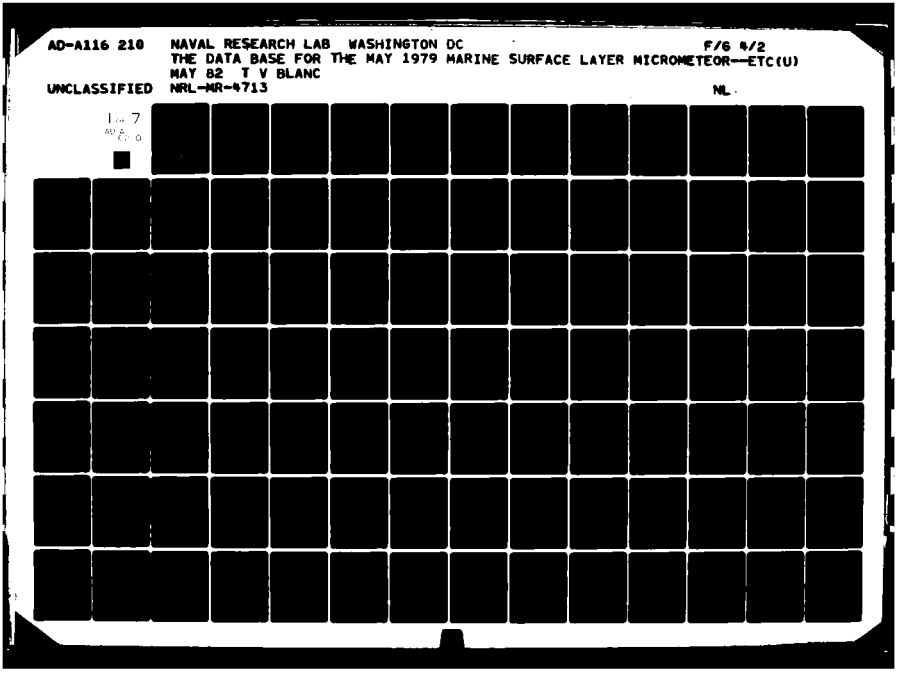
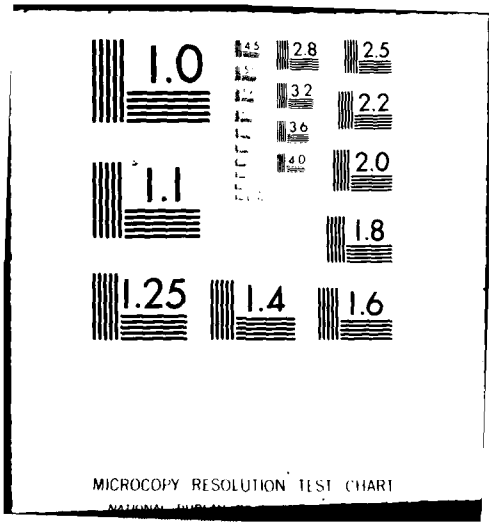

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL


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AD A116210

NRL Memorandum Report 4713

The Data Base for the May 1979 Marine Surface Layer Micrometeorological Experiment at San Nicolas Island, California

THEODORE V. BLANC

Atmospheric Physics Branch
Environmental Sciences Division

May 7, 1982

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Washington, D.C.

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Marine micrometeorology	Gradient & bulk flux comparison
Coastal meteorology	Downward marine humidity flux
Wind profile beach escarpment effect	Simple two-level bulk method
Flux & stability error analysis	Electro-optical meteorology

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
One hundred thirty-six hours of gradient (profile) and bulk aerodynamic measurements of momentum, moisture, and sensible heat flux, accompanied by determinations of stability, drag coefficient, roughness length, and sky radiation were made in the marine atmospheric surface layer over the Pacific Ocean from an upwind, low-profile promontory of San Nicolas Island, California. Over a 10-day period a wide variety of meteorological and oceanographic conditions were observed in which 30-minute average wind speeds ranged from 2 to 17 m/s, air-water temperature differences from −2.1 to +0.6°C, dew point-water temperature differences from −7.5 to −2.0°C,
(Continued)

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20. ABSTRACT (Continued)

and Richardson number stabilities from -2.7 to +0.1. Subsequently, 10% of the data were acquired under stable atmospheric conditions and 15% at wind speeds in excess of 12 m/s. The micrometeorological observations were accompanied by 80 hours of aerosol size distribution observations of particles ranging from 0.3 to 14 μm in radius, 171 hourly measurements of upwind wave period and height, 59 hourly measurements of atmospheric radon (^{222}Rn), and typically twice daily high resolution radiosonde measurements for determining the height of the marine inversion. The data includes measurement error values for the various flux and stability related parameters. Because the data base forms a unique collection of maritime observations, considerable care has been taken to present the data in an easily usable form. The data base is also available on magnetic floppy disk and, along with the various details of the experiment, in graphic form in NRL Report 8363.

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The Data Base for the May 1979 Marine Surface Layer Micrometeorological Experiment at San Nicolas Island, California

THEODORE V. BLANC

Atmospheric Physics Branch
Environmental Sciences Division

Abstract — One hundred thirty-six hours of gradient (profile) and bulk aerodynamic measurements of momentum, moisture, and sensible heat flux, accompanied by determinations of stability, drag coefficient, roughness length, and sky radiation were made in the marine atmospheric surface layer over the Pacific Ocean from an upwind, low-profile promontory of San Nicolas Island, California. Over a 10-day period a wide variety of meteorological and oceanographic conditions were observed in which 30-minute average wind speeds ranged from 2 to 17 m/s, air-water temperature differences from −2.1 to +0.6°C, dew point-water temperature differences from −7.5 to −2.0°C, and Richardson number stabilities from −2.7 to +0.1. Subsequently, 10% of the data were acquired under stable atmospheric conditions and 15% at wind speeds in excess of 12 m/s. The micrometeorological observations were accompanied by 80 hours of aerosol size distribution observations of particles ranging from 0.3 to 14 μm in radius, 171 hourly measurements of upwind wave period and height, 59 hourly measurements of atmospheric radon (^{222}Rn), and typically twice daily high resolution radiosonde measurements for determining the height of the marine inversion. The data includes measurement error values for the various flux and stability related parameters. Because the data base forms a unique collection of maritime observations, considerable care has been taken to present the data in an easily usable form. The data base is also available on magnetic floppy disk and, along with the various details of the experiment, in graphic form in NRL report 8363.

1. Introduction

A previous NRL formal report 8363, Blanc (1981), presented a detailed description and analysis of the marine surface layer experiment conducted at San Nicolas Island, California, in May of 1979. In that earlier report, all of the data and much of the analysis was presented in a graphic format. This report presents the measurements in a tabular form upon which the previous report was based. Because the data base represents a unique collection of observations made under an unusually wide variety of meteorological and oceanographic conditions, considerable care has been taken to present the data in a fashion which is self-explanatory and which is conducive to its easy ulitization. Interpretations of the data which may differ from those presented in Blanc (1981), or which may have different objectives in mind, are invited. Some observations of precipitation, visibility, and cloud cover made in the vicinity of the micrometeorological observation site are available in Williams et al. (1979). The micrometeorological data presented in this report is also available on Hewlett-Packard model 9885 or Tektronix model 4907 compatible floppy disk upon request to the author. All of the data are presented in chronological order cataloged in local Pacific Standard Time (PST).

2. Distribution of Observations by Day, Hour, and Run Number

Table 2.1 — Distribution of the Observations for the May 1979 Marine Surface Layer Experiment at San Nicolas Island, California

Approx. Start Time (PST)	1979									
	1 May	2 May	3 May	4 May	5 May	6 May	7 May	8 May	9 May	10 May
00:00		†	030000*†	040000*†	050000 †			080000*†	090000 †	100000 †
00:30			030030*	040030*	050030			080030*	090030	100030
01:00		†	030100*†	040100*†	050100 †			080100*†	090100 †	100100 †
01:30			030130*	040130*	050130			080130*	090130	100130
02:00		†	030200*†	040200*†	050200 †			080200*†	090200 †	100200 †
02:30			030230*	040230*	050230			080230*	090230	100230
03:00		†	030300*†	040300*†	050300 †			080300*†	090300 †	100300 †
03:30			030330*	040330*	050330			080330*	090330	100330
04:00		†	030400*†	040400*†	050400 †			080400*†	090400 †	100400 †
04:30			030430*	040430*	050430			080430*	090430	
05:00		†	030500*†	040500*†	050500 †			080500*†	090500 †	†
05:30			030530*	040530*	050530			080530*	090530	
06:00		†	030600*†	040600*†	050600 †		†	080600*†	090600 †	†
06:30			030630*	040630*	050630			080630*	090630	
07:00	□	†	030700*†	*†	050700 † □		†	080700*†Δ□	† □	†
07:30		□	030730*	*	050730			080730*	Δ	*Δ
08:00		†Δ	030800*†Δ□	*†Δ□	050800 †		†□	080800*†Δ	090800 †Δ	*†
08:30			030830*	040830*	050830			080830*	090830	100830 Δ
09:00		†Δ	030900 †Δ	040900*†Δ	050900 †		†	080900*†Δ	090900 †Δ	†Δ
09:30			030930*	040930*	050930			080930*	090930	□
10:00		†Δ	031000*†Δ	041000*†Δ	051000 †		†Δ	*†Δ	091000 †Δ	Δ
10:30			031030*	041030*	051030			*	091030	
11:00		†Δ	031100*†Δ	041100*†Δ	051100 † □		†Δ	*†Δ	091100 †	
11:30		*	031130*	*	051130			*	091130 □	
12:00	†Δ	*†Δ	031200*†Δ	†Δ	051200 †		†Δ	*†Δ	091200 Δ	
12:30		*	031230*	041230	051230			081230*	091230	
13:00	†Δ	*†Δ	031300*†Δ	041300 †	051300 †		071300*†	081300*†Δ	091300 Δ	
13:30		021330*	031330*	041330	051330		071330* □	081330*	091330	□
14:00	†Δ□	021400*†Δ	031400*†Δ	041400 †	051400 †		071400*†Δ	081400*†Δ	091400 Δ	
14:30		021430*	031430* □	041430 □	051430		071430*	081430*	091430	
15:00	†Δ	021500*†Δ	031500*†	041500 †	051500 † □		071500*†	081500*†	091500 † □	
15:30	011530	021530* □	031530*	041530	051530		*	081530*	091530	
16:00	011600 †	021600*†	031600*†	041600 †	051600 †		*†	081600*†	091600	
16:30	011630	021630*	031630*	041630	051630		*	081630*	091630	
17:00	011700 †Δ	021700*†Δ	031700*†	041700 †	051700 †		071700*†	081700*†	091700	
17:30		021730*	031730*	041730	051730		071730*	081730*	091730	
18:00	†Δ	021800*†Δ	031800*†	041800 †	†		071800*†	081800*†Δ	091800 Δ	
18:30		021830*	031830* Δ	041830			071830*	081830*	091830	
19:00	†Δ	021900*†Δ	031900*†	041900 †	□		071900*†	081900*†Δ	091900 †Δ	
19:30	011930	021930*	*	041930			071930*	081930	091930	
20:00	012000 †	*†	032000*†	042000 †			072000*†	082000 †Δ	092000 †	
20:30	012030	022030*	032030*	042030			072030*	082030	092030	
21:00	012100 †	022100*†	032100*†	042100 †			072100*†	082100 †	092100 †	
21:30		022130*	032130*	042130			072130*	082130	092130	
22:00	†	022200*†	032200*†	042200 †			072200*†	082200 †	092200 †	
22:30		022230*	032230*	042230			072230*	082230	092230	
23:00	†	022300*†	032300*†	042300†			072300*†	082300 †	092300 †	
23:30		022330*	032330*	042330			072330*	082330	092330	

Six digit number indicates micrometeorological observation. 7905 + (six digit number in table) = run number. The run number is data run start time (year, month, day, hour, minute) in local Pacific Standard time rounded off to the nearest clock half hour. See. pp. 3-547.

*indicates aerosol size distribution observation. See pp. 549-553.

†indicates wave period and wave height obeservation. See. p. 555-557

Δindicates atmospheric radon observation. See. p. 558.

□indicates inversion-base height observation. See. p. 559.

3. Micrometeorological Observations

The 272 half hour micrometeorological observations, presented in graphic form and analyzed in Blanc (1981), are presented in tabular form. The Businger et al. (1971) scheme, described in Businger (1973), was used to compute the profile-derived flux and stability parameters with the von Kármán constant set equal to 0.40. This procedure renders the Businger et al. profile scheme equivalent to that proposed by Dyer and Hicks (1970). The Friehe and Schmitt (1976) scheme, described in Friehe and Pazan (1978), was used to compute the bulk-derived flux and stability parameters with the Smith and Banke (1975) formulation for drag coefficient. Approximately 190 parameters are presented in this section of the report which were computed and stored on magnetic disk for each 30-min long data run. They include the results of such calculations as the upwind fetch length over the island promontory, the wind speed profile escarpment corrections, the error values for the various flux related parameters, and the newly proposed composite profile-bulk flux method determinations. The roughness length and drag coefficient values are listed beneath the various scaling parameter columns. The data contained on magnetic floppy disk are cataloged by a 10-digit run number which represents the data start time (year, month, day, hour, minute) in local Pacific Standard Time rounded off to the nearest clock half hour.

It is of interest to note that for the minor event of profile observed downward humidity flux reported in this section and in Blanc (1981) for 4 May, 1979, Matthews and Akkerman (1979) reported the observation of fog between 8:30 and 9:30 PST.

In retrospect, the selection of the term "total heat budget flux" in this section and in Blanc (1981) to represent the sum of latent heat, sensible heat, and shortwave sky radiation was unfortunate. Following the example of Friehe and Pazan (1978), we should have employed a term such as "net heat flux," or "perhaps composite heat flux," since we did not have available a measurements of incoming and outgoing longwave radiation.

For a listing of the variable labels under which the data is stored on magnetic disk, see pp. 562-581. For a listing of the various parameters minimum, maximum, mean, and standard deviation values, see pp. 560-561. For a complete listing of the equations employed for the micrometeorological calculations, see pp. 564-598. The various micrometeorological computer programs are listed on pp. 600-627.

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905011530
START TIME: 15:31:20 PST
END TIME: 16: 1:20 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.035	4.945	6.164	5.850	4.686	3.900	4.751

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.512	3.962	2.514	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 134535	1421 135387	0.157	104	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.96

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.454	11.87	9.75	NO DATA	306.5	1010.10	-5.44E 02	14.141	286.656

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.539	10.98	9.15	NO DATA	0.11	1011.20

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.633	14.750	14.930	9.095E-03	78.27	7.441E-03	12.031	15.371	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.629	14.784	14.874	8.740E-03	74.74	7.144E-03	11.564	15.473	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905011530
START TIME: 15:31:20 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.003 AT GMH	MOMENTUM FLUX (Nt/m2) -3.37E-01	FRICTION VELOCITY (Meters/sec) 5.246E-01	GENERAL FORM:DM/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -1.51E-04	SCALING SPEC.HUMD. (Kg/Kg) 2.352E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.94E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.62E-01
Z/L AT GMH -0.004	LAT.HEAT FLUX (Watts/m2) -3.73E 02	SCALING POT. TEMP. (Kelvin) -6.321E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.32E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 2.30E 03
Z/L AT 10 METERS -0.003	SEN.HEAT FLUX (Watts/m2) 4.10E 00	ROUGHNESS LENGTH (Meters) 5.652E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.55E 01
Z/L AT Z1 -0.006	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.44E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.279E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.003	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.12E 02			
MONIN-OBUKHOV LENGTH (Meters) -3.171E 03	BOWEN RATIO (no units) -0.011			
PSI1 AT Z1= 0.021139 PSI1 AT Z2= 0.010736 PSI2 AT Z1= 0.012775 PSI2 AT Z2= 0.006466				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2230	2.4158E 02	5.8968E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905011530
START TIME: 15:31:20 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.528	11.08	9.22	NO DATA	1011.10	14.141	-0.613	-0.515	0.639	0.737

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.626	14.780	14.878	8.783E-03	75.16	7.179E-03	11.620	15.461	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.015 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.019

Z/L AT 10 METERS
-0.014

MONIN-OBUKHOV LENGTH (Meters)
-6.903E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.05E-01

HUMIDITY FLUX (Kg/sec m2)
4.93E-05

LAT.HEAT FLUX (Watts/m2)
1.22E 02

SEN.HEAT FLUX (Watts/m2)
8.97E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.44E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.13E 02

BOWEN RATIO (no units)
0.074

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.090E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.845E-05

SCALING POT.TEMP. (Kelvin)
-1.773E-02

ROUGHNESS LENGTH (Meters)
2.418E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.361E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.672E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.925E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.249E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8966E 05

VAP.PRES.AT WT LEVEL (Millibar)
16.109

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.215E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.30

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
172%	172%	89%	80%	153%	5%	33%	234%	45%	36%	109%	65%	89%
227%	227%	46%	40%	155%	5%	9%	195%	23%	63%	178%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905011530
START TIME: 15:31:20 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.008 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.010 [0.02]

Z/L AT 10 METERS
-0.008 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.245E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.49E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
-1.72E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
-4.24E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.52E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.44E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.17E 02 [3.0E+01]

BOWEN RATIO (no units)
0.035 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.483E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
1.145E-04 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.065E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.710E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.646E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
29%	29%	28%	614%	37%	0%	56%	53%	14%	151%	29%	44%	30%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905011600
START TIME: 16: 1:30 PST
END TIME: 16:31:40 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	5.106	4.974	6.273	5.921	4.678	3.139	4.799

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.430	3.917	2.512	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 134335	1421 134974	0.157	106	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.1	59.92

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
13.434	12.08	10.17	NO DATA	308.2	1009.97	-4.38E 02	14.061	286.625

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
13.497	11.11	9.32	NO DATA	0.08	1011.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	13.613	14.768	14.947	9.356E-03	80.62	7.656E-03	12.375	15.349	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	13.588	14.757	14.848	8.845E-03	75.83	7.230E-03	11.701	15.430	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905011600
START TIME: 16: 1:30 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -3.46E-01	FRICTION VELOCITY (Meters/sec) 5.316E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -2.02E-04	SCALING SPEC.HUMD. (Kg/Kg) 3.104E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.08E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.52E-01
Z/L AT GMH 0.012	LAT.HEAT FLUX (Watts/m2) -4.98E 02	SCALING POT. TEMP. (Kelvin) 1.879E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 4.76E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 1.74E 03
Z/L AT 10 METERS 0.009	SEN.HEAT FLUX (Watts/m2) -1.24E 01	ROUGHNESS LENGTH (Meters) 5.908E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.88E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.88E 01
Z/L AT Z1 0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.38E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.254E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.48E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.107E 03	BOWEN RATIO (no units) 0.025			
PSI1 AT Z1= -0.077926 PSI1 AT Z2= -0.039069 PSI2 AT Z1= -0.105306 PSI2 AT Z2= -0.052796				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2228

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4161E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8970E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905011600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 1:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.498	11.22	9.43	NO DATA	1010.98	14.061	-0.572	-0.474	0.697	0.795

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.588	14.758	14.856	8.906E-03	76.40	7.280E-03	11.781	15.420	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRISCH E ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -2.11E-01	FRICTION VELOCITY (Meters/sec) 4.155E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.727E-01	AIR DENSITY (Kg/m3) 1.2233
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.72E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.277E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.715E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 1.16E 02	SCALING POT.TEMP. (Kelvin) -1.659E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.893E-03	WATER LA..HEAT VAP. (ITcal./Kg) 5.8968E 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 8.53E 00	ROUGHNESS LENGTH (Meters) 2.556E-04		VAP.PRES.AT WT LEVEL (Millibar) 16.024
MONIN-OBUKHOV LENGTH (Meters) -7.616E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.38E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.371E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.209E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.13E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.18
	BOWEN RATIO (no units) 0.073			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
98%	106%	78%	63%	76%	5%	33%	139%	39%	24%	37%	59%	78%
236%	236%	46%	41%	164%	5%	10%	204%	23%	64%	187%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905011600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 1:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.002 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.61E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.585E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -4.99E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 1.987E-04 [3.0E-05]
Z/L AT GMH 0.003 [0.02]	LAT.HEAT FLUX (Watts/m2) -1.23E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.298E-02 [2.0E-02]
Z/L AT 10 METERS 0.002 [0.02]	SEN.HEAT FLUX (Watts/m2) -5.75E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.968E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 4.655E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.38E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.670E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.55E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.044 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
58%	59%	27%	255%	194%	0%	80%	31%	13%	111%	107%	43%	28%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905011630
START TIME: 16:31:50 PST
END TIME: 17: 2: 0 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.203	5.012	6.190	5.832	4.668	2.372	4.839

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.344	3.869	2.516	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 133883	1421 134343	0.157	108	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.388	11.92	10.75	NO DATA	309.5	1009.82	-3.31E 02	13.977	286.571

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.434	10.94	9.55	NO DATA	0.05	1010.92

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.568	14.775	14.955	9.724E-03	84.04	7.958E-03	12.859	15.301	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.524	14.714	14.804	8.982E-03	77.32	7.342E-03	11.880	15.364	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905011630
START TIME: 16:31:50 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.014 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.020

Z/L AT 10 METERS
0.015

Z/L AT Z1
0.038

Z/L AT Z2
0.014

MONIN-OBUKHOV LENGTH (Meters)
6.480E 02

PSI1 AT Z1= -0.133103
PSI1 AT Z2= -0.066733
PSI2 AT Z1= -0.179869
PSI2 AT Z2= -0.090180

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.26E-01

HUMIDITY FLUX (Kg/sec m2)
-2.70E-04

LAT.HEAT FLUX (Watts/m2)
-6.66E 02

SEN.HEAT FLUX (Watts/m2)
-1.93E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.31E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.02E 03

BOWEN RATIO (no units)
0.029

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.160E-01

SCALING SPEC.HUMD. (Kg/Kg)
4.273E-04

SCALING POT. TEMP. (Kelvin)
3.025E-02

ROUGHNESS LENGTH (Meters)
5.350E-04

DRAG COEF. AT 10 METERS (Dimensionless)
2.186E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.09E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 6.87E-05

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 4.87E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 7.75E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 1.26E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI?
PTK SLOPE= 1.79E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2227

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8973E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905011630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:31:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.429	11.06	9.69	NO DATA	1010.83	13.977	-0.549	-0.451	0.743	0.841

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.527	14.721	14.819	9.069E-03	78.11	7.414E-03	11.995	15.357	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -2.03E-01	FRICTION VELOCITY (Meters/sec) 4.078E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.663E-01	AIR DENSITY (Kg/m3) 1.2233
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.31E-05	SCALING SPEC. HUMID. (Kg/Kg) -8.648E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.314E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) *2.4160E 02*
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 1.07E 02	SCALING POT.TEMP. (Kelvin) -1.615E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.585E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8972E 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 8.15E 00	ROUGHNESS LENGTH (Meters) 2.395E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.934
MONIN-OBUKHOV LENGTH (Meters) -7.533E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.31E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.360E-03		*ABS.HUMID.*AT WT LEVEL (Kg/m3) 1.202E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.16E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.03
	BOWEN RATIO (no units) 0.076			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
84%	96%	76%	56%	62%	5%	37%	118%	38%	18%	24%	58%	76%
241%	241%	46%	42%	169%	5%	11%	210%	23%	65%	192%	43%	40%

* *CONTINUED BELOW*

RUN NUMBER: 7905011630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:31:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.007 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.49E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 4.486E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -8.97E-05 (8.0E-06)	*SCALING SPEC.HUMID.* (Kg/Kg) 3.142E-04 (3.0E-05)
Z/L AT GMH 0.009 (0.02)	LAT.HEAT FLUX (Watts/m2) -2.21E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 2.517E-02 (2.0E-02)
Z/L AT 10 METERS 0.007 (0.02)	SEN.HEAT FLUX (Watts/m2) -1.20E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 3.653E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) 1.374E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.31E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.644E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.01E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.046 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN *PERCENT DIFFERENCE AND* ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
76%	78%	25%	176%	126%	0%	113%	31%	12%	94%	117%	41%	26%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905011700
START TIME: 17: 2:10 PST
END TIME: 17:32:20 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.318	5.032	6.193	5.833	4.669	1.622	4.804

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.239	3.898	2.517	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 132337	1421 132867	0.157	110	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.234	11.92	11.43	NO DATA	308.3	1009.85	-2.26E 02	13.876	286.420

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.287	10.94	9.67	NO DATA	0.01	1010.95

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.414	14.684	14.864	1.018E-02	88.84	8.331E-03	13.458	15.148	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.377	14.576	14.666	9.058E-03	78.69	7.400E-03	11.974	15.217	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905011700
START TIME: 17: 2:10 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.012 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.017

Z/L AT 10 METERS
0.013

Z/L AT Z1
0.023

Z/L AT Z2
0.012

MONIN-OBUKHOV LENGTH (Meters)
7.046E 02

PSI1 AT Z1= -0.189924
PSI1 AT Z2= -0.055112
PSI2 AT Z1= -0.148546
PSI2 AT Z2= -0.074476

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.38E-01

HUMIDITY FLUX (Kg/sec m2)
-4.23E-04

LAT.HEAT FLUX (Watts/m2)
-1.04E 03

SEN.HEAT FLUX (Watts/m2)
-1.68E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.26E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.29E 03

BOWEN RATIO (no units)
0.016

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.256E-01

SCALING SPEC.HUMD. (Kg/Kg)
6.581E-04

SCALING POT. TEMP. (Kelvin)
2.590E-02

ROUGHNESS LENGTH (Meters)
5.688E-04

DRAG COEF. AT 10 METERS (Dimensionless)
2.265E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.09E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.04E-04

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 4.08E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 7.61E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 8.21E 02

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 2.89E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8981E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905011700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.288	11.06	9.88	NO DATA	1010.85	13.876	-0.595	-0.497	0.712	0.810

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.378	14.588	14.686	9.188E-03	79.86	7.507E-03	12.146	15.209	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -2.04E-01	FRICTION VELOCITY (Meters/sec) 4.079E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.664E-01	AIR DENSITY (Kg/m3) 1.2239
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.03E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.077E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.033E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4162E 02
Z/L AT GMH -0.018	LAT.HEAT FLUX (Watts/m2) 9.96E 01	SCALING POT.TEMP. (Kelvin) -1.731E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.061E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8980E 05
Z/L AT 10 METERS -0.014	SEN.HEAT FLUX (Watts/m2) 8.74E 00	ROUGHNESS LENGTH (Meters) 2.397E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.830
MONIN-OBUKHOV LENGTH (Meters) -7.027E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.26E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.360E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.195E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.18E 02			BAR PRES.AT WT LEVEL (Millibar) 1012.05
	BOWEN RATIO (no units) 0.088			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COFF
87%	97%	76%	52%	65%	5%	42%	117%	38%	14%	27%	58%	76%
231%	231%	46%	42%	159%	5%	14%	201%	23%	65%	182%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905011700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.005 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.54E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 4.523E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -1.68E-04 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) 5.289E-04 (3.0E-05)
Z/L AT GMH 0.006 (0.02)	LAT.HEAT FLUX (Watts/m2) -4.16E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 2.028E-02 (2.0E-02)
Z/L AT 10 METERS 0.005 (0.02)	SEN.HEAT FLUX (Watts/m2) -9.40E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 3.799E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) 2.112E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.26E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.67[illegible]E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.07E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.042 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	73%	27%	138%	148%	0%	161%	46%	13%	83%	133%	44%	[illegible]%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905011930
START TIME: 19:30: 0 PST
END TIME: 19:59:50 PST
START DATE: 0 May 1979 (DAY 120)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.991	5.022	7.066	6.551	4.679	-0.092	4.960

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.934	3.888	2.515	1.115	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128346	1421 129218	0.183	105	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
42	0	180	0	0	0	0	0	115.1	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.835	13.58	9.49	NO DATA	313.6	1010.00	1.28E 01	13.577	286.038

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.922	12.18	9.61	NO DATA	0.06	1011.09

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRS.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.014	14.106	14.286	8.956E-03	80.08	7.311E-03	11.820	14.760	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRS.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.012	14.204	14.294	9.034E-03	80.26	7.370E-03	11.927	14.861	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905011930
START TIME: 19:30: 0 PST
START DATE: 0 May 1979 (DAY 120)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.001 AT GMH	-8.18E-01	8.170E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	6.29E-05	-6.287E-05	DWS/DZ= 1.56E-01	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX			WS SLOPE= 4.90E-01
-0.002	(Watts/m2)	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	1.56E 02	(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.001		-6.287E-03	DSH/DZ= -8.92E-06	PSI=PSI2
	SEN.HEAT FLUX			SH SLOPE= -8.60E 03
Z/L AT Z1	(Watts/m2)			
-0.002	6.37E 00	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT Z2	SKY AND SOLAR HEAT FLUX	2.115E-03	DPT/DZ= -8.92E-04	PSI=PSI2
-0.001	(Watts/m2)			PTK SLOPE= -8.60E 01
	1.28E 01			
MONIN-OBUKHOV LENGTH		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC.(KxM-2/3)
(Meters)	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert.Axis
-7.758E 03	(Watts/m2)	4.137E 03		PSI=NONE
	1.75E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.008773				
PSI1 AT Z2= 0.004422	BOWEN RATIO			
PSI2 AT Z1= 0.005280	(no units)			
PSI2 AT Z2= 0.002658	0.041			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2254

AIR SPECIFIC HEAT (ITcal /Kg Kel.) 2.4159E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9003E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905011930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 0 May 1979 (DAY 120) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.911	12.35	9.59	NO DATA	1011.00	13.577	-0.666	-0.568	0.614	0.712

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.009	14.192	14.290	9.025E-03	80.24	7.363E-03	11.914	14.849	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.011 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.015

Z/L AT 10 METERS
-0.011

MONIN-OBUKHOV LENGTH (Meters)
-8.932E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.70E-01

HUMIDITY FLUX (Kg/sec m2)
4.42E-05

LAT.HEAT FLUX (Watts/m2)
1.09E 02

SEN.HEAT FLUX (Watts/m2)
1.05E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.32E 02

BOWEN RATIO (no units)
0.096

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.694E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.676E-05

SCALING POT.TEMP. (Kelvin)
-1.801E-02

ROUGHNESS LENGTH (Meters)
3.887E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.445E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.204E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.417E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.455E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2257

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4159E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9001E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.528

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.173E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.20

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
151%	151%	67%	141%	141%	10%	126%	282%	33%	108%	108%	53%	67%
218%	218%	46%	43%	146%	10%	37%	189%	23%	66%	169%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905011930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 0 May 1979 (DAY 120) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.005 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.007 [0.02]

Z/L AT 10 METERS
-0.005 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.869E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.94E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.85E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.20E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.39E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.42E 02 [3.0E+01]

BOWEN RATIO (no units)
0.074 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.112E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.149E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.083E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.159E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.454E 03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	25%	56%	22%	25%	0%	17%	35%	29%	10%	30%	75%	57%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905012000
START TIME: 20: 0: 0 PST
END TIME: 20:30:10 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.970	4.999	6.963	6.510	4.693	-0.093	4.875

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.883	3.895	2.516	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT&FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127942	1421 128810	0.183	106	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLU[illegible] THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.794	13.38	9.36	NO DATA		310.7	1010.21	1.29E 01	13.528	285.998

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.881	12.11	9.47	NO DATA	0.05	1011.31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.974	14.054	14.234	8.882E-03	79.61	7.249E-03	11.722	14.724	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.971	14.151	14.241	8.954E-03	79.73	7.302E-03	11.820	14.824	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905012000
START TIME: 20: 0: 0 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.001 AT GMH	MOMENTUM FLUX (Nt/m2) -6.84E-01	FRICTION VELOCITY (Meters/sec) 7.470E-01	GENERAL FORM:DN/DZ= I(N1-N2)I/ILn(Z1/Z2)* (Z1*Z2)1/2	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.76E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.292E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.43E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 5.35E-01
Z/L AT GMH -0.002	LAT.HEAT FLUX (Watts/m2) 1.42E 02	SCALING POT. TEMP. (Kelvin) -6.292E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.59E 03
Z/L AT 10 METERS -0.002	SEN.HEAT FLUX (Watts/m2) 5.83E 00	ROUGHNESS LENGTH (Meters) 1.680E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.59E 01
Z/L AT Z1 -0.003	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.568E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.001	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.61E 02			
MONIN-OBUKHOV LENGTH (Meters) -6.475E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.010490 PSI1 AT Z2= 0.005293 PSI2 AT Z1= 0.006317 PSI2 AT Z2= 0.003182				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2259

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9005E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905012000 | *MARINE SURFACE LAYER* | PRINT DATE: 11 JUN 1980
START TIME: 20: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.871	12.26	9.46	NO DATA	1011.21	13.528	-0.658	-0.560	0.611	0.709

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.969	14.139	14.237	8.945E-03	79.72	7.295E-03	11.808	14.813	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	*INFERRED SCALING PARAMETERS*	*INFERRED MEAN VERTICAL VELOCITY COVARIANCE*	*MISCELLANEOUS*
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -2.65E-01	FRICTION VELOCITY (Meters/sec) 4.651E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.163E-01	AIR DENSITY (Kg/m3) 1.2262
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.46E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.819E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.459E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4158E 02
Z/L AT GMH -0.015	LAT.HEAT FLUX (Watts/m2) 1.10E 02	SCALING POT.TEMP. (Kelvin) -1.787E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.313E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9003E 05
Z/L AT 10 METERS -0.011	SEN.HEAT FLUX (Watts/m2) 1.03E 01	ROUGHNESS LENGTH (Meters) 3.765E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.481
MONIN-OBUKHOV LENGTH (Meters) -8.833E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.439E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.170E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.33E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.41
	BOWEN RATIO (no units) 0.094			

\# MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
156%	156%	72%	144%	144%	10%	127%	287%	36%	108%	108%	56%	72%
219%	219%	46%	43%	147%	10%	37%	190%	23%	66%	170%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905012000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

\# COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -4.29E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 5.754E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.76E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.242E-05 [3.0E-05]
Z/L AT GMH -0.007 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.18E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.078E-02 [2.0E-02]
Z/L AT 10 METERS -0.006 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.04E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 9.439E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.784E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.203E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.40E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.073 [0.08]	

\# *DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE* ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	25%	50%	16%	28%	0%	11%	34%	25%	11%	30%	70%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905012030
START TIME: 20:30:20 PST
END TIME: 21: 0:30 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.946	4.978	6.449	6.079	4.706	-0.092	4.862

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.827	3.885	2.510	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128102	1421 128926	0.183	102	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.810	12.40	9.22	NO DATA	310.3	1010.41	1.29E 01	13.474	286.011

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.893	11.31	9.35	NO DATA	0.10	1011.51

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.990	14.058	14.238	8.797E-03	78.75	7.178E-03	11.610	14.743	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.983	14.152	14.242	8.883E-03	79.03	7.242E-03	11.727	14.838	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905012030
START TIME: 20:30:20 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.002 AT GMH	MOMENTUM FLUX (Nt/m2) -4.96E-01	FRICTION VELOCITY (Meters/sec) 6.361E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.92E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.303E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.21E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 6.29E-01
Z/L AT GMH -0.003	LAT.HEAT FLUX (Watts/m2) 1.21E 02	SCALING POT. TEMP. (Kelvin) -6.303E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.58E 03
Z/L AT 10 METERS -0.002	SEN.HEAT FLUX (Watts/m2) 4.97E 00	ROUGHNESS LENGTH (Meters) 1.051E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.58E 01
Z/L AT Z1 -0.004	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.049E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.002	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.39E 02			
MONIN-OBUKHOV LENGTH (Meters) -4.678E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.014447 PSI1 AT Z2= 0.007308 PSI2 AT Z1= 0.008711 PSI2 AT Z2= 0.004396				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal /Kg)
1.2262	2.4156E 02	5.9005E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905012030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.883	11.45	9.33	NO DATA	1011.41	13.474	-0.591	-0.493	0.667	0.765

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.981	14.141	14.239	8.873E-03	78.99	7.235E-03	11.713	14.827	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -2.23E-01	FRICTION VELOCITY (Meters/sec) 4.260E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.815E-01	AIR DENSITY (Kg/m3) 1.2264
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.22E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.072E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.217E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4156E 02
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 1.04E 02	SCALING POT.TEMP. (Kelvin) -1.689E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.195E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9003E 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 8.92E 00	ROUGHNESS LENGTH (Meters) 2.786E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.430
MONIN-OBUKHOV LENGTH (Meters) -7.844E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.385E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.166E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.26E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.61
	BOWEN RATIO (no units) 0.086			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
161%	161%	77%	147%	147%	10%	128%	294%	39%	108%	108%	59%	77%
231%	231%	46%	42%	159%	10%	37%	202%	23%	65%	182%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905012030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.24E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 5.043E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.37E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.406E-05 [3.0E-05]
Z/L AT GMH -0.008 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.08E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.024E-02 [2.0E-02]
Z/L AT 10 METERS -0.006 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.87E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.052E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.540E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.95[illegible]-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.29E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.067 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
27%	27%	43%	9%	29%	0%	6%	28%	21%	12%	27%	65%	4[illegible]%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905012100
START TIME: 21: 0:40 PST
END TIME: 21:30:50 PST
START DATE: 1 May 1979 (DAY 121)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.918	4.951	6.806	6.380	4.692	-0.093	4.896

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.770	3.882	2.510	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126566	1421 127461	0.183	98	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.657	13.08	9.06	NO DATA	311.5	1010.20	1.29E 01	13.418	285.861

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.746	11.87	9.19	NO DATA	0.16	1011.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.836	13.890	14.070	8.705E-03	78.69	7.100E-03	11.482	14.592	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.836	13.991	14.081	8.789E-03	78.92	7.163E-03	11.597	14.694	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905012100
START TIME: 21: 0:40 PST
START DATE: 1 May 1979 (DAY 121)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.002 AT GMH	MOMENTUM FLUX (Nt/m2) -6.19E-01	FRICTION VELOCITY (Meters/sec) 7.103E-01	GENERAL FORM:DN/DZ= I(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.48E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.295E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.36E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 5.63E-01
Z/L AT GMH -0.002	LAT.HEAT FLUX (Watts/m2) 1.36E 02	SCALING POT. TEMP. (Kelvin) -6.295E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.59E 03
Z/L AT 10 METERS -0.002	SEN.HEAT FLUX (Watts/m2) 5.55E 00	ROUGHNESS LENGTH (Meters) 1.460E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.59E 01
Z/L AT Z1 -0.003	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.388E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.002	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.54E 02			
MONIN-OBUKHOV LENGTH (Meters) -5.845E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.011603 PSI1 AT Z2= 0.005859 PSI2 AT Z1= 0.006990 PSI2 AT Z2= 0.003523				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2266

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4154E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9013E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905012100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.735	12.01	9.17	NO DATA	1011.20	13.418	-0.683	-0.585	0.561	0.659

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.833	13.979	14.077	8.779E-03	78.90	7.156E-03	11.583	14.682	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.012 AT GMH	MOMENTUM FLUX (Nt/m2) -2.52E-01	FRICTION VELOCITY (Meters/sec) 4.532E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.054E-01	AIR DENSITY (Kg/m3) 1.2269
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.51E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.197E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.508E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4155E 02
Z/L AT GMH -0.016	LAT.HEAT FLUX (Watts/m2) 1.11E 02	SCALING POT.TEMP. (Kelvin) -1.867E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.462E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9011E 05
Z/L AT 10 METERS -0.012	SEN.HEAT FLUX (Watts/m2) 1.05E 01	ROUGHNESS LENGTH (Meters) 3.447E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.370
MONIN-OBUKHOV LENGTH (Meters) -8.026E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.423E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.162E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.35E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.4[illegible]
	BOWEN RATIO (no units) 0.094			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
157%	157%	73%	145%	145%	10%	127%	289%	37%	108%	108%	57%	73%
216%	216%	46%	42%	144%	10%	37%	186%	23%	65%	167%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905012100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 1 May 1979 (DAY 121) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.93E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 5.523E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.73E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.425E-05 [3.0E-05]
Z/L AT GMH -0.008 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.17E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.116E-02 [2.0E-02]
Z/L AT 10 METERS -0.006 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.03E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.257E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.600E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.29E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.316E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.39E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.073 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
27%	27%	48%	12%	31%	0%	8%	34%	24%	13%	32%	68%	4[illegible]%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021330
START TIME: 13:30: 0 PST
END TIME: 13:59:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.088	5.108	5.453	5.317	4.799	4.185	4.754

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.183	3.863	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 130215	1421 131389	0.157	110	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.022	10.50	10.06	NO DATA	306.6	1011.83	-5.84E 02	13.821	286.240

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.139	9.99	10.12	NO DATA	0.01	1012.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.201	14.344	14.524	9.319E-03	82.22	7.600E-03	12.307	14.969	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.229	14.467	14.557	9.362E-03	81.91	7.630E-03	12.369	15.101	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021330
START TIME: 13:30: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.032 AT GMH	MOMENTUM FLUX (Nt/m2) -1.38E-01	FRICTION VELOCITY (Meters/sec) 3.353E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.78E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.748E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.73E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.19E 00
Z/L AT GMH -0.040	LAT.HEAT FLUX (Watts/m2) 6.85E 01	SCALING POT. TEMP. (Kelvin) -2.340E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.01E 03
Z/L AT 10 METERS -0.031	SEN.HEAT FLUX (Watts/m2) 9.74E 00	ROUGHNESS LENGTH (Meters) 1.202E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.09E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.31E 01
Z/L AT Z1 -0.056	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.84E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.214E -03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.028	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.05E 02			
MONIN-OBUKHOV LENGTH (Meters) -3.253E 02	BOWEN RATIO (no units) 0.142			
PSI1 AT Z1= 0.171438 PSI1 AT Z2= 0.094377 PSI2 AT Z1= 0.107901 PSI2 AT Z2= 0.058297				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2266	2.4164E 02	5.8992E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021330
START TIME: 13:30: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.125	10.05	10.12	NO DATA	1012.84	13.821	-0.696	-0.598	0.632	0.730

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.223	14.452	14.550	9.357E-03	81.95	7.627E-03	12.362	15.085	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.022 AT GMH	MOMENTUM FLUX (Nt/m2) -1.60E-01	FRICTION VELOCITY (Meters/sec) 3.615E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.307E-01	AIR DENSITY (Kg/m3) 1.2268
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.42E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.707E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.41BE-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.028	LAT.HEAT FLUX (Watts/m2) 8.44E 01	SCALING POT.TEMP. (Kelvin) -2.083E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.529E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8989E 05
Z/L AT 10 METERS -0.022	SEN.HEAT FLUX (Watts/m2) 9.35E 00	ROUGHNESS LENGTH (Meters) 1.571E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.804
MONIN-OBUKHOV LENGTH (Meters) -4.585E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.84E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.293E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.193E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.90E 02			BAR.PRES.AT WT LEVEL (Millibar) 1014.04
	BOWEN RATIO (no units) 0.111			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
140%	140%	128%	173%	101%	5%	19%	274%	64%	108%	37%	84%	128%
214%	214%	46%	44%	142%	5%	7%	185%	23%	67%	165%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021330
START TIME: 13:30: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.028 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.546E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.29E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.342E-05 [3.0E-05]
Z/L AT GMH -0.035 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.12E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.293E-02 [2.0E-02]
Z/L AT 10 METERS -0.027 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.57E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.446E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.677E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.84E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.276E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.94E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.123 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
18%	17%	8%	11%	2%	0%	2%	13%	4%	7%	7%	13%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021400
START TIME: 14: 0: 0 PST
END TIME: 14:30:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD	No.09 WIND DIR
6.205	0.000	0.001	5.064	5.085	5.269	5.096	4.792	5.320	4.851

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.162	3.859	2.525	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WSFC (Coeff.)	WS2C (Coeff.)
1411 129651	1421 130746	0.157	106	-0.009	0.000	0.004	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	117.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.965	10.15	9.92	NO DATA	309.9	1011.73	-4.63E-02	13.860	286.180

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
13.075	9.58	9.99	NO DATA	0.08	1012.83

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX.1 (Kel.xM-2/3)
18.35	13.145	14.275	14.454	9.231E-03	81.74	7.528E-03	12.189	14.912	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX.2 (Kel.xM-2/3)
9.20	13.165	14.390	14.481	9.278E-03	81.51	7.561E-03	12.255	15.036	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021400
START TIME: 14: 0: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.019 AT GMH	MOMENTUM FLUX (Nt/m2) -1.55E-01	FRICTION VELOCITY (Meters/sec) 3.554E-01	GENERAL FORM DN/DZ= ((N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2))	GENERAL FORM N-SLOPE= (Ln(Z1 PSI)-(Ln(Z2-PSI))/ (M1-M2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.87E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.574E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.33E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE= 1.13E 00
Z/L AT GMH -0.024	LAT.HEAT FLUX (Watts/m2) 7.08E 01	SCALING POT. TEMP. (Kelvin) -1.630E-02	N=SPEC HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE -8.2E 03
Z/L AT 10 METERS -0.019	SEN.HEAT FLUX (Watts/m2) 7.19E 00	ROUGHNESS LENGTH (Meters) 1.479E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.21E-03	N=POT TEMP (Kelvin) Z HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= 3.3E 01
Z/L AT Z1 -0.034	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.63E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.479E-04		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE (1) SLOPE=NO DATA
Z/L AT Z2 -0.017				
MONIN-OBUKHOV LENGTH (Meters) -5.403E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.85E 02			
PSI1 AT Z1= 0.111049	BOWEN RATIO (no units) 0.102			
PSI1 AT Z2= 0.059320				
PSI2 AT Z1= 0.068897				
PSI2 AT Z2= 0.036780				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.2959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2268

AIR SPECIFIC HEAT (Cal./Kg Kel.) 2.416E 02

WATER LAT HEAT VAP (Cal/ Kg) 5.899E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .0AE 3 Kg/Kg

* CONTINUED ON EXT PAGE

RUN NUMBER: 7905021400
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* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.061	9.65	9.98	NO DATA	1012.73	13.800	-0.739	-0.641	0.576	0.674

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.159	14.376	14.474	9.272E-03	81.54	7.557E-03	12.248	15.021	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.027 AT GMH	MOMENTUM FLUX (Nt/m2) -1.45E-01	FRICTION VELOCITY (Meters/sec) 3.435E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.180E-01	AIR DENSITY (Kg/m3) 1.2270
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.37E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.992E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.369E-05	AIR SPECIFIC HEAT (Ttcal /Kg Kel) 2.416E 02
Z/L AT GMH -0.034	LAT.HEAT FLUX (Watts/m2) 8.32E 01	SCALING POT.TEMP. (Kelvin) -2.238E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.689E-03	WATER LAT.HEAT VAP (Ttcal /Kg) 5.8993E 05
Z/L AT 10 METERS -0.026	SEN.HEAT FLUX (Watts/m2) 9.55E 00	ROUGHNESS LENGTH (Meters) 1.311E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.78
MONIN-OBUKHOV LENGTH (Meters) -3.851E 02	SK. AND SOLAR HEAT FLUX (Watts/m2) -4.63E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.267E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.192E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.70E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.93
	BOWEN RATIO (no units) 0.115			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
138%	138%	113%	164%	104%	5%	22%	269%	56%	108%	48%	76%	113%
208%	208%	46%	43%	136%	5%	8%	179%	23%	66%	159%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021400
START TIME: 14: 0: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
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SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.022 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.48E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.470E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.26E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.452E-05 [3.0E-05]
Z/L AT GMH -0.028 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.06E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.771E-02 [2.0E-02]
Z/L AT 10 METERS -0.021 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.21E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.371E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.656E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.63E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.320E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.74E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.109 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
19%	18%	4%	9%	14%	8%	2%	6%	2%	10%	17%	6%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021430
START TIME: 14:30:20 PST
END TIME: 15: 0:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.069	5.088	5.034	4.884	4.792	2.369	4.768

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.147	3.856	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIRFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 129802	1421 129825	0.157	103	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.880	9.70	9.95	NO DATA	307.1	1011.73	-3.30E 02	13.785	286.091

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.984	9.19	10.01	NO DATA	0.13	1012.83

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.060	14.192	14.372	9.252E-03	82.36	7.543E-03	12.214	14.830	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	13.073	14.300	14.390	9.293E-03	82.11	7.571E-03	12.271	14.945	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021430
START TIME: 14:30:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.015 AT GMH	MOMENTUM FLUX (Nt/m2) -1.22E-01	FRICTION VELOCITY (Meters/sec) 3.156E-01	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.52E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.516E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.70E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.27E 00
Z/L AT GMH -0.019	LAT.HEAT FLUX (Watts/m2) 6.23E 01	SCALING POT. TEMP. (Kelvin) -1.033E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.30E 03
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 4.05E 00	ROUGHNESS LENGTH (Meters) 9.665E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.41E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -5.23E 01
Z/L AT Z1 -0.027	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.30E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.79E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.64E 02			
MONIN OBUKHOV LENGTH (Meters) -6.282E 02	BOWEN RATIO (no units) 0.065			
PSI1 AT Z1= 0.090619 PSI1 AT Z2= 0.042895 PSI2 AT Z1= 0.055931 PSI2 AT Z2= 0.029192				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEFF.	TRANSF.COEF.
0.4	9.2959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2272

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.900E 05

* GENERAL NOTES

Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2 +/- 08E 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021430
START TIME: 14:30:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.970	9.25	10.00	NO DATA	1012.73	13.785	-0.815	-0.717	0.501	0.599

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.068	14.287	14.385	9.288E-03	82.14	7.567E-03	12.265	14.932	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.034 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.042

Z/L AT 10 METERS
-0.032

MONIN-OBUKHOV LENGTH (Meters)
-3.119E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.30E-01

HUMIDITY FLUX (Kg/sec m2)
3.20E-05

LAT.HEAT FLUX (Watts/m2)
7.90E 01

SEN.HEAT FLUX (Watts/m2)
1.01E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.30E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.41E 02

BOWEN RATIO (no units)
0.127

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.259E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.992E-05

SCALING POT.TEMP. (Kelvin)
-2.487E-02

ROUGHNESS LENGTH (Meters)
1.086E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.241E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.062E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.197E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.104E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2274

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8998E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.766

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.191E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.93

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE *+or-*:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
167%	167%	122%	170%	133%	5%	27%	303%	61%	109%	72%	81%	122%
200%	200%	46%	43%	128%	5%	10%	171%	23%	66%	151%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021430
START TIME: 14:30:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.023 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.029 [0.02]

Z/L AT 10 METERS
-0.023 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.422E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.28E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.06E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.56E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.12E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.30E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.47E 02 [3.0E+01]

BOWEN RATIO (no units)
0.105 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.231E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.434E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.504E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.044E-04 [6.0E-05]

DRAG COEF AT 10 METERS (Meters)
[illegible] [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE *+or-*:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
40%	38%	3%	13%	42%	0%	5%	31%	2%	10%	39%	6%	2%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021500
START TIME: 15: 0:40 PST
END TIME: 15:30:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.094	5.114	5.420	5.227	4.769	2.398	4.777

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.150	3.891	2.530	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128945	1421 130001	0.157	101	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.894	10.44	10.10	NO DATA		307.4	1011.38	-3.34E 02	13.789	286.107
AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
13.000	9.82	10.16	NO DATA		0.16	1012.47			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.074	14.220	14.400	9.342E-03	83.12	7.620E-03	12.333	14.838	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.090	14.331	14.421	9.386E-03	82.87	7.650E-03	12.396	14.958	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021500
START TIME: 15: 0:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STARILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -1.75E-01	FRICTION VELOCITY (Meters/sec) 3.779E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.01E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.485E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.87E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.66E 00
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 7.43E 01	SCALING POT. TEMP. (Kelvin) -1.297E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HFIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.33E 03
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 6.08E 00	ROUGHNESS LENGTH (Meters) 1.836E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.78E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.17E 01
Z/L AT Z1 -0.024	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.34E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.562E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.012	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.54E 02			
MONIN-OBUKHOV LENGTH (Meters) -7.792E 02	BOWEN RATIO (no units) 0.082			
PSI1 AT Z1= 0.079985 PSI1 AT Z2= 0.042022 PSI2 AT Z1= 0.049212 PSI2 AT Z2= 0.025566				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2266	2.4165E 02	5.8999E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 0:40 PST | NRL MICROMETEORDLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.987	9.90	10.15	NO DATA	1012.38	13.789	-0.801	-0.703	0.529	0.627

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.085	14.318	14.416	9.381E-03	82.90	7.646E-03	12.389	4.944	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.027 AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E-01	FRICTION VELOCITY (Meters/sec) 3.546E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.258E-01	AIR DENSITY (Kg/m3) 1.2269
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.30E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.577E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.296E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.034	LAT.HEAT FLUX (Watts/m2) 8.14E 01	SCALING POT.TEMP. (Kelvin) -2.370E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.406E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8997E 05
Z/L AT 10 METERS -0.026	SEN.HEAT FLUX (Watts/m2) 1.04E 01	ROUGHNESS LENGTH (Meters) 1.467E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.764
MONIN-OBUKHOV LENGTH (Meters) -3.874E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.34E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.283E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.190E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.43E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.58
	BOWEN RATIO (no units) 0.128			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
142%	142%	107%	161%	111%	5%	29%	273%	54%	108%	58%	74%	107%
201%	201%	46%	44%	129%	5%	10%	173%	23%	67%	152%	45%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 0:40 PST | NRL MICROMETEORDLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.019 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -1.61E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 3.616E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.23E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.159E-05 (3.0E-05)
Z/L AT GMH -0.024 (0.02)	LAT.HEAT FLUX (Watts/m2) 7.99E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -1.592E-02 (2.0E-02)
Z/L AT 10 METERS -0.018 (0.02)	SEN.HEAT FLUX (Watts/m2) 8.10E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 1.603E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -5.493E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.34E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.359E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.46E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.110 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
35%	33%	7%	5%	27%	0%	3%	22%	3%	8%	29%	12%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021530
START TIME: 15:31: 0 PST
END TIME: 16: 1:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.087	5.107	4.469	4.285	4.800	1.379	4.796

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.115	3.879	2.525	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128756	1421 129726		0.157	99	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.876	8.62	10.06	NO DATA		308.0	1011.84	-1.92E 02	13.754	286.084

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.973	8.08	10.12	NO DATA	0.18	1012.94

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.055	14.197	14.377	9.321E-03	82.99	7.598E-03	12.304	14.827	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.063	14.300	14.390	9.365E-03	82.79	7.629E-03	12.367	14.937	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021530
START TIME: 15:31: 0 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.009 AT GMH	-1.27E-01	3.212E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.53E-05	-6.417E-05	DWS/DZ= 3.94E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.25E 00
-0.011	6.25E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-6.417E-03	DSH/DZ= -8.92E-06	PSI=PSI2
-0.009	2.56E 00			SH SLOPE= -8.42E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.016	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.031E-04	DPT/DZ= -8.92E-04	PSI=PSI2
Z/L AT Z2	-1.92E 02			PTK SLOPE= -8.42E 01
-0.008		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.724E 03		Z=HEIGHT (M) Vert.Axis
-1.151E 03	-1.27E 02			PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.055799	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.028972				
PSI2 AT Z1= 0.034091	0.041			
PSI2 AT Z2= 0.017523				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2273
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9008E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	W. SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Mi. bar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.961	8.15	10.11	NO DATA	1012.85	13.754	-0.793	8.695	0.533	0.631

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.059	14.287	14.385	9.360E-03	82.81	7.625E-03	12.360	14.925	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.049 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.059

Z/L AT 10 METERS
-0.046

MONIN-OBUKHOV LENGTH (Meters)
-2.186E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.52E-02

HUMIDITY FLUX (Kg/sec m2)
2.71E-05

LAT.HEAT FLUX (Watts/m2)
6.71E 01

SEN.HEAT FLUX (Watts/m2)
8.96E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.92E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.16E 02

BOWEN RATIO (no units)
0.134

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.785E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.942E-05

SCALING POT.TEMP. (Kelvin)
-2.590E-02

ROUGHNESS LENGTH (Meters)
6.095E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.168E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.754E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.715E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.214E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2275

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8998E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.736

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.188E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.05

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
188%	88%	108%	164%	164%	5%	40%	327%	54%	110%	110%	74%	108%
202%	202%	46%	44%	130%	5%	12%	174%	23%	67%	153%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.020 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.034 [0.02]

Z/L AT 10 METERS
-0.027 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-3.767E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.05E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.68E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.61E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.13E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.92E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.19E 02 [3.0E+01]

BOWEN RATIO (no units)
0.101 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.913E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.366E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.457E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
7.647E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.31[illegible]-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
72%	70%	16%	4%	53%	0%	5%	48%	8%	11%	49%	29%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021600
START TIME: 16: 1:20 PST
END TIME: 16:31:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.076	5.096	4.771	4.615	4.783	1.414	4.949

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.072	3.867	2.524	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128434	1421 129407	0.183	97	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.843	9.19	9.99	NO DATA		313.3	1011.60	-1.97E 02	13.712	286.052

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
12.941	8.63	10.05	NO DATA		0.18	1012.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.023	14.159	14.338	9.277E-03	82.78	7.563E-03	12.245	14.792	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.031	14.261	14.352	9.320E-03	82.57	7.593E-03	12.305	14.903	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021600
START TIME: 16: 1:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -1.37E-01	FRICTION VELOCITY (Meters/sec) 3.345E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.405E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.20E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.20E 00
Z/L AT GMH -0.010	LAT.HEAT FLUX (Watts/m2) 6.49E 01	SCALING POT. TEMP. (Kelvin) -6.405E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.44E 03
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 2.66E 00	ROUGHNESS LENGTH (Meters) 1.192E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.44E 01
Z/L AT Z1 -0.015	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.97E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.671E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.007	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.30E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.252E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.051559 PSI1 AT Z2= 0.026659 PSI2 AT Z1= 0.031460 PSI2 AT Z2= 0.016140				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2271	2.4164E 02	5.9002E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0RE-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021600 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 16: 1:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.929	8.70	10.04	NO DATA	1012.60	13.712	-0.783	-0.685	0.537	0.635

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.027	14.249	14.347	9.315E-03	82.60	7.589E-03	12.299	14.890	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.039 AT GMH	MOMENTUM FLUX (Nt/m2) -1.12E-01	FRICTION VELOCITY (Meters/sec) 3.018E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.109E-02	AIR DENSITY (Kg/m3) 1.2274
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.91E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.858E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.911E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.048	LAT.HEAT FLUX (Watts/m2) 7.19E 01	SCALING POT.TEMP. (Kelvin) -2.479E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.483E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9008E 05
Z/L AT 10 METERS -0.037	SEN.HEAT FLUX (Watts/m2) 9.29E 00	ROUGHNESS LENGTH (Meters) 8.218E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.689
MONIN-OBUKHOV LENGTH (Meters) -2.683E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.97E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.204E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.185E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.16E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.80
	BOWEN RATIO (no units) 0.129			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
190%	190%	110%	165%	165%	5%	41%	330%	55%	110%	110%	75%	110%
203%	203%	46%	44%	131%	5%	13%	175%	23%	67%	154%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021600 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 16: 1:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.023 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.19E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.115E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.85E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.310E-05 [3.0E-05]
Z/L AT GMH -0.029 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.04E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.407E-02 [2.0E-02]
Z/L AT 10 METERS -0.022 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.35E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 9.568E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.517E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.97E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.31?E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.19E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.099 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	66%	12%	6%	53%	0%	6%	47%	6%	10%	47%	28%	1?%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021630
START TIME: 16:31:40 PST
END TIME: 17: 1:50 ST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.285	0.001	0.001	5.065	5.086	4.880	4.735	4.783	0.887	4.797

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.031	3.852	2.524	0.001	0.001	0.001	0.001	6.285

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 127926	1421 128882	0.157	100	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.793	9.40	9.93	NO DATA	308.1	1011.58	-1.24E 02	13.672	286.000

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.888	8.91	9.99	NO DATA	0.17	1012.68

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.972	14.102	14.282	9.238E-03	82.69	7.530E-03	12.191	14.743	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.978	14.204	14.294	9.286E-03	82.54	7.564E-03	12.259	14.851	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021630
START TIME: 16:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.010 AT GMH	MOMENTUM FLUX (Nt/m2) -1.09E-01	FRICTION VELOCITY (Meters/sec) 2.973E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.35E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.443E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.46E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.35E 00
Z/L AT GMH -0.013	LAT.HEAT FLUX (Watts/m2) 5.81E 01	SCALING POT. TEMP. (Kelvin) -6.443E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.39E 03
Z/L AT 10 METERS -0.010	SEN.HEAT FLUX (Watts/m2) 2.38E 00	ROUGHNESS LENGTH (Meters) 7.778E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.39E 01
Z/L AT Z1 -0.019	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.24E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.216E-04		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.32E 01			
MONIN-OBUKHOV LENGTH (Meters) -9.773E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.064959 PSI1 AT Z2= 0.033844 PSI2 AT Z1= 0.039795 PSI2 AT Z2= 0.020538				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2274

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.980SE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021630
START TIME: 16:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.877	8.97	9.98	NO DATA	1012.59	13.672	-0.795	-0.697	0.519	0.617

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.975	14.191	14.289	9.281E-03	82.56	7.560E-03	12.251	14.839	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.036 AT GMH	MOMENTUM FLUX (Nt/m2) -1.21E-01	FRICTION VELOCITY (Meters/sec) 3.137E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.843E-02	AIR DENSITY (Kg/m3) 1.2276
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.01E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.813E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.009E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.045	LAT.HEAT FLUX (Watts/m2) 7.43E 01	SCALING POT.TEMP. (Kelvin) -.473E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.758E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9003E 05
Z/L AT 10 METERS -0.034	SEN.HEAT FLUX (Watts/m2) 9.63E 00	ROUGHNESS LENGTH (Meters) 9.466E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.648
MONIN-OBUKHOV LENGTH (Meters) -2.906E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.24E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.222E- 3		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.182E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.97E 01			BAR.PRES.AT WT LEVEL (Millibar) 1013.79
	BOWEN RATIO (no units) 0.130			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
205%	205%	126%	174%	174%	6%	55%	348%	63%	111%	111%	83%	126%
202%	202%	46%	44%	130%	6%	17%	173%	23%	67%	153%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021630
START TIME: 16:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.023 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.18E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.094E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.88E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.299E-05 [3.0E-05]
Z/L AT GMH -0.029 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.11E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.414E-02 [2.0E-02]
Z/L AT 10 METERS -0.022 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.54E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.891E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.462E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.24E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.2211-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.53E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.100 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFFRENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
56%	54%	6%	13%	56%	0%	29%	47%	3%	10%	46%	10%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021700
START TIME: 17: 2: 0 PST
END TIME: 17:32:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.073	5.097	5.117	4.904	4.784	0.444	4.796

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.994	3.857	2.525	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126624	1421 127657	0.157	101	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.662	9.86	9.98	NO DATA	308.1	1011.60	-6.19E 01	13.636	285.874

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.766	9.23	10.06	NO DATA	0.15	1012.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.842	13.975	14.155	9.274E-03	83.69	7.556E-03	12.233	14.618	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.856	14.087	14.177	9.332E-03	83.59	7.598E-03	12.315	14.733	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021700
START TIME: 17: 2: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.010 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.014

Z/L AT 10 METERS
-0.010

Z/L AT Z1
-0.019

Z/L AT Z2
-0.010

MONIN-OBUKHOV LENGTH
(Meters)
-9.540E 02

PSI1 AT Z1= 0.066430
PSI1 AT Z2= 0.034639
PSI2 AT Z1= 0.040714
PSI2 AT Z2= 0.021025

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.81E-01

HUMIDITY FLUX
(Kg/sec m2)
3.04E-05

LAT.HEAT FLUX
(Watts/m2)
7.52E 01

SEN.HEAT FLUX
(Watts/m2)
5.26E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-6.19E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
1.85E 01

BOWEN RATIO
(no units)
0.070

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.844E-01

SCALING SPEC.HUMD.
(Kg/Kg)
6.447E-05

SCALING POT. TEMP.
(Kelvin)
-1.102E-02

ROUGHNESS LENGTH
(Meters)
1.949E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.83[illegible]E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.06E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.52E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI))/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.04E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.3HE 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -4.90E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2279

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4164E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9012E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021700
START TIME: 17: 2: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.753	9.30	10.05	NO DATA	1012.60	13.636	-0.883	-0.785	0.437	0.535

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.851	14.073	14.171	9.326E-03	83.60	7.593E-03	12.305	14.720	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.035 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.044

Z/L AT 10 METERS
-0.034

MONIN-OBUKHOV LENGTH (Meters)
-2.958E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.32E-01

HUMIDITY FLUX (Kg/sec m2)
3.03E-05

LAT.HEAT FLUX (Watts/m2)
7.49E 01

SEN.HEAT FLUX (Watts/m2)
1.08E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.19E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.39E 01

BOWEN RATIO (no units)
0.145

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.282E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.525E-05

SCALING POT.TEMP. (Kelvin)
-2.657E-02

ROUGHNESS LENGTH (Meters)
1.114E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.244E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.077E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.033E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.720E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2282

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9010E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.612

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.180E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.80

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
143%	143%	100%	157%	116%	6%	83%	273%	50%	108%	66%	70%	100%
194%	194%	46%	44%	122%	6%	24%	166%	23%	67%	145%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021700
START TIME: 17: 2: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.021 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.026 [0.02]

Z/L AT 10 METERS
-0.020 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.905E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.48E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.04E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.50E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.98E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.19E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.27E 01 [3.0E+01]

BOWEN RATIO (no units)
0.116 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.459E-01 [6.0E-02]

SCALING SPEC.HUMID (Kg/Kg)
-7.111E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.590E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.432E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.412E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER) ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
60%	58%	18%	0%	3%	0%	10%	34%	9%	8%	41%	30%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021730
START TIME: 17:32:20 PST
END TIME: 18: 2:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.110	5.125	4.414	4.260	4.797	0.119	4.871

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.967	3.861	2.524	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125438	1421 126464	0.157	103	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.544	8.51	10.20	NO DATA	308.9	1011.81	-1.66E 01	13.610	285.755

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.646	8.04	10.23	NO DATA	0.13	1012.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.724	13.876	14.056	9.418E-03	85.59	7.669E-03	12.417	14.507	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.737	13.982	14.072	9.444E-03	85.19	7.684E-03	12.456	14.621	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021730
START TIME: 17:32:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -1.07E-01	FRICTION VELOCITY (Meters/sec) 2.954E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.38E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.557E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.28E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.35E 00
Z/L AT GMH -0.023	LAT.HEAT FLUX (Watts/m2) 5.80E 01	SCALING POT. TEMP. (Kelvin) -1.062E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.24E 03
Z/L AT 10 METERS -0.017	SEN.HEAT FLUX (Watts/m2) 3.90E 00	ROUGHNESS LENGTH (Meters) 7.591E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.44E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -5.09E 01
Z/L AT Z1 -0.032	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.66E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.496E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.016	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.61E 01			
MONIN-OBUKHOV LENGTH (Meters) -5.738E 02	BOWEN RATIO (no units) 0.066			
PSI1 AT Z1= 0.105311 PSI1 AT Z2= 0.056885 PSI2 AT Z1= 0.065240 PSI2 AT Z2= 0.034269				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.9JE-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2286	2.4166E 02	5.9019E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:32:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.634	8.10	10.22	NO DATA	1012.81	13.610	-0.976	-0.878	0.359	0.457

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.732	13.969	14.067	9.441E-03	85.24	7.682E-03	12.452	14.608	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.060 AT GMH	MOMENTUM FLUX (Nt/m2) -9.38E-02	FRICTION VELOCITY (Meters/sec) 2.762E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.629E-02	AIR DENSITY (Kg/m3) 1.2289
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.50E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.359E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.498E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.072	LAT.HEAT FLUX (Watts/m2) 6.17E 01	SCALING POT.TEMP. (Kelvin) -3.090E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.536E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -0.056	SEN.HEAT FLUX (Watts/m2) 1.06E 01	ROUGHNESS LENGTH (Meters) 5.911E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.588
MONIN-OBUKHOV LENGTH (Meters) -1.801E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.66E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.164E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.178E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.58E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.01
	BOWEN RATIO (no units) 0.172			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
160%	160%	116%	167%	128%	9%	124%	295%	58%	109%	71%	78%	116%
187%	187%	46%	45%	115%	9%	34%	160%	23%	68%	138%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:32:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.037 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.76E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.817E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.47E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.850E-05 [3.0E-05]
Z/L AT GMH -0.045 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.11E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.749E-02 [2.0E-02]
Z/L AT 10 METERS -0.035 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.44E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.509E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.859E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.66E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.37E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.135 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"

GRAD.RICH. NO AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
57%	55%	7%	1%	45%	0%	10%	41%	4%	6%	53%	13%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021800
START TIME: 18: 2:40 PST
END TIME: 18:32:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* *ANALOG CHANNEL RAW DATA (AVERAGE VDC):*

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.091	5.111	5.309	5.061	4.798	-0.034	5.056

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.936	3.873	2.523	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	*UPWIND NEAR* HEIGHT/LENGTH	*UPWIND LAND* PATH(Meters)	*DP1FCAL* (Volts)	*DP2FCAL* (Volts)	*WIBFCAL* (Volts)	*WS1EC* (Coeff.)	*WS2EC* (Coeff.)
1411 123799	1421 124870	0.183	102	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	*WIND DIR.* (Deg.True)	*BAR.PRES.1* (Millibar)	*SKY RAD.* (Watt/m2)	*BULK WT TEMP* (Celsius)	*MEAN AIR TEMP* (Kelvin)
12.380	10.22	10.88	NO DATA	316.9	1011.82	4.78E 00	13.580	285.593

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.487	9.45	10.14	NO DATA	0.10	1012.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.560	13.701	13.881	9.350E-03	85.85	7.609E-03	12.322	14.352	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.577	13.814	13.904	9.395E-03	85.60	7.641E-03	12.386	14.469	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021800
START TIME: 18: 2:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	*SCALING PARAMETERS*	*PARTIAL DERIVATIVES*	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -2.66E-01	FRICTION VELOCITY (Meters/sec) 4.648E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.67E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.424E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.58E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.61E-01
Z/L AT GMH -0.012	LAT.HEAT FLUX (Watts/m2) 9.07E 01	SCALING POT. TEMP. (Kelvin) -1.400E-02	*N=SPEC.HUMIDITY (Kg/Kg)* Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	*N=SPEC.HUMIDITY (Kg/Kg)* Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.41E 03
Z/L AT 10 METERS -0.009	SEN.HEAT FLUX (Watts/m2) 8.09E 00	ROUGHNESS LENGTH (Meters) 3.756E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.94E-03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= 3.86E 01
Z/L AT Z1 -0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) 4.78E 00	DRAG COEF. AT 10 METERS (Dimensionless) 2.442E 03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.04E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.101E 03	BOWEN RATIO (no units) 0.089			
PSI1 AT Z1= 0.058166 PSI1 AT Z2= 0.030189 PSI2 AT Z1= 0.035562 PSI2 AT Z2= 0.018298				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	*GRAVITATION* ACCELERATION (M/sec 2)	*PROFILE* TUR.PRANDTL NUMBER	*PROFILE* TUR.SCHMIDT NUMBER	*BULK* SEN HEAT TRANSF.COEF.	*BULK* MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2293
AIR SPECIFIC HEAT (Ical /Kg Kel)
2.415E 02
WATER LAT HEAT VAP (Ical /Kg)
5.902BE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021800
START TIME: 18: 2:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.474	9.54	10.13	NO DATA	1012.82	13.580	-1.106	-1.008	0.221	0.319

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.572	13.800	13.898	9.390E-03	85.63	7.637E-03	12.378	14.455	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.040 AT GMH	MOMENTUM FLUX (Nt/m2) -1.41E-01	FRICTION VELOCITY (Meters/sec) 3.386E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.147E-01	AIR DENSITY (Kg/m3) 1.2296
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.98E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.158E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.980E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.050	LAT.HEAT FLUX (Watts/m2) 7.36E 01	SCALING POT.TEMP. (Kelvin) -3.202E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.084E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9026E 05
Z/L AT 10 METERS -0.038	SEN.HEAT FLUX (Watts/m2) 1.35E 01	ROUGHNESS LENGTH (Meters) 1.245E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.558
MONIN-OBUKHOV LENGTH (Meters) -2.610E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 4.78E 00	DRAG COEF.AT 10 METERS (Dimensionless) 1.260E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.19E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.02
	BOWEN RATIO (no units) 0.183			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
117%	117%	84%	148%	94%	20%	130%	242%	42%	106%	52%	62%	84%
180%	180%	46%	45%	108%	20%	39%	153%	23%	68%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021800
START TIME: 18: 2:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.021 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.85E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.833E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.14E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.872E-05 [3.0E-05]
Z/L AT GMH -0.027 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.76E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.914E-02 [2.0E-02]
Z/L AT 10 METERS -0.021 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.06E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.274E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.845E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 4.78E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.65[illegible]-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.46E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.147 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	72%	35%	12%	25%	0%	7%	33%	17%	5%	49%	56%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021830
START TIME: 18:33: 0 PST
END TIME: 19: 3:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR
6.205	0.000	0.001	5.076	5.095	4.961	4.742	4.819	-0.085	5.076

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.916	3.805	2.525	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122513	1421 123633	0.183	104	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.251	9.55	9.99	NO DATA	317.6	1012.14	1.19E 01	13.561	285.467

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.363	8.86	10.05	NO DATA	0.07	1013.24

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.431	13.564	13.744	9.302E-03	86.07	7.564E-03	12.252	14.236	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.453	13.681	13.772	9.344E-03	85.76	7.592E-03	12.312	14.356	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021830
START TIME: 18:33: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -2.22E-01	FRICTION VELOCITY (Meters/sec) 4.246E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)] (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.40E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.510E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.67E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE 9.42E-01
Z/L AT GMH -0.019	LAT.HEAT FLUX (Watts/m2) 8.40E 01	SCALING POT. TEMP. (Kelvin) -1.819E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.93E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= -8.30E 03
Z/L AT 10 METERS -0.014	SEN.HEAT FLUX (Watts/m2) 9.61E 00	ROUGHNESS LENGTH (Meters) 2.754E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.49E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= 2.92E 01
Z/L AT Z1 -0.026	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.19E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.97E 03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.013				
MONIN-OBUKHOV LENGTH (Meters) -6.970E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.06E 02			
PSI1 AT Z1= 0.088493 PSI1 AT Z2= 0.046707 PSI2 AT Z1= 0.054525 PSI2 AT Z2= 0.028457	BOWEN RATIO (no units) 0.114			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2303
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02
WATER EAT HEAT VAP (ITcal./Kg)
5.9035E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- 08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 790502IH30 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:33: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.350	8.95	10.04	NO DATA	1013.14	13.561	-1.211	-1.113	0.106	0.204

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.448	13.667	13.765	9.339E-03	85.80	7.589E-03	12.305	14.342	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable, -Unstable)
0.054 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
+0.065

Z/L AT 10 METERS
+0.050

MONIN-OBUKHOV LENGTH (Meters)
+1.993E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
1.30E-01

HUMIDITY FLUX (Kg/sec m2)
2.84E-05

LAT.HEAT FLUX (Watts/m2)
7.03E 01

SEN.HEAT FLUX (Watts/m2)
1.39E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.19E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.60E 01

BOWEN RATIO (no units)
0.198

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.125E-01

SCALING SPEC.HUMID. (Kg/Kg)
7.394E-05

SCALING POT.TEMP (Kelvin)
-3.571E-02

ROUGHNESS LENGTH (Meters)
9.333E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.220E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-9.767E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.844E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.116E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2306

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.416E-02

WATER LAT.HEAT VAP (1Tcal./Kg
5.983E-05

VAP.PRES.AT WT LEVEL (Millibar)
15.544

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.175E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.34

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
111%	111%	87%	150%	85%	11%	119%	235%	43%	106%	42%	63%	87%
175%	175%	46%	45%	103%	11%	36%	148%	23%	68%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 790502IH30 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:33: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable, -Unstable)
-0.030 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.037 [0.02]

Z/L AT 10 METERS
-0.028 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
3.542E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
1.55E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.92E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.34E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.16E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.19E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.67E 01 [3.0E+01]

BOWEN RATIO (no units)
0.166 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.513E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-2.050E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.256E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.668E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.391E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
68%	65%	34%	11%	19%	0%	5%	26%	17%	6%	43%	56%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021900
START TIME: 19: 3:20 PST
END TIME: 19:33:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.067	5.087	4.907	4.709	4.827	-0.091	5.090

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.895	3.798	2.526	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121579	1421 122709	0.183	106	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.158	9.45	9.94	NO DATA	318.1	1012.27	1.27E 01	13.539	285.374

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.271	8.80	10.00	NO DATA	0.05	1013.36

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.338	13.465	13.645	9.274E-03	86.30	7.537E-03	12.211	14.150	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.361	13.584	13.674	9.318E-03	86.00	7.568E-03	12.274	14.271	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021900
START TIME: 19: 3:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.017 AT GMH	-1.99E-01	4.020E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.20E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	3.24E-05	-6.550E-05		WS SLOPE= 9.95E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.022	8.01E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-1.910E-02		
-0.017	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.25E 03
Z/L AT Z1	9.56E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.60E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.031		2.278E-04		
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			PTK SLOPE= -2.83E 01
-0.016	1.27E 01			
		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.201E 03		
-5.909E 02	1.02E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.102596	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.054561	0.119			
PSI2 AT Z1= 0.063512				
PSI2 AT Z2= 0.033322				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2309	2.4163E 02	5.9041E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021900
START TIME: 19: 3:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.257	8.88	9.99	NO DATA	1013.27	13.539	-1.282	-1.184	0.030	0.128

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REF.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.355	13.570	13.668	9.313E-03	86.04	7.564E-03	12.267	14.257	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.058 AT GMH	MOMENTUM FLUX (Nt/m2) -1.18E-01	FRICTION VELOCITY (Meters/sec) 3.097E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.591E-02	AIR DENSITY (Kg/m3) 1.2311
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.84E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.441E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.837E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.078	LAT.HEAT FLUX (Watts/m2) 7.01E 01	SCALING POT.TEMP. (Kelvin) -3.770E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.168E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9038E 05
Z/L AT 10 METERS -0.054	SEN.HEAT FLUX (Watts/m2) 1.45E 01	ROUGHNESS LENGTH (Meters) 9.030E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.524
MONIN-OBUKHOV LENGTH (Meters) -1.853E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.216E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.173E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.74E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.47
	BOWEN RATIO (no units) 0.207			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
113%	113%	92%	152%	86%	11%	119%	239%	46%	106%	41%	66%	92%
172%	172%	46%	45%	100%	11%	35%	145%	23%	68%	123%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021900
START TIME: 19: 3:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.033 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.45E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.405E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.93E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.895E-05 [3.0E-05]
Z/L AT GMH -0.041 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.24E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.371E-02 [2.0E-02]
Z/L AT 10 METERS -0.032 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.19E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.446E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.161E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.515E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.85E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.174 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
63%	60%	29%	8%	21%	0%	3%	26%	14%	6%	44%	49%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905021930
START TIME: 19:33:40 PST
END TIME: 20: 3:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.055	5.077	4.943	4.733	4.851	-0.091	4.933

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.868	3.794	2.528	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT&FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 120909	1421 122101	0.183	107	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.091	9.52	9.87	NO DATA		312.7	1012.63	1.27E 01	13.513	285.310

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
12.210	8.85	9.94	NO DATA		0.04	1013.73

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.271	13.392	13.571	9.234E-03	86.26	7.500E-03	12.156	14.093	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.70	12.300	13.518	13.608	9.284E-03	85.99	7.536E-03	12.227	14.219	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905021930
START TIME: 19:33:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD RICHARDSON NUMBER (+ Stable,- Unstable)
0.020 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.026

Z/L AT 10 METERS
-0.020

Z/L AT Z1
0.016

Z/L AT Z2
0.018

MONIN OBUKHOV LENGTH (Meters)
-5.050E 02

PSI1 AT Z1= 0.117831
PSI1 AT Z2= 0.063164
PSI2 AT Z1= 0.073231
PSI2 AT Z2= 0.038675

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.19E-01

HUMIDITY FLUX (Kg/sec m2)
3.42E-05

LAT.HEAT FLUX (Watts/m2)
8.46E 01

SEN.HEAT FLUX (Watts/m2)
1.28E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.10E 02

BOWEN RATIO (No units)
0.151

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.216E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.593E-05

SCALING POT. TEMP. (Kelvin)
-2.438E-02

ROUGHNESS LENGTH (Meters)
2.686E-04

DRAG COEF. AT 10 METERS (Dimensionless)
[illegible]

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.47E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.30E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 9.49E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.20E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.22E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2316

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP. (1Tcal./Kg)
5.9044E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2 +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.196	8.93	9.93	NO DATA	1013.63	13.513	-1.318	-1.220	-0.011	0.087

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.294	13.502	13.600	9.278E-03	86.02	7.532E-03	12.219	14.204	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.059 AT GMH	MOMENTUM FLUX (Nt/m2) -1.20E-01	FRICTION VELOCITY (Meters/sec) 3.117E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.717E-02	AIR DENSITY (Kg/m3) 1.2319
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.88E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.487E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.875E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.071	LAT.HEAT FLUX (Watts/m2) 7.11E 01	SCALING POT.TEMP. (Kelvin) -3.855E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.202E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9042E 05
Z/L AT 10 METERS -0.054	SEN.HEAT FLUX (Watts/m2) 1.50E 01	ROUGHNESS LENGTH (Meters) 9.247E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.503
MONIN-OBUKHOV LENGTH (Meters) -1.836E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.219E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.87E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.83
	BOWEN RATIO (no units) 0.211			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
104%	104%	88%	150%	77%	11%	116%	227%	44%	106%	33%	64%	88%
171%	171%	46%	44%	99%	11%	35%	143%	23%	67%	122%	43%	40%

* CONTINUED BFLOW

RUN NUMBER: 7905021930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.035 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.493E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.00E-05 [8.0E-	SCALING SPEC.HUMID. (Kg/Kg) -7.139E-05 [3.0E-05]
Z/L AT GMH -0.043 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.42E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.739E-02 [2.0E-02]
Z/L AT 10 METERS -0.033 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.38E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.631E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.040E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.581E 04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.188 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
57%	54%	34%	10%	8%	0%	6%	16%	16%	6%	30%	55%	39%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022030
START TIME: 20:30: 0 PST
END TIME: 20:59:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.042	5.064	5.075	4.854	4.888	-0.091	5.254

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.837	3.863	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WS1ECC (Coeff.)	WS2ECC (Coeff.)
1411 120615	1421 121765	0.199	77	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.062	9.77	9.79	NO DATA	323.6	1013.20	1.27E 01	13.484	285.279

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.176	9.04	9.86	NO DATA	0.03	1014.29

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.241	13.356	13.535	9.193E-03	85.99	7.462E-03	12.101	14.073	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.267	13.477	13.567	9.244E-03	85.74	7.498E-03	12.172	14.196	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905022030
START TIME: 20:30: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973)

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.015 AT GMH	-2.49E-01	4.496E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC HUMD (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.12E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	3.61E-05	6.512E-05		WS SLOPE= 8.90E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.019	8.9?E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-2.060E-02		
-0.015	SEN HEAT FLUX (Watts/m2)			SH SLOPE= -8.30E 03
Z/L AT Z1	1.15E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.82E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.027	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.354E-04		PTK SLOPE= -2.62E 01
Z/L AT Z2	1.27E 01			
-0.013		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.958E-03		C12 SLOPE=NO DATA
-6.893E 02	1.13E 02			
PSI1 AT Z1= 0.089383	ROWEN RATIO (no units)			
PSI1 AT Z2= 0.047200	0.129			
PSI2 AT Z1= 0.055137				
PSI2 AT Z2= 0.028762				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2325

AIR SPECIFIC HEAT (Ttral /Kg Kel.) 2.416?E 02

WATER LAT HEAT VAP (Ttcal /Kg) 5.9046E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.163	9.13	9.85	NO DATA	1014.20	13.484	-1.321	-1.223	-0.021	0.077

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.261	13.463	13.561	9.238E-03	85.77	7.494E-03	12.164	14.181	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.055 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.067

Z/L AT 10 METERS
-0.051

MONIN-OBUKHOV LENGTH (Meters)
-1.953E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.27E-01

HUMIDITY FLUX (Kg/sec m2)
2.97E-05

LAT.HEAT FLUX (Watts/m2)
7.34E 01

SEN.HEAT FLUX (Watts/m2)
1.53E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.01E 02

BOWEN RATIO (no units)
0.208

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.205E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.520E-05

SCALING POT.TEMP. (Kelvin)
-3.829E-02

ROUGHNESS LENGTH (Meters)
1.022E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.232E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.027E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.971E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.227E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2327

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9044E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.482

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.170E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.40

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
104%	104%	84%	148%	79%	11%	116%	227%	42%	106%	37%	62%	84%
171%	171%	46%	44%	99%	11%	35%	143%	23%	67%	122%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.030 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.037 [0.02]

Z/L AT 10 METERS
-0.028 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-3.523E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.70E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.12E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.71E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.32E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.04E 02 [3.0E+01]

BOWEN RATIO (no units)
0.178 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.663E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.12HE-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.475E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.979E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.061E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
70%	67%	38%	12%	14%	0%	7%	33%	18%	7%	40%	60%	4 %

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022100
START TIME: 21: 0: 0 PST
END TIME: 21:30:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.052	5.073	4.511	4.316	4.897	-0.091	5.176

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.828	3.860	2.524	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128202	1421 121372	0.199	76	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.020	8.69	9.85	NO DATA	321.0	1013.33	1.27E 01	13.474	285.239

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.137	8.06	9.91	NO DATA	0.05	1014.43

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.200	13.319	13.499	9.232E-03	86.55	7.491E-03	12.150	14.037	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.227	13.442	13.532	9.277E-03	86.25	7.523E-03	12.214	14.161	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905022100
START TIME: 21: 0: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.021 AT GMH	-1.96E-01	3.988E-01	f(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	f(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
12.99	3.75E-05	-6.603E-05	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 7.05E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.00E 00
-0.027	8.03E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		-2.249E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.020	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -8.92E-06	PSI=PSI2
	1.12E 01			SH SLOPE= -8.19E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.048		2.217E-04	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	SKY AND SOLAR HEAT FLUX (Watts/m2)		DPT/DZ= -3.04E-03	PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -2.40E 01
-0.019		DRAG COEF. AT 10 METERS (Dimensionless)		
	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.08E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	1.04E 02			PSI=NONE
-4.892E 02				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.121154	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.065057	0.139			
PSI2 AT Z1= 0.075160				
PSI2 AT Z2= 0.039856				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2328

AIR SPECIFIC HEAT (1Tcal./Kg Kel.) 2.4162E 03

WATER LAT HEAT VAP. (1Tcal./Kg) 5.904BE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.123	8.13	9.90	NO DATA	1014.34	13.474	-1.351	-1.253	-0.047	0.051

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP PRES. (Millibars)	S.VAP PRES (Millibars)	REF INDEX (Kel.xM-2/3)
10.00	12.221	13.427	13.525	9.271E-03	86.29	7.519E-03	12.207	14.147	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.080 AT GMH	-9.51E-02	2.778E-01	-7.717E-02	1.2330
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.61E-05	-7.606E-05	2.605E-05	2.4162E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.095	6.44E 01	-4.096E-02	1.138E-02	5.9046E 05
Z/L AT 10 METERS				
-0.073	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
MONIN-OBUKHOV LENGTH (Meters)	1.42E 01	6.039E-05		15.475
-1.372E 02	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
	1.27E 01	1.167E-03		1.178E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	9.13E 01			1015.54
	BOWEN RATIO (no units)			
	0.220			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
103%	103%	86%	149%	78%	11%	115%	227%	43%	106%	35%	63%	86%
170%	170%	46%	44%	98%	11%	35%	142%	23%	67%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.043 [0.02] AT GMH	-1.30E-01 [6.0E-02]	3.200E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.25E-05 [8.0E-06]	-7.215E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.052 [0.02]	6.81E 01 [2.0E+01]	-2.666E-02 [2.0E-02]
Z/L AT 10 METERS		
-0.040 [0.02]	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
MONIN-OBUKHOV LENGTH (Meters)	1.25E 01 [3.0E+00]	1.259E-04 [6.0E-05]
-2.481E 02	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
	1.27E 01 [2.0E+01]	1.6[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	9.43E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.189 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
70%	67%	40%	13%	12%	0%	8%	22%	20%	7%	40%	65%	4 %

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022130
START TIME: 21:30:20 PST
END TIME: 22: 0:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.045	5.064	4.592	4.439	4.893	-0.091	5.160

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.816	3.784	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 11931B	1421 120522	0.199	75	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.68

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.932	8.84	9.81	NO DATA		320.5	1013.28	1.27E 01	13.463	285.152

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.052	8.28	9.86	NO DATA	0.07	1014.38

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.112	13.227	13.406	9.208E-03	86.82	7.470E-03	12.115	13.955	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP 2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.142	13.352	13.442	9.247E-03	86.44	7.497E-03	12.171	14.081	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905022130
START TIME: 21:30:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.030 AT GMH	-1.64E-01	3.649E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	3.02E-05	-6.720E-05	DWS/DZ= 6.28E-02	PSI=PSI1 WS SLOPE= 1.10E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.037	7.44E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.589E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.04E 03
-0.029	1.18E 01			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.033	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.623E-04	DPT/DZ= -3.44E-03	PSI=PSI2 PTK SLOPE= -2.09E 01
Z/L AT Z2	1.27E 01			
-0.026		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.049E-03		PSI=NONE
-3.485E 02	9.93E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.161862	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.088697	0.158			
PSI2 AT Z1= 0.101658				
PSI2 AT Z2= 0.054704				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2331	2.416?E 02	5.9053E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0BE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.038	8.35	9.85	NO DATA	1014.28	13.463	-1.426	1.328	-0.126	-0.028

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.136	13.337	13.435	9.243E-03	86.48	7.494E-03	12.165	14.066	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.078 AT GMH	MOMENTUM FLUX (Nt/m2) -1.02E-01	FRICTION VELOCITY (Meters/sec) 2.869E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.232E-02	AIR DENSITY (Kg/m3) 1.2334
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.70E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.621E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.697E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4162E 02
Z/L AT GMH -0.092	LAT.HEAT FLUX (Watts/m2) 6.67E 01	SCALING POT.TEMP. (Kelvin) -4.251E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.220E-02	WATER LAT HEAT VAP (ITcal /Kg) 5.9051E 05
Z/L AT 10 METERS -0.071	SEN.HEAT FLUX (Watts/m2) 1.52E 01	ROUGHNESS LENGTH (Meters) 6.817E-05		VAP.PRES AT WT LEVEL (Millibar) 15.463
MONIN-OBUKHOV LENGTH (Meters) -1.409E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.181E-03		ABS HUMID AT WT LEVEL (Kg/m3) 1.169E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.46E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.48
	BOWEN RATIO (no units) 0.228			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
111%	111%	98%	156%	82%	10%	118%	237%	49%	107%	33%	69%	98%
168%	168%	46%	44%	96%	10%	35%	140%	23%	67%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.049 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -1.21E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 3.118E-01 (6.0E 02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.77E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.272E-05 (3.0E-05)
Z/L AT GMH -0.059 (0.02)	LAT.HEAT FLUX (Watts/m2) 6.85E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -2.947E-02 (2.0E-02)
Z/L AT 10 METERS -0.046 (0.02)	SEN.HEAT FLUX (Watts/m2) 1.34E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 1.043E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -2.196E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.446E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.57E 01 (3.0E+01)	
	BOWEN RATIO (no units) 0.202 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
50%	47%	27%	7%	13%	0%	3%	18%	13%	6%	32%	46%	44%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79050220B
START TIME: 22: 0:40 PST
END TIME: 22:40:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* UNITS OF CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
-.205	0.030	0.081	5.056	5.074	4.660	4.514	4.888	-0.091	4.936

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
DEW P.J.(MV)	A.FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT.REF.H
4.984	5.017	2.523	0.001	0.001	0.001	0.001	6.205

* UNITS OF CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
14:1 112:01	14:1 120494	0.183	102	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.) 005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
1	1	1hr	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
13.924	8.92	9.87	NO DATA	312.8	1013.20	1.22E 01	13.451	285.140

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.940	8.44	9.92	NO DATA	0.11	1014.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID 1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
19.30	12.106	13.221	13.401	9.249E-03	87.28	7.504E-03	12.109	13.943	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.141	13.346	13.436	9.284E-03	86.85	7.527E-03	12.219	14.069	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79050220B
START TIME: 22: 0:40 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD RICHARDSON NUMBER
(+=Stable, -=Unstable)
-0.033 AT GRH

GEOMETRIC MEAN HEIGHT
(Meter) GRH=(Z1*Z2)1/2
12.99

Z/L AT GRH
0.041

Z/L AT 10 METERS
-0.037

Z/L AT Z1
0.077

Z/L AT Z2
0.029

MONIN OBUKHOV LENGTH
(Meters)
-3.131E 02

PSI1 AT Z1= 0.176925
PSI1 AT Z2= 0.097651
PSI2 AT Z1= 0.111488
PSI2 AT Z2= 0.060372

FLUX PARAMETERS
(+=UP, -=DOWN)

MOMENTUM FLUX
(N*/M2)
-1.49E-01

HUMIDITY FLUX
(Kg/sec m2)
2.89E-05

LAT.HEAT FLUX
(Watts/m2)
7.15E 01

SEN.HEAT FLUX
(Watts/m2)
1.12E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
9.55E 01

BOWEN RATIO
(no units)
0.157

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.471E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.764E-05

SCALING POT. TEMP.
(Kelvin)
-2.588E-02

ROUGHNESS LENGTH
(Meters)
1.360E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.03E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.91E-02

N=SPEC.HUMIDITY (Kg/kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.41E-03

PROFILE SLOPES
(+=INCR WITH HEIGHT)

GENERAL FORM: N SLOPE=
[(lnZ1-PSI1)-(lnZ2-PSI2)]
(N1-N2)

N WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.1?E 00

N=SPEC.HUMIDITY (Kg/kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -2.99E 03

N=POT TEMP (Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 2.09E 01

N=LnTEMP STRUC (K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No.units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.79?2	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2331

AIR SPECIFIC HEAT
(Ical./Kg Kel.)
2.416?E 02

WATER LAT.HEAT VAP
(Ical /Kg)
5.9054E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .008 .3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER 7905022200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME 22: 0 40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter se	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.026	8.51	9.91	NO DATA	1014.20	13.451	-1.425	-1.327	-0.120	-0.022

HEIGHT (Meters)	POT TEM (Celsius)	VIR TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.124	13.331	13.429	9.280E-03	86.90	7.524E-03	12.214	14.054	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.073 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.087

Z/L AT 10 METERS
-0.067

MONIN OBUKHOV LENGTH (Meters)
1.488E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.06E-01

HUMIDITY FLUX (Kg/sec m2)
2.70E-05

LAT.HEAT FLUX (Watts/m2)
6.66E 01

SEN.HEAT FLUX (Watts/m2)
1.55E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.48E 01

BOWEN RATIO (no units)
0.232

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.937E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.441E-05

SCALING POT.TEMP. (Kelvin)
-4.218E-02

ROUGHNESS LENGTH (Meters)
7.434E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.192E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.626E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.695E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.239E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2333

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9051E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.449

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.168E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.40

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
118%	118%	106%	160%	86%	11%	121%	247%	53%	107%	33%	73%	106%
168%	168%	46%	45%	96%	11%	35%	140%	23%	68%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 0 40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,- Unstable)
-0.050 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.060 [0.02]

Z/L AT 10 METERS
-0.047 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.150E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.19E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.74E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.77E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.32E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.49E 01 [3.0E+01]

BOWEN RATIO (no units)
0.205 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.098E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.179E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.945E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
9.717E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.368E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
41%	38%	19%	4%	16%	0%	0%	19%	9%	5%	32%	33%	20%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022230
START TIME: 22:31: 0 PST
END TIME: 23: 1:10 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.081	5.099	4.751	4.608	4.884	-0.091	4.959

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.795	3.807	2.521	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPPFCAL	WIBFCAL	WSIEC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119470	1421 120697	0.183	99	-0.009	0.000	0.000	0.997	0.952

* SYSTEM HOUSEKEEPING *PARAMETERS TRANSLATED INTO ENGINEERING UNITS*:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.947	9.15	10.02	NO DATA	313.6	1013.14	1.27E 01	13.443	285.168

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.070	8.62	10.07	NO DATA	0.14	1014.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM 2/3)
18.35	12.127	13.261	13.440	9.339E-03	87.98	7.578E-03	12.288	13.967	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.160	13.388	13.478	9.375E-03	87.55	7.603E-03	12.340	14.096	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905022230
START TIME: 22:31: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
-0.036 AT GMH	-1.52E-01	3.510E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.94E-05	-6.792E-05	DWS/DZ= 5.94E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.14E 00
-0.044	7.27E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-2.811E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.034	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -7.96E 03
Z/L AT Z1	1.23E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.061	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.415E-04	DPT/DZ= -3.69E-03	PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -1.92E 01
-0.031		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.801E-03		PSI=NONE
-2.934E 02	9.77E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.186630	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.103477	0.169			
PSI2 AT Z1= 0.117846				
PSI2 AT Z2= 0.064073				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2328

AIR SPECIFIC HEAT (ITcal /Kg Kel.) 2.4164E 02

WATER LAT.HEAT VAP. (ITcal /Kg) 5.9052E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022230
START TIME: 22:31: 0 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.055	8.68	10.06	NO DATA	1014.14	13.443	-1.388	-1.290	-0.070	0.028

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.153	13.373	13.471	9.371E-03	87.60	7.600E-03	12.335	14.080	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.067 AT GMH	MOMENTUM FLUX (Nt/m2) -1.12E-01	FRICTION VELOCITY (Meters/sec) 3.011E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.066E-02	AIR DENSITY (Kg/m3) 1.2330
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.64E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.106E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.638E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.080	LAT.HEAT FLUX (Watts/m2) 6.52E 01	SCALING POT.TEMP. (Kelvin) -4.086E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.230E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9050E 05
Z/L AT 10 METERS -0.062	SEN.HEAT FLUX (Watts/m2) 1.53E 01	ROUGHNESS LENGTH (Meters) 8.147E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.440
MONIN-OBUKHOV LENGTH (Meters) -1.615E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.203E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.167E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.33E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.34
	BOWEN RATIO (no units) 0.235			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTA HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
118%	118%	108%	161%	85%	11%	120%	246%	54%	107%	31%	74%	108%
169%	169%	46%	45%	97%	11%	36%	142%	23%	od%	120%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022230
START TIME: 22:31: 0 PST
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.049 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.24E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.160E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.70E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.984E-05 [3.0E-05]
Z/L AT GMH -0.059 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.69E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.075E-02 [2.0E-02]
Z/L AT 10 METERS -0.046 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.37E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.036E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.198E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.365E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.43E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.211 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
33%	31%	17%	6%	11%	0%	3%	16%	9%	2%	24%	30%	24%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022300
START TIME: 23: 1:20 PST
END TIME: 23:31:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.093	5.109	4.290	4.204	4.887	-0.092	4.977

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.785	3.807	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DPIFCAL (Volts)	DPJFCAL (Volts)	WIBFCAL (Volts)	W'IEC (Coeff.)	WS2EC (Coeff.)
AIR TEMP.1	AIR TEMP.2							
1411 119149	1421 120331	0.183	97	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.915	8.27	10.09	NO DATA	314.2	1013.18	1.28E 01	13.432	285.134

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.033	7.88	10.13	NO DATA	0.18	1014.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.095	13.235	13.415	9.386E-03	88.60	7.616E [illegible]	12.349	13.938	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.123	13.357	13.447	9.414E-03	88.11	7.633E-03	12.390	14.062	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905022300
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NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)[/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.058 AT GMH	-8.97E-02	2.698E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.34E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	2.34E-05	-7.02AE-05		WS SLOPE= 1.48E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.070	5.79E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.502E-02		SH SLOPE= -7.69E 03
-0.054	8.42E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.18E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.093	SKY AND SOLAR HEAT FLUX (Watts/m2)	5.406E-05		PTK SLOPE= -2.16E 01
Z/L AT Z2	1.28E 01			
-0.049		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.334E-03		CT2 SLOPE=NO DATA
-1.868E 02	7.90E 01			
PSI1 AT Z1= 0.266502	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.153029	0.146			
PSI2 AT Z1= 0.170837				
PSI2 AT Z2= 0.095918				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2330	2.4165E 02	5.9054E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
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START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.019	7.92	10.12	NO DATA	1014.18	13.432	-1.414	-1.316	-0.090	0.008

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.117	13.342	13.440	9.411E-03	88.17	7.631E-03	12.386	14.048	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.091 AT GMH	MOMENTUM FLUX (Nt/m2) -8.93E-02	FRICTION VELOCITY (Meters/sec) 2.691E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.239E-02	AIR DENSITY (Kg/m3) 1.2332
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.36E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.109E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.359E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.106	LAT.HEAT FLUX (Watts/m2) 5.83E 01	SCALING POT.TEMP. (Kelvin) -4.308E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.159E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9052E 05
Z/L AT 10 METERS -0.082	SEN.HEAT FLUX (Watts/m2) 1.45E 01	ROUGHNESS LENGTH (Meters) 5.350E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.430
MONIN-OBUKHOV LENGTH (Meters) -1.223E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.153E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.167E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.56E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.38
	BOWEN RATIO (no units) 0.248			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
144%	144%	136%	178%	106%	10%	130%	283%	68%	110%	38%	88%	136%
168%	168%	46%	46%	96%	10%	35%	142%	23%	69%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.073 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.94E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.692E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.35E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.077E-05 [3.0E-05]
Z/L AT GMH -0.086 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.82E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.937E-02 [2.0E-02]
Z/L AT 10 METERS -0.067 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.16E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.368E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.502E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.194E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.42E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.214 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
23%	21%	0%	1%	26%	0%	5%	25%	0%	1%	35%	0%	9%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905022330
START TIME: 23:31:40 PST
END TIME: 0: 1:30 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.096	5.114	4.225	4.131	4.895	-0.092	4.987

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.777	3.813	2.520	0.001	0.001	0.001	0.001	6.205

DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119594	1421 120757	0.183	94	-0.009	0.000	0.000	0.992	0.952

SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.81

OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.959	8.14	10.11	NO DATA	314.5	1013.30	1.28E 01	13.425	285.178

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.076	7.74	10.16	NO DATA	0.22	1014.40

CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.139	13.281	13.461	9.398E-03	88.45	7.625E-03	12.366	13.980	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.166	13.402	13.492	9.433E-03	88.05	7.649E-03	12.417	14.103	NO DATA

CONTINUED BELOW

RUN NUMBER: 7905022330
START TIME: 23:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.051 AT GMH	MOMENTUM FLUX (Nt/m2) -9.12E-02	FRICTION VELOCITY (Meters/sec) 2.728E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.34E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.964E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.43E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.47E 00
Z/L AT GMH -0.062	LAT.HEAT FLUX (Watts/m2) 5.77E 01	SCALING POT. TEMP. (Kelvin) -2.311E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.76E 03
Z/L AT 10 METERS -0.048	SEN.HEAT FLUX (Watts/m2) 7.84E 00	ROUGHNESS LENGTH (Meters) 5.576E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.96E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.34E 01
Z/L AT Z1 -0.088	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.403E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.044	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.84E 01			
MONIN-OBUKHOV LENGTH (Meters) -2.879E 02	BOWEN RATIO (no units) 0.136			
PSI1 AT Z1= 0.245489 PSI1 AT Z2= 0.139725 PSI2 AT Z1= 0.156793 PSI2 AT Z2= 0.087387				

GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2329

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9852E 05

GENERAL NOTES:

Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.

CONTINUED ON NEXT PAGE

RUN NUMBER: 7905022330
START TIME: 23:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.062	7.79	10.15	NO DATA	1014.30	13.425	-1.363	-1.265	-0.037	0.061

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.160	13.388	13.486	9.429E-03	88.10	7.646E-03	12.412	14.089	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.092 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.108

Z/L AT 10 METERS
-0.083

MONIN-OBUKHOV LENGTH (Meters)
-1.204E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.57E-02

HUMIDITY FLUX (Kg/sec m2)
2.30E-05

LAT.HEAT FLUX (Watts/m2)
5.68E 01

SEN.HEAT FLUX (Watts/m2)
1.38E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.34E 01

BOWEN RATIO (no units)
0.243

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.635E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.065E-05

SCALING POT.TEMP. (Kelvin)
-4.199E-02

ROUGHNESS LENGTH (Meters)
4.942E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.144E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-6.946E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.296E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.107E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2332

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9049E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.424

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.50

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
142%	142%	131%	175%	105%	10%	129%	279%	65%	109%	39%	85%	131%
170%	170%	46%	46%	98%	10%	35%	143%	23%	69%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905022330
START TIME: 23:31:40 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.070 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.083 [0.02]

Z/L AT 10 METERS
-0.064 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.562E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.71E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.30E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.70E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.09E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.23E 01 [3.0E+01]

BOWEN RATIO (no units)
0.207 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.657E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.026E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.777E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.155E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.20[illegible]E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
29%	27%	4%	1%	27%	0%	3%	27%	2%	1%	38%	6%	1.3

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030000
START TIME: 0: 1:40 PST
END TIME: 0:31:30 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.082	5.100	4.191	4.066	4.901	-0.092	5.048

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.776	3.806	2.521	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 118699	1421 119862	0.183	92	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.870	8.08	10.03	NO DATA	316.6	1013.40	1.28E 01	13.424	285.088

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
11.986	7.62	10.08	NO DATA	0.25	1014.49

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP 1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.050	13.184	13.364	9.348E-03	88.47	7.582E-03	12.297	13.899	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.076	13.305	13.395	9.385E-03	88.08	7.607E-03	12.351	14.022	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030000
START TIME: 0: 1:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.040 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.049

Z/L AT 10 METERS
-0.038

Z/L AT Z1
-0.070

Z/L AT Z2
-0.035

MONIN-OBUKHOV LENGTH (Meters)
-2.639E 02

PSI1 AT Z1= 0.203393
PSI1 AT Z2= 0.113643
PSI2 AT Z1= 0.128873
PSI2 AT Z2= 0.070553

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.12E-01

HUMIDITY FLUX (Kg/sec m2)
2.54E-05

LAT.HEAT FLUX (Watts/m2)
6.21E 01

SEN.HEAT FLUX (Watts/m2)
8.56E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.42E 01

BOWEN RATIO (no units)
0.136

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.010E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.841E-05

SCALING POT. TEMP. (Kelvin)
-2.279E-02

ROUGHNESS LENGTH (Meters)
8.141E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.75E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.04E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.97E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.33E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.90E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.37E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2335	2.4164E 02	5.9057E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030000
START TIME: 0: 1:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.972	7.68	10.07	NO DATA	1014.40	13.424	-1.451	-1.353	-0.133	-0.035

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.070	13.290	13.388	9.381E-03	88.13	7.604E-03	12.344	14.007	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.102 AT GMH	MOMENTUM FLUX (Nt/m2) -8.27E-02	FRICTION VELOCITY (Meters/sec) 2.589E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.702E-02	AIR DENSITY (Kg/m3) 1.2337
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.31E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.239E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.312E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.119	LAT.HEAT FLUX (Watts/m2) 5.72E 01	SCALING POT.TEMP. (Kelvin) -4.465E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.156E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9054E 05
Z/L AT 10 METERS -0.092	SEN.HEAT FLUX (Watts/m2) 1.44E 01	ROUGHNESS LENGTH (Meters) 4.613E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.424
MONIN-OBUKHOV LENGTH (Meters) -1.892E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.137E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.166E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.44E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.60
	BOWEN RATIO (no units) 0.252			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
127%	127%	113%	164%	94%	10%	123%	259%	57%	108%	38%	77%	113%
167%	167%	46%	46%	95%	10%	35%	140%	23%	69%	118%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030000
START TIME: 0: 1:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.067 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.11E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.711E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.36E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.085E-05 [3.0E-05]
Z/L AT GMH -0.079 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.84E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.811E-02 [2.0E-02]
Z/L AT 10 METERS -0.061 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.15E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.882E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.636E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.44E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.212 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
47%	44%	17%	6%	26%	0%	0%	29%	8%	3%	44%	3:%	26%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030030
START TIME: 0:31:40 PST
END TIME: 1: 1:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.063	5.083	4.401	4.270	4.891	-0.092	5.086

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.771	3.803	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118011	1421 119224	0.183	90	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.801	8.48	9.92	NO DATA	317.9	1013.25	1.28E 01	13.419	285.022

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.922	8.00	9.97	NO DATA	0.28	1014.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.981	13.105	13.285	9.279E-03	88.21	7.525E-03	12.203	13.834	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.013	13.232	13.322	9.320E-03	87.83	7.553E-03	12.262	13.961	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030030
START TIME: 0:31:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.042 AT GMH	MOMENTUM FLUX (Nt/m2) -1.28E-01	FRICTION VELOCITY (Meters/sec) 3.221E-01	GENERAL FORM:DN/DZ= I(N1-N2)I/ILn(Z1/Z2)*(Z1*Z2)1/2I	GENERAL FORM: N SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2I
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.73E-05	SCALING SPEC.HUMD (Kg/Kg) -6.862E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.37E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.24E 00
Z/L AT GMH -0.051	LAT.HEAT FLUX (Watts/m2) 6.74E 01	SCALING POT. TEMP. (Kelvin) -2.714E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.8HE 03
Z/L AT 10 METERS -0.040	SEN.HEAT FLUX (Watts/m2) 1.09E 01	ROUGHNESS LENGTH (Meters) 1.042E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.53E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.9%E 01
Z/L AT Z1 -0.073	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.797E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.036	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.12E 01			
MONIN-OBUKHOV LENGTH (Meters) -2.528E 02	BOWEN RATIO (no units) 0.162			
PSI1 AT Z1= 0.210506 PSI1 AT Z2= 0.117995 PSI2 AT Z1= 0.133569 PSI2 AT Z2= 0.073337				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2336

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP (ITcal./Kg)
5.9061E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030030
START TIME: 0:31:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.908	8.06	9.96	NO DATA	1014.25	13.419	-1.511	-1.413	-0.263	-0.105

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.806	13.216	13.314	9.315E-03	87.88	7.550E-03	12.255	13.946	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.092 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.108

Z/L AT 10 METERS
-0.083

MONIN-OBUKHOV LENGTH (Meters)
-1.207E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.30E-02

HUMIDITY FLUX (Kg/sec m2)
2.49E-05

LAT.HEAT FLUX (Watts/m2)
6.16E 01

SEN.HEAT FLUX (Watts/m2)
1.56E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.09E 01

BOWEN RATIO (no units)
0.253

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.745E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.352E-05

SCALING POT.TEMP. (Kelvin)
-4.544E-02

ROUGHNESS LENGTH (Meters)
5.777E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.162E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.537E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.490E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.247E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2338

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9058E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.418

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.45

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
121%	121%	111%	163%	88%	10%	121%	252%	56%	108%	33%	76%	111%
165%	165%	46%	45%	93%	10%	35%	138%	23%	68%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030030
START TIME: 0:31:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.063 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.075 [0.02]

Z/L AT 10 METERS
-0.058 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.728E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.03E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.54E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.28E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.32E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.02E 01 [3.0E+01]

BOWEN RATIO (no units)
0.221 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.885E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.162E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.117E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
7.460E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.330E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
40%	38%	18%	5%	18%	0%	1%	21%	9%	4%	34%	32%	26%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030100
START TIME: 1: 2: 0 PST
END TIME: 1:32:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	5.050	5.068	4.452	4.320	4.884	-0.092	5.658

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.761	3.794	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117445	1421 118649	0.183	89	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.744	8.58	9.84	NO DATA	317.0	1013.14	1.28E 01	13.410	284.965

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.865	8.09	9.89	NO DATA	0.30	1014.24

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.924	13.041	13.221	9.231E-03	88.07	7.485E-03	12.138	13.781	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.955	13.166	13.256	9.267E-03	87.66	7.509E-03	12.190	13.906	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030100
START TIME: 1: 2: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+-Stable,-=Unstable)
-0.040 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.049

Z/L AT 10 METERS
-0.038

Z/L AT Z1
-0.069

Z/L AT Z2
-0.035

MONIN-OBUKHOV LENGTH
(Meters)
-2.644E 02

PSI1 AT Z1= 0.203056
PSI1 AT Z2= 0.113437
PSI2 AT Z1= 0.128651
PSI2 AT Z2= 0.070422

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.29E-01

HUMIDITY FLUX
(Kg/sec m2)
2.73E-05

LAT.HEAT FLUX
(Watts/m2)
6.76E 01

SEN.HEAT FLUX
(Watts/m2)
1.06E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
9.11E 01

BOWEN RATIO
(no units)
0.157

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.239E 01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.840E-05

SCALING POT. TEMP.
(Kelvin)
-2.632E-02

ROUGHNESS LENGTH
(Meters)
1.062E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.225E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.42E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.43E-03

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.24E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.90E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.05E 01

N=LnTEMP STRUC (KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2338

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.064E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- 08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 2: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.850	8.15	9.88	NO DATA	1014.14	13.410	-1.559	-1.461	-0.258	-0.160

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.948	13.151	13.249	9.263E-03	87.71	7.507E-03	12.184	13.892	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (*FRIEHE ET AL,1978*):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.091 AT GMH	MOMENTUM FLUX (Nt/m2) -9.57E-02	*FRICTION VELOCITY* (Meters/sec) 2.785E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.754E-02	AIR DENSITY (Kg/m3) 1.2340
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.57E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.469E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.566E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4162E 02
Z/L AT GMH -0.107	LAT.HEAT FLUX (Watts/m2) 6.35E 01	SCALING POT.TEMP. (Kelvin) -4.652E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.295E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9061E 05
Z/L AT 10 METERS -0.082	SEN.HEAT FLUX (Watts/m2) 1.62E 01	ROUGHNESS LENGTH (Meters) 6.094E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.406
MONIN-OBUKHOV LENGTH (Meters) -1.212E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.168E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.25E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.34
	BOWEN RATIO (no units) 0.255			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
122%	122%	111%	163%	89%	10%	122%	252%	56%	108%	34%	76%	111%
164%	164%	46%	45%	92%	10%	35%	137%	23%	68%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 2: 0 PST | NRL MICROMETEORDLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.062 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -1.06E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 2.918E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.60E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.226E-05 (3.0E-05)
Z/L AT GMH -0.074 (0.02)	LAT.HEAT FLUX (Watts/m2) 6.44E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -3.088E-0.' (2.0E-02)
Z/L AT 10 METERS -0.057 (0.02)	SEN.HEAT FLUX (Watts/m2) 1.34E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 7.734E-05 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -1.759E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.5[illegible]E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.22E 01 (3.0E+01)	
	BOWEN RATIO (no units) 0.221 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
42%	40%	17%	4%	21%	0%	1%	23%	8%	4%	37%	30%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030130
START TIME: 1:32:20 PST
END TIME: 2: 2:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.285	0.000	0.001	5.869	5.086	4.165	4.038	4.888	-0.092	5.171

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.756	3.793	2.521	0.001	0.001	0.001	0.001	6.285

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118323	1421 119478	0.199	64	-0.089	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.832	8.03	9.95	NO DATA	320.8	1013.20	1.28E 01	13.484	285 050

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.948	7.55	9.99	NO DATA	0.30	1014.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.012	13.139	13.319	9.301E-03	88.25	7.544E-03	12.233	13.862	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.038	13.259	13.349	9.332E-03	87.81	7.564E-03	12.278	13.984	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030130
START TIME: 1:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.035 AT GMH	MOMENTUM FLUX (Nt/m2) -1.22E-01	FRICTION VELOCITY (Meters/sec) 3.145E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.778E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.34E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.27E 00
Z/L AT GMH -0.043	LAT.HEAT FLUX (Watts/m2) 6.50E 01	SCALING POT. TEMP. (Kelvin) -2.188E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.98E 03
Z/L AT 10 METERS -0.033	SEN.HEAT FLUX (Watts/m2) 8.59E 00	ROUGHNESS LENGTH (Meters) 9.549E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.88E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.47E 01
Z/L AT Z1 -0.061	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.936E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.030	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.64E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.033E 02	BOWEN RATIO (no units) 0.132			
PSI1 AT Z1= 0.181635 PSI1 AT Z2= 0.108473 PSI2 AT Z1= 0.114571 PSI2 AT Z2= 0.062163				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK GEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2334	2.4163E 02	5.9059E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030130
START TIME: 1:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.934	7.61	9.99	NO DATA	1014.21	13.404	-1.470	-1.372	-0.159	-0.061

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.032	13.245	13.343	9.328E-03	87.86	7.561E-03	12.273	13.969	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.106 AT GMH	MOMENTUM FLUX (Nt/m2) -8.08E-02	FRICTION VELOCITY (Meters/sec) 2.559E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.548E-02	AIR DENSITY (Kg/m3) 1.2337
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.33E-05	SCALING SPEC HUMID. (Kg/Kg) -7.371E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.327E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.124	LAT.HEAT FLUX (Watts/m2) 5.75E 01	SCALING POT.TEMP. (Kelvin) -4.534E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.160E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9056E 05
Z/L AT 10 METERS -0.095	SEN.HEAT FLUX (Watts/m2) 1.45E 01	ROUGHNESS LENGTH (Meters) 4.409E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.402
MONIN-OBUKHOV LENGTH (Meters) -1.051E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.132E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.48E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.41
	BOWEN RATIO (no units) 0.252			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
122%	122%	106%	160%	91%	10%	121%	252%	53%	107%	38%	73%	106%
166%	166%	46%	45%	94%	10%	35%	140%	23%	68%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030130
START TIME: 1:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.065 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.33E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.736E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.39E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.140E-05 [3.0E-05]
Z/L AT GMH -0.077 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.92E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.766E-02 [2.0E-02]
Z/L AT 10 METERS -0.059 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.15E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.315E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.687E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.354E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.52E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.209 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
56%	53%	24%	7%	26%	0%	1%	30%	12%	4%	48%	42%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030200
START TIME: 2: 2:20 PST
END TIME: 2:32:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.062	5.082	4.309	4.150	4.891	-0.092	5.291

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.744	3.782	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118459	1421 119656	0.199	64	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.846	8.30	9.91	NO DATA	324.9	1013.25	1.28E 01	13.393	285.066

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.966	7.75	9.97	NO DATA	0.30	1014.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.026	13.149	13.329	9.275E-03	87.92	7.523E-03	12.200	13.875	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.056	13.275	13.365	9.316E-03	87.55	7.551E-03	12.258	14.001	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030200
START TIME: 2: 2:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.031 AT GMH	MOMENTUM FLUX (Nt/m2) -1.57E-01	FRICTION VELOCITY (Meters/sec) 3.563E-01	GENERAL FORM:DN/DZ= ((N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM.'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.96E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.730E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.12E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.12E 00
Z/L AT GMH -0.038	LAT.HEAT FLUX (Watts/m2) 7.31E 01	SCALING POT. TEMP. (Kelvin) -2.523E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.03E 03
Z/L AT 10 METERS -0.029	SEN.HEAT FLUX (Watts/m2) 1.12E 01	ROUGHNESS LENGTH (Meters) 1.492E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.34E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.14E 01
Z/L AT Z1 -0.054	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.305E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.027	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.72E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.404E 02	BOWEN RATIO (no units) 0.153			
PSI1 AT Z1= 0.165112 PSI1 AT Z2= 0.090620 PSI2 AT Z1= 0.103775 PSI2 AT Z2= 0.055919				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2334

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9058E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030200
START TIME: 2: 2:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.951	7.82	9.96	NO DATA	1014.25	13.393	-1.442	-1.344	-0.134	-0.036

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.049	13.259	13.357	9.311E-03	87.60	7.547E-03	12.251	13.986	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICH. NUMBER (+=Stable,-=Unstable)
-0.096 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.112

Z/L AT 10 METERS
-0.086

MONIN-OBUKHOV LENGTH (Meters)
-1.157E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.64E-02

HUMIDITY FLUX (Kg/sec m2)
2.40E-05

LAT.HEAT FLUX (Watts/m2)
5.94E 01

SEN.HEAT FLUX (Watts/m2)
1.46E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.68E 01

BOWEN RATIO (no units)
0.245

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.647E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.357E-05

SCALING POT.TEMP. (Kelvin)
-4.408E-02

ROUGHNESS LENGTH (Meters)
5.025E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.146E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.006E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.402E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.167E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2337

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9?55E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.391

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.164E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.45

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
109%	109%	95%	154%	81%	10%	116%	234%	47%	106%	33%	67%	95%
167%	167%	46%	45%	95%	10%	35%	140%	23%	68%	118%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030200
START TIME: 2: 2:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.056 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.067 [0.02]

Z/L AT 10 METERS
-0.052 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.928E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.09E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.53E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.25E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.27E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.92E 01 [3.0E+01]

BOWEN RATIO (no units)
0.211 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.946E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.112E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.936E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
8.879E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.490E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
59%	56%	34%	13%	13%	0%	7%	22%	16%	5%	37%	57%	4c1

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030230
START TIME: 2:32:20 PST
END TIME: 3: 2:30 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.061	5.077	4.086	3.946	4.890	-0.092	5.429

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.732	3.783	2.521	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND MEAN	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117794	1421 118966	0.199	65	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
11.779	7.88	9.90	NO DATA	329.6	1013.23	1.28E 01	13.381	284.998

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.897	7.38	9.94	NO DATA	0.27	1014.32

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.959	13.082	13.262	9.273E-03	88.27	7.519E-03	12.194	13.814	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.987	13.203	13.293	9.298E-03	87.77	7.535E-03	12.232	13.937	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030230
START TIME: 2:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) -0.034 (C GMH	MOMENTUM FLUX (Nt/m2) -1.38E-01	FRICTION VELOCITY (Meters/sec) 3.252E-01	GENERAL FORM:DN/DZ= I(N1-N2))/ILn(Z1/Z2)* (Z1*Z2)1/2	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 13.99	HUMIDITY FLUX (Kg/sec m2) 2.72E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.777E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.52E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.23E 00
Z/L AT GMH -0.043	LAT.HEAT FLUX (Watts/m2) 6.72E 01	SCALING POT. TEMP. (Kelvin) -2.335E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.98E 03
Z/L AT 10 METERS -0.033	SEN.HEAT FLUX (Watts/m2) 9.48E 00	ROUGHNESS LENGTH (Meters) 1.077E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.07E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.31E 01
Z/L AT Z1 -0.060	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.101E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.030	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.95E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.038E 02	BOWEN RATIO (no units) 0.141			
PSI1 AT Z1= 0.181394 PSI1 AT Z2= 0.100329 PSI2 AT Z1= 0.114414 PSI2 AT Z2= 0.062072				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2337	2.4163E 02	5.9062E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- 08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030230
START TIME: 2:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.882	7.44	9.93	NO DATA	1014.23	13.381	-1.499	-1.401	-0.193	-0.095

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.980	13.188	13.286	9.295E-03	87.83	7.533E-03	12.228	13.922	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.116 AT GMH	MOMENTUM FLUX (Nt/m2) -7.66E-02	FRICTION VELOCITY (Meters/sec) 2.491E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.204E-02	AIR DENSITY (Kg/m3) 1.2339
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.29E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.459E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.293E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.134	LAT.HEAT FLUX (Watts/m2) 5.67E 01	SCALING POT.TEMP. (Kelvin) -4.652E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.159E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9059E 05
Z/L AT 10 METERS -0.103	SEN.HEAT FLUX (Watts/m2) 1.45E 01	ROUGHNESS LENGTH (Meters) 3.965E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.379
MONIN-OBUKHOV LENGTH (Meters) -9.701E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.121E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.163E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.40E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.43
	BOWEN RATIO (no units) 0.255			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
115%	115%	100%	157%	86%	10%	118%	243%	50%	107%	36%	70%	100%
166%	166%	46%	45%	94%	10%	35%	139%	23%	68%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030230
START TIME: 2:32:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.068 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.35E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.730E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.39E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.194E-05 [3.0E-05]
Z/L AT GMH -0.080 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.90E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.882E-02 [2.0E-02]
Z/L AT 10 METERS -0.062 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.19E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.553E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.621E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.418E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.52E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.214 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
61%	58%	31%	18%	21%	0%	4%	28%	15%	5%	45%	53%	40%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030300
START TIME: 15 2:40 PST
END TIME: 3:32:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.080	5.095	3.692	3.558	4.899	-0.092	5.474

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.220	3.787	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117892	1421 119089	0.206	54	-0.009	0.000	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.789	7.11	10.02	NO DATA	331.1	1013.37	1.28E 01	13.375	285.009

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.909	6.66	10.04	NO DATA	0.23	1014.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.969	13.102	13.282	9.344E-03	88.88	7.576E-03	12.287	13.825	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.999	13.224	13.315	9.367E-03	88.33	7.590E-03	12.323	13.950	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030300
START TIME: 15 2:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.044 AT GMH	MOMENTUM FLUX (Nt/m2) -1.16E-01	FRICTION VELOCITY (Meters/sec) 3.063E-01	GENERAL FORM:DN/DZ= I(N1-N2)I/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.60E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.890E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.07E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.31E 00
Z/L AT GMH 0.054	LAT.HEAT FLUX (Watts/m2) 6.44E 01	SCALING POT. TEMP. (Kelvin) -2.580E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.85E 03
Z/L AT 10 METERS 0.042	SEN.HEAT FLUX (Watts/m2) 9.86E 00	ROUGHNESS LENGTH (Meters) 8.670E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.34E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.10E 01
Z/L AT Z1 -0.077	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.414 -03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.038				
MONIN-OBUKHOV LENGTH (Meters) -2.491E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.71E 01			
PSI1 AT Z1= 0.220016 PSI1 AT Z2= 0.123849 PSI2 AT Z1= 0.139861 PSI2 AT Z2= 0.077088	BOWEN RATIO (no units) 0.153			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2338

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9061E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- 08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030300
START TIME: 3: 2:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.894	6.71	10.04	NO DATA	1014.37	13.375	-1.480	-1.382	-0.165	-0.067

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.992	13.210	13.308	9.364E-03	88.40	7.588E-03	12.319	13.935	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.156 AT GMH	MOMENTUM FLUX (Nt/m2) -5.97E-02	FRICTION VELOCITY (Meters/sec) 2.199E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.835E-02	AIR DENSITY (Kg/m3) 1.2340
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.00E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.388E-05	WITH ABS HUMIDITY (Meter Kg/sec m3) 2.005E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.177	LAT.HEAT FLUX (Watts/m2) 4.96E 01	SCALING POT.TEMP. (Kelvin) -4.791E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.054E-02	WATER LAT HEAT VAP. (ITcal./Kg) 5.9059E 05
Z/L AT 10 METERS -0.136	SEN.HEAT FLUX (Watts/m2) 1.32E 01	ROUGHNESS LENGTH (Meters) 2.377E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.375
MONIN-OBUKHOV LENGTH (Meters) -7.341E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.073E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.163E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.56E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.57
	BOWEN RATIO (no units) 0.265			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
111%	111%	99%	157%	83%	10%	116%	240%	49%	107%	34%	69%	99%
166%	166%	46%	46%	94%	10%	34%	140%	23%	69%	117%	41%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030300
START TIME: 3: 2:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 [illegible] 1980
DATA SAMPLING [illegible] (ALL CHANNELS): 6/Min
DATA AVERAGIN[illegible]OD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.089 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.75E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.473E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.14E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.194E-05 [3.0E-05]
Z/L AT GMH -0.104 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.29E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.075E-02 [2.0E-02]
Z/L AT 10 METERS -0.080 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.14E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.783E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.254E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) [illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.82E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.224 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
64%	60%	39%	16%	14%	0%	8%	26%	19%	4%	41%	54%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030330
START TIME: 3:33: 0 PST
END TIME: 4: 2:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.133	5.143	3.223	3.177	4.912	-0.092	5.232

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.719	3.788	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119850	1421 120934	0.199	70	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.985	6.22	10.33	NO DATA	322.9	1013.56	1.28E 01	13.368	285.199

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.093	5.98	10.33	NO DATA	0.17	1014.66

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.165	13.327	13.506	9.539E-03	89.61	7.739E-03	12.552	14.008	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.184	13.436	13.526	9.544E-03	88.96	7.738E-03	12.565	14.123	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030330
START TIME: 3:33: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.097 AT GMH	MOMENTUM FLUX (Nt/m2) -4.04E-02	FRICTION VELOCITY (Meters/sec) 1.811E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.64E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.357E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.72E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.21E 00
Z/L AT GMH -0.113	LAT.HEAT FLUX (Watts/m2) 4.06E 01	SCALING POT. TEMP. (Kelvin) -1.729E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.35E 03
Z/L AT 10 METERS -0.087	SEN.HEAT FLUX (Watts/m2) 3.91E 00	ROUGHNESS LENGTH (Meters) 9.690E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.10E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.13E 01
Z/L AT Z1 -0.160	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.150E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.080	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.73E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.145E 02	BOWEN RATIO (no units) 0.096			
PSI1 AT Z1= 0.380326 PSI1 AT Z2= 0.228884 PSI2 AT Z1= 0.247879 PSI2 AT Z2= 0.145212				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2331
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9050E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:33: 0 PST | NRL MICROMETEORDLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V POT-WT TEMP (Kelvin)
12.080	6.00	10.33	NO DATA	1014.56	13.368	-1.288	-1.190	0.054	0.152

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.178	13.422	13.520	9.544E-03	89.04	7.738E-03	12.564	14.110	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.191 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.215

Z/L AT 10 METERS
-0.165

MONIN-OBUKHOV LENGTH (Meters)
-6.845E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.56E-02

HUMIDITY FLUX (Kg/sec m2)
1.65E-05

LAT.HEAT FLUX (Watts/m2)
4.08E 01

SEN.HEAT FLUX (Watts/m2)
1.07E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.42E 01

BOWEN RATIO (no units)
0.262

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.924E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.950E-05

SCALING POT.TEMP. (Kelvin)
-4.457E-02

ROUGHNESS LENGTH (Meters)
1.302E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.026E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.701E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.649E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.573E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2333

AIR SPECIFIC HEAT (ITcal./kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9048E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.371

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.162E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.76

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
183%	183%	169%	199%	141%	10%	141%	340%	84%	114%	57%	104%	169%
172%	172%	46%	47%	100%	10%	34%	147%	23%	70%	12?%	4?%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:33: 0 PST | NRL MICROMETEORDLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.145 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.166 [0.02]

Z/L AT 10 METERS
-0.128 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.841E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.45E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.65E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.07E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.88E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.28E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.29E 01 [3.0E+01]

BOWEN RATIO (no units)
0.212 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.900E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.105E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.591E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.205E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.050E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
32%	31%	5%	0%	44%	0%	6%	42%	3%	3%	56%	3%	

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030400
START TIME: 4: 3: 0 PST
END TIME: 4:32:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.168	5.178	3.053	3.021	4.922	-0.092	5.101

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.719	3.753	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121486	1421 122511	0.183	103	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.75

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.149	5.89	10.54	NO DATA	318.4	1013.72	1.28E 01	13.369	285.360

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.251	5.71	10.54	NO DATA	0.10	1014.82

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.328	13.510	13.690	9.667E-03	89.88	7.847E-03	12.729	14.162	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.341	13.613	13.703	9.675E-03	89.28	7.847E-03	12.743	14.273	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030400
START TIME: 4: 3: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.116 AT GMH	MOMENTUM FLUX (Nt/m2) -2.44E-02	FRICTION VELOCITY (Meters/sec) 1.407E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.30E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.489E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.05E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.84E 00
Z/L AT GMH -0.134	LAT.HEAT FLUX (Watts/m2) 3.21E 01	SCALING POT. TEMP. (Kelvin) -1.203E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.22E 03
Z/L AT 10 METERS -0.103	SEN.HEAT FLUX (Watts/m2) ? 11E 00	ROUGHNESS LENGTH (Meters) 2.256E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.43E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.49E 01
Z/L AT Z1 -0.189	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF. AT 10 METERS (Dimensionless) 7.877E 04		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.095	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.70E 01			
MONIN-OBUKHOV LENGTH (Meters) -9.695E 01	BOWEN RATIO (no units) 0.066			
PSI1 AT Z1= 0.426130 PSI1 AT Z2= 0.259581 PSI2 AT Z1= 0.279225 PSI2 AT Z2= 0.166204				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2325	2.4169E 02	5.9041E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030400
START TIME: 4: 3: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.239	5.73	10.54	NO DATA	1014.72	13.369	-1.130	-1.032	0.232	0.330

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.337	13.600	13.698	9.674E-03	89.35	7.847E-03	12.742	14.260	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILIT/	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.196 AT GMH	MOMENTUM FLUX (Nt/m2) -4.08E-02	FRICTION VELOCITY (Meters/sec) 1.820E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.311E-02	AIR DENSITY (Kg/m3) 1.2328
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.48E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.584E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.477E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH -0.220	LAT.HEAT FLUX (Watts/m2) 3.65E 01	SCALING POT.TEMP. (Kelvin) -4.089E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.441E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9039E 05
Z/L AT 10 METERS -0.170	SEN.HEAT FLUX (Watts/m2) 9.28E 00	ROUGHNESS LENGTH (Meters) 9.927E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.374
MONIN-OBUKHOV LENGTH (Meters) -5.899E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.008E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.163E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.86E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.92
	BOWEN RATIO (no units) 0.254			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
239%	239%	216%	228%	190%	10%	156%	418%	108%	120%	82%	128%	216%
178%	178%	46%	48%	106%	10%	35%	155%	23%	71%	129%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030400
START TIME: 4: 3: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.162 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.79E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.747E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.45E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 6.922E-05 [3.0E-05]
Z/L AT GMH -0.183 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.57E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.323E-02 [2.0E-02]
Z/L AT 10 METERS -0.141 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.71E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.998E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.086E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.28E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 9.736E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.65E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.203 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	24%	16%	7%	56%	0%	12%	51%	14%	7%	64%	7%	14%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030430
START TIME: 4:33: 0 PST
END TIME: 5: 3:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS) 6/Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES 2	SKY RAD.	WIND DIR
6.205	0.000	0.001	5.154	5.167	3.201	3.154	4.948	0.090	5.190

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.717	3.600	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121904	1421 122915	0.183	108	-0.009	0.008	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.60

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BULK WI TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.190	6.18	10.46	NO DATA	318.1	1014.11	1.26E 01	13.366	285.403

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.291	5.95	10.48	NO DATA	0.02	1015.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP PRES 1	S.VAP PRES 1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.370	13.545	13.724	9.618E-03	89.16	7.805E-03	12.695	14.206	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP PRES 2	S.VAP PRES 2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.382	13.648	13.738	9.636E-03	88.67	7.814E-03	12.694	14.317	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030430
START TIME: 4:33: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS) 6/Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973)

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.069 AT GMH	MOMENTUM FLUX (Nt/m2) -3.16E-02	FRICTION VELOCITY (Meters/sec) 1.602E-01	GENERAL FORM:DN/DZ= I(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)^1.21	GENERAL FORM: N SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)^1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.41E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.127E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.32E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSIM WS SLOPE= 2.50E 00
Z/L AT GMH -0.082	LAT.HEAT FLUX (Watts/m2) 3.48E 01	SCALING POT. TEMP. (Kelvin) -1.020E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSIV SH SLOPE= 7.50E 03
Z/L AT 10 METERS 0.063	SEN.HEAT FLUX (Watts/m2) 2.04E 00	ROUGHNESS LENGTH (Meters) 5.019E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.28E 03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSIH PTK SLOPE= 5.30E 01
Z/L AT Z1 0.116	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.26E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.141E 04		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CTS SLOPE=NO DATA
Z/L AT Z2 -0.058	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.94E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.787E 02	BOWEN RATIO (no units) 0.059			
PSIM AT Z1= 0.301107				
PSIM AT Z2= 0.175329				
PSIH AT Z1= 0.194102				
PSIH AT Z2= 0.110444				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M^3)
1.2328

AIR SPECIFIC HEAT (Cal/gm/Kg Kel.)
2.416E 02

WATER LAT.HEAT VAP. (Cal/Kg)
5.907E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by Loop. 5 of:

SH1 SH2 +/- .08E 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:33: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.279	5.98	10.47	NO DATA	1015.11	13.366	-1.087	-0.989	0.269	0.367

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.377	13.635	13.733	9.634E-03	88.73	7.813E-03	12.691	14.304	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.167 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.189

Z/L AT 10 METERS
-0.146

MONIN-OBUKHOV LENGTH (Meters)
-6.862E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.52E-02

HUMIDITY FLUX (Kg/sec m2)
1.57E-05

LAT.HEAT FLUX (Watts/m2)
3.89E 01

SEN.HEAT FLUX (Watts/m2)
9.28E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.26E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.08E 01

BOWEN RATIO (no units)
0.239

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.914E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.672E-05

SCALING POT.TEMP. (Kelvin)
-3.888E-02

ROUGHNESS LENGTH (Meters)
1.270E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.025E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.662E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.575E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.441E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2331

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9037E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.378

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.31

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
220%	220%	181%	206%	176%	11%	145%	382%	91%	116%	85%	111%	181%
181%	181%	46%	48%	109%	11%	35%	157%	23%	71%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:33: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.123 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.141 [0.02]

Z/L AT 10 METERS
-0.108 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-9.222E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.24E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.54E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.81E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.52E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.26E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.86E 01 [3.0E+01]

BOWEN RATIO (no units)
0.186 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.851E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.845E-05 [3.0E-05]

SCALING POT TEMP. (Kelvin)
-2.149E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.055E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.005E-03 [4.0E-04]

* [illegible] AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE [illegible] MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE [illegible]

[illegible]	[illegible]	SEN.HEAT [illegible]	SKY RAD [illegible]	TOTAL HEAT [illegible]	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
[illegible]	[illegible]	[illegible]%	1%	11%	52%	10%	3%	68%	7%	[illegible]

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79803030500
START TIME: 03:30:20 PST
END TIME: 05:33:30 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.705	0.000	0.001	5.159	5.171	3.095	3.072	4.966	-0.050	5.084

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
EQ.# OF TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
6.711	3.291	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTRFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Metres)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1431 1234960	1431 1234925	0.103	115	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.scans)	(No.Scans)	A(No.).065V)	B(No.) 005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	180	0	0	0	0	0	115.2	59.79

* DIGITIZED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.2	5.92	10.49	NO DATA	317.8	1014.39	6.99E 00	13.360	285.504

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.278	5.81	10.50	NO DATA	-0.07	1015.48

* CALCULATED MICROMETEOROLOGICAL PARAMETERS

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
19.35	12.476	13.653	13.833	9.636E-03	88.71	7.820E-03	12.694	14.309	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.11	12.406	13.252	13.842	9.652E-03	88.23	7.828E-03	12.720	14.416	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79803030500
START TIME: 03:30:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

BULK RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.083 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.098

Z/L AT 10 METERS
-0.076

Z/L AT Z1
-0.139

Z/L AT Z2
-0.070

MONIN OBUKHOV LENGTH (Meters)
-1.324E 02

PSI1 AT Z1= 0.343554
PSI1 AT Z2= 0.203312
PSI2 AT Z1= 0.222837
PSI2 AT Z2= 0.128820

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N1/m2)
-1.92E-02

HUMIDITY FLUX (Kg/sec m2)
1.11E-05

LAT.HEAT FLUX (Watts/m2)
2.76E 01

SEN.HEAT FLUX (Watts/m2)
1.13E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
6.99E 00

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.57E 01

BOWEN RATIO (no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.247E-01

SCALING SPEC.HUMD. (Kg/Kg)
-7.251E-05

SCALING POT. TEMP. (Kelvin)
-7.251E-03

ROUGHNESS LENGTH (Meters)
9.487E-07

DRAG COEF. AT 10 METERS (Dimensionless)
1.229E-04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.91E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.21E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.46E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -7.46E 01

N=LnTEMP.STRUC.(K=M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/ser 2)				
0.4	9.7969	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2327

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (1Tcal./Kg)
5.9033E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- 00E 3 Kg/Kg
PTK1 PTK2 +/- 00E 0 Kel

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5: 3:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.381	5.82	10.50	NO DATA	1015.39	13.360	-0.979	-0.881	0.379	0.477

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.479	13.740	13.838	9.650E-03	88.29	7.827E-03	12.717	14.404	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.166 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.188

Z/L AT 10 METERS
-0.145

MONIN-OBUKHOV LENGTH (Meters)
-6.915E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.24E-02

HUMIDITY FLUX (Kg/sec m2)
1.52E-05

LAT.HEAT FLUX (Watts/m2)
3.76E 01

SEN.HEAT FLUX (Watts/m2)
8.39E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
6.99E 00

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.30E 01

BOWEN RATIO (no units)
0.223

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.855E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.648E-05

SCALING POT.TEMP. (Kelvin)
-3.625E-02

ROUGHNESS LENGTH (Meters)
1.091E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.014E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.439E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.520E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
6.722E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2330

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9031E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.376

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.59

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
292%	292%	236%	240%	240%	15%	185%	479%	118%	122%	122%	138%	236%
187%	187%	46%	48%	115%	15%	39%	163%	23%	71%	138%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5: 3:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.134 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.153 [0.02]

Z/L AT 10 METERS
-0.118 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-8.497E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.86E 02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.45E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.59E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.04E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
6.99E 00 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.00E 01 [3.0E+01]

BOWEN RATIO (no units)
0.177 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.755E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.871E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.086E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
8.539E-06 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
9.541E-04 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
32%	30%	23%	17%	64%	0%	21%	57%	21%	5%	70%	9%	23

* END OF DATA RUN

MARINE ''FACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030530
START TIME: 5:33:40 PST
END TIME: 6: 3:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.142	5.154	3.429	3.379	4.991	0.046	5.097

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.705	3.933	2.521	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122775	1421 123797	0.183	121	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.93

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.277	6.61	10.38	NO DATA	318.3	1014.78	-6.35E 00	13.355	285.489

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.380	6.36	10.40	NO DATA	-0.16	1015.87

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.457	13.625	13.805	9.573E-03	88.20	7.766E-03	12.610	14.297	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.470	13.729	13.819	9.588E-03	87.69	7.773E-03	12.635	14.409	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030530
START TIME: 5:33:40 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.061 AT GMH	-3.77E-02	1.749E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.52E-05	-7.058E `5	DWS/DZ= 2.79E-02	PSI=PSI1 WS SLOPE= 2.29E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
-0.073	3.76E 01	-1.106E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -7.66E 03
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.057	2.41E 00	8.117E-06	DPT/DZ= -1.40E-03	PSI=PSI2 PTK SLOPE= -4.89E 01
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
-0.104	-6.35E 00	9.305E-04		PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2	TOTAL HEAT BUDGET FLUX (Watts/m2)			
-0.052	3.37E 01			
MONIN-OBUKHOV LENGTH (Meters)	BOWEN RATIO (no units)			
-1.769E 02	0.064			
PSI1 AT Z1= 0.277700				
PSI1 AT Z2= 0.160193				
PSI2 AT Z1= 0.178348				
PSI2 AT Z2= 0.100572				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2333

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9034E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of *Profile Slope and/or Partial Derivative.*
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.367	6.39	10.40	NO DATA	1015.78	13.355	-0.988	-0.890	0.362	0.460

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.465	13.717	13.815	9.587E-03	87.75	7.772E-03	12.633	14.396	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.126 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.145

Z/L AT 10 METERS
-0.111

MONIN-OBUKHOV LENGTH (Meters)
-8.985E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.31E-02

HUMIDITY FLUX (Kg/sec m2)
1.72E-05

LAT.HEAT FLUX (Watts/m2)
4.26E 01

SEN.HEAT FLUX (Watts/m2)
9.03E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.35E 00

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.53E 01

BOWEN RATIO (no units)
0.212

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.074E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.737E-05

SCALING POT.TEMP. (Kelvin)
-3.488E-02

ROUGHNESS LENGTH (Meters)
1.840E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.052E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.301E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.723E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.233E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2336

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9032E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.376

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.98

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
209%	209%	174%	201%	165%	16%	163%	366%	87%	114%	78%	107%	174%
186%	186%	46%	48%	114%	16%	39%	162%	23%	71%	137%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.095 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.111 [0.02]

Z/L AT 10 METERS
-0.085 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.170E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.98E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.69E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.16E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.32E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.35E 00 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.30E 01 [3.0E+01]

BOWEN RATIO (no units)
0.167 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.006E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.860E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.970E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.545E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.029E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
34%	32%	15%	7%	53%	0%	16%	48%	9%	2%	62%	9%	9%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030600
START TIME: 6: 4: 0 PST
END TIME: 6:34:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.120	5.133	3.595	3.534	5.011	0.193	5.017

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.703	3.886	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 120752	1421 121849	0.183	128	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.075	6.93	10.25	NO DATA	315.6	1015.09	-2.69E 01	13.353	285.290

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.185	6.65	10.27	NO DATA	-0.26	1016.18

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.255	13.410	13.598	9.500E-03	88.61	7.698E-03	12.505	14.112	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.275	13.522	13.612	9.520E-03	88.10	7.709E-03	12.536	14.230	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030600
START TIME: 6: 4: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.077 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.091

Z/L AT 10 METERS
-0.070

Z/L AT Z1
-0.128

Z/L AT Z2
-0.064

MONIN-OBUKHOV LENGTH (Meters)
-1.432E 02

PSI1 AT Z1= 0.324632
PSI1 AT Z2= 0.190755
PSI2 AT Z1= 0.210004
PSI2 AT Z2= 0.129555

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.12E-02

HUMIDITY FLUX (Kg/sec m2)
1.81E-05

LAT.HEAT FLUX (Watts/m2)
4.47E 01

SEN.HEAT FLUX (Watts/m2)
4.59E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.69E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.24E 01

BOWEN RATIO (no units)
0.103

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.036E-01

SCALING SPEC.HUMD (Kg/Kg)
-7.195E-05

SCALING POT. TEMP. (Kelvin)
-1.804E-02

ROUGHNESS LENGTH (Meters)
1.695E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.132E-03

PARTIAL DERIVATIVES

GENERAL FORM DN/DZ= ((N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.16E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.24E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM 'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.96E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.51E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PT SLOPE= -3.00E 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2346

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9045E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement or Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6: 4: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.172	6.68	10.27	NO DATA	1016.09	13.353	-1.181	-1.083	0.156	0.254

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.270	13.509	13.607	9.518E-03	88.16	7.708E-03	12.533	14.216	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.128 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.148

Z/L AT 10 METERS
-0.114

MONIN-OBUKHOV LENGTH (Meters)
-8.800E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.91E-02

HUMIDITY FLUX (Kg/sec m2)
1.86E-05

LAT.HEAT FLUX (Watts/m2)
4.61E 01

SEN.HEAT FLUX (Watts/m2)
1.08E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.69E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.00E 01

BOWEN RATIO (no units)
0.235

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.187E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.902E-05

SCALING POT.TEMP. (Kelvin)
-3.959E-02

ROUGHNESS LENGTH (Meters)
2.323E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.071E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.784E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.864E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.658E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2348

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9043E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.379

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.29

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
174%	174%	160%	192%	132%	8%	113%	325%	80%	113%	53%	100%	160%
176%	176%	46%	47%	104%	8%	29%	151%	23%	70%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6: 4: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.102 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.119 [0.02]

Z/L AT 10 METERS
-0.092 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.092E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.73E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.85E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.58E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.07E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.69E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.84E 01 [3.0E+01]

BOWEN RATIO (no units)
0.193 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.153E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.014E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.434E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.134E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.080E-03 [4.0E-04]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.84E 01 [3.0E+01]

BOWEN RATIO (no units)
0.193 [0.08]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	24%	8%	2%	39%	0%	15%	36%	4%	2%	48%	6%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030630
START TIME: 6:34:20 PST
END TIME: 7: 4:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.099	5.112	3.488	3.445	5.022	0.364	5.132

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.706	3.928	2.523	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 120718	1421 121776	0.183	134	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO RFF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.93

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.072	6.73	10.13	NO DATA	319.5	1015.25	-5.07E 01	13.356	285.285

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.178	6.48	10.14	NO DATA	-0.35	1016.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.252	13.396	13.576	9.425E-03	87.92	7.636E-03	12.406	14.112	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.268	13.503	13.594	9.439E-03	87.38	7.642E-03	12.430	14.226	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030630
START TIME: 6:34:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+-Stable,--Unstable)
-0.084 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.099

Z/L AT 10 METERS
-0.076

Z/L AT Z1
-0.139

Z/L AT Z2
-0.070

MONIN-OBUKHOV LENGTH
(Meters)
-1.319E 02

PSI1 AT Z1= 0.344456
PSI1 AT Z2= 0.203914
PSI2 AT Z1= 0.223450
PSI2 AT Z2= 0.129217

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.87E-02

HUMIDITY FLUX
(Kg/sec m2)
1.59E-05

LAT.HEAT FLUX
(Watts/m2)
3.99E 01

SEN.HEAT FLUX
(Watts/m2)
3.24E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-5.07E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-8.25E 00

BOWEN RATIO
(no units)
0.083

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.771E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-7.253E-05

SCALING POT. TEMP.
(Kelvin)
-1.466E-02

ROUGHNESS LENGTH
(Meters)
8.658E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
9.171E 04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
((N1-N2))/(Ln(Z1/Z2)*
(Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.71E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.80E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
((LnZ1-PSI)-(LnZ2-PSI))/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI1
WS SLOPE= 2.26E 00

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH SLOPE= -7.4*E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE= -3.69E 01

N=LnTEMP STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2348

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4165E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9046E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:34:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.165	6.51	10.14	NO DATA	1016.25	13.356	-1.191	-1.093	0.135	0.233

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.263	13.490	13.588	9.438E-03	87.44	7.641E-03	12.427	14.212	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.140 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.160

Z/L AT 10 METERS
-0.123

MONIN-OBUKHOV LENGTH (Meters)
-8.125E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.56E-02

HUMIDITY FLUX (Kg/sec m2)
1.89E-05

LAT.HEAT FLUX (Watts/m2)
4.67E 01

SEN.HEAT FLUX (Watts/m2)
1.07E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.07E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.67E 00

BOWEN RATIO (no units)
0.229

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.121E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.212E-05

SCALING POT.TEMP. (Kelvin)
-4.031E-02

ROUGHNESS LENGTH (Meters)
2.032E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.860E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.498E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.889E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.549E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2351

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9043E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.384

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.45

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. *TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES.* ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
201%	201%	182%	206%	156%	6%	87%	362%	91%	115%	65%	111%	182%
176%	176%	46%	46%	104%	6%	23%	150%	23%	69%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:34:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.114 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.131 [0.02]

Z/L AT 10 METERS
-0.101 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-9.895E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.22E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.83E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.53E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.71E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.07E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.58E 00 [3.0E+01]

BOWEN RATIO (no units)
0.186 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.050E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.227E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.331E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.707E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.034E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASURMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	23%	16%	10%	49%	0%	29%	43%	10%	0%	58%	11%	8%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030700
START TIME: 7: 4:30 PST
END TIME: 7:34:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.000	0.001	5.084	5.095	3.370	3.338	5.030	0.583	5.102

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.716	3.947	2.523	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 120473	1411 121526	0.183	139	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.95

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.042	6.50	10.04	NO DATA	318.5	1015.37	-8.13E 01	13.366	285.260

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.153	6.27	10.05	NO DATA	-0.43	1016.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.45	11.227	13.367	13.543	9.368E-03	87.51	7.588E-03	12.331	14.090	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.243	13.469	13.560	9.379E 03	86.94	7.591E-03	12.349	14.204	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030700
START TIME: 7: 4:30 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.108 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.125

Z/L AT 10 METERS
-0.096

Z/L AT Z1
-0.175

Z/L AT Z2
-0.088

MONIN OBUKHOV LENGTH (Meters)
-1.040E 02

PSI1 AT Z1= 0.406462
PSI1 AT Z2= 0.245972
PSI2 AT Z1= 0.265746
PSI2 AT Z2= 0.157115

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.14E-02

HUMIDITY FLUX (Kg/sec m2)
-1.4nE-05

LAT HEAT FLUX (Watts/m2)
-3.09 01

SEN HEAT FLUX (Watts/m2)
-2.89E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
8.13E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.22E 01

BOWEN RATIO (no units)
0.080

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.594E-01

SCALING SPEC HUMD. (Kg/Kg)
-7.433E-05

SCALING POT. TEMP. (Kelvin)
-1.453E-02

ROUGHNESS LENGTH (Meters)
4.871E-06

DRAG COEF. AT 10 METERS (Dimensionless)
1.036E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2]

N-WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.35E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.74E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.51E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.27E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -3.72E 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2351

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9047E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7: 4:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.140	6.32	10.04	NO DATA	1016.38	13.366	-1.226	-1.128	0.091	0.189

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.238	13.457	13.555	9.370E-03	87.01	7.591E-03	12.347	14.191	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.157 AT GMH	MOMENTUM FLUX (Nt/m2) -5.16E-02	FRICTION VELOCITY (Meters/sec) 2.043E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.175E-02	AIR DENSITY (Kg/m3) 1.2354
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.89E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.482E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.889E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.179	LAT.HEAT FLUX (Watts/m2) 4.67E 01	SCALING POT.TEMP. (Kelvin) -4.185E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.551E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9045E 05
Z/L AT 10 METERS -0.138	SEN.HEAT FLUX (Watts/m2) 1.07E 01	ROUGHNESS LENGTH (Meters) 1.722E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.396
MONIN-OBUKHOV LENGTH (Meters) -7.264E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.13E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.047E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.39E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.58
	BOWEN RATIO (no units) 0.229			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
221%	221%	206%	221%	172%	6%	67%	393%	103%	118%	69%	123%	206%
174%	174%	46%	46%	102%	6%	18%	148%	23%	69%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7: 4:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.135 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -4.79E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.9A1E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.82E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.464E-05 [3.0E-05]
Z/L AT GMH -0.155 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.49E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.424E-02 [2.0E-02]
Z/L AT 10 METERS -0.119 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.78E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.401E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -8.378E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.13E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.0[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.78E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.188 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER) ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
18%	18%	20%	14%	52%	0%	35%	43%	14%	0%	59%	11%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030730
START TIME: 7:34:30 PST
END TIME: 8: 4:40 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.087	5.096	3.000	2.998	5.047	0.845	4.979

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.732	3.945	2.523	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 120789	1421 121851	0.183	144	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.95

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.079	5.79	10.06	NO DATA	314.3	1015.63	-1.18E 02	13.381	285.292

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.185	5.67	10.05	NO DATA	-0.49	1016.73

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.259	13.396	13.576	9.381E-03	87.43	7.597E-03	12.348	14.123	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.275	13.502	13.593	9.382E-03	86.78	7.593E-03	12.355	14.238	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030730
START TIME: 7:34:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (RUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.196 AT GMH	MOMENTUM FLUX (Nt/m2) -2.21E-02	FRICTION VELOCITY (Meters/sec) 1.339E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM.'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.31E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.933E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.79E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.99E 00
Z/L AT GMH -0.220	LAT.HEAT FLUX (Watts/m2) 3.24E 01	SCALING POT. TEMP. (Kelvin) -1.632E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.91E 03
Z/L AT 10 METERS -0.170	SEN.HEAT FLUX (Watts/m2) 2.73E 00	ROUGHNESS LENGTH (Meters) 1.604E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.83E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.31E 01
Z/L AT Z1 -0.311	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.18E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.4[illegible]E-04		N=LnTEMP STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.156	TOTAL HEAT BUDGET FLUX (Watts/m2) -0.27E 01			
MONIN-OBUKHOV LENGTH (Meters) -5.897E 01	BOWEN RATIO (no units) 0.084			
PSI1 AT Z1= 0.584599 PSI1 AT Z2= 0.373418 PSI2 AT Z1= 0.388586 PSI2 AT Z2= 0.243168				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2353	2.4164E 02	5.9045E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.828 of Mean Value.
SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:34:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.172	5.68	10.05	NO DATA	1016.63	13.381	-1.208	-1.110	0.109	0.207

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.270	13.490	13.588	9.382E-03	86.86	7.593E-03	12.355	14.225	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.213 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.238

Z/L AT 10 METERS
-0.183

MONIN-OBUKHOV LENGTH (Meters)
-5.453E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.01E-02

HUMIDITY FLUX (Kg/sec m2)
1.71E-05

LAT.HEAT FLUX (Watts/m2)
4.22E 01

SEN.HEAT FLUX (Watts/m2)
9.76E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.18E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.59E 01

BOWEN RATIO (no units)
0.231

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.801E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.666E-05

SCALING POT.TEMP. (Kelvin)
-4.333E-02

ROUGHNESS LENGTH (Meters)
9.428E-06

DRAG COEF.AT 10 METERS (Dimensionless)
1.005E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.244E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.706E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.804E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2356

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02

WATER LAT HEAT VAP (ITcal./Kg)
5.9043E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.415

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.83

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
249%	249%	252%	252%	201%	6%	54%	453%	126%	126%	75%	146%	252%
175%	175%	46%	46%	103%	6%	13%	149%	23%	69%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:34:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.206 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.231 [0.02]

Z/L AT 10 METERS
0.178 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-5.628E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.73E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.65E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.07E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.37E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.18E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.93E 01 [3.0E+01]

BOWEN RATIO (no units)
0.195 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.730E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
7.760E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.637E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
7.649E-06 [7.0E-05]

DRAG COEF.AT 10 METERS (Meters)
9.691E-04 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
4%	4%	18%	15%	50%	0%	14%	42%	16%	2%	53%	7%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030800
START TIME: 8: 4:50 PST
END TIME: 8:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR PRES 2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.080	5.095	2.901	2.826	5.074	1.042	4.962

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF B
3.755	3.928	2.526	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1CAL (Volts)	DP2CAL (Volts)	WIBECAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 121329	1421 122373	0.183	148	0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT FLUX (No.)5V)	AC FREQ FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.93

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR (Deg.True)	BAR.PRES 1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.123	5.60	10.02	NO DATA	313.7	1016.04	-1.45E 02	13.403	285.340

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.237	5.45	10.05	NO DATA	-0.55	1017.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
14.35	12.303	13.437	13.617	9.359E-03	86.96	7.578E-03	12.322	14.170	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel xM-2/3)
9.20	12.387	13.555	13.645	9.383E 03	86.47	7.593E-03	12.358	14.293	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030800
START TIME: 8: 4:50 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.312 AT GMH	MOMENTUM FLUX (Nt/m2) -2.49E-02	FRICTION VELOCITY (Meters/sec) 1.419E-01	GENERAL FORM DN/DZ= I((N1-N2))/(LN(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM, N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.47E-05	SCALING SPEC HUMD. (Kg/Kg) -8.381E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.73E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE= 2.82E 00
Z/L AT GMH -0.344	LAT.HEAT FLUX (Watts/m2) 3.63E 01	SCALING POT. TEMP. (Kelvin) -2.583E-03	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= -6.45E 03
Z/L AT 10 METERS -0.265	SEN HEAT FLUX (Watts/m2) 4.58E 00	ROUGHNESS LENGTH (Meters) 2.388E-06	N=POT TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.75E-03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= -2.09E 01
Z/L AT Z1 -0.406	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 02	DRAG COEF. AT 10 METERS (Dimensionless) 9.834E-04		N=LnTEMP STRUC.(KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE ET2 SLOPE NO DATA
Z/L AT Z2 -0.244	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.04E 03			
MONIN-OBUKHOV LENGTH (Meters) -3.777E 01	BOWEN RATIO (no units) 0.126			
PSI1 AT Z1= 0.754520 PSI1 AT Z2= 0.502422 PSI2 AT Z1= 0.506193 PSI2 AT Z2= 0.331716				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.93E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2356

AIR SPECIFIC HEAT (Ltcal /kg Kel.) 2.4164E 02

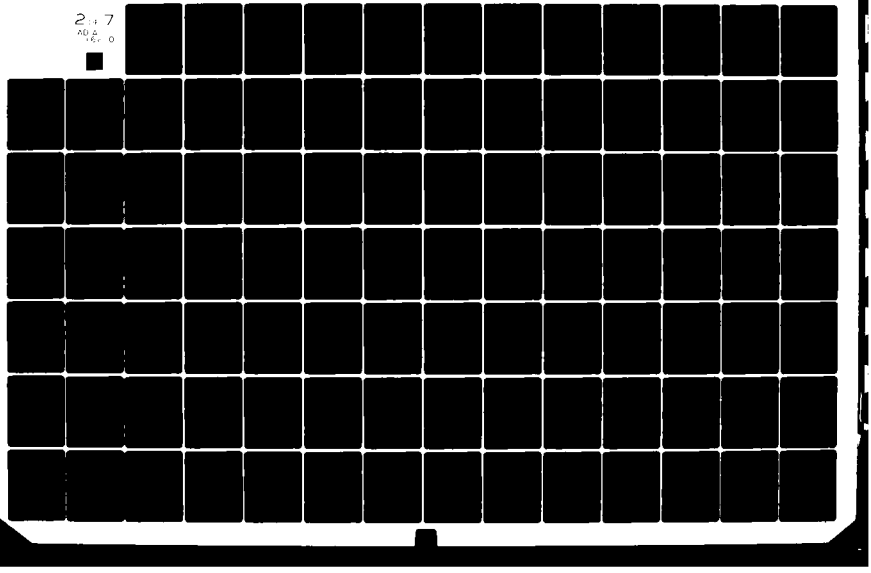
WATER LAT HEAT VAP (Ltcal /kg) 5.9043E 05

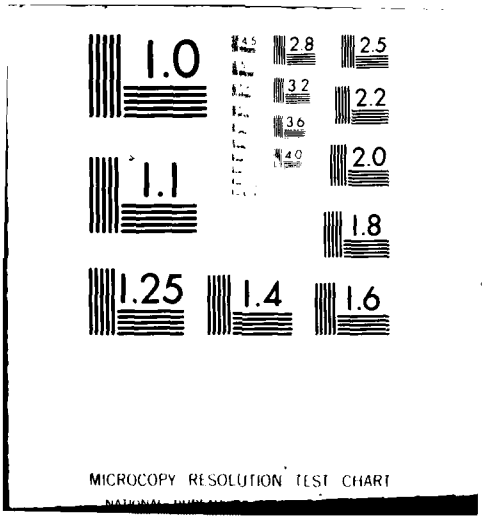
* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART

RUN NUMBER: 7905030800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8: 4:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.223	5.46	10.04	NO DATA	1017.04	13.403	-1.180	-1.082	0.137	0.235

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.321	13.540	13.638	9.380E-03	86.53	7.590E-03	12.354	14.278	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.234 AT GMH	-3.66E-02	1.720E-01	-2.958E-02	1.2358
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	1.66E-05	-7.797E-05	1.657E-05	2.4164E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.261	4.10E 01	-4.325E-02	7.439E-03	5.9040E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.201	9.30E 00	7.424E-06		15.444
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-4.981E 01	-1.45E 02	9.907E-04		1.168E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-9.51E 01			1018.24
	BOWEN RATIO (no units)			
	0.227			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
231%	231%	262%	262%	195%	5%	52%	457%	131%	131%	64%	151%	262%
176%	176%	46%	45%	104%	5%	11%	150%	23%	68%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8: 4:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.268 [0.02] AT GMH	-3.48E-02 [6.0E-02]	1.675E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.63E-05 [8.0E-06]	-7.997E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.297 [0.02]	4.03E 01 [2.0E+01]	-3.166E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.228 [0.02]	7.66E 00 [3.0E+00]	6.307E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-4.378E 01	-1.45E 02 [2.0E+01]	9.761E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-9.68E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.202 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASURMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
15%	14%	12%	7%	32%	0%	6%	28%	11%	4%	29%	5%	6%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030830
START TIME: 8:35:10 PST
END TIME: 9: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.062	5.077	2.651	2.648	5.078	1.779	4.894

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.787	3.914	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121447	1421 122735	0.183	151	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.91

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.145	5.12	9.91	NO DATA	311.4	1016.11	-2.48E 02	13.435	285.369

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.274	5.03	9.94	NO DATA	-0.59	1017.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.325	13.450	13.629	9.292E-03	86.21	7.523E-03	12.234	14.191	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.364	13.581	13.671	9.313E-03	85.62	7.535E-03	12.267	14.328	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030830
START TIME: 8:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.594 AT GMH	MOMENTUM FLUX (Nt/m2) -2.72E-02	FRICTION VELOCITY (Meters/sec) 1.485E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.66E-05	SCALING SPEC.HUMD. (Kg/Kg) -9.043E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.58E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.69E 00
Z/L AT GMH -0.641	LAT.HEAT FLUX (Watts/m2) 4.10E 01	SCALING POT. TEMP. (Kelvin) -4.426E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -5.98E 03
Z/L AT 10 METERS -0.493	SEN.HEAT FLUX (Watts/m2) 8.22E 00	ROUGHNESS LENGTH (Meters) 3.190E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.37E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.27E 01
Z/L AT Z1 -0.705	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.48E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.274E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.454	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.99E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.027E 01	BOWEN RATIO (no units) 0.200			
PSI1 AT Z1= 1.034557 PSI1 AT Z2= 0.726860 PSI2 AT Z1= 0.699256 PSI2 AT Z2= 0.487039				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP (ITcal./Kg)
1.2356	2.4163E 02	5.9041E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.
SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.258	5.04	9.93	NO DATA	1017.11	13.435	-1.177	-1.079	0.131	0.229

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.356	13.565	13.663	9.310E-03	85.69	7.534E-03	12.264	14.312	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.296 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.327

Z/L AT 10 METERS
-0.252

MONIN-OBUKHOV LENGTH (Meters)
-3.972E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.02E-02

HUMIDITY FLUX (Kg/sec m2)
1.59E-05

LAT.HEAT FLUX (Watts/m2)
3.93E 01

SEN.HEAT FLUX (Watts/m2)
8.75E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.48E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.00E 02

BOWEN RATIO (no units)
0.223

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.563E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.232E-05

SCALING POT.TEMP. (Kelvin)
-4.479E-02

ROUGHNESS LENGTH (Meters)
4.347E-06

DRAG COEF.AT 10 METERS (Dimensionless)
9.625E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.442E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.590E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
6.999E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2358

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9038E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.477

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.170E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.31

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
220%	220%	293%	293%	213%	5%	41%	506%	146%	146%	67%	166%	293%
176%	176%	46%	45%	104%	5%	8%	149%	23%	68%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.429 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.467 [0.02]

Z/L AT 10 METERS
-0.359 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.784E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.98E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.60E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.95E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.57E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.48E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.00E 02 [3.0E+01]

BOWEN RATIO (no units)
0.218 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.552E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.489E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-4.444E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
4.109E-06 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
9.93VE-04 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	34%	3%	3%	3%	0%	0%	6%	3%	5%	1%	1%	1%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030900
START TIME: 9: 5:10 PST
END TIME: 9:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.061	5.072	2.306	2.302	5.085	2.351	4.859

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.851	3.885	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 122543	1421 123972	0.183	152	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.4	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.254	4.44	9.90	NO DATA	310.2	1016.21	-3.28E 02	13.497	285.486

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.397	4.37	9.91	NO DATA	-0.61	1017.31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.434	13.559	13.739	9.284E-03	85.54	7.519E-03	12.229	14.296	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.487	13.703	13.793	9.291E-03	84.76	7.520E-03	12.244	14.446	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030900
START TIME: 9: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.073 AT GMH	MOMENTUM FLUX (Nt/m2) -2.68E-02	FRICTION VELOCITY (Meters/sec) 1.473E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.75E-05	SCALING SPEC.HUMD. (Kg/Kg) -9.646E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.37E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.72E 00
Z/L AT GMH -1.143	LAT.HEAT FLUX (Watts/m2) 4.34E 01	SCALING POT. TEMP. (Kelvin) -6.419E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -5.60E 03
Z/L AT 10 METERS -0.880	SEN.HEAT FLUX (Watts/m2) 1.18E 01	ROUGHNESS LENGTH (Meters) 3.028E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.93E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.42E 00
Z/L AT Z1 -1.614	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.28E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.714E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.809	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.73E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.137E 01	BOWEN RATIO (no units) 0.272			
PSI1 AT Z1= 1.336149 PSI1 AT Z2= 0.980540 PSI2 AT Z1= 0.904294 PSI2 AT Z2= 0.662180				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2352	2.4162E 02	5.9034E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.
SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030900
START TIME: 9: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP STRUC. (Kel.xM-2/3)	BAR PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.380	4.38	9.91	NO DATA	1017.21	13.497	-1.117	-1.019	0.189	0.287

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.478	13.685	13.783	9.291E-03	84.85	7.520E-03	12.243	14.429	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY (+=UP, -=DOWN)	FLUX PARAMETERS	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.428 AT GMH	MOMENTUM FLUX (Nt/m2) -2.17E-02	FRICTION VELOCITY (Meters/sec) 1.326E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.760E-02	AIR DENSITY (Kg/m3) 1.2354
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.43E-05	SCALING SPEC.HUMID. (Kg/Kg) 8.660E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.419E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4162E-02
Z/L AT GMH -0.466	LAT.HEAT FLUX (Watts/m2) 3.51E 01	SCALING POT.TEMP. (Kelvin) 4.599E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.101E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9031E 05
Z/L AT 10 METERS -0.359	SEN.HEAT FLUX (Watts/m2) 7.62E 00	ROUGHNESS LENGTH (Meters) 1.501E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.541
MONIN-OBUKHOV LENGTH (Meters) -2.788E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.28E 02	DRAG COEF.AT 10 METERS (Dimensionless) 9.188E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.85E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.41
	BOWEN RATIO (no units) 0.217			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
215%	215%	344%	344%	259%	5%	40%	604%	172%	172%	87%	192%	344%
179%	179%	46%	44%	107%	5%	7%	151%	23%	67%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030900
START TIME: 9: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.721 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.23E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.344E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.46E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.937E-05 [3.0E-05]
Z/L AT GMH -0.774 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.60E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -5.689E-02 [2.0E-02]
Z/L AT 10 METERS -0.595 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.85E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.780E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.680E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.28E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.002E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.83E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.228 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
45%	44%	5%	15%	26%	0%	3%	14%	7%	6%	16%	2%	51%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905030930
START TIME: 9:35:10 PST
END TIME: 10: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.073	5.083	2.499	2.488	5.098	2.755	5.062

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.907	3.888	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123392	1421 124722	0.183	152	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.339	4.82	9.98	NO DATA		317.1	1016.41	-3.84E 02	13.552	285.566

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.472	4.72	9.97	NO DATA	-0.61	1017.51

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.519	13.651	13.831	9.329E-03	85.48	7.556E-03	12.291	14.379	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.562	13.784	13.874	9.333E-03	84.72	7.554E-03	12.302	14.521	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905030930
START TIME: 9:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.742 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.796

Z/L AT 10 METERS
-0.613

Z/L AT Z1
-1.124

Z/L AT Z2
-0.564

MONIN-OBUKHOV LENGTH (Meters)
-1.632E 01

PSI1 AT Z1= 1.143179
PSI1 AT Z2= 0.817013
PSI2 AT Z1= 0.773507
PSI2 AT Z2= 0.549431

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.66E-02

HUMIDITY FLUX (Kg/sec m2)
1.68E-05

LAT.HEAT FLUX (Watts/m2)
4.15E 01

SEN.HEAT FLUX (Watts/m2)
9.20E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.84E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.34E 02

BOWEN RATIO (no units)
0.222

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.467E-01

SCALING SPEC.HUMD. (Kg/Kg)
-9.273E-05

SCALING POT. TEMP. (Kelvin)
-5.019E-02

ROUGHNESS LENGTH (Meters)
2.961E-06

DRAG COEF. AT 10 METERS (Dimensionless)
1.304E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.49E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.83E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.73E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -5.83E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -1.08E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2351

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9030E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.
SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905030930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.456	4.73	9.97	NO DATA	1017.42	13.552	-1.096	-0.998	0.216	0.314

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.554	13.768	13.866	9.332E-03	84.81	7.555E-03	12.301	14.504	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.335 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.368

Z/L AT 10 METERS
-0.284

MONIN-OBUKHOV LENGTH (Meters)
-3.526E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.61E-02

HUMIDITY FLUX (Kg/sec m2)
1.54E-05

LAT.HEAT FLUX (Watts/m2)
3.80E 01

SEN.HEAT FLUX (Watts/m2)
7.93E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.84E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.38E 02

BOWEN RATIO (no units)
0.289

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.453E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.554E-05

SCALING POT.TEMP. (Kelvin)
-4.366E-02

ROUGHNESS LENGTH (Meters)
2.786E-06

DRAG COEF.AT 10 METERS (Dimensionless)
9.425E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.112E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.536E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
6.346E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2353

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9027E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.600

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.179E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.62

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
218%	218%	309%	309%	227%	5%	30%	536%	154%	154%	73%	174%	309%
180%	180%	46%	44%	108%	5%	6%	152%	23%	67%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905030930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.519 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.562 [0.02]

Z/L AT 10 METERS
-0.432 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.313E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.62E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.55E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.84E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.34E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.84E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.38E 02 [3.0E+01]

BOWEN RATIO (no units)
0.212 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.455E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.772E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-4.786E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.821E-06 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
9.93?E-04 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
39%	38%	1%	6%	8%	0%	1%	3%	1%	4%	7%	0%	28%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031000
START TIME: 10: 5:10 PST
END TIME: 10:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.095	5.103	3.257	3.212	5.188	2.735	5.008

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.951	3.896	2.532	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123920	1421 125181		0.183	151	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.),005V)	B(No.),005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.392	6.29	10.11	NO DATA	315.3	1016.57	-3.81E 02	13.595	285.615

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.518	6.06	10.09	NO DATA	-0.59	1017.67

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.572	13.716	13.895	9.412E-03	85.95	7.624E-03	12.403	14.431	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.608	13.841	13.931	9.407E-03	85.14	7.615E-03	12.403	14.567	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031000
START TIME: 10: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.216 AT GMH	-4.60E-02	1.929E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.91E-05	-8.022E-05	DWS/DZ= 2.53E-02	PSI=PSI1 WS SLOPE= 2.07E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.242	4.72E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-3.644E-02	Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.74E 03
-0.186	8.78E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.341	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.319E-05	Z=HEIGHT (Meters) DPT/DZ= -4.05E-03	Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.48E 01
Z/L AT Z2	-3.81E 02			
-0.171		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.273E-03		
-5.380E 01	-3.25E 02			
PSI1 AT Z1= 0.617436	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.397833	0.186			
PSI2 AT Z1= 0.411239				
PSI2 AT Z2= 0.259841				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal /Kg)
1.2350	2.4165E 02	5.9027E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031000
START TIME: 10: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEORDLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.503	6.09	10.09	NO DATA	1017.57	13.595	-1.092	-0.994	0.231	0.329

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.601	13.826	13.924	9.408E-03	85.24	7.616E-03	12.403	14.551	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.159 AT GMH	-4.72E-02	1.955E-01	-3.821E-02	1.2353
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	1.94E-05	-8.034E-05	1.940E-05	2.4165E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.181	4.79E 01	-3.870E-02	7.566E-03	5.9024E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.139	9.46E 00	1.404E-05		15.646
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-7.198E 01	-3.81E 02	1.032E-03		1.182E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-3.24E 02			1018.77
	BOWEN RATIO (no units)			
	0.197			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
174%	174%	191%	215%	137%	5%	24%	351%	95%	119%	41%	115%	191%
180%	180%	46%	45%	108%	5%	7%	153%	23%	68%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031000
START TIME: 10: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEORDLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.188 [0.02] AT GMH	-4.70E-02 [6.0E-02]	1.950E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.94E-05 [8.0E-06]	-8.030E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.212 [0.02]	4.78E 01 [2.0E+01]	-3.698E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.163 [0.02]	9.16E 00 [3.0E+00]	1.381E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-6.142E 01	-3.81E 02 [2.0E+01]	1.074E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-3.24E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.194 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
15%	14%	1%	1%	4%	0%	0%	3%	1%	0%	3%	1%	13%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031030
START TIME: 10:35:10 PST
END TIME: 11: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.136	5.144	3.726	3.652	5.116	3.202	5.109

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.997	3.886	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124529	1421 125798	0.183	148	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg,True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.453	7.18	10.35	NO DATA	318.7	1016.69	-4.46E 02	13.639	285.676

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.580	6.86	10.34	NO DATA	-0.56	1017.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.633	13.798	13.978	9.564E-03	87.00	7.748E-03	12.606	14.490	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.670	13.925	14.015	9.564E-03	86.22	7.744E-03	12.612	14.627	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031030
START TIME: 10:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.112 AT GMH	MOMENTUM FLUX (Nt/m2) -7.27E-02	FRICTION VELOCITY (Meters/sec) 2.427E-01	GENERAL FORM:DN/DZ= I(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.24E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.461E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.56E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.65E 00
Z/L AT GMH -0.129	LAT.HEAT FLUX (Watts/m2) 5.53E 01	SCALING POT. TEMP. (Kelvin) -3.480E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.24E 03
Z/L AT 10 METERS -0.100	SEN.HEAT FLUX (Watts/m2) 1.06E 01	ROUGHNESS LENGTH (Meters) 3.577E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.16E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.55E 01
Z/L AT Z1 -0.183	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.46E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.482E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.092	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.81E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.004E 02	BOWEN RATIO (no units) 0.191			
PSI1 AT Z1= 0.416366 PSI1 AT Z2= 0.252809 PSI2 AT Z1= 0.272530 PSI2 AT Z2= 0.161678				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2348	2.4167E 02	5.9024E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.565	6.90	10.34	NO DATA	1017.69	13.639	-1.075	-0.977	0.271	0.369

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.663	13.910	14.008	9.564E-03	86.32	7.744E-03	12.612	14.611	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE E. AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.107 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.124

Z/L AT 10 METERS
-0.096

MONIN-OBUKHOV LENGTH (Meters)
-1.046E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.39E-02

HUMIDITY FLUX (Kg/sec m2)
2.09E-05

LAT.HEAT FLUX (Watts/m2)
5.16E 01

SEN.HEAT FLUX (Watts/m2)
1.03E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.46E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.85E 02

BOWEN RATIO (no units)
0.199

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.275E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.436E-05

SCALING POT.TEMP. (Kelvin)
-3.606E-02

ROUGHNESS LENGTH (Meters)
2.742E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.086E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.173E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.089E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.202E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2350

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9021E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.693

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.186E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.89

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
144%	144%	147%	185%	107%	5%	21%	292%	73%	112%	33%	93%	147%
181%	181%	46%	45%	109%	5%	7%	155%	23%	68%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.110 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.127 [0.02]

Z/L AT 10 METERS
-0.098 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.022E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.60E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.12E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.23E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.04E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.46E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.84E 02 [3.0E+01]

BOWEN RATIO (no units)
0.196 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.311E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.445E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.505E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.005E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.120E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
2%	2%	8%	4%	1%	0%	1%	2%	4%	0%	2%	7%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031100
START TIME: 11: 5:10 PST
END TIME: 11:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.135	5.142	3.950	3.848	5.110	3.270	5.187

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.050	5.982	2.532	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125917	1401 124249	0.199	103	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.Scans)	ERROR COUNT (No.Scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.292	7.61	10.34	NO DATA	321.3	1016.61	-4.56E 02	13.662	285.518

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.425	7.20	10.33	NO DATA	-0.51	1017.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.472	13.636	13.816	9.565E-03	87.89	7.745E-03	12.600	14.336	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.515	13.768	13.858	9.550E-03	87.01	7.735E-03	12.598	14.478	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031100
START TIME: 11: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.078 AT GMH	MOMENTUM FLUX (Nt/m2) -1.09E-01	FRICTION VELOCITY (Meters/sec) 2.975E-01	GENERAL FORM:DN/DZ= f(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= f(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.65E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.210E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.60E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.34E 00
Z/L AT GMH -0.093	LAT.HEAT FLUX (Watts/m2) 6.55E 01	SCALING POT. TEMP. (Kelvin) -3.923E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.50E 03
Z/L AT 10 METERS -0.071	SEN.HEAT FLUX (Watts/m2) 1.46E 01	ROUGHNESS LENGTH (Meters) 7.796E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.85E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.3HE 01
Z/L AT Z1 -0.131	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.56E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.75E-03		N=LnTEMP.STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.066	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.76E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.403E 02	BOWEN RATIO (no units) 0.224			
PSI1 AT Z1= 0.329508 PSI1 AT Z2= 0.193978 PSI2 AT Z1= 0.213307 PSI2 AT Z2= 0.120673				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2354

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9032E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031100 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 11: 5:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.409	7.25	10.33	NO DATA	1017.61	13.662	-1.253	-1.155	0.090	0.188

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.507	13.752	13.050	9.560E-03	87.12	7.737E-03	12.599	14.462	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.106 AT GMH	MOMENTUM FLUX (Nt/m2) -7.20E-02	FRICTION VELOCITY (Meters/sec) 2.414E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.828E-02	AIR DENSITY (Kg/m3) 1.2356
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.21E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.421E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.214E-05	AIR SPECIFIC HEAT (ITcal /Kg Kel) 2.416?E 02
Z/L AT GMH -0.123	LAT.HEAT FLUX (Watts/m2) 5.47E 01	SCALING POT.TEMP. (Kelvin) -4.020E-02	WITH POT.TEMPERATURE (Meter Kel /sec) 9.705E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9030E 05
Z/L AT 10 METERS -0.095	SEN.HEAT FLUX (Watts/m2) 1.21E 01	ROUGHNESS LENGTH (Meters) 3.500E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.715
MONIN-OBUKHOV LENGTH (Meters) -1.057E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.56E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.109E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.187E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.89E 02			BAR.PRES.AT WT LEVEL (Millibar) 018.81
	BOWEN RATIO (no units) 0.222			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
119%	119%	118%	168%	86%	5%	21%	254%	59%	109%	27%	79%	118%
173%	173%	46%	45%	101%	5%	7%	147%	23%	68%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041100 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 11: 5:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.089 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -8.25E-02 (6.0E-04)	FRICTION VELOCITY (Meters/sec) 2.572E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.31E 05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.339E-05 (3.0E 05)
Z/L AT GMH -0.105 (0.02)	LAT.HEAT FLUX (Watts/m2) 5.70E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -3.940E-02 (2.0E-02)
Z/L AT 10 METERS -0.081 (0.02)	SEN.HEAT FLUX (Watts/m2) 1.35E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 5.015E-05 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -1.238E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.56E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.3[illegible] (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.86E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.222 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
16%	15%	25%	11%	9%	0%	2%	0%	12%	1%	1%	37%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031130
START TIME: 11:35:10 PST
END TIME: 12: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.285	0.001	0.001	5.122	5.131	3.752	3.696	5.088	5.974	5.134

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.092	3.881	2.542	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1CC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123650	1421 125170	0.183	141	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.365	7.23	10.27	NO DATA	319.6	1016.26	-8.33E 02	13.732	285.601

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.517	6.94	10.26	NO DATA	-0.44	1017.36

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.545	13.703	13.882	9.509E-03	87.01	7.705E-03	12.530	14.401	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.607	13.855	13.945	9.510E-03	86.10	7.701E-03	12.538	14.561	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031130
START TIME: 11:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.227 AT GMH	MOMENTUM FLUX (Nt/m2) -7.64E-02	FRICTION VELOCITY (Meters/sec) 2.487E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.48E-05	SCALING SPEC.HUMD. (Kg/Kg) -8.069E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.23E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.61E 00
Z/L AT GMH -0.253	LAT.HEAT FLUX (Watts/m2) 6.12E 01	SCALING POT. TEMP. (Kelvin) -6.285E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.70E 03
Z/L AT 10 METERS -0.195	SEN.HEAT FLUX (Watts/m2) 1.95E 01	ROUGHNESS LENGTH (Meters) 3.943E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -6.95E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.60E 00
Z/L AT Z1 -0.158	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.33E 02	DRAG COFF. AT 10 METERS (Dimensionless) 1.532E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.179	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.52E 02			
MONIN-OBUKHOV LENGTH (Meters) -5.132E 01	BOWEN RATIO (no units) 0.319			
PSI1 AT Z1= 0.634722 PSI AT Z2= 0.410793 PSI2 AT Z1= 0.423212 PSI2 AT Z2= 0.260712				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2346

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 1.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.902BE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .001 -3 Kg/Kg.

* CONTINUED ON NEXT PAGE

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* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V POT WT TEMP (Kelvin)
12.499	6.98	10.26	NO DATA	1017.26	13.732	-1.234	-1.136	0.104	0.202

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.597	13.836	13.934	9.510E-03	86.21	7.701E-03	12.537	14.542	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.117 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.135

Z/L AT 10 METERS
-0.104

MONIN-OBUKHOV LENGTH (Meters)
-9.609E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.56E-02

HUMIDITY FLUX (Kg/sec m2)
2.22E-05

LAT.HEAT FLUX (Watts/m2)
5.49E 01

SEN.HEAT FLUX (Watts/m2)
1.16E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.33E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.67E 02

BOWEN RATIO (no units)
0.212

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.305E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.800E-05

SCALING POT.TEMP. (Kelvin)
-4.031E-02

ROUGHNESS LENGTH (Meters)
2.898E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.091E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.313E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.220E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.292E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2348

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9025E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.782

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.192E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.46

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
158%	150%	171%	202%	115%	5%	15%	318%	85%	117%	30%	105%	171%
174%	174%	46%	45%	102%	5%	6%	147%	23%	68%	125%	43%	40%

* CONTINUED BELOW

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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY *INDICATED IN ( )*:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.176 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.199 [0.02]

Z/L AT 10 METERS
-0.153 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-6.542E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.79E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.27E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.60E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.53E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.33E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.63E 02 [3.0E+01]

BOWEN RATIO (no units)
0.245 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.344E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.899E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-5.851E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.201E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.174E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COEF.
31%	30%	9%	7%	26%	0%	1%	23%	4%	2%	23%	9%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031200
START TIME: 12: 5:10 PST
END TIME: 12:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.139	5.145	3.714	3.666	5.078	6.108	5.069

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.203	3.858	2.532	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124553	1421 126160	0.183	135	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.455	7.16	10.37	NO DATA	317.3	1016.11	-8.52E 02	13.840	285.696

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.616	6.89	10.34	NO DATA	-0.37	1017.20

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.635	13.802	13.982	9.570E-03	87.09	7.757E-03	12.614	14.484	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.706	13.962	14.052	9.560E-03	86.04	7.745E-03	12.608	14.654	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031200
START TIME: 12: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.300 AT GMH	-7.34E-02	2.439E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.00E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	2.51E-05	-8.340E-05		WS SLOPE= 1.64E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.331	6.20E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-7.411E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.254	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -6.48E 03
Z/L AT Z1	2.26E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.467		3.645E-05	DPT/DZ= -7.92E-03	PSI=PSI2
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			PTK SLOPE= -7.29E 00
-0.234	-8.52E 02			
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
-3.931E 01	-7.67E 02	1.507E-03		PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.738240	BOWEN RATIO			
PSI1 AT Z2= 0.489794	(no units)			
PSI2 AT Z1= 0.494920	0.364			
PSI2 AT Z2= 0.323008				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2340

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9022E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.597	6.92	10.35	NO DATA	1017.11	13.840	-1.243	-1.145	0.103	0.201

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.695	13.943	14.041	9.561E-03	86.16	7.747E-03	12.609	14.634	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.121 AT GMH	MOMENTUM FLUX (Nt/m2) -6.43E-02	FRICTION VELOCITY (Meters/sec) 2.283F-01	WITH LONG. VELOCITY (Meter2/sec2) -5.211E-02	AIR DENSITY (Kg/m3) 1.2342
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.23E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.902E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.226E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02
Z/L AT GMH -0.139	LAT.HEAT FLUX (Watts/m2) 5.50E 01	SCALING POT.TEMP. (Kelvin) -4.071E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.294E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -0.107	SEN.HEAT FLUX (Watts/m2) 1.16E 01	ROUGHNESS LENGTH (Meters) 2.783E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.890
MONIN-OBUKHOV LENGTH (Meters) -9.334E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.52E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.087E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.200E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.85E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.31
	BOWEN RATIO (no units) 0.211			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
157%	157%	188%	215%	126%	5%	15%	341%	94%	121%	32%	114%	188%
174%	174%	46%	44%	102%	5%	6%	146%	23%	67%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.215 [0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -6.61E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.313E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.27E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.059E-05 [3.0E-05]
Z/L AT GMH -0.240 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.62E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -6.727E-02 [2.0E-02]
Z/L AT 10 METERS -0.184 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.65E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.019E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -5.422E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.52E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.161E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.80E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.257 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
42%	40%	8%	7%	33%	0%	1%	32%	4%	3%	29%	8%	22%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031230
START TIME: 12:35:10 PST
END TIME: 13: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.133	5.138	3.707	3.637	5.075	5.078	5.132

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.198	3.900	2.542	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124389	1421 125911	0.183	130	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED IN ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.439	7.15	10.33	NO DATA	319.5	1016.07	-7.0BE 02	13.835	285.675

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.591	6.84	10.30	NO DATA	-0.29	1017.17

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.619	13.783	13.962	9.546E-03	86.96	7.738E-03	12.582	14.468	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.681	13.933	14.023	9.534E-03	85.94	7.724E-03	12.573	14.629	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031230
START TIME: 12:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.200 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.225

Z/L AT 10 METERS
-0.173

Z/L AT Z1
-0.318

Z/L AT Z2
-0.159

MONIN-OBUKHOV LENGTH (Meters)
-5.772E 01

PSI1 AT Z1= 0.598145
PSI1 AT Z2= 0.378999
PSI2 AT Z1= 0.393729
PSI2 AT Z2= 0.246973

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.28E-02

HUMIDITY FLUX (Kg/sec m2)
2.54E-05

LAT.HEAT FLUX (Watts/m2)
6.2HE 01

SEN.HEAT FLUX (Watts/m2)
2.01E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-7.08E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.25E 02

BOWEN RATIO (no units)
0.320

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.590E-01

SCALING SPEC.HUMD. (Kg/Kg)
-7.954E-05

SCALING POT. TEMP. (Kelvin)
-6.218E-02

ROUGHNESS LENGTH (Meters)
4.621E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.707E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.44E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -6.97E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.54E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -6.80E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -8.69E 00

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2341

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal /Kg)
5.9024E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.573	6.88	10.31	NO DATA	1017.07	13.835	-1.263	-1.165	0.080	0.178

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.671	13.915	14.013	9.536E-03	86.06	7.726E-03	12.574	14.610	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.125 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.144

Z/L AT 10 METERS
-0.111

MONIN-OBUKHOV LENGTH (Meters)
-9.028E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.32E-02

HUMIDITY FLUX (Kg/sec m2)
2.23E-05

LAT.HEAT FLUX (Watts/m2)
5.51E 01

SEN.HEAT FLUX (Watts/m2)
1.17E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-7.08E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.41E 02

BOWEN RATIO (no units)
0.212

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.263E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.985E-05

SCALING POT.TEMP. (Kelvin)
-4.138E-02

ROUGHNESS LENGTH (Meters)
2.686E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.084E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.123E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.231E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.367E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2343

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9020E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.885

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.199E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.27

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
140%	140%	156%	193%	106%	5%	16%	[illegible]%	78%	115%	28%	98%	156%
173%	173%	46%	44%	101%	5%	6%	145%	23%	67%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.167 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.189 [0.02]

Z/L AT 10 METERS
-0.145 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-6.888E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.77E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.29E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.66E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.58E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-7.08E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.37E 02 [3.0E+01]

BOWEN RATIO (no units)
0.247 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.338E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.973E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-5.839E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.276E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.211E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
23%	22%	16%	8%	27%	0%	1%	23%	8%	0%	21%	17%	30%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031300
START TIME: 13: 5:10 PST
END TIME: 13:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.089	5.094	3.208	3.155	5.068	3.706	5.270

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.164	3.888	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	?	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP..	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124844	1421 126146	0.199	88	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.484	6.19	10.07	NO DATA	324.2	1015.95	-5.17E 02	13.802	285.710

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.615	5.93	10.04	NO DATA	-0.20	1017.05

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.664	13.805	13.984	9.375E-03	85.18	7.601E-03	12.359	14.510	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.705	13.933	14.023	9.364E-03	84.30	7.587E-03	12.350	14.650	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031300
START TIME: 13: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.188 AT GMH	MOMENTUM FLUX (Nt/m2) -5.59E-02	FRICTION VELOCITY (Meters/sec) 2.128E-01	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.07E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.896E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.86E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.88E 00
Z/L AT GMH -0.212	LAT.HEAT FLUX (Watts/m2) 5.12E 01	SCALING POT. TEMP. (Kelvin) -3.999E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.85E 03
Z/L AT 10 METERS -0.163	SEN.HEAT FLUX (Watts/m2) 1.06E 01	ROUGHNESS LENGTH (Meters) 2.062E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.52E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.35E 01
Z/L AT Z1 -0.299	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.17E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.604E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.150	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.55E 02			
MONIN-OBUKHOV LENGTH (Meters) -6.135E 01	BOWEN RATIO (no units) 0.207			
PSI1 AT Z1= 0.570767 PSI1 AT Z2= 0.363202 PSI2 AT Z1= 0.378935 PSI2 AT Z2= 0.236203				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2339

AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.4164E 02

WATER LAT.HEAT VAP. (1Cal./Kg) 5.9022E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2- +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.599	5.97	10.04	NO DATA	1016.95	13.882	-1.204	-1.106	0.115	0.213

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.697	13.917	14.015	9.366E-03	84.40	7.589E-03	12.351	14.634	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.183 AT GMH	MOMENTUM FLUX (Nt/m2) -4.50E-02	FRICTION VELOCITY (Meters/sec) 1.909E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.643E-02	AIR DENSITY (Kg/m3) 1.2341
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.05E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.699E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.049E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.207	LAT.HEAT FLUX (Watts/m2) 5.06E 01	SCALING POT.TEMP. (Kelvin) -4.227E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.067E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -0.159	SEN.HEAT FLUX (Watts/m2) 1.01E 01	ROUGHNESS LENGTH (Meters) 1.254E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.849
MONIN-OBUKHOV LENGTH (Meters) -6.286E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.17E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.024E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.197E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.56E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.15
	BOWEN RATIO (no units) 0.199			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
152%	152%	163%	197%	117%	5%	18%	314%	82%	116%	35%	102%	163%
175%	175%	46%	43%	103%	5%	6%	147%	23%	66%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.186 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -4.74E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.957E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.05E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.406E-05 [3.0E-05]
Z/L AT GMH -0.209 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.07E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -4.049E-02 [2.0E-02]
Z/L AT 10 METERS -0.161 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.03E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.494E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -6.204E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.17E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.138E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.56E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.202 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
1%	1%	10%	1%	3%	0%	0%	2%	6%	5%	3%	7%	36%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031330
START TIME: 13:35:10 PST
END TIME: 14: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.057	5.065	3.316	3.251	5.061	2.899	5.215

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.138	3.885	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 135591	1421 126832	0.199	84	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).003V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.559	6.40	9.88	NO DATA	322.3	1015.86	-4.04E 02	13.776	285.701

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.683	6.11	9.87	NO DATA	-0.12	1016.95

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.739	13.863	14.043	9.258E-03	83.73	7.508E-03	12.208	14.580	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.773	13.987	14.077	9.255E-03	82.97	7.501E-03	12.209	14.715	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031330
START TIME: 13:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.128 AT GMH	-6.12E-02	2.228E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.08E-05	-7.565E-05	DWS/DZ= 3.20E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.80E 00
-0.147	5.14E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-3.257E-02	Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.113	9.06E 00			SH SLOPE= -7.15E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.207	SKY AND SOLAR HEAT FLUX (Watts/m2)	2.514E-05	Z=HEIGHT (Meters) DPT/DZ= -3.84E-03	Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT Z2	-4.04E 02			PTK SLOPE= -1.66E 01
-0.104		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.630E-03		Z=HEIGHT (M) Vert.Axis PSI=NONE
-8.851E 01	-3.44E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.452712	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.278169	0.176			
PSI2 AT Z1= 0.297490				
PSI2 AT Z2= 0.178663				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL	PROFILE TUR.SCHMIDT	BULK SEN HEAT	BULK MOISTURE
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2335

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9018E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031330
START TIME: 13:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.668	6.15	9.87	NO DATA	1016.86	13.776	-1.108	-1.010	0.196	0.294

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.766	13.972	14.070	9.256E-03	83.06	7.502E-03	12.209	14.699	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.156 AT GMH	MOMENTUM FLUX (Nt/m2) -4.83E-02	FRICTION VELOCITY (Meters/sec) 1.978E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.911E-02	AIR DENSITY (Kg/m3) 1.2338
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.18E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.950E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.184E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4162E 02
Z/L AT GMH -0.178	LAT.HEAT FLUX (Watts/m2) 5.40E 01	SCALING POT.TEMP. (Kelvin) -3.899E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.712E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9015E 05
Z/L AT 10 METERS -0.137	SEN.HEAT FLUX (Watts/m2) 9.62E 00	ROUGHNESS LENGTH (Meters) 1.483E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.821
MONIN-OBUKHOV LENGTH (Meters) -7.317E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.04E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.036E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.195E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.41E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.06
	BOWEN RATIO (no units) 0.178			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
145%	145%	147%	186%	109%	5%	21%	295%	74%	113%	36%	94%	147%
179%	179%	46%	43%	107%	5%	7%	150%	23%	66%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031330
START TIME: 13:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.140 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.13E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.037E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.16E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.439E-05 [3.0E-05]
Z/L AT GMH -0.161 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.35E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.795E-02 [2.0E-02]
Z/L AT 10 METERS -0.124 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.34E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.808E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -8.092E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.04E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.163E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.41E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.178 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT TEMP	ROUGH LENGTH	DRAG COEF
10%	10%	12%	3%	3%	0%	1%	1%	7%	8%	11%	9%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031400
START TIME: 14: 5:10 PST
END TIME: 14:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.057	5.062	3.389	3.342	5.051	2.857	5.075

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.136	3.841	2.530	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125331	1421 126534	0.183	112	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.533	6.54	9.88	NO DATA	317.6	1015.70	-3.98E 02	13.775	285.753

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.653	6.30	9.85	NO DATA	-0.04	1016.80

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.713	13.837	14.017	9.254E-03	83.84	7.506E-03	12.202	14.553	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.744	13.955	14.045	9.243E-03	83.03	7.491E-03	12.191	14.684	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031400
START TIME: 14: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.163 AT GMH	MOMENTUM FLUX (Nt/m2) -4.63E-02	FRICTION VELOCITY (Meters/sec) 1.938E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.86E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.770E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.67E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.06E 00
Z/L AT GMH -0.185	LAT.HEAT FLUX (Watts/m2) 4.59E 01	SCALING POT. TEMP. (Kelvin) -2.979E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.96E 03
Z/L AT 10 METERS -0.142	SEN.HEAT FLUX (Watts/m2) 7.21E 00	ROUGHNESS LENGTH (Meters) 1.349E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.42E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.81E 01
Z/L AT Z1 -0.761	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.98E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.173E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.131	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.45E 02			
MONIN-OBUKHOV LENGTH (Meters) -7.018E 01	BOWEN RATIO (no units) 0.157			
PSI1 AT Z1= 0.525368 PSI1 AT Z2= 0.330846 PSI2 AT Z1= 0.347554 PSI2 AT Z2= 0.213672				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2335

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9019E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.639	6.33	9.85	NO DATA	1016.70	13.775	-1.136	-1.038	0.166	0.264

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.737	13.941	14.039	9.244E-03	83.12	7.493E-03	12.193	14.669	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (*FRIEHE ET AL,1978*):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.146 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.167

Z/L AT 10 METERS
-0.128

MONIN-OBUKHOV LENGTH (Meters)
-7.785E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.17E-02

HUMIDITY FLUX (Kg/sec m2)
2.25E-05

LAT.HEAT FLUX (Watts/m2)
5.57E 01

SEN.HEAT FLUX (Watts/m2)
1.00E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.98E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.33E 02

BOWEN RATIO (no units)
0.180

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.048E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.926E-05

SCALING POT.TEMP. (Kelvin)
-3.928E-02

ROUGHNESS LENGTH (Meters)
1.738E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.048E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.192E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.255E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.042E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2337

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4162E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9017E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.817

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.194E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.90

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
176%	176%	184%	209%	135%	5%	22%	344%	92%	117%	43%	112%	184%
178%	178%	46%	43%	106%	5%	7%	149%	23%	66%	129%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.155 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.176 [0.02]

Z/L AT 10 METERS
-0.136 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.379E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.06E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.19E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.40E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.79E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.98E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.36E 02 [3.0E+01]

BOWEN RATIO (no units)
0.173 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.026E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.510E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.216E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.630E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.070E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
5%	5%	5%	11%	16%	0%	2%	7%	3%	7%	16%	4%	7%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031430
START TIME: 14:35:10 PST
END TIME: 15: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.972	4.986	3.808	3.712	5.037	2.625	5.124

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.169	3.860	2.530	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIREFAL	WSIEC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125762	1421 126935	0.183	107	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.576	7.34	9.37	NO DATA	319.2	1015.49	-3.66E 02	13.807	285.795

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.693	6.98	9.39	NO DATA	0.04	1016.58

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.756	13.837	14.016	8.943E-03	80.83	7.255E-03	11.793	14.591	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.784	13.956	14.046	8.961E-03	80.31	7.265E-03	11.822	14.720	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031430
START TIME: 14:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.063 AT GMH	MOMENTUM FLUX (Nt/m2) -8.12E-02	FRICTION VELOCITY (Meters/sec) 2.566E-01	GENERAL FORM:DN/DZ= ((N1-N2))/([ln(Z1/Z2)*(Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2) 1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.24E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.077E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.08E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.56E 00
Z/L AT GMH -0.076	LAT.HEAT FLUX (Watts/m2) 5.53E 01	SCALING POT. TEMP. (Kelvin) -2.446E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.64E 03
Z/L AT 10 METERS -0.058	SEN.HEAT FLUX (Watts/m2) 7.83E 00	ROUGHNESS LENGTH (Meters) 4.458E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.08E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.21E 01
Z/L AT Z1 -0.107	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.66E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.577E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.054	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.03E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.717E 02	BOWEN RATIO (no units) 0.141			
PSI1 AT Z1= 0.284072 PSI1 AT Z2= 0.164292 PSI2 AT Z1= 0.182630 PSI2 AT Z2= 1.103241				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2332

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02

WATER LAT.HEAT VAP (ITcal./Kg) 5.9017E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031430
START TIME: 14:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.679	7.02	9.39	NO DATA	1016.49	13.807	-1.128	-1.030	0.134	0.232

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.777	13.942	14.040	8.959E-03	80.38	7.264E-03	11.819	14.704	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.106 AT GMH	MOMENTUM FLUX (Nt/m2) -6.64E-02	FRICTION VELOCITY (Meters/sec) 2.321E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.387E-02	AIR DENSITY (Kg/m3) 1.2334
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.79E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.731E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.786E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.123	LAT.HEAT FLUX (Watts/m2) 6.88E 01	SCALING POT.TEMP. (Kelvin) -3.727E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.651E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9814E 05
Z/L AT 10 METERS -0.095	SEN.HEAT FLUX (Watts/m2) 1.08E 01	ROUGHNESS LENGTH (Meters) 2.981E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.847
MONIN-OBUKHOV LENGTH (Meters) -1.054E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.66E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.093E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.197E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.86E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.69
	BOWEN RATIO (no units) 0.157			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
138%	138%	129%	174%	103%	5%	23%	277%	64%	110%	38%	84%	129%
179%	179%	46%	41%	107%	5%	8%	148%	23%	64%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031430
START TIME: 14:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.082 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.03E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.386E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.68E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.749E-05 [3.0E-05]
Z/L AT GMH -0.096 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.62E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.740E-02 [2.0E-02]
Z/L AT 10 METERS -0.074 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.28E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.480E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.347E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.66E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.20[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.91E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.151 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFFRENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
26%	25%	12%	12%	16%	0%	3%	5%	6%	16%	27%	13%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031500
START TIME: 15: 5:10 PST
END TIME: 15:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PER. D: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.932	4.944	3.633	3.563	5.030	2.380	4.929

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.199	3.854	2.528	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125000	1421 126240	0.183	102	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.500	7.01	9.14	NO DATA	312.6	1015.37	-3.21E 02	13.836	285.722

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.624	6.70	9.14	NO DATA	0.10	1016.47

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.680	13.740	13.920	8.803E-03	79.94	7.140E-03	11.605	14.516	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.714	13.865	13.955	8.812E-03	79.32	7.142E-03	11.621	14.651	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031500
START TIME: 15: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.113 AT GMH	MOMENTUM FLUX (Nt/m2) -6.64E-02	FRICTION VELOCITY (Meters/sec) 2.321E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.14E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.468E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.40E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.72E 00
Z/L AT GMH -0.131	LAT.HEAT FLUX (Watts/m2) 5.28E 01	SCALING POT. TEMP. (Kelvin) -3.203E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.24E 03
Z/L AT 10 METERS -0.100	SEN.HEAT FLUX (Watts/m2) 9.27E 00	ROUGHNESS LENGTH (Meters) 2.982E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.82E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.69E 01
Z/L AT Z1 -0.104	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.21E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.435E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 -0.092	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.59E 02			
MONIN-OBUKHOV LENGTH (Meters) -9.953E 01	BOWEN RATIO (no units) 0.176			
PSI1 AT Z1= 0.418669 PSI1 AT Z2= 0.254404 PSI2 AT Z1= 0.274109 PSI2 AT Z2= 0.162743				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2335
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.4154E 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.9021E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.609	6.74	9.14	NO DATA	1016.37	13.836	-1.227	-1.129	0.014	0.112

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.707	13.850	13.948	8.811E-03	79.40	7.142E-03	11.620	14.635	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.129 AT GMH	-6.02E-02	2.209E-01	-4.880E-02	1.2337
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.82E-05	-1.036E-04	2.824E-05	2.4154E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.149	6.98E 01	-4.074E-02	9.000E-03	5.9018E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.114	1.12E 01	2.424E-05		15.875
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-8.735E 01	-3.21E 02	1.075E-03		1.199E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-2.40E 02			1017.57
	BOWEN RATIO (no units)			
	0.161			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
149%	149%	150%	187%	111%	5%	26%	298%	75%	112%	36%	95%	150%
174%	174%	46%	41%	102%	5%	9%	143%	23%	64%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.120 (0.02) AT GMH	-6.17E-02 (6.0E-02)	2.235E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.70E-05 (8.0E-06)	-9.316E-05 (3.0E-05)
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.139 (0.02)	6.68E 01 (2.0E+01)	-3.396E-02 (2.0E-02)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.107 (0.02)	1.03E 01 (3.0E+00)	2.597E-05 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-9.352E 01	-3.21E 02 (2.0E+01)	1.150E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-2.44E 02 (3.0E+01)	
	BOWEN RATIO (no units)	
	0.166 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
7%	7%	6%	15%	10%	0%	4%	5%	3%	16%	15%	5%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031530
START TIME: 15:35:10 PST
END TIME: 16: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.939	4.951	3.468	3.392	5.027	1.750	5.138

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.214	3.830	2.528	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124781	1421 125916	0.183	99	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(Nc.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS *(INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:*

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.478	6.69	9.18	NO DATA	319.7	1015.33	-2.44E 02	13.851	285.695

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.592	6.39	9.18	NO DATA	0.16	1016.42

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.658	13.722	13.901	8.828E-03	80.29	7.160E-03	11.638	14.495	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.682	13.836	13.926	8.835E-03	79.70	7.161E-03	11.652	14.619	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031530
START TIME: 15:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.080 AT GMH	-5.86E-02	2.180E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.36E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.94E-05	-7.228E-05		WS SLOPE= 1.83E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.095	4.80E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.155E-02		SH SLOPE= -7.48E 03
-0.073	5.86E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.66E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.134	SKY AND SOLAR HEAT FLUX (Watts/m2)	2.292E-05		PTK SLOPE= -2.51E 01
Z/L AT Z2	-2.44E 02			
-0.067		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.408E-03		CT2 SLOPE=NO DATA
-1.367E 02	-1.90E 02			
PSI1 AT Z1= 0.335675	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.198068	0.122			
PSI2 AT Z1= 0.217489				
PSI2 AT Z2= 0.125365				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2335

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9022E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031530
START TIME: 15:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.578	6.43	9.18	NO DATA	1016.33	13.851	-1.273	-1.175	-0.029	0.069

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.676	13.822	13.920	8.835E-03	79.77	7.161E-03	11.650	14.605	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.154 AT GMH	MOMENTUM FLUX (Nt/m2) -5.37E-02	FRICTION VELOCITY (Meters/sec) 2.086E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.351E-02	AIR DENSITY (Kg/m3) 1.2338
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.68E 05	SCALING SPEC.HUMID. (Kg/Kg) -1.042E 04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.681E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4155E 02
Z/L AT GMH -0.176	LAT.HEAT FLUX (Watts/m2) 6.63E 01	SCALING POT.TEMP. (Kelvin) -4.290E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.948E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9020E 05
Z/L AT 10 METERS -0.135	SEN.HEAT FLUX (Watts/m2) 1.12E 01	ROUGHNESS LENGTH (Meters) 1.889E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.890
MONIN-OBUKHOV LENGTH (Meters) -7.397E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.44E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.054E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.200E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.67E 02			BAR.PRES AT WT LEVEL (Millibar) 1017.53
	BOWEN RATIO (no units) 0.169			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
155%	155%	144%	184%	117%	5%	30%	301%	72%	111%	45%	92%	144%
173%	173%	46%	41%	101%	5%	10%	141%	23%	64%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031530
START TIME: 15:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.115 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.49E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.109E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.55E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.259E-05 [3.0E-05]
Z/L AT GMH -0.133 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.30E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.725E-02 [2.0E-02]
Z/L AT 10 METERS -0.103 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.72E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.017E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -9.755E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.44E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.131E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.72E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.154 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
32%	30%	5%	17%	31%	0%	8%	16%	3%	18%	43%	4%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031600
START TIME: 16: 5:10 PST
END TIME: 16:35: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.909	4.915	3.190	3.135	5.026	1.420	5.025

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.202	3.846	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HFIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124669	1421 125780	0.183	96	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.467	6.16	9.80	NO DATA	315.8	1015.32	-1.98E 02	13.839	285.682

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.578	5.92	8.97	NO DATA	0.19	1016.41

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.647	13.695	13.875	8.720E-03	79.36	7.072E-03	11.495	14.484	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.668	13.804	13.894	8.710E-03	78.64	7.059E-03	11.486	14.606	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031600
START TIME: 16: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,--Unstable)
-0.115 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.133

Z/L AT 10 METERS
-0.102

Z/L AT Z1
-0.188

Z/L AT Z2
-0.094

MONIN-OBUKHOV LENGTH
(Meters)
-9.762E 01

PSI1 AT Z1= 0.424181
PSI1 AT Z2= 0.258227
PSI2 AT Z1= 0.277888
PSI2 AT Z2= 0.165298

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-4.10E-02

HUMIDITY FLUX
(Kg/sec m2)
1.68E-05

LAT.HEAT FLUX
(Watts/m2)
4.16E 01

SEN.HEAT FLUX
(Watts/m2)
4.57E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-1.98E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-1.52E 02

BOWEN RATIO
(no units)
0.110

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.824E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-7.484E-05

SCALING POT. TEMP.
(Kelvin)
-2.009E-02

ROUGHNESS LENGTH
(Meters)
1.003E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.194E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.67E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.39E-03

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.19E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.22E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.69E 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2336

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4153E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031600
START TIME: 16: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.565	5.95	8.97	NO DATA	1016.32	13.839	-1.274	-1.176	-0.048	0.050

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.663	13.791	13.889	8.712E-03	78.73	7.060E-03	11.487	14.592	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) -0.194 AT GMH	MOMENTUM FLUX (Nt/m2) -4.46E-02	FRICTION VELOCITY (Meters/sec) 1.901E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.614E-02	AIR DENSITY (Kg/m3) 1.2339
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.57E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.096E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.571E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.219	LAT.HEAT FLUX (Watts/m2) 6.35E 01	SCALING POT.TEMP. (Kelvin) -4.436E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.433E-03	WATER LAT.HEAT VAP (ITcal./Kg) 5.9021E 05
Z/L AT 10 METERS -0.168	SE[illegible] FLUX (Wat[illegible]2) 1.05E 1	ROUGHNESS LENGTH (Meters) 1.231E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.877
MONIN-OBUKHOV LENGTH (Meters) -5.942E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.98E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.022E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.199E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.24E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.52
	BOWEN RATIO (no units) 0.166			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
179%	179%	171%	200%	138%	5%	35%	338%	86%	115%	52%	106%	171%
173%	173%	46%	40%	101%	5%	11%	141%	23%	63%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031600
START TIME: 16: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) -0.155 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -4.38E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.885E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.42E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.725E-05 [3.0E-05]
Z/L AT GMH -0.177 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.99E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.729E-02 [2.0E-02]
Z/L AT 10 METERS -0.136 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.01E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.165E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.356E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.98E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.055E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.31E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.149 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
26%	24%	3%	22%	38%	0%	12%	20%	2%	19%	48%	2%	10%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031630
START TIME: 16:35:10 PST
END TIME: 17: 5: 0 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.883	4.898	3.692	3.612	5.023	1.125	4.948

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.157	3.810	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122946	1421 124111	0.183	95	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.295	7.12	8.84	NO DATA	313.2	1015.26	-1.57E 02	13.795	285.513

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.411	6.79	8.86	NO DATA	0.21	1016.36

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.474	13.509	13.689	8.636E-03	79.45	6.999E-03	11.377	14.320	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.501	13.628	13.718	8.654E-03	78.95	7.009E-03	11.405	14.446	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031630
START TIME: 16:35:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.077 AT GMH	MOMENTUM FLUX (Nt/m2) -6.84E-02	FRICTION VELOCITY (Meters/sec) 2.354E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.09E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.198E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.65E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.70E 00
Z/L AT GMH -0.091	LAT.HEAT FLUX (Watts/m2) 5.17E 01	SCALING POT. TEMP. (Kelvin) -2.419E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.51E 03
Z/L AT 10 METERS -0.070	SEN.HEAT FLUX (Watts/m2) 7.11E 00	ROUGHNESS LENGTH (Meters) 3.159E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.00E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.23E 01
Z/L AT Z1 -0.129	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.57E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.423E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.064	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.81E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.426E 02	BOWEN RATIO (no units) 0.138			
PSI1 AT Z1= 0.325578 PSI1 AT Z2= 0.191380 PSI2 AT Z1= 0.210644 PSI2 AT Z2= 0.120965				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2343

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (1Tcal./Kg)
5.9033E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.397	6.83	8.86	NO DATA	1016.27	13.795	-1.398	-1.300	-0.181	-0.083

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.495	13.614	13.712	8.652E-03	79.01	7.888E-03	11.402	14.431	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.140 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.160

Z/L AT 10 METERS
-0.123

MONIN-OBUKHOV LENGTH (Meters)
-8.128E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.23E-02

HUMIDITY FLUX (Kg/sec m2)
2.98E 05

LAT.HEAT FLUX (Watts/m2)
7.36E 01

SEN.HEAT FLUX (Watts/m2)
1.27E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.57E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.06E 01

BOWEN RATIO (no units)
0.172

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.246E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.074E-04

SCALING POT.TEMP. (Kelvin)
-4.528E-02

ROUGHNESS LENGTH (Meters)
2.600E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.081E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.045E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.978E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.017E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2346

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9030E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.831

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.195E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.47

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
149%	149%	141%	181%	111%	5%	44%	292%	70%	111%	41%	90%	141%
168%	168%	46%	40%	96%	5%	14%	137%	23%	63%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:35:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.106 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.123 [0.02]

Z/L AT 10 METERS
-0.095 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.053E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.38E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.82E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.96E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.01E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.57E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.72E 01 [3.0E+01]

BOWEN RATIO (no units)
0.161 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.273E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-9.455E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.954E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.781E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.157E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
36%	28%	5%	19%	28%	0%	20%	12%	3%	19%	46%	5%	17%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031700
START TIME: 17: 5:10 PST
END TIME: 17:35:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.204	0.000	0.000	4.900	4.912	3.991	3.893	5.017	1.094	4.961

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.121	3.809	2.540	0.000	0.000	0.000	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123435	1421 124580	0.183	95	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.344	7.69	8.95	NO DATA	313.7	1015.17	-1.53E 02	13.761	285.561

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.458	7.31	8.95	NO DATA	0.21	1016.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.523	13.567	13.747	8.693E-03	79.73	7.047E-03	11.453	14.365	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.548	13.682	13.773	8.703E-03	79.18	7.051E-03	11.472	14.489	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031700
START TIME: 17: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.051 AT GMH	MOMENTUM FLUX (Nt/m2) -8.58E-02	FRICTION VELOCITY (Meters/sec) 2.637E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.26E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.960E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.30E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.52E 00
Z/L AT GMH -0.062	LAT.HEAT FLUX (Watts/m2) 5.60E 01	SCALING POT. TEMP. (Kelvin) -2.160E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.77E 03
Z/L AT 10 METERS -0.048	SEN.HEAT FLUX (Watts/m2) 7.11E 00	ROUGHNESS LENGTH (Meters) 4.952E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.77E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.50E 01
Z/L AT Z1 -0.088	SKY AND SOLAR HEAT FLUX (Watts/m2, -1.53E 02	DRAG Coe. AT 10 METERS (Dimensionless) 1.497E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.044	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.96E 01			
MONIN-OBUKHOV LENGTH (Meters) -2.094E 02	BOWEN RATIO (no units) 0.127			
PSI1 AT Z1= 0.244114 PSI1 AT Z2= 0.138861 PSI2 AT Z1= 0.155876 PSI2 AT Z2= 0.086749				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2340

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4152E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9030E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031700
START TIME: 17: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.444	7.35	8.95	NO DATA	1016.17	13.761	-1.316	-1.218	-0.092	0.006

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.542	13.669	13.767	8.702E-03	79.24	7.051E-03	11.470	14.475	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.106 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.123

Z/L AT 10 METERS
-0.095

MONIN-OBUKHOV LENGTH (Meters)
-1.054E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.45E-02

HUMIDITY FLUX (Kg/sec m2)
3.13E-05

LAT.HEAT FLUX (Watts/m2)
7.74E 01

SEN.HEAT FLUX (Watts/m2)
1.28E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.53E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.25E 01

BOWEN RATIO (no units)
0.165

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.456E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.033E-04

SCAL. IG POT.TEMP. (Kelvin)
-4.170E-02

ROUGHNESS LENGTH (Meters)
3.750E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.115E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-6.032E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.131E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.024E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2342

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4152E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9028E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.794

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.193E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.37

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES, ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
141%	141%	127%	173%	105%	5%	45%	278%	64%	109%	41%	84%	127%
171%	171%	46%	40%	99%	5%	14%	139%	23%	63%	122%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031700
START TIME: 17: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.076 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.090 [0.02]

Z/L AT 10 METERS
-0.069 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.44BE 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.75E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.97E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.33E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.00E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.53E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.90E 01 [3.0E+01]

BOWEN RATIO (no units)
0.152 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.504E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-9.092E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.670E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
4.158E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.207E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
36%	34%	8%	17%	28%	0%	22%	13%	4%	19%	42%	11%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031730
START TIME: 17:35:20 PST
END TIME: 18: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.911	4.920	4.069	3.978	5.012	0.821	4.926

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.079	3.810	2.538	0.001	0.001	0.001	0.001	6.205

DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTRFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123345	1421 124468	0.183	95	-0.009	0.000	0.000	0.992	0.952

SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.81

OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.335	7.84	9.01	NO DATA	312.5	1015.10	-1.14E 02	13.719	285.551

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.447	7.46	9.00	NO DATA	0.20	1016.20

CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.514	13.563	13.743	8.732E-03	80.14	7.080E-03	11.505	14.356	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.537	13.675	13.765	8.730E-03	79.48	7.073E-03	11.507	14.478	NO DATA

CONTINUED BELOW

RUN NUMBER: 7905031730
START TIME: 17:35:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.048 AT GMH	-8.15E-02	2.570E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.20E-05	-6.932E-05	DWS/DZ= 4.22E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.56E 00
-0.059	5.43E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.957E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.045	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -7.80E 03
Z/L AT Z1	6.28E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.083	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.484E-05	DPT/DZ= -2.52E-03	PSI=PSI2
Z/L AT Z2	-1.14E 02			PTK SLOPE= -2.74E 01
-0.042		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.303E-03		Z=HEIGHT (M) Vert.Axis
-2.207E 02	-5.39E 01			PSI=NONE
PSI1 AT Z1= 0.234370	BOWEN RATIO			CT2 SLOPE=NO DATA
PSI1 AT Z2= 0.132761	(no units)			
PSI2 AT Z1= 0.149389	0.116			
PSI2 AT Z2= 0.082817				

GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (1Tcal./Kg Kel.)	WATER LAT.HEAT VAP. (1Tcal./Kg)
1.2339	2.4153E 02	5.9031E 05

GENERAL NOTES:

Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031730
START TIME: 17:35:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.433	7.51	9.00	NO DATA	1016.10	13.719	-1.286	-1.188	-0.058	0.040

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.531	13.662	13.760	8.731E-03	79.56	7.074E-03	11.507	14.463	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.097 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.114

Z/L AT 10 METERS
-0.088

MONIN-OBUKHOV LENGTH
(Meters)
-1.142E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.83E-02

HUMIDITY FLUX
(Kg/sec m2)
3.14E-05

LAT.HEAT FLUX
(Watts/m2)
7.76E 01

SEN.HEAT FLUX
(Watts/m2)
1.27E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-1.14E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-2.42E 01

BOWEN RATIO
(no units)
0.164

INFERRED SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.519E-01

SCALING SPEC.HUMID.
(Kg/Kg)
-1.009E-04

SCALING POT.TEMP.
(Kelvin)
-4.052E-02

ROUGHNESS LENGTH
(Meters)
4.147E-05

DRAG COEF.AT 10 METERS
(Dimensionless)
1.126E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY
(Meter2/sec2)
-6.347E-02

WITH ABS. HUMIDITY
(Meter Kg/sec m3)
3.138E-05

WITH POT.TEMPERATURE
(Meter Kel./sec)
1.021E-02

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2342

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4153E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9028E 05

VAP.PRES.AT WT LEVEL
(Millibar)
15.751

ABS.HUMID.AT WT LEVEL
(Kg/m3)
1.190E-02

BAR.PRES.AT WT LEVEL
(Millibar)
1017.30

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
149%	149%	133%	176%	111%	6%	55%	287%	66%	110%	45%	86%	133%
172%	172%	46%	41%	100%	6%	17%	141%	23%	64%	123%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031730
START TIME: 17:35:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.071 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.084 [0.02]

Z/L AT 10 METERS
-0.065 [0.02]

MONIN-OBUKHOV LENGTH
(Meters)
-1.541E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.91E-02 [6.0E-02]

HUMIDITY FLUX
(Kg/sec m2)
2.96E-05 [8.0E-06]

LAT.HEAT FLUX
(Watts/m2)
7.32E 01 [2.0E+01]

SEN.HEAT FLUX
(Watts/m2)
9.68E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-1.14E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-3.12E 01 [3.0E+01]

BOWEN RATIO
(no units)
0.148 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.532E-01 [6.0E-02]

SCALING SPEC.HUMID.
(Kg/Kg)
8.932E-05 [3.0E-05]

SCALING POT.TEMP.
(Kelvin)
-2.518E-02 [2.0E-02]

ROUGHNESS LENGTH
(Meters)
4.259E-05 [6.0E-05]

DRAG COEF.AT 10 METERS
(Meters)
1.161E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE *LISTED IN PERCENT DIFFERENCE AND ARE "+or-"*:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT TEMP	ROUGH LENGTH	DRAG COEF
35%	33%	2%	19%	33%	0%	54%	17%	1%	18%	46%	3%	1%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031800
START TIME: 18: 5:20 PST
END TIME: 18:35:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS) 6/Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.1	No.08 SKY RAD.	No.09 WIND DIR
6.205	0.000	0.001	4.924	4.934	4.349	4.247	5.015	6.170	4.845

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.031	3.806	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	BSIE (Coeff.)	WSCEC (Coeff.)
1411 121330	1421 122534	0.157	99	-0.009	0.000	0.000	0.552	0.979

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.133	8.39	9.09	NO DATA	309.7	1015.15	-2.37E 01	13.673	285.353

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.253	8.01	9.08	NO DATA	0.18	1016.25

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC HUMID 1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.313	13.367	13.547	8.782E-03	81.62	7.115E-03	11.563	14.167	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC HUMID 2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.344	13.488	13.578	8.785E-03	80.95	7.113E-03	11.571	14.295	NO DATA

* CONTINUED BELOW

PRINT DATE: 11 JUN 1980
RUN NUMBER: 7905031800 MARINE SURFACE LAYER DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START TIME: 18: 5:20 PST NRL MICROMETEOROLOGY DATA AVERAGING PERIOD: 30 Min
START DATE: 3 May 1979 (DAY 123) SAN NICOLAS ISLAND, CAL NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.068 AT GMH	MOMENTUM FLUX (Nt/m2) -8.59E-02	FRICTION VELOCITY (Meters/sec) 2.638E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM:"N"SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.32E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.118E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.16E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.52E 00
Z/L AT GMH -0.081	LAT.HEAT FLUX (Watts/m2) 5.73E 01	SCALING POT. TEMP. (Kelvin) -2.733E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.59E 03
Z/L AT 10 METERS -0.062	SEN.HEAT FLUX (Watts/m2) 9.00E 00	ROUGHNESS LENGTH (Meters) 4.959E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.42E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.98E 01
Z/L AT Z1 -0.114	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.37E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.234E 03		N=LnTEMP.STRUC.(K*M 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.057	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.26E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.608E 02	BOWEN RATIO (no units) 0.157			
PSI1 AT Z1= 0.298188 PSI1 AT Z2= 0.173424 PSI2 AT Z1= 0.192128 PSI2 AT Z2= 0.109199				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2348

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4154E 02

WATER LAT.HEAT VAP (ITcal./Kg) 5.9042E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 5:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-W. TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.239	8.06	9.08	NO DATA	1016.15	13.673	-1.434	-1.336	-0.200	-0.102

HEIGHT (Meters)	POT.TEMP (Celsius)	VIR TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.337	13.473	13.571	8.785E-03	81.03	7.113E-03	11.571	14.280	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.087 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.102

Z/L AT 10 METERS
-0.079

MONIN-OBUKHOV LENGTH (Meters)
-1.269E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.32E-02

HUMIDITY FLUX (Kg/sec m2)
3.28E-05

LAT.HEAT FLUX (Watts/m2)
8.10E 01

SEN.HEAT FLUX (Watts/m2)
1.49E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.37E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.21E 01

BOWEN RATIO (no units)
0.184

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.747E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.652E-05

SCALING POT.TEMP. (Kelvin)
-4.334E-02

ROUGHNESS LENGTH (Meters)
5.792E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.162E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.548E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.275E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.191E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2351

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4154E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9039E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.704

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.186E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.35

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
149%	149%	144%	183%	109%	8%	117%	291%	72%	110%	37%	92%	144%
167%	167%	46%	41%	95%	8%	30%	136%	23%	64%	118%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 5:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.072 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.091 [0.02]

Z/L AT 10 METERS
-0.070 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.428E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
9.14E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.10E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.66E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.21E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.37E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.60E 01 [3.0E+01]

BOWEN RATIO (no units)
0.175 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.721E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.723E 05 [3.0E 05]

SCALING POT.TEMP. (Kelvin)
-3.110E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.527E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.1[illegible]E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
13%	12%	4%	[illegible]%	24%	0%	26%	8%	2%	15%	29%	7%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031830
START TIME: 18:35:20 PST
END TIME: 19: 5:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.946	4.956	4.649	4.516	5.029	-0.071	4.930

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.984	3.825	2.532	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121689	1421 122801	0.183	99	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.169	8.95	9.22	NO DATA	312.6	1015.36	9.93E 00	13.626	285.384

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.280	8.45	9.21	NO DATA	0.15	1016.46

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.349	13.414	13.594	8.861E-03	82.15	7.178E-03	11.668	14.204	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.370	13.525	13.616	8.864E-03	81.52	7.176E-03	11.676	14.323	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031830
START TIME: 18:35:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.026 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.033

Z/L AT 10 METERS
-0.025

Z/L AT Z1
-0.046

Z/L AT Z2
-0.023

MONIN-OBUKHOV LENGTH (Meters)
-3.904E 02

PSI1 AT Z1= 0.144603
PSI1 AT Z2= 0.078523
PSI2 AT Z1= 0.090459
PSI2 AT Z2= 0.048124

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N+/m2)
-1.29E-01

HUMIDITY FLUX (Kg/sec m2)
2.66E-05

LAT.HEAT FLUX (Watts/m2)
6.59E 01

SEN.HEAT FLUX (Watts/m2)
7.35E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
9.93E 00

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.30E 01

BOWEN RATIO (no units)
0.110

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.233E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.670E-05

SCALING POT. TEMP. (Kelvin)
-1.795E-02

ROUGHNESS LENGTH (Meters)
1.055E-04

DRAG COEF AT 10 METERS (Dimensionless)
1.631E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.63E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.40E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.24E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.10E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -3.01E 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2349

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9048E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:35:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.267	8.51	9.21	NO DATA	1016.36	13.626	-1.360	-1.262	-0.114	-0.016

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.365	13.512	13.610	8.864E-03	81.59	7.176E-03	11.676	14.309	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.070 AT GMH	-1.07E-01	2.938E-01	-8.631E-02	1.2351
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	3.33E-05	-9.189E-05	3.334E-05	2.4155E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.084	8.24E 01	-4.044E-02	1.188E-02	5.9038E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.064	1.48E 01	7.442E-05		15.660
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.555E 02	9.93E 00	1.192E-03		1.183E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	1.07E 02			1017.56
	BOWEN RATIO (no units)			
	0.180			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
134%	134%	112%	164%	101%	12%	130%	265%	56%	108%	45%	76%	112%
170%	170%	46%	41%	98%	12%	35%	139%	23%	64%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:35:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.045 [0.02] AT GMH	-1.13E-01 [6.0E-02]	3.024E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	3.20E-05 [8.0E-06]	-8.246E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.055 [0.02]	7.91E 01 [2.0E+01]	-2.405E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.042 [0.02]	1.11E 01 [3.0E+00]	8.565E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-2.359E 02	9.93E 00 [2.0E+01]	1.500E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	1.02E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.156 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
49%	47%	11%	12%	34%	0%	14%	23%	5%	16%	51%	19%	19%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905031900
START TIME: 19: 5:20 PST
END TIME: 19:35:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.265	0.000	0.001	4.981	4.989	4.500	4.364	5.053	-0.091	5.045

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.955	3.831	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 122488	1421 123574	0.183	101	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.249	8.67	9.43	NO DATA	316.5	1015.72	1.27E 01	13.599	285.463

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.357	8.17	9.41	NO DATA	0.11	1016.82

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.429	13.512	13.692	8.988E-03	82.89	7.282E-03	11.839	14.284	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.448	13.620	13.710	8.983E-03	82.19	7.273E-03	11.837	14.402	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905031900
START TIME: 19: 5:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (N1/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.023 AT GMH	-1.23E-01	3.162E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.59E-05	-6.63BE-05	DWS/DZ= 5.54E-0	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.27E 00
-0.030	6.41E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.569E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.023	6.20E 00			SH SLOPE= -8.14E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.049	SKY AND SOLAR HEAT FLUX (Watts/m2)	9.737E-05	DPT/DZ= -2.11E-03	PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -3.44E 01
-0.021		DRAG COEF. AT 10 METERS		
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	(Dimensionless) 1.648E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
-4.383E 02	8.29E 01			PSI=NONE
PSI1 AT Z1= 0.133243	BOWEN RATIO			CT2 SLOPE=NO DATA
PSI1 AT Z2= 0.071990	(no units)			
PSI2 AT Z1= 0.083127	0.097			
PSI2 AT Z2= 0.044192				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2349

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9036E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905031900
START TIME: 19: 5:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.344	8.23	9.41	NO DATA	1016.73	13.599	-1.254	-1.156	0.008	0.106

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.442	13.607	13.705	8.984E-03	82.28	7.274E-03	11.838	14.386	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.072 AT GMH	MOMENTUM FLUX (Nt/m2) -9.82E-02	FRICTION VELOCITY (Meters/sec) 2.819E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.948E-02	AIR DENSITY (Kg/m3) 1.2352
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.08E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.834E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.076E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.086	LAT.HEAT FLUX (Watts/m2) 7.60E 01	SCALING POT.TEMP. (Kelvin) -3.815E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.076E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9033E 05
Z/L AT 10 METERS -0.066	SEN.HEAT FLUX (Watts/m2) 1.34E 01	ROUGHNESS LENGTH (Meters) 6.384E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.637
MONIN-OBUKHOV LENGTH (Meters) -1.518E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.173E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.182E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.02E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.93
	BOWEN RATIO (no units) 0.177			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
137%	137%	111%	163%	105%	11%	126%	269%	55%	108%	50%	75%	111%
173%	173%	46%	42%	101%	11%	34%	143%	23%	65%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905031900
START TIME: 19: 5:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.045 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.06E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.920E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.98E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.007E-05 [3.0E-05]
Z/L AT GMH -0.054 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.36E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.215E-02 [2.0E-02]
Z/L AT 10 METERS -0.042 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.89E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.603E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.390E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.299E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.81E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.149 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITH R THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER) ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH. LENGTH	DRAG COEF.
54%	52%	13%	9%	37%	0%	11%	28%	6%	14%	55%	23%	20%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032000
START TIME: 20: 0: 0 PST
END TIME: 20:29:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.993	4.999	4.264	4.142	5.086	-0.091	5.116

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.921	3.747	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121587	1421 122646	0.183	186	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	117.3	59.75

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.159	8.22	9.50	NO DATA	319.0	1016.23	1.27E 01	13.565	285.373

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.267	7.76	9.47	NO DATA	0.05	1017.33

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
18.35	12.339	13.428	13.608	9.039E-03	83.78	7.317E-03	11.902	14.206	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	12.357	13.534	13.624	9.027E-03	83.02	7.302E-03	11.891	14.323	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032000
START TIME: 20: 0: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.027 AT GMH	-1.04E-01	2.906E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.40E-05	-6.689E-05	DWS/DZ= 5.04E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.38E 00
-0.034	5.94E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.521E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.026	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.08E 03
Z/L AT Z1	5.52E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.049	SKY AND SOLAR HEAT FLUX (Watts/m2)	7.14E-05	DPT/DZ= -2.03E-03	PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -3.55E 01
-0.024		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.569E-03		Z=HEIGHT (M) Vert.Axis
-3.787E 02	7.76E 01			PSI=NONE
PSI1 AT Z1= 0.150966	BOWEN RATIO (no units)			CT2 SLOPE=NO DATA
PSI1 AT Z2= 0.082209	0.093			
PSI2 AT Z1= 0.094580				
PSI2 AT Z2= 0.050641				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2359	2.415DE 02	5.9041E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2- +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS.

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK W. TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.254	7.83	9.47	NO DATA	1017.23	13.565	1.312	1.214	-0.044	0.054

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC HUMID (kg/kg)	VAP PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.352	13.521	13.619	9.029E-03	83.11	7.304E-03	11.09	14.309	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.088 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.103

Z/L AT 10 METERS
-0.079

MONIN-OBUKHOV LENGTH (Meters)
-1.258E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.66E-02

HUMIDITY FLUX (Kg/sec m2)
2.86E-05

LAT.HEAT FLUX (Watts/m2)
7.06E 01

SEN.HEAT FLUX (Watts/m2)
1.34E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.67E 01

BOWEN RATIO (no units)
0.190

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.647E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.734E-05

SCALING POT.TEMP. (Kelvin)
-4.054E-02

ROUGHNESS LENGTH (Meters)
5.024E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.146E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.005E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.857E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.073E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2362

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4158E 02

WATER LAT.HEAT VAP (ITcal./Kg)
5.9038E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.611

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.180E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.43

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
143%	143%	116%	166%	110%	11%	128%	277%	58%	108%	52%	78%	116%
171%	171%	46%	42%	99%	11%	34%	142%	23%	65%	122%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.055 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.066 [0.02]

Z/L AT 10 METERS
-0.051 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.978E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.16E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.76E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.83E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
9.68E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.27E 01 [3.0E+01]

BOWEN RATIO (no units)
0.157 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.720E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.964E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.281E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.779E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.259E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
55%	53%	11%	10%	41%	0%	12%	32%	5%	13%	60%	18%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032030
START TIME: 20:30: 0 PST
END TIME: 20:59:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.992	4.999	4.152	4.024	5.099	-0.091	5.098

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.909	3.771	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121219	1421 122344	0.183	109	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
12.122	8.00	9.50	NO DATA	318.3	1016.44	1.27E 01	13.553	285.338

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.234	7.55	9.47	NO DATA	0.01	1017.54

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.302	13.391	13.570	9.039E-03	83.96	7.315E-03	11.901	14.175	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.325	13.501	13.592	9.029E-03	83.19	7.301E-03	11.892	14.296	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032030
START TIME: 20:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.034 AT GMH	-1.09E-01	2.972E-01	[(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	[(LnZ1-PSI)-(LnZ2-PSI)]/ LN1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
12.99	2.49E-05	-6.774E-05	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 5.05E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX			WS SLOPE= 1.35E 00
-0.042	(Watts/m2)	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
	6.15E 01	(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.938E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.033	SEN.HEAT FLUX			SH SLOPE= -7.98E 03
	(Watts/m2)			
Z/L AT Z1	7.20E 00	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.060		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	SKY AND SOLAR HEAT FLUX	7.765E-05	DPT/DZ= -2.55E-03	PSI=PSI2
Z/L AT Z2	(Watts/m2)			PTK SLOPE= -2.79E 01
-0.030	1.27E 01			
		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert.Axis
(Meters)	(Watts/m2)	1.74E-03		PSI=NONE
-3.069E 02	8.14E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.180201	BOWEN RATIO			
PSI1 AT Z2= 0.099613	(no units)			
PSI2 AT Z1= 0.113632	0.117			
PSI2 AT Z2= 0.061617				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2363

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4158E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9043E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032030
START TIME: 20:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.221	7.60	9.47	NO DATA	1017.44	13.553	-1.333	-1.235	-0.066	0.032

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.319	13.488	13.586	9.031E-03	83.28	7.303E-03	11.894	14.281	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.097 AT GMH	MOMENTUM FLUX (Nt/m2) -8.09E-02	FRICTION VELOCITY (Meters/sec) 2.557E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.540E-02	AIR DENSITY (Kg/m3) 1.2366
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.77E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.760E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.770E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415BE 02
Z/L AT GMH -0.113	LAT.HEAT FLUX (Watts/m2) 6.85E 01	SCALING POT.TEMP. (Kelvin) -4.159E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.063E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9040E 05
Z/L AT 10 METERS -0.087	SEN.HEAT FLUX (Watts/m2) 1.33E 01	ROUGHNESS LENGTH (Meters) 4.398E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.602
MONIN-OBUKHOV LENGTH (Meters) -1.145E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.132E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.179E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.45E 01			BAR.PRES.AT WT LEVEL (Millibar) 1018.64
	BOWEN RATIO (no units) 0.194			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
131%	131%	112%	164%	99%	11%	124%	263%	56%	108%	43%	76%	112%
170%	170%	46%	42%	98%	11%	34%	141%	23%	65%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032030
START TIME: 20:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.061 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.91E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.678E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.71E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.010E-05 [3.0E-05]
Z/L AT GMH -0.073 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.70E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.517E-02 [2.0E-02]
Z/L AT 10 METERS -0.056 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.03E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.615E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.773E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.29[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.17E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.167 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
52%	49%	17%	6%	30%	0%	8%	24%	8%	13%	49%	29%	26%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032100
START TIME: 21: 0: 0 PST
END TIME: 21:29:50 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR
6.205	0.001	0.001	4.988	4.995	4.416	4.287	5.107	-0.091	5.054

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.896	3.871	2.521	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 119536	1421 120680	0.183	110	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.954	8.51	9.47	NO DATA	316.8	1016.56	1.27E 01	13.541	285.171

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.068	8.03	9.45	NO DATA	-0.01	1017.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.133	13.219	13.399	9.029E-03	84.74	7.301E-03	11.880	14.020	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.158	13.332	13.422	9.021E-03	83.98	7.290E-03	11.875	14.141	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032100
START TIME: 21: 0: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.033 AT GMH	MOMENTUM FLUX (Nt/m2) -1.22E-01	FRICTION VELOCITY (Meters/sec) 3.136E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.62E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.758E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.35E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.28E 00
Z/L AT GMH -0.041	LAT.HEAT FLUX (Watts/m2) 6.48E 01	SCALING POT. TEMP. (Kelvin) -2.084E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.00E 03
Z/L AT 10 METERS -0.031	SEN.HEAT FLUX (Watts/m2) 8.18E 00	ROUGHNESS LENGTH (Meters) 9.446E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.75E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.59E 01
Z/L AT Z1 -0.058	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.689E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.029	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.57E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.177E 02	BOWEN RATIO (no units) 0.126			
PSI1 AT Z1= 0.174838 PSI1 AT Z2= 0.096404 PSI2 AT Z1= 0.110123 PSI2 AT Z2= 0.059581				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2372	2.415AE 02	5.9052E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.054	8.09	9.45	NO DATA	1017.56	13.541	-1.487	-1.389	-0.222	-0.124

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.152	13.319	13.417	9.023E-03	84.07	7.291E-03	11.876	14.127	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (*FRIEHE ET AL,1978*):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.089 AT GMH	MOMENTUM FLUX (Nt/m2) -9.42E-02	FRICTION VELOCITY (Meters/sec) 2.758E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.609E-02	AIR DENSITY (Kg/m3) 1.2374
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.95E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.633E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.947E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.105	LAT.HEAT FLUX (Watts/m2) 7.29E 01	SCALING POT.TEMP. (Kelvin) -4.470E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.233E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9050E 05
Z/L AT 10 METERS -0.081	SEN.HEAT FLUX (Watts/m2) 1.54E 01	ROUGHNESS LENGTH (Meters) 5.881E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.591
MONIN-OBUKHOV LENGTH (Meters) -1.239E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.164E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.178E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.76
	BOWEN RATIO (no units) 0.212			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
129%	129%	112%	164%	96%	11%	124%	260%	56%	108%	40%	76%	112%
166%	166%	46%	42%	94%	11%	34%	136%	23%	65%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS *WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]*:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.058 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.02E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.868E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.88E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.924E-05 [3.0E-05]
Z/L AT GMH -0.069 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.12E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.694E-02 [2.0E-02]
Z/L AT 10 METERS -0.053 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.18E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.169E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.887E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.302E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.77E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.182 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
49%	47%	15%	7%	31%	0%	9%	25%	7%	12%	49%	26%	2:%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032130
START TIME: 21:30: 0 PST
END TIME: 22: 0:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.978	4.984	4.346	4.239	5.102	-0.091	4.969

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.882	3.870	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118792	1421 119977	0.183	111	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.879	8.37	9.41	NO DATA	313.9	1016.48	1.27E 01	13.528	285.098

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.998	7.94	9.38	NO DATA	-0.03	1017.58

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.059	13.139	13.319	8.995E-03	84.82	7.272E-03	11.832	13.950	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.088	13.256	13.346	8.983E-03	83.99	7.257E-03	11.821	14.075	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032130
START TIME: 21:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.047 AT GMH	MOMENTUM FLUX (Nt/m2) -1.06E-01	FRICTION VELOCITY (Meters/sec) 2.933E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.51E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.919E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.83E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.36E 00
Z/L AT GMH -0.058	LAT.HEAT FLUX (Watts/m2) 6.21E 01	SCALING POT. TEMP. (Kelvin) -2.492E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.81E 03
Z/L AT 10 METERS -0.044	SEN.HEAT FLUX (Watts/m2) 9.15E 00	ROUGHNESS LENGTH (Meters) 7.393E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.21E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.17E 01
Z/L AT Z1 -0.081	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.351E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.041				
MONIN-OBUKHOV LENGTH (Meters) -2.258E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.39E 01			
PSI1 AT Z1= 0.230187 PSI1 AT Z2= 0.130155 PSI2 AT Z1= 0.146609 PSI2 AT Z2= 0.081139	BOWEN RATIO (no units) 0.147			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2374	2.4157E 02	5.9056E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032130
START TIME: 21:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.983	7.99	9.38	NO DATA	1017.48	13.528	-1.544	-1.446	-0.286	-0.188

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.081	13.242	13.340	8.984E-03	84.09	7.259E-03	11.823	14.060	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.096 AT GMH	MOMENTUM FLUX (Nt/m2) -9.15E-02	FRICTION VELOCITY (Meters/sec) 2.720E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.396E-02	AIR DENSITY (Kg/m3) 1.2377
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.94E 05	SCALING SPEC.HUMID. (Kg/Kg) -8.742E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.942E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.112	LAT.HEAT FLUX (Watts/m2) 7.28E 01	SCALING POT.TEMP. (Kelvin) -4.646E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.264E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9054E 05
Z/L AT 10 METERS -0.086	SEN.HEAT FLUX (Watts/m2) 1.58E 01	ROUGHNESS LENGTH (Meters) 5.573E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.577
MONIN-OBUKHOV LENGTH (Meters) -1.158E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.158E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.177E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.68
	BOWEN RATIO (no units) 0.217			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
133%	133%	123%	170%	98%	11%	126%	268%	61%	109%	36%	81%	123%
165%	165%	46%	42%	93%	11%	34%	135%	23%	65%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032130
START TIME: 21:30: 0 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.069 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.56E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.778E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.86E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.057E-05 [3.0E-05]
Z/L AT GMH -0.082 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.06E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.008E-02 [2.0E-02]
Z/L AT 10 METERS -0.063 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.26E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.203E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.585E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.249E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.76E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.194 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF.
36%	33%	9%	9%	27%	0%	10%	19%	4%	12%	40%	15%	1 %

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032200
START TIME: 22: 0:20 PST
END TIME: 22:30:10 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.985	4.990	4.355	4.224	5.101	-0.091	5.077

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.873	3.869	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118816	1421 119966	0.183	112	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.882	8.39	9.45	NO DATA	317.6	1016.47	1.27E 01	13.519	285.059

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.997	7.91	9.42	NO DATA	-0.03	1017.57

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES 1	S VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.061	13.146	13.325	9.021E-03	85.06	7.294E-03	11.867	13.952	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.087	13.258	13.348	9.307E-03	84.22	7.277E-03	11.854	14.074	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032200
START TIME: 22: 0:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.034 AT GMH	MOMENTUM FLUX (Nt/m2) -1.21E-01	FRICTION VELOCITY (Meters/sec) 3.122E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.62E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.776E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.30E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.28E 00
Z/L AT GMH -0.043	LAT.HEAT FLUX (Watts/m2) 6.47E 01	SCALING POT. TEMP. (Kelvin) -2.146E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.98E 03
Z/L AT 10 METERS -0.033	SEN.HEAT FLUX (Watts/m2) 8.39E 00	ROUGHNESS LENGTH (Meters) 9.295E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.82E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.52E 01
Z/L AT Z1 -0.060	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.72e0 -3		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.030	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.58E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.047E 02	BOWEN RATIO (no units) 0.130			
PSI1 AT Z1= 0.180930 PSI1 AT Z2= 0.100050 PSI2 AT Z1= 0.114109 PSI2 AT Z2= 0.061895				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2374

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP. (1Tcal /Kg)
5.9056E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032200
START TIME: 22: 0:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.983	7.97	9.42	NO DATA	1017.47	13.519	-1.536	-1.439	-0.274	-0.176

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.081	13.245	13.343	9.009E-03	84.32	7.279E-03	11.856	14.060	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.096 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.113

Z/L AT 10 METERS
-0.087

MONIN-OBUKHOV LENGTH (Meters)
-1.155E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.09E-02

HUMIDITY FLUX (Kg/sec m2)
2.90E 05

LAT.HEAT FLUX (Watts/m2)
7.17E 01

SEN.HEAT FLUX (Watts/m2)
1.57E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.00E 02

BOWEN RATIO (no units)
0.219

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.710E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.649E 05

SCALING POT.TEMP. (Kelvin)
-4.629E-02

ROUGHNESS LENGTH (Meters)
5.502E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.156E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.346E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.901E-05

WITH POT.TEMPERATURE (Meter Kel /sec)
1.255E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2376

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415?E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9054E 05

VAP PRES.AT WT LEVEL (Millibar)
15.567

ABS.HUMID AT WT LEVEL (Kg/m3)
1.177E-02

BAR.PRES AT WT LEVEL (Millibar)
1018.67

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
128%	128%	111%	163%	95%	11%	124%	258%	56%	108%	39%	76%	111%
165%	165%	46%	43%	93%	11%	34%	135%	23%	66%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032200
START TIME: 22: 0:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.061 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.073 (0.02)

Z/L AT 10 METERS
-0.056 (0.02)

MONIN-OBUKHOV LENGTH (Meters)
-1.777E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.96E-02 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
2.84E-05 (8.0E-06)

LAT.HEAT FLUX (Watts/m2)
7.03E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.21E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.71E 01 (3.0E+01)

BOWEN RATIO (no units)
0.188 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.831E-01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-7.941E-05 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
-2.776E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
6.876E-05 (6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
1.307E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
51%	48%	16%	6%	30%	0%	9%	25%	8%	12%	50%	29%	.4

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032230
START TIME: 22:30:20 PST
END TIME: 24: 0:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	4.988	4.992	4.258	4.147	5.105	-0.091	5.046

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.863	3.875	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 117451	1421 118638	0.183	111	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.745	8.20	9.47	NO DATA	316.6	1016.53	1.27E 01	13.589	284.964

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
11.864	7.77	9.43	NO DATA	-0.02	1017.63

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	11.975	13.010	13.190	9.037E-03	85.93	7.303E-03	11.882	13.828	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	11.954	13.126	13.216	9.017E-03	85.01	7.281E-03	11.860	13.952	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032230
START TIME: 22:30:20 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)= (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.047 AT GMH	-1.07E-01	2.939E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N:WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	2.52E-05	-6.922E-05	DWS/DZ= 4.83E-02	WS SLOPE= 1.36E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.058	6.23E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.514E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -7.81E 03
-0.045	9.25E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.082	SKY AND SOLAR HEAT FLUX (Watts/m2)	7.456E-05	DPT/DZ= -3.24E-03	PSI=PSI2 PTK SLOPE= -2.15E 01
Z/L AT Z2	1.27E 01			
0.041		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP STRUC (k=M-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.262E-03		PSI=NONE
2.247E 02	8.42E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.231123	BOWEN RATIO			
PSI1 AT Z2= 0.130737	(no units)			
PSI2 AT Z1= 0.142731	0.149			
PSI2 AT Z2= 0.081514				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2380
AIR SPECIFIC HEAT (1Tcal./Kg Kel.)	2.415RE 02
WATER LAT.HEAT VAP. (1Tcal./Kg)	5.9064E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1=SH2= +/- .08E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.849	7.82	9.43	NO DATA	1017.53	13.509	-1.659	-1.561	-0.397	-0.299

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.947	13.112	13.210	9.020E-03	85.12	7.284E-03	11.864	13.937	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.110 AT GMH	MOMENTUM FLUX (Nt/m2) -8.69E-02	FRICTION VELOCITY (Meters/sec) 2.649E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.017E-02	AIR DENSITY (Kg/m3) 1.2383
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.83E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.628E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.830E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.127	LAT.HEAT FLUX (Watts/m2) 7.00E 01	SCALING POT.TEMP. (Kelvin) -4.998E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.324E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9061E 05
Z/L AT 10 METERS 0.098	SEN.HEAT FLUX (Watts/m2) 1.66E 01	ROUGHNESS LENGTH (Meters) 5.041E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.558
MONIN OBUKHOV LENGTH (Meters) -1.021E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.146E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.92E 01			BAR.PRES.AT WT LEVEL (Millibar) 1018.73
	BOWEN RATIO (no units) 0.237			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
131%	131%	120%	168%	96%	11%	125%	264%	60%	108%	36%	80%	120%
162%	162%	46%	43%	90%	11%	34%	133%	23%	66%	113%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 3 May 1979 (DAY 123) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.075 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.25E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.729E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.77E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.985E-05 [3.0E-05]
Z/L AT GMH -0.089 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.84E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.114E-02 [2.0E-02]
Z/L AT 10 METERS .068 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.30E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.885E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.463E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.610E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.61E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.207 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
42%	39%	12%	7%	28%	0%	9%	22%	6%	11%	45%	21%	21%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032300
START TIME: 23: 0:30 PST
END TIME: 23:30:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.983	4.986	4.132	4.060	5.104	-0.091	4.989

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.854	3.873	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117020	1421 118156	0.183	110	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.702	7.96	9.44	NO DATA	314.6	1016.51	1.27E 01	13.500	284.919

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.816	7.61	9.40	NO DATA	-0.00	1017.61

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.882	12.964	13.144	9.019E-03	85.99	7.287E-03	11.856	13.788	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.964	13.074	13.165	8.999E-03	85.10	7.266E-03	11.835	13.907	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032300
START TIME: 23: 0:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.060 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.072

Z/L AT 10 METERS
-0.056

Z/L AT Z1
-0.102

Z/L AT Z2
-0.051

MONIN-OBUKHOV LENGTH
(Meters)
-1.794E 02

PSI1 AT Z1= 0.274861
PSI1 AT Z2= 0.158372
PSI2 AT Z1= 0.176443
PSI2 AT Z2= 0.099388

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-7.34E-02

HUMIDITY FLUX
(Kg/sec m2)
2.13E-05

LAT.HEAT FLUX
(Watts/m2)
5.26E 01

SEN.HEAT FLUX
(Watts/m2)
6.44E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
7.17E 01

BOWEN RATIO
(no units)
0.123

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.435E-01

SCALING SPEC.HUMID.
(Kg/Kg)
-7.050E-05

SCALING POT. TEMP.
(Kelvin)
-2.112E-02

ROUGHNESS LENGTH
(Meters)
3.623E-05

DRAG COEFF. AT 10 METERS
(Dimensionless)
1.180E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
((N1-N2))/(Ln(Z1/Z2)*
(Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.89E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.67E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
((LnZ1-PSI)-(LnZ2-PSI))1/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.64E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.67E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.56E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2382

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9066E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032300
START TIME: 23: 0:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.802	7.66	9.40	NO DATA	1017.51	13.500	-1.698	-1.600	-0.439	-0.341

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.900	13.061	13.159	9.002E-03	85.21	7.268E-03	11.838	13.893	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.120 AT GMH	MOMENTUM FLUX (Nt/m2) -8.24E-02	FRICTION VELOCITY (Meters/sec) 2.580E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.654E-02	AIR DENSITY (Kg/m3) 1.2385
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.78E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.705E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.781E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4157E 02
Z/L AT GMH -0.138	LAT.HEAT FLUX (Watts/m2) 6.88E 01	SCALING POT.TEMP. (Kelvin) -5.145E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.327E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9064E 05
Z/L AT 10 METERS -0.106	SEN.HEAT FLUX (Watts/m2) 1.66E 01	ROUGHNESS LENGTH (Meters) 4.549E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.549
MONIN-OBUKHOV LENGTH (Meters) -9.405E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.135E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.81E 01			BAR.PRES.AT WT LEVEL (Millibar) 1018.71
	BOWEN RATIO (no units) 0.242			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
158%	158%	146%	184%	117%	11%	135%	301%	73%	111%	44%	93%	146%
161%	161%	46%	43%	89%	11%	33%	132%	23%	66%	112%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032300
START TIME: 23: 0:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.090 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.03E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.545E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.66E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.090E-05 [3.0E-05]
Z/L AT GMH -0.105 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.57E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.968E-02 [2.0E-02]
Z/L AT 10 METERS -0.081 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.22E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.257E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.238E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COFF.AT 10 METERS (Meters) 1.145E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.28E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.205 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
33%	31%	6%	15%	42%	0%	17%	31%	3%	11%	56%	8%	2%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905032330
START TIME: 23:30:30 PST
END TIME: 0: 0:20 PST
START DATE: 3 May 1979 (DAY 123)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.951	4.954	4.296	4.197	5.097	-0.091	5.062

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.833	3.873	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 115948	1421 117152	0.183	108	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
11.595	8.28	9.25	NO DATA	317.1	1016.39	1.27E 01	13.480	284.815

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.715	7.86	9.20	NO DATA	0.03	1017.49

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.775	12.840	13.020	8.905E-03	85.49	7.193E-03	11.703	13.689	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.805	12.957	13.047	8.883E-03	84.55	7.170E-03	11.679	13.814	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905032330
START TIME: 23:30:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.056 AT GMH	MOMENTUM FLUX (Nt/M2) -1.00E-01	FRICTION VELOCITY (Meters/sec) 2.843E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.47E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.005E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.59E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.41E 00
Z/L AT GMH -0.067	LAT.HEAT FLUX (Watts/m2) 6.10E 01	SCALING POT. TEMP. (Kelvin) -2.691E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.72E 03
Z/L AT 10 METER -0.052	SEN.HEAT FLUX (Watts/m2) 9.59E 00	ROUGHNESS LENGTH (Meters) 6.591E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.43E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.81E 01
Z/L AT Z1 -0.093	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.478E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.048	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.33E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.934E 02	BOWEN RATIO (no units) 0.157			
PSI1 AT Z1= 0.259561 PSI1 AT Z2= 0.148614 PSI2 AT Z1= 0.166191 PSI2 AT Z2= 0.093056				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2386

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9072E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905032330
START TIME: 23:30:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.701	7.91	9.21	NO DATA	1017.39	13.480	-1.779	-1.681	-0.537	-0.439

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.799	12.943	13.041	8.886E-03	84.66	7.173E-0[illegible]	11.682	13.799	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.113 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.131

Z/L AT 10 METERS
-0.101

MONIN-OBUKHOV LENGTH (Meters)
-9.898E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.94E-02

HUMIDITY FLUX (Kg/sec m2)
2.98E-05

LAT.HEAT FLUX (Watts/m2)
7.37E 01

SEN.HEAT FLUX (Watts/m2)
1.78E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.04E 02

BOWEN RATIO (no units)
0.242

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.686E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.949E-05

SCALING POT.TEMP. (Kelvin)
-5.301E-02

ROUGHNESS LENGTH (Meters)
5.320E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.152E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.217E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.978E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.424E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2389

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9870E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.527

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.174E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.59

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

	GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
	136%	136%	128%	173%	99%	11%	127%	272%	64%	109%	35%	84%	128%
	160%	160%	46%	42%	88%	11%	33%	130%	23%	65%	111%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905032330
START TIME: 23:30:30 PST
START DATE: 3 May 1979 (DAY 123)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.082 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.097 [0.02]

Z/L AT 10 METERS
-0.074 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.345E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.22E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.88E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.12E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.40E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.99E 01 [3.0E+01]

BOWEN RATIO (no units)
0.215 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.728E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.223E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.319E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.750E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.230E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	33%	6%	10%	30%	0%	12%	21%	3%	12%	44%	11%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040800
START TIME: 0: 0:30 PST
END TIME: 8:30:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.981	4.986	4.074	3.979	5.075	-0.091	5.048

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.813	3.777	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 116393	1421 117587	0.183	105	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.639	7.85	9.43	NO DATA	316.6	1016.07	1.27E 01	13.460	284.859

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.759	7.46	9.39	NO DATA	0.06	1017.17

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.819	12.900	13.080	9.011E-03	86.29	7.282E-03	11.844	13.725	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.849	13.017	13.107	8.994E-03	85.39	7.263E-03	11.826	13.849	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040800
START TIME: 0: 0:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.061 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.073

Z/L AT 10 METERS
-0.056

Z/L AT Z1
-0.103

Z/L AT Z2
-0.052

MONIN-OBUKHOV LENGTH (Meters)
-1.778E 02

PSI1 AT Z1= 0.276624
PSI1 AT Z2= 0.159503
PSI2 AT Z1= 0.177626
PSI2 AT Z2= 0.100123

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.06E-02

HUMIDITY FLUX (Kg/sec m2)
2.36E-05

LAT.HEAT FLUX (Watts/m2)
5.85E 01

SEN.HEAT FLUX (Watts/m2)
8.90E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.01E 01

BOWEN RATIO (no units)
0.152

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.706E-01

SCALING SPEC.HUMD. (Kg/Kg)
-7.055E-05

SCALING POT. TEMP. (Kelvin)
-2.627E-02

ROUGHNESS LENGTH (Meters)
5.468E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.506E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.32E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.32E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.48E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.66E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.06E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2388

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9078E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0: 0:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.744	7.51	9.40	NO DATA	1017.07	13.460	-1.715	-1.617	-0.457	-0.359

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.842	13.003	13.101	8.996E-03	85.5%	7.265E-03	11.828	13.835	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.128 AT GMH	-7.86E-02	2.520E-01	-6.351E-02	1.2382
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.70E-05	-8.652E-05	2.700E-05	2.4157E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.147	6.68E 01	-5.228E-02	1.318E-02	5.9067E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.113	1.65E 01	4.152E-05		15.50
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-8.833E 01	1.27E 01	1.126E-03		1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	9.60E 01			1018.27
	BOWEN RATIO (no units)			
	0.247			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
137%	137%	129%	174%	101%	11%	128%	275%	65%	109%	36%	85%	129%
161%	161%	46%	43%	89%	11%	33%	132%	23%	66%	112%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0: 0:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.092 [0.02] AT GMH	-8.18E-02 [6.0E-02]	2.569E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.63E-05 [8.0E-06]	-8.053E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.107 [0.02]	6.51E 01 [2.0E+01]	-3.263E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.082 [0.02]	1.29E 01 [3.0E+00]	4.595E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-1.212E 02	1.27E 01 [2.0E+01]	1.216E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	9.27E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.216 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
37%	35%	8%	7%	29%	0%	10%	23%	4%	10%	45%	12%	10%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBE 7905040030
START TI 0:30:30 PST
END TIM 1: 0:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.998	5.000	3.980	3.901	5.055	-0.091	4.871

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.791	3.768	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117561	1421 118704	0.183	102	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.756	7.67	9.53	NO DATA	310.6	1015.76	1.27E 01	13.439	284.973

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.870	7.32	9.48	NO DATA	0.10	1016.85

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.936	13.026	13.206	9.064E-03	86.19	7.330E-03	11.918	13.827	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.961	13.137	13.227	9.042E-03	85.27	7.307E-03	11.893	13.947	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040030
START TIME: 0:30:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.062 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.074

Z/L AT 10 METERS
-0.057

Z/L AT Z1
-0.105

Z/L AT Z2
-0.052

MONIN-OBUKHOV LENGTH (Meters)
-1.753E 02

PSI1 AT Z1= 0.279645
PSI1 AT Z2= 0.161442
PSI2 AT Z1= 0.179655
PSI2 AT Z2= 0.101386

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.42E-02

HUMIDITY FLUX (Kg/sec m2)
2.14E-05

LAT.HEAT FLUX (Watts/m2)
5.29E 01

SEN.HEAT FLUX (Watts/m2)
6.68E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.23E 01

BOWEN RATIO (no units)
0.126

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.448E-01

SCALING SPEC.HUMD. (Kg/Kg)
-7.064E-05

SCALING POT. TEMP (Kelvin)
-2.179E-02

ROUGHNESS LENGTH (Meters)
3.703E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.300E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= I(N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.90E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.75E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.63E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.65E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.48E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2370

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415HE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9063E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:30:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.857	7.36	9.49	NO DATA	1016.76	13.439	-1.582	-1.484	-0.315	-0.217

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.955	13.123	13.221	9.045E-03	85.38	7.310E-03	11.897	13.933	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.126 AT GMH	MOMENTUM FLUX (Nt/m2) -7.49E-02	FRICTION VELOCITY (Meters/sec) 2.460E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.050E-02	AIR DENSITY (Kg/m3) 1.2373
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.58E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.481E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.581E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4158E 02
Z/L AT GMH -0.145	LAT.HEAT FLUX (Watts/m2) 6.38E 01	SCALING POT.TEMP. (Kelvin) -4.900E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.205E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9061E 05
Z/L AT 10 METERS -0.111	SEN.HEAT FLUX (Watts/m2) 1.51E 01	ROUGHNESS LENGTH (Meters) 3.772E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.475
MONIN-OBUKHOV LENGTH (Meters) -8.981E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.116E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.170E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.16E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.96
	BOWEN RATIO (no units) 0.236			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
152%	152%	141%	181%	113%	11%	133%	294%	70%	110%	43%	90%	141%
164%	164%	46%	43%	92%	11%	34%	135%	23%	66%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:30:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.093 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.47E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.457E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.50E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.951E-05 [3.0E-05]
Z/L AT GMH -0.108 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.17E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.919E-02 [2.0E-02]
Z/L AT 10 METERS -0.083 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.13E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.750E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.202E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.157E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.77E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.202 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	33%	1%	10%	37%	0%	13%	29%	0%	9%	51%	1%	9%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040100
START TIME: 1: 0:30 PST
END TIME: 1:30:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.019	5.017	3.772	3.711	5.041	-0.091	4.895

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.776	3.761	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118149	1421 119243	0.183	99	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.76

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.815	7.27	9.65	NO DATA	311.4	1015.54	1.27E 01	13.424	285 030

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.924	6.97	9.58	NO DATA	0.14	1016.64

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.995	13.096	13.276	9.137E-03	86.58	7.392E-03	12.016	13.878	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.014	13.199	13.289	9.097E-03	85.53	7.355E-03	11.969	13.994	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040100
START TIME: 1: 0:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.067 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.081

Z/L AT 10 METERS
-0.062

Z/L AT Z1
-0.114

Z/L AT Z2
-0.059

MONIN-OBUKHOV LENGTH
(Meters)
-1.613E 02

PSI1 AT Z1= 0.297493
PSI1 AT Z2= 0.172978
PSI2 AT Z1= 0.191665
PSI2 AT Z2= 0.108907

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-5.56E-02

HUMIDITY FLUX
(Kg/sec m2)
1.87E-05

LAT.HEAT FLUX
(Watts/m2)
4.61E 01

SEN.HEAT FLUX
(Watts/m2)
4.66E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
6.35E 01

BOWEN RATIO
(no units)
0.101

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.120E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-7.116E-05

SCALING POT. TEMP.
(Kelvin)
-1.759E-02

ROUGHNESS LENGTH
(Meters)
2.029E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.099E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
((N1-N2))/(Ln(Z1/Z2)*
(Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 3.34E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.20E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM 'N' SLOPE=
((LnZ1-PSI)-(LnZ2-PSI))/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.89E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.60E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -3.07E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.97E 03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2365

AIR SPECIFIC HEAT
(1Tcal./Kg Kel.)
2.4159E 02

WATER LAT.HEAT VAP.
(1Tcal./Kg)
5.9068E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 0:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.911	7.01	9.59	NO DATA	1016.54	13.424	-1.513	-1.415	-0.237	-0.139

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.089	13.187	13.285	9.102E-03	85.65	7.360E-03	11.975	13.981	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.139 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.160

Z/L AT 10 METERS
-0.123

MONIN-OBUKHOV LENGTH (Meters)
-8.136E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.64E-02

HUMIDITY FLUX (Kg/sec m2)
2.39E-05

LAT.HEAT FLUX (Watts/m2)
5.91E 01

SEN.HEAT FLUX (Watts/m2)
1.39E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.58E 01

BOWEN RATIO (no units)
0.23

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.317E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.346E-05

SCALING POT.TEMP. (Kelvin)
-4.801E-02

ROUGHNESS LENGTH (Meters)
2.960E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.093E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.368E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.392E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.112E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2368

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4159E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9058E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.457

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.169E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.74

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
173%	173%	157%	191%	131%	10%	139%	322%	79%	112%	53%	99%	157%
165%	165%	46%	43%	93%	10%	34%	137%	23%	66%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 0:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.104 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.121 [0.02]

Z/L AT 10 METERS
-0.093 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.073E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.39E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.29E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.67E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.01E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.14E 01 [3.0E+01]

BOWEN RATIO (no units)
0.195 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.272E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.889E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.706E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.677E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.094E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	33%	10%	14%	47%	0%	16%	37%	5%	8%	60%	8%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040130
START TIME: 1:30:30 PST
END TIME: 2: 0:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.042	5.039	3.709	3.665	5.032	-0.091	4.851

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.765	3.813	2.517	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 118289	1421 119396	0.157	99	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.829	7.16	9.79	NO DATA	309.9	1015.40	1.27E 01	13.413	285.044

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.940	6.94	9.71	NO DATA	0.18	1016.50

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.009	13.122	13.302	9.220E-03	87.31	7.462E-03	12.127	13.889	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.030	13.226	13.316	9.177E-03	86.21	7.421E-03	12.075	14.006	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040130
START TIME: 1:30:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,--Unstable)
-0.134 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.154

Z/L AT 10 METERS
-0.118

Z/L AT Z1
-0.217

Z/L AT Z2
-0.109

MONIN-OBUKHOV LENGTH
(Meters)
-8.445E 01

PSI1 AT Z1= 0.466815
PSI1 AT Z2= 0.288118
PSI2 AT Z1= 0.307181
PSI2 AT Z2= 0.185351

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.65E-02

HUMIDITY FLUX
(Kg/sec m2)
1.61E-05

LAT.HEAT FLUX
(Watts/m2)
3.99E 01

SEN.HEAT FLUX
(Watts/m2)
4.31E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
5.69E 01

BOWEN RATIO
(no units)
0.108

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.718E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-7.605E-05

SCALING POT. TEMP.
(Kelvin)
-2.007E-02

ROUGHNESS LENGTH
(Meters)
7.370E-06

DRAG COEF. AT 10 METERS
(Dimensionless)
7.479E-04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.45E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -2.35E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.33E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.11E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.69E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2362

AIR SPECIFIC HEAT
(ITcal./Kg Kel)
2.4161E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9059E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040130
START TIME: 1:30:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.926	6.97	9.72	NO DATA	1016.41	13.413	-1.487	-1.389	-0.200	-0.102

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.024	13.213	13.311	9.183E-03	86.34	7.426E-03	12.081	13.993	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.140 AT GMH	-6.54E-02	2.300E-01	-5.289E-02	1.2365
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.29E-05	-8.069E-05	2.295E-05	2.4160E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.160	5.67E 01	-4.740E-02	1.090E-02	5.9057E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.123	1.36E 01	2.871E-05		15.444
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-8.119E 01	1.27E 01	1.090E-03		1.168E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	8.31E 01			1017.61
	BOWEN RATIO (no units)			
	0.240			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
218%	218%	218%	228%	166%	11%	161%	395%	109%	119%	57%	129%	218%
166%	166%	46%	44%	94%	11%	34%	138%	23%	67%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040130
START TIME: 1:30:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.137 [0.02] AT GMH	-6.04E-02 [6.0E-02]	2.198E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.18E-05 [8.0E-06]	-7.902E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.157 [0.02]	5.40E 01 [2.0E+01]	-2.904E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.121 [0.02]	1.03E 01 [3.0E+00]	2.338E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-0.257E 01	1.27E 01 [2.0E+01]	1.037E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	7.85E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.206 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
2%	2%	29%	19%	47%	0%	20%	36%	16%	3%	59%	28%	20%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040200
START TIME: 2: 0:40 PST
END TIME: 2:30:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.038	5.040	3.771	3.682	5.039	-0.091	4.797

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.754	3.850	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117548	1421 118740	0.157	97	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.755	7.28	9.77	NO DATA	308.1	1015.51	1.27E 01	13.482	284.974

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.874	6.97	9.71	NO DATA	0.21	1016.61

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.935	13.045	13.225	9.210E-03	87.61	7.451E-03	12.110	13.823	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.964	13.160	13.251	9.182E-03	86.60	7.423E-03	12.079	13.947	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040200
START TIME: 2: 0:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.096 AT GMH	-6.45E-02	2.284E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.98E-05	-7.348E-05	DWS/DZ= 3.43E-02	PSI=PSI1
				WS SLOPE= 1.75E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.112	5.13E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-2.717E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.086	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -7.36E 03
Z/L AT Z1	7.76E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.158	SKY AND SOLAR HEAT FLUX (Watts/m2)	2.789E-05	DPT/DZ= -3.30E-03	PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -1.99E 01
-0.079		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.274E-03		Z=HEIGHT (M) Vert.Axis
-1.160E 02	7.18E 01			PSI=NONE
				C12 SLOPE=NO DATA
PSI1 AT Z1= 0.376962	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.225798	0.151			
PSI2 AT Z1= 0.245583				
PSI2 AT Z2= 0.143695				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2367
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4161E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9063E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.860	7.01	9.72	NO DATA	1016.51	13.402	-1.543	-1.445	-0.256	-0.158

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.958	13.147	13.245	9.186E-03	86.72	7.427E-03	12.083	13.933	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL.,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/ser2)	AIR DENSITY (Kg/m3)
-0.142 AT GMH	-6.63E-02	2.316E-01	-5.364E-02	1.2369
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.30E-05	-8.024E-05	2.299E-05	2.4160E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.163	5.68E 01	-4.884E-02	1.131E-02	5.9061E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.125	1.42E 01	2.955E-05		15.435
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-7.988E 01	1.27E 01	1.092E-03		1.167E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	8.37E 01			1017.71
	BOWEN RATIO (no units)			
	0.249			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
157%	157%	154%	189%	116%	11%	136%	305%	77%	112%	39%	97%	154%
165%	165%	46%	44%	93%	11%	34%	137%	23%	67%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.118 [0.02] AT GMH	-6.59E-02 [6.0E-02]	2.309E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.26E-05 [8.0E-06]	-7.771E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.137 [0.02]	5.58E 01 [2.0E+01]	-3.267E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.105 [0.02]	1.13E 01 [3.0E+00]	2.904E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-9.505E 01	1.27E 01 [2.0E+01]	1.130E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	8.13E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.219 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
20%	19%	2%	6%	28%	0%	9%	24%	1%	4%	37%	1%	9%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040218
START TIME: 2:30:50 PST
END TIME: 3: 0:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.051	5.052	3.429	3.349	5.040	-0.091	4.758

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.742	3.854	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117149	1421 118379	0.157	96	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.715	6.62	9.85	NO DATA	306.8	1015.52	1.22E 01	13.391	284.936

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.838	6.36	9.79	NO DATA	0.23	1016.62

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.895	13.012	13.192	9.240E-03	88.31	7.490E-03	12.174	13.787	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.928	13.130	13.221	9.228E-03	87.23	7.459E-03	12.138	13.914	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040230
START TIME: 2:30:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.146 AT GMH	-5.45E-02	2.098E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.95E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.99E-05	-7.677E-05		WS SLOPE= 1.91E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.167	4.93E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-3.203E-02		SH SLOPE= -7.04E 03
-0.129	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	8.41E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.72E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.234	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.939E-05		PTK SLOPE= -1.69E 01
Z/L AT Z2	1.27E 01			
-0.118		DRAG COFF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.336E-03		CT2 SLOPE=NO DATA
-7.781E 01	7.04E 01			
PSI1 AT Z1= 0.492151	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.304148	0.171			
PSI2 AT Z1= 0.324633				
PSI2 AT Z2= 0.197499				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2368

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416IE 02

WATER LAT.HEAT VAP (ITcal./Kg) 5.9065E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:30:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.823	6.39	9.79	NO DATA	1016.53	13.391	-1.568	-1.470	-0.275	-0.177

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.921	13.116	13.214	9.232E-03	87.36	7.463E-03	12.143	13.899	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.190 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.214

Z/L AT 10 METERS
-0.165

MONIN-OBUKHOV LENGTH (Meters)
-6.077E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.31E-02

HUMIDITY FLUX (Kg/sec m2)
2.05E-05

LAT.HEAT FLUX (Watts/m2)
5.07E 01

SEN.HEAT FLUX (Watts/m2)
1.33E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.67E 01

BOWEN RATIO (no units)
0.263

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.071E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.998E-05

SCALING POT.TEMP. (Kelvin)
-5.136E-02

ROUGHNESS LENGTH (Meters)
1.831E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.052E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/ser2)
-4.291E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.050E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.044E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2370

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.41□1E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9063E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.424

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.73

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
161%	161%	167%	198%	122%	11%	140%	320%	83%	115%	39%	103%	167%
164%	164%	46%	44%	92%	11%	33%	136%	23%	62%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:30:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.168 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.190 [0.02]

Z/L AT 10 METERS
-0.146 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-6.831E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.34E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.04E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.04E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.12E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.27E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.55E 01 [3.0E+01]

BOWEN RATIO (no units)
0.235 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.077E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.879E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.690E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.863E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.107E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
13%	12%	1%	2%	22%	0%	5%	21%	1%	2%	29%	1%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040300
START TIME: 3: 0:50 PST
END TIME: 3:30:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.085	5.080	3.371	3.321	5.038	-0.091	4.867

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.722	3.878	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117771	1421 118910	0.183	92	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No. scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.777	6.50	10.05	NO DATA	318.5	1015.49	1.27E 01	13.372	284.994

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.891	6.26	9.95	NO DATA	0.24	1016.59

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.957	13.093	13.272	9.384E-03	89.14	7.593E-03	12.340	13.843	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.981	13.198	13.289	9.330E-03	87.91	7.544E-03	12.274	13.963	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040300
START TIME: 3: 0:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2)]	GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ [N1-N2]
-0.124 AT GMH	-4.48E-02	1.886E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.72E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.76E-05	-7.545E-05		WS SLOPE= 2.12E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.143	4.35E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.282E-02	Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.110	5.39E 00			SH SLOPE= -7.1AE 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.202	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.185E-05	Z=HEIGHT (Meters) DPT/DZ= -2.70E-03	Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT Z2	1.27E 01			PTK SLOPE= -2.37E 01
-0.101		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.125E-03		Z=HEIGHT (M) Vert.Axis PSI=NONE
-9.967E 01	6.16E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.445551	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.273140	0.124			
PSI2 AT Z1= 0.292558				
PSI2 AT Z2= 0.175288				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2364	2.416*E 02	5.986E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0AE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040300
START TIME: 3: 0:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.877	6.29	9.9A	NO DATA	1016.49	13.372	-1.494	-1.396	-0.186	-0.088

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.975	13.18A	13.284	9.337E-03	88.06	7.550E-03	12.283	13.949	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.190 AT GMH	MOMENTUM FLUX (Nt/m2) -5.11E-02	FRICTION VELOCITY (Meters/sec) 2.033E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.133E-02	AIR DENSITY (Kg/m3) 1.2367
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.92E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.633E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.919E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E 02
Z/L AT GMH -0.214	LAT.HEAT FLUX (Watts/m2) 4.75E 01	SCALING POT.TEMP. (Kelvin) -4.958E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.008E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9060E 05
Z/L AT 10 METERS -0.165	SEN.HEAT FLUX (Watts/m2) 1.2AE 01	ROUGHNESS LENGTH (Meters) 1.682E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.404
MONIN-OBUKHOV LENGTH (Meters) -6.063E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COFF.AT 10 METERS (Dimensionless) 1.045E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.28E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.69
	BOWEN RATIO (no units) 0.266			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
179%	179%	177%	204%	137%	11%	145%	341%	89%	115%	48%	109%	177%
166%	166%	46%	45%	94%	11%	34%	139%	23%	68%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040300
START TIME: 3: 0:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.159 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -4.9AE-02 [A.0E-02]	FRICTION VELOCITY (Meters/sec) 2.003E-01 [A.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.89E-05 [8.0E-0A]	SCALING SPEC.HUMID. (Kg/Kg) -7.A00E-05 [3.0E-05]
Z/L AT GMH -0.180 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.67E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.0A2E-02 [2.0E-02]
Z/L AT 10 METERS -0.139 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.67E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.541E-05 [A.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.211E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COFF.AT 10 METERS (Meters) 1.060E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.0AE 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.225 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
21%	20%	7%	5%	38%	0%	9%	34%	4%	1%	47%	5%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040330
START TIME: 3:30:50 PST
END TIME: 4: 0:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.111	5.100	3.668	3.617	5.042	-0.091	5.069

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.711	3.925	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1ECAL	DP2ECAL	WTBECAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119678	1421 119724	0.183	93	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.92

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.868	7.07	10.20	NO DATA	317.4	1015.56	1.27E 01	13.360	285.080

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.972	6.80	10.07	NO DATA	0.24	1016.66

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.048	13.197	13.377	9.476E-03	89.50	7.670E-03	12.465	13.927	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.063	13.291	13.381	9.403E-03	88.14	7.605E-03	12.374	14.039	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040330
START TIME: 3:30:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[(ln(Z1/Z2)+ (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ (N1-N2)
-0.061 AT GMH	-4.50E-02	1.909E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.05E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.67E-05	-7.057E-05		WS SLOPE= 2.10E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.073	4.12E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.312E-02		SH SLOPE= -7.6AE 03
-0.056	3.13E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.66E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.105	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.255E-05		PTK SLOPE= -4.12E 01
Z/L AT Z2	1.27E 01			
-0.052		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	9.495E-04		CT2 SLOPE=NO DATA
-1.793E 02	5.70E 01			
PSI1 AT Z1= 0.277222	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.159886	0.07A			
PSI2 AT Z1= 0.178027				
PSI2 AT Z2= 0.100373				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS	
AIR DENSITY (Kg/m3)	1.2361
AIR SPECIFIC HEAT (ITral./Kg Kel.)	2.4165E 02
WATER LAT.HEAT VAP. (ITral./Kg)	5.9857E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .8RE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:30:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.960	6.83	10.09	NO DATA	1016.57	13.360	-1.401	-1.303	-0.081	0.017

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.058	13.279	13.377	9.412E-03	88.30	7.613E-03	12.385	14.026	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.140 AT GMH	MOMENTUM FLUX (Nt/m2) -6.24E-02	FRICTION VELOCITY (Meters/sec) 2.247E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.048E-02	AIR DENSITY (Kg/m3) 1.2364
GEOMETRIC MEAN HEIGHT (Meter) GMH=(71*72)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.01E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.239E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.011E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.160	LAT.HEAT FLUX (Watts/m2) 4.97E 01	SCALING POT.TEMP. (Kelvin) -4.535E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.019E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9055E 05
Z/L AT 10 METERS -0.123	SEN.HEAT FLUX (Watts/m2) 1.27E 01	ROUGHNESS LENGTH (Meters) 2.604E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.394
MONIN-OBUKHOV LENGTH (Meters) -8.099E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.081E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.51E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.77
	BOWEN RATIO (no units) 0.256			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
196%	196%	169%	198%	152%	11%	143%	349%	84%	113%	67%	104%	169%
168%	168%	46%	46%	96%	11%	35%	142%	23%	49%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:30:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.104 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.87E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.174E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(71*72)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.95E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.170E-05 [3.0E-05]
Z/L AT GMH -0.120 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.81E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.473E-02 [2.0E-02]
Z/L AT 10 METERS -0.092 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.01E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.210E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.082E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.056E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.1AE 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.204 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
38%	36%	17%	10%	55%	0%	15%	48%	9%	1%	68%	12%	7%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040400
START TIME: 4: 0:50 PST
END TIME: 4:31: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.135	5.129	3.315	3.231	5.049	-0.091	5.253

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.785	3.866	2.518	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119980	1421 121047	0.199	68	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.998	6.46	10.34	NO DATA	323.6	1015.66	1.27E 01	13.355	285.211

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.105	6.07	10.25	NO DATA	0.21	1016.76

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.178	13.341	13.520	9.564F-03	89.59	7.744F-03	12.586	14.049	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.195	13.449	13.529	9.511E-03	88.40	7.695E-03	12.521	14.163	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040400
START TIME: 4: 0:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.050 AT GMH	MOMENTUM FLUX (Nt/m2) -5.98E-02	FRICTION VELOCITY (Meters/sec) 2.200E-01	GENERAL FORM:DN/DZ= I(N1)-N2))/(ln(Z1/72)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*72)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.89E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.949E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.40E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.82E 00
Z/L AT GMH -0.061	LAT.HEAT FLUX (Watts/m2) 4.67E 01	SCALING POT. TEMP. (Kelvin) -1.476E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.78E 03
Z/L AT 10 METERS -0.047	SEN.HEAT FLUX (Watts/m2) 4.06E 00	ROUGHNESS LENGTH (Meters) 2.380E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.89E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.6AE 01
Z/L AT Z1 -0.084	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.590E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT 72 -0.043	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.34E 01			
MONIN-OBUKHOV LENGTH (Meters) -2.135E 02	BOWEN RATIO (no units) 0.087			
PSI1 AT Z1= 0.240478 PSI1 AT Z2= 0.136580 PSI2 AT Z1= 0.153454 PSI2 AT Z2= 0.085278				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2356	2.4167E 02	5.985BE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4: 0:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.092	6.11	10.26	NO DATA	1016.67	13.355	-1.263	-1.165	0.072	0.170

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.190	13.427	13.525	9.517E-03	88.55	7.701E-03	12.529	14.150	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.178 AT GMH	MOMENTUM FLUX (Nt/m2) -4.77E-02	FRICTION VELOCITY (Meters/sec) 1.965E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.861E-02	AIR DENSITY (Kg/m3) 1.2359
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.71E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.049E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.712E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.201	LAT.HEAT FLUX (Watts/m2) 4.23E 01	SCALING POT.TEMP. (Kelvin) -4.352E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.552E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9048E 05
Z/L AT 10 METERS -0.155	SEN.HEAT FLUX (Watts/m2) 1.07E 01	ROUGHNESS LENGTH (Meters) 1.439E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.390
MONIN-OBUKHOV LENGTH (Meters) -6.458E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.033E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.57E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.87
	BOWEN RATIO (no units) 0.253			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
155%	155%	129%	174%	121%	11%	129%	296%	64%	110%	57%	84%	129%
173%	173%	46%	47%	101%	11%	34%	148%	23%	70%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4: 0:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.111 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.09E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.027E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.75E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.010E-05 [3.0E-05]
Z/L AT GMH -0.127 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.32E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.385E-02 [2.0E-02]
Z/L AT 10 METERS -0.098 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.68E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.757E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.021E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.27E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.165E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.52E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.197 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT. TEMP.	ROUGH LENGTH	DRAG COEF.
58%	55%	11%	6%	43%	0%	2%	44%	6%	1%	64%	8%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040430
START TIME: 4:31:10 PST
END TIME: 5: 1:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.128	5.127	2.763	2.671	5.057	-0.098	5.601

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.798	3.809	2.520	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FETCH	UPWIND LAND	DP1FCAL	DP2FCAL	WIRFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121125	1421 122085	0.206	56	-0.009	0.000	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.112	5.33	10.29	NO DATA	335.4	1015.78	1.24E 01	13.356	285.320

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.208	5.04	10.21	NO DATA	0.17	1016.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.292	13.451	13.631	9.531E-03	88.63	7.719E-03	12.547	14.157	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.299	13.540	13.630	9.484E-03	87.58	7.675E-03	12.491	14.262	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ (N1-N2)
-0.029 AT GMH	-4.37E-02	1.882E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.25E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.5AE-05	-6.709E-05		WS SLOPE= 2.13E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.036	3.86E 01	-A.709E-03		SH SLOPE= -8.86E 03
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			
-0.028	1.58E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.171E-05		PTK SLOPE= -8.86E 01
-0.051	1.26E 01			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
-0.026	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.787E-03		
MONIN-OBUKHOV LENGTH (Meters)	5.27E 01			
-3.587E 02				
PSI1 AT Z1= 0.158004	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.086422	0.041			
PSI2 AT Z1= 0.099149				
PSI2 AT Z2= 0.053267				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2353

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416AE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9044E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .08A Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:31:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.197	5.08	10.22	NO DATA	1016.79	13.356	-1.159	-1.061	0.173	0.271

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.295	13.529	13.627	9.490E-03	87.71	7.681E-03	12.498	14.250	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.286 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.317

Z/L AT 10 METERS
-0.244

MONIN-OBUKHOV LENGTH (Meters)
-4.104E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.07E-02

HUMIDITY FLUX (Kg/sec m2)
1.44E-05

LAT.HEAT FLUX (Watts/m2)
3.56E 01

SEN.HEAT FLUX (Watts/m2)
8.69E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.26E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.69E 01

BOWEN RATIO (no units)
0.244

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.577E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.397E-05

SCALING POT.TEMP. (Kelvin)
-4.411E-02

ROUGHNESS LENGTH (Meters)
4.578E-06

DRAG COEF.AT 10 METERS (Dimensionless)
9.650E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.486E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.441E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
6.955E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2356

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416AE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9042E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.393

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.164E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.99

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
200%	200%	123%	173%	173%	11%	122%	347%	62%	112%	112%	82%	123%
177%	177%	46%	47%	105%	11%	33%	152%	23%	70%	128%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:31:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.165 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.165 [0.02]

Z/L AT 10 METERS
-0.142 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.029E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.43E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.47E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.62E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.01E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.26E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.60E 01 [3.0E+01]

BOWEN RATIO (no units)
0.182 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.660E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.133E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.414E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
7.040E-06 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.164E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
78%	76%	13%	5%	61%	0%	4%	68%	10%	5%	28%	6%	40%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040500
START TIME: 5: 1:30 PST
END TIME: 5:31:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	5.124	5.112	1.997	1.917	5.063	-0.063	5.957

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.705	3.847	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121775	1421 122660	0.207	48	-0.009	0.000	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.178	3.84	10.28	NO DATA	347.5	1015.89	8.82E 00	13.355	285.367

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.266	3.65	10.15	NO DATA	0.11	1016.98

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.357	13.515	13.695	9.519E-03	88.16	7.710E-03	12.535	14.219	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.356	13.592	13.683	9.444E-03	86.88	7.643E-03	12.439	14.318	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040500
START TIME: 5: 1:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) -0.064 AT GMH	MOMENTUM FLUX (Nt/m2) -2.33E-02	FRICTION VELOCITY (Meters/sec) 1.374E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/Kg m2) 1.20E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.085E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.14E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.91E 00
Z/L AT GMH -0.077	LAT.HEAT FLUX (Watts/m2) 2.97E 01	SCALING POT. TEMP. (Kelvin) -7.085E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= -7.63E 03
Z/L AT 10 METERS -0.059	SEN.HEAT FLUX (Watts/m2) 1.22E 00	ROUGHNESS LENGTH (Meters) 1.918E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 7.63E 01
Z/L AT Z1 -0.108	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.82E 00	DRAG COEF. AT 10 METERS (Dimensionless) 2.142E-03		N=LnTEMP STRUC (K*M 2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.054	TOTAL HEAT BUDGET FLUX (Watts/m2) 3.98E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.694E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.286919 PSI1 AT Z2= 0.166129 PSI2 AT Z1= 0.184545 PSI2 AT Z2= 0.104438				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2352

AIR SPECIFIC HEAT (ITcal /Kg Kel.) 2.416E 02

WATER LAT.HEAT VAP. (ITcal /Kg) 5.904E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .001 X Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5: 1:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.255	3.67	10.16	NO DATA	1016.89	13.355	-1.100	-1.002	0.228	0.326

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.353	13.583	13.681	9.453E-03	87.03	7.651E-03	12.451	14.306	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.701 AT GMH	MOMENTUM FLUX (Nt/m2) -1.45E-02	FRICTION VELOCITY (Meters/sec) 1.085E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.176E-02	AIR DENSITY (Kg/m3) 1.2355
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.04E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.917E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.061E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.753	LAT.HEAT FLUX (Watts/m2) 2.62E 01	SCALING POT.TEMP. (Kelvin) -4.965E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.384E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9038E 05
Z/L AT 10 METERS -0.580	SEN.HEAT FLUX (Watts/m2) 6.73E 00	ROUGHNESS LENGTH (Meters) 2.895E-07		VAP.PRES.AT WT LEVEL (Millibar) 15.393
MONIN-OBUKHOV LENGTH (Meters) -1.726E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.82E 00	DRAG COEF.AT 10 METERS (Dimensionless) 8.723E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.18E 01			BAR.PRES.AT WT LEVEL (Millibar) 1018.09
	BOWEN RATIO (no units) 0.257			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
207%	207%	136%	182%	182%	13%	136%	365%	68%	114%	114%	88%	136%
180%	180%	46%	46%	108%	13%	34%	154%	23%	69%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5: 1:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.405 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.68E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.158E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.09E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.604E-05 [3.0E-05]
Z/L AT GMH -0.439 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.69E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.693E-02 [2.0E-02]
Z/L AT 10 METERS -0.338 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.68E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.243E-07 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.962E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.82E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.16?E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.14E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.193 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
[illegible]	77%	8%	8%	61%	0%	3%	60%	14%	6%	79%	1%	[illegible]

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040530
START TIME: 5:31:50 PST
END TIME: 6: 2: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.162	5.147	1.837	1.800	5.083	0.026	5.670

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.787	3.849	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123329	1421 124184	0.206	61	-0.009	0.000	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).012V)	(No.)5V)	(No.)Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND D.R.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.333	3.55	10.51	NO DATA	337.8	1016.18	-3.62E 00	13.357	285.536

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.418	3.44	10.36	NO DATA	0.04	1017.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.513	13.692	13.872	9.663E-03	88.66	7.829E-03	12.731	14.369	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.509	13.764	13.854	9.574E-03	87.82	7.751E-03	12.617	14.466	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.211 AT GMH	-1.03E-02	9.120E-02		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.20E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.39E 00
12.99	9.01E-06	-8.000E-05		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.76E 03
0.236	2.23E 01	-8.000E-03		
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			
-0.182	9.12E-01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -6.76E 01
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.736E-08		
-0.333	-3.62E 00			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
-0.167	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.164E-03		
MONIN OBUKHOV LENGTH (Meters)	1.96E 01			
-5.584E 01	BOWEN RATIO (no units)			
PSI1 AT Z1= 0.609181	0.041			
PSI1 AT Z2= 0.391669				
PSI2 AT Z1= 0.405523				
PSI2 AT Z2= 0.256627				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2348

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416RE 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9031E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .0HE-3 Kg/Kg.
PTK1 PTK2+ +/- .00H Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:31:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.408	3.45	10.37	NO DATA	1017.18	13.357	-0.949	-0.851	0.398	0.496

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.506	13.755	13.853	9.585E-03	87.39	7.760E-03	12.632	14.455	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL.,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.755 AT GMH	MOMENTUM FLUX (Nt/m2) -1.26E-02	FRICTION VELOCITY (Meters/sec) 1.012E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.024E-02	AIR DENSITY (Kg/m3) 1.2351
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.40E-06	SCALING SPEC.HUMID. (Kg/Kg) -7.523E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 9.401E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02
Z/L AT GMH -0.810	LAT.HEAT FLUX (Watts/m2) 2.32E 01	SCALING POT.TEMP. (Kelvin) -4.650E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 4.705E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9038E 05
Z/L AT 10 METERS -0.623	SEN.HEAT FLUX (Watts/m2) 5.88E 00	ROUGHNESS LENGTH (Meters) 1.472E-07		VAP.PRES.AT WT LEVEL (Millibar) 15.400
MONIN-OBUKHOV LENGTH (Meters) -1.604E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.62E 00	DRAG COEF.AT 10 METERS (Dimensionless) 8.580E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.55E 01			BAR.PRES.AT WT LEVEL (Millibar) 1018.38
	BOWEN RATIO (no units) 0.253			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
282%	282%	243%	252%	252%	24%	210%	504%	121%	131%	131%	141%	243%
189%	189%	46%	47%	117%	24%	40%	164%	23%	70%	140%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:31:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.536 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.23E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 9.958E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.34E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.690E-05 [3.0E-05]
Z/L AT GMH -0.580 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.31E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.661E-02 [2.0E-02]
Z/L AT 10 METERS -0.446 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.31E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.239E-07 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.242E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.62E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 9.017E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.46E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.201 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
52%	50%	2%	3%	61%	0%	12%	59%	6%	3%	72%	0%	21%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040600
START TIME: 6: 2:10 PST
END TIME: 6:32:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
6.205	0.001	0.001	5.150	5.133	1.562	1.455	5.097	0.189	6.261

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.710	3.860	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124638	1421 125398		0.201	46	-0.009	0.000	0.000	0.992	0.948

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.464	3.96	10.44	NO DATA	357.9	1016.40	-2.63E 01	13.360	285.662

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.540	2.84	10.27	NO DATA	-0.05	1017.49

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.644	13.817	13.997	9.615E-03	87.43	7.792E-03	12.674	14.497	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.630	13.878	13.969	9.517E-03	86.04	7.707E-03	12.548	14.585	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040600
START TIME: 6: 2:10 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PARAMETER CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.087 AT GMH	MOMENTUM FLUX (Nt/m2) -5.37E-03	FRICTION VELOCITY (Meters/sec) 6.594E-02	GENERAL FORM:DN/DZ= [(N1-N2))/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -2.44E-06	SCALING SPEC.HUMD. (Kg/Kg) 2.994E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.44E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 6.07E 00
Z/L AT GMH 0.192	LAT.HEAT FLUX (Watts/m2) -6.02E 00	SCALING POT. TEMP. (Kelvin) 4.754E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 9.58E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 1.81E 04
Z/L AT 10 METERS 0.148	SEN.HEAT FLUX (Watts/m2) -3.92E-01	ROUGHNESS LENGTH (Meters) 4.146E-10	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.52E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.14E 02
Z/L AT Z1 0.272	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.63E 01	DRAG COEF. AT 10 METERS (Dimensionless) 9.185E-04		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.136				
MONIN-OBUKHOV LENGTH (Meters) 6.756E 01	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.27E 01			
PSI1 AT Z1= -1.276476 PSI1 AT Z2= -0.639927 PSI2 AT Z1= -1.724967 PSI2 AT Z2= -0.864834	BOWEN RATIO (no units) 0.065			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2345

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9024E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6: 2:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millib.)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-L TEMP (Kelvin)
12.531	2.86	10.29	NO DATA	1017.40	13.360	-0.829	-0.731	0.511	0.609

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.629	13.871	13.969	9.529E-03	86.20	7.717E-03	12.564	14.575	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-1.196 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-1.272

Z/L AT 10 METERS
-0.979

MONIN-OBUKHOV LENGTH (Meters)
-1.021E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.29E-03

HUMIDITY FLUX (Kg/sec m2)
8.07E-06

LAT.HEAT FLUX (Watts/m2)
1.98E 01

SEN.HEAT FLUX (Watts/m2)
4.91E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.63E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.60E 00

BOWEN RATIO (no units)
0.248

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.193E-02

SCALING SPEC.HUMID. (Kg/Kg)
-7.925E-05

SCALING POT.TEMP. (Kelvin)
-4.793E-02

ROUGHNESS LENGTH (Meters)
1.229E-08

DRAG COEF.AT 10 METERS (Dimensionless)
8.190E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-6.712E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
8.018E-06

WITH POT.TEMPERATURE (Meter Kel./sec)
3.926E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2349

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9023E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.406

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.165E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.60

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
134%	251%	125%	180%	146%	8%	34%	326%	62%	118%	83%	82%	125%
198%	198%	46%	47%	126%	8%	22%	173%	23%	70%	149%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6: 2:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.430 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.626 [0.02]

Z/L AT 10 METERS
-0.482 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.076E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.50E-03 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
5.86E-06 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.45E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
2.44E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.63E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.40E 01 [3.0E+01]

BOWEN RATIO (no units)
0.184 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
7.762E-02 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-3.859E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.410E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
8.216E-09 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
8.431E-04 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
152%	118%	3%	75%	89%	0%	53%	52%	11%	146%	137%	8%	2%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040630
START TIME: 6:32:30 PST
END TIME: 7: 2:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.184	5.165	1.158	1.080	5.099	0.361	6.548

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.715	3.827	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): *ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:*

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124903	1421 125723	0.186	49	-0.009	0.000	0.000	0.992	0.951

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	*(Deg.True)*	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.490	2.32	10.63	NO DATA	7.6	1016.44	-5.04E 01	13.364	285.691

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.572	2.17	10.46	*NO DATA*	-0.14	1017.54

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.670	13.862	14.042	9.743E-03	88.44	7.897E-03	12.844	14.52?	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.662	13.929	14.019	9.640E-03	86.97	7.807E-03	12.712	14.617	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040630
START TIME: 6:32:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.104 AT GMH	MOMENTUM FLUX (Nt/m2) -1.64E-02	FRICTION VELOCITY (Meters/sec) 1.152E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -1.19E-05	SCALING SPEC.HUMD. (Kg/Kg) 8.347E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.71E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.47E 00
Z/L AT GMH -0.121	LAT.HEAT FLUX (Watts/m2) -2.93E 01	SCALING POT. TEMP. (Kelvin) -7.408E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.00E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 6.48E 03
Z/L AT 10 METERS -0.093	SEN.HEAT FLUX (Watts/m2) 1.07E 00	ROUGHNESS LENGTH (Meters) 4.969E-07	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -7.30E 01
Z/L AT Z1 -0.171	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.04E 01	DRAG COEF. AT 10 METERS (Dimensionless) 6.359[illegible]-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 -0.086	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.86E 01			
MONIN-ORUKHOV LENGTH (Meters) -1.073E 02	BOWEN RATIO (no units) -0.036			
PSI1 AT Z1= 0.397739 PSI1 AT Z2= 0.239976 PSI2 AT Z1= 0.259777 PSI2 AT Z2= 0.153120				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK *SEN HEAT* TRANSF.COEF.	BULK *MOISTURE* TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2344

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

PTK1-PTK[illegible] +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 6:32:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.562	2.19	10.48	NO DATA	1017.44	13.364	-0.802	-0.704	0.556	0.654

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	RFL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.660	13.920	14.018	9.653E-03	87.15	7.818E-03	12.728	14.606	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-2.552 AT GMH	-4.58E-03	6.093E-02	-3.713E-03	1.2347
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	5.78E-06	-7.690E-05	5.785E-06	2.4169E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-2.692	1.43E 01	-5.609E-02	3.418E-03	5.9021E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-2.072	4.27E 00	9.353E-11		15.411
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-4.826E 00	-5.04E 01	7.745E-04		1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-3.18E 01			1018.64
	BOWEN RATIO (no units)			
	0.299			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
182%	182%	111%	159%	170%	6%	58%	329%	56%	103%	115%	76%	111%
201%	201%	46%	48%	129%	6%	14%	177%	23%	71%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 6:32:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-1.267 [0.02] AT GMH	-8.04E-03 [6.0E-02]	7.681E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.69E-06 [8.0E-06]	-1.160E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-1.343 [0.02]	4.18E 00 [2.0E+01]	-2.833E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-1.034 [0.02]	2.89E 00 [3.0E+00]	1.802E-07 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-9.675E 00	-5.04E 01 [2.0E+01]	2.251E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-4.07E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.182 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
97%	96%	11%	124%	54%	0%	68%	96%	38%	272%	87%	0%	137%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040830
START TIME: 8:33:40 PST
END TIME: 9: 3:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.207	5.182	1.259	1.285	5.139	1.015	7.699

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.776	3.758	2.529	0.001	0.001	0.001	0.001	6.205

DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125334	1421 126403	NOT COMPUTED	NOT COMPUTED	-0.009	0.000	0.000	1.000	1.000

SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.76

OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.533	2.53	10.77	NO DATA	46.8	1017.05	-1.41E 02	13.424	285.747

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.640	2.67	10.57	NO DATA	-0.48	1018.15

CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.713	13.918	14.098	9.839E-03	89.02	7.972E-03	12.972	14.572	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.731	14.006	14.097	9.711E-03	87.18	7.862E-03	12.808	14.691	NO DATA

CONTINUED BELOW

RUN NUMBER: 7905040830
START TIME: 8:33:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.254 AT GMH	-1.98E-02	1.265E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -1.61E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.16E 00
12.99	-1.76E-05	1.125E-04		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.282	-4.34E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.23E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 4.80E 03
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.768E-02		
-0.217	2.80E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.93E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.06E 01
-0.398	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.060E-00		
Z/L AT Z2	-1.41E 02			
-0.200		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	5.885E-03		
-4.611E 01	-1.82E 02			
PSI1 AT Z1= 0.675163	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.441382	-0.064			
PSI2 AT Z1= 0.451238				
PSI2 AT Z2= 0.289694				

GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2348

AIR SPECIFIC HEAT (1Tcal./Kg Kel.) 2.4171E 02

WATER LAT.HEAT VAP. (1Tcal./Kg) 5.982BE 05

GENERAL NOTES:
NONE

CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.627	2.66	10.59	NO DATA	1018.05	13.424	-0.796	-0.698	0.572	0.670

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.725	13.996	14.094	9.726E-03	87.40	7.875E-03	12.828	14.677	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.454 AT GMH	MOMENTUM FLUX (Nt/m2) -7.02E-03	FRICTION VELOCITY (Meters/sec) 7.536E-02	WITH LONG. VELOCITY (Meter2/sec2) -5.680E-03	AIR DENSITY (Kg/m3) 1.2351
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.93E-06	SCALING SPEC.HUMID. (Kg/Kg) -7.449E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.934E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH -1.542	LAT.HEAT FLUX (Watts/m2) 1.71E 01	SCALING POT.TEMP. (Kelvin) -4.917E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.706E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -1.187	SEN.HEAT FLUX (Watts/m2) 4.63E 00	ROUGHNESS LENGTH (Meters) 3.732E-09		VAP.PRES.AT WT LEVEL (Millibar) 15.480
MONIN-OBUKHOV LENGTH (Meters) -8.424E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.41E 02	DRAG COEF.AT 10 METERS (Dimensionless) 8.053E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.170E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.28E 02			BAR.PRES.AT WT LEVEL (Millibar) 1019.25
	BOWEN RATIO (no units) 0.270			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
147%	147%	136%	159%	132%	5%	37%	291%	68%	90%	64%	88%	136%
202%	202%	46%	48%	130%	5%	8%	178%	23%	71%	153%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:33:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.760 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.02E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.828E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.22E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 7.913E-06 [3.0E-05]
Z/L AT GMH -0.813 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.01E 00 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.698E-02 [2.0E-02]
Z/L AT 10 METERS -0.626 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.72E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.501E-07 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.597E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.41E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.958E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.31E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.143 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
91%	78%	12%	172%	25%	0%	28%	120%	32%	314%	63%	1%	148%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040900
START TIME: 9: 3:40 PST
END TIME: 9:33:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	5.206	5.183	1.165	1.189	5.147	1.347	7.247

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.803	3.739	2.529	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125112	1421 126150	0.136	63	-0.009	0.000	0.000	0.994	0.965

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.74

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.511	2.34	10.76	NO DATA	31.4	1017.17	-1.88E 02	13.450	285.723

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.615	2.40	10.57	NO DATA	-0.54	1018.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.691	13.895	14.075	9.834E-03	89.09	7.966E-03	12.965	14.553	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.705	13.982	14.072	9.717E-03	87.37	7.865E-03	12.815	14.668	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040900
START TIME: 9: 3:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.979 AT GMH	MOMENTUM FLUX (Nt/m2) -7.46E-03	FRICTION VELOCITY (Meters/sec) 7.769E-02	GENERAL FORM:DN/DZ= K(N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= K((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -1.16E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.208E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.41E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 5.15E 00
Z/L AT GMH -1.044	LAT.HEAT FLUX (Watts/m2) -2.86E 01	SCALING POT. TEMP. (Kelvin) -1.686E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.13E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 4.48E 03
Z/L AT 10 METERS -0.803	SEN.HEAT FLUX (Watts/m2) 1.64E 00	ROUGHNESS LENGTH (Meters) 5.853E-09	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.57E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.21E 01
Z/L AT Z1 -1.474	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.88E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.822E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.739	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.15E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.245E 01	BOWEN RATIO (no units) -0.057			
PSI1 AT Z1= 1.286332 PSI1 AT Z2= 0.937949 PSI2 AT Z1= 0.870674 PSI2 AT Z2= 0.632883				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7979	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2351

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4171E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9821E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040900
START TIME: 9: 3:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.602	2.40	10.60	NO DATA	1018.18	13.450	-0.848	-0.750	0.521	0.619

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.700	13.971	14.069	9.732E-03	87.57	7.877E-03	12.834	14.655	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -2.022 AT GMH	MOMENTUM FLUX (Nt/m2) -5.59E-03	FRICTION VELOCITY (Meters/sec) 6.727E-02	WITH LONG. VELOCITY (Meter2/sec2) -4.525E-03	AIR DENSITY (Kg/m3) 1.2354
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.31E-06	SCALING SPEC.HUMID. (Kg/Kg) -7.587E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.305E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH -2.138	LAT.HEAT FLUX (Watts/m2) 1.56E 01	SCALING POT.TEMP. (Kelvin) -5.430E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.653E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -1.645	SEN.HEAT FLUX (Watts/m2) 4.57E 00	ROUGHNESS LENGTH (Meters) 5.899E-10		VAP.PRES.AT WT LEVEL (Millibar) 15.509
MONIN-OBUKHOV LENGTH (Meters) -6.078E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.88E 02	DRAG COEF.AT 10 METERS (Dimensionless) 7.881E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.68E 02			BAR.PRES.AT WT LEVEL (Millibar) 1019.38
	BOWEN RATIO (no units) 0.293			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. *TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":*

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
257%	257%	360%	339%	316%	5%	45%	655%	180%	159%	136%	200%	360%
197%	197%	46%	48%	125%	5%	7%	173%	23%	71%	148%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040900
START TIME: 9: 3:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.569 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.80E-03 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.845E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.08E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.511E-05 [3.0E-05]
Z/L AT GMH -1.663 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.01E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.484E-02 [2.0E-02]
Z/L AT 10 METERS -1.280 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.74E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.522E-09 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.812E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.88E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 9.517E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.74E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.220 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE *LISTED IN PERCENT DIFFERENCE AND ARE "+or-":*

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
34%	33%	2%	138%	43%	0%	17%	92%	10%	351%	54%	0%	131%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905040930
START TIME: 9:33:40 PST
END TIME: 10: 3:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	5.197	5.171	0.989	1.048	5.164	1.478	6.688

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.854	3.808	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 125082	1421 125990	0.168	56	-0.009	0.000	0.000	0.993	0.956

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/M2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.508	2.01	10.71	NO DATA	12.4	1017.43	-2.96E 02	13.500	285.714

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.599	2.12	10.50	NO DATA	-0.58	1018.53

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.688	13.887	14.067	9.804E-03	88.81	7.940E-03	12.925	14.554	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.689	13.959	14.049	9.672E-03	87.02	7.826E-03	12.755	14.657	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905040930
START TIME: 9:33:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.208 AT GMH	MOMENTUM FLUX (Nt/M2) -1.03E-02	FRICTION VELOCITY (Meters/sec) 9.147E-02	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec M2) -1.29E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.138E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -1.21E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.37E 00
Z/L AT GMH -0.234	LAT.HEAT FLUX (Watts/M2) -3.18E 01	SCALING POT. TEMP. (Kelvin) -7.990E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.27E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 4.75E 03
Z/L AT 10 METERS -0.180	SEN.HEAT FLUX (Watts/M2) 9.14E-01	ROUGHNESS LENGTH (Meters) 4.903E-08	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -6.76E 01
Z/L AT Z1 -0.338	SKY AND SOLAR HEAT FLUX (Watts/M2) -2.06E 02			N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.165	DRAG COEF. AT 10 METERS (Dimensionless) 6.505E-03			
MONIN-OBUKHOV LENGTH (Meters) -5.559E 01	TOTAL HEAT BUDGET FLUX (Watts/M2) -2.37E 02			
PSI1 AT Z1= 0.605583 PSI1 AT Z2= 0.388987 PSI2 AT Z1= 0.403032 PSI2 AT Z2= 0.253794	BOWEN RATIO (no units) -0.029			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2354

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4178E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9021E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905040930 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9:33:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.588	2.11	10.52	NO DATA	1018.43	13.500	-0.912	-0.814	0.450	0.548

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.686	13.950	14.048	9.688E-03	87.24	7.839E-03	12.776	14.645	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -3.026 AT GMH	MOMENTUM FLUX (Nt/m2) -4.23E-03	FRICTION VELOCITY (Meters/sec) 5.848E-02	WITH LONG. VELOCITY (Meter2/sec2) -3.420E-03	AIR DENSITY (Kg/m3) 1.2358
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.78E-06	SCALING SPEC.HUMID. (Kg/Kg) -7.997E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.779E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02
Z/L AT GMH -3.189	LAT.HEAT FLUX (Watts/m2) 1.43E 01	SCALING POT.TEMP. (Kelvin) -6.121E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.580E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -2.454	SEN.HEAT FLUX (Watts/m2) 4.48E 00	ROUGHNESS LENGTH (Meters) 4.062E-11		VAP.PRES.AT WT LEVEL (Millibar) 15.563
MONIN-OBUKHOV LENGTH (Meters) -4.074E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.06E 02	DRAG COEF.AT 10 METERS (Dimensionless) 7.692E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.87E 02			BAR.PRES.AT WT LEVEL (Millibar) 1019.63
	BOWEN RATIO (no units) 0.313			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
207%	207%	152%	169%	198%	5%	23%	367%	76%	93%	122%	96%	152%
191%	191%	46%	47%	119%	5%	6%	167%	23%	70%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905040930 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9:33:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.672 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.65E-03 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.616E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.70E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 3.583E-06 [3.0E-05]
Z/L AT GMH -1.769 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.19E 00 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.259E-02 [2.0E-02]
Z/L AT 10 METERS -1.361 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.14E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.521E-08 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.346E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.06E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.966E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.98E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.207 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
84%	84%	6%	133%	59%	0%	14%	89%	28%	326%	82%	0%	1693

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041000
START TIME: 10: 4: 0 PST
END TIME: 10:34:10 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
6.205	0.001	0.001	5.199	5.175	0.989	1.043	5.168	1.967	6.212

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.893	3.820	2.525	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125535	1421 126472	0.201	59	-0.009	0.000	0.000	0.992	0.948

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.554	1.97	10.73	NO DATA	356.2	1017.49	-2.74E 02	13.538	285.760

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	T) TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.647	2.09	10.53	NO DATA	-0.61	1018.58

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.733	13.934	14.114	9.811E-03	88.62	7.946E-03	12.937	14.598	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	12.737	14.010	14.100	9.688E-03	86.90	7.840E-03	12.778	14.704	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041000
START TIME: 10: 4: 0 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM (N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI')] (N1-N2)
-0.167 AT GMH	-1.19E-02	9.825E-02		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis
12.99	-1.26E-05	1.039E-04	DWS/DZ= -1.35E-02	PSI=PSI1 WS SLOPE= 4.07E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.189	-3.19E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-7.789E-03	DSH/DZ= 1.19E-05	PSI=PSI2 SH SLOPE= 5.20E 03
-0.146	9.57E-01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP (Kelvin) Z-HEIGHT (Meters)	N=POT.TEMP (Kelvin) Z-HEIGHT (M) Vert Axis
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.086E-07	DPT/DZ= 8.92E-04	PSI=PSI2 PTK SLOPE= -6.94E 01
-0.247	-2.74E 02			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis
-0.134	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.052E-03		PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	-3.04E 02			CT2 SLOPE=NO DATA
-6.872E 01	BOWEN RATIO (no units)			
PSI1 AT Z1= 0.532315	-0.031			
PSI1 AT Z2= 0.535005				
PSI2 AT Z1= 0.352352				
PSI2 AT Z2= 0.217089				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2353

AIR SPECIFIC HEAT (Ideal Kg Kel) 2.41E 02

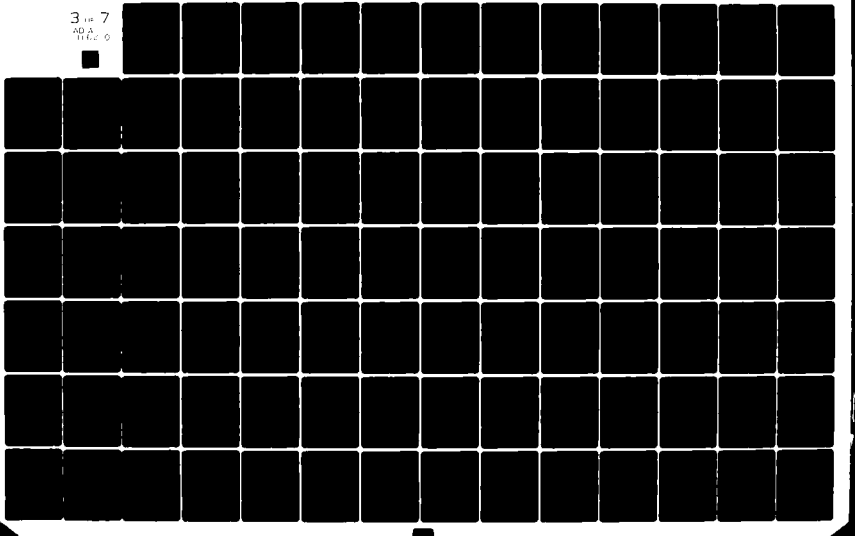
WATER LAT.HEAT VAP (Ideal Kg) 5.50E 05

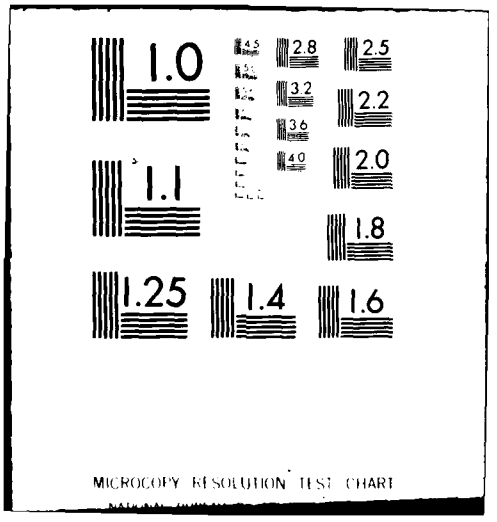
* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART

RUN NUMBER: 7905041000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10: 4: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.636	2.08	10.55	NO DATA	1018.49	13.538	-0.902	-0.804	0.462	0.560

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.734	14.000	14.098	9.703E-03	87.11	7.852E-03	12.797	14.692	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -3.127 AT GMH	MOMENTUM FLUX (Nt/m2) -4.10E-03	FRICTION VELOCITY (Meters/sec) 5.763E-02	WITH LONG. VELOCITY (Meter2/sec2) -3.321E-03	AIR DENSITY (Kg/m3) 1.2356
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.74E-06	SCALING SPEC.HUMID. (Kg/Kg) -8.058E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.738E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH -3.294	LAT.HEAT FLUX (Watts/m2) 1.42E 01	SCALING POT.TEMP. (Kelvin) -6.141E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.539E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9817E 05
Z/L AT 10 METERS -2.535	SEN.HEAT FLUX (Watts/m2) 4.42E 00	ROUGHNESS LENGTH (Meters) 2.982E-11		VAP.PRES.AT WT LEVEL (Millibar) 15.602
MONIN-OBUKHOV LENGTH (Meters) -3.944E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.74E 02	DRAG COEF.AT 10 METERS (Dimensionless) 7.673E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.179E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.56E 02			BAR.PRES.AT WT LEVEL (Millibar) 1019.69
	BOWEN RATIO (no units) 0.312			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
194%	194%	132%	160%	185%	5%	17%	345%	66%	94%	119%	86%	132%
192%	192%	46%	47%	120%	5%	6%	167%	23%	70%	143%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10: 4: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.654 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -6.13E-03 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.814E-02 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.56E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.675E-06 [3.0E-05]
Z/L AT -1.749 .02]	LAT.HEAT FLUX (Watts/m2) 3.85E 00 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.211E-02 [2.0E-02]
Z/L AT 10 METERS -1.346 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.06E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.624E-08 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.428E 00	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.74E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.465E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.68E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.200 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
89%	89%	7%	129%	58%	0%	10%	91%	33%	311%	84%	0%	168%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041030
START TIME: 10:34:20 PST
END TIME: 11: 4:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.215	5.188	1.004	1.023	5.166	2.446	5.340

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.954	3.819	2.528	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127064	1421 128227	0.199	108	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.706	2.04	10.82	NO DATA		326.5	1017.46	-3.41E 02	13.597	285.975

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.823	2.06	10.60	NO DATA	-0.61	1018.56

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.886	14.096	14.276	9.865E-03	88.27	7.995E-03	13.015	14.745	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.913	14.193	14.283	9.732E-03	86.36	7.881E-03	12.844	14.874	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041030
START TIME: 10:34:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-2.470 AT GMH	NOT COMPUTED	NOT COMPUTED	[(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	[(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPED (M/sec)
12.993	NOT COMPUTED	NOT COMPUTED	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 6.40E-03	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX			WS SLOPE=NOT COMPUTED
NOT COMPUTED	(Watts/m2)			
	NOT COMPUTED	SCALING POT.TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		NOT COMPUTED	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
NOT COMPUTED	SEN.HEAT FLUX		DSH/DZ= 1.27E-05	PSI=PSI2
	(Watts/m2)			SH SLOPE= NOT COMPUTED
Z/L AT Z1	NOT COMPUTED	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
NOT COMUTED		NOT COMPUTED	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	SKY AND SOLAR HEAT FLUX		DPT/DZ= -2.97E-03	PSI=PSI2
Z/L AT Z2	(Watts/m2)			PTK SLOPE= NOT COMPUTED
NOT COMPUTED	NOT COMPUTED			
		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert.Axis
(Meters)	(Watts/m2)	5.187E-03		PSI=NONE
NOT COMPUTED	NOT COMPUTED			CT2 SLOPE=NO DATA
PSI1 AT Z1=NOT COMPUTED	BOWEN RATIO			
PSI1 AT Z2=NOT COMPUTED	(no units)			
PSI2 AT Z1=NOT COMPUTED	NOT COMPUTED			
PSI2 AT Z2=NOT COMPUTED				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2345

AIR SPECIFIC HEAT (ITcal./Kg.)
2.4171E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9009E 05

* GENERAL NOTES:
Profile data Richardson Number (RI) (-2.0) functional limitations exceeded for computing Z/L as a function of RI. Profile Z/L and Z/L dependent calculations not executed.
Accuracy limitations exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041030
START TIME: 10:34:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.M-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.809	2.06	10.63	NO DATA	1018.47	13.597	-0.788	-0.690	0.584	0.682

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.M-2/3)
10.00	12.907	14.181	14.279	9.749E-03	86.58	7.894E-03	12.865	14.859	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-3.025 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-3.188

Z/L AT 10 METERS
-2.454

MONIN-OBUKHOV LENGTH (Meters)
-4.075E 00

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.00E-03

HUMIDITY FLUX (Kg/sec m2)
5.67E-06

LAT.HEAT FLUX (Watts/m2)
1.40E 01

SEN.HEAT FLUX (Watts/m2)
4.13E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.41E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.23E 02

BOWEN RATIO (no units)
0.295

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.694E-02

SCALING SPEC.HUMID. (Kg/Kg)
-8.061E-05

SCALING POT.TEMP. (Kelvin)
-5.807E-02

ROUGHNESS LENGTH (Meters)
2.312E-11

DRAG COEF.AT 10 METERS (Dimensionless)
7.658E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.243E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.668E-06

WITH POT.TEMPERATURE (Meter Kel./sec)
3.307E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2348

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4171E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9007E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.662

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.183E-02

BAR.PRES.AT WT LEVEL (Millibar)
1019.67

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
230%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202%	202%	46%	47%	130%	5%	5%	178%	23%	78%	153%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041030
START TIME: 10:34:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-2.766 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
NOT COMPUTED

Z/L AT 10 METERS
NOT COMPUTED

MONIN-OBUKHOV LENGTH (Meters)
NOT COMPUTED

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
NOT COMPUTED

HUMIDITY FLUX (Kg/sec m2)
NOT COMPUTED

LAT.HEAT FLUX (Watts/m2)
NOT COMPUTED

SEN.HEAT FLUX (Watts/m2)
NOT COMPUTED

SKY AND SOLAR HEAT FLUX (Watts/m2)
NOT COMPUTED

TOTAL HEAT BUDGET FLUX (Watts/m2)
NOT COMPUTED

BOWEN RATIO (no units)
NOT COMPUTED

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
NOT COMPUTED

SCALING SPEC.HUMID. (Kg/Kg)
NOT COMPUTED

SCALING POT.TEMP. (Kelvin)
NOT COMPUTED

ROUGHNESS LENGTH (Meters)
NOT COMPUTED

DRAG COEF.AT 10 METERS (Meters)
1.080E-05

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2701

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041100
START TIME: 11: 4:40 PST
END TIME: 11:34:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.251	5.217	1.529	1.549	5.159	2.571	5.106

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.996	3.896	2.528	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125979	1421 127504	0.183	151	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.598	3.00	11.04	NO DATA	318.6	1017.35	-3.59E 02	13.639	285.834

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.750	3.01	10.78	NO DATA	-0.59	1018.45

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.778	14.007	14.187	1.001E-02	90.19	8.112E-03	13.203	14.639	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.841	14.136	14.227	9.847E-03	87.78	7.974E-03	12.993	14.802	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041100
START TIME: 11: 4:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -2.712 AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED	GENERAL FORM:DN/DZ= I(N1-N2)/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.993	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC.HUMD. (Kg/Kg) NOT COMPUTED	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.38E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE=NOT COMPUTED
Z/L AT GMH NOT COMPUTED	LAT.HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT.TEMP. (Kelvin) NOT COMPUTED	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.54E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	SEN.HEAT FLUX (Watts/m2) NOT COMPUTED	ROUGHNESS LENGTH (Meters) NOT COMPUTED	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -7.00E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= NOT COMPUTED
Z/L AT Z1 NOT COMUTED	SKY AND SOLAR HEAT FLUX (Watts/m2) NOT COMPUTED	DRAG COEF. AT 10 METERS (Dimensionless) 3.503E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 NOT COMPUTED	TOTAL HEAT BUDGET FLUX (Watts/m2) NOT COMPUTED			
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	BOWEN RATIO (no units) NOT COMPUTED			
PSI1 AT Z1=NOT COMPUTED PSI1 AT Z2=NOT COMPUTED PSI2 AT Z1=NOT COMPUTED PSI2 AT Z2=NOT COMPUTED				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2347	2.4174E 02	5.9015E 05

* GENERAL NOTES:
Profile data Richardson Number (RI) (-2.0) functional limitations exceeded for computing Z/L as a function of RI. Profile Z/L and Z/L dependent calculations not executed.
Accuracy limitations exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1-WS2= +0.028 of Mean Value.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041100
START TIME: 11: 4:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.732	3.01	10.81	NO DATA	1018.35	13.639	-0.987	-0.809	0.482	0.580

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.830	14.121	14.219	9.867E-03	88.07	7.990E-03	13.019	14.782	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.086 AT GMH	MOMENTUM FLUX (Nt/m2) -9.29E-03	FRICTION VELOCITY (Meters/sec) 8.673E-02	WITH LONG. VELOCITY (Meter2/sec2) -7.523E-03	AIR DENSITY (Kg/m3) 1.2349
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.94E-06	SCALING SPEC.HUMID. (Kg/Kg) -7.413E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.940E-06	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4173E 02
Z/L AT GMH -1.158	LAT.HEAT FLUX (Watts/m2) 1.96E 01	SCALING POT.TEMP. (Kelvin) -4.890E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 4.242E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9011E 05
Z/L AT 10 METERS -0.891	SEN.HEAT FLUX (Watts/m2) 5.30E 00	ROUGHNESS LENGTH (Meters) 2.579E-08		VAP.PRES.AT WT LEVEL (Millibar) 15.703
MONIN-OBUKHOV LENGTH (Meters) -1.122E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.59E 02	DRAG COEF.AT 10 METERS (Dimensionless) 8.288E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.186E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.34E 02			BAR.PRES.AT WT LEVEL (Millibar) 1019.55
	BOWEN RATIO (no units) 0.270			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
213%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
192%	192%	46%	48%	120%	5%	6%	168%	23%	71%	143%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041100
START TIME: 11: 4:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -1.857 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) NOT COMPUTED	FRICTION VELOCITY (Meters/sec) NOT COMPUTED
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) NOT COMPUTED	SCALING SPEC.HUMID. (Kg/Kg) NOT COMPUTED
Z/L AT GMH NOT COMPUTED	LAT.HEAT FLUX (Watts/m2) NOT COMPUTED	SCALING POT.TEMP. (Kelvin) NOT COMPUTED
Z/L AT 10 METERS NOT COMPUTED	SEN.HEAT FLUX (Watts/m2) NOT COMPUTED	ROUGHNESS LENGTH (Meters) NOT COMPUTED
MONIN-OBUKHOV LENGTH (Meters) NOT COMPUTED	SKY AND SOLAR HEAT FLUX (Watts/m2) NOT COMPUTED	DRAG COEF.AT 10 METERS (Meters) 1.018E-03
	TOTAL HEAT BUDGET FLUX (Watts/m2) NOT COMPUTED	
	BOWEN RATIO (no units) NOT COMPUTED	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
44%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	173%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041230
START TIME: 12:30:20 PST
END TIME: 13: 0:10 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.179	5.164	3.624	3.553	5.108	2.704	4.818

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.993	3.924	2.524	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND MEAN	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123115	1421 124374	0.157	139	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.92

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvi)
12.312	7.00	10.60	NO DATA	308.8	1016.56	-3.77E 02	13.635	285.534

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.437	6.73	10.46	NO DATA	-0.42	1017.66

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.491	13.679	13.859	9.731E-03	89.31	7.881E-03	12.820	14.355	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.528	13.793	13.883	9.643E-03	87.72	7.805E-03	12.710	14.490	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041230
START TIME: 12:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.160 AT GMH	MOMENTUM FLUX (Nt/m2) -5.56E-02	FRICTION VELOCITY (Meters/sec) 2.122E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.03E-05	SCALING SPEC.HUMD. (Kg/Kg) -7.752E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.94E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.89E 00
Z/L AT GMH -0.182	LAT.HEAT FLUX (Watts/m2) 5.02E 01	SCALING POT. TEMP. (Kelvin) -3.513E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.97E 03
Z/L AT 10 METERS -0.140	SEN.HEAT FLUX (Watts/m2) 9.32E 00	ROUGHNESS LENGTH (Meters) 2.036E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.04E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.54E 01
Z/L AT Z1 -0.254	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.77E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.203E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.129	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.18E 02			
MONIN-OBUKHOV LENGTH (Meters) -7.155E 01	BOWEN RATIO (no units) 0.186			
PSI1 AT Z1= 0.519043 PSI1 AT Z2= 0.325471 PSI2 AT Z1= 0.343187 PSI2 AT Z2= 0.210572				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2352	2.4169E 02	5.9032E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041230
START TIME: 12:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.422	6.76	10.48	NO DATA	1017.57	13.635	[illegible]	-1.115	0.144	0.242

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.520	13.779	13.877	9.654E-03	87.91	7.814E-03	12.723	14.474	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.127 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.146

Z/L AT 10 METERS
-0.112

MONIN-OBUKHOV LENGTH (Meters)
-8.914E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.09E-02

HUMIDITY FLUX (Kg/sec m2)
1.96E-05

LAT.HEAT FLUX (Watts/m2)
4.85E 01

SEN.HEAT FLUX (Watts/m2)
1.12E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.77E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.17E 02

BOWEN RATIO (no units)
0.230

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.219E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.159E-05

SCALING POT.TEMP. (Kelvin)
-4.028E-02

ROUGHNESS LENGTH (Meters)
2.473E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.076E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.926E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.963E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.939E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2355

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9029E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.687

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.185E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.77

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
168%	168%	178%	205%	127%	5%	24%	332%	89%	116%	38%	109%	178%
175%	175%	46%	46%	103%	5%	7%	149%	23%	69%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041230
START TIME: 12:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.144 [0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.164 [0.02]

Z/L AT 10 METERS
-0.126 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.920E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.98E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.98E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.88E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.03E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.77E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.17E 02 [3.0E+01]

BOWEN RATIO (no units)
0.216 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.199E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.381E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.633E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.349E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.190E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
12%	11%	5%	2%	9%	0%	0%	11%	3%	4%	8%	4%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041300
START TIME: 13: 0:20 PST
END TIME: 13:30:10 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	5.173	5.154	3.810	3.714	5.095	3.205	4.753

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.040	3.862	2.522	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 125176	1421 126389	0.157	133	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.518	7.35	10.57	NO DATA	306.6	1016.38	-4.47E 02	13.681	285.738

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.639	7.03	10.40	NO DATA	-0.34	1017.48

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.697	13.883	14.063	9.699E-03	87.90	7.863E-03	12.787	14.548	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.729	13.989	14.080	9.594E-03	86.21	7.772E-03	12.655	14.680	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041300
START TIME: 13: 0:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.092 AT GMH	MOMENTUM FLUX (Nt/m2) -7.05E-02	FRICTION VELOCITY (Meters/sec) 2.390E-01	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -2.44E-05	SCALING SPEC.HUMD. (Kg/Kg) 8.266E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 3.61E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.67E 00
Z/L AT GMH -0.108	LAT.HEAT FLUX (Watts/m2) -6.02E 01	SCALING POT. TEMP. (Kelvin) -2.894E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.01E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 6.54E 03
Z/L AT 10 METERS -0.083	SEN.HEAT FLUX (Watts/m2) 8.64E 00	ROUGHNESS LENGTH (Meters) 3.362E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.53E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.87E 01
Z/L AT Z1 -0.153	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.47E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.363E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.076				
MONIN-OBUKHOV LENGTH (Meters) -1.203E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.99E 02			
PSI1 AT Z1= 0.367556 PSI1 AT Z2= 0.219427 PSI2 AT Z1= 0.239169 PSI2 AT Z2= 0.139472	BOWEN RATIO (no units) -0.143			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2341

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9020E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 0:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.624	7.07	10.42	NO DATA	1017.38	13.681	-1.057	-0.959	0.296	0.394

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.722	13.977	14.075	9.607E-03	86.41	7.783E-03	12.671	14.664	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.098 AT GMH	MOMENTUM FLUX (Nt/m2) -6.76E-02	FRICTION VELOCITY (Meters/sec) 2.340E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.478E-02	AIR DENSITY (Kg/m3) 1.2344
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.12E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.351E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.124E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416BE 02
Z/L AT GMH -0.114	LAT.HEAT FLUX (Watts/m2) 5.25E 01	SCALING POT.TEMP. (Kelvin) -3.518E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.234E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -0.088	SEN.HEAT FLUX (Watts/m2) 1.03E 01	ROUGHNESS LENGTH (Meters) 3.086E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.731
MONIN-OBUKHOV LENGTH (Meters) -1.136E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.47E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.096E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.188E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.84E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.58
	BOWEN RATIO (no units) 0.196			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
150%	150%	147%	174%	110%	5%	21%	284%	74%	100%	37%	94%	147%
182%	182%	46%	46%	110%	5%	7%	156%	23%	69%	133%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 0:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) *-0.095 [0.02] AT GMH*	MOMENTUM FLUX (Nt/m2) *-6.83E-02 [6.0E-02]*	FRICTION VELOCITY (Meters/sec) *2.352E-01 [6.0E-02]*
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.18E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.001E-05 [3.0E-05]
Z/L AT GMH -0.111 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.90E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.029E-02 [2.0E-02]
Z/L AT 10 METERS -0.085 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.46E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.173E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.172E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.47E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.153E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.13E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.076 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
3%	3%	2%	225%	9%	0%	16%	221%	1%	265%	12%	2%	13%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041330
START TIME: 13:30:20 PST
END TIME: 14: 0:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.148	5.129	4.115	4.009	5.083	3.201	4.765

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.073	3.865	2.514	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125298	1421 126485	0.157	127	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DE>	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.),.005V)	B(No.),.005V)	(No).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.530	7.94	10.42	NO DATA	307.0	1016.18	-4.46E 02	13.714	285.749

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.649	7.57	10.25	NO DATA	-0.24	1017.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.710	13.882	14.062	9.603E-03	86.98	7.786E-03	12.662	14.556	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.739	13.986	14.076	9.498E-03	85.31	7.696E-03	12.528	14.686	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041330
START TIME: 13:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.067 AT GMH	MOMENTUM FLUX (Nt/m2) -8.18E-02	FRICTION VELOCITY (Meters/sec) 2.575E-01	GENERAL FORM:DN/DZ= I(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -2.56E-05	SCALING SPEC.HUMD. (Kg/Kg) 8.066E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.07E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.55E 00
Z/L AT GMH -0.080	LAT.HEAT FLUX (Watts/m2) -6.33E 01	SCALING POT. TEMP. (Kelvin) -2.587E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.01E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 6.70E 03
Z/L AT 10 METERS -0.062	SEN.HEAT FLUX (Watts/m2) 8.32E 00	ROUGHNESS LENGTH (Meters) 4.519E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.24E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.09E 01
Z/L AT Z1 -0.113	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.46E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.331E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.057	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.01E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.625E 02	BOWEN RATIO (no units) -0.131			
PSI1 AT Z1= 0.295984 PSI1 AT Z2= 0.171998 PSI2 AT Z1= 0.190648 PSI2 AT Z2= 0.108267				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2339

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041330
START TIME: 13:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.634	7.62	10.27	NO DATA	1017.18	13.714	-1.080	-0.982	0.259	0.357

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.732	13.973	14.071	9.511E-03	85.51	7.707E-03	12.545	14.671	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.079 AT GMH	MOMENTUM FLUX (Nt/m2) -8.11E-02	FRICTION VELOCITY (Meters/sec) 2.564E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.574E-02	AIR DENSITY (Kg/m3) 1.2342
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.41E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.608E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.408E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.094	LAT.HEAT FLUX (Watts/m2) 5.95E 01	SCALING POT.TEMP. (Kelvin) -3.463E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.880E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -0.072	SEN.HEAT FLUX (Watts/m2) 1.11E 01	ROUGHNESS LENGTH (Meters) 4.443E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.762
MONIN-OBUKHOV LENGTH (Meters) -1.385E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.46E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.133E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.191E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.76E 02			BAR.PRES.AT WT LEVEL (Millibar) 1018.38
	BOWEN RATIO (no units) 0.186			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or ":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
147%	147%	140%	168%	108%	5%	21%	276%	70%	98%	38%	90%	140%
181%	181%	46%	45%	109%	5%	7%	154%	23%	68%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041330
START TIME: 13:30:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.072 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.13E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.567E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.36E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.220E-05 [3.0E-05]
Z/L AT GMH -0.086 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.37E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.782E-02 [2.0E-02]
Z/L AT 10 METERS -0.066 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.69E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.468E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.508E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.46E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.177E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.08E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.073 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
9%	8%	8%	211%	14%	0%	17%	206%	0%	266%	18%	1%	14%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041400
START TIME: 14: 0:40 PST
END TIME: 14:30:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.148	5.142	4.314	4.197	5.065	2.810	4.893

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.069	3.860	2.513	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125025	1421 126259	0.183	119	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.503	8.31	10.42	NO DATA	311.4	1015.91	-3.92E 02	13.709	285.724

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.626	7.86	10.33	NO DATA	-0.14	1017.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.682	13.854	14.034	9.599E-03	87.11	7.784E-03	12.654	14.527	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.716	13.970	14.060	9.547E-03	85.89	7.737E-03	12.591	14.661	NO DATA

* CONTINUED BELOW

PRINT DATE: 11 JUN 1980
RUN NUMBER: 7905041400 MARINE SURFACE LAYER DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START TIME: 14: 0:40 PST NRL MICROMETEOROLOGY DATA AVERAGING PERIOD: 30 Min
START DATE: 4 May 1979 (DAY 124) SAN NICOLAS ISLAND, CAL NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.052 AT GMH	MOMENTUM FLUX (Nt/m2) -1.15E-01	FRICTION VELOCITY (Meters/sec) 3.058E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/LLn(Z1/72)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.966E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.98E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.31E 00
Z/L AT GMH -0.063	LAT.HEAT FLUX (Watts/m2) 6.49E 01	SCALING POT. TEMP. (Kelvin) -2.936E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.76E 03
Z/L AT 10 METERS -0.048	SEN.HEAT FLUX (Watts/m2) 1.12E 01	ROUGHNESS LENGTH (Meters) 8.624E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.76E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.84E 01
Z/L AT Z1 -0.089	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.92E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.643E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.044	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.16E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.072E 02	BOWEN RATIO (no units) 0.173			
PSI1 AT Z1= 0.246109 PSI1 AT Z2= 0.140115 PSI2 AT Z1= 0.157206 PSI2 AT Z2= 0.087559				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2337

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416RE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9021E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .00E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.611	7.92	10.34	NO DATA	1016.91	13.709	-1.098	-1.000	0.247	0.345

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.709	13.956	14.054	9.553E-03	86.03	7.742E-03	12.599	14.645	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.072 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.085

Z/L AT 10 METERS
-0.066

MONIN-OBUKHOV LENGTH (Meters)
-1.526E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.92E-02

HUMIDITY FLUX (Kg/sec m2)
2.45E-05

LAT.HEAT FLUX (Watts/m2)
6.06E 01

SEN.HEAT FLUX (Watts/m2)
1.16E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.92E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.20E 02

BOWEN RATIO (no units)
0.191

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.688E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.390E-05

SCALING POT.TEMP. (Kelvin)
-3.454E-02

ROUGHNESS LENGTH (Meters)
5.332E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.153E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.226E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.451E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.285E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2339

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9018E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.753

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.190E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.11

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COEF.
125%	125%	118%	167%	91%	5%	24%	258%	59%	108%	32%	79%	118%
180%	180%	46%	45%	108%	5%	8%	153%	23%	68%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.060 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.072 (0.02)

Z/L AT 10 METERS
-0.055 (0.02)

MONIN-OBUKHOV LENGTH (Meters)
-1.807E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.65E-02 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
2.47E-05 (8.0E-06)

LAT.HEAT FLUX (Watts/m2)
6.15E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.14E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.92E 02 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.17E 02 (3.0E+01)

BOWEN RATIO (no units)
0.184 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.792E-01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-7.227E-05 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
-3.038E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
6.493E-05 (6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
1.290E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
17%	16%	15%	4%	2%	0%	1%	5%	7%	3%	10%	26%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041430
START TIME: 14:31: 0 PST
END TIME: 15: 1:10 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.131	5.156	3.853	3.738	5.064	2.089	5.118

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.042	3.826	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124517	1421 125671		0.183	112	-0.009	0.000	0.000	0.992	0.958

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.1	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.452	7.43	10.32	NO DATA		319.0	1015.90	-2.91E 02	13.683	285.669
AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
12.567	7.02	10.41	NO DATA		-0.04	1017.00			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.632	13.795	13.974	9.538E-03	86.83	7.733E-03	12.572	14.478	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.657	13.918	14.009	9.600E-03	86.68	7.779E-03	12.659	14.604	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041430
START TIME: 14:31: 0 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.048 AT GMH	MOMENTUM FLUX (Nt/m2) -9.32E-02	FRICTION VELOCITY (Meters/sec) 2.748E-01	GENERAL FORM:DN/DZ= f(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.35E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.930E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.51E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.46E 00
Z/L AT GMH -0.059	LAT.HEAT FLUX (Watts/m2) 5.81E 01	SCALING POT. TEMP. (Kelvin) -2.232E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.80E 03
Z/L AT 10 METERS -0.045	SEN.HEAT FLUX (Watts/m2) 7.66E 00	ROUGHNESS LENGTH (Meters) 5.800E-05	N=POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= -2.87E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.42E 01
Z/L AT Z1 -0.083	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.91E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.767E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.042	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.26E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.215E 02	BOWEN RATIO (no units) 0.132			
PSI1 AT Z1= 0.233668 PSI1 AT Z2= 0.142373 PSI2 AT Z1= 0.148922 PSI2 AT Z2= 0.082535				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2339	2.4168E 02	5.9024E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041430 | MARINE SURFACE LAYER | PRINT DATE: 1, JUN 1980
START TIME: 14:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.553	7.07	10.40	NO DATA	1016.90	13.683	-1.130	-1.032	0.220	0.318

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.651	13.903	14.001	9.593E-03	86.70	7.773E-03	12.649	14.589	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.104 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.121

Z/L AT 10 METERS
-0.093

MONIN-OBUKHOV LENGTH (Meters)
-1.074E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.77E-02

HUMIDITY FLUX (Kg/sec m2)
2.13E-05

LAT.HEAT FLUX (Watts/m2)
5.27E 01

SEN.HEAT FLUX (Watts/m2)
1.09E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.91E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.28E 02

BOWEN RATIO (no units)
0.206

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.342E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.386E-05

SCALING POT.TEMP. (Kelvin)
-3.722E-02

ROUGHNESS LENGTH (Meters)
3.093E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.097E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.484E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.134E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.715E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2341

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9021E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.726

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.188E-02

BAR.PRES.AT WT LEVEL (Millibar)
1018.10

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
131%	131%	117%	167%	98%	5%	28%	265%	58%	108%	40%	78%	117%
178%	178%	46%	45%	106%	5%	9%	152%	23%	68%	129%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.072 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.085 [0.02]

Z/L AT 10 METERS
-0.065 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.528E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-7.49E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.11E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.39E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
9.20E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.91E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.27E 02 [3.0E+01]

BOWEN RATIO (no units)
0.179 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.457E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.209E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.581E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
4.051E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.266E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFFRENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
39%	37%	19%	6%	18%	0%	1%	22%	9%	3%	33%	24%	2%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041500
START TIME: 15: 1:20 PST
END TIME: 15:31:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.157	5.176	3.886	3.768	5.050	3.531	5.049

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.070	3.821	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126814	1421 128035	0.183	196	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.681	7.49	10.47	NO DATA	316.7	1015.68	-4.92E 02	13.710	285.902

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.863	7.08	10.53	NO DATA	0.06	1016.77

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.861	14.039	14.219	9.625E-03	86.48	7.812E-03	12.697	14.695	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.894	14.167	14.257	9.670E-03	86.06	7.843E-03	12.761	14.829	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041500
START TIME: 15: 1:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.058 AT GMH	-1.01E-01	2.867E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.48E-05	-7.029E-05	DWS/DZ= 4.61E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.40E 00
-0.070	6.14E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		-2.849E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.054	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -8.92E-06	PSI=PSI2
Z/L AT Z1	1.02E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	SH SLOPE= -7.69E 03
-0.079	SKY AND SOLAR HEAT FLUX (Watts/m2)	6.794E-05	Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin)
Z/L AT Z2	-4.92E 02		DPT/DZ= -3.61E-03	Z=HEIGHT (M) Vert.Axis
-0.050		DRAG COEF. AT 10 METERS (Dimensionless)		PSI=PSI2
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.880E 03		PTK SLOPE= -1.90E 01
-1.856E 02	-4.21E 02			N=LnTEMP.STRUC.(KxM-2/3)
PSI1 AT Z1= 0.267781	BOWEN RATIO (no units)			Z=HEIGHT (M) Vert.Axis
PSI1 AT Z2= 0.153845	0.166			PSI=NONE
PSI2 AT Z1= 0.171694				CT2 SLOPE=NO DATA
PSI2 AT Z2= 0.096448				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2325

AIR SPECIFIC HEAT (ITcal./Kg Kel) .4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9011E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 1:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.789	7.13	10.53	NO DATA	1016.68	13.710	-0.921	-0.823	0.442	0.540

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.887	14.152	14.250	9.665E-03	86.10	7.840E-03	12.754	14.813	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.085 AT GMH	MOMENTUM FLUX (Nt/m2) -6.89E-02	FRICTION VELOCITY (Meters/sec) 2.364E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.590E-02	AIR DENSITY (Kg/m3) 1.2328
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.10E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.205E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.100E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02
Z/L AT GMH -0.100	LAT.HEAT FLUX (Watts/m2) 5.19E 01	SCALING POT.TEMP. (Kelvin) -3.129E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.398E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9008E 05
Z/L AT 10 METERS -0.077	SEN.HEAT FLUX (Watts/m2) 9.23E 00	ROUGHNESS LENGTH (Meters) 3.216E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.750
MONIN-OBUKHOV LENGTH (Meters) -1.304E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.92E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.100E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.190E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.31E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.88
	BOWEN RATIO (no units) 0.178			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
123%	123%	115%	166%	91%	5%	19%	257%	58%	108%	33%	78%	115%
191%	191%	46%	46%	119%	5%	7%	165%	23%	69%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 1:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.068 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.81E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.507E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.18E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.137E-05 [3.0E-05]
Z/L AT GMH -0.082 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.39E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.902E-02 [2.0E-02]
Z/L AT 10 METERS -0.063 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.77E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.491E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.591E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.92E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.301E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.29E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.173 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
20%	19%	23%	10%	5%	0%	1%	4%	11%	1%	6%	31%	33%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041530
START TIME: 15:31:40 PST
END TIME: 16: 1:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.144	5.169	4.329	4.164	5.036	3.521	5.086

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.122	3.818	2.512	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128108	1421 129180	0.183	100	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.811	8.34	10.40	NO DATA	317.9	1015.47	-4.91E 02	13.761	286.024

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.918	7.80	10.49	NO DATA	0.14	1016.56

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.991	14.162	14.342	9.571E-03	85.25	7.773F-03	12.631	14.817	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.008	14.278	14.368	9.634E-03	85.15	7.819F-03	12.719	14.937	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041530
START TIME: 15:31:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.024

Z/L AT 10 METERS
-0.018

Z/L AT Z1
-0.034

Z/L AT Z2
-0.017

MONIN-OBUKHOV LENGTH (Meters)
-5.450E 02

PSI1 AT Z1= 0.110212
PSI1 AT Z2= 0.058847
PSI2 AT Z1= 0.068363
PSI2 AT Z2= 0.035986

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.39E-01

HUMIDITY FLUX (Kg/sec m2)
2.72E-05

LAT.HEAT FLUX (Watts/m2)
6.79E 01

SEN.HEAT FLUX (Watts/m2)
6.06E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.91E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.18E 02

BOWEN RATIO (no units)
0.090

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.362E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.571E-05

SCALING POT. TEMP. (Kelvin)
-1.446E-02

ROUGHNESS LENGTH (Meters)
1.214E-04

DRAG COEF. AT 10 METERS (Dimensionless)
2.030E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.99E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.96E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:N SLOPE= [((LnZ1-PSI)-(LnZ2-PSI))]/ [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.19F 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH SLOPE= -8.23E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE= -3.74E 01

N=LnTEMP.STRUC.(KxM 2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92F-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2318

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416AE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9004E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08F-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15:31:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.905	7.87	10.47	NO DATA	1016.47	13.761	-0.856	-0.758	0.503	0.601

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.003	14.264	14.362	9.626E-03	85.16	7.813E-03	12.709	14.923	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.058 AT GMH	MOMENTUM FLUX (Nt/m2) -8.77E-02	FRICTION VELOCITY (Meters/sec) 2.667E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.114E-02	AIR DENSITY (Kg/m3) 1.232C
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.39E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.285E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.394E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02
Z/L AT GMH -0.070	LAT.HEAT FLUX (Watts/m2) 5.91E 01	SCALING POT.TEMP. (Kelvin) -2.806E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.485E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9002E 05
Z/L AT 10 METERS -0.054	SEN.HEAT FLUX (Watts/m2) 9.33E 00	ROUGHNESS LENGTH (Meters) 5.176E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.799
MONIN-OBUKHOV LENGTH (Meters) -1.851E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.91E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.149E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.193E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.23E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.67
	BOWEN RATIO (no units) 0.158			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
130%	130%	99%	157%	102%	5%	19%	259%	49%	107%	53%	69%	99%
196%	196%	46%	45%	124%	5%	7%	169%	23%	68%	147%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15:31:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.034 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.04E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.888E-01 [6.0E-02.
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.47E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.007E-05 [3.0E-05]
Z/L AT GMH -0.042 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.10E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.805E-02 [2.0E-02]
Z/L AT 10 METERS -0.033 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.54E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.840E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.072E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.91E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.405E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.21E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.131 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
59%	56%	26%	8%	22%	0%	1%	26%	13%	5%	38%	46%	34%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041600
START TIME: 16: 2: 0 PST
END TIME: 16:32:10 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.135	5.156	4.570	4.389	5.022	3.082	5.058

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.168	3.837	2.512	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128456	1421 129086	0.183	95	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.836	8.80	10.35	NO DATA	317.0	1015.25	-4.30E 02	13.806	286.042

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.927	8.22	10.41	NO DATA	0.21	1016.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.015	14.182	14.362	9.534E-03	84.81	7.746E-03	12.584	14.838	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.019	14.282	14.372	9.584E-03	84.67	7.780E-03	12.654	14.945	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041600
START TIME: 16: 2: 0 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.007 AT GMH	-1.52E-01	3.518E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.55E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	2.77E-05	-6.392E-05		WS SLOPE= 1.14E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.009	6.84E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-6.392E-03		
-0.007	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.46E 03
Z/L AT Z1	2.80E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.013	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.426E-04		PTK SLOPE= -8.46E 01
Z/L AT Z2	-4.30E 02			
-0.007		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.971E 03		
-1.391E 03	-3.59E 02			
PSI1 AT Z1= 0.046686	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.024072	0.041			
PSI2 AT Z = 0.028444				
PSI2 AT Z2= 0.014561				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2315

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9893E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 2: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.917	8.29	10.48	NO DATA	1016.26	13.806	-0.889	-0.791	0.464	0.562

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.015	14.270	14.368	9.578E-03	84.69	7.776E-03	12.646	14.932	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.051 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.062

Z/L AT 10 METERS
-0.048

MONIN-OBUKHOV LENGTH (Meters)
-2.089E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.95E-02

HUMIDITY FLUX (Kg/sec m2)
2.61E-05

LAT.HEAT FLUX (Watts/m2)
6.44E 01

SEN.HEAT FLUX (Watts/m2)
1.00E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.30E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.55E 02

BOWEN RATIO (no units)
0.155

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.843E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.447E-05

SCALING POT.TEMP. (Kelvin)
-2.824E-02

ROUGHNESS LENGTH (Meters)
6.584E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.177E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.080E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.607E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.027E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2318

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9001E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.842

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.196E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.46

* *MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":*

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
181%	181%	100%	160%	160%	5%	22%	319%	50%	109%	109%	70%	100%
193%	193%	46%	45%	121%	5%	8%	166%	23%	68%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 2: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.028 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.035 [0.02]

Z/L AT 10 METERS
-0.027 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-3.722E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.16E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.64E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.53E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.89E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.30E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.56E 02 [3.0E+01]

BOWEN RATIO (no units)
0.116 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.055E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.044E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.582E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
9.503E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.404E-03 [4.0E-04]

* *DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":*

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
78%	76%	24%	4%	53%	0%	1%	52%	12%	8%	55%	42%	31%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041630
START TIME: 16:32:20 PST
END TIME: 17: 2:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.130	5.148	4.523	4.345	5.008	2.303	5.100

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.168	3.860	2.513	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128443	1421 129208	0.183	91	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.844	8.71	10.31	NO DATA	318.4	1015.04	-3.21E 02	13.806	286.043

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.921	8.14	10.36	NO DATA	0.26	1016.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.024	14.188	14.368	9.511E-03	84.57	7.728E-03	12.553	14.843	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.011	14.270	14.340	9.552E-03	84.45	7.756E-03	12.611	14.934	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041630
START TIME: 16:32:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (PANOFSKY,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.012 AT GMH	MOMENTUM FLUX (Nt/m2) -1.18E-01	FRICTION VELOCITY (Meters/sec) 3.091E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.15E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.637E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.44E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.29E 00
Z/L AT GMH 0.017	LAT.HEAT FLUX (Watts/m2) 5.30E 01	SCALING POT. TEMP. (Kelvin) 9.238E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.59E 03
Z/L AT 10 METERS 0.013	SEN.HEAT FLUX (Watts/m2) -3.56E 00	ROUGHNESS LENGTH (Meters) 8.962E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.46E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 5.84E 01
Z/L AT Z1 0.024	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.21E 02	DRAG COFF. AT 10 METERS (Dimensionless) 1.55?E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.012	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.72E 02			
MONIN-OBUKHOV LENGTH (Meters) 7.378E 02	BOWEN RATIO (no units) -0.062			
PSI1 AT Z1= -0.113809 PSI1 AT Z2= -0.057860 PSI2 AT Z1= -0.153797 PSI2 AT Z2= -0.077108				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (1Tcal./Kg Kel.)	WATER LAT.HEAT VAP. (1Tcal./Kg)
1.2312	2.4167E 02	5.9003E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041630
START TIME: 16:32:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.912	8.21	10.36	NO DATA	1016.04	13.806	-0.894	-0.796	0.454	0.552

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.010	14.260	14.358	9.548E-03	84.46	7.752E-03	12.605	14.923	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.053 AT GMH	-9.71E-02	2.808E-01	-7.887E-02	1.2315
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.61E-05	-7.554E-05	2.613E-05	2.4167E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.064	6.45E 01	-2.853E-02	8.012E-03	5.9001E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.050	9.98E 00	6.293E-05		15.839
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-2.018E 02	-3.21E 02	1.172E-03		1.196E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-2.47E 02			1017.24
	BOWEN RATIO (no units)			
	0.155			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
143%	160%	99%	158%	119%	5%	23%	277%	50%	109%	70%	70%	99%
193%	193%	46%	45%	121%	5%	9%	165%	23%	68%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041630
START TIME: 16:32:20 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.016 [0.02] AT GMH	-1.04E-01 [6.0E-02]	2.898E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.51E-05 [8.0E-06]	-6.819E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.020 [0.02]	6.[illegible] 01 [2.0E+01]	-3.063E-03 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.015 [0.02]	3.16E 00 [3.0E+00]	7.313E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-6.562E 02	-3.21E 02 [2.0E+01]	1.282E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-2.54E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.072 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
165%	158%	11%	11%	214%	0%	5%	143%	5%	14%	100%	19%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041700
START TIME: 17: 2:40 PST
END TIME: 17:32:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	5.140	5.155	4.307	4.175	4.998	1.519	5.045

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.151	3.829	2.516	0.001	0.001	0.001	0.001	6.265

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126739	1421 127637		0.183	89	-0.009	0.000	0.000	0.992	0.952

* *SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:*

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.674	8.30	10.37	NO DATA	316.5	1014.89	-2.12E 02	13.790	285.879

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.764	7.82	10.40	NO DATA	0.29	1015.99

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.854	14.022	14.202	9.553E-03	85.87	7.759E-03	12.602	14.676	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.854	14.115	14.206	9.580E-03	85.53	7.775E-03	12.641	14.779	NO DATA

* *CONTINUED BELOW*

RUN NUMBER: 7905041700
START TIME: 17: 2:40 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* *PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):*

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.011 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.014

Z/L AT 10 METERS
-0.011

Z/L AT Z1
-0.020

Z/L AT Z2
-0.010

MONIN-OBUKHOV LENGTH
(Meters)
-9.212E 02

PSII AT Z1= 0.068608
PSII AT Z2= 0.035819
PSI2 AT Z1= 0.042075
PSI2 AT Z2= 0.021749

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.03E-01

HUMIDITY FLUX
(Kg/sec m2)
2.30E-05

LAT.HEAT FLUX
(Watts/m2)
5.68E 01

SEN.HEAT FLUX
(Watts/m2)
2.33E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-2.12E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-1.53E 02

BOWEN RATIO
(no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.892E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.453E-05

SCALING POT. TEMP.
(Kelvin)
-6.453E-03

ROUGHNESS LENGTH
(Meters)
7.019E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.519E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)/(Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.30E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.38E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.38E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -8.38E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL	PROFILE TUR.SCHMIDT	BULK SEN HEAT	BULK MOISTURE
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2317

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.416E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9012E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.753	7.88	10.40	NO DATA	1015.89	13.790	-1.037	-0.934	0.314	0.412

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.051	14.104	14.202	9.577E-03	85.57	7.773E-03	12.637	14.767	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.069 AT GMH	MOMENTUM FLUX (Nt/m2) -8.80E-02	FRICTION VELOCITY (Meters/sec) 2.672E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.142E-02	AIR DENSITY (Kg/m3) 1.2320
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.46E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.484E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.464E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02
Z/L AT GMH -0.069	LAT.HEAT FLUX (Watts/m2) 6.09E 01	SCALING POT.TEMP. (Kelvin) -3.295E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.807E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9010E 05
Z/L AT 10 METERS 0.063	SEN.HEAT FLUX (Watts/m2) 1.10E 01	ROUGHNESS LENGTH (Meters) 5.214E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.820
MONIN OBUKHOV LENGTH (Meters) -1.581E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.12E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.150E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.195E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.40E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.09
	BOWEN RATIO (no units) 0.180			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
195%	195%	116%	168%	168%	5%	36%	337%	58%	110%	110%	78%	116%
103%	103%	46%	45%	111%	5%	11%	156%	23%	68%	134%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) -0.041 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -9.23E-02 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 2.735E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.43E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.092E-05 (3.0E-05)
Z/L AT GMH -0.049 (0.02)	LAT.HEAT FLUX (Watts/m2) 6.00E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -1.841E-02 (2.0E-02)
Z/L AT 10 METERS -0.038 (0.02)	SEN.HEAT FLUX (Watts/m2) 7.54E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 5.856E-05 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -2.642E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.12E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.245E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.41E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.136 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	69%	9%	4%	59%	0%	5%	55%	4%	7%	67%	16%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041730
START TIME: 17:32:50 PS
END TIME: 18: 3: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
6.205	0.001	0.001	5.138	5.152	4.095	3.958	4.998	0.774	5.002

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT REF B
4.095	3.835	2.515	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPTECAL	DPTECAL	WTRECAL	WSREC	WSZREC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124059	1421 125145	0.183	88	5.009	0.000	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.) .005V)	(No.) .002V)	(No. .5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	%SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.406	7.89	10.36	NO DATA	315.1	1014.88	-1.03E 02	13.735	285.620

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.514	7.41	10.41	NO DATA	0.30	1015.98

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
18.35	12.586	13.752	13.932	9.554E-03	87.32	7.753E-03	12.592	14.420	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.405	13.866	13.956	9.596E-03	87.02	7.781E-03	12.651	14.539	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041730
START TIME: 17:32:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:"N"SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.025 AT GMH	-1.17E-01	3.078E-01		
GEOMETRIC MEAN HEIGHT (Meter) G M=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.37E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1
12.99	2.53E-05	-6.650E-05		WS SLOPE 1.30E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.031	6.24E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		1.576E-02	DQH/DZ= -8.92E-06	PSI=PSI2
-0.024	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.1.E 03
Z/L AT Z1	6.05E 00	ROUGHNESS LENGTH (Meters)	N=POT TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis
-0.044		8.826E-05	DPT/DZ= -2.11E-03	PSI=PSI2
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			PTK SLOPE= -3.43E 01
-0.022	-1.08E 02			
		DRAG COEF. AT 10 METERS		N=LnTEMP STRUC (KxM-2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert Axis
(Meters)	(Watts/m2)	1.926E-03		PSI=NONE
-4.125E 02	-3.95E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.140358				
PSI1 AT Z2= 0.076106	BOWEN RATIO			
PSI2 AT Z1= 0.087716	(no units)			
PSI2 AT Z2= 0.046774	0.097			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT HEAT VAP (ITcal./Kg)
1.2328	2.4160E 02	5.902E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08[3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:32:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.501	7.47	10.41	NO DATA	1015.89	13.735	-1.233	-1.135	0.118	0.216

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.599	13.852	13.950	9.591E-03	87.05	7.778E-03	12.644	14.525	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.095 AT GMH	MOMENTUM FLUX (Nt/m2) -7.72E-02	FRICTION VELOCITY (Meters/sec) 2.503E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.264E-02	AIR DENSITY (Kg/m3) 1.2331
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.28E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.393E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.282E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02
Z/L AT GMH -0.111	LAT.HEAT FLUX (Watts/m2) 5.64E 01	SCALING POT.TEMP. (Kelvin) -3.916E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.800E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9024E 05
Z/L AT 10 METERS -0.086	SEN.HEAT FLUX (Watts/m2) 1.22E 01	ROUGHNESS LENGTH (Meters) 4.042E-05		VAP.PRES.AT WT LEVEL (Millibar) 13.763
MONIN-OBUKHOV LENGTH (Meters) -1.166E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.08E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.123E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.191E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.93E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.89
	BOWEN RATIO (no units) 0.217			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
131%	131%	104%	160%	102%	6%	57%	262%	52%	108%	50%	72%	104%
174%	174%	46%	45%	102%	6%	16%	147%	23%	68%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:32:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.055 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.94E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.679E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.34E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.107E-05 [3.0E-05]
Z/L AT GMH -0.066 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.77E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.243E-02 [2.0E-02]
Z/L AT 10 METERS -0.051 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.14E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.830E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.973E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.08E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.346E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.94E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.174 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	61%	24%	6%	34%	0%	0%	36%	12%	5%	57%	41%	31%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041800
START TIME: 18: 3:10 PST
END TIME: 18:33:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.131	5.147	3.904	3.780	5.000	0.197	4.924

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.027	3.843	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122353	1421 123423		0.183	89	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.235	7.52	10.32	NO DATA	312.4	1014.91	-2.74E 01	13.668	285.449

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.342	7.10	10.36	NO DATA	0.30	1016.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.415	13.577	13.757	9.534E-03	88.06	7.731E-03	12.557	14.260	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.432	13.688	13.778	9.565E-03	87.67	7.752E-03	12.603	14.376	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041800
START TIME: 18: 3:10 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [M1-M2]
-0.029 AT GMH	-9.33E-02	2.751E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.28E-05	-6.713E-05	DWS/DZ= 4.74E-02	PSI=PSI1 WS SLOPE= 1.45E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.037	5.65E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.448E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.05E 03
-0.028	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	4.97E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.037	SKY AND SOLAR HEAT FLUX (Watts/m2)	5.818E-05	DPT/DZ= -1.92E-03	PSI=PSI2 PTK SLOPE= -3.73E 01
Z/L AT Z2	2.74E 01			
-0.026		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.713E-03		PSI=NONE
-3.549E 02	3.39E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.159419	BOWEN RATIO			
PSI1 AT Z2= 0.087255	(no units)			
PSI2 AT Z1= 0.100069	0.088			
PSI2 AT Z2= 0.053793				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2336

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9836E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2+ +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 3:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.329	7.15	10.35	NO DATA	1015.91	13.668	-1.339	-1.241	0.006	0.104

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.427	13.674	13.772	9.562E-03	87.72	7.749E-03	12.598	14.362	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.117 AT GMH	MOMENTUM FLUX (Nt/m2) -6.95E-02	FRICTION VELOCITY (Meters/sec) 2.374E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.635E-02	AIR DENSITY (Kg/m3) 1.2339
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.17E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.397E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.167E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02
Z/L AT GMH -0.135	LAT.HEAT FLUX (Watts/m2) 5.36E 01	SCALING POT.TEMP. (Kelvin) -4.281E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.016E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9034E 05
Z/L AT 10 METERS -0.104	SEN.HEAT FLUX (Watts/m2) 1.27E 01	ROUGHNESS LENGTH (Meters) 3.269E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.695
MONIN-OBUKHOV LENGTH (Meters) -9.590E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.74E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.102E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.186E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 3.88E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.11
	BOWEN RATIO (no units) 0.237			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
143%	143%	113%	165%	111%	8%	105%	276%	57%	108%	55%	77%	113%
170%	170%	46%	45%	98%	8%	29%	144%	23%	68%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 3:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.069 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.64E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.483E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.19E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.132E-05 [3.0E-05]
Z/L AT GMH -0.082 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.41E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.330E-02 [2.0E-02]
Z/L AT 10 METERS -0.063 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.07E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.186E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.591E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.74E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.262E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 3.77E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.186 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	61%	17%	3%	43%	0%	8%	42%	8%	5%	65%	22%	27%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041830
START TIME: 18:33:30 PST
END TIME: 19: 3:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.143	5.160	3.759	3.623	4.999	-0.070	4.939

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.955	3.820	2.508	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124068	1421 125019	0.183	91	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINFERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.487	7.25	10.39	NO DATA	312.9	1014.90	9.82E 00	13.598	285.614

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.502	6.81	10.44	NO DATA	0.27	1016.00

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.587	13.756	13.935	9.574E-03	87.49	7.769E-03	12.617	14.421	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.592	13.855	13.946	9.611E-03	87.22	7.793E-03	12.671	14.527	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041830
START TIME: 18:33:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.813 AT GMH	MOMENTUM FLUX (Nt/m2) -8.79E-02	FRICTION VELOCITY (Meters/sec) 2.671E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.14E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.486E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.86E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.50E 00
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 5.29E 01	SCALING POT. TEMP. (Kelvin) -6.486E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.33E 03
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 2.16E 00	ROUGHNESS LENGTH (Meters) 5.201E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.33E 01
Z/L AT Z1 -0.024	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.82E 00	DRAG COEF. AT 10 METERS (Dimensionless) 1.759E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.012	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.48E 01			
MONIN-OBUKHOV LENGTH (Meters) -7.767E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.080216 PSI1 AT Z2= 0.042148 PSI2 AT Z1= 0.049357 PSI2 AT Z2= 0.025643				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2329

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9827E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .88E-3 Kg/Kg.
PTK1-PTK2= +/- .808 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:33:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.490	6.86	10.43	NO DATA	1015.90	13.598	-1.108	-1.010	0.245	0.343

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMIT (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.588	13.843	13.941	9.607E-03	87.25	7.790E-03	12.665	14.515	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.112 AT GMH	MOMENTUM FLUX (Nt/m2) -6.29E-02	FRICTION VELOCITY (Meters/sec) 2.259E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.103E-02	AIR DENSITY (Kg/m3) 1.2332
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.99E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.153E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.993E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416BE 02
Z/L AT GMH -0.130	LAT.HEAT FLUX (Watts/m2) 4.92E 01	SCALING POT.TEMP. (Kelvin) -3.708E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.377E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9025E 05
Z/L AT 10 METERS -0.100	SEN.HEAT FLUX (Watts/m2) 1.05E 01	ROUGHNESS LENGTH (Meters) 2.665E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.624
MONIN-OBUKHOV LENGTH (Meters) -1.003E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.82E 00	DRAG COEF.AT 10 METERS (Dimensionless) 1.083E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.181E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.95E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.10
	BOWEN RATIO (no units) 0.212			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
190%	190%	111%	166%	166%	12%	135%	332%	56%	110%	110%	76%	111%
180%	180%	46%	46%	108%	12%	37%	154%	23%	69%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:33:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.064 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.03E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.388E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.02E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.894E-05 [3.0E-05]
Z/L AT GMH -0.075 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.00E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.050E-02 [2.0E-02]
Z/L AT 10 METERS -0.058 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.19E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.585E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.738E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.82E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.262E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.85E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.158 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED , PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
78%	75%	19%	4%	59%	0%	4%	58%	9%	5%	75%	22%	30%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041900
START TIME: 19: 3:50 PST
END TIME: 19:34: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.173	5.190	3.758	3.634	5.004	-0.097	5.014

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.896	3.825	2.508	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): *ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:*

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125044	1421 125948	0.183	93	-0.009	0.000	0.000	0.992	0.952

* *SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:*

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.82

* *OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:*

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.504	7.25	10.57	NO DATA	315.5	1014.97	1.35E 01	13.541	285.710

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.595	6.83	10.61	NO DATA	0.23	1016.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.684	13.870	14.050	9.687E-03	87.98	7.843E-03	12.771	14.515	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.685	13.965	14.055	9.721E-03	87.70	7.885E-03	12.819	14.617	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905041900
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -8.05E-02	FRICTION VELOCITY (Meters/sec) 2.556E-01	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.05E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.506E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.62E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.57E 00
Z/L AT GMH -0.018	LAT.HEAT FLUX (Watts/m2) 5.04E 01	SCALING POT. TEMP. (Kelvin) -6.506E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.31E 03
Z/L AT 10 METERS -0.014	SEN.HEAT FLUX (Watts/m2) 2.07E 00	ROUGHNESS LENGTH (Meters) 4.389E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.31E 01
Z/L AT Z1 -0.026	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.612E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.013	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.62E 01			
MONIN-OBUKHOV LENGTH (Meters) -7.071E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.087350 PSI1 AT Z2= 0.046075 PSI2 AT Z1= 0.053853 PSI2 AT Z2= 0.028067				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2325

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9022E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905041900
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.584	6.88	10.61	NO DATA	1015.97	13.541	-0.957	-0.859	0.412	0.518

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.682	13.953	14.051	9.717E-03	87.74	7.882E-03	12.814	14.605	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.098 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.114

Z/L AT 10 METERS
-0.088

MONIN-OBUKHOV LENGTH (Meters)
-1.140E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.33E-02

HUMIDITY FLUX (Kg/sec m2)
1.86E-05

LAT.HEAT FLUX (Watts/m2)
4.60E 01

SEN.HEAT FLUX (Watts/m2)
9.28E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.35E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.87E 01

BOWEN RATIO (no units)
0.202

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.266E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.661E-05

SCALING POT.TEMP. (Kelvin)
-3.284E-02

ROUGHNESS LENGTH (Meters)
2.698E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.084E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-5.134E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.861E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.441E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2328

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9020E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.567

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.177E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.17

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
195%	195%	116%	169%	169%	10%	129%	338%	58%	111%	111%	78%	116%
188%	188%	46%	48%	116%	10%	36%	164%	23%	71%	139%	43%	40%

* CONTINUED BELOW

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MARINE SURFACE LAYER
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.057 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.067 [0.02]

Z/L AT 10 METERS
-0.052 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.938E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.82E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.90E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.70E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.34E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.35E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.82E 01 [3.0E+01]

BOWEN RATIO (no units)
0.149 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.348E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.601E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.817E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.298E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.219E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
74%	71%	14%	6%	58%	0%	2%	57%	7%	1%	66%	15%	24%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905041930
START TIME: 19:34:10 PST
END TIME: 20: 4:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.189	5.206	3.511	3.399	5.015	-0.097	4.949

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.850	3.836	2.508	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125497	1421 126362		0.183	97	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.550	6.77	10.67	NO DATA	313.3	1015.14	1.35E 01	13.496	285.753

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.636	6.40	10.71	NO DATA	0.18	1016.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.730	13.924	14.104	9.749E-03	88.28	7.914E-03	12.855	14.561	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.726	14.015	14.105	9.785E-03	88.04	7.937E-03	12.905	14.659	NO DATA

* CONTINUED BELOW

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PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -6.61E-02	FRICTION VELOCITY (Meters/sec) 2.316E-01	GENERAL FORM:DN/DZ= ((N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.87E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.539E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.14E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.73E 00
Z/L AT GMH -0.023	LAT.HEAT FLUX (Watts/m2) 4.63E 01	SCALING POT. TEMP. (Kelvin) -6.539E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.24E 03
Z/L AT 10 METERS -0.018	SEN.HEAT FLUX (Watts/m2) 1.89E 00	ROUGHNESS LENGTH (Meters) 2.953E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.24E 01
Z/L AT Z1 -0.032	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.544E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.016	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.17E 01			
MONIN-OBUKHOV LENGTH (Meters) -5.708E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.105792 PSI1 AT Z2= 0.056356 PSI2 AT Z1= 0.065546 PSI2 AT Z2= 0.034437				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2325

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4171E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9019E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

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RUN NUMBER: 7905041930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:34:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.626	6.45	10.70	NO DATA	1016.14	13.496	-0.870	-0.772	0.508	0.606

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.724	14.004	14.182	9.781E-03	88.07	7.934E-03	12.900	14.648	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.110 AT GMH	MOMENTUM FLUX (Nt/m2) -5.40E-02	FRICTION VELOCITY (Meters/sec) 2.094E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.384E-02	AIR DENSITY (Kg/m3) 1.2328
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.66E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.441E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.662E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4171E 02
Z/L AT GMH -0.128	LAT.HEAT FLUX (Watts/m2) 4.11E 01	SCALING POT.TEMP. (Kelvin) -3.143E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.581E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -0.098	SEN.HEAT FLUX (Watts/m2) 8.21E 00	ROUGHNESS LENGTH (Meters) 1.921E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.524
MONIN-OBUKHOV LENGTH (Meters) -1.017E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.055E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.173E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.28E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.34
	BOWEN RATIO (no units) 0.200			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
199%	199%	122%	172%	172%	10%	129%	344%	61%	111%	111%	81%	122%
195%	195%	46%	48%	123%	10%	36%	171%	23%	71%	146%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905041930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:34:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.064 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.74E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.155E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.71E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.487E-05 [3.0E-05]
Z/L AT GMH -0.076 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.22E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.732E-02 [2.0E-02]
Z/L AT 10 METERS -0.058 [0.02]	SEN.HEAT FLUX (Watts/m2) 5.58E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.279E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.713E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.176E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.26E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.147 [0.08]	

* *DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE* ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
72%	69%	11%	7%	57%	0%	1%	57%	6%	1%	63%	9%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042000
START TIME: 20: 4:30 PST
END TIME: 20 34:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.198	5.214	3.747	3.618	5.014	-0.097	4.959

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.825	3.831	2.505	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 124347	1421 125294	0.183	101	-0.009	0.000	0.300	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	1	179	0	0	0	0	0	115.1	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.435	7.23	10.72	NO DATA	313.6	1015.13	1.35E 01	13.471	285.642

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.529	6.80	10.76	NO DATA	0.12	1016.23

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.614	13.814	13.993	9.786E-03	89.26	7.941E-03	12.899	14.451	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.28	12.620	13.912	14.002	9.819E-03	88.93	7.962E-03	12.946	14.557	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042000
START TIME: 20: 4:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.014 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.018

Z/L AT 10 METERS
-0.014

Z/L AT Z1
-0.025

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH (Meters)
-7.320E 02

PSI1 AT Z1= 0.084658
PSI1 AT Z2= 0.044590
PSI2 AT Z1= 0.052154
PSI2 AT Z2= 0.027150

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-8.32E-02

HUMIDITY FLUX
(Kg/sec m2)
2.08E-05

LAT.HEAT FLUX
(Watts/m2)
5.14E 01

SEN.HEAT FLUX
(Watts/m2)
2.11E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.35E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
6.71E 01

BOWEN RATIO
(no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.598E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.499E-05

SCALING POT. TEMP.
(Kelvin)
-6.499E-03

ROUGHNESS LENGTH
(Meters)
4.674E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.675E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/(Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.71E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.54E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.32E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -8.32E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2329

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4172E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9025E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 4:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.518	6.85	10.75	NO DATA	1016.13	13.471	-0.953	-0.855	0.429	0.527

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.616	13.980	13.998	9.815E-03	88.97	7.959E-03	12.941	14.544	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.098 AT GMH	-6.27E-02	2.255E-01	-5.085E-02	1.2332
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	1.72E-05	-6.186E-05	1.720E-05	2.4172E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.115	4.25E 01	-3.279E-02	7.394E-03	5.9023E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.088	9.23E 00	2.644E-05		15.499
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.131E 02	1.35E 01	1.082E-03		1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	6.53E 01			1017.33
	BOWEN RATIO (no units)			
	0.217			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
193%	193%	114%	168%	168%	10%	129%	335%	57%	111%	111%	77%	114%
188%	188%	46%	49%	116%	10%	36%	165%	23%	72%	139%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 4:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.057 (0.02) AT GMH	-6.86E-02 (6.0E-02)	2.353E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.80E-05 (8.0E-06)	-6.309E-05 (3.0E-05)
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.067 (0.02)	4.45E 01 (2.0E+01)	-1.812E-02 (2.0E-02)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.051 (0.02)	6.31E 00 (3.0E+00)	3.372E-05 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-1.942E 02	1.35E 01 (2.0E+01)	1.236E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	6.57E 01 (3.0E+01)	
	BOWEN RATIO (no units)	
	0.159 (0.98)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	73%	16%	11%	57%	0%	2%	59%	8%	3%	66%	18%	27%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042030
START TIME: 20:34:50 PST
END TIME: 21: 5: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.172	5.188	3.046	2.976	5.026	-0.098	4.883

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.801	3.842	2.505	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121991	1421 122954	0.183	105	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.199	5.88	10.56	NO DATA	311.0	1015.31	1.36E 01	13.448	285.407

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.295	5.63	10.60	NO DATA	0.06	1016.40

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.379	13.563	13.743	9.697E-03	89.74	7.860E-03	12.770	14.231	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.386	13.663	13.753	9.730E-03	89.40	7.881E-03	12.818	14.337	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042030
START TIME: 20:34:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.038 AT GMH	MOMENTUM FLUX (Nt/m2) -3.50E-02	FRICTION VELOCITY (Meters/sec) 1.684E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.42E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.818E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.83E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.38E 00
Z/L AT GMH -0.047	LAT.HEAT FLUX (Watts/m2) 3.50E 01	SCALING POT. TEMP. (Kelvin) -6.818E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.93E 03
Z/L AT 10 METERS -0.036	SEN.HEAT FLUX (Watts/m2) 1.43E 00	ROUGHNESS LENGTH (Meters) 6.625E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -7.93E 01
Z/L AT Z1 -0.066	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.36E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.133E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.033				
MONIN-OBUKHOV LENGTH (Meters) -2.775E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.01E 01			
PSI1 AT Z1= 0.195309 PSI1 AT Z2= 0.108724 PSI2 AT Z1= 0.123549 PSI2 AT Z2= 0.067414	BOWEN RATIO (no units) 0.041			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2342

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9039E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .08B Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:34:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.284	5.66	10.60	NO DATA	1016.31	13.448	-1.164	-1.066	0.203	0.301

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.382	13.651	13.749	9.726E-03	89.44	7.879E-03	12.813	14.325	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (*FRIEHE ET AL,1978*):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.209 AT GMH	MOMENTUM FLUX (Nt/m2) -3.96E-02	FRICTION VELOCITY (Meters/sec) 1.792E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.211E-02	AIR DENSITY (Kg/m3) 1.2345
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.48E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.869E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.475E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH -0.234	LAT.HEAT FLUX (Watts/m2) 3.65E 01	SCALING POT.TEMP. (Kelvin) -4.214E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.551E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9037E 05
Z/L AT 10 METERS -0.180	SEN.HEAT FLUX (Watts/m2) 9.43E 00	ROUGHNESS LENGTH (Meters) 9.186E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.478
MONIN-OBUKHOV LENGTH (Meters) -5.552E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.36E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.003E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.170E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.95E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.51
	BOWEN RATIO (no units) 0.259			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
227%	227%	155%	191%	191%	10%	134%	383%	77%	114%	114%	97%	155%
177%	177%	46%	48%	105%	10%	34%	153%	23%	71%	128%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:34:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.134 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.86E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.767E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.46E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 6.726E-05 [3.0E-05]
Z/L AT GMH -0.152 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.62E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.346E-02 [2.0E-02]
Z/L AT 10 METERS -0.117 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.60E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.401E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -8.548E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.36E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.030E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.76E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.196 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF
64%	62%	4%	2%	63%	0%	10%	60%	3%	1%	75%	2%	%

* END OF DATA H:M

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042100
START TIME: 21: 5:10 PST
END TIME: 21:35:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.186	5.202	2.617	2.533	5.029	-0.098	5.041

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.781	3.833	2.504	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123691	1421 124558	0.183	109	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

M...AL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.sc...)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCAR...NT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.369	5.06	10.65	NO DATA	316.4	1015.36	1.37E-01	13.428	285.572

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.456	4.81	10.68	NO DATA	0.00	1016.45

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.549	13.741	13.921	9.746E-03	89.24	7.905E-03	12.843	14.392	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.546	13.832	13.922	9.777E-03	88.94	7.924E-03	12.887	14.490	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042100
START TIME: 21: 5:10 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.040 AT GMH	MOMENTUM FLUX (Nt/m2) -3.34E-02	FRICTION VELOCITY (Meters/sec) 1.644E-01	GENERAL FORM:DN/DZ= ((N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: N-SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.39E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.844E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.75E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSIM WS SLOPE= 2.43E 00
Z/L AT GMH -0.049	LAT.HEAT FLUX (Watts/m2) 3.43E 01	SCALING POT. TEMP. (Kelvin) -6.844E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSIH SH SLOPE= 7.90E 03
Z/L AT 10 METERS -0.038	SEN.HEAT FLUX (Watts/m2) 1.40E 00	ROUGHNESS LENGTH (Meters) 5.816E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.92E-04	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert Axis PSI PSIH PTK SLOPE= -7.90E 01
Z/L AT Z1 -0.070	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.7 E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.549E-03		N=ENTEMP.SIGUE (K+M 2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.035	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.94E 01			
MONIN-OBUKHOV LENGTH (Meters) 2.626E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.204203 PSI1 AT Z2= 0.114137 PSI2 AT Z1= 0.129408 PSI2 AT Z2= 0.070869				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.233

AIR SPECIFIC HEAT (Ical /Kg Kel) 2.401E 00

WATER LAT HEAT VAP. (Ical /Kg) 5.902E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.445	4.84	10.68	NO DATA	1016.36	13.428	-0.983	-0.885	0.392	0.490

HEIGHT (Meters)	POT.TEMP (Celsius)	VIR.TEMP (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	17.543	13.821	13.919	9.774E-03	88.98	7.921E-03	12.882	14.479	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.289 AT GMH	MOMENTUM FLUX (Nt/m2) -2.74E-02	FRICTION VELOCITY (Meters/sec) 1.491E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.224E-02	AIR DENSITY (Kg/m3) 1.2338
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.22E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.648E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.223E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4171E 02
Z/L AT GMH -0.319	LAT.HEAT FLUX (Watts/m2) 3.02E 01	SCALING POT.TEMP. (Kelvin) -3.984E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.941E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9028E 05
Z/L AT 10 METERS 0.246	SEN.HEAT FLUX (Watts/m2) 7.42E 00	ROUGHNESS LENGTH (Meters) 3.276E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.459
MONIN-OBUKHOV LENGTH (Meters) -4.069E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 9.494E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.169E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.13E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.56
	BOWEN RATIO (no units) 0.245			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
212%	212%	138%	182%	182%	10%	127%	365%	69%	113%	113%	89%	138%
186%	186%	46%	49%	114%	10%	33%	163%	23%	72%	137%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 5:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.172 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.89E-02 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 1.529E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.26E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -6.724E-05 (3.0E-05)
Z/L AT GMH -0.193 (0.02)	LAT.HEAT FLUX (Watts/m2) 3.11E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -2.174E-02 (2.0E-02)
Z/L AT 10 METERS -0.149 (0.02)	SEN.HEAT FLUX (Watts/m2) 5.10E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 4.102E-06 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -6.732E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.084E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.09E 01 (3.0E+01)	
	BOWEN RATIO (no units) 0.182 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
70%	70%	6%	8%	60%	0%	2%	60%	6%	1%	76%	2%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042130
START TIME: 21:35:30 PST
END TIME: 22: 5:40 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.200	5.214	2.644	2.564	5.014	-0.098	5.145

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.765	3.830	2.505	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124165	1421 125039	0.183	113	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT REF.	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.417	5.11	10.73	NO DATA	319.9	1015.12	1.37E 01	13.413	285.620

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.504	4.87	10.76	NO DATA	-0.05	1016.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.596	13.797	13.977	9.797E-03	89.46	7.950E-03	12.912	14.434	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.594	13.887	13.977	9.822E-03	89.11	7.964E-03	12.949	14.532	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042130
START TIME: 21:35:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.044 AT GMH	-3.12E-02	1.592E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/se: m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.35E-05	-6.881E-05	DWS/DZ= 2.64E-02	PSI=PSI1 WS SLOPE= 2.51E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.053	3.34E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-6.881E-03	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -7.86E 03
-0.041	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	1.37E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.075	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.841E-06	DPT/DZ= -8.92E-04	PSI=PSI2 PTK SLOPE= -7.86E 01
Z/L AT Z2	1.37E 01			
-0.038		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.417E-03		PSI=NONE
-2 432E 02	4.84E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.217119	BOWEN RATIO			
PSI1 AT Z2= 0.122061	(no units)			
PSI2 AT Z1= 0.137943	0.041			
PSI2 AT Z2= 0.075942				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2330

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4172E 02

WATER LAT HEAT VAP (ITcal./Kg)
5 9027E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042130
START TIME: 21:35:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.493	4.90	10.76	NO DATA	1016.13	13.413	-0.920	-0.822	0.463	0.561

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.591	13.876	13.974	9.820E-03	89.15	7.962E-03	12.945	14.521	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.265 AT GMH	MOMENTUM FLUX (Nt/m2) -2.82E-02	FRICTION VELOCITY (Meters/sec) 1.513E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.289E-02	AIR DENSITY (Kg/m3) 1.2333
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.28E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.429E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.200E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4172E 02
Z/L AT GMH -0.294	LAT.HEAT FLUX (Watts/m2) 2.96E 01	SCALING POT.TEMP. (Kelvin) -3.770E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.704E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9025E 05
Z/L AT 10 METERS -0.226	SEN.HEAT FLUX (Watts/m2) 7.12E 00	ROUGHNESS LENGTH (Meters) 3.580E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.440
MONIN-OBUKHOV LENGTH (Meters) -4.426E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 9.534E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.167E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.04E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.33
	BOWEN RATIO (no units) 0.240			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
218%	218%	146%	187%	187%	10%	129%	373%	73%	114%	114%	93%	146%
191%	191%	46%	58%	119%	10%	34%	168%	23%	73%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042130
START TIME: 21:35:30 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.161 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.90E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.532E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.23E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.605E-05 [3.0E-05]
Z/L AT GMH -0.181 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.04E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.060E-02 [2.0E-02]
Z/L AT 10 METERS -0.140 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.88E 00 [5.0E+00]	ROUGHNESS LENGTH (Meters) 3.979E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -7.161E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.053E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.00E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.178 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
69%	66%	3%	7%	60%	0%	2%	60%	3%	4%	75%	1%	25%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042200
START TIME: 22: 5:50 PST
END TIME: 22:56: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
CHANNEL A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.000	0.000	0.001	5.215	5.229	2.748	2.672	5.011	-0.098	4.988

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.255	5.964	2.704	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 1243\0	1421 1254\92	0.185	115	-0.009	0.000	0.000	0.992	0.952

* SYSTEM MONITORING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MASTER TIME	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ FLUX	AC VOLTAGE	AC FREQUENCY
(Accumulated)	(No./scan)	(No./scan)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.0	59.86

* DERIVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.430	5.31	10.02	NO DATA	314.6	1015.09	1.37E 01	13.401	285.637

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Meter MSL)	(Millibar)
12.526	5.07	10.87	NO DATA	-0.09	1016.19

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
13.35	12.615	13.824	14.003	9.854E-03	89.88	7.997E-03	12.988	14.451	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.79	12.618	13.911	14.001	9.879E-03	89.53	8.011E-03	13.024	14.547	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042200
START TIME: 22: 5:50 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRADIENT RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.043 AT ZMH

AERODYNAMIC MEAN HEIGHT
(Meters) ZMH=(Z1*Z2)1/2
12.22

ZL AT ZMH
0.020

ZOL AT 10 METERS
0.041

ZOL AT Z1
0.034

ZOL AT Z2
0.037

ROUGHNESS LENGTH
(Meters)
2.487E 02

PSII AT Z1 0.213282
PSII AT Z2 0.119699
PSIT AT Z1 0.135484
PSIT AT Z2 0.074428

FLUX PARAMETERS
(+=UP,--DOWN)

MOMENTUM FLUX
(Nt/m2)
-3.18E-02

HUMIDITY FLUX
(Kg/sec m2)
1.36E-05

LAT.HEAT FLUX
(Watts/m2)
5.76E 01

SEN.HEAT FLUX
(Watts/m2)
1.38E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.37E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
4.87E 01

BOWEN RATIO
(no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.607E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.870E-05

SCALING POT. TEMP.
(Kelvin)
-6.870E-03

ROUGHNESS LENGTH
(Meters)
5.108E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.31E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.67E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.49E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -7.87E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -7.87E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION AT EARTH'S SURFACE	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.80	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2328

AIR SPECIFIC HEAT
(1Cal./Kg Kel.)
2.4173E 02

WATER LAT.HEAT VAP.
(1Cal./Kg)
5.9026E 05

* COMMENT:
A [illegible] limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation was restored by insertion of

[illegible]

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V POT-WT TEMP (Kelvin)
12.509	5.10	10.84	NO DATA	1016.09	13.401	-0.892	-0.794	0.499	0.597

HEIGHT (Meters)	POT TEMP (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	12.607	13.901	13.999	9.876E-03	89.57	8.009E-03	13.020	14.536	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.230 AT GMH	MOMENTUM FLUX (N/m2) -3.10E-02	FRICTION VELOCITY (Meters/sec) 1.585E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.511E-02	AIR DENSITY (Kg/m3) 1.2331
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.20E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.162E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.204E-05	AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.4173E 02
Z/L AT GMH -0.256	LAT.HEAT FLUX (Watts/m2) 2.98E 01	SCALING POT.TEMP. (Kelvin) -3.611E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.722E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9024E 05
Z/L AT 10 METERS -0.197	SEN.HEAT FLUX (Watts/m2) 7.14E 00	ROUGHNESS LENGTH (Meters) 4.714E-06		VAP.PRES.AT WT LEVEL (Millibar) 15.428
MONIN-OBUKHOV LENGTH (Meters) -5.069E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 9.664E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.167E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.06E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.29
	BOWEN RATIO (no units) 0.240			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
221%	221%	149%	188%	188%	10%	130%	377%	75%	114%	114%	95%	149%
193%	193%	46%	50%	121%	10%	34%	171%	23%	73%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.142 [0.02] AT GMH	MOMENTUM FLUX (N/m2) -3.12E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.590E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.24E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.439E 05 [3.0E-05]
Z/L AT GMH 0.161 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.06E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.979E-02 [2.0E-02]
Z/L AT 10 METERS -0.124 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.89E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.837E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -8.059E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.040E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.62E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.178 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
66%	63%	1%	7%	60%	0%	2%	60%	1%	6%	74%	0%	1%

* END OF DATA RUN

ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042230
START TIME: 22:36:10 PST
END TIME: 24: 6:20 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	5.230	5.243	2.879	2.799	5.013	-0.694	4.841

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.743	3.869	2.504	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1CAL	DP2CAL	WIDCAL	WSLEE	WSREC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124775	1421 125605	0.107	118	-0.009	0.000	0.000	0.994	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA PASS	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watts/m2)	(Celsius)	(Kelvin)
12.478	5.57	10.91	NO DATA	309.6	1015.12	1.32E-01	13.392	285.629

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.561	5.34	10.93	NO DATA	-0.11	1016.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.657	13.874	14.054	9.910E-03	90.14	8.043E-03	13.063	14.491	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.651	13.960	14.050	9.933E-03	89.79	8.054E-03	13.098	14.586	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042230
START TIME: 22:36:10 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.048 AT GMH	MOMENTUM FLUX (N/m2) -2.90E-02	FRICTION VELOCITY (Meters/Sec) 1.534E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1 PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.79	HUMIDITY FLUX (Kg/sec m2) 1.31E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.927E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.52E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.61E 00
Z/L AT GMH -0.058	LAT.HEAT FLUX (Watts/m2) 3.24E 01	SCALING POT. TEMP. (Kelvin) -6.927E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.80E 03
Z/L AT 10 METERS -0.045	SEN.HEAT FLUX (Watts/m2) 1.33E 00	ROUGHNESS LENGTH (Meters) 3.896E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 7.86E 01
Z/L AT Z1 -0.043	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.072E-03		N=LnTEMP.SIRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.041	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.74E 01			
MONIN-OBUKHOV LENGTH (Meters) -2.226E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.232766 PSI1 AT Z2= 0.131760 PSI2 AT Z1= 0.148322 PSI2 AT Z2= 0.082173				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2327

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4174E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:36:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP STRUC (Kel **2/3)	BAR.PRES (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.551	5.37	10.93	NO DATA	1016.12	13.392	0.841	0.743	0.558	0.654

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP (Celsius)	V.POT.TEMP (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID (Per cent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM**2/3)
10.00	12.649	13.950	14.048	9.930E-03	89.84	0.054E-03	13.094	14.725	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (* DENOTES AT 10M)

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	VERTICAL VELOCITY CORR.	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.188 AT GMH	MOMENTUM FLUX (Nt/m2) -3.50E-02	FRICTION VELOCITY (Meters/sec) 1.684E-01	WITH LONG. VELOCITY (Meter**2/sec**2) -2.835E-02	AIR DENSITY (Kg/m**3) 1.2330
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.22E-05	SCALING SPEC.HUMID (Kg/Kg) -5.900E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.225E-05	AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.4174E 02
Z/L AT GMH -0.212	LAT.HEAT FLUX (Watts/m2) 3.03E 01	SCALING POT.TEMP. (Kelvin) -3.368E-02	WITH POT.TEMPERATURE (Meter Kel /sec) 5.671E-03	WATER LAT HEAT VAP (1Cal./Kg) 5.9022E 05
Z/L AT 10 METERS -0.163	SEN.HEAT FLUX (Watts/m2) 7.08E 00	ROUGHNESS LENGTH (Meters) 6.623E-06		VAP.PRES AT WT LEVEL (Millibar) 15.419
MONIN-OBUKHOV LENGTH (Meters) -6.138E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 9.842E-04		ABS.HUMID AT WT LEVEL (Kg/m3) 1.166E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.10E 01			BAR PRES AT WT LEVEL (Millibar) 1017.32
	BOWEN RATIO (no units) 0.234			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF
235%	235%	165%	198%	198%	10%	135%	396%	83%	115%	115%	104%	165%
197%	197%	46%	51%	125%	10%	35%	176%	23%	74%	146%	44%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:36:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.124 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.37E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.651E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.24E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.302E-05 [3.0E-05]
Z/L AT GMH -0.142 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.07E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.862E-02 [2.0E-02]
Z/L AT 10 METERS -0.109 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.85E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.819E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -9.168E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.000E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.03E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.174 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
57%	54%	6%	4%	61%	0%	4%	59%	5%	8%	67%	3%	

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79050423OO
START TIME: 23: 6:30 PST
END TIME: 24:36:46 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.285	0.000	0.001	5.243	5.255	3.385	3.266	5.002	-0.098	4.807

No.11	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.230	3.858	2.503	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124236	1421 125123	0.157	119	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.424	6.54	10.98	NO DATA	308.5	1014.94	1.37E 01	13.379	285.628

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.512	6.20	11.00	NO DATA	-0.12	1016.04

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.604	13.827	14.007	9.960E-03	90.92	8.084E-03	13.127	14.438	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
7.20	12.603	13.918	14.008	9.979E-03	.49	8.093E-03	13.156	14.538	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79050423OO
START TIME: 23: 6:30 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
RI, RICHARDSON NUMBER (+=Stable, -Unstable)	MOMENTUM FLUX (N*/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.022 AT GMH	-5.50E-02	2.113E-01		
GEOPOTENTIAL MEAN HEIGHT (Meters GMH (Z1*Z2)1/2)	HUMIDITY FLUX (Kg/Sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N-WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.72E-05	-6.618E-05	DWS/DZ= 3.72E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.89E 00
0.028	4.2?E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-6.618E-03	DSH/DZ= -8.92E-06	PSI=PSI2
0.021	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.17E 03
Z/L AT Z1	1.74E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
0.027	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.999E-05	DPT/DZ= -8.92E-04	PSI=PSI2
Z/L AT Z2	1.37E 01			PTK SLOPE= -8.17E 01
0.020		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3)
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.395E 03		Z=HEIGHT (M) Vert.Axis
4.663E 02	5.89E 01			PSI=NONE
PSI1 AT Z1= 0.12631H	BOWEN RATIO (no units)			CT2 SLOPE=NO DATA
PSI1 AT Z2= 0.98019	0.041			
PSI2 AT Z1= 0.07867?				
PSI2 AT Z2= 0.041701				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3)
1.2326

AIR SPECIFIC HEAT (1Tcal/Kg Kel)
2.417?E 02

WATER LAT.HEAT VAP (1Tcal/Kg)
5.9026E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .00E-3 Kg/Kg.
PTK1 PTK2 +/- .00E 0 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 6:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.502	6.24	11.00	NO DATA	1015.95	13.379	-0.877	-0.779	0.528	0.626

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.600	13.907	14.005	9.977E-03	90.54	8.092E-03	13.153	14.526	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.122 AT GMH	MOMENTUM FLUX (Nt/m2) -5.01E-02	FRICTION VELOCITY (Meters/sec) 2.0.3E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.062E-02	AIR DENSITY (Kg/m3) 1.2329
GEOMETRIC MEAN HEIGHT (Meter) GMH-(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.38E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.542E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.377E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4175E 02
Z/L AT GMH -0.141	LAT.HEAT FLUX (Watts/m2) 3.40E 01	SCALING POT.TEMP. (Kelvin) -3.213E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.476E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9024E 05
Z/L AT 10 METERS -0.109	SEN.HEAT FLUX (Watts/m2) 8.08E 00	ROUGHNESS LENGTH (Meters) 1.618E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.403
MONIN-OBUKHOV LENGTH (Meters) -9.217E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.042E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.165E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.58E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.15
	BOWEN RATIO (no units) 0.237			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
207%	207%	130%	177%	177%	10%	130%	354%	65%	112%	112%	85%	130%
194%	194%	46%	52%	122%	10%	36%	174%	23%	75%	145%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 6:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.074 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.14E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.041E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.46E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.974E-05 [3.0E-05]
Z/L AT GMH -0.086 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.60E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.772E-02 [2.0E-02]
Z/L AT 10 METERS -0.066 [0.02]	SEN.HEAT FLUX (Watts/m2) 5.49E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.746E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.507E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.1[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.64E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.173 [0.001]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	66%	5%	14%	59%	0%	2%	60%	3%	9%	64%	3%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905042330
START TIME: 23:36:50 PST
END TIME: 0: 7: 0 PST
START DATE: 4 May 1979 (DAY 124)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.060	0.081	5.246	5.258	3.977	3.845	4.996	-0.094	4.847

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.717	3.857	2.503	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FETCH	UPWIND LAND	DPTEMP	DPTEMP	WIND	WIND	WIND
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Coeff.)	(Coeff.)	(Coeff.)
1411 123685	1421 124599	0.152	119	-9.109	3.930	0.930	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A/D(.005V)	D/A(mV)	(No.).002V)	(No.)VAC)	(No.)Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.8	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CHL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.669	7.67	11.01	NO DATA	339.8	1014.85	1.37E 01	13.366	285.974

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.460	7.27	11.02	NO DATA	-0.12	1015.95

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
19.35	12.548	13.774	13.994	9.976E-03	91.39	8.096E-03	13.145	14.384	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.550	13.782	13.992	9.994E-03	90.93	8.104E-03	13.173	14.487	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905042330
START TIME: 23:36:50 PST
START DATE: 4 May 1979 (DAY 124)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) -0.015 AT GMH	MOMENTUM FLUX (N/m2) -7.65E-02	FRICTION VELOCITY (Meters/sec) 2.491E 01	GENERAL FORM: DN/DZ= [(N1-N2)/(Ln(Z1/Z2)x (Z1*Z2)1/2]	GENERAL FORM: N SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.9	HUMIDITY FLUX (Kg/sec-m2) 2.90E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.519E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.49E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.61E 00
Z/L AT GMH -0.09	LAT.HEAT FLUX (Watts/m2) 4.93E 01	SCALING POT. TEMP. (Kelvin) 6.519E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 8.29E 03
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 2.03E 00	ROUGHNESS LENGTH (Meters) 3.968E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 8.29E 01
Z/L AT Z1 -0.027	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.344E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
Z/L AT Z2 -0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.52E 01			CTP SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) -6.68E 02	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.091840 PSI1 AT Z2= 0.048642 PSI2 AT Z1= 0.056691 PSI2 AT Z2= 0.029684				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec-2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.2979	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (1Cal/Kg Kel)	WATER LAT.HEAT VAP (1Cal/Kg)
1.2328	2.417E 02	5.902E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2 +/- .08E-3 Kg/Kg
PTK1-PTK2 +/- .00H Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905042330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.449	7.32	11.02	NO DATA	1015.85	13.366	-0.917	-0.819	0.490	0.589

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.547	13.856	13.954	9.992E-03	90.99	8.193E-03	13.170	14.475	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.078 AT GMH	MOMENTUM FLUX (Nt/m2) -7.35E-02	FRICTION VELOCITY (Meters/sec) 2.442E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.964E-02	AIR DENSITY (Kg/m3) 1.2330
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.59E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.281E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.590E-05	AIR SPECIFIC HEAT (IIcal./Kg Kel.) 2.4175E 02
Z/L AT GMH -0.092	LAT.HEAT FLUX (Watts/m2) 3.93E 01	SCALING POT.TEMP. (Kelvin) -3.078E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.518E-03	WATER LAT.HEAT VAP. (IIcal./Kg) 5.9027E 05
Z/L AT 10 METERS -0.071	SEN.HEAT FLUX (Watts/m2) 9.38E 00	ROUGHNESS LENGTH (Meters) 3.665E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.389
MONIN-OBUKHOV LENGTH (Meters) -1.412E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.113E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.24E 01			BAR.PRES.AT WT LEVEL (Millibar) 1017.05
	BOWEN RATIO (no units) 0.239			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
204%	204%	126%	174%	174%	10%	132%	349%	63%	111%	111%	83%	126%
191%	191%	46%	52%	119%	10%	38%	171%	23%	75%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905042330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 4 May 1979 (DAY 124) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.047 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.43E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.455E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.69E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.781E-05 [3.0E-05]
Z/L AT GMH -0.057 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.17E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.717E-02 [2.0E-02]
Z/L AT 10 METERS -0.044 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.40E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.769E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.284E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF AT 10 METERS (Meters) 1.16[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.30E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.174 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
66%	64%	2%	14%	59%	0%	3%	60%	1%	11%	61%	3%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790505B000
START TIME: 0: 7:10 PST
END TIME: 0:37:20 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* 16BIT DAS CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
5.000	0.060	0.061	5.230	5.245	4.820	4.617	4.977	-0.098	4.972

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
CASE AD TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.004	3.659	2.503	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.?	No.?		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
A/D ISOLAT	AIR TEMP.?		HEIGHT/LENGTH	PATH(meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 (2560)	1411 (2560)		0.183	116	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

Address Flag	Error Count	Data Rate	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.=0 or 1)	(No.>0=Bad)	(No.=BAUD)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	19B	0	0	0	0	0	115.0	59.86

* DIGITAL MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

Data Header	Wind Speed1	Dew Point1	Temp.Struc.1		Wind Dir.	Bar.Pres.1	Sky Rad.	Bulk Wt Temp	Mean Air Temp
(Hex Code)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
1F55	9.58	10.91	NO DATA		314.0	1014.55	1.37E 01	13.354	285.559

Data Header 2	Wind Speed2	Dew Point2	Temp.Struc.2		TIDE TABLE	Bar.Pres.2
(Hex Code)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
1F5A2	8.65	10.94	NO DATA		-0.09	1015.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

Height, Z1	Pot.Temp.1	Vir.Temp.1	V.Pot.Temp.1	Abs.Humid.1	Rel.Humid.1	Spec.Humid.1	Vap.Pres.1	S.Vap.Pres.1	Ref.Index 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	12.541	13.749	13.928	9.911E-03	90.92	8.045E-03	13.059	14.364	NO DATA

Height, Z2	Pot.Temp.2	Vir.Temp.2	V.Pot.Temp.2	Abs.Humid.2	Rel.Humid.2	Spec.Humid.2	Vap.Pres.2	S.Vap.Pres.2	Ref.Index 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
5.	12.542	13.842	13.942	9.939E-03	90.56	8.062E-03	13.190	14.465	NO DATA

* CONTINUED BELOW

RUN NUMBER: 790505B000
START TIME: 0: 7:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ LN1-N21
0.006 AT GMH	-1.83E-01	3.049E-01		
GEOMETRIC MEAN HEIGHT (Meters GMH=(Z1*Z2)1/2	MOISTURE FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
10.99	-3.02E-05	-6.371E-05	DWS/DZ= 7.20E-02	PSI=PSI1
				WS SLOPE= 1.04E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.008	7.47E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-6.371E-03	DSH/DZ= -8.92E-06	PSI=PSI2
-0.006	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.48E 03
Z/L AT Z1	-5.06E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.011		1.959E-04	DPT/DZ= -8.92E-04	PSI=PSI2
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			PTK SLOPE= -8.48E 01
-0.005	1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.699E 03		PSI=NONE
-1.67E 03	9.14E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.63X143	BOWEN RATIO (no units)			
PSI2 AT Z2= 0.62X224	-0.041			
PTK1 AT Z1= 0.62X293				
PTK2 AT Z2= 0.01X439				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2325

AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.4174E 02

WATER LAT.HEAT VAP. (Ical./Kg) 5.903BE 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2 +/- .00B-3 Kg/Kg.
PTK1-PTK2 +/- .00B Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0: 7:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-W. TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.431	8.71	10.94	NO DATA	1015.56	13.354	-0.923	-0.825	0.477	0.575

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.529	13.831	13.929	9.936E-03	90.61	8.060E-03	13.096	14.453	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.045 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2
12.99

Z/L AT GMH
-0.055

Z/L AT 10 METERS
-0.043

MONIN-OBUKHOV LENGTH (Meters)
-2.342E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-1.13E-01

HUMIDITY FLUX (Kg/sec m2)
1.94E-05

LAT.HEAT FLUX (Watts/m2)
4.80E 01

SEN.HEAT FLUX (Watts/m2)
1.07E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.37E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.24E 01

BOWEN RATIO (no units)
0.224

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.024E-01

SCALING SPEC.HUMID. (Kg/Kg)
-5.211E-05

SCALING POT.TEMP. (Kelvin)
-2.847E-02

ROUGHNESS LENGTH (Meters)
8.281E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.205E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-9.147E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.943E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.611E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2328

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4174E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9028E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.372

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.163E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.76

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
178%	178%	96%	157%	157%	10%	129%	315%	48%	109%	109%	68%	96%
191%	191%	46%	52%	119%	10%	39%	170%	23%	75%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0: 7:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.025 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2
12.99

Z/L AT GMH
-1.031 [0.02]

Z/L AT 10 METERS
-0.024 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.221E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-1.35E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.21E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.46E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.44E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.37E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.68E 01 [3.0E+01]

BOWEN RATIO (no units)
0.160 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.292E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-5.682E 05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.599E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.266E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.400E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
79%	78%	27%	27%	56%	0%	14%	60%	13%	10%	56%	46%	14%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050030
START TIME: 0:37:30 PST
END TIME: 1: 7:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1981
DATA SAMPLING RATE (ALL CHANNELS): 2/min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	[illegible]	[illegible]	WIND DIR
6.205	0.000	0.001	5.229	5.248	4.765	4.553	4.954	[illegible]	5.450

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE M	SPARE P	[illegible]
3.686	3.869	2.503	0.001	0.001	0.001	0.001	[illegible]

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED MEASUREMENT [illegible]

No.1	No.2	UPWIND NEAR	UPWIND FAR	OPTICAL	[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	[illegible]	[illegible]	[illegible]
1411 123016	1421 123945	0.103	114	-0.009	[illegible]	[illegible]	[illegible]

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.) .005V)	VOLT REF DEV B(No.) (05V)	ZERO REF DEV [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	0	180	0	0	0	0	[illegible]	[illegible]	[illegible]

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE [illegible] AND ESCARPMENT CORRECTION [illegible]

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xm 2/3)	WIND DIR (Deg True)	BAR PRES.1 (Millibar)	[illegible]	[illegible]	[illegible]
12.382	9.06	10.90	NO DATA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xm 2/3)	[illegible] (Degrees True)	BAR PRES.2 (Millibar)	[illegible]	[illegible]	[illegible]
12.394	8.52	10.91	NO DATA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	RE. HUMID.1 (Percent)	SPEC.HUMID.1 [illegible]	[illegible]	[illegible]	[illegible]
18.35	12.481	13.697	13.827	9.918E-03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (K_g/m^3)	RE. HUMID.2 (Percent)	[illegible]	[illegible]	[illegible]	[illegible]
9.20	12.485	13.791	13.881	9.917E-03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* CONTINUED BELOW

RUN NUMBER: 7905050030
START TIME: 0:37:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS I. AND CA

PRINT DATE: [illegible]
DATA SAMPLING RATE: [illegible]
DATA AVERAGING PERIOD: [illegible]
NOMENCLATURE: [illegible]

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (REFERENCE LEVEL 1):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	[illegible]
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (N/m2)	[illegible] (Meters)	GENERAL FORM OF [illegible]	[illegible]
0.008 AT GMH	-1.32E 01	3.75E 01	[illegible]	[illegible]
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1xZ2)1/2	HUMIDITY FLUX Kg/(sec m2)	SCALING SPEC HUMID (kg/kg)	N WIND SPEED (M/sec) Z-HEIGHT (Meters)	S WIND [illegible] Z-Height [illegible] Axis
12.99	2.59E-05	6.41E-05	EWS D2= 0.00 D2	FIT P=31 [illegible]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP (Kelvin)	N SPEC HUMIDITY (kg/kg) Z-HEIGHT (Meters)	N SPEC HUMIDITY Kg/kg Z-HEIGHT [illegible] Axis
-0.011	6.40E 01	-6.41E 03	D2H D2= 0.00 D2	[illegible]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			[illegible]
-0.038	2.62E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N POT TEMP (Kelvin) Z-HEIGHT (Meters)	N POT TEMP (Kelvin) Z-HEIGHT [illegible] Axis
-0.011	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.10E-04	D2= 12 0.00 E4	[illegible]
Z/L AT Z2	1.37E 01			[illegible]
-0.008		DRAG COEF AT 10 METER (Dimensionless)		N SPEC HUMID (kg/kg) Z-HEIGHT [illegible] Axis
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.92E-03		[illegible] NO DATA
-1.196E 03	8.03E 01			
PSI1 AT Z1= 0.053800	BOWEN RATIO (No units)			
PSI1 AT Z2= 0.037854	0.041			
PSI2 AT Z1= 0.032870				
PSI2 AT Z2= 0.016879				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PRANDTL TUR NUMBER	SCHMIDT TUR NUMBER	SEA HEAT TRANSF COEF	[illegible] MOISTURE TRANSF COEF	[illegible]
0.4	9.79E2	0.74	0.74	0.9E 03	1.3E 03	[illegible]

[illegible]	[illegible]
AIR DENSITY (Kg/m3)	1.213E 00
AIR SPECIFIC HEAT (Cal/gm Kg/Kg)	2.41E 02
WATER LAT HEAT VAP (Cal/gm)	5.93E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by inspection of

SH1-SH2= +/- .00H 3 Kg/Kg
PTK1-PTK2= +/- .00B Kel

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:37:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2 MIN
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 MIN

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/Sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM**2/3)	BAR PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.383	8.58	10.91	NO DATA	1015.2A	13.36	-0.953	0.854	0.444	0.54?

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Ref.xM**2/3)
10.00	12.481	13.280	13.078	9.916E-03	90.22	8.044E-03	13.067	14.494	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) -0.049 AT GMH	MOMENTUM FLUX (N/m2) -1.09E-01	FRICTION VELOCITY (Meters/Sec) 2.969E-01	WITH LONG. VELOCITY (Meter2/Sec2) 8.853E-02	AIR DENSITY (Kg/M3) 1.2327
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.92E-05	SCALING SPEC.HUMID (Kg/Kg) -5.242E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.918E-05	AIR SPECIFIC HEAT (Ideal Kg Kel.) 1.012E+03
Z/L AT GMH -0.060	LAT.HEAT FLUX (Watts/m2) 4.7AE 01	SCALING POT.TEMP (Kelvin) -2.948E-02	WITH POT.TEMPERATURE (Meter Kel./Sec) 8.242E-03	WATER LAT.HEAT VAP (Ideal J/Kg) 2.501E+06
Z/L AT 10 METERS 0.046	SEN.HEAT FLUX (Watts/m2) 1.09E 01	ROUGHNESS LENGTH (Meters) 7.234E-05		VAP.PRES.AT WT LEVEL (Millibar) 13.349
MONIN-OBUKHOV LENGTH (Meters) -2.80E 02	SKY AND SOLAR FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.196E-03		ABS.HUMID AT WT LEVEL (Kg/m3) 1.161E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.20E 01			BAR.PRES.AT WT LEVEL (Millibar) 1016.47
	BOWEN RATIO (no units) 0.230			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "for "

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH. LENGTH	DRAG COEF
190%	190%	111%	16?%	165%	10%	13?%	331%	55%	110%	116%	??%	111%
189%	189%	46%	?2%	117%	10%	38%	168%	?3%	?5%	146%	4?%	4?%

* CONTINUED BELOW

RUN NUMBER: 7905050030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 198?
START TIME: 0:37:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2 MIN
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 MIN

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP, -DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) 0.029 [0.02] AT GMH	MOMENTUM FLUX (N/m2) 1.16E 01 [6.6E-02]	FRICTION VELOCITY (Meters/Sec) 3.05?E-01 [5.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) ?.90E-05 [8.0E-06]	SCALING SPEC.HUMID (Kg/Kg) -5.?1?E-05 [3.0E-05]
Z/L AT GMH -0.03? [0.02]	LAT.HEAT FLUX (Watts/m2) 5.14E 01 [2.0E+01]	SCALING POT.TEMP (Kelvin) 1.6??E-02 [2.1E-02]
Z/L AT 10 METERS -0.027 [0.02]	SEN.HEAT FLUX (Watts/m2) ?.48E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.94?E-?? [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.675E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.3?E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters/s) ?.??E-?? [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) ?.??E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.166 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATIONS IN RELATION TO THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "for "

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH. LENGTH	DRAG COEF
71%	69%	11%	18%	54%	0%	A%	60%	4%	10%	59%	1?%	

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7285DC1100
START TIME: 1: 2:50 PST
END TIME: 1:30: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* RAW DATA CHANNEL RAW DATA (AVERAGE VDC):

No.01	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES 2	SKY RAD	WIND DIR
5.209	1.186	0.001	5.206	5.217	3.949	3.825	4.949	-0.698	5.447

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BUOY WL TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF.B
5.211	5.958	2.504	0.001	0.001	0.001	0.001	6.204

* CALIB CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIFFCAL	WS1FF	WS2FF
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1.414	1.252	0.183	119	0.009	0.000	0.000	0.952	0.952

* CALIBRATION PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

CHANNEL	ERROR POINT	DATA RATE	VOLT REF DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQ.FLUX	DC VOLTAGE	AC FREQUENCY
(No.)	No.Scans	(No./Scan)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)*V)	(No.)Hz)	(VDC)	(Hz)
1	1	180	0	0	0	0	0	117.0	59.60

* CALCULATED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BUOY WL TEMP	MEAN AIR TEMP
(Meters/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Celsius)
7.61	19.76	NO DATA	316.7	1014.14	1.37E 01	14.318	285.454

WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
7.34	18.78	NO DATA	-0.01	1015.03

* MEAN MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
Meters	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
4.83	13.470	14.672	13.852	9.812E-03	90.39	7.968E-03	12.926	14.300	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
Meters	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
2.13	13.467	15.763	13.853	9.828E-03	89.94	7.992E-03	12.957	14.399	NO DATA

* CONTINUED FROM PREVIOUS PAGE

RUN NUMBER: 7285DC1100
START TIME: 1: 2:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* *** ITERATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

STABILITY

RATIO Z/L BASED ON NUMBER
OF ITERATIONS (Z1/L1)
AT GMH
0.014

HUMIDITY GRAD HEIGHT
DIFFERENCE GMH (Z1-Z2)/L2
0.77

Z/L AT GMH
0.0

Z/L AT 10 METERS
0.015

Z/L AT Z1
1.04

Z/L AT Z2
0.0

MONIN OBUKHOV LENGTH
(Meters)
-448.02

U AT Z1 = 6.88/377
T1-T2 AT Z1 = 0.04355
Q AT Z1 = 0.00717
RH AT Z1 = 0.82435

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(N/m2)
-8.56E-02

HUMIDITY FLUX
(Kg/sec m2)
2.11E-05

LAT HEAT FLUX
(Watts/m2)
5.21E 01

SEN.HEAT FLUX
(Watts/m2)
2.13E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.37E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
6.79E 01

BOWEN RATIO
(No units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/SEC)
2.635E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.492E-05

SCALING POT. TEMP.
(Kelvin)
-6.492E-03

ROUGHNESS LENGTH
(Meters)
4.939E-05

DRAG COEFF. AT 10 METERS
(Dimensionless)
1.03E 03

PARTIAL DERIVATIVES

GENERAL FORM: DN-DZ=
[(N1-N2)]/[LOG(Z1/Z2)+
(Z1*Z2)/L2]

N=WIND SPEED (M/Sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.78E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DQH/DZ= 8.92E-06

N=POT.TEMP.(Kelvin)
Z-HEIGHT (Meters)
DPT/DZ= 8.92E-04

PROFILE SLOPES
(N INDEX WITH HEIGHT)

GENERAL FORM: N=SLOPE*
LOG(Z1 PSI)-LOG(Z2-PSI)]/
[N1-N2]

N=WIND SPEED (M/Sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE = 1.52E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLO = -8.33E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE = 8.33E 01

N=POTEMP STRUC (Kelm 2/3)
Z HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF COEF.	BULK MOISTURE TRANSF COEF.
(MKS UNITS)	(M/Sec 2)				
0.4	9.799	0.74	0.74	0.92E-03	1.32E-04

MISCELLANEOUS

AIR DENSITY
(Kg/M3)
1.2323

AIR SPECIFIC HEAT
(Ical/Kg Kel.)
0.4179 02

WATER LAT HEAT VAP
(Ical/Kg)
5.9034E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHS SHS +/- 0BE-3 Kg/Kg.
PTK1 PTK2 +/- 00H Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* [illegible] MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meters/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
[illegible]	[illegible]	10.77	NO DATA	1015.14	13.318	-0.950	-0.852	0.434	0.532

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
[illegible]	13.466	13.752	13.850	9.826E-03	90.30	7.972E-03	12.948	14.388	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.083 AT 6M	MOMENTUM FLUX (Nt/m2) -7.14E-02	FRICTION VELOCITY (Meters/sec) 2.407E-01	WITH LONG. VELOCITY (Meter2/sec2) -5.794E-02	AIR DENSITY (Kg/m3) 1.2326
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.69E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.692E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.689E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4172E-02
Z/L AT GMH -0.098	LAT.HEAT FLUX (Watts/m2) 4.17E 01	SCALING POT.TEMP. (Kelvin) -3.187E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.671E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9032E 05
Z/L AT 10 METERS 0.075	SEN.HEAT FLUX (Watts/m2) 9.57E 00	ROUGHNESS LENGTH (Meters) 3.459E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.330
MONIN-OBUKHOV LENGTH (Meters) -1.325E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.107E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.159E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.50E 01			BAR.PRES.AT WT LEVEL (Millibar) 1016.34
	BOWEN RATIO (no units) 0.229			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
197%	197%	118%	170%	170%	10%	130%	339%	59%	111%	111%	79%	118%
189%	189%	46%	51%	117%	10%	37%	167%	23%	74%	140%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) 0.049 [0.01] AT GMH	MOMENTUM FLUX (Nt/m2) -7.54E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.471E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.79E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.011E-05 [3.0E-05]
Z/L AT GMH -0.098 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.41E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.771E-02 [2.0E-02]
Z/L AT 10 METERS 0.045 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.54E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.981E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.22E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) [illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.57E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.167 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	69%	10%	13%	58%	0%	3%	60%	5%	7%	64%	13%	19%

END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER 7905050140
START TIME 1:38:10 PST
END TIME 2:08:20 PST
START DATE 5 May 1979 (DAY 125)

PRINT DATE 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLT):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC 1	TEMP.STRUC 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.204	0.000	0.001	5.208	5.215	4.322	4.152	4.930	-0.098	5.072

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.643	3.856	2.504	1.031	0.001	0.001	0.000	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DPTEMP	DPTEMP	WTEMP	WVEL	WVEL
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Counts)	(Counts)
1411 123290	1421 124166		0.183	107	-0.009	0.006	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	5	0	119.0	59.66

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.329	8.33	19.28	NO DATA		312.4	1013.84	1.3XE-01	13.294	285.553

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
12.417	7.78	10.76	NO DATA		0.04	1014.93			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID 1	VAP.PRES 1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.509	13.713	13.893	9.817E-03	90.24	7.973E-03	12.934	14.333	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.507	13.800	13.690	9.815E-03	89.64	7.965E-03	12.936	14.441	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050130
START TIME: 1:38:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (*BUSINGER,1973*):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= (N1-N2)1/((ln(Z1/Z2)* (Z1*Z2))1.21	GENERAL FORM:N SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.008 AT GMH	-1.33E-01	3.281E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z-HEIGHT (M) Vert Axis
12.99	2.59E-05	-6.411E-05	DW5/DZ= 6.08E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			W5 SLOPE= 1.22E 00
-0.011	6.40E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-6.411E-03	DSH/DZ= -8.92E 00	PSI=PSI2
-0.008	2.62E 00			SH SLOPE -8.45E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N POT TEMP (Kelvin) Z=HEIGHT (M) Vert Axis
-0.015	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.112E-04	DPT/DZ= -8.97E-04	PSI=PSI2
Z/L AT Z2	1.37E 01			PTK SLOPE -8.45E 01
-0.008		DRAG COEF. AT 10 METERS (Dimensionless)		N=ConTEMP STRUC (K*M 2/3) Z=HEIGHT (M) Vert Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.998E-03		PSI=NONE
-1.200E 03	8.03E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.053639				
PSI1 AT Z2= 0.027768	BOWEN RATIO (no units)			
PSI2 AT Z1= 0.032750	0.041			
PSI2 AT Z2= 0.016817				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2318

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.417E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.903E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:38:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.406	7.85	10.76	NO DATA	1014.84	13.294	-0.888	-0.790	0.495	0.593

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.504	13.789	13.887	9.816E-03	89.71	7.966E-03	12.936	14.420	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.061 AT GMH	MOMENTUM FLUX (Nt/m2) -8.71E-02	FRICTION VELOCITY (Meters/sec) 2.659E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.070E-02	AIR DENSITY (Kg/m3) 1.2321
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.83E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.561E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.822E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4172E 02
Z/L AT GMH -0.073	LAT.HEAT FLUX (Watts/m2) 4.50E 01	SCALING POT.TEMP. (Kelvin) -2.897E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.703E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9030E 05
Z/L AT 10 METERS -0.056	SEN.HEAT FLUX (Watts/m2) 9.61E 00	ROUGHNESS LENGTH (Meters) 5.114E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.301
MONIN-OBUKHOV LENGTH (Meters) -1.779E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.148E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.157E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.83E 01			BAR.PRES.AT WT LEVEL (Millibar) 1016.04
	BOWEN RATIO (no units) 0.213			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
183%	183%	102%	161%	161%	10%	128%	321%	51%	110%	110%	71%	102%
193%	193%	46%	51%	121%	10%	38%	172%	25%	74%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:38:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.034 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.01E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.852E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.01E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.903E-05 [3.0E-05]
Z/L AT GMH -0.041 [0.02]	LAT.HEAT FLUX (Watts/m2) 4.96E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.615E-02 [2.0E-02]
Z/L AT 10 METERS -0.032 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.60E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.379E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.164E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.371E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.10E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.153 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF.
78%	76%	24%	22%	53%	0%	10%	59%	12%	7%	57%	42%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050200
START TIME: 2: 8:30 PST
END TIME: 2:38:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.304	0.000	0.001	5.234	5.239	4.418	4.216	4.922	-0.098	5.344

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT. TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.617	4.858	2.502	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123846	1421 124729	0.199	74	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.) 005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.384	8.51	10.93	NO DATA	326.7	1013.71	1.37E 01	13.269	285.588

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.473	7.87	10.91	NO DATA	0.09	1014.81

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.564	13.783	13.963	9.916E-03	90.85	8.057E-03	13.067	14.383	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.563	13.870	13.960	9.907E-03	90.17	8.043E-03	13.059	14.483	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050200
START TIME: 2: 8:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -1.78E-01	FRICTION VELOCITY (Meters/sec) 3.797E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.98E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.374E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.16E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.05E 00
Z/L AT GMH -0.008	LAT.HEAT FLUX (Watts/m2) 7.36E 01	SCALING POT. TEMP. (Kelvin) -6.374E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.48E 03
Z/L AT 10 METERS -.006	SEN.HEAT FLUX (Watts/m2) 3.02E 00	ROUGHNESS LENGTH (Meters) 1.867E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.48E 01
AT Z1 -0.011	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.476E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.03E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.628E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.040213 PSI1 AT Z2= 0.028652 PSI2 AT Z1= 0.024451 PSI2 AT Z2= 0.012481				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2314

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4174E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9028E 05

* GENERAL NOTES
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E 3 Kg/Kg
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 8:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.462	7.95	10.91	NO DATA	1014.72	13.269	-0.806	-0.708	0.591	0.689

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.560	13.859	13.957	9.908E-03	90.25	8.045E-03	13.060	14.471	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.054 AT GMH	MOMENTUM FLUX (Nt/m2) -8.99E-02	FRICTION VELOCITY (Meters/sec) 2.702E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.298E-02	AIR DENSITY (Kg/m3) 1.2316
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.73E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.193E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.728E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4174E 02
Z/L AT GMH -0.065	LAT.HEAT FLUX (Watts/m2) 4.27E 01	SCALING POT.TEMP. (Kelvin) -2.658E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.181E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9027E 05
Z/L AT 10 METERS -0.050	SEN.HEAT FLUX (Watts/m2) 8.95E 00	ROUGHNESS LENGTH (Meters) 5.434E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.274
MONIN-OBUKHOV LENGTH (Meters) -2.001E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.155E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.155E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.53E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.92
	BOWEN RATIO (no units) 0.210			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
172%	172%	90%	154%	154%	10%	126%	308%	45%	109%	109%	65%	90%
201%	201%	46%	52%	129%	10%	39%	181%	23%	75%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 8:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.028 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.20E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.072E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.05E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.676E-05 [3.0E-05]
Z/L AT GMH -0.034 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.06E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.482E-02 [2.0E-02]
Z/L AT 10 METERS -0.026 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.25E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.070E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -5.791E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.501E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.12E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.147 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
85%	83%	39%	34%	48%	0%	20%	59%	19%	11%	51%	63%	45%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050230
START TIME: 2:38:50 PST
END TIME: 3: 9: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.317	5.310	3.333	3.187	4.928	-0.098	5.390

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.623	3.860	2.502	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124873	1421 125680	0.199	71	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.487	6.43	11.42	NO DATA	324.9	1013.82	1.36E 01	13.275	285.688

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.568	5.99	11.33	NO DATA	0.15	1014.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.667	13.933	14.113	1.024E-02	93.22	8.325E-03	13.501	14.482	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.658	14.005	14.096	1.019E-02	92.17	8.274E-03	13.434	14.575	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050230
START TIME: 2:38:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -6.53E-02	FRICTION VELOCITY (Meters/sec) 2.303E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM.'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.57E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.527E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.87E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.74E 00
Z/L AT GMH 0.021	LAT.HEAT FLUX (Watts/m2) 3.87E 01	SCALING POT. TEMP. (Kelvin) 6.163E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.78E 03
Z/L AT 10 METERS 0.016	SEN.HEAT FLUX (Watts/m2) -1.77E 00	ROUGHNESS LENGTH (Meters) 2.889E-05	N=POT TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 9.94E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= 8.77E 01
Z/L AT Z1 0.029	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.36E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.721E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.015	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.06E 01			
MONIN-OBUKHOV LENGTH (Meters) 6 319E 02	BOWEN RATIO (no units) -0.046			
PSI1 AT Z1= -0.136490 PSI1 AT Z2= -0.068431 PSI2 AT Z1= -0.184447 PSI2 AT Z2= -0.092475				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9 7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2309	2.4179E 02	5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.558	6.05	11.34	NO DATA	1014.82	13.275	-0.717	-0.619	0.722	0.820

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.656	13.997	14.095	1.019E-02	92.30	8.280E-03	13.443	14.564	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.115 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.133

Z/L AT 10 METERS
-0.102

MONIN-OBUKHOV LENGTH (Meters)
-9.780E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.63E-02

HUMIDITY FLUX (Kg/sec m2)
1.09E-05

LAT.HEAT FLUX (Watts/m2)
2.69E 01

SEN.HEAT FLUX (Watts/m2)
6.78E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.36E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.73E 01

BOWEN RATIO (no units)
0.252

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.940E-01

SCALING SPEC.HUMID. (Kg/Kg)
-4.565E-05

SCALING POT.TEMP. (Kelvin)
-2.805E-02

ROUGHNESS LENGTH (Meters)
1.354E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.029E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.763E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.090E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
5.442E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2312

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4179E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9021E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.282

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.156E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.02

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
169%	194%	101%	161%	151%	10%	115%	312%	50%	111%	100%	70%	101%
211%	211%	46%	57%	139%	10%	38%	196%	23%	80%	162%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.043 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.053 [0.02]

Z/L AT 10 METERS
0.041 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.457E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.23E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.22E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.00E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
2.68E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.36E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.81E 01 [3.0E+01]

BOWEN RATIO (no units)
0.137 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.054E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-4.969E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-6.935E-03 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.93AE-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.22[illegible] [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
150%	145%	17%	22%	143%	0%	4%	111%	9%	10%	88%	13%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050300
START TIME: 5: 9:10 PST
END TIME: 5:39:20 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	5.261	5.266	3.654	3.547	4.931	-0.098	4.898

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.610	3.659	2.502	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123139	1421 124028	0.183	96	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.314	7.05	11.09	NO DATA	311.5	1013.86	1.37E 01	13.262	285.518

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.403	6.67	11.07	NO DATA	0.19	1014.96

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.494	13.727	13.907	1.003E-02	92.26	8.144E-03	13.210	14.319	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUM.D.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.493	13.814	13.904	1.002E-02	91.55	8.129E-03	13.200	14.418	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050300
START TIME: 5: 9:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)] [N1-N2]
-0.018 AT GMH	-6.65E-02	2.324E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.88E-05	-6.557E-05	DWS/DZ= 4.15E-02	PSI=PSI1 WS SLOPE= 1.72E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.023	4.64E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-6.557E-03	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.24E 03
-0.017	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	1.90E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP (Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.019		2.995E-05	DPT/DZ= -8.92E-04	PSI=PSI2 PTK SLOPE= -1.24E 01
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			
0.016	1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.420E 03		PSI=NONE CT2 SLOPE=NO DATA
5.747E 02	6.20E 01			
PSI1 AT Z1= 0.105166	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.056004	0.041			
PSI2 AT Z1= 0.065148				
PSI2 AT Z2= 0.034218				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2318	2.4176E 02	5.9032E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg
PTK1 PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3: 9:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.392	6.72	11.07	NO DATA	1014.86	13.262	-0.870	-0.772	0.542	0.640

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.490	13.804	13.902	1.002E-02	91.64	8.131E-03	13.202	14.407	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.097 AT GMH	MOMENTUM FLUX (Nt/m2) -5.97E-02	FRICTION VELOCITY (Meters/sec) 2.201E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.845E-02	AIR DENSITY (Kg/m3) 1.2321
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.36E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.016E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.360E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4176E 02
Z/L AT GMH -0.113	LAT.HEAT FLUX (Watts/m2) 3.36E 01	SCALING POT.TEMP. (Kelvin) -3.076E-02	WITH POT.TEMPERATURE (Meter Kel /sec) 6.771E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9031E 05
Z/L AT 10 METERS -0.087	SEN.HEAT FLUX (Watts/m2) 8.44E 00	ROUGHNESS LENGTH (Meters) 2.387E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.270
MONIN-OBUKHOV LENGTH (Meters) -1.148E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.073E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.155E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.57E 01			BAR.PRES.AT WT LEVEL (Millibar) 1016.06
	BOWEN RATIO (no units) 0.251			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
203%	203%	126%	174%	174%	10%	131%	348%	63%	111%	111%	83%	126%
195%	195%	46%	54%	123%	10%	38%	177%	23%	72%	146%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3: 9:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.058 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -6.15E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.234E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.48E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.646E-05 [3.0E-05]
Z/L AT GMH -0.069 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.66E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.704E-02 [2.0E-02]
Z/L AT 10 METERS -0.053 [0.02]	SEN.HEAT FLUX (Watts/m2) 5.74E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.595E-05 [6.0E-05]
MONIN OBUKHOV LENGTH (Meters) -1.882E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.157E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.71E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.180 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
66%	66%	6%	20%	58%	0%	6%	61%	3%	14%	61%	5%	17%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050330
START TIME: 3:39:30 PST
END TIME: 4: 9:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.152	5.164	4.401	4.253	4.919	-0.099	5.076

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.568	3.864	2.503	0.001	0.001	0.001	0.001	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FE	WS2EL
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121892	1421 122812	0.183	94	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).003V)	(No.)5V)	(No..1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.true)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.189	8.48	10.44	NO DATA	317.6	1013.68	1.38E 01	13.221	285.35

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.281	7.97	10.46	NO DATA	0.22	1014.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.369	13.542	13.722	9.605E-03	89.08	7.797E-03	12.648	14.199	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.371	13.636	13.726	9.620E-03	88.62	7.804E-03	12.623	14.301	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050330
START TIME: 3:39:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6 Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -1.18E-01	FRICTION VELOCITY (Meters/sec) 3.100E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/2 (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.46E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.429E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.71E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.2VE 00
Z/L AT GMH -0.012	LAT.HEAT FLUX (Watts/m2) 6.07E 01	SCALING POT. TEMP. (Kelvin) -6.429E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.41E 03
Z/L AT 10 METERS -0.009	SEN.HEAT FLUX (Watts/m2) 2.48E 00	ROUGHNESS LENGTH (Meters) 9.058E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E 04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.41E 01
Z/L AT Z1 -0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.38E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.6[illegible] 03		N=LnTEMP.STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.70E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.065E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.059990 PSI1 AT Z2= 0.031168 PSI2 AT Z1= 0.036697 PSI2 AT Z2= 0.018897				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2323

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416[illegible] 02

WATER LAT.HEAT VAP. (ITcal /Kg)
[illegible]839E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed , insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:39:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* Estimated Micrometeorological Parameters at Ten Meters:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.270	8.03	10.46	NO DATA	1014.68	13.221	-0.951	-0.853	0.403	0.501

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.368	13.624	13.722	9.619E-03	88.67	7.803E-03	12.670	14.289	NO DATA

* Bulk Aerodynamic Calculations Based On Above Estimated Values At Ten Meters (Friehe et al,1978):

Inferred Stability

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.060 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.072

Z/L AT 10 METERS
-0.056

MONIN-OBUKHOV LENGTH (Meters)
-1.794E 02

Flux Parameters (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.21E-02

HUMIDITY FLUX (Kg/sec m2)
2.02E-05

LAT.HEAT FLUX (Watts/m2)
4.98E 01

SEN.HEAT FLUX (Watts/m2)
1.04E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.38E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.39E 01

BOWEN RATIO (no units)
0.208

Inferred Scaling Parameters

FRICTION VELOCITY (Meters/sec)
2.734E-01

SCALING SPEC.HUMID. (Kg/Kg)
-5.980E-05

SCALING POT.TEMP. (Kelvin)
-3.036E-02

ROUGHNESS LENGTH (Meters)
5.688E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.160E-03

Inferred Mean Vertical Velocity Covariance

WITH LONG. VELOCITY (Meter2/sec2)
-7.476E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.015E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.300E-03

Miscellaneous

AIR DENSITY (Kg/m3)
1.2326

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9037E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.226

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.152E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.88

* Measurement Error Analysis Of Parameters Listed In Percent Mean Error As Computed From Constituent Measurement Accuracies. Top Row Are Profile Error Values And Bottom Row Are Bulk Aerodynamic Error Values. All Values Are Approximate And Are "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
190%	190%	110%	165%	165%	10%	130%	330%	55%	110%	110%	75%	110%
189%	189%	46%	49%	117%	10%	37%	166%	23%	72%	140%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:39:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* Composite Profile And Bulk Aerodynamic Derived Parameter Value Weighted As A Function Of The Above Respective Measurement Errors With The Lower Limit Of The Corresponding Measurement Uncertainty Indicated In [ ]:

Stability

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.035 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.042 [0.02]

Z/L AT 10 METERS
-0.033 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-3.064E 02

Flux Parameters (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.99E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.12E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
5.23E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.09E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.38E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.46E 01 [3.0E+01]

BOWEN RATIO (no units)
0.152 [0.08]

Scaling Parameters

FRICTION VELOCITY (Meters/sec)
2.842E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.158E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.698E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
6.916E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.294E-03 [4.0E-04]

* Difference Between The Profile And Bulk Aerodynamic Derived Parameter Values As Computed Via The Standard Deviation From Either The Above Weighted Composite Value Or Measurement Uncertainty Value (Which Ever Absolute Value Is Larger). All Values Are Listed In Percent Difference And Are "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
73%	71%	14%	12%	56%	0%	2%	58%	7%	4%	60%	25%	21%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050400
START TIME: 4: 9:50 PST
END TIME: 4:40: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.122	5.135	4.813	4.625	4.911	-0.098	5.212

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.549	3.872	2.503	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIRFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 1.1870	1421 1.2083	0.199	67	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.=Code)	ERROR COUNT (No.Scans)	DATA BASE (No.Scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.0	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM 2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.187	9.27	10.27	NO DATA	322.2	1013.56	1.37E 01	13.193	285.395

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM 2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.282	8.62	10.28	NO DATA	0.24	1014.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.367	13.524	13.704	9.490E-03	88.04	7.705E-03	12.497	14.195	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.372	13.621	13.711	9.507E-03	87.58	7.713E-03	12.524	14.300	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050400
START TIME: 4: 9:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 At GMH	MOMENTUM FLUX (Nt/m2) -1.83E 01	FRICTION VELOCITY (Meters/sec) 3.851E-01	GENERAL FORM:DN/DZ= f(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM 'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.02E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.371E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.21E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE= 1.04L 00
Z/L AT GMH 0.008	LAT.HEAT FLUX (Watts/m2) 7.47E 01	SCALING POT. TEMP. (Kelvin) -6.371E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= -8.4RE 03
Z/L AT 10 METERS -0.006	SEN.HEAT FLUX (Watts/m2) 3.06E 00	ROUGHNESS LENGTH (Meters) 1.961E-04	N=POT.TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.4RE 01
Z/L AT Z1 -0.011	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.10?E 03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONI CT2 SLOPE=NO DATA
Z/L AT Z2 -0.005	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.15E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.674E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.039142 PSI1 AT Z2= 0.020094 PSI2 AT Z1= 0.023792 PSI2 AT Z2= 0.012139				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2323

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4167E 02

WATER LAT HEAT VAP (1Tcal /Kg)
5.9039E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .00E-3 Kg/Kg.
PTK1-PTK2= +/- .00E Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050400 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 4: 9:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.271	8.70	10.28	NO DATA	1014.56	13.193	-0.922	-0.824	0.416	0.514

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.369	13.609	13.707	9.505E-03	87.63	7.712E-03	12.521	14.288	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.046 AT GMH	MOMENTUM FLUX (Nt/m2) -1.12E-01	FRICTION VELOCITY (Meters/sec) 3.019E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.114E-02	AIR DENSITY (Kg/m3) 1.2325
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.29E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.153E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.289E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4167E 02
Z/L AT GMH -0.056	LAT.HEAT FLUX (Watts/m2) 5.66E 01	SCALING POT.TEMP. (Kelvin) -2.847E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.594E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9037E 05
Z/L AT 10 METERS -0.043	SEN.HEAT FLUX (Watts/m2) 1.07E 01	ROUGHNESS LENGTH (Meters) 8.226E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.196
MONIN-OBUKHOV LENGTH (Meters) -2.332E 0<	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.204E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.150E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.10E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.76
	BOWEN RATIO (no units) 0.189			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
177%	177%	96%	157%	157%	10%	129%	314%	48%	109%	109%	68%	96%
191%	191%	46%	48%	119%	10%	37%	167%	23%	71%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050400 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 4: 9:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.025 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.35E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.289E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.46E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.239E-05 [3.0E-05]
Z/L AT GMH 0.031 [0.02]	LAT.HEAT FLUX (Watts/m2) 6.08E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.599E-02 [2.0E-02]
Z/L AT 10 METERS -0.024 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.42E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.264E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.208E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.37E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.470E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.34E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.138 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
99%	78%	28%	17%	52%	0%	7%	56%	13%	2%	56%	46%	33%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050430
START TIME: 4:40:10 PST
END TIME: 5:10:20 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	5.122	5.131	5.044	4.811	4.910	-0.087	5.246

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.516	3.791	2.503	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WINFCAL (Volts)	WS1FC (Coeff.)	WS2FC (Coeff.)
1411 122308	1421 123238	0.199	67	0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.0	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.231	9.71	10.27	NO DATA	323.4	1013.54	1.21E 01	13.171	285.437

AIR TEMP.2 (Celsius)	*WIND SPEED2* (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.324	8.96	10.26	NO DATA	0.24	1014.64

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.411	13.568	13.748	9.489E-03	87.79	7.705E-03	12.498	14.236	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.414	13.661	13.751	9.493E-03	87.23	7.703E-03	12.508	14.339	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050430
START TIME: 4:40:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.004 AT GMH	MOMENTUM FLUX (Nt/m2) -2.42E-01	FRICTION VELOCITY (Meters/sec) 4.435E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z)/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUM DITY FLUX (Kg/sec m2) 3.47E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.344E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.35E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.02E-01
Z/L AT GMH -0.006	LAT.HEAT FLUX (Watts/m2) 8.57E 01	SCALING POT. TEMP. (Kelvin) -6.344E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.52E 03
Z/L AT 10 METERS -0.004	SEN.HEAT FLUX (Watts/m2) 3.51E 00	ROUGHNESS LENGTH (Meters) 3.199E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.52E 01
Z/L AT Z1 -0.004	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.21E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.522E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 -0.004	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.240E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.029612 PSI1 AT Z2= 0.015116 PSI2 AT Z1= 0.017945 PSI2 AT Z2= 0.009117				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2321

AIR SPECIFIC HEAT (1Ical./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (1Ical./Kg)
5.9037E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:40:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.313	9.05	10.26	NO DATA	1014.54	13.171	-0.859	-0.761	0.479	0.577

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.411	13.650	13.748	9.493E-03	87.30	7.703E-03	12.507	14.327	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHF ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.038 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.047

Z/L AT 10 METERS
-0.036

MONIN-OBUKHOV LENGTH (Meters)
-2.788E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.24E-01

HUMIDITY FLUX (Kg/sec m2)
2.38E-05

LAT.HEAT FLUX (Watts/m2)
5.88E 01

SEN.HEAT FLUX (Watts/m2)
1.04E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.21E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.13E 01

BOWEN RATIO (no units)
0.177

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.171E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.085E-05

SCALING POT.TEMP. (Kelvin)
-2.628E-02

ROUGHNESS LENGTH (Meters)
9.840E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.227E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.006E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.378E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.333E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2323

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9035E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.174

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.148E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.74

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
170%	170%	87%	152%	152%	11%	129%	305%	44%	109%	109%	64%	87%
196%	196%	46%	48%	124%	11%	38%	172%	23%	71%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:40:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* *COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS* WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.020 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.025 [0.02]

Z/L AT 10 METERS
-0.019 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-5.249E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.65E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.64E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
6.52E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.31E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.21E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
8.5HE 01 [3.0E+01]

BOWEN RATIO (no units)
0.128 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.607E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.187E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.483E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.877E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.634E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF.
84%	79%	38%	23%	47%	0%	13%	55%	18%	2%	50%	60%	4.5

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050500
START TIME: 5:10:30 PST
END TIME: 5:40:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.083	5.094	5.757	5.466	4.923	0.150	5.306

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.500	3.695	2.504	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123069	1423 123905	0.199	68	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.69

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.307	11.08	10.03	NO DATA	325.4	1013.73	-2.09E 01	13.155	285.509

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.391	10.16	10.04	NO DATA	0.22	1014.83

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.487	13.623	13.803	9.340E-03	85.99	7.584E-03	12.305	14.310	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.481	13.708	13.798	9.352E-03	85.56	7.588E-03	12.324	14.405	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050500
START TIME: 5:10:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.003 AT GMH	MOMENTUM FLUX (Nt/m2) -3.59E-01	FRICTION VELOCITY (Meters/sec) 5.394E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.2 -05	SCALING SPEC.HUMD. (Kg/Kg) -6.318E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.02E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.42E-01
Z/L AT GMH -0.004	LAT.HEAT FLUX (Watts/m2) 1.04E 02	SCALING POT. TEMP. (Kelvin) -6.318E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.56E 03
Z/L AT 10 METERS -0.003	SEN.HEAT FLUX (Watts/m2) 4.25E 00	ROUGHNESS LENGTH (Meters) 6.200E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -8.56E 01
Z/L AT Z1 -0.005	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.09E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.799E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.003	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.72E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.343E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.020077 PSI1 AT Z2= 0.010190 PSI2 AT Z1= 0.012129 PSI2 AT Z2= 0.006136				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2321
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02
WATER LAT.HEAT VAP (ITcal /Kg)
5.9033E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:10:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.380	10.27	10.04	NO DATA	1014.73	13.155	-0.775	-0.677	0.543	0.641

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.478	13.698	13.796	9.351E-03	85.61	7.588E-03	12.322	14.394	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.023 AT GMH	MOMENTUM FLUX (Nt/m2) -1.70E-01	FRICTION VELOCITY (Meters/sec) 3.714E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.379E-01	AIR DENSITY (Kg/m3) 1.2324
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.88E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.289E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.878E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02
Z/L AT GMH -0.029	LAT.HEAT FLUX (Watts/m2) 7.11E 01	SCALING POT.TEMP. (Kelvin) -2.260E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.391E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9031E 05
Z/L AT 10 METERS 0.022	SEN.HEAT FLUX (Watts/m2) 1.05E 01	ROUGHNESS LENGTH (Meters) 1.727E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.161
MONIN-OBUKHOV LENGTH (Meters) -4.447E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.09E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.308E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.147E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.07E 01			BAR.PRES.AT WT LEVEL (Millibar) 1015.93
	BOWEN RATIO (no units) 0.147			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. *TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES.* ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
165%	165%	82%	149%	149%	8%	120%	298%	41%	108%	108%	61%	82%
204%	204%	46%	47%	132%	8%	35%	179%	23%	70%	155%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:10:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.012 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.38E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.320E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.19E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.300E-05 [3.0E-05]
Z/L AT GMH -0.015 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.89E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.302E-02 [2.0E-02]
Z/L AT 10 METERS 0.012 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.55E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.580E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 0.544E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.09E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.798E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.67E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.107 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
51%	49%	41%	24%	41%	0%	23%	51%	20%	0%	41%	63%	44%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050530
START TIME: 5:40:50 PST
END TIME: 6:10:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	5.079	5.087	5.870	5.554	4.946	0.768	5.316

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.494	3.862	2.585	0.001	0.001	0.001	0.001	6.204

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTMFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411	124056	1421 124768	0.199	70	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.0	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.406	11.29	10.01	NO DATA	325.7	1014.09	-1.07E 02	13.149	285.604

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.477	10.32	10.00	NO DATA	0.18	1015.19

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.585	13.720	13.900	9.326E-03	85.30	7.573E-03	12.290	14.409	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.567	13.791	13.881	9.326E-03	84.83	7.567E-03	12.294	14.492	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050530
START TIME: 5:40:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) 0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -3.62E-01	FRICTION VELOCITY (Meters/sec) 5.423E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.97E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.945E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.08E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.38E-01
Z/L AT GMH 0.008	LAT.HEAT FLUX (Watts/m2) 9.80E 01	SCALING POT. TEMP. (Kelvin) 1.369E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.09E 03
Z/L AT 10 METERS 0.006	SEN.HEAT FLUX (Watts/m2) -9.25E 00	ROUGHNESS LENGTH (Meters) 6.308E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.05E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.95E 01
Z/L AT Z1 0.012	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.07E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.712E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.82E 01			
MONIN-OBUKHOV LENGTH (Meters) 1.575E 03	BOWEN RATIO (no units) -0.094			
PSI1 AT Z1= -0.054772 PSI1 AT Z2= -0.027461 PSI2 AT Z1= -0.074017 PSI2 AT Z2= -0.037109				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2321

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.902BE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050530
START TIME: 5:40:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.468	10.44	10.00	NO DATA	1015.09	13.149	-0.681	-0.583	0.633	0.731

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.566	13.782	13.880	9.327E-03	84.89	7.567E-03	12.294	14.482	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.025

Z/L AT 10 METERS
-0.019

MONIN-OBUKHOV LENGTH (Meters)
-5.227E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.77E-01

HUMIDITY FLUX (Kg/sec m2)
2.96E-05

LAT.HEAT FLUX (Watts/m2)
7.31E 01

SEN.HEAT FLUX (Watts/m2)
9.47E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.07E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.45E 01

BOWEN RATIO (no units)
0.130

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.791E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.333E-05

SCALING POT.TEMP. (Kelvin)
-2.004E-02

ROUGHNESS LENGTH (Meters)
1.856E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.319E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.437E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.959E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.596E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2324

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9026E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.161

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.147E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.29

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
106%	112%	74%	143%	86%	6%	65%	229%	37%	106%	49%	57%	74%
216%	216%	46%	47%	144%	6%	20%	190%	23%	70%	167%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050530
START TIME: 5:40:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.002 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.003 [0.02]

Z/L AT 10 METERS
-0.002 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.251E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.48E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.21E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.93E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-2.24E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.07E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.30E 01 [3.0E+01]

BOWEN RATIO (no units)
0.028 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.417E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.179E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
5.998E-03 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.772E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.600E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
67%	67%	38%	18%	322%	0%	12%	140%	19%	3%	96%	60%	40%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050600
START TIME: 6:11: 0 PST
END TIME: 6:41: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.P	SKY RAD.	WIND DIR.
6.265	0.000	0.001	5.125	5.130	5.507	5.187	4.9%	1.570	5.349

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.512	5.989	2.508	0.001	0.001	0.001	0.001	6.285

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125484	1421 126057	0.199	73	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	180	0	0	0	0	0	115.1	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.548	10.60	10.29	NO DATA	326.9	1014.51	-2.19E 02	13.166	285.737

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.606	9.65	10.25	NO DATA	0.11	1015.61

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.720	13.889	14.068	9.499E-03	86.08	7.715E-03	12.525	14.550	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.696	13.943	14.033	9.488E-03	85.58	7.699E-03	12.512	14.621	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050600
START TIME: 6:11: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -3.23E-01	FRICTION VELOCITY (Meters/sec) 5.120E-01	GENERAL FORM:DN/DZ= f(N1-N2))/fLn(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.59E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.689E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.06E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.81E-01
Z/L AT GMH 0.016	LAT.HEAT FLUX (Watts/m2) 8.87E 01	SCALING POT. TEMP. (Kelvin) 2.304E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.50E 03
Z/L AT 10 METERS 0.012	SEN.HEAT FLUX (Watts/m2) -1.47E 01	ROUGHNESS LENGTH (Meters) 5.210E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.61E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.35E 01
Z/L AT Z1 0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.19E 02	DRAG COEFF. AT 10 METERS (Dimensionless) 2.775E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.011	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.45E 02			
MONIN-OBUKHOV LENGTH (Meters) 8.345E 02	BOWEN RATIO (no units) -0.166			
PSI1 AT Z1= -0.103354 PSI1 AT Z2= -0.051818 PSI2 AT Z1= -0.139667 PSI2 AT Z2= -0.070024				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7999	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2319

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9028E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050600
START TIME: 6:11: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.599	9.76	10.26	NO DATA	1015.51	13.166	-0.568	-0.470	0.770	0.868

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.697	13.937	14.035	9.489E-03	85.64	7.701E-03	12.514	14.613	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.021 AT GMH	MOMENTUM FLUX (Nt/m2) -1.50E-01	FRICTION VELOCITY (Meters/sec) 3.485E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.215E-01	AIR DENSITY (Kg/m3) 1.2323
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.58E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.006E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.580E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.026	LAT.HEAT FLUX (Watts/m2) 6.37E 01	SCALING POT.TEMP. (Kelvin) -1.784E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.218E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -0.020	SEN.HEAT FLUX (Watts/m2) 7.75E 00	ROUGHNESS LENGTH (Meters) 1.380E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.184
MONIN-OBUKHOV LENGTH (Meters) -4.965E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.19E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.274E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.149E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.47E 02			BAR.PRES.AT WT LEVEL (Millibar) 1016.71
	BOWEN RATIO (no units) 0.122			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
84%	94%	70%	140%	65%	5%	39%	205%	35%	105%	30%	55%	70%
236%	236%	46%	48%	164%	5%	12%	212%	23%	71%	187%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050600
START TIME: 6:11: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.003 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.18E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.134E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.84E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.879E-05 [3.0E-05]
Z/L AT GMH 0.004 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.01E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.745E-02 [2.0E-02]
Z/L AT 10 METERS 0.003 [0.02]	SEN.HEAT FLUX (Watts/m2) -8.37E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.062E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 3.485E 04	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.19E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.8[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.47E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.025 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
87%	88%	40%	20%	146%	0%	1%	180%	20%	3%	126%	63%	43%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050630
START TIME: 6:41:10 PST
END TIME: 7:11:10 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.000	0.001	5.127	5.129	5.070	5.538	4.985	2.149	5.418

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.545	3.903	2.509	0.001	0.001	0.001	0.001	6.265

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIRFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126233	1421 126843	0.199	77	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.623	11.29	10.30	NO DATA	329.2	1014.68	-3.00E 02	13.199	285.814

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.684	10.29	10.25	NO DATA	0.03	1015.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.803	13.965	14.145	9.585E-03	85.72	7.721E-03	12.537	14.624	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.775	14.022	14.112	9.482E-03	85.09	7.694E-03	12.508	14.699	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050630
START TIME: 6:41:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.009 AT GMH	MOMENTUM FLUX (N/M2) -3.71E-01	FRICTION VELOCITY (Meters/sec) 5.492E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.93E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.805E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.12E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.28E-01
Z/L AT GMH 0.012	LAT.HEAT FLUX (Watts/m2) 9.70E 01	SCALING POT. TEMP. (Kelvin) 2.074E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.31E 03
Z/L AT 10 METERS 0.009	SEN.HEAT FLUX (Watts/m2) -1.42E 01	ROUGHNESS LENGTH (Meters) 6.576E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.19E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.61E 01
Z/L AT Z1 0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.00E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.788E-03		N=LnTEMP.STRUC (K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.17E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.067E 03	BOWEN RATIO (no units) -0.146			
PSI1 AT Z1= -0.080853 PSI1 AT Z2= -0.040537 PSI2 AT Z1= -0.109261 PSI2 AT Z2= -0.054779				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2318

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9016E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 6:41:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.677	10.41	10.25	NO DATA	1015.68	13.199	-0.522	-0.424	0.816	0.914

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.775	14.015	14.113	9.485E-03	85.17	7.698E-03	12.512	14.691	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.016 AT GMH	MOMENTUM FLUX (Nt/m2) -1.76E-01	FRICTION VELOCITY (Meters/sec) 3.778E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.428E-01	AIR DENSITY (Kg/m3) 1.2322
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.79E-05	SCALING SPEC.HUMID. (Kg/Kg) -5.995E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.791E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.020	LAT.HEAT FLUX (Watts/m2) 6.90E 01	SCALING POT.TEMP. (Kelvin) -1.603E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.057E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9014E 05
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 7.55E 00	ROUGHNESS LENGTH (Meters) 1.835E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.219
MONIN-OBUKHOV LENGTH (Meters) -6.496E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.00E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.317E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.152E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.23E 02			BAR.PRES.AT WT LEVEL (Millibar) 1016.88
	BOWEN RATIO (no units) 0.109			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COEF
88%	96%	70%	140%	68%	5%	33%	209%	35%	105%	33%	55%	78%
248%	248%	46%	48%	176%	5%	10%	224%	23%	71%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 6:41:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS
WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.002 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.53E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.455E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.08E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -5.919E-05 [3.0E-05]
Z/L AT GMH 0.003 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.61E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.550E-02 [2.0E-02]
Z/L AT 10 METERS 0.002 [0.02]	SEN.HEAT FLUX (Watts/m2) -8.12E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.911E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 4.050E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.00E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.847E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.22E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.023 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE
ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE
LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
67%	68%	39%	21%	146%	0%	2%	168%	20%	2%	113%	61%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050700
START TIME: 7:11:20 PST
END TIME: 7:41:20 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.152	5.152	5.699	5.372	4.992	2.926	5.403

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
6.577	3.862	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIRFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126586	1421 127272	0.199	81	-0.009	0.000	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.659	10.96	10.44	NO DATA		328.7	1014.79	-4.08E 02	13.230	285.853
AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
12.727	9.99	10.39	NO DATA		-0.06	1015.89			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.838	14.014	14.193	9.599E-03	88.36	7.797E-03	12.661	14.660	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID 2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.817	14.077	14.167	9.570E-03	85.65	7.767E-03	12.627	14.742	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050700
START TIME: 7:11:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.007 AT GMH	MOMENTUM FLUX (N/m2) -3.61E-01	FRICTION VELOCITY (Meters/sec) 5.416E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.94E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.904E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.09E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIi WS SLOPE= 7.38E-01
Z/L AT GMH 0.009	LAT.HEAT FLUX (Watts/m2) 9.73E 01	SCALING POT. TEMP. (Kelvin) 1.555E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -6.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.15E 03
Z/L AT 10 METERS 0.007	SEN.HEAT FLUX (Watts/m2) -1.05E 01	ROUGHNESS LENGTH (Meters) 6.284E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.35E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.48E 01
Z/L AT Z1 0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.08E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.885E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.007				
MONIN-OBUKHOV LENGTH (Meters) 1.385E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.21E 02			
PSI1 AT Z1= -0.062290 PSI1 AT Z2= -0.031240 PSI2 AT Z1= -0.084175 PSI2 AT Z2= -0.042202	BOWEN RATIO (nn units) -0.108			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2317
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.4168E 02
WATER LAT.HEAT VAP (ITcal./Kg)	5.9014E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .008 E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:11:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.719	10.11	10.39	NO DATA	1015.79	13.230	-0.511	-0.413	0.839	0.937

HEIGHT (Meters)	POT.TEMP (Celsius)	VIR.TEMP (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.817	14.070	14.168	9.574E-03	85.74	7.771E-03	12.631	14.733	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.017 AT GMH	-1.63E-01	3.639E-01	-1.324E-01	1.2321
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.62E-05	-5.847E-05	2.622E-05	2.4168E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP (ITcal./Kg)
-0.022	6.48E 01	-1.605E-02	5.841E-03	5.9012E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.017	7.28E 00	1.608E-04		15.252
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-6.020E 02	-4.08E 02	1.297E-03		1.154E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-3.36E 02			1016.99
	BOWEN RATIO (no units)			
	0.112			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
98%	105%	71%	141%	79%	5%	27%	220%	36%	105%	43%	56%	71%
251%	251%	46%	48%	179%	5%	8%	227%	23%	71%	202%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:11:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.000 [6.02] AT GMH	-2.41E-01 [6.0E-02]	4.338E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.96E-05 [8.0E-06]	5.870E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
0.000 [0.02]	7.31E 01 [2.0E+01]	9.953E-03 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
0.000 [0.02]	-5.05E 00 [3.0E+00]	3.649E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF AT 10 METERS (Meters)
4.762E 04	-4.08E 02 [2.0E+01]	1.852E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	3.32E 02 [3.0.+11]	
	BOWEN RATIO (no units)	
	0.000 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	64%	42%	25%	189%	0%	3%	138%	21%	0%	94%	65%	44%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050736
START TIME: 7:41:30 PST
END TIME: 8:11:30 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 1 min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.SIRDC.1	TEMP.SIRDC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR
6.205	0.000	0.001	5.147	5.144	5.235	4.920	5.011	5.99-	[illegible]

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.678	3.869	2.515	0.091	0.091	0.091	0.091	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND FIELD ESCARPMENT CORRECTIONS

No.1	No.2		UPWIND NEAR	UPWIND LAND	OPTICAL	BAROMETRIC	WIRE	[illegible]
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	[illegible]
1411 127908	1421 128551		0.206	68	-0.009	0.000	0.000	[illegible]

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF DEV	VOLT.REF DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQUENCY	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.) 0.02V)	(No.)5V)	(No. 10Hz	(VAC)	[illegible]
0	0	180	0	0	0	0	0	115.1	[illegible]

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.SIRDC.1		WIND DIR.	BAR.PRES.1	SKY RAD	[illegible]	[illegible]
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.(M-2/3)		(Deg.from)	(Millibar	(Watts/m2)	[illegible]	[illegible]
12.771	10.07	10.42	NO DATA		352.9	1015.09	-5.52E-02	1.260	[illegible]

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.SIRDC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.(M-2/3)		(Meter MSL)	(Millibar)			
12.855	9.14	10.54	NO DATA		-0.16	1016.18			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	SAT.VAP.PRES.1	[illegible]
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibars)	(Millibar)	[illegible]
18.35	12.971	14.144	14.324	9.529E-03	85.46	7.28E-03	12.41	14.52	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	SAT.VAP.PRES.2	[illegible]
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibars)	(Millibar)	[illegible]
9.20	12.945	14.201	14.292	9.538E-03	84.87	7.24E-03	12.39	14.60	[illegible]

* CONTINUED BELOW

RUN NUMBER: 7905050730
START TIME: 7:41:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 1 min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973)

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+ INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER	MOMENTUM FLUX	FRICTION VELOCITY	GENERAL FORM IN DZ	GENERAL FORM IN SLOPE
(+=Stable, -=Unstable)	(N/m2)	(Meters/sec)	[illegible]	[illegible]
0.009 AT GMH	3.13E-01	5.044E-01	-21.223 1	(N1 N2)
GEOMETRIC MEAN HEIGHT	HUMIDITY FLUX	SCALING SPEC.HUMD	U WIND SPEED (M/Sec)	U WIND SPEED (M/Sec)
(Meter) GMH=(Z1*Z2)1/2	(Kg/Sec m2)	(Kg/Kg)	Z HEIGHT (Meters)	Z HEIGHT (M) (Meters Agl)
12.99	3.59E-05	-5.784E-03	DWS DZ 1.0 E-01	PSI P 11
				[illegible]
Z/L AT GMH	LAT.HEAT FLUX			
0.013	(Watts/m2)			
	8.80E 01	SCALING POT. TEMP	N SPEC HUMIDITY (Kg Kg)	N SPEC HUMIDITY (Kg Kg)
Z/L AT 10 METERS		(Kelvin)	Z HEIGHT (Meters)	Z HEIGHT (M) (Meters Agl)
0.010	SEN.HEAT FLUX	1.840E-02	DSH DZ 3.92E 00	PSI P 21
	(Watts/m2)			[illegible] 9.35E-03
Z/L AT Z1	-1.16E 01			
0.013		ROUGHNESS LENGTH	N POT TEMP (Kelvin)	N POT TEMP (Kelvin)
	SKY AND SOLAR HEAT FLUX	(Meters)	Z HEIGHT (Meters)	Z HEIGHT (M) (Meters Agl)
Z/L AT Z2	(Watts/m2)	4.95E 04	DPT DZ 2.64E 00	PSI T 21
0.009	5.52E 02			[illegible] 2.71E-02
		DRAG COEF AT 10 METERS		
MONIN OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		N SPEC HUMIDITY (Kg Kg)
(Meters)	(Watts/m2)	1.01E-03		Z HEIGHT (M) (Meters Agl)
1.015E 03	-4.80E 02			PSI NOW
				[illegible]
PSI1 AT Z1 -0.004987	BOWEN RATIO			
PSI1 AT Z2= -0.042584	(no units)			
PSI2 AT Z1= 0.114779	-0.130			
PSI2 AT Z2= 0.052546				

* GENERAL CONSTANTS

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF	TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E 03	1.32E 03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.185

AIR SPECIFIC HEAT
(Cp) (J/Kg Kel)
1.01E 03

WATER VAP HEAT VAP
(Lv) (J/Kg)
2.45E 06

* GENERAL NOTES

Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of

SHI SH2 +/- 0HE 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:41:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.847	9.25	10.35	NO DATA	1016.09	13.280	-0.433	-0.335	0.915	1.013

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.945	14.194	14.292	9.544E-03	84.76	7.747E-03	12.597	14.861	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.020 AT GMH	-1.31E-01	3.259E-01	-1.062E-01	1.2319
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.49E-05	-6.190E-05	2.485E-05	2.416E-02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP (ITcal./Kg)
-0.025	6.14E 01	-1.487E-02	4.848E-03	5.9005E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.019	6.04E 00	1.085E-04		15.306
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-5.212E 02	-5.57E 02	1.241E-03		1.158E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-4.90E 02			1017.29
	SOWEN RATIO (no units)			
	0.098			

MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
90%	98%	69%	140%	71%	5%	19%	210%	34%	105%	37%	54%	69%
279%	279%	46%	48%	207%	5%	7%	255%	23%	71%	230%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7:41:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.002 [0.02] AT GMH	-2.04E-01 [6.0E-02]	3.976E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.27E-05 [8.0E-06]	-6.027E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
.003 [0.02]	6.84E 01 [2.0E+01]	1.303E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
0.002 [0.02]	2.08E 00 [3.0E+00]	2.797E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
4.307E 03	-5.57E 02 [2.0E+01]	1.69[illegible] [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	4.87E 02 [3.0E+01]	
	BOW RATIO (no units)	
	0.022 [0.08]	

[illegible] BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE [illegible] COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE [illegible] OF DIFFERENCE AND ARE "+or-":

[illegible]	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF.
[illegible]	4[illegible]	22%	139%	0%	1%	144%	23%	3%	103%	70%	4[illegible]

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79805?0800
START TIME: 8:11:40 PST
END TIME: 8:41:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.000	0.001	5.148	5.141	4.496	4.317	5.024	4.707	5.304	

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
SPARE B	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.020	2.515	0.001	0.001	0.001	0.001	6.285	

* [illegible] RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

[illegible]	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIRECAL	WS1EC	WS2EC
[illegible]	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
[illegible]	9.199	91	-0.009	0.000	0.000	0.992	0.949

* [illegible] SAMPLING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

[illegible]	ERROR CODE	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
[illegible]	No.Scans	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
	0	180	0	0	0	0	0	115.2	59.82

* [illegible] MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

[illegible]	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
[illegible]	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
[illegible]	0.66	19.42	NO DATA	325.3	1015.29	-6.56E 02	13.319	286.054

[illegible]	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
[illegible]	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
[illegible]	0.66	10.32	NO DATA	-0.26	1016.39

* [illegible] CALCULATED MICROMETEOROLOGICAL PARAMETERS:

[illegible]	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
[illegible] 35	13.036	14.210	14.396	9.581E-03	85.11	7.784E-03	12.647	14.859	NO DATA

[illegible] 22	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.14	13.022	14.276	14.366	9.524E-03	84.13	7.731E-03	12.575	14.948	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79805?0800
START TIME: 8:11:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMLTERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BRAD.RICHARDSON NUMBER (+=Stable, Unstable) 0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -1.27E-01	FRICTION VELOCITY (Meters/sec) 3.214E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.22E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.613E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.72E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.24E 00
Z/L AT GMH 0.018	LAT.HEAT FLUX (Watts/m2) 5.49E 01	SCALING POT. TEMP. (Kelvin) 1.045E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.63E 03
Z/L AT 10 METERS 0.014	SEN.HEAT FLUX (Watts/m2) -4.19E 00	ROUGHNESS LENGTH (Meters) 1.033E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.66E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 5.17E 01
Z/L AT Z1 [illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 6.56E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.202E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 0.013	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.06E 00			
MONIN OBUKHOV LENGTH (Meters) 2.98E 02	BOWEN RATIO (no units) -0.076			
PSI1 AT Z1 0.118797				
PSI1 AT Z2 0.059568				
PSI2 AT Z1 0.160536				
PSI2 AT Z2 0.481487				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE EDW.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7999	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2315
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416RE 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9002E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

DEL SH/DZ = .000 3 Kg/Kg

RUN NUMBER: 7905050800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:11:40 PST | NRI MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.922	8.13	10.33	NO DATA	1016.29	13.319	-0.397	-0.299	0.949	1.047

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.020	14.268	14.366	9.532E-03	84.24	7.73HE-03	12.584	14.938	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.028 AT GMH	MOMENTUM FLUX (Nt/m2) -9.50E-02	FRICTION VELOCITY (Meters/sec) 2.777E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.712E-02	AIR DENSITY (Kg/m3) 1.2318
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.23E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.518E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.230E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416YE 02
Z/L AT GMH -0.03;	LAT.HEAT FLUX (Watts/m2) 5.51E 01	SCALING POT.TEMP. (Kelvin) -1.525E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 4.236E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9001E 05
Z/L AT 10 METERS -0.029	SEN.HEAT FLUX (Watts/m2) 5.28E 00	ROUGHNESS LENGTH (Meters) 6.032E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.348
MONIN-OBUKHOV LENGTH (Meters) -3.691E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.56E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.167E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.161E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.96E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.49
	BOWEN RATIO (no units) 0.096			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
131%	148%	94%	155%	109%	5%	13%	264%	47%	108%	62%	67%	94%
297%	297%	46%	47%	225%	5%	6%	273%	23%	70%	248%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:11:40 PST | NRI MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable -Unstable) 0.000 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.06E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.92IE-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.23E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.161E-05 [3.0E-05]
Z/L AT GMH 0.000 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.50E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 5.335E-03 [2.0E-02]
Z/L AT 10 METERS 0.000 [0.02]	SEN.HEAT FLUX (Watts/m2) -1.11E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.714E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 4.995E 04	SKY AND SOLAR HEAT FLUX (Watts/m2) 6.56E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.3/0E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.99E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.008 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
109%	108%	16%	0%	167%	0%	1%	108%	8%	8%	75%	29%	22%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050830
START TIME: 8:41:50 PST
END TIME: 9:11:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.127	5.121	4.317	4.160	5.035	5.310	5.110

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.706	3.815	2.514	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 130294	1421 131108	0.183	134	-0.009	0.000	0.000	0.992	0.994

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.029	8.32	10.30	NO DATA	318.8	1015.45	-7.41E 02	13.355	286.230

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.111	7.80	10.20	NO DATA	-0.35	1016.55

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.209	14.373	14.553	9.501E-03	83.49	7.722E-03	12.548	15.030	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.201	14.446	14.536	9.447E-03	82.50	7.672E-03	12.480	15.127	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050830
START TIME: 8:41:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable) 0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -9.93E-02	FRICTION VELOCITY (Meters/sec) 2.841E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))1/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.02E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.775E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.81E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.41E 00
Z/L AT GMH 0.013	LAT.HEAT FLUX (Watts/m2) 4.99E 01	SCALING POT. TEMP. (Kelvin) 5.960E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.36E 03
Z/L AT 10 METERS 0.010	SEN.HEAT FLUX (Watts/m2) -2.11E 00	ROUGHNESS LENGTH (Meters) 6.567E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 9.20E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 9.07E 01
Z/L AT Z1 0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.41E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.459E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.93E 02			
MONIN-OBUKHOV LENGTH (Meters) 9.948E 02	BOWEN RATIO (no units) -0.042			
PSI1 AT Z1= -0.086698 PSI1 AT Z2= -0.043467 PSI2 AT Z1= -0.117160 PSI2 AT Z2= -0.058740				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2310

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8992E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050830
START TIME: 8:41:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.101	7.86	10.21	NO DATA	1016.45	13.355	-0.254	-0.156	1.082	1.180

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.199	14.437	14.535	9.453E-03	82.62	7.678E-03	12.489	15.116	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.023 AT GMH	MOMENTUM FLUX (Nt/m2) -8.74E-02	FRICTION VELOCITY (Meters/sec) 2.664E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.095E-02	AIR DENSITY (Kg/m3) 1.2313
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.26E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.906E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.265E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416&E 02
Z/L AT GMH -0.029	LAT.HEAT FLUX (Watts/m2) 5.59E 01	SCALING POT.TEMP. (Kelvin) -1.175E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.130E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8990E 05
Z/L AT 10 METERS -0.023	SEN.HEAT FLUX (Watts/m2) 3.90E 00	ROUGHNESS LENGTH (Meters) 5.148E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.387
MONIN-OBUKHOV LENGTH (Meters) -4.411E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.41E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.149E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.164E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.81E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.65
	BOWEN RATIO (no units) 0.070			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
183%	201%	108%	165%	162%	5%	11%	326%	54%	111%	108%	74%	108%
450%	450%	46%	46%	378%	5%	6%	424%	23%	69%	401%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050830
START TIME: 8:41:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS
WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.000 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.09E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.716E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.21E-05 [8.0E-06]	SCALING SPEC.HUMID (Kg/Kg) -6.470E-05 [3.0E-05]
Z/L AT GMH -0.000 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.46E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.214E-03 [2.0E-02]
Z/L AT 10 METERS -0.000 [0.02]	SEN.HEAT FLUX (Watts/m2) -3.10E-01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.670E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.919E 05	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.41E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.250E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.85E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.006 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE
ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE
LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
88%	88%	7%	6%	108%	0%	1%	71%	4%	9%	51%	12%	14%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050900
START TIME: 9:12: 0 PST
END TIME: 9:42: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
5.205	0.001	0.001	5.118	5.114	4.484	4.323	5.035	5.867	4.932

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.734	3.802	2.517	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 132238	1421 133031	0.183	140	-0.009	0.000	0.500	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.) 002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.224	8.64	10.24	NO DATA	312.7	1015.45	-8.18E 02	13.363	286.424

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.303	8.10	10.16	NO DATA	-0.44	1016.55

* CALCULATED MICROMETEOROLOGICAL PARAMETERS

HEIGHT, Z1	POT TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP PRES.1	S VAP PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
18.35	13.404	14.563	14.743	9.459E-03	82.13	7.693E-03	12.502	15.222	NO DATA

HEIGHT, Z2	POT TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP PRES.2	S VAP PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	13.397	14.635	14.725	9.411E-03	81.23	7.648E-03	12.442	15.318	NO DATA

* CONTINUED BELOW

RUN NUMBER 7905050900
START TIME 9:12: 0 PST
START DATE 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NPL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE 11 Jun 1980
DATA SAMPLING RATE (ALL CHANNELS) 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973)

STABILITY

BULK RICHARDSON NUMBER
(+ Stable, -Unstable)
0.011 AT GMH

GEOMETRIC MEAN HEIGHT
(Meters) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.015

Z/L AT 10 METERS
0.012

Z/L AT Z1
0.022

Z/L AT Z2
0.011

MONIN-OBUKHOV LENGTH
(Meters)
8.461E 02

PSI1 AT Z1= -0.101956
PSI1 AT Z2= -0.051107
PSI2 AT Z1= 0.137251
PSI2 AT Z2= 0.069063

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(N/m2)
-1.05E 01

HUMIDITY FLUX
(Kg/sec m2)
2.05E-05

LAT.HEAT FLUX
(Watts/m2)
5.06E 01

SEN.HEAT FLUX
(Watts/m2)
2.71E 00

SKY AND SOLAR HEAT FLUX
(Watt/m2)
8.18E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-7.70E 02

BOWEN RATIO
(no units)
-0.053

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.925E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-5.697E-05

SCALING POT. TEMP.
(Kelvin)
7.435E-03

ROUGHNESS LENGTH
(Meters)
7.319E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.47IE-03

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.04E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.16E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: N SLOPE
[(LnZ1 PSI)-(LnZ2-PSI 2)]
[N1 N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI1
WS SLOPE 1.32E 00

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH SLOPE= 9.49E-03

N=POT. TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE 2.21E 01

N=LnTEMP STRUC (KxM-2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2302

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.8981E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:12: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.293	8.16	10.17	NO DATA	1016.46	13.383	-0.090	0.008	1.243	1.341

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.391	14.626	14.724	9.417E-03	81.33	7.653E-03	12.450	15.307	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.012 AT GMH	MOMENTUM FLUX (Nt/m2) -9.58E-02	FRICTION VELOCITY (Meters/sec) 2.790E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.783E-02	AIR DENSITY (Kg/m3) 1.2305
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.41E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.027E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.412E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.016	LAT.HEAT FLUX (Watts/m2) 5.96E 01	SCALING POT.TEMP. (Kelvin) -6.946E-03	WITH POT.TEMPERATURE (Meter Kel./sec) 1.938E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8980E 05
Z/L AT 10 METERS 0.012	SEN.HEAT FLUX (Watts/m2) 2.41E 00	ROUGHNESS LENGTH (Meters) 6.137E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.415
MONIN OBUKHOV LENGTH (Meters) -8.191E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.18E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.169E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.166E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.56E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.66
	BOWEN RATIO (no units) 0.040			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD RICH NO AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
14%	191%	106%	163%	139%	5%	11%	302%	53%	110%	86%	73%	106%
21%	2151%	46%	46%	4079%	5%	18%	6125%	23%	69%	6102%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:12: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS
GRAD RICHARDSON NUMBER (+=Stable, -=Unstable) -0.016 +0.03 AT GMH	MOMENTUM FLUX (Nt/m2) -9.86E 02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.83E 01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH =Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.33E 05 [8.0E-06]	SCALING SPEC.HUMID (Kg/Kg) 6.51E 05 [3.0E-05]
Z/L AT GMH -0.014 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.76E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 7.23E 05 [2.0E-02]
Z/L AT 10 METERS 0.011 [0.02]	SEN.HEAT FLUX (Watts/m2) -2.59E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.57E-05 [6.0E-05]
MONIN OBUKHOV LENGTH (Meters) -8.98E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.18E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.23E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.65E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.049 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
79%	84%	5%	9%	118%	0%	1%	79%	3%	10%	50%	9%	11%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905050930
START TIME: 9:42:10 PST
END TIME: 10:12:10 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.143	5.132	4.020	3.888	5.048	6.348	4.894

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.778	3.825	2.514	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 133579	1421 134475	0.183	145	-0.089	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.358	7.75	10.39	NO DATA	311.4	1015.65	-8.85E 02	13.426	286.563

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.447	7.30	10.27	NO DATA	-0.51	1016.75

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.538	14.712	14.891	9.551E-03	82.22	7.770E-03	12.629	15.359	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.538	14.790	14.881	9.480E-03	81.07	7.706E-03	12.549	15.466	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905050930
START TIME: 9:42:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.012 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.017

Z/L AT 10 METERS
0.013

Z/L AT Z1
0.014

Z/L AT Z2
0.012

MONIN-OBUKHOV LENGTH
(Meters)
7.955E 02

PSI1 AT Z1= -0.114155
PSI1 AT Z2= -0.057233
PSI2 AT Z1= -0.154263
PSI2 AT Z2= -0.077342

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX
(N/m2)
-7.12E-02

HUMIDITY FLUX
(Kg/sec m2)
1.67E-05

LAT.HEAT FLUX
(Watts/m2)
4.19E 01

SEN.HEAT FLUX
(Watts/m2)
-1.69E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-8.85E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-8.46E 02

BOWEN RATIO
(no units)
-0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.405E-01

SCALING SPEC.HUMD
(Kg/Kg)
-5.635E-05

SCALING POT. TEMP.
(Kelvin)
5.635E-03

ROUGHNESS LENGTH
(Meters)
3.449E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.226E-03

PARTIAL DERIVATIVES

GENERAL FORM DN/DZ=
[(N1-N2)]/[ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.01E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 8.92E-04

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM N-SLOPE=
[(lnZ1-PSI1)-(lnZ2-PSI2)]/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI1
WS SLOPE= 1.66E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH SLOPE= 9.59E-03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE= 9.59E 01

N=LnTEMP.STRUC.(K^M 2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2297

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.8973E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905050930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:42:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.437	7.35	10.28	NO DATA	1016.65	13.426	0.011	0.109	1.355	1.453

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.535	14.781	14.879	9.489E-03	81.21	7.714E-03	12.550	15.454	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.012 AT GMH	-7.42E-02	2.455E-01	-6.029E-02	1.2301
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	2.14E-05	-7.072E-05	2.136E-05	2.4167E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.015	5.27E 01	-5.140E-03	1.262E-03	5.8971E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.012	1.57E 00	3.746E-05		15.461
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-8.579E 02	-8.85E 02	1.115E-03		1.169E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-8.31E 02			1017.85
	BOWEN RATIO (no units)			
	0.030			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
194%	217%	117%	170%	170%	5%	9%	341%	59%	112%	112%	79%	117%
588%	588%	46%	46%	516%	5%	6%	563%	23%	69%	539%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905050930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:42:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.306 [0.02] AT GMH	-7.33E-02 [6.0E-02]	2.441E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	2.04E-05 [8.0E-06]	-6.523E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
0.008 [0.02]	5.03E 01 [2.0E+01]	3.786E-03 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
0.007 [0.02]	-8.78E-01 [3.0E+00]	3.641E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
1.532E 03	-8.85E 02 [2.0E+01]	1.149E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-8.37E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	-0.014 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
66%	69%	2%	13%	61%	0%	1%	46%	1%	11%	32%	3%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051000
START TIME: 10:12:20 PST
END TIME: 10:42:30 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.119	5.107	4.389	4.209	5.043	6.683	4.891

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.618	3.876	2.512	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 135209	1421 135984	0.183	149	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO RFF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	1	180	0	0	0	0	0	115.1	59.88

* OTHER MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.520	8.46	10.29	NO DATA	311.3	1015.58	-9.32E 02	13.465	286.719

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.596	7.87	10.12	NO DATA	-0.57	1016.68

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.706	14.861	15.041	9.454E-03	80.58	7.696E-03	12.507	15.521	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.00	13.689	14.928	15.018	9.377E-03	79.46	7.627E-03	12.410	15.618	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.011 AT GRH	MOMENTUM FLUX (N/m2) 1.17E-01	FRICTION VELOCITY (Meters/sec) 3.083E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM.'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.16E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.709E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.36E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.30E 00
Z/L AT GMH 0.015	LAT.HEAT FLUX (Watts/m2) 5.34E 01	SCALING POT. TEMP. (Kelvin) 8.068E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.47E 03
Z/L AT 10 METERS 0.012	SEN.HEAT FLUX (Watts/m2) -3.09E 00	ROUGHNESS LENGTH (Meters) 8.885E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.26E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 6.70E 01
Z/L AT Z1 0.021	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.32E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.656E-03		N=LnTEMP.STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.011	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.82E 02			
MONIN-OBUKHOV LENGTH (Meters) 8.674E 02	BOWEN RATIO (no units) -0.058			
PSI1 AT Z1= -0.099425 PSI1 AT Z2= -0.049848 PSI2 AT Z1= -0.134359 PSI2 AT Z2= -0.067362				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2290	2.4165E 02	5.8965E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051000
START TIME: 10:12:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.589	7.95	10.13	NO DATA	1016.58	13.465	0.124	0.222	1.455	1.553

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.90	13.687	14.920	15.018	9.387E-03	79.60	7.635E-03	12.422	15.607	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.003 AT GMH	MOMENTUM FLUX (Nt/m2) -8.98E-02	FRICTION VELOCITY (Meters/sec) 2.703E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.308E-02	AIR DENSITY (Kg/m3) 1.2294
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.45E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.362E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.447E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH -0.003	LAT.HEAT FLUX (Watts/m2) 6.04E 01	SCALING POT.TEMP. (Kelvin) -1.381E-03	WITH POT.TEMPERATURE (Meter Kel./sec) 3.732E-04	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8963E 05
Z/L AT 10 METERS -0.003	SEN.HEAT FLUX (Watts/m2) 4.64E-01	ROUGHNESS LENGTH (Meters) 5.448E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.499
MONIN-OBUKHOV LENGTH (Meters) -3.874E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.32E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.155E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.71E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.78
	BOWEN RATIO (no units) 0.008			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
151%	167%	98%	158%	129%	5%	10%	287%	49%	109%	80%	69%	98%
355%	355%	46%	45%	283%	5%	6%	328%	23%	68%	306%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051000
START TIME: 10:12:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.007 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.85E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.825E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.38E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 6.726E-05 [3.0E-05]
Z/L AT GMH 0.009 [0.02]	LAT.HEAT FLUX (Watts/m2) 5.88E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 6.114E-03 [2.0E-02]
Z/L AT 10 METERS 0.007 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.98E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.767E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 1.426L 04	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.32E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.500E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.75E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.027 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	37%	15%	7%	63%	0%	1%	41%	7%	13%	27%	26%	21%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051030
START TIME: 10:42:40 PST
END TIME: 11:12:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	5.130	5.111	4.716	4.540	5.044	6.900	4.912

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.829	3.877	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 136359	1421 137189	0.183	151	-0.009	0.000	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.1	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
13.636	9.08	10.31	NO DATA	312.0	1015.59	-9.62E 02	13.475	286.837

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
13.719	8.49	10.14	NO DATA	-0.60	1016.69

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	13.816	14.984	15.163	9.490E-03	80.31	7.728E-03	12.560	15.639	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	13.809	15.051	15.142	9.389E-03	78.97	7.640E-03	12.430	15.741	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051030
START TIME: 10:42:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.007 AT GMH	MOMENTUM FLUX (Nt/m2) -1.38E-01	FRICTION VELOCITY (Meters/sec) 3.256E-01	GENERAL FORM:DN/DZ= I(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -2.61E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.524E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.56E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.23E 00
Z/L AT GMH 0.010	LAT.HEAT FLUX (Watts/m2) -6.44E 01	SCALING POT. TEMP. (Kelvin) 5.889E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 9.88E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 8.29E 03
Z/L AT 10 METERS 0.008	SEN.HEAT FLUX (Watts/m2) -2.38E 00	ROUGHNESS LENGTH (Meters) 1.082E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 9.1HE 01
Z/L AT Z1 0.014	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.62E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.575E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.007	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.03E 03			
MONIN-OBUKHOV LENGTH (Meters) 1.325E 03	BOWEN RATIO (no units) 0.037			
PSI1 AT Z1= -0.065080 PSI1 AT Z2= -0.032626 PSI2 AT Z1= -0.087965 PSI2 AT Z2= -0.044092				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2285

AIR SPECIFIC HEAT (ITcal./kg Kel.)
2.4166E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8958E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

PTK1-PTK2= +/- .08R Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10:42:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.709	8.56	10.16	NO DATA	1016.59	13.475	0.234	0.332	1.568	1.666

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.807	15.043	15.141	9.401E-03	79.13	7.650E-03	12.446	15.729	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.003 AT GMH	MOMENTUM FLUX (Nt/m2) -1.08E-01	FRICTION VELOCITY (Meters/sec) 2.961E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.768E-02	AIR DENSITY (Kg/m3) 1.2289
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.219E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.627E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02
Z/L AT GMH 0.004	LAT.HEAT FLUX (Watts/m2) 6.48E 01	SCALING POT.TEMP. (Kelvin) 2.072E-03	WITH POT.TEMPERATURE (Meter Kel./sec) -6.134E-04	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8956E 05
Z/L AT 10 METERS 0.003	SEN.HEAT FLUX (Watts/m2) -7.63E-01	ROUGHNESS LENGTH (Meters) 7.661E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.510
MONIN-OBUKHOV LENGTH (Meters) 3.098E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.62E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.195E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.98E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.79
	BOWEN RATIO (no units) -0.012			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
184%	197%	104%	153%	162%	5%	11%	315%	52%	101%	110%	72%	104%
272%	281%	46%	45%	209%	5%	6%	254%	23%	68%	232%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 10:42:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.005 (0.021) AT GMH	MOMENTUM FLUX (Nt/m2) -1.15E 01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 3.051E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.43E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) 1.665E 05 (3.0E 05)
Z/L AT GMH 0.007 (0.02)	LAT.HEAT FLUX (Watts/m2) 3.53E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 4.658E-03 (2.0E 02)
Z/L AT 10 METERS 0.006 (0.02)	SEN.HEAT FLUX (Watts/m2) -1.67E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 8.841E-05 (6.0E 05)
MONIN OBUKHOV LENGTH (Meters) 1.734E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.62E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.30[illegible]E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.45E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.010 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
10%	11%	11%	208%	27%	0%	7%	31%	5%	231%	10%	18%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051100
START TIME: 11:12:50 PST
END TIME: 11:42:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.163	5.159	4.743	4.524	5.037	7.032	4.906

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT.REF.B
5.692	3.832	2.510	0.001	0.961	0.981	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FREQ CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPJFCAL	WIRECAL	WSIEC	WSJEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 136649	1421 132909	0.183	152	0.009	0.000	0.200	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA CASE	VOLT REF DEV	VOLT REF DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.>.005V)	B(No.>.005V)	(No.>.002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
13.668	9.13	10.51	NO DATA	311.8	1015.49	-9.81E 02	13.537	286.889

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.721	8.46	10.31	NO DATA	-0.61	1016.59

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
19.35	13.849	15.034	15.214	9.614E-03	81.22	7.832E-03	12.727	15.670	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.IN.EX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.881	15.139	15.329	9.492E-03	99.49	7.729E-03	12.520	15.813	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051100
START TIME: 11:12:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.023 AT GRH	MOMENTUM FLUX (Nt/M2) 2.21E-01	FRICTION VELOCITY (Meters/sec) 4.745E-01	GENERAL FORM: DN/DZ= (N1-N2)1/(LN(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM: N SLOPE= (LNZ1 PSI) (LNZ2=PSI)/ (N1-N2)
GEOSTRIC MEAN HEIGHT (Meter) GRH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/Kg/sec M2) -4.54E 05	SCALING SPEC.HUMID. (Kg/Kg) 8.706E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.46E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE= 9.42E-01
Z/L AT GRH 0.079	LAT.HEAT FLUX (Watts/m2) -1.12E 02	SCALING POT. TEMP. (Kelvin) -2.750E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.17E 05	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= 6.21E 01
Z/L AT 10 METERS -0.099	SEN.HEA FLUX (Watts/m2) 1.45E 01	ROUGHNESS LENGTH (Meters) 2.753E-04	N=POT TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.70E 03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI3 PTK SLOPE= -1.97E 01
Z/L AT Z1 0.040	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.81E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.645E 03		N=LnTEMP STRUC (K*M**-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE LT2 SLOPE=END DATA
Z/L AT Z2 -0.020	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.00E 03			
MONIN-OBUKHOV LENGTH (Meters) -4.541E 02	BOWE. RATIO (no units) 0.10			
PSI1 AT Z1= 0.129254				
PSI1 AT Z= 0.069033				
PSI2 AT Z1= 0.080547				
PSI2 AT Z2= 0.043747				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec**2)	PROFILE FOR PRANDTL NUMBER	PROFILE FOR SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	1.92E 03	1.35E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2281

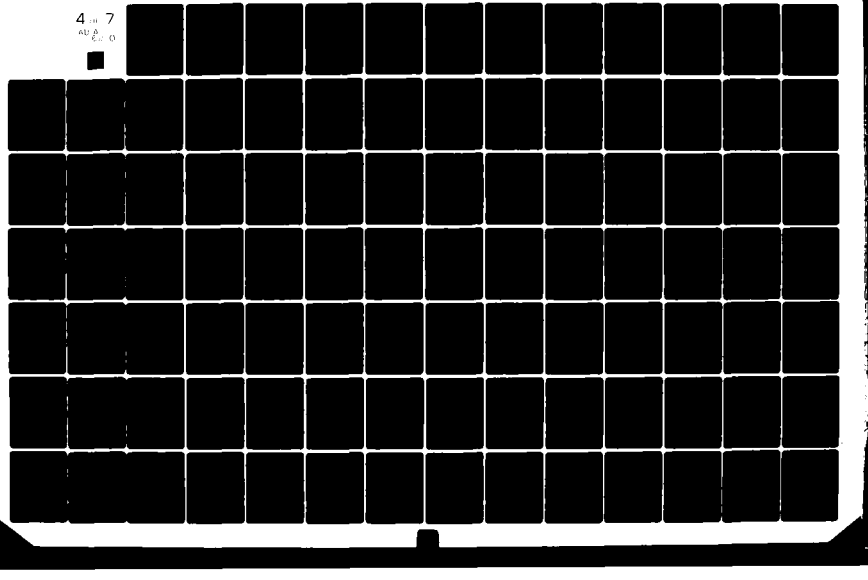
AIR SPECIFIC HEAT (Ly.al/Kg Kel) 2.416E 02

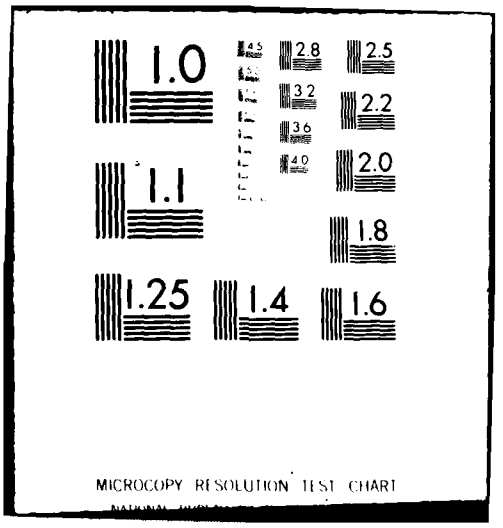
WATER VAPOR HEAT VAP (Ly.al/Kg) 5.085E 02

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART

RUN NUMBER: 7905051100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11:12:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.776	8.54	10.33	NO DATA	1016.49	13.537	0.239	0.337	1.589	1.687

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.874	15.126	15.224	9.507E-03	79.70	7.739E-03	12.589	15.796	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.003 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.004

Z/L AT 10 METERS
0.003

MONIN-OBUKHOV LENGTH (Meters)
2.899E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.07E-01

HUMIDITY FLUX (Kg/sec m2)
2.55E-05

LAT.HEAT FLUX (Watts/m2)
6.29E 01

SEN.HEAT FLUX (Watts/m2)
-8.08E-01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.81E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.19E 02

BOWEN RATIO (no units)
-0.013

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.952E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.032E-05

SCALING POT.TEMP. (Kelvin)
2.202E-03

ROUGHNESS LENGTH (Meters)
7.579E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.194E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.717E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.550E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-6.501E-04

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2284

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8952E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.571

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.177E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.69

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
98%	98%	85%	124%	72%	5%	13%	196%	42%	82%	30%	62%	85%
270%	278%	46%	46%	206%	5%	6%	252%	23%	69%	229%	43%	48%

* CONTINUED BELOW

RUN NUMBER: 7905051100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11:12:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.016 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.020 (0.02)

Z/L AT 10 METERS
-0.015 (0.02)

MONIN-OBUKHOV LENGTH (Meters)
-6.492E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.47E-01 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
6.42E-06 (8.0E-06)

LAT.HEAT FLUX (Watts/m2)
1.59E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.05E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.81E 02 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.65E 02 (3.0E+01)

BOWEN RATIO (no units)
-0.078 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.407E-01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
1.56%E-06 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
-2.410E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
1.572E-04 (6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
1.659E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	71%	40%	402%	81%	0%	9%	73%	20%	263%	78%	65%	46%

* END OF DATA MIN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051130
START TIME: 11:43: 0 PST
END TIME: 12:13:10 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.200	5.167	4.722	4.500	5.026	7.091	4.901

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.934	3.861	2.510	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 137025	1421 138143	0.183	151	-0.009	0.000	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.1	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.702	9.09	10.73	NO DATA	311.6	1015.31	-9.89E 02	13.578	286.918

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.814	8.42	10.48	NO DATA	-0.59	1016.40

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID 1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.882	15.089	15.268	9.752E-03	82.22	7.947E-03	12.911	15.703	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES 2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.904	15.178	15.268	9.597E-03	80.27	7.815E-03	12.710	15.834	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051130
START TIME: 11:43: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.015 AT GMH	MOMENTUM FLUX (Nt/m2) -2.13E-01	FRICTION VELOCITY (Meters/sec) 4.170E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -5.53E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.080E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.53E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.59E-01
Z/L AT GMH -0.019	LAT.HEAT FLUX (Watts/m2) -1.3AE 02	SCALING POT. TEMP. (Kelvin) -1.802E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.48E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 5.01E 03
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 9.34E 00	ROUGHNESS LENGTH (Meters) 2.587E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.47E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.00E 01
Z/L AT Z1 -0.027	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.89E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.577E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.013	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.12E 03			
MONIN-OBUKHOV LENGTH (Meters) -6.815E 02	BOWEN RATIO (no units) -0.068			
PSI1 AT Z1= 0.090299 PSI1 AT Z2= 0.047707 PSI2 AT Z1= 0.055716 PSI2 AT Z2= 0.029075				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2277

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8953E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051130
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.861	8.50	10.51	NO DATA	1016.31	13.578	0.223	0.321	1.589	1.687

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.899	15.167	15.265	9.616E-03	80.50	7.831E-03	12.735	15.819	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.003 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.004

Z/L AT 10 METERS
0.003

MONIN-OBUKHOV LENGTH (Meters)
3.632E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.06E-01

HUMIDITY FLUX (Kg/sec m2)
2.45E-05

LAT.HEAT FLUX (Watts/m2)
6.04E 01

SEN.HEAT FLUX (Watts/m2)
-6.33E-01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.89E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.29E 02

BOWEN RATIO (no units)
-0.010

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.934E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.798E-05

SCALING POT.TEMP. (Kelvin)
1.735E-03

ROUGHNESS LENGTH (Meters)
7.402E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.191E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.606E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.446E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-5.090E-04

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2280

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8951E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.610

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.180E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.51

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
109%	109%	85%	109%	84%	5%	14%	193%	42%	66%	42%	62%	85%
279%	286%	46%	46%	214%	5%	5%	260%	23%	69%	237%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051130
START TIME: 11:43: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.010 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.013 [0.02]

Z/L AT 10 METERS
-0.010 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.013E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.44E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
6.07E-07 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.50E 00 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.52E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.89E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.82E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.044 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.369E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
2.200E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.504E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.495E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.636E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK *AERODYNAMIC DERIVED PARAMETER VALUES* AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
47%	48%	39%	530%	83%	0%	10%	37%	19%	293%	68%	63%	45%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051200
START TIME: 12:13:20 PST
END TIME: 12:43:30 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.218	5.181	4.763	4.580	5.014	7.090	4.798

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.963	3.903	2.510	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 137843	1421 138715	0.157	147	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.),005V)	B(No.),005V)	(No.),002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.1	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
13.794	9.18	10.84	NO DATA	308.1	1015.13	-9.89E 02	13.607	286.988

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.671	8.63	10.56	NO DATA	-0.55	1016.22

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.964	15.181	15.361	9.817E-03	82.37	8.004E-03	13.001	15.784	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.962	15.243	15.333	9.646E-03	80.41	7.858E-03	12.778	15.890	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051200
START TIME: 12:13:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -1.13E-01	FRICTION VELOCITY (Meters/sec) 3.032E-01	GENERAL FORM:DN/DZ= [(N1-N2)/ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -3.97E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.068E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.15E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.32E 00
Z/L AT GMH 0.011	LAT.HEAT FLUX (Watts/m2) -9.81E 01	SCALING POT. TEMP. (Kelvin) 5.840E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.63E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 5.86E 03
Z/L AT 10 METERS 0.009	SEN.HEAT FLUX (Watts/m2) -2.20E 00	ROUGHNESS LENGTH (Meters) 8.362E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 9.24E 01
Z/L AT Z1 0.016	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.89E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.334E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.09E 03			
MONIN-OBUKHOV LENGTH (Meters) 1.160E 03	BOWEN RATIO (no units) 0.022			
PSI1 AT Z1= -0.074333 PSI1 AT Z2= -0.037268 PSI2 AT Z1= -0.100450 PSI2 AT Z2= -0.050362				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7950	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2271

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4171E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8949E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:13:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.861	8.70	10.59	NO DATA	1016.13	13.607	0.254	0.352	1.629	1.727

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.959	15.235	15.333	9.667E-03	80.65	7.875E-03	12.805	15.878	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.004 AT GMH	MOMENTUM FLUX (Nt/m2) -1.12E-01	FRICTION VELOCITY (Meters/sec) 3.017E-01	WITH LONG. VELOCITY (Meter2/sec2) -9.104E-02	AIR DENSITY (Kg/m3) 1.2275
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.47E-05	SCALING SPEC.HUMID. (Kg/Kg) -6.656E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.465E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4170E 02
Z/L AT GMH 0.005	LAT.HEAT FLUX (Watts/m2) 6.08E 01	SCALING POT.TEMP. (Kelvin) 2.713E-03	WITH POT.TEMPERATURE (Meter Kel./sec) -8.186E-04	WATER LAT.HEAT VAP. (ITcal./Kg) 5.894BE 05
Z/L AT 10 METERS 0.004	SEN.HEAT FLUX (Watts/m2) -1.02E 00	ROUGHNESS LENGTH (Meters) 8.210E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.636
MONIN-OBUKHOV LENGTH (Meters) 2.458E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.89E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.204E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.181E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.29E 02			BAR.PRES.AT WT LEVEL (Millibar) 1017.33
	BOWEN RATIO (no units) -0.017			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
190%	206%	112%	122%	167%	5%	12%	289%	56%	66%	111%	76%	112%
262%	272%	46%	47%	200%	5%	5%	247%	23%	70%	223%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:13:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.006 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.12E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.022E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.80E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 2.275E-05 [3.0E-05]
Z/L AT GMH 0.009 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.68E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 4.801E-03 [2.0E-02]
Z/L AT 10 METERS 0.007 [0.02]	SEN.HEAT FLUX (Watts/m2) -1.66E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.265E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 1.502E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.89E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.238E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.80E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.001 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
11%	11%	1%	435%	20%	0%	9%	25%	0%	289%	8%	1%	6%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051230
START TIME: 12:43:40 PST
END TIME: 13:13:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.203	5.159	4.529	4.362	5.002	6.983	4.758

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.033	3.873	2.511	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 139055	1421 140270		0.157	143	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.996	8.73	10.75	NO DATA	306.8	1014.94	-9.74E 02	13.675	287.126

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.027	8.23	10.43	NO DATA	-0.49	1016.04

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.085	15.295	15.475	9.756E-03	81.26	7.959E-03	12.925	15.906	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.117	15.387	15.477	9.554E-03	78.90	7.788E-03	12.662	16.049	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051230
START TIME: 12:43:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.038 AT GMH	-1.38E-01	3.352E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	-6.08E-05	1.459E-04	DWS/DZ= 5.64E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.19E 00
-0.047	-1.48E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-2.707E-02	DSH/DZ= 1.91E-05	PSI=PSI2
-0.036	1.13E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	SH SLOPE= 3.71E 03
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.201E-04	DPT/DZ= -3.54E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.066	-9.74E 02			PSI=PSI2
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		PTK SLOPE= -2.00E 01
-0.033		1.822E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)			PSI=NONE
-2.788E 02	-1.11E 03			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.194582	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.108283	-0.076			
PSI2 AT Z1= 0.123071				
PSI2 AT Z2= 0.067133				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2264

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4178E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8942E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051230
START TIME: 12:43:40 PST
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.012	8.29	10.47	NO DATA	1015.94	13.675	0.338	0.436	1.701	1.799

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.110	15.376	15.474	9.578E-03	79.18	7.808E-03	12.694	16.032	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.007 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.010

Z/L AT 10 METERS
0.008

MONIN-OBUKHOV LENGTH (Meters)
1.274E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.92E-02

HUMIDITY FLUX (Kg/sec m2)
2.50E-05

LAT.HEAT FLUX (Watts/m2)
6.17E 01

SEN.HEAT FLUX (Watts/m2)
-1.64E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.74E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.14E 02

BOWEN RATIO (no units)
-0.027

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.843E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.163E-05

SCALING POT.TEMP. (Kelvin)
4.651E-03

ROUGHNESS LENGTH (Meters)
6.591E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.177E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.085E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.498E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-1.323E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2267

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8939E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.702

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.186E-02

BAR.PRES.AT WT LEVEL (Millibar)
1017.14

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
119%	119%	108%	108%	87%	5%	15%	195%	54%	54%	33%	74%	108%
228%	245%	46%	46%	173%	5%	5%	218%	23%	69%	196%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051230
START TIME: 12:43:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.022 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.028 [0.02]

Z/L AT 10 METERS
-0.022 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.636E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.11E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
-1.54E-07 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
-3.82E-01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.95E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.74E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.67E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.053 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.995E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
4.994E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.255E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
8.588E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.351E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
106%	107%	19%	566%	98%	0%	11%	31%	9%	219%	86%	33%	26%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051300
START TIME: 13:13:50 PST
END TIME: 13:44: 0 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	5.171	5.128	4.605	4.396	4.981	6.527	4.775

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.975	3.862	2.513	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140000	1421 141064	0.157	137	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.1	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.000	8.88	10.56	NO DATA	307.4	1014.62	-9.10E 02	13.618	287.213

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.106	8.29	10.24	NO DATA	-0.40	1015.71

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.180	15.372	15.552	9.626E-03	79.74	7.858E-03	12.757	15.998	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	RFL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.197	15.450	15.540	9.430E-03	77.53	7.691E-03	12.502	16.127	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051300
START TIME: 13:13:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.015 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.019

Z/L AT 10 METERS
-0.015

Z/L AT Z1
-0.027

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH
(Meters)
-6.860E 02

PSI1 AT Z1= 0.089767
PSI1 AT Z2= 0.047412
PSI2 AT Z1= 0.055380
PSI2 AT Z2= 0.028893

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.62E-01

HUMIDITY FLUX
(Kg/sec m2)
-6.02E-05

LAT.HEAT FLUX
(Watts/m2)
-1.49E 02

SEN.HEAT FLUX
(Watts/m2)
6.13E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
-9.10E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-1.05E 03

BOWEN RATIO
(no units)
-0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.633E-01

SCALING SPEC.HUMD.
(Kg/Kg)
1.353E-04

SCALING POT. TEMP.
(Kelvin)
-1.360E-02

ROUGHNESS LENGTH
(Meters)
1.598E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
2.063E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.56E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 1.85E-05

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.86E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.10E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 4.00E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -3.97E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2257

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.8937E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:13:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/ser)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.094	8.36	10.28	NO DATA	1015.62	13.618	0.475	0.573	1.822	1.920

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.192	15.440	15.538	9.454E-03	77.79	7.711E-03	12.533	16.112	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.013 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.018

Z/L AT 10 METERS
0.014

MONIN-OBUKHOV LENGTH (Meters)
7.220E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.01E-01

HUMIDITY FLUX (Kg/sec m2)
2.61E-05

LAT.HEAT FLUX (Watts/m2)
6.44E 01

SEN.HEAT FLUX (Watts/m2)
-2.99E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.10E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-8.49E 02

BOWEN RATIO (no units)
-0.046

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.874E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.401E-05

SCALING POT.TEMP. (Kelvin)
8.389E-03

ROUGHNESS LENGTH (Meters)
6.862E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.182E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.261E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.608E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-2.411E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2260

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8934E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.640

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.182E-02

BAR.PRES.AT WT LEVEL (Millibar)
1016.82

* *MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.* TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
130%	130%	96%	103%	103%	5%	15%	206%	48%	55%	55%	68%	96%
193%	217%	46%	45%	145%	5%	6%	190%	23%	68%	168%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:13:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable)
-0.004 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.005 [0.02]

Z/L AT 10 METERS
-0.004 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.528E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.21E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
-1.07E-07 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
-2.67E-01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
2.35E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.10E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.04E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.044 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.120E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
4.142E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-8.187E-03 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.040E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.441E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COEF
70%	73%	27%	572%	154%	0%	12%	3%	13%	254%	62%	45%	33%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051330
START TIME: 13:44:10 PST
END TIME: 14:14:20 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.162	5.125	4.543	4.365	4.952	6.297	4.722

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.009	3.869	2.514	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140470	1421 141516	0.157	130	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.1	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.047	8.76	10.51	NO DATA	305.6	1014.18	-8.78E 02	13.651	287.259

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.152	8.23	10.22	NO DATA	-0.30	1015.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.227	15.414	15.594	9.587E-03	79.22	7.830E-03	12.708	16.048	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.242	15.494	15.584	9.413E-03	77.20	7.682E-03	12.481	16.167	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051330
START TIME: 13:44:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD RICHARDSON NUMBER (+-Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))]/ (N1-N2)
-0.016 AT GMH	-1.32E-01	3.278E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	-4.87E-05	1.213E-04	DWS/DZ= 5.89E-02	PSI=PSI1
				WS SLOPE= 1.22F 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.021	-1.20E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.219E-02	DSH/DZ= 1.65E-05	PSI=PSI2
-0.016	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= 4.46E 03
Z/L AT Z1	4.95E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.050	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.108E-04	DPT/DZ= -1.66E-03	PSI=PSI2
Z/L AT Z2	8.78E 02			PTK SLOPE= -4.43E 01
0.015		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.730E-03		Z=HEIGHT (M) Vert.Axis
-6.207E 02	-9.93E 02			PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.098190	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.052096	-0.041			
PSI2 AT Z1= 0.060714				
PSI2 AT Z2= 0.031793				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	0.74	0.74	0.92E-03	1.32E-03
0.4	9.7959				

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2250

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8934E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051330
START TIME: 13:44:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.139	8.30	10.26	NO DATA	1015.19	13.651	0.488	0.586	1.832	1.930

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.237	15.484	15.582	9.434E-03	77.44	7.700E-03	12.509	16.152	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -9.93E-02	FRICTION VELOCITY (Meters/sec) 2.847E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.104E-02	AIR DENSITY (Kg/m3) 1.2253
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.541E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.630E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH 0.019	LAT.HEAT FLUX (Watts/m2) 6.49E 01	SCALING POT.TEMP. (Kelvin) 8.673E-03	WITH POT.TEMPERATURE (Meter Kel./sec) -2.469E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8932E 05
Z/L AT 10 METERS 0.015	SEN.HEAT FLUX (Watts/m2) -3.06E 00	ROUGHNESS LENGTH (Meters) 6.620E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.667
MONIN-OBUKHOV LENGTH (Meters) 6.851E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.78E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.178E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.184E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.16E 02			BAR.PRES.AT WT LEVEL (Millibar) 1016.39
	BOWEN RATIO (no units) -0.047			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
144%	144%	106%	115%	115%	5%	14%	229%	53%	62%	62%	73%	106%
190%	215%	46%	45%	143%	5%	6%	188%	23%	68%	166%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051330
START TIME: 13:44:10 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.004 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.09E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.977E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.30E-06 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 2.738E-05 [3.0E-05]
Z/L AT GMH -0.005 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.31E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -6.556E-03 [2.0E-02]
Z/L AT 10 METERS -0.004 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.39E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 8.275E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.618E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.78E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.329E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.66E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.044 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	78%	16%	506%	134%	0%	11%	4%	8%	328%	57%	28%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051400
START TIME: 14:14:30 PST
END TIME: 14:44:40 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
5.265	0.001	0.001	5.157	5.119	4.845	4.658	4.915	5.804	4.707

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.011	3.835	2.575	*0.001*	*0.001*	*0.001*	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT1FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140606	1421 141405	0.157	123	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.1	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.061	9.34	10.47	NO DATA	305.0	1013.60	-8.09E-02	13.653	287.261

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.146	8.77	10.19	NO DATA	-0.19	1014.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	*POT.TEMP.1*	*VIR.TEMP.1*	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.240	15.425	15.605	9.559E-03	78.97	7.812E-03	12.671	16.045	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.231	15.479	15.569	9.387E-03	77.08	7.664E-03	12.446	16.146	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051400
START TIME: 14:14:30 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -1.16E-01	FRICTION VELOCITY (Meters/sec) 3.083E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.9	HUMIDITY FLUX (Kg/sec m2) -4.02E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.064E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.31E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.30E 00
Z/L AT GMH 0.013	LAT.HEAT FLUX (Watts/m2) -9.91E 01	SCALING POT. TEMP. (Kelvin) 7.092E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.64E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 *SH SLOPE= 5.01E 03*
Z/L AT 10 METERS 0.010	SEN.HEAT FLUX (Watts/m2) -2.71E 00	ROUGHNESS LENGTH (Meters) 8.881E-05	N=POT TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.10E-03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI3 PTK SLOPE= 7.63E 01
Z/L AT Z1 0.012	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.09E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.39E-03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.11E 02			PTK SLOPE=NO DATA
MONIN OBUKHOV LENGTH (Meters) 9.884E 02	BOWEN RATIO (no units) 0.027			
PSI1 AT Z1 0.087260				
PSI1 AT Z2= 0.043749				
PSI2 AT Z1= 0.117920				
PSI2 AT Z2= 0.059120				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (NO UNITS)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2243

AIR SPECIFIC HEAT (Ltcal./Kg Kel.) 2.4167E 02

WATER LAT.HEAT VAP. (Ltcal./Kg) 5.8934E 02

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:14:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.131	8.84	10.22	NO DATA	1014.61	13.653	0.478	0.576	1.819	1.917

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.229	15.473	15.571	9.408E-03	77.31	7.682E-03	12.474	16.135	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.011 AT GAH

GEOMETRIC MEAN HEIGHT (Meter) GAH=(Z1*Z2)1/2
12.99

Z/L AT GAH
0.016

Z/L AT 10 METERS
0.013

MONIN-OBUKHOV LENGTH (Meters)
7.988E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.16E-01

HUMIDITY FLUX (Kg/sec m2)
2.83E-05

LAT.HEAT FLUX (Watts/m2)
6.98E 01

SEN.HEAT FLUX (Watts/m2)
-3.32E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.09E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.43E 02

BOWEN RATIO (no units)
-0.048

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.080E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.497E-05

SCALING POT.TEMP. (Kelvin)
8.707E-03

ROUGHNESS LENGTH (Meters)
8.850E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.214E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (m**2/sec2)
9.486E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.82HE-05

WITH POT TEMPERATURE (Meter Kel./sec)
-2.682E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2246

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416/E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8932F 05

VAP.PRES.AT WT LEVEL (Millibar)
15.660

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.183E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.81

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GAH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
171%	187%	110%	119%	146%	5%	14%	265%	55%	64%	91%	75%	110%
195%	217%	46%	45%	145%	5%	6%	189%	23%	68%	168%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:14:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ].

STABILITY

GRAD RICHARDSON NUMBER (+-Stable, -Unstable)
0.010 [6.02] AT GAH

GEOMETRIC MEAN HEIGHT (Meter) GAH=(Z1*Z2)1/2
12.99

Z/L AT GAH
0.015 [0.02]

Z/L AT 10 METERS
0.011 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
8.965E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.16E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
9.65E 96 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.38E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-3.02E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.09E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.93E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.016 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.081E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
1.801E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
7.661E 03 [2.0E-02]

ROUGHNESS LENGTH (Meters)
8.852E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.244E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GAH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
5%	6%	0%	590%	10%	0%	11%	47%	0%	302%	4%	0%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051430
START TIME: 14:44:50 PST
END TIME: 15:14:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.182	5.135	4.681	4.520	4.889	5.225	4.602

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.008	3.833	2.516	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPTECAL	DPZECAL	WIBECAL	WSIEC	WSZEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140371	1421 141019	0.157	116	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.037	9.02	10.62	NO DATA	301.5	1013.21	-7.29E 02	13.650	287.329

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.102	8.52	10.29	NO DATA	-0.07	1014.31

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.217	15.415	15.595	9.651E-03	79.88	7.890E-03	12.792	16.015	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.192	15.449	15.540	9.447E-03	77.79	7.715E-03	12.523	16.100	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051430
START TIME: 14:44:50 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
0.029 AT GMH	-7.11E-02	2.411E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.65E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.66E 00
12.99	-3.12E-05	1.058E-04		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.045	-7.70E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 1.95E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 5.11E 03
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	1.501E-02		
0.035	-4.48E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.77E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.60E 01
0.054	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.481E-05		
Z/L AT Z2	-7.29E 02			
0.032		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	8.762E-04		
2.860E 02	-8.10E 02			
PSI1 AT Z1= -0.30153R	BOWEN RATIO (no units)			
PSI1 AT Z2= -0.151180	0.058			
PSI2 AT Z1= -0.407484				
PSI2 AT Z2= -0.204297				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2239

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8936E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:44:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.094	8.58	10.33	NO DATA	1014.21	13.650	0.444	0.542	1.795	1.893

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.192	15.445	15.543	9.471E-03	78.04	7.736E-03	12.556	16.090	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -1.08E-01	FRICTION VELOCITY (Meters/sec) 2.967E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.804E-02	AIR DENSITY (Kg/m3) 1.2243
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.66E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.334E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.664E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416?E 02
Z/L AT GMH 0.015	LAT.HEAT FLUX (Watts/m2) 6.57E 01	SCALING POT.TEMP. (Kelvin) 7.686E-03	WITH POT.TEMPERATURE (Meter Kel./sec) -2.281E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8934E 05
Z/L AT 10 METERS 0.012	SEN.HEAT FLUX (Watts/m2) -2.83E 00	ROUGHNESS LENGTH (Meters) 7.719E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.650
MONIN-OBUKHOV LENGTH (Meters) 8.396E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.29E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.196E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.182E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.66E 02			BAR.PRES.AT WT LEVEL (Millibar) 1015.41
	BOWEN RATIO (no units) -0.043			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
129%	167%	117%	115%	101%	5%	12%	216%	59%	56%	42%	79%	117%
200%	222%	46%	45%	150%	5%	6%	195%	23%	68%	173%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:44:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.022 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.75E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.811E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.03E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 2.490E-05 [3.0E-05]
Z/L AT GMH 0.033 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.55E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.357E-02 [2.0E-02]
Z/L AT 10 METERS 0.025 [0.02]	SEN.HEAT FLUX (Watts/m2) -3.82E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.222E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 3.989E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.29E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.115E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.14E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.005 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
43%	46%	21%	305%	22%	0%	11%	63%	11%	300%	21%	35%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051500
START TIME: 15:15: 0 PST
END TIME: 15:45:10 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	5.204	5.155	4.346	4.147	4.874	4.472	4.504

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.016	3.843	2.517	0.001	0.001	0.001	0.001	6.265

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140708	1401 141109		0.125	75	-0.009	0.000	0.000	0.995	0.969

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.071	8.40	10.75	NO DATA		298.1	1012.98	-6.24E 02	13.658	287.253

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.116	7.91	10.40	NO DATA	0.05	1014.08

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.251	15.461	15.641	9.733E-03	80.40	7.960E-03	12.902	16.046	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.206	15.474	15.564	9.518E-03	78.33	7.776E-03	12.619	16.110	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051500
START TIME: 15:15: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.057 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.103

Z/L AT 10 METERS
0.079

Z/L AT Z1
0.144

Z/L AT Z2
0.073

MONIN-OBUKHOV LENGTH (Meters)
1.259E 02

PSI1 AT Z1= -0.684988
PSI1 AT Z2= -0.343427
PSI2 AT Z1= -0.925659
PSI2 AT Z2= -0.464091

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.35E-02

HUMIDITY FLUX (Kg/sec m2)
-1.99E-05

LAT.HEAT FLUX (Watts/m2)
4.90E 01

SEN.HEAT FLUX (Watts/m2)
-4.88E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.24E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.78E 02

BOWEN RATIO (no units)
0.100

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.886E-01

SCALING SPEC.HUMD. (Kg/Kg)
8.611E-05

SCALING POT. TEMP. (Kelvin)
2.092E-02

ROUGHNESS LENGTH (Meters)
1.183E-05

DRAG COEF. AT 10 METERS (Dimensionless)
6.209E-04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.42E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.05E-05

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 4.97E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 2.12F 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 6.2RE 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 2.5HE 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

* GENERAL NOTES:
NONE

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2235

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.4170E 02

WATER LAT.HEAT VAP. (1Tcal./Kg)
5.8934E 05

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051500 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 15:15: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelv n)
14.110	7.97	10.45	NO DATA	1013.98	13.658	0.452	0.550	1.814	1.912

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.208	15.473	15.571	9.544E-03	78.58	7.798E-03	12.654	16.103	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -8.99E-02	FRICTION VELOCITY (Meters/sec) 2.710E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.344E-02	AIR DENSITY (Kg/m3) 1.2239
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.40E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.242E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.402E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4168E 02
Z/L AT GMH 0.018	LAT.HEAT FLUX (Watts/m2) 5.93E 01	SCALING POT.TEMP. (Kelvin) 7.507E-03	WITH POT.TEMPERATURE (Meter Kel./sec) -2.034E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8933E 05
Z/L AT 10 METERS 0.014	SEN.HEAT FLUX (Watts/m2) -2.52E 00	ROUGHNESS LENGTH (Meters) 5.500E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.656
MONIN-OBUKHOV LENGTH (Meters) 7.173E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.24E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.156E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.183E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.67E 02			BAR.PRES.AT WT LEVEL (Millibar) 1015.18
	BOWEN RATIO (no units) -0.043			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
112%	176%	121%	117%	92%	5%	10%	209%	60%	57%	31%	80%	121%
196%	221%	46%	46%	149%	5%	6%	194%	23%	69%	172%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051500 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 15:15: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.041 [0.021 AT GMH	MOMENTUM FLUX (Nt/m2) -7.71E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.482E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.17E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 1.417E-05 [3.0E-05]
Z/L AT GMH 0.065 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.90E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.885E-02 [2.0E-02]
Z/L AT 10 METERS 0.050 [0.02]	SEN.HEAT FLUX (Watts/m2) -3.98E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.994E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 1.984E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.24E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.625E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.10E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.026 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
56%	65%	31%	204%	31%	0%	9%	89%	18%	265%	41%	38%	29%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051530
START TIME: 15:45:20 PST
END TIME: 16:15:30 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.187	5.129	4.643	4.475	4.865	3.642	4.554

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.990	3.813	2.516	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPJFCAL	WIBFCAL	WSIFT	WSJFC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 142038	1421 142251	0.125	72	-0.009	0.000	0.000	0.995	0.969

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.204	8.97	10.66	NO DATA	299.8	1012.86	-5.08E 02	13.632	287.374

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.225	8.52	10.25	NO DATA	0.15	1013.96

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.384	15.586	15.765	9.664E-03	79.20	7.908E-03	12.817	16.183	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.315	15.570	15.660	9.416E-03	76.98	7.696E-03	12.488	16.223	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051530
START TIME: 15:45:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.104 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.265

Z/L AT 10 METERS
0.204

Z/L AT Z1
0.374

Z/L AT Z2
0.188

MONIN-OBUKHOV LENGTH (Meters)
4.903E 01

PSI1 AT Z1= -1.759180
PSI1 AT Z2= -0.881986
PSI2 AT Z1= -2.377270
PSI2 AT Z2= -1.191874

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.59E-02

HUMIDITY FLUX (Kg/sec m2)
-8.51E-06

LAT.HEAT FLUX (Watts/m2)
-2.10E 01

SEN.HEAT FLUX (Watts/m2)
-2.78E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.08E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.32E 02

BOWEN RATIO (no units)
0.132

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.139E-01

SCALING SPEC.HUMD. (Kg/Kg)
6.110E-05

SCALING POT. TEMP. (Kelvin)
1.969E-02

ROUGHNESS LENGTH (Meters)
4.498E-07

DRAG COEF. AT 10 METERS (Dimensionless)
1.982E-04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)1/[ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.98E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= 2.36E-05

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 7.62E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:N'SLOPE= [(LnZ1-PS1)-(LnZ2-PS1)]/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.51E 00

N=SPEC.HUMIDITY (kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 8.85E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 2.74E 01

N=LnTEMP.STRUC.(kxM 2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2229

AIR SPECIFIC HEAT (Ilcal./kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP (Ilcal./Kg)
5.8928E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051530
START TIME: 15:45:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.223	8.58	10.30	NO DATA	1013.86	13.632	0.590	0.688	1.940	2.038

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.321	15.572	15.670	9.446E-03	77.24	7.722E-03	12.528	16.219	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.016 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.023

Z/L AT 10 METERS
0.018

MONIN-OBUKHOV LENGTH (Meters)
5.579E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.08E-01

HUMIDITY FLUX (Kg/sec m2)
2.67E-05

LAT.HEAT FLUX (Watts/m2)
6.60E 01

SEN.HEAT FLUX (Watts/m2)
-4.25E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.08E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.46E 02

BOWEN RATIO (no units)
-0.064

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.967E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.366E-05

SCALING POT.TEMP. (Kelvin)
1.157E-02

ROUGHNESS LENGTH (Meters)
7.714E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.196E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.800E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.673E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-3.432E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8927E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.627

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.181E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.06

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
121%	248%	167%	150%	124%	5%	8%	275%	84%	67%	41%	104%	167%
175%	203%	46%	45%	131%	5%	7%	176%	23%	68%	154%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051530
START TIME: 15:45:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.068 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.132 [0.02]

Z/L AT 10 METERS
0.102 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
9.847E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.79E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.86E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
4.59E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-3.49E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.08E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.87E 02 [3.0E+01]

BOWEN RATIO (no units)
0.012 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.573E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-5.602E-06 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
1.800E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.466E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.004E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
66%	92%	60%	108%	21%	6%	9%	126%	41%	225%	24%	69%	58%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051600
START TIME: 16:15:40 PST
END TIME: 16:45:50 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.205	5.139	4.999	4.828	4.862	2.853	4.581

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.251	5.802	2.517	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
141[141577	142[141600	0.157	95	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.158	9.63	10.76	NO DATA	300.8	1012.80	-3.98E 02	13.594	287.319

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.160	9.09	10.31	NO DATA	0.24	1013.90

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.338	15.549	15.729	9.734E-03	80.00	7.965E-03	12.907	16.134	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.250	15.510	15.690	9.454E-03	77.60	7.726E-03	12.536	16.154	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051600
START TIME: 16:15:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.089 AT GMH	MOMENTUM FLUX (Nt/m2) -3.23E-02	FRICTION VELOCITY (Meters/sec) 1.625E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -1.63E-05	SCALING SPEC.HUMD. (Kg/Kg) 8.183E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.10E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 2.46E 00
Z/L AT GMH 0.198	LAT.HEAT FLUX (Watts/m2) -4.01E 01	SCALING POT. TEMP. (Kelvin) 2.994E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 2.66E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 6.61E 03
Z/L AT 10 METERS 0.153	SEN.HEAT FLUX (Watts/m2) -6.02E 00	ROUGHNESS LENGTH (Meters) 5.443E-06	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 9.74E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.81E 01
Z/L AT Z1 0.200	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.98E 02	DRAG COEF. AT 10 METERS (Dimensionless) 3.445E-04		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.140	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.44E 02			
MONIN-OBUKHOV LENGTH (Meters) 6.554E 01	BOWEN RATIO (No units) 0.150			
PSI1 AT Z1= -1.315918 PSI1 AT Z2= -0.659752 PSI2 AT Z1= 1.778267 PSI2 AT Z2= 0.891556				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2230

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8931E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:15:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.160	9.15	10.36	NO DATA	1013.80	13.594	0.565	0.663	1.920	2.018

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.258	15.514	15.612	9.488E-03	77.89	7.755E-03	12.581	16.152	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.013 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.019

Z/L AT 10 METERS
0.015

MONIN-OBUKHOV LENGTH (Meters)
6.798E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.26E-01

HUMIDITY FLUX (Kg/sec m2)
2.77E-05

LAT.HEAT FLUX (Watts/m2)
6.83E 01

SEN.HEAT FLUX (Watts/m2)
-4.44E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.98E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.34E 02

BOWEN RATIO (no units)
-0.065

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.215E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.036E-05

SCALING POT.TEMP. (Kelvin)
1.115E-02

ROUGHNESS LENGTH (Meters)
1.034E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.234E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.034E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.768E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-3.586E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2235

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8931E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.588

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.178E-02

BAR.PRES.AT WT LEVEL (Millibar)
1015.00

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
105%	198%	135%	121%	97%	5%	12%	217%	68%	53%	29%	88%	135%
181%	205%	46%	45%	133%	5%	8%	179%	23%	68%	156%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16:15:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.061 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.110 [0.02]

Z/L AT 10 METERS
0.085 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.178E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.03E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.57E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
3.87E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-5.36E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.98E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.78E 02 [3.0E+01]

BOWEN RATIO (no units)
0.032 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.812E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
1.525E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
2.701E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
7.119E-05 [6.0E-05]

DRAG COEF.AT 10 METERS
1.031E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	81%	51%	154%	15%	0%	15%	135%	32%	256%	42%	73%	49%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051630
START TIME: 16:46: 0 PST
END TIME: 17:16:10 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No 02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.246	5.167	5.276	5 047	4.851	2.10¹	4.617

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.890	3.836	2.522	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 141421	1421 14138B	0.157	90	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
14.142	10.16	11.80	NO DATA	302.0	1012.63	-2.93E 02	13.535	287.300

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
14.139	9.49	10.47	NO DATA	0.32	1013.73

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.322	15.556	15.736	9.891E-03	81.38	8.095E-03	13.115	16.115	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	14.229	15.504	15.594	9.559E-03	78.58	7.813E-03	12.674	16.129	NO DATA

* CONTINUED BELOW

PRINT DATE: 11 JUN 1980
RUN NUMBER: 7905051630 MARINE SURFACE LAYER DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START TIME: 16:46: 0 PST NRL MICROMETEOROLOGY DATA AVERAGING PERIOD: 30 Min
START DATE: 5 May 1979 (DAY 125) SAN NICOLAS ISLAND, CAL NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.063 AT GMH	-7.65E-02	2.501E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	-3.85E-05	1.260E-04	DWS/DZ= 7.49E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	WS SLOPE= 1.60E 00
0.116	9.50E 01	4.150E-02	DSH/DZ= 3.15E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			PSI=PSI2
0.090	-1.28E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	SH SLOPE= 4.29E 03
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.027E-05	DPT/DZ= 1.04E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
0.164	-2.93E 02			PSI=PSI2
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		PTK SLOPE= 1.30E 01
0.082	TOTAL HEAT BUDGET FLUX (Watts/m2)	7.252E-04		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	-4.01E 02			PSI=NONE
1.117E 02				CT2 SLOPE=NO DATA
PSI1 AT Z1= -0.772255	BOWEN RATIO (no units)			
PSI1 AT Z2= -0.387179				
PSI2 AT Z1= -1.043587	0.135			
PSI2 AT Z2= -0.523215				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2228
AIR SPECIFIC HEAT (Ical./Kg Kel.)	2.4172E 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.8932E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051630
START TIME: 16:46: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.139	9.57	10.54	NO DATA	1013.63	13.535	0.604	0.702	1.975	2.073

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.237	15.510	15.608	9.599E-03	78.91	7.846E-03	12.727	16.128	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.013 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.019

Z/L AT 10 METERS
0.015

MONIN-OBUKHOV LENGTH (Meters)
6.895E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.41E-01

HUMIDITY FLUX (Kg/sec m2)
2.70E-05

LAT.HEAT FLUX (Watts/m2)
6.66E 01

SEN.HEAT FLUX (Watts/m2)
-5.18E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.93E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.32E 02

BOWEN RATIO (no units)
-0.078

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.401E-01

SCALING SPEC.HUMID. (Kg/Kg)
-6.487E-05

SCALING POT.TEMP. (Kelvin)
1.230E-02

ROUGHNESS LENGTH (Meters)
1.264E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.262E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.156E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.698E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-4.182E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2233

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4169E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8932E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.525

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.173E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.83

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
90%	147%	105%	93%	73%	5%	22%	165%	53%	40%	20%	73%	105%
178%	201%	46%	47%	129%	5%	10%	176%	23%	70%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051630
START TIME: 16:46: 0 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.046 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.075 [0.02]

Z/L AT 10 METERS
0.058 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.728E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.22E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
5.00E-06 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.23E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-1.01E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.93E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.83E 02 [3.0E+01]

BOWEN RATIO (no units)
0.032 [0.31]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.127E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
5.644E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
3.807E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
9.438E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.114E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFFRENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
57%	66%	29%	425%	39%	0%	32%	133%	15%	175%	48%	47%	75%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051700
START TIME: 17:16:20 PST
END TIME: 17:46:30 PST
START DATE: 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.333	5.237	5.751	5.502	4.836	1.295	4.573

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.854	3.850	2.524	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 140446	1421 140608		0.157	87	-0.009	0.000	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.2	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
14.045	11.08	11.52	NO DATA	300.5	1012.40	-1.81E 02	13.500	287.213

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
14.061	10.33	10.89	NO DATA	0.37	1013.50

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	14.224	15.508	15.608	1.024E-02	84.76	8.379E-03	13.569	16.010	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	14.151	15.464	15.554	9.830E-03	81.22	8.036E-03	13.030	16.044	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051700
START TIME: 17:16:20 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.040 AT GMH	MOMENTUM FLUX (Nt/m2) -1.31E-01	FRICTION VELOCITY (Meters/sec) 3.276E-01	GENERAL FORM:DN/DZ= [(N1-N2))/ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -7.54E-05	SCALING SPEC.HUMD. (Kg/Kg) 1.882E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.30E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.22E 00
Z/L AT GMH 0.066	LAT.HEAT FLUX (Watts/m2) -1.86E 02	SCALING POT. TEMP. (Kelvin) 4.030E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 3.82E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 2.87E 03
Z/L AT 10 METERS 0.051	SEN.HEAT FLUX (Watts/m2) -1.63E 01	ROUGHNESS LENGTH (Meters) 1.106E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.19E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.34E 01
Z/L AT Z1 0.073	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.81E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.032E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.047	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.83E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.969E 02	BOWEN RATIO (no units) 0.088			
PSI1 AT Z1= -0.437989 PSI1 AT Z2= -0.219591 PSI2 AT Z1= -0.591877 PSI2 AT Z2= -0.296745				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2227
AIR SPECIFIC HEAT (1Tcal./Kg Kel.)	2.4177E 02
WATER LAT.HEAT VAP. (1Tcal./Kg)	5.8937E 05

* GENERAL NOTES:
NONE

CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:16:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
14.059	10.42	10.97	NO DATA	1013.40	13.500	0.558	0.656	1.969	2.067

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.157	15.469	15.567	9.879E-03	81.64	8.076E-03	13.095	16.040	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.010 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.014

Z/L AT 10 METERS
0.011

MONIN-OBUKHOV LENGTH (Meters)
9.244E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.75E-01

HUMIDITY FLUX (Kg/sec m2)
2.51E-05

LAT.HEAT FLUX (Watts/m2)
6.20E 01

SEN.HEAT FLUX (Watts/m2)
-5.32E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.81E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.24E 02

BOWEN RATIO (no units)
-0.086

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.783E-01

SCALING SPEC.HUMID. (Kg/Kg)
-5.432E-05

SCALING POT.TEMP. (Kelvin)
1.135E-02

ROUGHNESS LENGTH (Meters)
1.843E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.318E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.431E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.514E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-4.294E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2232

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4174E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8936E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.487

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.171E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.60

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
91%	128%	98%	81%	68%	5%	39%	149%	49%	32%	19%	69%	98%
187%	206%	46%	50%	134%	5%	13%	184%	23%	73%	157%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:16:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 5 May 1979 (DAY 125) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.030 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
9.046 [0.02]

Z/L AT 10 METERS
0.035 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
2.821E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.61E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
-1.33E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
-3.28E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-1.26E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.81E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.90E 02 [3.0E+01]

BOWEN RATIO (no units)
0.010 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.621E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
1.144E-04 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
3.712E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.560E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.235E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE FLUX WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
53%	58%	14%	389%	46%	0%	76%	109%	7%	114%	49%	24%	13%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051730
START TIME: 17:46:40 PST
END TIME 18:16:50 PST
START DATE 5 May 1979 (DAY 125)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 5/Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2 LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.476	5.307	5.864	5.655	4.838	0.600	4.469

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT REF B
3.788	3.867	2.519	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1ECAL	DP2ECAL	W1ECAL	W1SLP	W2SLP
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 138562	1421 138950	0.125	64	-0.009	0.100	0.000	0.995	0.559

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.2	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.856	11.31	12.07	NO DATA		296.6	1012.31	-8.37E 01	13.435	287.034
AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
13.895	10.73	11.31	NO DATA		0.39	1013.41			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	14.036	15.373	15.553	1.062E-02	88.98	8.691E-03	14.071	15.814	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.985	15.337	15.427	1.011E-02	84.41	8.263E-03	13.396	15.871	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051730
START TIME: 17:46:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 5/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIG.?)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.045 AT GMH	MOMENTUM FLUX (Nt/m2) -7.59E-02	FRICTION VELOCITY (Meters/sec) 2.491E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM:N/SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)] [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) -6.85E-05	SCALING SPEC.HUMD. (Kg/Kg) 2.248E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.53E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.61E 00
Z/L AT GMH 0.076	LAT.HEAT FLUX (Watts/m2) -1.69E 02	SCALING POT. TEMP. (Kelvin) 2.673E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 4.77E-05	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 2.40E 03
Z/L AT 10 METERS 0.058	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1 0.107	-8.25E 00	ROUGHNESS LENGTH (Meters) 3.964E-05	N=POT TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= 5.57E 03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIC PTK SLOPE= 2.07E 01
Z/L AT Z2 0.054	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.37E 01			
MONIN-OBUKHOV LENGTH (Meters) 1.718E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.61E 02	DRAG COEF. AT 10 METERS (Dimensionless) 5.702E 04		N=LnTEMP.STRUC (K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE (T)? SLOPE=NO DATA
PSI1 AT Z1= -0.502106 PSI1 AT Z2= -0.251737 PSI2 AT Z1= -0.678521 PSI2 AT Z2= -0.340185	BOWEN RATIO (no units) 0.049			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

* MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.223

AIR SPECIFIC HEAT (Ical/Kg Kel.) 2.418E 02

WATER LAT HEAT VAP (Ical/Kg) 5.894E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905051730
START TIME: 17:46:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.890	10.80	11.40	NO DATA	1013.32	13.435	0.455	0.553	1.906	2.004

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.988	15.341	15.439	1.017E-02	84.95	8.314E-03	13.476	15.864	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.007 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.010

Z/L AT 10 METERS
0.008

MONIN-OBUKHOV LENGTH (Meters)
1.298E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.92E-01

HUMIDITY FLUX (Kg/sec m2)
2.12E-05

LAT.HEAT FLUX (Watts/m2)
5.23E 01

SEN.HEAT FLUX (Watts/m2)
-4.33E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.37E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
-3.58E 01

BOWEN RATIO (no units)
-0.083

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.957E-01

SCALING SPEC.HUMID. (Kg/Kg)
-4.273E-05

SCALING POT.TEMP. (Kelvin)
8.834E-03

ROUGHNESS LENGTH (Meters)
2.156E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.343E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.565E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
2.117E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
-3.495E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2236

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4180E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8946E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.420

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.52

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
121%	176%	130%	96%	93%	6%	62%	188%	65%	31%	28%	85%	130%
206%	220%	46%	55%	148%	6%	21%	203%	23%	78%	171%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905051730
START TIME: 17:46:40 PST
START DATE: 5 May 1979 (DAY 125)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.031 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.047 [0.02]

Z/L AT 10 METERS
0.036 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
2.792E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.61E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
-1.16E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
-2.85E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-6.74E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-8.37E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-9.33E 01 [3.0E+01]

BOWEN RATIO (no units)
-0.014 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.573E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
1.487E-04 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
2.423E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.564E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.160E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
63%	71%	40%	402%	30%	0%	134%	82%	23%	98%	46%	59%	36%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071300
START TIME: 13: 0: 0 PST
END TIME: 13:29:50 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.127	5.202	6.788	6.500	4.798	6.484	4.742

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.365	3.819	2.527	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 137999	1421 139102	0.157	147	-0.088	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.830	13.06	10.30	NO DATA	306.2	1011.82	-9.04E 02	13.998	287.015

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.911	12.18	10.39	NO DATA	-0.55	1012.92

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	13.980	15.148	15.327	9.444E-03	79.41	7.724E-03	12.506	15.748	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
2.20	14.001	15.266	15.357	9.504E-03	79.29	7.768E-03	12.591	15.879	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071300
START TIME: 13: 0: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (N/m2) -3.48E-01	FRICTION VELOCITY (Meters/sec) 5.337E-01	GENERAL FORM:DN/DZ= I(N1-N2))/ILn(Z1/Z2)* (Z1*Z2)1/2I	GENERAL FORM:'N'SLOPE= I((LnZ1-PSI)-(LnZ2-PSI))/ IN1-N2I
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.10E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.410E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.89E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.50E-01
Z/L AT GMH -0.011	LAT.HEAT FLUX (Watts/m2) 1.03E 02	SCALING POT. TEMP. (Kelvin) -1.687E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.43E 03
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 1.11E 01	ROUGHNESS LENGTH (Meters) 5.983E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.35E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.20E 01
Z/L AT Z1 -0.015	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.04E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.919E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.90E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.2?3E 03	BOWEN RATIO (no units) 0.108			
PSI1 AT Z1= 0.053096				
PSI1 AT Z2= 0.027478				
PSI2 AT Z1= 0.032413				
PSI2 AT Z2= 0.016640				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/ser 2)	PRANDTL TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2232	2.4167E 02	5.8948E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .00(-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071300
START TIME: 13: 0: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
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* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.897	12.28	10.38	NO DATA	1012.82	13.998	-0.101	-0.003	1.254	1.352

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.995	15.252	15.350	9.497E-03	79.31	7.762E-03	12.581	15.864	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.003 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.004

Z/L AT 10 METERS
-0.003

MONIN-OBUKHOV LENGTH (Meters)
-3.651E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.66E-01

HUMIDITY FLUX (Kg/sec m2)
4.16E-05

LAT.HEAT FLUX (Watts/m2)
1.03E 02

SEN.HEAT FLUX (Watts/m2)
2.52E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.04E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.99E 02

BOWEN RATIO (no units)
0.025

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.662E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.297E-05

SCALING POT.TEMP. (Kelvin)
-4.361E-03

ROUGHNESS LENGTH (Meters)
3.796E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.441E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.173E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.162E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.033E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2234

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4168E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8945E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.987

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.206E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.02

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
118%	118%	92%	152%	90%	5%	16%	242%	46%	106%	44%	66%	92%
17264%	17264%	46%	44%	17192%	5%	43%	17235%	23%	67%	17215%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071300
START TIME: 13: 0: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.008 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.011 [0.02]

Z/L AT 10 METERS
-0.008 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.219E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.93E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.17E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.03E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.11E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-9.04E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.92E 02 [3.0E+01]

BOWEN RATIO (no units)
0.107 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.887E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-6.955E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.684E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
4.659E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.585E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
17%	19%	15%	0%	55%	0%	1%	54%	7%	7%	44%	24%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071330
START TIME: 13:30: 0 PST
END TIME: 14: 0: 0 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	5.124	5.200	6.474	6.218	4.796	6.201	4.692

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.414	3.826	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WI8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 137776	1421 138699	0.157	143	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.778	12.46	10.28	NO DATA	304.5	1011.78	-8.65E 02	14.046	286.984

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.870	11.65	10.37	NO DATA	-0.49	1012.88

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.957	15.123	15.303	9.432E-03	79.43	7.714E-03	12.490	15.725	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.960	15.224	15.314	9.496E-03	79.43	7.761E-03	12.579	15.837	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071330
START TIME: 13:30: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1986
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.004 AT GMH	-2.77E-01	4.758E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.99E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	3.69E-05	-6.333E-05		WS SLOPE= 8.41E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.005	9.10E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-6.333E-03		
-0.004	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.53E 03
Z/L AT Z1	3.73E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.007				
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.070E-04		PTK SLOPE= -8.53E 01
-0.004	-8.65E 02			
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
-2.602E 03	-7.70E 02	1.688E-03		CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.025616				
PSI1 AT Z2= 0.013045	BOWEN RATIO (no units)			
PSI2 AT Z1= 0.015503	0.041			
PSI2 AT Z2= 0.007862				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2233
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.8958E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .8RE-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.859	11.75	10.36	NO DATA	1012.79	14.046	-0.187	-0.089	1.166	1.264

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.957	15.212	15.310	9.489E-03	79.43	7.755E-03	12.568	15.824	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.005 AT GMH	-2.37E-01	4.406E-01	-1.941E-01	1.2235
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	4.05E-05	-7.510E-05	4.048E-05	2.4168E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.006	9.99E 01	-6.720E-03	2.960E-03	5.8948E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.005	3.67E 00	3.128E-04		16.036
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-2.116E 03	-8.65E 02	1.406E-03		1.210E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-7.61E 02			1013.99
	BOWEN RATIO (no units)			
	0.037			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
184%	184%	103%	161%	161%	5%	16%	321%	51%	109%	109%	71%	103%
693%	693%	46%	43%	621%	5%	7%	664%	23%	66%	644%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:30: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.004 [0.02] AT GMH	-2.50E-01 [6.0E-02]	4.515E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	3.97E-05 [8.0E-06]	-7.066E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.005 [0.02]	9.80E 01 [2.0E+01]	-6.389E-03 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.004 [0.02]	3.72E 00 [3.0E+00]	3.483E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-2.482E 03	-8.65E 02 [2.0E+01]	1.485E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-7.64E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.040 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
3%	3%	8%	5%	1%	0%	1%	3%	4%	9%	1%	14%	10%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071400
START TIME: 14: 0:10 PST
END TIME: 14:30:20 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	5.079	5.154	6.385	6.163	4.780	5.826	4.620

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT.REF.B
4.403	5.813	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
ATR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 137402	1421 138275	0.157	137	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.740	12.29	10.82	NO DATA	302.1	1011.4	-8.13E 02	14.035	286.944

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.827	11.55	10.10	NO DATA	-0.40	1012.64

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.920	15.062	15.242	9.265E-03	78.22	7.578E-03	12.268	15.683	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.00	13.918	15.157	15.247	9.323E-03	78.21	7.619E-03	12.348	15.789	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071400
START TIME: 14: 0:10 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
-0.004 AT GMH	-2.33E-01	4.365E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	3.39E-05	-6.347E-05	DWS/DZ= 8.22E-02	PSI=PSI1
				WS SLOPE= 9.16E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.006	8.36E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-6.347E-03	DSH/DZ= -8.92E-06	PSI=PSI2
-0.005	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.52E 03
Z/L AT Z1	3.43E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.008	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.029E-04	DPT/DZ= -8.92E-04	PSI=PSI2
Z/L AT Z2	-8.13E 02			PTK SLOPE= -8.52E 01
0.004		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.463E-03		PSI=NONE
-2.179E 03	-7.25E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.030400	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.015526	0.041			
PSI2 AT Z1= 0.018427				
PSI2 AT Z2= 0.009365				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (1Tcal./Kg Kel.)	WATER LAT.HEAT VAP. (1Tcal./Kg)
1.2232	2.4164E 02	5.8952E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1=SH2 +/- .08E 3 Kg/Kg
PTK1 PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DAT : 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.817	11.64	10.09	NO DATA	1012.55	14.035	-0.218	-0.120	1.110	1.208

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.915	15.145	15.243	9.317E-03	78.21	7.614E-03	12.339	15.777	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable): -0.005 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2: 12.99

Z/L AT GMH: -0.007

Z/L AT 10 METERS: -0.005

MONIN-OBUKHOV LENGTH (Meters): -1.838E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2): -2.32E-01

HUMIDITY FLUX (Kg/sec m2): 4.26E-05

LAT.HEAT FLUX (Watts/m2): 1.05E 02

SEN.HEAT FLUX (Watts/m2): 4.07E 00

SKY AND SOLAR HEAT FLUX (Watts/m2): -8.13E 02

TOTAL HEAT BUDGET FLUX (Watts/m2): -7.03E 02

BOWEN RATIO (no units): 0.039

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 4.353E-01

SCALING SPEC.HUMID. (Kg/Kg): -7.995E-05

SCALING POT.TEMP. (Kelvin): -7.552E-03

ROUGHNESS LENGTH (Meters): 3.002E-04

DRAG COEF.AT 10 METERS (Dimensionless): 1.398E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2): -1.895E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3): 4.258E-05

WITH POT.TEMPERATURE (Meter Kel./sec): 3.288E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3): 1.2235

AIR SPECIFIC HEAT (ITcal./Kg Kel.): 2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg): 5.8950E 05

VAP.PRES.AT WT LEVEL (Millibar): 16.021

ABS.HUMID.AT WT LEVEL (Kg/m3): 1.209E-02

BAR.PRES.AT WT LEVEL (Millibar): 1013.75

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
191%	191%	110%	165%	165%	5%	16%	330%	55%	110%	110%	75%	110%
546%	546%	46%	42%	474%	5%	7%	516%	23%	65%	497%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable): -0.005 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2: 12.99

Z/L AT GMH: -0.006 [0.02]

Z/L AT 10 METERS: -0.005 [0.02]

MONIN-OBUKHOV LENGTH (Meters): -2.079E 0

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2): -2.32E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2): 4.08E 05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2): 1.01E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2): 3.59E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2): -8.13E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2): -7.10E 02 [3.0E+01]

BOWEN RATIO (no units): 0.040 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 4.352E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg): -7.379E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin): -6.565E-03 [2.0E-02]

ROUGHNESS LENGTH (Meters): 3.012E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters): 1.410E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
2%	2%	0%	12%	10%	0%	2%	1%	0%	12%	4%	0%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071430
START TIME: 14:30:30 PST
END TIME: 15: 0:40 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.203	0.001	0.001	5.101	5.171	6.393	6.157	4.771	5.088	4.517

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.384	5.820	2.536	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT8FCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 136923	1421 137706	0.125	85	-0.008	-0.050	0.000	0.995	0.969

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.492	12.33	10.15	NO DATA	298.6	1011.40	-7.10E 02	14.017	286.891

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.771	11.66	10.20	NO DATA	-0.29	1012.50

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.872	15.025	15.205	9.344E-03	79.14	7.643E-03	12.370	15.632	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM 2/3)
9.20	13.861	15.109	15.199	9.388E-03	79.03	7.672E-03	12.431	15.729	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071430
START TIME: 14:30:30 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -1.66E-01	FRICTION VELOCITY (Meters/sec) 3.681E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)+ (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.63E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.852E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.45E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.09E 00
Z/L AT GMH 0.011	LAT.HEAT FLUX (Watts/m2) 6.50E 01	SCALING POT. TEMP. (Kelvin) 8.338E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.24E 03
Z/L AT 10 METERS 0.008	SEN.HEAT FLUX (Watts/m2) -3.80E 00	ROUGHNESS LENGTH (Meters) 1.673E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.27E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 6.48E 01
Z/L AT Z1 0.015	SKY AND SOLAR HEAT FLUX (Watts/m2) 7.10E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.033E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.48E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.196E 03	BOWEN RATIO (no units) -0.058			
PSI1 AT Z1= -0.072090 PSI1 AT Z2= -0.036143 PSI2 AT Z1= -0.097419 PSI2 AT Z2= -0.048842				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2233

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.8955E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071430
START TIME: 14:30:30 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.761	11.74	10.20	NO DATA	1012.40	14.017	-0.255	-0.157	1.082	1.180

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.859	15.099	15.197	9.383E-03	79.05	7.668E-03	12.424	15.718	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -2.37E-01	FRICTION VELOCITY (Meters/sec) 4.402E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.938E-01	AIR DENSITY (Kg/m3) 1.2236
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.17E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.749E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.169E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.008	LAT.HEAT FLUX (Watts/m2) 1.03E 02	SCALING POT.TEMP. (Kelvin) -8.408E-03	WITH POT.TEMPERATURE (Meter Kel./sec) 3.701E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8953E 05
Z/L AT 10 METERS -0.006	SEN.HEAT FLUX (Watts/m2) 4.58E 00	ROUGHNESS LENGTH (Meters) 3.119E-04		VAP.PRES.AT WT LEVEL (Millibar) 16.000
MONIN-OBUKHOV LENGTH (Meters) -1.688E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.10E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.405E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.207E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.02E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.60
	BOWEN RATIO (no units) 0.045			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
171%	184%	120%	170%	140%	5%	15%	309%	60%	110%	80%	80%	120%
448%	448%	46%	43%	376%	5%	7%	418%	23%	66%	399%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071430
START TIME: 14:30:30 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.004 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.17E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.202E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.86E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.032E-05 [3.0E-05]
Z/L AT GMH 0.005 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.53E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 5.542E-03 [2.0E-02]
Z/L AT 10 METERS 0.004 [0.02]	SEN.HEAT FLUX (Watts/m2) -1.52E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.613E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 2.383E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.10E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.312E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.17E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.015 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
37%	39%	18%	23%	154%	0%	4%	65%	9%	14%	50%	29%	16%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071500
START TIME: 15: 0:50 PST
END TIME: 15:31: 0 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.076	5.152	6.825	6.368	4.752	4.499	4.444

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.367	3.835	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 136615	1421 137168	0.125	81	-0.008	-0.050	0.000	0.995	0.969

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.4	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.662	13.16	10.00	NO DATA	296.1	1011.11	-6.27E 02	14.000	286.849

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.717	12.06	10.09	NO DATA	-0.16	1012.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.841	14.981	15.161	9.252E-03	78.53	7.568E-03	12.247	15.596	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.807	15.045	15.135	9.314E-03	78.70	7.613E-03	12.332	15.669	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071500
START TIME: 15: 0:50 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -4.47E-01	FRICTION VELOCITY (Meters/sec) 6.046E-01	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.30E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.819E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.23E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 6.62E-01
Z/L AT GMH 0.012	LAT.HEAT FLUX (Watts/m2) 1.06E 02	SCALING POT. TEMP. (Kelvin) 2.497E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.30E 03
Z/L AT 10 METERS 0.009	SEN.HEAT FLUX (Watts/m2) -1.87E 01	ROUGHNESS LENGTH (Meters) 8.970E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.83E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.16E 01
Z/L AT Z1 0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.27E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.423E-03		N=.nTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.40E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.078E 03	BOWEN RATIO (no units) -0.176			
PSI1 AT Z1= -0.080025 PSI1 AT Z2= -0.040121 PSI2 AT Z1= -0.108142 PSI2 AT Z2= -0.054218				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2231	2.4164E 02	5.8957E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071500
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START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.710	12.19	10.08	NO DATA	1012.11	14.000	-0.290	-0.192	1.037	1.135

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.808	15.037	15.135	9.307E-03	78.68	7.607E-03	12.322	15.661	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.006 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.007

Z/L AT 10 METERS
-0.006

MONIN-OBUKHOV LENGTH (Meters)
-1.734E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.61E-01

HUMIDITY FLUX (Kg/sec m2)
4.42E-05

LAT.HEAT FLUX (Watts/m2)
1.09E 02

SEN.HEAT FLUX (Watts/m2)
5.14E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.27E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.13E 02

BOWEN RATIO (no units)
0.047

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.617E-01

SCALING SPEC.HUMID. (Kg/Kg)
-7.832E-05

SCALING POT.TEMP. (Kelvin)
-8.999E-03

ROUGHNESS LENGTH (Meters)
3.672E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.35E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.132E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.424E-05

WITH POT TEMPERATURE (Meter Kel./sec)
4.155E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2235

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.8956E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.978

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.206E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.31

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
87%	95%	74%	142%	65%	5%	21%	207%	37%	105%	28%	57%	74%
390%	390%	46%	43%	318%	5%	8%	361%	23%	66%	341%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071500
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.006 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.008 [0.02]

Z/L AT 10 METERS
0.006 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.577E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.32E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.39E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.08E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-1.46E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.27E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.21E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.095 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.165E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
7.055E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
2.237E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.950E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.782E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
42%	44%	29%	2%	98%	0%	3%	122%	14%	15%	99%	45%	29%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071700
START TIME: 17: 2:10 PST
END TIME: 17:32:20 PST
START DATE: May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR
6.205	0.000	0.001	5.096	5.170	6.339	6.033	4.744	1.658	4.651

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.288	3.804	2.539	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WSIFC	WS2FCC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 135940	1421 136480	0.157	88	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.594	12.20	10.12	NO DATA	303.2	1011.03	-2.31E 02	13.923	286.781

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.648	11.31	10.19	NO DATA	0.36	1012.10

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES 1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.774	14.924	15.104	9.327E-03	79.50	7.629E-03	12.343	15.526	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES 2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.738	14.985	15.075	9.382E-03	79.62	7.667E-03	12.418	15.598	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071700
START TIME: 17: 2:10 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -2.71E-01	FRICTION VELOCITY (Meters/ser) 4.[illegible]11E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.20E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.554E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.92E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.49E-01
Z/L AT GMH 0.020	LAT.HEAT FLUX (Watts/m2) 7.90E 01	SCALING POT. TEMP. (Kelvin) 2.479E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.73E 03
Z/L AT 10 METERS 0.015	SEN.HEAT FLUX (Watts/m2) -1.45E 01	ROUGHNESS LENGTH (Meters) 3.934E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.98E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.18E 01
Z/L AT Z1 0.020	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.31E 02	DRAG COFF. AT 10 METERS (Dimensionless) 1.731E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.67E 02			
MONIN-OBUKHOV LENGTH (Meters) 6.594E 02	BOWEN RATIO (no units) -0.183			
PSI1 AT Z1= -0.130784 PSI1 AT Z2= -0.065570 PSI2 AT Z1= -0.176735 PSI2 AT Z2= -0.088608				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP (ITcal /Kg)
1.2232	2.4165E 02	5.8961E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

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RUN NUMBER: 7905071700
START TIME: 17: 2:10 PST
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NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.641	11.42	10.18	NO DATA	1012.00	13.923	-0.281	-0.183	1.055	1.153

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.739	14.978	15.076	9.376E-03	79.60	7.667E-03	12.410	15.589	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.007 AT GMH	MOMENTUM FLUX (Nt/m2) -2.31E-01	FRICTION VELOCITY (Meters/sec) 4.248E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.805E-01	AIR DENSITY (Kg/m3) 1.2236
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.95E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.605E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.953E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4166E 02
Z/L AT GMH -0.009	LAT.HEAT FLUX (Watts/m2) 9.76E 01	SCALING POT.TEMP. (Kelvin) -9.237E-03	WITH POT.TEMPERATURE (Meter Kel./sec) 3.924E-03	WATER LAT.HEAT VAP (ITcal./Kg) 5.8960E 05
Z/L AT 10 METERS -0.007	SEN.HEAT FLUX (Watts/m2) 4.86E 00	ROUGHNESS LENGTH (Meters) 2.759E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.896
MONIN-OBUKHOV LENGTH (Meters) -1.430E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.31E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.384E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.200E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.29E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.20
	BOWEN RATIO (no units) 0.050			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
96%	110%	86%	149%	71%	5%	37%	220%	43%	106%	28%	63%	86%
403%	403%	46%	43%	331%	5%	14%	374%	23%	66%	354%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071700
START TIME: 17: 2:10 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.010 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.38E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.409E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.78E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.816E-05 [3.0E-05]
Z/L AT GMH 0.014 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.34E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.226E-02 [2.0E-02]
Z/L AT 10 METERS 0.010 [0.02]	SEN.HEAT FLUX (Watts/m2) -1.10E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.236E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 9.591E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.31E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.494E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.39E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.097 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF
61%	64%	11%	11%	104%	0%	15%	124%	5%	15%	100%	18%	1.5

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071730
START TIME: 17:32:30 PST
END TIME: (8: 2:4C PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.1	SKY RAD	WIND DIR
6.205	0.001	0.001	5.159	5.218	5.608	5.436	4.739	0.689	4.565

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF B
0.241	3.295	2.540	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPJFCAL	WIFCAL	WSIFC	WJFC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Ratio)	(Ratio)
1411 133507	1421 134428	0.157	82	-0.008	-0.006	0.000	0.993	0.994

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).009V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.351	10.80	10.49	NO DATA	300.2	1010.91	-9.61E 01	13.677	286.[illegible]

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.442	10.21	10.48	NO DATA	0.45	1012.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID 1	SPEC HUMID 1	VAP PRES 1	S VAP PRES 1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM**.2
18.35	13.531	14.713	14.893	9.571E-03	82.82	7.823E-03	12.655	15.284	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL HUMID.2	SPEC HUMID 2	VAP PRES 2	S VAP PRES 2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM**.2
9.20	13.532	14.804	14.894	9.572E-03	82.28	7.818E-03	12.661	15.388	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071730
START TIME: 17:32:30 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 198[illegible]
DATA SAMPLING RATE (ALL CHANNELS): 6 Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.007 AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E-01	FRICTION VELOCITY (Meters/sec) 3.545E-01	GENERAL FORM: DM/DZ= I(N1-N2)/(L=(Z1-Z2 * (Z1*Z2)1/2	GENERAL FORM: N=C1 + C2 * Ln(Z) PSI1=PSI2 (or Z1=Z2) INDICATES
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.77E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.37E-05	N=WIND SPEED (Meters/sec) Z=HEIGHT (Meters) DWS/DZ= 6.60E 02	N=WIND SPEED, M/S Z=HEIGHT (M, FEET AGL) PSI=PSI1 DWS/DZ= 1.18E 01
Z/L AT GMH -0.009	LAT.HEAT FLUX (Watts/m2) 6.85E 01	SCALING POT. TEMP. (Kelvin) 6.390E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg Z=HEIGHT (M, FEET AGL PSI=PSI2 SH SLOPE 1.42E 03
Z/L AT 10 METERS -0.007	SEN.HEAT FLUX (Watts/m2) 2.81E 00	ROUGHNESS LENGTH (Meters) 1.465E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT TEMP (Kelvin) Z=HEIGHT (M, FEET AGL PSI=PSI1 PTK SLOPE 6.42E 01
Z/L AT Z1 -0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.61E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.276E 03		N=HUMIDITY (Kg/Kg * 10**3) Z=HEIGHT (M, FEET AGL PSI=PSI1 PSI=PSI2
Z/L AT Z2 -0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) -2.48E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.416E 03	BOWEN RATIO (no units) 0.041			
PSI1 AT Z1= 0.045899 PSI1 AT Z2= 0.023655 PSI2 AT Z1= 0.027958 PSI2 AT Z2= 0.014307				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2640

AIR SPECIFIC HEAT (Cal/gm Kg Kel) 2.41E 02

WATER LAT HEAT VAP (Cal/gm) 5.67E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .001 Kg/Kg.
PTK1-PTK2= +/- .00[illegible] Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905021730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:30:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/Sec)	DEW POINT (Celsius)	TEMP STRUC. (Kel xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.431	10.28	10.49	NO DATA	1011.91	13.877	-0.446	-0.348	0.916	1.014

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	13.509	14.793	14.891	9.572E-03	82.34	7.819E-03	12.661	15.376	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978)

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -1.69E-01	FRICTION VELOCITY (Meters/sec) 3.719E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.383E-01	AIR DENSITY (Kg/m3) 1.2243
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.25E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.127E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.245E-05	AIR SPECIFIC HEAT (IIcal./Kg Kel.) 2.4169E 02
Z/L AT GMH -0.018	LAT.HEAT FLUX (Watts/m2) 8.01E 01	SCALING POT.TEMP. (Kelvin) -1.424E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.296E-03	WATER LAT HEAT VAP. (IIcal./Kg) 5.8972E 05
Z/L AT 10 METERS -0.014	SEN.HEAT FLUX (Watts/m2) 6.56E 00	ROUGHNESS LENGTH (Meters) 1.736E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.848
MONIN-OBUKHOV LENGTH (Meters) -7.105E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.61E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.309E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.196E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.40E 00			BAR.PRES.AT WT LEVEL (Millibar) 1013.11
	BOWEN RATIO (no units) 0.082			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRA COEF.
199%	199%	120%	171%	171%	6%	70%	341%	60%	110%	110%	80%	120%
273%	273%	46%	45%	201%	6%	21%	246%	23%	68%	224%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905021730 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:30:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 2 May 1979 (DAY 122) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* EMPIRICAL PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.016 [6.0E-02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.65E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.671E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.15E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -6.847E-05 [3.0E-05]
Z/L AT GMH -0.013 [9.0E-02]	LAT.HEAT FLUX (Watts/m2) 7.77E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -8.978E-03 [2.0E-02]
Z/L AT 10 METERS -0.014 [9.0E-02]	SEN.HEAT FLUX (Watts/m2) 4.53E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.642E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 9.932E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.61E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.300E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.30E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.065 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
18%	18%	5%	9%	42%	0%	29%	26%	3%	6%	21%	9%	1%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071800
START TIME: 18: 2:50 PST
END TIME: 18:32:50 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	5.116	5.182	5.672	5.459	4.729	0.134	4.651

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.214	3.879	2.549	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	DFWIND NEAR	DFWIND LAND	DPTECAL	DPSYCAL	WTBFLAG	WSSIG	WSSEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411.133268	1411.133179	0.157	78	0.008	-0.059	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGIN. KING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.227	10.92	10.24	NO DATA	303.1	1010.76	-1.84E 01	13.851	286.452

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Meter MSL)	(Millibar)
13.318	10.25	10.27	NO DATA	0.51	1011.86

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.30	13.467	14.566	14.746	9.412E-03	83.08	7.691E-03	12.446	15.155	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.408	14.660	14.750	9.437E-03	81.75	7.705E-03	12.476	15.262	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071800
START TIME: 18: 2:50 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.005 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.007

Z/L AT 10 METERS
-0.006

Z/L AT Z1
-0.010

Z/L AT Z2
-0.005

MONIN OBUKHOV LENGTH
(Meters)
-1.814E 03

PSI1 AT Z1= 0.035059
PSI1 AT Z2= 0.018703
PSI2 AT Z1= 0.022020
PSI2 AT Z2= 0.011220

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(N/m2)
-1.96E-01

HUMIDITY FLUX
(Kg/sec m2)
3.11E-05

LAT.HEAT FLUX
(Watts/m2)
7.67E 01

SEN.HEAT FLUX
(Watts/m2)
3.15E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.84E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
6.16E 01

BOWEN RATIO
(no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.996E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.363E-05

SCALING POT. TEMP.
(Kelvin)
-6.363E-03

ROUGHNESS LENGTH
(Meters)
2.231E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.582E 03

PARTIAL DERIVATIVES

GENERAL FORM.DN/DZ=
I(N1-N2)I/ln(Z1/Z2)*
(Z1*Z2)1/2

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.49E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM: N SLOPE=
I(LnZ1-PSI)-(LnZ2-PSI)I/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.00E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE -8.50E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE= -8.50E 01

N=LnTEMP STRUC (K*M 2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2244

AIR SPECIFIC HEAT
(IIcal./Kg Kel.)
2.416E 02

WATER LAT.HEAT VAP.
(IIcal./Kg)
5.898IE 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .0B) -3 Kg/Kg.
PTK1-PTK2= +/- .00B Kel.

* CONTINUED ON NEXT PAGE

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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.307	10.33	10.26	NO DATA	1011.77	13.851	-0.544	-0.446	0.798	0.896

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.405	14.649	14.747	9.434E-03	81.79	7.703E-03	12.472	15.250	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.016 AT GMH	MOMENTUM FLUX (Nt/m2) -1.72E-01	FRICTION VELOCITY (Meters/sec) 3.743E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.401E-01	AIR DENSITY (Kg/m3) 1.2247
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.42E-05	SCALING SPEC.HUMID. (Kg/Kg) -7.464E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.421E-05	AIR SPECIFIC HEAT (ITcal /Kg Kel) 2.4166E 02
Z/L AT GMH -0.021	LAT.HEAT FLUX (Watts/m2) 8.45E 01	SCALING POT.TEMP. (Kelvin) -1.667E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 6.239E-03	WATER LAT.HEAT VAP (ITcal./Kg) 5.8979E 05
Z/L AT 10 METERS -0.016	SEN.HEAT FLUX (Watts/m2) 7.73E 00	ROUGHNESS LENGTH (Meters) 1.775E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.818
MONIN-OBUKHOV LENGTH (Meters) -6.145E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.84E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.312E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.194E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.38E 01			BAR.PRES.AT WT LEVEL (Millibar) 1012.97
	BOWEN RATIO (no units) 0.092			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
188%	188%	108%	164%	164%	9%	128%	327%	54%	110%	110%	74%	108%
242%	242%	46%	44%	170%	9%	36%	214%	23%	67%	193%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071800
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

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DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.010 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.79E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.819E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.36E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.047E-05 [3.0E-05]
Z/L AT GMH 0.013 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.29E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.010E-02 [2.0E-02]
Z/L AT 10 METERS 0.010 [0.02]	SEN.HEAT FLUX (Watts/m2) 5.40E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.943E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -9.786E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.84E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.305E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.12E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.072 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
28%	27%	7%	5%	42%	0%	10%	32%	4%	8%	27%	12%	11%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79059/1830
START TIME: 18:33: 0 PST
END TIME: (Y: 2150 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPLY REF.M	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
5.305	0.001	0.001	5.020	5.093	6.014	5.816	4.727	-0.074	4.792

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.172	4.913	2.539	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2							
AIR TEMP.1	AIR TEMP.2	UPWIND MEAN HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1ECAL (Volts)	DP2ECAL (Volts)	W1BECAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1461 0.92A5	1431 139D00	0.157	25	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.=0 auto)	ERROR COUNT (No.=0 auto)	DATA RATE (No.=6 auto)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	100	0	0	0	0	0	115.4	59.91

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING IBP ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/Sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.true)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.996	11.58	9.66	NO DATA	307.9	1010.74	1.04E 01	13.810	286.198

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/Sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
13.070	10.91	9.73	NO DATA	0.55	1011.83

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	13.166	14.273	14.453	9.063E-03	80.23	7.398E-03	11.969	14.918	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	13.180	14.284	14.474	9.113E-03	80.06	7.433E-03	12.038	15.036	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79059/1830
START TIME: 18:33: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

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* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.010 AT GMH	MOMENTUM FLUX (N1/m2) -2.00E-01	FRICTION VELOCITY (Meters/sec) 4.042E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[(ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.19E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.435E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.44E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.70E-01
Z/L AT GMH -0.013	LAT.HEAT FLUX (Watts/m2) 7.02E 01	SCALING POT. TEMP. (Kelvin) 1.137E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.40E 03
Z/L AT 10 METERS -0.010	SEN.HEAT FLUX (Watts/m2) 5.70E 00	ROUGHNESS LENGTH (Meters) 2.323E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.58E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.75E 01
Z/L AT Z1 -0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.04E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.47E 03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.48E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.026E 03	BOWEN RATIO (no units) 0.072			
PSI1 AT Z1= 0.062113				
PSI1 AT Z2= 0.032310				
PSI2 AT Z1= 0.030020				
PSI2 AT Z2= 0.014592				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2256

AIR SPECIFIC HEAT (1Tcal./Kg Kel.) 2.4160E 02

WATER LAT.HEAT VAP. (1Tcal./Kg) 5.8994E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SPEC.HUM. +/- .0001 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071830
START TIME: 18:33: 0 PST
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MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.077	10.99	9.73	NO DATA	1011.74	13.810	-0.733	-0.635	0.560	0.658

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.175	14.370	14.468	9.107E-03	80.08	7.429E-03	12.030	15.022	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -2.01E-01	FRICTION VELOCITY (Meters/sec) 4.047E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.638E-01	AIR DENSITY (Kg/m3) 1.2259
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.07E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.205E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.070E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4160E 02
Z/L AT GMH -0.023	LAT.HEAT FLUX (Watts/m2) 1.01E 02	SCALING POT.TEMP. (Kelvin) -2.080E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.419E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8992E 05
Z/L AT 10 METERS -0.017	SEN.HEAT FLUX (Watts/m2) 1.04E 01	ROUGHNESS LENGTH (Meters) 2.332E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.776
MONIN-OBUKHOV LENGTH (Meters) -5.750E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.04E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.355E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.191E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.21E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.94
	BOWEN RATIO (no units) 0.104			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
151%	151%	110%	163%	120%	12%	136%	283%	55%	108%	65%	75%	110%
209%	209%	46%	42%	137%	12%	37%	179%	23%	65%	160%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071830
START TIME: 18:33: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.01E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 4.045E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.89E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.538E-05 (3.0E-05)
Z/L AT GMH -0.017 (0.02)	LAT.HEAT FLUX (Watts/m2) 9.60E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -1.409E-02 (2.0E-02)
Z/L AT 10 METERS -0.013 (0.02)	SEN.HEAT FLUX (Watts/m2) 7.91E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 2.328E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -7.719E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.04E 01 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.370E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.16E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.092 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
20%	19%	0%	13%	30%	0%	13%	18%	0%	12%	26%	0%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071900
START TIME: 19: 3: 0 PST
END TIME: 19:33:10 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.000	0.001	4.992	5.064	5.770	5.600	4.742	-0.103	4.858

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.155	3.934	2.540	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128018	1421 129099		0.183	72	-0.008	-0.050	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.),.005V)	B(No.),.005V)	(No.),.002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.92

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.802	11.10	9.50	NO DATA		313.2	1010.97	1.43E 01	13.793	286.016

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
12.910	10.44	9.56	NO DATA		0.54	1012.06

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.982	14.074	14.254	8.973E-03	80.33	7.318E-03	11.842	14.743	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.40	13.000	14.168	14.278	9.015E-03	80.07	7.347E-03	11.902	14.863	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071900
START TIME: 19: 3: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable, -Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -2.03E-01	FRICTION VELOCITY (Meters/sec) 4.071E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.24E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.483E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.41E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.82E-01
Z/L AT GMH -0.016	LAT.HEAT FLUX (Watts/m2) 8.00E 01	SCALING POT. TEMP. (Kelvin) -1.487E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.34E 03
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 7.51E 00	ROUGHNESS LENGTH (Meters) 2.381E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.05E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.64E 01
Z/L AT Z1 -0.023	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.587E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=ND DATA
Z/L AT Z2 -0.012	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.02E 02			
MONIN-OBUKHOV LENGTH (Meters) -7.887E 02	BOWEN RATIO (no units) 0.094			
PSI1 AT Z1= 0.079106 PSI1 AT Z2= 0.041540 PSI2 AT Z1= 0.048659 PSI2 AT Z2= 0.025269				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2267	2.415BE 02	5.9004E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071900
START TIME: 19: 3: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.897	10.52	9.55	NO DATA	1011.97	13.793	-6.895	-0.798	0.381	0.479

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.995	14.174	14.272	9.010E-03	80.10	7.343E-03	11.895	14.849	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.024 AT GMH	MOMENTUM FLUX (Nt/m2) -1.80E-01	FRICTION VELOCITY (Meters/sec) 3.827E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.464E-01	AIR DENSITY (Kg/m3) 1.2270
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.01E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.550E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.014E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4159E 02
Z/L AT GMH -0.031	LAT.HEAT FLUX (Watts/m2) 9.92E 01	SCALING POT.TEMP. (Kelvin) -2.540E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.721E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9002E 05
Z/L AT 10 METERS -0.024	SEN.HEAT FLUX (Watts/m2) 1.21E 01	ROUGHNESS LENGTH (Meters) 1.918E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.762
MONIN-OBUKHOV LENGTH (Meters) -4.208E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.324E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.190E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.26E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.17
	BOWEN RATIO (no units) 0.122			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
134%	134%	105%	160%	104%	10%	126%	263%	53%	107%	51%	73%	105%
193%	193%	46%	42%	121%	10%	35%	162%	23%	65%	144%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071900
START TIME: 19: 3: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.87E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.901E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.85E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.771E-05 [3.0E-05]
Z/L AT GMH -0.022 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.52E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.762E-02 [2.0E-02]
Z/L AT 10 METERS -0.017 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.61E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.090E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -5.803E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.396E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.20E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.111 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
30%	28%	7%	12%	24%	0%	11%	13%	3%	14%	29%	11%	10%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905071930
START TIME: 19:33:20 PST
END TIME: 20: 3:30 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.995	5.067	5.603	5.416	4.756	-0.103	4.805

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF B
4.135	3.683	2.541	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1ECAL	DP2ECAL	W1BECAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
I421 I28818	I421 I29872	0.157	28	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.882	10.79	9.52	NO DATA		308.4	1011.18	1.44E 01	13.774	286.095
AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
12.988	10.17	9.58	NO DATA		0.51	1012.27			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.062	14.156	14.335	8.981E-03	79.98	7.325E-03	11.855	14.823	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.078	14.267	14.358	9.025E-03	79.76	7.355E-03	11.918	14.942	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905071930
START TIME: 19:33:20 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= ((N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:(N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
-0.013 AT GMH	-1.77E-01	3.799E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	3.02E-05	-6.487E-05	DWS/DZ= 6.90E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.05E 00
-0.017	7.47E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-1.320E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.013	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.33E 03
Z/L AT Z1	6.22E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.024	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.870E-04	DPT/DZ= -1.82E-03	PSI=PSI2
Z/L AT Z2	1.44E 01			PTK SLOPE= -4.09E 01
-0.012		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.468E-03		Z=HEIGHT (M) Vert.Axis
-7.731E 02	9.53E 01			PSI=NONE
PSI1 AT Z1= 0.080564	BOWEN RATIO (no units)			CT2 SLOPE=NO DATA
PSI1 AT Z2= 0.042349				
PSI2 AT Z1= 0.049575	0.083			
PSI2 AT Z2= 0.025761				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2266
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.4159E 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.9000E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905071930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:33:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.975	10.25	9.57	NO DATA	1012.18	13.774	-0.799	-0.701	0.480	0.578

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.073	14.254	14.352	9.020E-03	79.78	7.352E-03	11.911	14.928	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.024 AT GMH	-1.68E-01	3.704E-01	-1.372E-01	1.2269
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	3.88E-05	-8.546E-05	3.884E-05	2.4159E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.030	9.59E 01	-2.324E-02	8.607E-03	5.8998E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.023	1.07E 01	1.711E-04		15.746
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-4.312E 02	1.44E 01	1.306E-03		1.189E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	1.21E 02			1013.38
	BOWEN RATIO (no units)			
	0.111			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
144%	144%	110%	163%	112%	10%	128%	275%	55%	108%	57%	75%	110%
201%	201%	46%	42%	129%	10%	35%	171%	23%	65%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905071930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:33:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec
-0.017 [0.02] AT GMH	-1.71E-01 [6.0E-02]	3.732E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	3.71E-05 [8.0E-06]	-7.772E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.022 [0.02]	9.16E 01 [2.0E+01]	-1.593E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.017 [0.02]	8.29E 00 [3.0E+00]	1.769E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-5.810E 02	1.44E 01 [2.0E+01]	1.349E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	1.15E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.101 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
28%	26%	3%	13%	27%	0%	13%	14%	1%	14%	28%	5%	7%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072000
START TIME: 20: 3:40 PST
END TIME: 20:33:50 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.993	5.067	6.003	5.783	4.766	-0.103	4.828

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.131	3.748	2.538	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT1FCAL	WS1FC	WS2FCL
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 129259	1421 130292	0.157	82	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.75

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.926	11.56	9.51	NO DATA	309.1	1011.32	1.44E 01	13.770	286.138

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.029	10.85	9.58	NO DATA	0.44	1012.42

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.106	14.199	14.379	8.975E-03	79.69	7.320E-03	11.849	14.868	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.119	14.309	14.399	9.024E-03	79.54	7.355E-03	11.919	14.985	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072000
START TIME: 20: 3:40 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.008 AT GMH	-2.23E-01	4.260E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.89E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	3.35E-05	-6.413E-05		WS SLOPE= 9.39E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.011	8.28E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.094E-02		SH SLOPE= -8.43E 03
-0.008	5.78E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.52E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	2.785E-04		PTK SLOPE= -4.94E 01
-0.015	1.44E 01			
Z/L AT Z2		DRAG COFF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
-0.008	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.591E-03		CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	1.03E 02			
-1.188E 03				
PSI1 AT Z1= 0.054167	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.028049	0.070			
PSI2 AT Z1= 0.033077				
PSI2 AT Z2= 0.016989				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2266

AIR SPECIFIC HEAT (1Cal/Kg Kel.)
2.4150E 02

WATER LAT HEAT VAP (1Cal/Kg)
5.8997E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 3:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V POT-WT TEMP (Kelvin)
13.017	10.94	9.57	NO DATA	1012.32	13.770	-0.753	-0.655	0.526	0.624

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.115	14.296	14.394	9.019E-03	79.56	7.351E-03	11.911	14.972	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -1.98E-01	FRICTION VELOCITY (Meters/sec) 4.021E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.617E-01	AIR DENSITY (Kg/m3) 1.2269
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.14E-05	SCALING SPEC.HUMID (Kg/Kg) -8.401E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.144E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4159E 02
Z/L AT GMH -0.024	LAT.HEAT FLUX (Watts/m2) 1.02E 02	SCALING POT.TEMP. (Kelvin) -2.136E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.589E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.8995E 05
Z/L AT 10 METERS -0.018	SEN.HEAT FLUX (Watts/m2) 1.07E 01	ROUGHNESS LENGTH (Meters) 2.281E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.744
MONIN-OBUKHOV LENGTH (Meters) -5.529E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.352E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.189E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.27E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.52
	BOWEN RATIO (no units) 0.104			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
147%	147%	104%	160%	119%	10%	129%	278%	52%	108%	66%	72%	104%
206%	206%	46%	42%	134%	10%	36%	176%	23%	65%	157%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 3:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.06E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.094E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.98E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.653E-05 [3.0E-05]
Z/L AT GMH -0.016 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.83E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.403E-02 [2.0E-02]
Z/L AT 10 METERS -0.012 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.07E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.469E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -8.034E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.41[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.22E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.091 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH LENGTH	DRAG COEF
25%	25%	6%	12%	30%	0%	12%	19%	3%	13%	28%	11%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7985072030
START TIME: 20:34: 0 PST
END TIME : 21: 4:10 PST
START DATE : 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.295	6.000	0.001	4.979	5.055	5.845	5.647	4.789	-0.103	4.836

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.114	5.761	2.536	0.001	0.001	0.001	0.901	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFLAG	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 1.9555	1411 1.9589	0.157	89	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

DIGITAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No./scans)	A(No.).005V)	B(No./.005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	180	0	0	0	0	0	115.4	59.76

* RECEIVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.956	11.26	9.42	NO DATA	309.4	1011.69	1.44E 01	13.764	286.167

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.959	10.61	9.51	NO DATA	0.34	1012.79

* DERIVED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	13.135	14.247	14.462	8.927E-03	79.10	7.279E-03	11.788	14.902	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
5.29	13.149	14.333	14.423	8.986E-03	79.03	7.322E-03	11.869	15.020	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7985072030
START TIME: 20:34: 0 PST
START DATE : 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.010 AT GMH	MOMENTUM FLUX (Nt/m2) -1.93E-01	FRICTION VELOCITY (Meters/sec) 3.968E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH:(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.13E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.436E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.30E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.01E 00
Z/L AT GMH 0.013	LAT.HEAT FLUX (Watts/m2) 7.7aE 01	SCALING POT. TEMP. (Kelvin) -1.100E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.40E 03
Z/L AT 10 METERS -0.019	SEN.HEAT FLUX (Watts/m2) 5.42E 00	ROUGHNESS LENGTH (Meters) 2.178E-04	N=POT.TEMP.(Kelv.n) Z=HEIGHT (Meters) DPT/DZ= -1.52E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.91E 01
Z/L AT Z1 -0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.4a3E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009				
MONIN-OBUKHOV LENGTH (Meters) -1.021E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.72E 01			
PSI1 AT Z1= 0.062455 PSI1 AT Z2= 0.032440 PSI2 AT Z1= 0.038176 PSI2 AT Z2= 0.019676	BOWEN RATIO (no units) 0.070			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec/2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS	
AIR DENSITY (Kg/m3)	1.2270
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.41CAE 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.8996E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI 9.62 /- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:34: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	V.R-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.046	10.68	9.50	NO DATA	1012.69	13.764	-0.717	-0.619	0.556	0.654

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.144	14.320	14.418	8.979E-03	79.04	7.317E-03	11.860	15.006	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.024

Z/L AT 10 METERS
-0.019

MONIN-OBUKHOV LENGTH (Meters)
-5.367E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.87E-01

HUMIDITY FLUX (kg/sec m2)
4.10E 05

LAT.HEAT FLUX (Watts/m2)
1.01E 02

SEN.HEAT FLUX (Watts/m2)
1.00E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.26E 02

BOWEN RATIO (no units)
0.099

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.902E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.567E-05

SCALING POT.TEMP. (Kelvin)
-2.072E-02

ROUGHNESS LENGTH (Meters)
2.053E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.335E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.522E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.102E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
8.084E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2272

AIR SPECIFIC HEAT (1Tcal./Kg Kel.)
2.415OE 02

WATER LAT.HEAT VAP. (1Tcal./Kg)
5.8994E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.743

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.189E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.89

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
152%	152%	110%	163%	121%	10%	130%	284%	55%	108%	67%	75%	110%
211%	211%	46%	42%	139%	10%	35%	180%	23%	65%	16?%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20:34: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND FLUX AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.014 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.018 [0.02]

Z/L AT 10 METERS
0.013 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.410E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.89E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.90E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.64E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
7.57E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.20E 02 [3.0E+01]

BOWEN RATIO (no units)
0.088 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.921E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.769E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.383E 02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.098E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.3[illegible] 03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
25%	22%	2%	14%	31%	0%	14%	17%	1%	14%	26%	3%	[illegible]

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072100
START TIME: 21: 4:20 PST
END TIME: 21:34:30 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.920	5.061	6.137	5.840	4.800	-0.103	4.959

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF.B
4.122	3.887	2.534	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPIFCAL	WTBFCAL	WSIFC	WSFC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128552	1421 129624	0.183	93	-0.008	-0.050	0.000	0.952	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.25V)	(No.1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.855	11.80	9.07	NO DATA	313.6	1011.65	1.44E 01	13.701	286.007

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.962	10.88	9.19	NO DATA	0.23	1012.95

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC HUMID.1	VAP PRES 1	% VAP PRES 1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
18.35	13.035	14.091	14.271	8.721E-03	77.74	7.107E-03	11.512	14.86	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC HUMID.2	VAP PRES 2	% VAP PRES 2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	13.053	14.209	14.299	8.797E-03	77.82	7.163E-03	11.616	14.976	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072100
START TIME: 21: 4:20 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -3.76E-01	FRICTION VELOCITY (Meters/sec) 5.533E-01	GENERAL FORM DN/DZ= [(N1-N2)]/[ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM N SLOPE= [(LnZ1-PSI1)-(LnZ2-PSI2)]/[N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.33E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.377E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.03E+01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE= 7.23E+01
Z/L AT GMH -0.008	LAT.HEAT FLUX (Watts/m2) 1.07E 02	SCALING POT. TEMP. (Kelvin) -1.396E-02	N=SPEC HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= 8.92E-06
Z/L AT 10 METERS -0.006	SEN.HEAT FLUX (Watts/m2) 9.59E 00	ROUGHNESS LENGTH (Meters) 6.739E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ -1.95E-03	N=POT.TEMP (Kelvin) Z=HEIGHT (M) Vert Axis PSI=PSI2 PT SLOPE= 3.87E 01
Z/L AT Z1 -0.010	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.565E-03		N=AIRTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE PTS SLOPE=NO DATA
Z/L AT Z2 0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.31E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.579E 03	BOWEN RATIO (no units) 0.090			
PSI1 AT Z1= 0.041383 PSI1 AT Z2= 0.021272 PSI2 AT Z1= 0.025172 PSI2 AT Z2= 0.012856				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (Ical/Kg Kel)	WATER LAT HEAT VAP (Ical/Kg)
1.2277	2.415E 02	5.900E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1-SH2= +/- .008-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 4:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.949	10.99	9.17	NO DATA	1012.86	13.761	-0.812	-0.714	0.433	0.531

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF INDEX (Kel.xM-2/3)
10.00	13.047	14.194	14.292	8.788E-03	77.81	7.157E-03	11.604	14.914	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.025

Z/L AT 10 METERS
-0.019

MONIN-OBUKHOV LENGTH (Meters)
-5.245E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-2.01E-01

HUMIDITY FLUX (Kg/sec m2)
4.50E 05

LAT.HEAT FLUX (Watts/m2)
1.11E 02

SEN.HEAT FLUX (Watts/m2)
1.14E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.37E 02

BOWEN RATIO (no units)
0.103

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.045E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.056E-05

SCALING POT.TEMP. (Kelvin)
-2.278E-02

ROUGHNESS LENGTH (Meters)
2.328E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.355E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.636E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.495E 05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.215E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2280

AIR SPECIFIC HEAT (Ical/Kg Kel.)
2.415E 02

WATER LAT.HEAT VAP (Ical/Kg)
5.899E 05

VAP.PRES AT WT LEVEL (Millibar)
15.743

ABS.HUMID AT WT LEVEL (Kg/m3)
1.189E-02

BAR PRES AT WT LEVEL (Millibar)
1014.00

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF
114%	114%	80%	145%	92%	10%	120%	238%	40%	106%	52%	86%	80%
200%	200%	46%	41%	138%	10%	35%	169%	23%	64%	151%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 4:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.011 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.014 [0.02]

Z/L AT 10 METERS
-0.011 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-9.125E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-2.65E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.46E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.10E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.04E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.36E 02 [3.0E+01]

BOWEN RATIO (no units)
0.097 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.59?E-01 [6.0E-02]

SCALING SPEC.HUMID (Kg/Kg)
8.04?E 05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
1.62?E 02 [2.0E 02]

ROUGHNESS LENGTH (Meters)
4.16?E 04 [6.0E-05]

DRAG COEF AT 10 METERS (Meters)
1.?2?E 03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF
34%	33%	34%	2%	9%	0%	8%	7%	1?%	17%	?5%	54%	?%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER 79050722138
START TIME 21:34:40 PST
END TIME 22:34:40 PST
START DATE 7 MAY 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
BATT.VOLT.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.c	SKY RAD.	WIND DIR.
6.265	0.005	0.001	4.942	5.012	5.769	5.550	4.796	-0.103	4.822

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE m	SPARE R	VOLT.REF.R
4.117	5.903	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
14.1 129961	14.1 129020	0.157	105	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

PROGRAM FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(Ad Scan ?)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	180	0	0	0	0	0	115.3	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
13.796	11.98	9.20	NO DATA	308.9	1011.80	1.44E 01	13.756	286.009

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
13.962	10.42	9.28	NO DATA	0.10	1012.89

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	12.976	14.043	14.222	8.800E-03	78.74	7.170E-03	11.613	14.749	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.50	12.992	14.156	14.246	8.854E-03	78.62	7.209E-03	11.669	14.868	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79050722138
START TIME: 21:34:40 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[LN(Z1/Z2)* (Z1*Z2)**.5]	GENERAL FORM: N-SLOPE= [(LN(Z1 PSI1)-(LN(Z2-PSI2)] / [N1-N2]
0.015 AT MH	-1.54E-01	3.547E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)**.5	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis
12.99	2.84E-05	-6.520E-05	DWS/DZ= 6.40E 02	PSI=PSI1
				WS SLOPE= 1.15 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.019	7.01E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis
Z/L AT 10 METERS		-1.326E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.015	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= 8.29E 03
Z/L AT Z1	5.84E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis
0.023	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.469E-04	DPT/DZ= -1.81E-03	PSI=PSI2
Z/L AT Z2	1.44E 01			PTK SLOPE= 4.01E 01
0.014		DRAG COEF. AT 10 METERS (Dimensionless)		N=POTEMP STRUC (K*M-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.249E 03		Z HEIGHT (M) Vert Axis
-6.671E 02	9.03E 01			PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1 0.092849	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.048678	0.083			
PSI2 AT Z1= 0.056923				
PSI2 AT Z2= 0.029676				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.797	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2279

AIR SPECIFIC HEAT (ITcal/Kg Kel)
2.415E 02

WATER LAT.HEAT VAP (ITcal/Kg)
5.900E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .001E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:34:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/Sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.989	10.49	9.27	NO DATA	1012.80	13.756	-0.867	-0.769	0.386	0.484

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.987	14.142	14.240	8.848E-03	78.63	7.204E-03	11.680	14.854	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.024 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.030

Z/L AT 10 METERS
0.023

MONIN-OBUKHOV LENGTH (Meters)
-4.302E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.79E-01

HUMIDITY FLUX (Kg/sec m2)
4.21E-05

LAT.HEAT FLUX (Watts/m2)
1.04E 02

SEN.HEAT FLUX (Watts/m2)
1.17E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.30E 02

BOWEN RATIO (no units)
0.113

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.815E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.977E-05

SCALING POT.TEMP. (Kelvin)
-2.470E-02

ROUGHNESS LENGTH (Meters)
1.898E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.322E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.455E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.206E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.422E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2281

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4156E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9002E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.737

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.189E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.00

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
154%	154%	121%	169%	118%	10%	132%	287%	61%	108%	58%	81%	121%
195%	195%	46%	41%	123%	10%	35%	164%	23%	64%	146%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:34:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -Unstable)
0.019 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.024 [0.02]

Z/L AT 10 METERS
0.019 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
5.359E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.72E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
5.94E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.73E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.21E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.23E 02 [3.0E+01]

BOWEN RATIO (no units)
0.102 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.741E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
8.063E-05 [3.0E 05]

SCALING POT.TEMP. (Kelvin)
-1.649E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.749E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.299E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
21%	21%	0%	20%	34%	0%	19%	15%	4%	16%	31%	13%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072200
START TIME: 22: 5: 0 PST
END TIME: 22:55:10 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.876	4.957	5.879	5.764	4.794	0.163	4.761

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.192	3.901	2.533	0.991	0.991	0.991	0.991	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FETCH	CROSSWIND FETCH	DP/REAL	DP/IMAG	WIND/REAL	WSPEC	WDSPEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128199	1421 129320	0.157	114	0.004	0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.Scans)	A(No > .005V)	B(No > .005V)	(No.>.002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.820	11.32	8.81	NO DATA	307.6	1011.75	1.44E-01	13.742	286.031

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.922	10.71	8.92	NO DATA	-0.04	1012.85

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.000	14.034	14.213	8.568E-03	76.55	6.981E-03	11.367	14.771	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.012	14.146	14.236	8.641E-03	76.63	7.039E-03	11.408	14.887	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072200
START TIME: 22: 5: 0 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 AT GMH	MOMENTUM FLUX (N/m2) -1.70E-01	FRICTION VELOCITY (Meters/sec) 3.724E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI1)-(LnZ2-PSI2)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.95E-05	SCALING SPEC HUMD. (Kg/Kg) 6.442E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/.. 6.85E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIU WS SLOPE= 1.07E 00
Z/L AT GMH -0.013	LAT.HEAT FLUX (Watts/m2) 7.28E 01	SCALING POT. TEMP. (Kelvin) -1.003E-02	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIQ SH SLOPE= -8.39E 03
Z/L AT 10 METERS -0.010	SEN.HEAT FLUX (Watts/m2) 4.64E 00	ROUGHNESS LENGTH (Meters) 1.744E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.39E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIE PTK SLOPE= -5.39E 01
Z/L AT Z1 -0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.02E-03		N=LnTEMP.STRUC.(KxM 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.18E 01			
MONIN-OBUKHOV LENGTH (Meters) -9.850E 02	BOWEN RATIO (no units) 0.064			
PSI1 AT Z1= 0.064492 PSI1 AT Z2= 0.033592 PSI2 AT Z1= 0.039504 PSI2 AT Z2= 0.020383				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2278

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415E 02

WATER LAT.HEAT VAP (ITcal./Kg) 5.9003E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.910	10.78	8.91	NO DATA	1012.75	13.742	-0.832	-0.734	0.398	0.488

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	13.008	14.132	14.230	8.632E-03	76.62	7.029E-03	11.396	14.873	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.021 AT GMH	MOMENTUM FLUX (Nt/m2) -1.91E-01	FRICTION VELOCITY (Meters/sec) 3.948E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.559E-01	AIR DENSITY (Kg/m3) 1.2281
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.61E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.514E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.614E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4152E 02
Z/L AT GMH -0.027	LAT.HEAT FLUX (Watts/m2) 1.14E 02	SCALING POT.TEMP. (Kelvin) -2.351E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.283E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9001E 05
Z/L AT 10 METERS -0.021	SEN.HEAT FLUX (Watts/m2) 1.15E 01	ROUGHNESS LENGTH (Meters) 2.140E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.722
MONIN-OBUKHOV LENGTH (Meters) -4.841E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.341E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.187E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.40E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.95
	BOWEN RATIO (no units) 0.101			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
165%	165%	118%	168%	132%	10%	133%	300%	59%	109%	73%	79%	118%
198%	198%	46%	40%	126%	10%	34%	166%	23%	63%	149%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.015 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.86E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.886E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.29E-05 [3.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.384E-05 [3.0E-05]
Z/L AT GMH -0.019 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.06E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.446E-02 [2.0E-02]
Z/L AT 10 METERS -0.015 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.16E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.001E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -6.702E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.374E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.30E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.088 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
28%	26%	6%	23%	42%	0%	21%	22%	3%	19%	36%	10%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072230
START TIME: 22:35:20 PST
END TIME: 23: 5:30 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.000	0.001	4.866	4.949	5.686	5.499	4.789	-0.103	4.780

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.068	5.094	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 1.0196	14.1 1.9028	0.157	122	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM MODE: RING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.Scans)	ERROR COUNT (No.Scans)	DATA RAW (No.Scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	.0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.804	10.95	8.75	NO DATA	307.5	1011.69	1.44E 01	13.728	286.016

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.908	10.33	8.87	NO DATA	-0.17	1012.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.984	14.013	14.193	8.535E-03	76.34	6.954E-03	11.264	14.755	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.998	14.128	14.218	8.613E-03	76.46	7.013E-03	11.371	14.872	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072230
START TIME: 22:35:20 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BRAD RICHARDSON NUMBER (+=Stable,-=Unstable) -0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -1.77E-01	FRICTION VELOCITY (Meters/sec) 3.802E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.91E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.455E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.97E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.05E 00
Z/L AT GMH 0.014	LAT.HEAT FLUX (Watts/m2) 7.44E 01	SCALING POT. TEMP. (Kelvin) -1.124E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.37E 03
Z/L AT 10 METERS -0.011	' HEAT FLUX '/m2) J0	ROUGHNESS LENGTH (Meters) 1.875E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.55E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.81E 01
Z/L AT Z1 -0.010	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E .1	DRAG COEF. AT 10 METERS (Dimensionless) 1.45E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.010				
MONIN-OBUKHOV LENGTH (Meters) -9.138E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.41E 01			
PSI1 AT Z1= 0.069120 PSI1 AT Z2= 0.036096 PSI2 AT Z1= 0.042395 PSI2 AT Z2= 0.021919	BOWEN RATIO (no units) 0.071			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2278

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9004E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:35:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.895	10.40	8.86	NO DATA	1012.69	13.728	-0.033	-0.735	0.386	0.484

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.993	14.114	14.212	8.604E-03	76.44	7.006E-3	11.358	14.858	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.024 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.030

Z/L AT 10 METERS
-0.023

MONIN-OBUKHOV LENGTH (Meters)
-4.344E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.75E-01

HUMIDITY FLUX (Kg/sec m2)
4.48E-05

LAT.HEAT FLUX (Watts/m2)
1.11E 02

SEN.HEAT FLUX (Watts/m2)
1.12E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.36E 02

BOWEN RATIO (no units)
0.101

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.774E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.656E 05

SCALING POT.TEMP. (Kelvin)
-2.393E-02

ROUGHNESS LENGTH (Meters)
1.827E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.316E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.424E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.476E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
9.033E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2281

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9002E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.707

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.186E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.89

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
153%	153%	112%	164%	121%	10%	130%	285%	56%	108%	66%	76%	112%
198%	198%	46%	40%	126%	10%	34%	166%	23%	63%	149%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:35:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.016 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.021 [0.02]

Z/L AT 10 METERS
-0.016 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-6.172E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.76E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.19E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.03E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.21E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.27E 02 [3.0E+01]

BOWEN RATIO (no units)
0.090 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.782E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.475E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.512E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.845E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.345E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
32%	30%	1%	20%	36%	0%	19%	17%	0%	20%	34%	1%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072300
START TIME: 23: 5:40 PST
END TIME: 23:35:50 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No 08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.891	4.972	5.645	5.435	4.781	-0.103	4.818

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.071	3.897	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPJFCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127687	1421 128776	0.157	130	-0.008	-0.050	0.900	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.769	10.87	8.90	NO DATA	308.8	1011.56	1.44E 01	13.712	285.983

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.878	10.21	9.01	NO DATA	-0.30	1012.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.Ir TX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.949	13.990	14.170	8.620E-03	77.28	7.024E-03	11.375	14.719	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.968	14.108	14.199	8.692E-03	77.31	7.077E-03	11.474	14.841	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072300
START TIME: 23: 5:40 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -2.05E-01	FRICTION VELOCITY (Meters/sec) 4.083E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.25E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.492E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.41E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.80E-01
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 8.04E 01	SCALING POT. TEMP. (Kelvin) -1.560E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.33E 03
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 7.91E 00	ROUGHNESS LENGTH (Meters) 2.405E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.14E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.47E 01
Z/L AT Z1 -0.024	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.669E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.012	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.03E 02			
MONIN-OBUKHOV LENGTH (Meters) -7.547E 02	BOWEN RATIO (no units) 0.098			
PSI1 AT Z1= 0.082343 PSI1 AT Z2= 0.043316 PSI2 AT Z1= 0.050695 PSI2 AT Z2= 0.026364				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2278	2.4152E 02	5.9006E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 5:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.864	10.29	8.99	NO DATA	1012.56	13.712	-0.847	-0.749	0.382	0.480

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.962	14.094	14.192	8.683E-03	77.31	7.071E-03	11.462	14.827	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.025 AT GMH	MOMENTUM FLUX (Nt/m2) -1.70E-01	FRICTION VELOCITY (Meters/sec) 3.722E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.386E-01	AIR DENSITY (Kg/m3) 1.2280
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.30E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.407E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.300E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.031	LAT.HEAT FLUX (Watts/m2) 1.06E 02	SCALING POT.TEMP. (Kelvin) -2.443E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.092E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9004E 05
Z/L AT 10 METERS -0.024	SEN.HEAT FLUX (Watts/m2) 1.13E 01	ROUGHNESS LENGTH (Meters) 1.741E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.688
MONIN-OBUKHOV LENGTH (Meters) -4.141E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.309E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.185E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.32E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.76
	BOWEN RATIO (no units) 0.106			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
130%	130%	103%	159%	100%	10%	124%	259%	51%	107%	49%	71%	103%
197%	197%	46%	41%	125%	10%	34%	165%	23%	64%	148%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 5:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.018 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.81E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.834E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.09E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.321E-05 [3.0E-05]
Z/L AT GMH -0.023 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.01E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.779E-02 [2.0E-02]
Z/L AT 10 METERS -0.018 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.41E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.990E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -5.684E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.410E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.26E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.103 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
30%	28%	10%	15%	18%	0%	13%	4%	5%	18%	25%	17%	14%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905072330
START TIME: 23:36: 0 PST
END TIME: 0: 5:50 P
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.930	5.003	5.288	5.126	4.782	-0.103	4.884

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
-.048	3.889	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127394	1421 128673		0.183	138	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.259	10.18	9.13	NO DATA	311.1	1011.57	1.44E 01	13.689	285.973

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.867	9.57	9.20	NO DATA	-0.40	1012.67

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.939	14.000	14.180	8.759E-03	78.55	7.136E-03	11.555	14.710	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.957	14.114	14.204	8.804E-03	78.36	7.169E-03	11.621	14.831	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905072330
START TIME: 23:36: 0 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.015 AT GMH	MOMENTUM FLUX (N/M2) -1.75E-01	FRICTION VELOCITY (Meters/sec) 3.778E-01	GENERAL FORM:DN/DZ= I(N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.02E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.517E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.82E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.06E 00
Z/L AT GMH -0.019	LAT.HEAT FLUX (Watts/m2) 7.47E 01	SCALING POT. TEMP. (Kelvin) -1.486E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.29E 03
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 6.97E 00	ROUGHNESS LENGTH (Meters) 1.835E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.03E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.64E 01
Z/L AT Z1 -0.027	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.651E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.60E 01			
MONIN OBUKHOV LENGTH (Meters) -6.759E 02	BOWEN RATIO (no units) 0.093			
PSI1 AT Z1= 0.090980				
PSI1 AT Z2= 0.048085				
PSI2 AT Z1= 0.056147				
PSI2 AT Z2= 0.029309				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2278	2.4154E 02	5.9007E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905072330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.854	9.64	9.19	NO DATA	1012.57	13.689	-0.835	-0.737	0.411	0.509

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.952	14.100	14.198	8.799E-03	78.38	7.165E-03	11.614	14.817	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.030 AT GMH	MOMENTUM FLUX (Nt/m2) -1.45E-01	FRICTION VELOCITY (Meters/sec) 3.431E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.177E-01	AIR DENSITY (Kg/m3) 1.2280
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.86E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.167E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.862E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4155E 02
Z/L AT GMH -0.038	LAT.HEAT FLUX (Watts/m2) 9.54E 01	SCALING POT.TEMP. (Kelvin) -2.487E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.532E-03	WATER LAT.HEAT VAP (ITcal./Kg) 5.9004E 05
Z/L AT 10 METERS -0.029	SEN.HEAT FLUX (Watts/m2) 1.96E 01	ROUGHNESS LENGTH (Meters) 1.305E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.665
MONIN-OBUKHOV LENGTH (Meters) -3.454E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.266E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.183E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.20E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.77
	BOWEN RATIO (no units) 0.111			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
134%	134%	105%	160%	104%	10%	125%	264%	53%	107%	51%	73%	105%
198%	198%	46%	41%	126%	10%	34%	167%	23%	64%	149%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905072330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 127) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.021 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.536E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.69E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.175E-05 [3.0E-05]
Z/L AT GMH -0.027 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.12E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.742E-02 [2.0E-02]
Z/L AT 10 METERS -0.021 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.61E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.502E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.874E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.37[illegible]-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.15E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.104 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
37%	35%	11%	13%	21%	0%	12%	9%	5%	17%	28%	18%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080000
START TIME: 0: 6: 0 PST
END TIME: 0:35:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	4.886	4.972	5.176	4.956	4.772	-0.103	4.916

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.024	3.891	2.533	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127291	1421 128324	0.183	143	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.729	9.96	8.87	NO DATA	312.2	1011.42	1.44E 01	13.666	285.941

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.832	9.26	9.01	NO DATA	-0.48	1012.52

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.909	13.948	14.128	8.605E-03	77.34	7.011E-03	11.353	14.679	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.923	14.063	14.153	8.693E-03	77.55	7.078E-03	11.474	14.795	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080000
START TIME: 0: 6: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.008 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.011

Z/L AT 10 METERS
-0.009

Z/L AT Z1
-0.014

Z/L AT Z2
-0.008

MONIN-OBUKHOV LENGTH (Meters)
-1.176E 03

PSI1 AT Z1= 0.054659
PSI1 AT Z2= 0.028312
PSI2 AT Z1= 0.033383
PSI2 AT Z2= 0.017150

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.22E-01

HUMIDITY FLUX (Kg/sec m2)
3.35E-05

LAT.HEAT FLUX (Watts/m2)
8.27E 01

SEN.HEAT FLUX (Watts/m2)
5.81E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.44E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.03E 02

BOWEN RATIO (no units)
0.070

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.253E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.414E-05

SCALING POT. TEMP. (Kelvin)
-1.100E-02

ROUGHNESS LENGTH (Meters)
2.770E-04

DRAG COEF. AT 10 METERS (Dimensionless)
2.192E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 7.87E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.53E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)], [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 9.40E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.43E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -4.91E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2278

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415CE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9009E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080000
START TIME: 0: 6: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.820	9.34	8.99	NO DATA	1012.42	13.666	-0.846	-0.748	0.384	0.482

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.918	14.049	14.147	8.683E-03	77.53	7.070E-03	11.459	14.781	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.034 AT GMH	MOMENTUM FLUX (Nt/m2) -1.34E-01	FRICTION VELOCITY (Meters/sec) 3.298E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.088E-01	AIR DENSITY (Kg/m3) 1.2281
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.86E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.535E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.862E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.042	LAT.HEAT FLUX (Watts/m2) 9.54E 01	SCALING POT.TEMP. (Kelvin) -2.554E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.425E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9006E 05
Z/L AT 10 METERS -0.032	SEN.HEAT FLUX (Watts/m2) 1.05E 01	ROUGHNESS LENGTH (Meters) 1.133E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.639
MONIN-OBUKHOV LENGTH (Meters) -3.108E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.247E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.181E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.20E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.62
	BOWEN RATIO (no units) 0.110			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
135%	135%	90%	152%	111%	10%	123%	263%	45%	107%	65%	65%	90%
197%	197%	46%	41%	125%	10%	34%	166%	23%	64%	148%	43%	40%

* *CONTINUED BELOW*

RUN NUMBER: 7905080000
START TIME: 0: 6: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.019 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.63E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.620E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.75E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.370E-05 [3.0E-05]
Z/L AT GMH -0.024 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.27E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.546E-02 [2.0E-02]
Z/L AT 10 METERS -0.018 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.99E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.784E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -5.522E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.537E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.16E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.094 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	60%	28%	8%	29%	0%	9%	21%	14%	19%	39%	47%	33%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080030
START TIME: 0:36: 0 PST
END TIME: 1: 6:10 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.061	0.001	4.884	4.960	5.136	4.966	4.750	-0.103	4.613

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF B
4.903	3.885	2.563	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIRFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127508	1421 128551	0.157	146	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT. FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.).05V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.750	9.90	8.86	NO DATA	301.9	1011.08	1.43E 01	13.646	285.963

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.855	9.34	8.94	NO DATA	-0.53	1012.18

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.930	13.969	14.148	8.594E-03	77.17	7.005E-03	11.339	14.694	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.945	14.060	14.170	8.648E-03	77.06	7.044E-03	11.414	14.812	NO DATA

* CONTINUED BELOW

PRINT DATE: 11 JUN 1980
RUN NUMBER: 7905080030 MARINE SURFACE LAYER DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START TIME: 0:36: 0 PST NRL MICROMETEOROLOGY DATA AVERAGING PERIOD: 30 Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.015 AT GRH	MOMENTUM FLUX (Nt/m2) -1.44E-01	FRICTION VELOCITY (Meters/sec) 3.428E-01	GENERAL FORM DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.74E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.524E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.18E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.17E 00
Z/L AT GMH -0.020	LAT.HEAT FLUX (Watts/m2) 6.78E 01	SCALING POT. TEMP. (Kelvin) -1.260E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.29E 03
Z/L AT 10 METERS -0.015	SEN.HEAT FLUX (Watts/m2) 5.36E 00	ROUGHNESS LENGTH (Meters) 1.302E-04	N=POT.TEMP (Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.72E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.29E 01
Z/L AT Z1 -0.018	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.44AE 03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 -0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.75E 01			
MONIN OBUKHOV LENGTH (Meters) -6.555E 02	BOWEN RATIO (no units) 0.079			
PSI1 AT Z1= 0.093517 PSI1 AT Z2= 0.149423 PSI2 AT Z1= 0.652752 PSI2 AT Z2= 0.030180				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.795	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2273

AIR SPECIFIC HEAT (1Cal/Kg Kel.) 2.415E 02

WATER LAT HEAT VAP (1Cal/Kg) 5.980E 02

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= + 6E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:36: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.842	9.41	8.93	NO DATA	1012.08	13.646	-0.803	-0.705	0.421	0.519

HEIGHT (Meters)	POT TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.940	14.066	14.164	8.641E-03	77.08	7.039E-03	11.406	14.798	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.031 AT GMH	MOMENTUM FLUX (Nt/m2) -1.36E-01	FRICTION VELOCITY (Meters/sec) 3.328E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.107E-01	AIR DENSITY (Kg/m3) 1.2276
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.92E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.591E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.918E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4152E 02
Z/L AT GMH -0.039	LAT.HEAT FLUX (Watts/m2) 9.68E 01	SCALING POT.TEMP. (Kelvin) -2.435E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.104E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9005E 05
Z/L AT 10 METERS -0.030	SEN.HEAT FLUX (Watts/m2) 1.01E 01	ROUGHNESS LENGTH (Meters) 1.170E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.613
MONIN-OBUKHOV LENGTH (Meters) -3.319E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.251E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.180E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.21E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.28
	BOWEN RATIO (no units) 0.104			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
149%	149%	114%	165%	117%	10%	128%	282%	57%	108%	60%	77%	114%
201%	201%	46%	41%	129%	10%	34%	170%	23%	64%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:36: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.022 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.38E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.357E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.69E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.455E-05 [3.0E-05]
Z/L AT GMH 0.028 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.11E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.592E-02 [2.0E-02]
Z/L AT 10 METERS 0.022 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.59E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.217E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.632E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.30?E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.14E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.095 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
36%	75%	3%	19%	31%	0%	17%	14%	2%	19%	32%	6%	8%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080100
START TIME: 1: 6:20 PST
END TIME: 1:36:30 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	4.910	4.977	5.288	5.140	4.724	-0.103	4.539

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF.B
3.977	3.889	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WSIFC	WS2FC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127603	1421 128652		0.125	92	-0.008	-0.050	0.000	0.995	0.969

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.760	10.21	9.01	NO DATA	299.3	1010.69	1.43E 01	13.619	285.973

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.865	9.76	9.04	NO DATA	-0.55	1011.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.940	13.991	14.171	8.681E-03	77.93	7.079E-03	11.454	14.698	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.955	14.099	14.189	8.705E-03	77.55	7.094E-03	11.490	14.816	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080100
START TIME: 1: 6:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.024 AT GMH	-9.81E-02	2.827E-01	[(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	[(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	2.30E-05	-6.641E-05	DWS/DZ= 4.95E-02	PSI=PSI1 WS SLOPE= 1.41E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.030	5.69E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.270E-02	Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.023	4.45E 00			SH SLOPE= -8.14E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.042	SKY AND SOLAR HEAT FLUX (Watts/m2)	6.453E-05	Z=HEIGHT (Meters) DPT/DZ= -1.70E-03	Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT Z2	1.43E 01			PTK SLOPE= -4.26E 01
-0.021		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	9.186E 04		Z=HEIGHT (M) Vert.Axis PSI=NONE
-4.337E 02	7.57E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.134473	BOWEN RATIO			
PSI1 AT Z2= 0.072700	(no units)			
PSI2 AT Z1 0.083920	0.078			
PSI2 AT Z2= 0.044637				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2267
AIR SPECIFIC HEAT (1Cal./Kg Kel.)
2.4153E 02
WATER LAT.HEAT VAP (1Cal./Kg)
5.9007E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 6:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

T° TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.m^-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.853	9.82	9.04	NO DATA	1011.69	13.619	-0.767	-0.669	0.467	0.585

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	SAT.VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.951	14.086	14.184	8.702E-03	77.60	7.092E-03	11.486	14.802	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.026 AT GMH	MOMENTUM FLUX (Nt/m2) -1.51E-01	FRICTION VELOCITY (Meters/sec) 3.510E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.232E-01	AIR DENSITY (Kg/m3) 1.2270
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.98E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.240E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.979E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.033	LAT.HEAT FLUX (Watts/m2) 9.83E 01	SCALING POT.TEMP. (Kelvin) -2.291E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.040E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9005E 05
Z/L AT 10 METERS -0.025	SEN.HEAT FLUX (Watts/m2) 9.98E 00	ROUGHNESS LENGTH (Meters) 1.414E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.581
MONIN-OBUKHOV LENGTH (Meters) -3.924E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.278E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.177E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.23E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.89
	BOWEN RATIO (no units) 0.101			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
178%	178%	146%	183%	136%	10%	138%	319%	73%	110%	63%	93%	146%
205%	205%	46%	41%	133%	10%	35%	174%	73%	64%	156%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 6:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.025 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.38E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.346E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.67E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.28?E-05 [3.0E-05]
Z/L AT GMH -0.031 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.07E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.562E-02 [2.0E-02]
Z/L AT 10 METERS -0.024 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.25E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.172E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.135E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.201E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.13E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.093 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
5%	5%	22%	27%	38%	0%	24%	13%	11%	16%	28%	35%	1?%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080136
START TIME: 1:36:40 PST
END TIME: 2: 6:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.838	4.923	5.403	5.195	4.696	-0.103	4.601

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.965	5.885	2.544	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WSIFC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 129396	1421 129335	0.152	146	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.733	10.41	8.58	NO DATA	301.4	1010.25	1.43E 01	13.608	285.943

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.833	9.77	8.72	NO DATA	-0.53	1011.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.912	13.928	14.107	8.429E-03	75.83	6.875E-03	11.121	14.665	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.924	14.040	14.130	9.512E-03	76.02	6.930E-03	11.234	14.779	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080130
START TIME: 1:36:40 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -1.84E-01	FRICTION VELOCITY (Meters/sec) 3.869E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.04E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.413E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.16E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.03E 00
Z/L AT GMH -0.011	LAT.HEAT FLUX (Watts/m2) 7.59E 01	SCALING POT. TEMP. (Kelvin) -9.018E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.43E 03
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 4.33E 00	ROUGHNESS LENGTH (Meters) 1.994E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.25E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -5.99E 01
Z/L AT Z1 -0.011	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.649E-03		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.008	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.38E 01			
MONIN-OBUKHOV LENGTH (Meters) -1.188E 03	BOWEN RATIO (no units) 0.058			
PSI1 AT Z1= 0.054168 PSI1 AT Z2= 0.028050 PSI2 AT Z1= 0.033078 PSI2 AT Z2= 0.016990				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2265

AIR SPECIFIC HEAT
(Ical/Kg Kel)
2.4149E 02

WATER LAT HEAT VAP
(Ical/Kg)
5.9008E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- 08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79050B0130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:36:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.821	9.84	8.70	NO DATA	1011.25	13.608	-0.787	-0.689	0.418	0.516

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.919	14.026	14.124	8.507E-03	75.99	6.930E-03	11.221	14.766	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.027 AT GMH	MOMENTUM FLUX (Nt/m2) -1.52E-01	FRICTION VELOCITY (Meters/sec) 3.521E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.240E-01	AIR DENSITY (Kg/m3) 1.2267
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.23E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.798E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.232E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4150E 02
Z/L AT GMH -0.034	LAT.HEAT FLUX (Watts/m2) 1.05E 02	SCALING POT.TEMP. (Kelvin) -2.340E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.238E-03	WATER LAT.HEAT Vap. (ITcal./Kg) 5.9006E 05
Z/L AT 10 METERS 0.026	SEN.HEAT FLUX (Watts/m2) 1.02E 01	ROUGHNESS LENGTH (Meters) 1.431E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.563
MONIN-OBUKHOV LENGTH (Meters) -3.867E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.280E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.29E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.45
	BOWEN RATIO (no units) 0.098			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
159%	159%	105%	161%	132%	10%	129%	293%	52%	108%	79%	72%	105%
203%	203%	46%	40%	131%	10%	34%	171%	23%	63%	154%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 79050B0130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:36:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,- Unstable) -0.016 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.62E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.627E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.99E-05 [3.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.550E-05 [3.0E-05]
Z/L AT GMH -0.021 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.87E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.392E-02 [2.0E-02]
Z/L AT 10 METERS -0.016 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.29E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.641E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -6.216E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.384E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.22E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.083 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
46%	44%	10%	17%	40%	0%	17%	25%	5%	20%	38%	18%	15%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080200
START TIME: 2: 7: 0 PST
END TIME: 2:37:10 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	4.816	4.898	5.169	4.988	4.676	-0.103	4.683

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.951	3.874	2.534	0.001	0.001	0.901	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WS1FC (Coeff.)	WS2FC (Coeff.)
1411 126963	1421 128025	0.157	143	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA RATE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.696	9.96	8.45	NO DATA	304.2	1009.95	1.43E 01	13.595	285.909

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.803	9.38	8.57	NO DATA	-0.49	1011.05

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.876	13.881	14.060	8.352E-03	75.33	6.814E-03	11.019	14.626	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.893	13.997	14.087	8.425E-03	75.41	6.868E-03	11.118	14.744	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080200
START TIME: 2: 7: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
0.015 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.020

Z/L AT 10 METERS
-0.015

Z/L AT Z1
-0.038

Z/L AT Z2
-0.014

MONIN-OBUKHOV LENGTH
(Meters)
-6.638E 02

PSI1 AT Z1= 0.092465
PSI1 AT Z2= 0.048908
PSI2 AT Z1= 0.057086
PSI2 AT Z2= 0.029819

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(N/m2)
.56E-01

HUMIDITY FLUX
(Kg/sec m2)
2.89E-05

LAT.HEAT FLUX
(Watts/m2)
7.04E 01

SEN.HEAT FLUX
(Watts/m2)
5.95E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.43E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
9.07E 01

BOWEN RATIO
(no units)
0.084

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.566E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-6.521E-05

SCALING POT. TEMP.
(Kelvin)
-1.346E-02

ROUGHNESS LENGTH
(Meters)
1.496E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
1.542E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 6.43E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.84E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.12E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.29E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -4.02E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2263

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4140E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9010E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080200 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 2: 7: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.790	9.45	8.55	NO DATA	1010.96	13.595	-0.805	-0.707	0.388	0.486

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID (Percent)	SPEC HUMID (Kg/Kg)	VAP PRES. (Millibars)	S.VAP PRES. (Millibars)	REF INDEX (Kel xM-2/3)
10.00	12.888	13.983	14.081	8.416E-03	75.40	6.862E-03	11.107	14.731	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978).

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.031 AT GMH	MOMENTUM FLUX (Nt/m2) -1.37E-01	FRICTION VELOCITY (Meters/sec) 3.347E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.120E-01	AIR DENSITY (Kg/m3) 1.2266
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.15E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.012E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.155E-05	AIR SPECIFIC HEAT (Ilcal./Kg Kel.) 2.414BE 02
Z/L AT GMH -0.039	LAT.HEAT FLUX (Watts/m2) 1.03E 02	SCALING POT.TEMP. (Kelvin) -2.435E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.149E-03	WATER LAT.HEAT VAP. (Ilcal./Kg) 5.9008E 05
Z/L AT 10 METERS -0.030	SEN.HEAT FLUX (Watts/m2) 1.01E 01	ROUGHNESS LENGTH (Meters) 1.195E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.545
MONIN-OBUKHOV LENGTH (Meters) -3.358E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.254E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.27E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.16
	BOWEN RATIO (no units) 0.098			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
142%	142%	110%	163%	111%	10%	126%	274%	55%	108%	56%	75%	110%
201%	201%	46%	40%	129%	10%	34%	169%	23%	63%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER 7905080200 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 2: 7: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.022 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.43E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.412E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.90E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.793E-05 [3.0E-05]
Z/L AT GMH -0.028 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.63E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.640E-02 [2.0E-02]
Z/L AT 10 METERS -0.021 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.87E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.305E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.724E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.331E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.19E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.093 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASURMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
37%	35%	7%	20%	26%	0%	18%	8%	3%	21%	30%	12%	12%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080230
START TIME: 2:37:20 PST
END TIME: 3: 7:30 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.265	0.001	0.001	4.880	4.953	4.543	4.424	4.667	-0.103	4.665

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.742	3.876	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122653	1421 122678	0.157	138	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.88

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.763	9.76	8.03	NO DATA	303.6	1009.82	1.43E 01	13.586	285.877

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.770	8.34	8.90	NO DATA	-0.41	1010.92

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	...843	13.879	14.058	8.571E-03	77.47	6.993E-03	11.305	14.593	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.860	13.991	14.081	8.614E-03	77.27	7.023E-03	11.367	14.711	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.029 AT GMH	-8.99E-02	2.708E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.66E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.48E 00
12.99	2.23E-05	-6.715E-05		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.037	5.51E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.05E 03
Z/L AT 10 METERS		-1.410E-02		
-0.038	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	4.74E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.87E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.87E 01
-0.037	SKY AND SOLAR HEAT FLUX (Watts/m2)	5.485E-05		
Z/L AT Z2	1.43E 01			
-0.026		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.181E-03		
-3.536E 02	7.42E 01			
PSI1 AT Z1= 0.159912	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.187546	0.086			
PSI2 AT Z1= 0.100390				
PSI2 AT Z2= 0.053977				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2262	2.4151E 02	5.9012E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2+ +/- .00E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080230 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 2:37:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.757	8.39	8.89	NO DATA	1010.82	13.586	-0.829	-0.731	0.391	0.489

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.855	13.977	14.075	8.609E-03	77.29	7.020E-03	11.360	14.697	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.046 AT GMH	-1.02E-01	2.888E-01	-8.338E-02	1.2264
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	3.47E-05	-9.788E-05	3.466E-05	2.4152E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.059	8.56E 01	-2.647E-02	7.643E-03	5.9018E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.044	9.48E 00	6.981E-05		15.533
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-2.299E 02	1.43E 01	1.184E-03		1.174E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	1.09E 02			1012.02
	BOWEN RATIO (no units)			
	0.111			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
162%	162%	134%	176%	124%	10%	131%	300%	67%	110%	57%	87%	134%
198%	198%	46%	41%	126%	10%	34%	167%	23%	64%	149%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080230 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 2:37:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.037 [0.02] AT GMH	-9.91E-02 [6.0E-02]	2.842E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	3.23E-05 [8.0E-06]	-8.657E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.046 [0.02]	7.99E 01 [2.0E+01]	-1.753E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.035 [0.02]	7.08E 00 [3.0E+00]	6.485E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-2.847E 02	1.43E 01 [2.0E+01]	1.18[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	1.02E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.102 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
23%	22%	7%	23%	33%	0%	20%	13%	4%	18%	34%	12%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080300
START TIME: 3: 7:40 PST
END TIME: 3:37:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.880	4.948	4.484	4.378	4.659	-0.103	4.657

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.938	3.873	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1FC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126748	1421 127762	0.157	132	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).065V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.675	8.65	8.83	NO DATA	303.3	1009.69	1.43E 01	13.582	285.686

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.776	8.26	8.87	NO DATA	-0.3?	1010.78

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.855	13.890	14.070	8.571E-03	77.43	6.994E-03	11.306	14.602	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.866	13.995	14.085	8.595E-03	77.08	7.009E-03	11.342	14.715	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080300
START TIME: 3: 7:40 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.023 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.030

Z/L AT 10 METERS
-0.023

Z/L AT Z1
-0.042

Z/L AT Z2
-0.021

MONIN-OBUKHOV LENGTH (Meters)
-4.372E 02

PSI1 AT Z1= 0.133532
PSI1 AT Z2= 0.072157
PSI2 AT Z1= 0.083313
PSI2 AT Z2= 0.044297

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N1/m2)
-7.58E-02

HUMIDITY FLUX (Kg/sec m2)
2.92E-05

LAT.HEAT FLUX (Watts/m2)
5.00E 01

SEN.HEAT FLUX (Watts/m2)
3.00E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.43E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.73E 01

BOWEN RATIO (no units)
0.060

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.486E-01

SCALING SPEC.HUMD. (Kg/Kg)
-6.630E-05

SCALING POT. TEMP. (Kelvin)
-9.739E-03

ROUGHNESS LENGTH (Meters)
3.937E-05

DRAG COEF. AT 10 METERS (Dimensionless)
1.025E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)1/[ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.36E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.31E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.61E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.14E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -5.55E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2260

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9012E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 3: 7:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.764	8.30	8.86	NO DATA	1010.69	13.582	-0.818	-0.720	0.460	0.498

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.862	13.982	14.080	8.593E-03	77.12	7.907E-03	11.338	14.702	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.047 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.058

Z/L AT 10 METERS
-0.044

MONIN-OBUKHOV LENGTH (Meters)
-2.252E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.96E-02

HUMIDITY FLUX (Kg/sec m2)
3.44E-05

LAT.HEAT FLUX (Watts/m2)
8.51E 01

SEN.HEAT FLUX (Watts/m2)
9.36E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.43E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.09E 02

BOWEN RATIO (no units)
0.109

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.850E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.852E-05

SCALING POT.TEMP. (Kelvin)
-2.632E-02

ROUGHNESS LENGTH (Meters)
6.646E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.178E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.121E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.443E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.499E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2262

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9010E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.527

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.173E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.89

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
189%	189%	143%	182%	150%	10%	135%	333%	71%	111%	79%	91%	143%
199%	199%	46%	11%	127%	10%	34%	168%	23%	64%	150%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 3: 7:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.035 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.043 [0.02]

Z/L AT 10 METERS
-0.033 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.998E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.38E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.19E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.87E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
6.41E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.43E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.00E 02 [3.0E+01]

BOWEN RATIO (no units)
0.093 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.761E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.679E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.545E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.779E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.144E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
34%	32%	14%	26%	49%	0%	24%	28%	7%	19%	43%	24%	8%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080330
START TIME: 3:37:50 PST
END TIME: 4: 7:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	4.890	4.968	4.446	4.330	4.648	-0.102	4.738

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.737	5.867	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1431 1/6862	1421 12/933	0.157	135	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.687	8.57	8.89	NO DATA	306.1	1009.52	1.43E 01	13.580	285.900

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.793	8.17	8.99	NO DATA	-0.21	1010.62

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.867	13.907	14.087	8.602E-03	77.66	7.021E-03	11.347	14.611	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.883	14.022	14.112	8.663E-03	77.62	7.066E-03	11.433	14.729	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080330
START TIME: 3:37:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.031 AT GMH	MOMENTUM FLUX (N1/m2) -8.57E-02	FRICTION VELOCITY (Meters/sec) 2.645E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.18E-05	SCALING SPEC HUMD. (Kg/Kg) -6.739E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.53E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.51E 00
Z/L AT GMH -0.039	LAT.HEAT FLUX (Watts/m2) 5.40E 01	SCALING POT. TEMP. (Kelvin) -1.423E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.02E 03
Z/L AT 10 METERS -0.030	SEN.HEAT FLUX (Watts/m2) 4.66E 00	ROUGHNESS LENGTH (Meters) 5.009E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.88E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.80E 01
Z/L AT Z1 0.0[illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.181E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.020	TOTAL HEAT BUDGET FLUX (Watts/m2) 7.29E 01			
MONIN-OBUKHOV LENGTH (Meters) -3.32BE 02	BOWEN RATIO (no units) 0.086			
PSI1 AT Z1= 0.168218 PSI1 AT Z2= 0.092462 PSI2 AT Z1= 0.105800 PSI2 AT Z2= 0.057084				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (1Kcal./Kg Kel.)	WATER LAT.HEAT VAP. (1Kcal./Kg)
1.2257	2.4152E 02	5.9011E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2: +/- .08E 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.780	8.22	8.97	NO DATA	1010.52	13.580	-0.800	-0.702	0.428	0.526

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.878	14.008	14.106	8.656E-03	77.63	7.061E-03	11.423	14.715	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) 0.048 AT GMH	MOMENTUM FLUX (Nt/m2) -9.70E-02	FRICTION VELOCITY (Meters/sec) 2.813E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.914E-02	AIR DENSITY (Kg/m3) 1.2259
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.33E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.669E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.335E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.058	LAT.HEAT FLUX (Watts/m2) 8.24E 01	SCALING POT.TEMP. (Kelvin) -2.597E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 7.306E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9009E 05
Z/L AT 10 METERS -0.045	SEN.HEAT FLUX (Watts/m2) 9.06E 00	ROUGHNESS LENGTH (Meters) 6.333E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.523
MONIN-OBUKHOV LENGTH (Meters) -2.224E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.172E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.173E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.06E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.72
	BOWEN RATIO (no units) 0.110			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
163%	163%	135%	177%	124%	10%	131%	302%	67%	110%	57%	87%	135%
201%	201%	46%	41%	129%	10%	34%	170%	23%	64%	152%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.039 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.41E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.770E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.12E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.589E-05 [3.0E-05]
Z/L AT GMH -0.048 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.70E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.743E-02 [2.0E-02]
Z/L AT 10 METERS -0.037 [0.02]	SEN.HEAT FLUX (Watts/m2) 6.82E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.896E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.723E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.43E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.174E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.90E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.101 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
22%	20%	7%	22%	32%	0%	19%	12%	3%	18%	32%	12%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080400
START TIME: 4: 7:50 PST
END TIME: 4:37:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS) /Min
DATA AVERAGING PERIOD 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	[illegible]	WIND DIR
6.265	0.000	0.001	4.897	4.971	4.298	4.199	4.639	0.[illegible]	4.665

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.926	3.654	2.535	0.001	0.001	0.001	0.001	6.225

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1	No.2	UPWIND MEAN	UPWIND LAND	OPTICAL	[illegible]	WIND[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	[illegible]	[illegible]
1411 125541	1421 126692	0.183	116	-0.008	0.056	0.000	0.952	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.).05V)	(No.).01Hz)	(Volts)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.62

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTION) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watts/m2)	(Celsius)	(Celsius)
12.554	8.28	8.94	NO DATA	310.4	1009.39	1.43E 01	[illegible]	[illegible]

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.669	7.87	9.01	NO DATA	-0.69	1010.48

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL HUMID.1	SPEC.HUMID.1	VAP PRES.1	S.VAP PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.734	13.728	13.957	8.631E-03	78.58	7.143E-03	11.381	14.48[illegible]	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL HUMID.2	SPEC.HUMID.2	VAP PRES.2	S.VAP PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.759	13.869	13.989	8.679E-03	78.36	7.027E-03	11.447	14.606	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080400
START TIME: 4: 7:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS) /Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
0.046 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.056

Z/L AT 10 METERS
-0.043

Z/L AT Z1
-0.077

Z/L AT Z2
0.039

MONIN OBUKHOV LENGTH
(Meters)
2.336E 02

PSI1 AT Z1= 0.227413
PSI1 AT Z2= 0.176697
PSI2 AT Z1= 0.142592
PSI2 AT Z2= 0.092724

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(N/m2)
-9.54E-02

HUMIDITY FLUX
(Kg/sec m2)
2.33E-05

LAT.HEAT FLUX
(Watts/m2)
5.8E 01

SEN.HEAT FLUX
(Watts/m2)
7.58E 00

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.43E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
8.02E 01

BOWEN RATIO
(no units)
0.130

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
2.78E-01

SCALING SPEC HUMD
(Kg/Kg)
-6.90E-05

SCALING POT. TEMP.
(Kelvin)
-2.19E-02

ROUGHNESS LENGTH
(Meters)
6.13E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
1.42E 03

PARTIAL DERIVATIVES

GENERAL FORM DN/DZ
[(N1-N2)/ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 4.61E 00

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.90E-04

N=POT TEMP (Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.83E 03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM N SLOPE=
[(N1-N2)/ln(Z1/Z2)-PSI1+PSI2]
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI
WS SLOPE= 1.43E 01

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI
H SLOPE= 2.83E 03

N=POT TEMP (Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI
PT SLOPE= 2.47E 01

N=[illegible] STRUC (K**-2/3)
Z=HEIGHT (M) Vert Axis
PSI=NON
CT SLOPE=NO DATA

* GENERAL CONSTANTS

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E 03	1.3E 03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2260

AIR SPECIFIC HEAT
(Cal/gm Kg Kel)
0.[illegible]

WATER LAT.HEAT VAP
(Cal/gm Kg)
5.9018E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2 +/- DH1 .5 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.655	7.92	9.00	NO DATA	1010.39	13.570	-0.914	-0.816	0.315	0.413

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM 2/3)
10.00	12.753	13.884	13.982	8.672E-03	78.39	7.072E-03	11.439	14.593	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.061 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.073

Z/L AT 10 METERS
-0.056

MONIN-OBUKHOV LENGTH (Meters)
-1.782E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.86E-02

HUMIDITY FLUX (Kg/sec m2)
3.19E-05

LAT.HEAT FLUX (Watts/m2)
7.87E 01

SEN.HEAT FLUX (Watts/m2)
9.85E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.43E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.03E 02

BOWEN RATIO (no units)
0.125

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.688E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.668E-05

SCALING POT.TEMP. (Kelvin)
-2.956E-02

ROUGHNESS LENGTH (Meters)
5.328E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.152E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.223E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.186E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
7.946E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2263

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4153E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9016E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.510

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.172E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.59

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT TEMP	ROUGH. LENGTH	DRAG COEF
141%	141%	127%	173%	104%	10%	126%	277%	64%	109%	46%	84%	127%
191%	191%	46%	41%	119%	10%	34%	160%	23%	64%	142%	45%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.052 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.063 [0.02]

Z/L AT 10 METERS
-0.048 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
2.064E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.04E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.03E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
7.48E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
8.64E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.43E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.81E 01 [3.0E+01]

BOWEN RATIO (no units)
0.127 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.715E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.644E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.361E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.602E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.217E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE GIVEN IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT TEMP	ROUGH. LENGTH	DRAG COEF
-	14%	4%	16%	13%	0%	13%	2%	2%	17%	19%	7%	1%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080430
START TIME: 4:37:50 PST
END TIME: 5: 7:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.000	0.001	4.910	4.982	4.228	4.129	4.638	-0.097	4.849

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.920	3.627	2.536	0.001	0.001	0.001	0.001	6.205

* SECTOR CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 1.74893	1421 1.75987	0.157	110	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).065V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.63

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.489	8.15	9.01	NO DATA	41.9	1009.36	1.35E 01	13.564	285.704

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.599	7.80	9.07	NO DATA	0.02	1010.46

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.669	13.719	13.899	8.678E-03	79.33	7.080E-03	11.440	14.420	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
7.20	12.689	13.833	13.924	8.717E-03	79.07	7.107E-03	11.496	14.540	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080430
START TIME: 4:37:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BULK RICHARDSON NUMBER (+=Stable,-=Unstable) -0.047 AT GMH	MOMENTUM FLUX (Nt/m2) -7.24E-02	FRICTION VELOCITY (Meters/sec) 2.431E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.06E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.914E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.00E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.65E 00
Z/L AT GMH -0.057	LAT.HEAT FLUX (Watts/m2) 5.09E 01	SCALING POT. TEMP. (Kelvin) -1.701E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.82E 03
Z/L AT 10 METERS -0.044	SEN.HEAT FLUX (Watts/m2) 5.13E 00	ROUGHNESS LENGTH (Meters) 3.597E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.19E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -3.18E 01
Z/L AT Z1 -0.081	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.116E 03		N=LnTEMP STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.046	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.95E 01			
MONIN OBUKHOV LENGTH (Meters) -2.479E 02	BOWEN RATIO (no units) 0.101			
PSI1 AT Z1= 0.268506				
PSI1 AT Z2= 0.129106				
PSI2 AT Z1= 0.149409				
PSI2 AT Z2= 0.080465				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS	
AIR DENSITY (Kg/m3)	1.2263
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.4153E 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.9022E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 .002 +/- .000 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.585	7.84	9.06	NO DATA	1010.36	13.564	-0.979	-0.881	0.255	0.353

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.683	13.820	13.918	8.713E-03	79.10	7.104E-03	11.490	14.526	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.067 AT GMH	MOMENTUM FLUX (Nt/m2) -8.65E-02	FRICTION VELOCITY (Meters/sec) 2.655E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.050E-02	AIR DENSITY (Kg/m3) 1.2265
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.11E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.545E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.109E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.079	LAT.HEAT FLUX (Watts/m2) 7.68E 01	SCALING POT.TEMP. (Kelvin) -3.145E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.352E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9020E 05
Z/L AT 10 METERS -0.061	SEN.HEAT FLUX (Watts/m2) 1.04E 01	ROUGHNESS LENGTH (Meters) 5.086E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.505
MONIN-OBUKHOV LENGTH (Meters) -1.634E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.147E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.56
	BOWEN RATIO (no units) 0.135			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
165%	165%	146%	183%	124%	10%	135%	307%	73%	111%	51%	93%	146%
187%	187%	46%	41%	115%	10%	34%	156%	23%	64%	138%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.056 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.31E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.601E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.99E-05 [6.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.570E-05 [3.0E-05]
Z/L AT GMH 0.068 [0.02]	LAT.HEAT FLUX (Watts/m2) 7.21E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.093E-02 [2.0E-02]
Z/L AT 10 METERS -0.052 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.84E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.614E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.923E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.35E 01 [2.0E+01]	DRAG COEF AT 10 METERS (Meters) 1.141E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 9.44E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.123 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
18%	17%	10%	21%	33%	0%	19%	15%	5%	16%	38%	13%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080500
START TIME: 5: 7:50 PST
END TIME: 5:37:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.265	0.000	0.001	4.748	4.828	4.582	4.465	4.646	-0.036	4.959

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.914	3.677	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DPIFCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 124702	1421 125712	0.183	101	-0.988	-0.950	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (Nr.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	)	0	0	115.4	59.66

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.470	8.82	8.05	NO DATA	313.6	1009.50	4.96E 00	13.558	285.681

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.571	8.36	8.15	NO DATA	0.13	1010.59

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.650	13.621	13.601	8.129E-03	74.39	6.629E-03	10.716	14.404	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.661	13.731	13.821	8.193E-03	74.43	6.676E-03	10.804	14.516	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080500
START TIME: 5: 7:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= I(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
-0.016 AT GMH	-1.04E-01	2.909E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	2.33E-05	-6.528E-05	DWS DZ= 5.23E-02	WS SLOPE= 1.38E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.026	5.76E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-9.214E-03	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.21E 03
-0.016	3.32E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.029	SKY AND SOLAR HEAT FLUX (Watts/m2)	7.173E-05	DPT/DZ= -1.26E-03	PSI=PSI2 PTK SLOPE= -5.87E 01
Z/L AT Z2	4.96E 00			
-0.014		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.340E-03		PSI=NONE
-6.438E 02	6.59E 01			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.095039	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.050349	0.058			
PSI2 AT Z1= 0.058716				
PSI2 AT Z2= 0.030704				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2269	2.4144E 02	5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080500
START TIME: 5: 7:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.559	8.41	8.14	NO DATA	1010.50	13.558	-0.999	-0.901	0.159	0.257

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.657	13.718	13.816	8.186E-03	74.42	6.670E-03	10.793	14.503	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.054 AT GMH	MOMENTUM FLUX (Nt/m2) -1.03E-01	FRICTION VELOCITY (Meters/sec) 2.896E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.386E-02	AIR DENSITY (Kg/m3) 1.2271
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.92E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.103E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.919E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4144E 02
Z/L AT GMH -0.066	LAT.HEAT FLUX (Watts/m2) 9.68E 01	SCALING POT.TEMP. (Kelvin) -3.100E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 8.976E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9021E 05
Z/L AT 10 METERS -0.051	SEN.HEAT FLUX (Watts/m2) 1.11E 01	ROUGHNESS LENGTH (Meters) 7.056E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.501
MONIN-OBUKHOV LENGTH (Meters) -1.973E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 4.96E 00	DRAG COEF.AT 10 METERS (Dimensionless) 1.185E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.13E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.70
	BOWEN RATIO (no units) 0.115			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
173%	173%	122%	170%	141%	19%	149%	311%	61%	110%	80%	81%	122%
185%	185%	46%	39%	113%	19%	36%	153%	23%	62%	136%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080500
START TIME: 5: 7:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERROR WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.034 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.03E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.899E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.62E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.395E-05 [3.0E-05]
Z/L AT GMH -0.042 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.95E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.729E-02 [2.0E-02]
Z/L AT 10 METERS -0.033 [0.02]	SEN.HEAT FLUX (Watts/m2) 7.65E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 7.097E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.076E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 4.96E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.294E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.04E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.096 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
56%	54%	0%	26%	51%	0%	27%	31%	0%	25%	56%	1%	%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080530
START TIME: 5:37:50 PST
END TIME: 6: 8: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.672	4.758	4.685	4.526	4.653	0.096	5.202

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.902	3.759	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121043	1471 121587	0.199	68	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.76

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.104	9.02	7.59	NO DATA	321.9	1009.59	-1.34E 01	13.546	285.292

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.159	8.44	7.73	NO DATA	0.22	1010.69

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.284	13.219	13.399	7.892E-03	73.88	6.425E-03	10.389	14.063	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.249	13.284	13.374	7.974E-03	74.31	6.487E-03	10.499	14.129	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080530
START TIME: 5:37:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.032 AT GMH	MOMENTUM FLUX (Nt/m2) -9.08E-02	FRICTION VELOCITY (Meters/sec) 2.718E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.58E-05	SCALING SPEC.HUMD. (Kg/Kg) -4.731E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.48E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.47E 00
Z/L AT GMH 0.056	LAT.HEAT FLUX (Watts/m2) 3.91E 01	SCALING POT. TEMP. (Kelvin) 2.085E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -1.14E 04
Z/L AT 10 METERS 0.038	SEN.HEAT FLUX (Watts/m2) -7.04E 00	ROUGHNESS LENGTH (Meters) 5.560E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 3.93E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.5YE 01
Z/L AT Z1 0.071	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.34E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.114E-03		N=LnTEMP.STRUC.(KxM 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE C12 SLOPE=NO DATA
Z/L AT Z2 0.035	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.86E 01			
MONIN-OBUKHOV LENGTH (Meters) 2.499E 02	BOWEN RATIO (no units) -0.180			
PSI1 AT Z1 -0.331898 PSI1 AT Z2= -0.166491 PSI2 AT Z1= -0.448511 PSI2 AT Z2= -0.224866				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units) 0.4	GRAVITATION ACCELERATION (M/sec 2) 9.7959	PROFILE TUR.PRANDTL NUMBER 0.74	PROFILE TUR.SCHMIDT NUMBER 0.74	BULK SEN.HEAT TRANSF.COEF. 0.92E-03	BULK MOISTURE TRANSF.COEF. 1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2288

AIR SPECIFIC HEAT (Ilcal./Kg K(.) 2.413YE 02

WATER LAT HEAT VAP. (Ilcal./Kg) 5.9045E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .0HE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.152	8.51	7.71	NO DATA	1010.60	13.546	-1.394	-1.296	-0.270	-0.172

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.250	13.276	13.374	7.964E-03	74.26	6.479E-03	10.486	14.121	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.072 AT GMH	MOMENTUM FLUX (Nt/m2) -1.06E-01	FRICTION VELOCITY (Meters/sec) 2.938E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.633E-02	AIR DENSITY (Kg/m3) 1.2291
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.20E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.364E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.205E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4140E 02
Z/L AT GMH -0.085	LAT.HEAT FLUX (Watts/m2) 1.04E 02	SCALING POT.TEMP. (Kelvin) -4.135E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.215E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9044E 05
Z/L AT 10 METERS -0.066	SEN.HEAT FLUX (Watts/m2) 1.51E 01	ROUGHNESS LENGTH (Meters) 7.445E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.490
MONIN-OBUKHOV LENGTH (Meters) -1.520E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.34E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.192E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.06E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.80
	BOWEN RATIO (no units) 0.145			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
107%	141%	102%	160%	82%	10%	105%	242%	51%	109%	32%	71%	102%
169%	169%	46%	39%	97%	10%	32%	135%	23%	62%	120%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080530 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:37:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.008 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.01E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.870E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.69E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.142E-05 [3.0E-05]
Z/L AT GMH 0.012 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.13E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 7.878E-03 [2.0E-02]
Z/L AT 10 METERS -0.009 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.15E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 6.733E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.113E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.34E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.170E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.52E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.029 [0.38]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
266%	262%	8%	42%	353%	0%	58%	211%	4%	39%	180%	14%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080600
START TIME: 6: 8:10 PST
END TIME: 6:38:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.657	4.734	4.417	4.287	4.667	0.352	5.178

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.903	3.727	2.534	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117011	1421 117750	0.199	55	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.73

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.701	8.51	7.50	NO DATA	321.1	1009.82	-4.91E 01	13.548	284.898

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.775	8.00	7.59	NO DATA	0.29	1010.91

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.881	12.807	12.987	7.858E-03	75.42	6.387E-03	10.330	13.697	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.865	12.888	12.978	7.910E-03	75.49	6.424E-03	10.401	13.779	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080600
START TIME: 6: 8:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
0.019 AT GMH	-8.22E-02	2.585E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.69E-05	-5.378E-05	DWS/DZ= 5.64E-02	PSI=PSI1 WS SLOPE= 1.55E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.028	4.18E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	1.044E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -1.02E 04
0.021	-3.36E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.584E-05	DPT/DZ= 1.75E-03	PSI=PSI2 PTK SLOPE= 5.18E 01
0.039	-4.91E 01	DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis
Z/L AT Z2	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.148E-03		PSI=NONE
0.020	-1.07E 01			CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	BOWEN RATIO (no units)			
4.678E 02	-0.080			
PSI1 AT Z1= -0.184347				
PSI1 AT Z2= -0.092425				
PSI2 AT Z1= -0.249118				
PSI2 AT Z2= -0.124898				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2308
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.413BE 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9068E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2+ +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080600
START TIME: 6: 8:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.766	8.06	7.58	NO DATA	1010.82	13.548	-1.782	-1.684	-0.669	-0.571

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.864	12.870	12.976	7.904E-03	75.48	6.420E-03	10.393	13.769	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.107 AT GMH	MOMENTUM FLUX (Nt/m2) -9.30E-02	FRICTION VELOCITY (Meters/sec) 2.749E-01	WITH LONG. VELOCITY (Meter2/sec2) -7.557E-02	AIR DENSITY (Kg/m3) 1.2311
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.05E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.197E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.052E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4139E 02
Z/L AT GMH -0.125	LAT.HEAT FLUX (Watts/m2) 1.00E 02	SCALING POT.TEMP. (Kelvin) -5.271E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.449E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9066E 05
Z/L AT 10 METERS -0.096	SEN.HEAT FLUX (Watts/m2) 1.80E 01	ROUGHNESS LENGTH (Meters) 5.806E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.495
MONIN-OBUKHOV LENGTH (Meters) -1.043E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.91E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.162E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.92E 01			BAR.PRES.AT WT LEVEL (Millibar) 1012.82
	BOWEN RATIO (no units) 0.180			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
142%	169%	111%	165%	116%	6%	73%	281%	55%	110%	60%	75%	111%
160%	140%	46%	39%	88%	6%	25%	126%	23%	62%	111%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080600
START TIME: 6: 8:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.041 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.99E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.701E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.60E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 9.57BE-05 [3.0E-05]
Z/L AT GMH -0.051 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.91E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -1.186E-02 [2.0E-02]
Z/L AT 10 METERS -0.039 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.81E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 5.362E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.567E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.91E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.158E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.89E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.099 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
156%	151%	7%	39%	122%	0%	91%	148%	3%	36%	165%	11%	1%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080630
START TIME: 6:38:30 PST
END TIME: 7: 8:30 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.705	4.783	4.230	4.110	4.673	0.595	5.226

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.906	3.765	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 114416	1421 115073	0.199	63	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg,True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.442	8.15	7.79	NO DATA	322.7	1009.91	-8.30E 01	13.550	284.634

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.507	7.68	7.88	NO DATA	0.33	1011.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.621	12.569	12.748	8.020E-03	78.23	6.513E-03	10.534	13.465	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.597	12.641	12.732	8.075E-03	78.36	6.553E-03	10.609	13.538	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080630
START TIME: 6:38:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL.

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.033 AT GMH	MOMENTUM FLUX (Nt/m2) -5.84E-02	FRICTION VELOCITY (Meters/sec) 2.177E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.25E-05	SCALING SPEC.HUMD. (Kg/Kg) -4.676E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.24E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.84E 00
Z/L AT GMH 0.052	LAT.HEAT FLUX (Watts/m2) 3.10E 01	SCALING POT. TEMP. (Kelvin) 1.399E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -1.14E 04
Z/L AT 10 METERS 0.040	SEN.HEAT FLUX (Watts/m2) -3.79E 00	ROUGHNESS LENGTH (Meters) 2.278E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.67E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.86E 01
Z/L AT Z1 0.074	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.30E 01	DRAG COEF. AT 10 METERS (Dimensionless) 8.964E 04		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.037	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.57E 01			
MONIN-OBUKHOV LENGTH (Meters) 2.480E 02	BOWEN RATIO (no units) -0.122			
PSI1 AT Z1= -0.347822 PSI1 AT Z2= -0.174485 PSI2 AT Z1= -0.470030 PSI2 AT Z2= -0.235656				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2320

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4141E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9982E 05

* GENERAL NOTE :
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:38:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.499	7.74	7.87	NO DATA	1010.91	13.550	-2.051	-1.953	-0.918	-0.820

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.597	12.633	12.731	8.069E-03	78.35	6.548E-03	10.600	13.530	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.139 AT GMH	MOMENTUM FLUX (Nt/m2) -8.42E-02	FRICTION VELOCITY (Meters/sec) 2.613E-01	WITH LONG. VELOCITY (Meter2/sec2) -6.830E-02	AIR DENSITY (Kg/m3) 1.2323
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.72E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.156E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.722E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4141E 02
Z/L AT GMH -0.159	LAT.HEAT FLUX (Watts/m2) 9.21E 01	SCALING POT.TEMP. (Kelvin) -6.086E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.590E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9081E 05
Z/L AT 10 METERS -0.123	SEN.HEAT FLUX (Watts/m2) 1.98E 01	ROUGHNESS LENGTH (Meters) 4.784E-05		VAP.PRES.AT WT LEVEL (Millibar) 15.499
MONIN-OBUKHOV LENGTH (Meters) -8.153E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.30E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.141E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.89E 01			BAR.PRES.AT WT LEVEL (Millibar) 1012.11
	BOWEN RATIO (no units) 0.215			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
128%	170%	116%	169%	102%	6%	45%	271%	58%	111%	44%	78%	116%
156%	156%	46%	37%	84%	6%	28%	123%	23%	62%	107%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:38:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.044 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.68E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 2.489E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.2AE-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.089E-05 [3.0E-05]
Z/L AT GMH -0.058 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.06E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -7.937E-03 [2.0E-02]
Z/L AT 10 METERS -0.045 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.18E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.893E-05 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.231E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.30E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.070E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.37E 00 [3.0E+01]	
	BOWEN RATIO (no units) 0.110 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
195%	182%	18%	45%	129%	0%	151%	164%	10%	39%	203%	22%	13%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080700
START TIME: 7: 8:40 PST
END TIME: 7:38:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.736	4.807	4.370	4.281	4.673	1.179	5.092

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP.	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.909	3.673	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 115401	1421 116361	0.183	86	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.67

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.540	8.42	7.97	NO DATA	318.1	1009.91	-1.64E 02	13.554	284.748

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.636	8.02	8.03	NO DATA	0.33	1011.01

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.720	12.682	12.862	8.119E-03	78.71	6.596F-03	10.667	13.553	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.726	12.782	12.072	8.154E-03	78.49	6.620E-03	10.717	13.654	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080700
START TIME: 7: 8:40 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PS1)-(LnZ2-PSI)]/ (N1-N2)
-0.015 AT GMH	-7.52E-02	2.472F-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 4.45E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.99E-05	-6.524E-05		WS SLOPE= 1.62E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.020	4.91E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		-6.524E-03		
-0.015	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -8.29E 03
Z/L AT Z1	2.01E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.028	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.847F-05		PTK SLOPE= -8.29E 01
Z/L AT Z2	-1.64E 02			
-0.014		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.075E-03		CT2 SLOPE=NO DATA
-6.549E 02	-1.13E 02			
PSI1 AT Z1= 0.093595	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.049536	0.041			
PSI2 AT Z1= 0.057801				
PSI2 AT Z2= 0.030207				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2314
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4143E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9076E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7: 8:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, Cal | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.624	8.07	8.02	NO DATA	1010.91	13.554	-1.929	-1.831	-0.783	-0.685

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.722	12.770	12.868	8.150E-03	78.52	6.617E-03	10.711	13.642	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,--Unstable)
-0.116 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.134

Z/L AT 10 METERS
-0.103

MONIN-OBUKHOV LENGTH (Meters)
-9.700E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.32E-02

HUMIDITY FLUX (Kg/sec m2)
3.80E-05

LAT.HEAT FLUX (Watts/m2)
9.39E 01

SEN.HEAT FLUX (Watts/m2)
1.94E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.64E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.12E 01

BOWEN RATIO (no units)
0.207

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.750E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.121E-04

SCALING POT.TEMP. (Kelvin)
-5.668E-02

ROUGHNESS LENGTH (Meters)
5.817E-05

DRAG COEF.AT 10 METERS (Dimensionless)
1.162E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-7.565E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.797E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.559E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2317

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4143E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9074E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.502

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.172E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.11

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
215%	215%	139%	181%	181%	5%	42%	363%	69%	112%	112%	89%	139%
157%	157%	46%	39%	85%	5%	15%	125%	23%	62%	108%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 7: 8:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, Cal | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,--Unstable)
-0.073 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.086 [0.02]

Z/L AT 10 METERS
-0.066 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.515E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.87E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.47E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
8.59E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.38E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.64E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.76E 01 [3.0E+01]

BOWEN RATIO (no units)
0.164 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
2.691E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-9.534E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.200E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.177E-05 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.143E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
69%	67%	11%	31%	67%	0%	51%	58%	6%	26%	78%	17%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080730
START TIME: 7:38:50 PST
END TIME: 8: 8:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	SKY RAD.	WIND DIR
0.205	0.561	0.861	4.719	4.801	4.999	4.871	4.668	1.876	4.964

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
SPARE M. TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
0.750	3.692	2.541	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117965	1411 116121	0.183	88	0.068	-0.050	0.000	0.992	0.950

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

PARITY FLAG	ERROR COUNT	DATA RATE	VOLT.REF DEV	VOLT.REF DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).0050)	B(No.) 005V)	(No.) .002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	180	0	0	0	0	0	115.4	59.62

* 30 MIN MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
11.730	9.62	7.80	NO DATA	313.8	1009.83	-2.62E 02	13.077	284.919

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.612	9.10	7.94	NO DATA	0.31	1010.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.865	12.841	13.021	8.659E-03	77.32	6.551E-03	10.594	13.702	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC HUMID 2	VAP.PRES 2	S.VAP.PRES 2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
7.23	11.982	12.956	13.046	9.129E-03	72.49	6.604E-03	10.690	13.813	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080730
START TIME: 7:38:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.018 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.018

Z/L AT Z1
-0.019

Z/L AT Z2
0.016

MONIN-OBUKHOV LENGTH (Meters)
-5.714E 02

PSI1 AT Z1= 0.105494
PSI1 AT Z2= 0.056300
PSI2 AT Z1= 0.065483
PSI2 AT Z2= 0.034402

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/M2)
-1.32E-01

HUMIDITY FLUX (Kg/SEC M2)
2.65E-05

LAT.HEAT FLUX (Watts/M2)
6.59E 01

SEN.HEAT FLUX (Watts/M2)
5.33E 00

SKY AND SOLAR HEAT FLUX (Watts/M2)
2.62E 02

TOTAL HEAT BUDGET FLUX (Watts/M2)
-1.91E 03

BOWEN RATIO (no units)
0.081

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.277E-01

SCALING SPEC.HUMID. (Kg/Kg)
6.599E-05

SCALING POT. TEMP. (Kelvin)
1.308E 02

ROUGHNESS LENGTH (Meters)
1.108E-04

DRAG COEF. AT 10 METERS (Dimensionless)
1.404E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)/Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 5.85E-02

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-04

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -1.78E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI1
WS SLOPE= 1.22E 00

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH S'OPE= -8.24E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTK SLOPE= -4.13E 01

N=LnTEMP STRUC (xM 2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/Sec 2)	0.74	0.74	0.92E 03	1.32E 03
0.4	9.7759				

MISCELLANEOUS

AIR DENSITY (Kg/M3)
1.230A

AIR SPECIFIC HEAT (Cal/gm Kg Kel)
2.414E 32

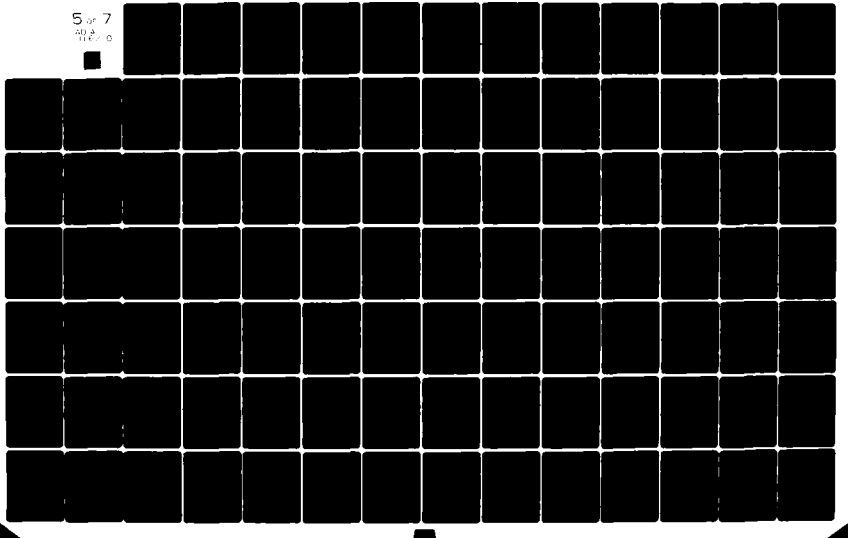
WATER LAT HEAT (VAP (Cal/gm Kg)
5.936E 01

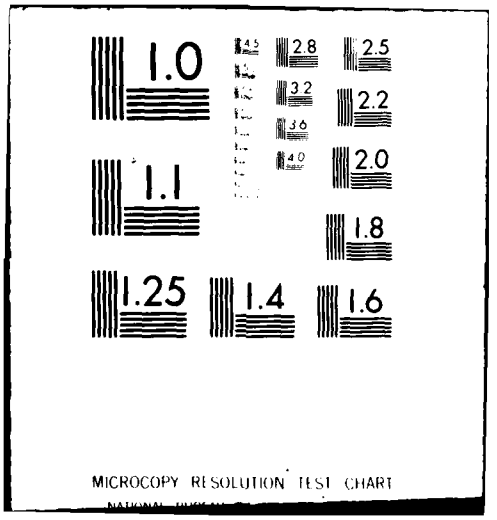
* GENERAL NOTES:
Accuracy limitation exceeded for measurement or Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .08E -3 Kg/Kg.

* CONTINUED ON NEXT PAGE

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

RUN NUMBER: 7905080730 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 7:38:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.799	9.16	7.98	NO DATA	1010.83	13.577	-1.777	-1.679	-0.634	-0.536

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.897	12.942	13.040	8.121E-03	77.39	6.597E-03	10.679	13.800	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.073 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.036

Z/L AT 10 METERS
-0.067

MONIN-OBUKHOV LENGTH (Meters)
-1.502E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.28E-01

HUMIDITY FLUX (Kg/sec m2)
4.37E-05

LAT.HEAT FLUX (Watts/m2)
1.08E 02

SEN.HEAT FLUX (Watts/m2)
2.01E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.62E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.34E 02

BOWEN RATIO (no units)
0.186

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.220E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.102E-04

SCALING POT.TEMP. (Kelvin)
-5.018E-02

ROUGHNESS LENGTH (Meters)
1.039E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.235E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.037E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.369E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.616E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2309

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4143E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9064E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.524

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.173E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.03

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
156%	150%	117%	167%	117%	5%	33%	283%	58%	108%	59%	78%	117%
160%	160%	46%	39%	88%	5%	12%	127%	23%	62%	111%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080730 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 7:38:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.044 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L A[illegible]
-0.054 [0.02]

Z/L AT 10 METERS
-0.041 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-2.424E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.29E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.04E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.99E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.38E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.62E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.49E 02 [3.0E+01]

BOWEN RATIO (no units)
0.154 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.236E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-9.396E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.590E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.064E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.278E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
62%	59%	2%	25%	54%	0%	21%	36%	1%	25%	75%	3%	7%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080800
START TIME: 8: 8:50 PST
END TIME: 8:39: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	4.724	4.805	5.088	4.979	4.672	4.213	4.876

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.978	3.785	2.541	0.001	0.001	0.001	0.001	6.205

DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 119882	1421 121038	0.183	91	-0.008	-0.050	0.000	0.992	0.952

SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.4	59.79

OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.988	9.79	7.90	NO DATA	310.8	1009.89	-5.87E 02	13.621	285.206

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.104	9.30	8.01	NO DATA	0.26	1010.99

CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.168	13.126	13.306	8.067E-03	76.04	6.564E-03	10.616	13.960	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (kel.xM-2/3)
9.20	12.194	13.251	13.341	8.131E-03	76.02	6.612E-03	10.704	14.082	NO DATA

CONTINUED BELOW

RUN NUMBER: 7905080800
START TIME: 8: 8:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.032 AT GMH	MOMENTUM FLUX (Nt/m2) -1.29E-01	FRICTION VELOCITY (Meters/sec) 3.233E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.68E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.752E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 5.52E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.24E 00
Z/L AT GMH -0.040	LAT.HEAT FLUX (Watts/m2) 6.64E 01	SCALING POT. TEMP. (Kelvin) -2.188E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.01E 03
Z/L AT 10 METERS -0.031	SEN.HEAT FLUX (Watts/m2) 8.79E 00	ROUGHNESS LENGTH (Meters) 1.056E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.89E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.47E 01
Z/L AT Z1 -0.037	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.87E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.316E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.029				
MONIN-OBUKHOV LENGTH (Meters) -3.219E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.12E 02			
PSI1 AT Z1= 0.172918 PSI1 AT Z2= 0.095258 PSI2 AT Z1= 0.108868 PSI2 AT Z2= 0.058855	BOWEN RATIO (no units) 0.132			

GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2294

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.950E 05

GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0AE-3 Kg/Kg.

CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080800 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8: 8:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 19 9 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.090	9.36	8.00	NO DATA	1010.89	13.621	-1.531	-1.433	-0.386	-0.288

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.188	13.236	13.334	8.124E-03	76.02	6.606E-03	10.694	14.068	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.059 AT GMH	MOMENTUM FLUX (Nt/m2) -1.34E-01	FRICTION VELOCITY (Meters/sec) 3.306E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.093E-01	AIR DENSITY (Kg/m3) 1.2297
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.50E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.107E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.498E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4143E 02
Z/L AT GMH -0.071	LAT.HEAT FLUX (Watts/m2) 1.11E 02	SCALING POT.TEMP. (Kelvin) -4.338E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.434E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9048E 05
Z/L AT 10 METERS -0.055	SEN.HEAT FLUX (Watts/m2) 1.78E 01	ROUGHNESS LENGTH (Meters) 1.143E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.570
MONIN-OBUKHOV LENGTH (Meters) -1.834E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.87E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.248E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.58E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.09
	BOWEN RATIO (no units) 0.160			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
139%	139%	125%	171%	101%	5%	18%	272%	62%	108%	39%	82%	125%
165%	165%	46%	39%	93%	5%	8%	132%	23%	62%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080800 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8: 8:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.044 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.33E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.286E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.16E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.496E-05 [3.0E-05]
Z/L AT GMH -0.054 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.03E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.732E-02 [2.0E-02]
Z/L AT 10 METERS -0.042 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.35E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.113E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.393E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.87E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.264E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.75E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.151 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASURMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
30%	28%	2%	26%	33%	0%	6%	10%	1%	24%	44%	4%	3%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080830
START TIME: 8:39:10 PST
END TIME: 9: 9:10 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.639	4.730	5.933	5.772	4.668	5.077	4.815

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.027	3.815	2.545	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123114	1421 124396		0.157	99	-0.008	-0.050	0.000	0.993	0.959

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.5	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.311	11.42	7.39	NO DATA	308.7	1009.83	-7.08E 02	13.669	285.535

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.440	10.83	7.56	NO DATA	0.18	1010.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.491	13.412	13.592	7.782E-03	71.90	6.339E-03	10.253	14.259	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.530	13.553	13.643	7.879E-03	72.14	6.414E-03	10.384	14.396	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080830
START TIME: 8:39:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.033 AT GMH	MOMENTUM FLUX (Nt/m2) -1.86E-01	FRICTION VELOCITY (Meters/sec) 3.887E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.23E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.765E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.62E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 1.03E 00
Z/L AT GMH -0.042	LAT.HEAT FLUX (Watts/m2) 7.91E 01	SCALING POT. TEMP. (Kelvin) -3.255E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -7.99E 03
Z/L AT 10 METERS -0.032	SEN.HEAT FLUX (Watts/m2) 1.57E 01	ROUGHNESS LENGTH (Meters) 2.027E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.29E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.66E 01
Z/L AT Z1 -0.037	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.08E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.359E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.029	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.12E 02			
MONIN-OBUKHOV LENGTH (Meters) -3.125E 02	BOWEN RATIO (no units) 0.197			
PSI1 AT Z1= 0.177204 PSI1 AT Z2= 0.097818 PSI2 AT Z1= 0.111670 PSI2 AT Z2= 0.060478				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2281	2.4138E 02	5.9031E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080830 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8:39:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.424	10.90	7.54	NO DATA	1010.83	13.669	-1.245	-1.147	-0.133	-0.035

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.522	13.536	13.634	7.867E-03	72.11	6.405E-03	10.369	14.380	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.030 AT GMH	MOMENTUM FLUX (Nt/m2) -1.97E-01	FRICTION VELOCITY (Meters/sec) 4.005E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.604E-01	AIR DENSITY (Kg/m3) 1.2283
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.66E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.150E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.657E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4138E 02
Z/L AT GMH -0.037	LAT.HEAT FLUX (Watts/m2) 1.40E 02	SCALING POT.TEMP. (Kelvin) -3.371E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.350E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9029E 05
Z/L AT 10 METERS -0.029	SEN.HEAT FLUX (Watts/m2) 1.68E 01	ROUGHNESS LENGTH (Meters) 2.249E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.618
MONIN-OBUKHOV LENGTH (Meters) -3.467E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.08E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.350E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.180E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.51E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.03
	BOWEN RATIO (no units) 0.120			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
126%	126%	120%	168%	88%	5%	17%	256%	60%	108%	28%	80%	120%
174%	174%	46%	38%	102%	5%	8%	140%	23%	61%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080830 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8:39:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.032 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.94E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.972E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.21E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.784E-05 [3.0E-05]
Z/L AT GMH 0.040 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.29E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.276E-02 [2.0E-02]
Z/L AT 10 METERS -0.031 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.62E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.171E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.260E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.08E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.352E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.70E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.147 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
5%	5%	3%	28%	3%	0%	6%	27%	2%	25%	2%	5%	0%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080900
START TIME: 9: 9:20 PST
END TIME: 9:39:30 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.645	4.737	6.269	6.051	4.675	5.687	4.896

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.055	3.778	2.548	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2							
AIR TEMP.1	AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 124451	1421 125860	0.183	104	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.5	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.445	12.06	7.43	NO DATA	311.5	1009.94	-7.93E 02	13.696	285.676

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.586	11.26	7.60	NO DATA	0.08	1011.04

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.625	13.549	13.728	7.798E-03	71.44	6.354E-03	10.278	14.387	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.676	13.703	13.793	7.897E-03	71.64	6.431E-03	10.414	14.536	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080900
START TIME: 9: 9:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.025 AT GMH	-3.15E-01	5.067E-01	[(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	[(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec)
12.99	4.14E-05	-6.657E-05	DWS/DZ= 8.84E-02	Z=HEIGHT (M) Vert.Axis
				PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX			WS SLOPE= 7.89E-01
-0.031	(Watts/m2)	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
	1.02E 02	(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-4.257E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.024	SEN.HEAT FLUX			SH SLOPE= -8.12E 03
	(Watts/m2)			
Z/L AT Z1	2.68E 01	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.044		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	SKY AND SOLAR HEAT FLUX	5.034E-04	DPT/DZ= -5.70E-03	PSI=PSI2
Z/L AT Z2	(Watts/m2)			PTK SLOPE= -1.27E 01
-0.022	-7.93E 02	DRAG COFF. AT 10 METERS		
		(Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	2.055E-03		Z=HEIGHT (M) Vert.Axis
(Meters)	(Watts/m2)			PSI=NONE
-4.137E 02	-6.64E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.140021	BOWEN RATIO			
PSI1 AT Z2= 0.075910	(no units)			
PSI2 AT Z1= 0.087498	0.262			
PSI2 AT Z2= 0.046651				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2276	2.4130E 02	5.9024E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080900 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9: 9:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.569	11.36	7.58	NO DATA	1010.94	13.696	-1.127	-1.029	-0.012	0.086

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.667	13.685	13.783	7.885E-03	71.62	6.422E-03	10.398	14.519	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.024 AT GMH	MOMENTUM FLUX (Nt/m2) -2.19E-01	FRICTION VELOCITY (Meters/sec) 4.219E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.780E-01	AIR DENSITY (Kg/m3) 1.2278
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.90E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.139E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.899E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4139E 02
Z/L AT GMH -0.030	LAT.HEAT FLUX (Watts/m2) 1.46E 02	SCALING POT.TEMP. (Kelvin) -3.023E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.275E-02	WATER LAT.HEAT VAP. (Ilcal./Kg) 5.9021E 05
Z/L AT 10 METERS -0.023	SEN.HEAT FLUX (Watts/m2) 1.58E 01	ROUGHNESS LENGTH (Meters) 2.694E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.647
MONIN-OBUKHOV LENGTH (Meters) -4.293E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.93E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.380E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.182E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.32E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.14
	BOWEN RATIO (no units) 0.109			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
98%	98%	94%	152%	68%	5%	18%	221%	47%	106%	21%	67%	94%
179%	179%	46%	38%	107%	5%	7%	145%	23%	61%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080900 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9: 9:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.025 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.50E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.498E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.55E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.653E-05 [3.0E-05]
Z/L AT GMH -0.031 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.37E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -4.083E-02 [2.0E-02]
Z/L AT 10 METERS -0.024 [0.02]	SEN.HEAT FLUX (Watts/m2) 2.25E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.610E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.191E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.93E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.582E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.41E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.169 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
2%	2%	20%	18%	25%	0%	3%	46%	10%	25%	19%	33%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905080930
START TIME: 9:39:40 PST
END TIME: 10: 9:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	4.630	4.723	6.363	6.114	4.668	6.268	4.938

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.981	3.769	2.548	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WSIEC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125765	1421 127315	0.183	112	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BAS	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.) .005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEM
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.577	12.24	7.34	NO DATA	312.9	1009.83	-8.74E 02	13.721	285.814

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.731	11.38	7.52	NO DATA	-0.04	1010.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.756	13.674	13.854	7.747E-03	70.40	6.316E-03	10.216	14.510	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.822	13.843	13.933	7.847E-03	70.56	6.395E-03	10.354	14.674	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905080930
START TIME: 9:39:40 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.027 AT GMH	MOMENTUM FLUX (Nt/m2) -3.73E-01	FRICTION VELOCITY (Meters/sec) 5.517E-01	GENERAL FORM:DN/DZ= f(N1-N2))/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= f(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.53E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.687E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.56E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.25E-01
Z/L AT GMH -0.034	LAT.HEAT FLUX (Watts/m2) 1.12E 02	SCALING POT. TEMP. (Kelvin) -5.456E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.0HE 03
Z/L AT 10 METERS -0.026	SEN.HEAT FLUX (Watts/m2) 3.73E 01	ROUGHNESS LENGTH (Meters) 6.675E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -7.28E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -9.91E 00
Z/L AT Z1 -0.048	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.74E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.360E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.024	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.25E 02			
MONIN-OBUKHOV LENGTH (Meters) -3.809E 02	BOWEN RATIO (no units) 0.334			
PSI1 AT Z1= 0.150229 PSI1 AT Z2= 0.081858 PSI2 AT Z1= 0.094103 PSI2 AT Z2= 0.050390				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2269

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4137E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9016E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0HF-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905080930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:39:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.713	11.48	7.50	NO DATA	1010.83	13.721	-1.009	-0.911	0.101	0.199

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.811	13.823	13.921	7.835E-03	70.54	6.385E-03	10.337	14.655	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.021 AT GMH	MOMENTUM FLUX (Nt/m2) -2.25E-01	FRICTION VELOCITY (Meters/sec) 4.277E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.830E-01	AIR DENSITY (Kg/m3) 1.2271
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.06E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.155E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.064E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4138E 02
Z/L AT GMH -0.026	LAT.HEAT FLUX (Watts/m2) 1.50E 02	SCALING POT.TEMP. (Kelvin) -2.716E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.162E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9012E 05
Z/L AT 10 METERS -0.020	SEN.HEAT FLUX (Watts/m2) 1.44E 01	ROUGHNESS LENGTH (Meters) 2.825E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.671
MONIN-OBUKHOV LENGTH (Meters) -4.914E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.74E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.388E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.184E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.10E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.03
	BOWEN RATIO (no units) 0.096			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
89%	89%	88%	149%	61%	5%	17%	210%	44%	105%	17%	64%	88%
185%	185%	46%	38%	113%	5%	7%	151%	23%	61%	136%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905080930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9:39:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.025 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.76E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.704E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.75E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.768E-05 [3.0E-05]
Z/L AT GMH -0.032 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.42E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -5.144E-02 [2.0E-02]
Z/L AT 10 METERS -0.024 [0.02]	SEN.HEAT FLUX (Watts/m2) 2.93E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 4.376E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.110E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.74E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.693E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.14E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.195 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
13%	13%	28%	16%	41%	0%	1%	62%	14%	26%	34%	45%	51%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081230
START TIME: 12:30: 0 PST
END TIME: 12:59:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.520	4.626	8.306	7.698	4.632	7.109	4.970

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.262	3.837	2.544	0.001	0.001	0.991	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1LC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126479	1421 127145	0.183	147	-0.998	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).062V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.648	15.95	6.69	NO DATA	314.0	1009.27	-9.91E 02	13.698	285.841

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.715	14.27	6.94	NO DATA	-0.54	1010.37

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.828	13.697	13.877	7.400E-03	66.99	6.037E-03	9.761	14.570	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.805	13.783	13.873	7.538E-03	67.88	6.145E-03	9.945	14.650	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081230
START TIME: 12:30: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.002 AT GMH	MOMENTUM FLUX (Nt/m2) -1.13E 00	FRICTION VELOCITY (Meters/sec) 9.613E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.71E-05	SCALING SPEC.HUMD. (Kg/Kg) -8.241E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.88E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.16E-01
Z/L AT GMH 0.003	LAT.HEAT FLUX (Watts/m2) 2.40E 02	SCALING POT. TEMP. (Kelvin) 1.765E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -1.20E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.56E 03
Z/L AT 10 METERS 0.003	SEN.HEAT FLUX (Watts/m2) -2.10E 01	ROUGHNESS LENGTH (Meters) 2.964E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.57E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.06E 01
Z/L AT Z1 0.005	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.91E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.067E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.002	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.72E 02			
MONIN-OBUKHOV LENGTH (Meters) 3.835E 03	BOWEN RATIO (no units) -0.088			
PSI1 AT Z1= -0.022489 PSI1 AT Z2= -0.011275 PSI2 AT Z1= -0.030390 PSI2 AT Z2= -0.015237				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2263

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.413E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.901AE 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081230
START TIME: 12:30: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.707	14.47	6.91	NO DATA	1010.27	13.898	-1.191	-1.093	-0.125	-0.027

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMT . (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.805	13.772	13.670	7.521E-03	67.78	6.132E-03	9.923	14.641	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.012 AT GMH	MOMENTUM FLUX (Nt/m2) -4.07E-01	FRICTION VELOCITY (Meters/sec) 5.761E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.318E-01	AIR DENSITY (Kg/m3) 1.2266
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.48E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.200E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 8.476E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.413?E 02
Z/L AT GMH -0.015	LAT.HEAT FLUX (Watts/m2) 2.09E 02	SCALING POT.TEMP. (Kelvin) -2.873F-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.655E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9013E 05
Z/L AT 10 METERS -0.012	SEN.HEAT FLUX (Watts/m2) 2.05F 01	ROUGHNESS LENGTH (Meters) 7.685E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.843
MONIN-OBUKHOV LENGTH (Meters) -8.426E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.91E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.585E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.196E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.61E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.47
	BOWEN RATIO (no units) 0.098			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
85%	87%	59%	108%	69%	5%	21%	177%	30%	79%	39%	50%	59%
176%	176%	46%	37%	104%	5%	8%	141%	23%	60%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081230
START TIME: 12:30: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.002 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -7.25E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 7.448F-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.79E-05 [9.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.037E-04 [3.0E-05]
Z/L AT GMH -0.003 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.17E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 6.709E-03 [2.0E-02]
Z/L AT 10 METERS -0.002 [0.02]	SEN.HEAT FLUX (Watts/m2) -4.48F 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.789E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.575E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.91E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.588E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.64E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.016 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT. TEMP.	ROUGH LENGTH	DRAG COEF.
38%	38%	50%	8%	473%	0%	1%	117%	26%	18%	131%	62%	4?%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081300
START TIME: 13: 0: 0 PST
END TIME: 14:30:10 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS).

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES 2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	4.489	4.605	8.789	8.054	4.670	6.843	4.924

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF B
4.260	4.796	2.545	0.001	0.091	0.901	0.901	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1CAL	DP2CAL	WIN1CAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126694	1421 127571	0.183	148	0.008	-0.050	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF DEV	ZERO REF DEV	AC VOLT FLUX	AC FREQ FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	9	0	0	2	115.5	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.290	15.87	6.50	NO DATA	312.4	1009.10	9.54E 02	14.896	285.693

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.757	14.94	6.82	NO DATA	-0.55	1010.20

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.869	13.725	13.905	7.303E-03	65.95	5.959E-03	9.634	14.607	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
7.29	12.847	13.816	13.906	7.471E-03	67.11	6.092E-03	9.858	14.688	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.002 AT GMH	MOMENTUM FLUX (Nt/m2) -1.51E 00	FRICTION VELOCITY (Meters/sec) 1.110E 00	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.39E-04	SCALING SPEC.HUMD. (Kg/Kg) -1.020E-04	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.16E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.60E-01
Z/L AT GMH 0.002	LAT.HEAT FLUX (Watts/m2) 3.43E 02	SCALING POT. TEMP. (Kelvin) 1.704E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -1.48E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PS1=PSI2 SH SLOPE= -5.30E 03
Z/L AT 10 METERS 0.002	SEN.HEAT FLUX (Watts/m2) -2.34E 01	ROUGHNESS LENGTH (Meters) 3.552E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.47E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.17E 01
Z/L AT Z1 0.001	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.54E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.815E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.002				
MONIN OBUKHOV LENGTH (Meters) 5.792E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.35E 02			
PSI1 AT Z1= -0.016283 PSI1 AT Z2= 0.008164 PSI2 AT Z1= -0.022064 PSI2 AT Z2= 0.011032	BOWEN RATIO (no units) -0.068			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2260

AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.413DE 02

WATER LAT.HEAT VAP. (1Cal./Kg) 5.9012E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.749	15.17	6.78	NO DATA	1010.10	13.896	-1.147	-1.049	-0.091	0.007

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.847	13.805	13.903	7.450E-03	66.97	6.076E-03	9.831	14.679	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.010 AT GMH	-4.60E-01	6.127E-01	-3.754E-01	1.2263
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	9.02E 05	-1.201E-04	9.022E-05	2.4131E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./Sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.013	2.23E 02	-2.716E-02	1.664E-02	5.9010E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.010	2.06E 01	9.356E-04		15.839
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.008E 03	-9.54E 02	1.631E-03		1.196E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-7.11E 02			1011.30
	BOWEN RATIO (no units)			
	0.092			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
82%	84%	54%	92%	68%	5%	24%	159%	27%	65%	40%	47%	54%
178%	178%	46%	37%	196%	5%	8%	143%	23%	60%	129%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 0: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.002 (0.02) AT GMH	-9.41E-01 (6.0E-02)	8.405E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.04E-04 (8.0E-06)	-1.114E 04 (3.0E-05)
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.002 (0.02)	2.57E 02 (2.0E+01)	6.477E-03 (2.0E-02)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.002 (0.02)	-6.24E 00 (3.0E+00)	2.183E-03 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-5.293E 03	9.54E 02 (2.0E+01)	2.98UE-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	6.9.E 02 (3.0E+01)	
	BOWEN RATIO (no units)	
	0.017 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
31%	31%	56%	25%	361%	0%	6%	101%	30%	8%	125%	60%	54%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081330
START TIME: 13:30:20 PST
END TIME: 14: 0:30 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.486	4.597	9.139	8.510	4.610	6.443	4.965

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.246	3.831	2.546	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1CAL (Volts)	DP2CAL (Volts)	WIDCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
AIR TEMP.1	AIR TEMP.2							
1411 127216	1421 127602	0.183	146	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No scans)	ERROR COUNT (No scans)	DATA BASE (No.=scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.5	59.83

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.true)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.722	17.54	6.48	NO DATA	313.6	1008.93	-8.98E 02	13.682	285.901

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.766	15.77	6.71	NO DATA	-0.52	1010.63

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.901	13.756	13.936	7.292E-03	65.74	5.953E-03	9.621	14.636	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.850	13.811	13.901	7.414E-03	66.60	6.046E-03	9.783	14.689	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081330
START TIME: 13:30:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
0.005 AT GMH	-1.21E 00	9.933E-01	I(N1-N2))1/(Ln(Z1/Z2)* (Z1*Z2)1/2)	((LnZ1-PSI)-(LnZ2-PSI)1/ IN1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
12.99	8.56E-05	-7.034E-05	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 1.97E-01	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 4.03E-01
0.007	2.12E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		3.824E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
0.005	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -1.05E-05	PSI=PSI2
	-4.70E 01			SH SLOPE= -7.68E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
0.010	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.124E-03	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	-8.98E 02		DPT/DZ= 5.69E-03	PSI=PSI2
Z/L AT Z2				PTK SLOPE= 1.41E 01
0.005		DRAG COEF. AT 10 METERS (Dimensionless)		
		3.553E-03		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)			Z=HEIGHT (M) Vert.Axis
1.891E 03	-7.34E 02			PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1= -0.045600	BOWEN RATIO (no units)			
PSI1 AT Z2= -0.022862	-0.222			
PSI2 AT Z1= -0.061622				
PSI2 AT Z2= -0.030895				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2257
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.413E 02
WATER LAT HEAT VAP (ITcal./Kg)	5.9011E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79050B1330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.756	15.99	6.68	NO DATA	1009.94	13.882	-1.127	-1.029	-0.078	0.020

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.854	13.805	13.903	7.400E-03	66.50	6.035E-03	9.764	14.683	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -5.28E-01	FRICTION VELOCITY (Meters/sec) 6.563E-01	WITH LONG VELOCITY (Meter2/sec2) -4.307E-01	AIR DENSITY (Kg/m3) 1.2261
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.59E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.192E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 9.590E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4130E 02
Z/L AT GMH -0.011	LAT.HEAT FLUX (Watts/m2) 2.37E 02	SCALING POT.TEMP. (Kelvin) -2.610E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.713E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9010E 05
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 2.12E 01	ROUGHNESS LENGTH (Meters) 1.157E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.822
MONIN-OBUKHOV LENGTH (Meters) -1.204E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.98E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.685E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.194E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.40E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.14
	BOWEN RATIO (no units) 0.090			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	72%	60%	119%	49%	5%	22%	168%	30%	89%	19%	50%	60%
179%	179%	46%	37%	107%	5%	9%	143%	23%	60%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 79050R1330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13:30:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.001 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.23E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.024E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.35E-05 [3.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.959E-05 [3.0E-05]
Z/L AT GMH 0.002 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.31E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.986E-03 [2.0E-02]
Z/L AT 10 METERS 0.001 [0.02]	SEN.HEAT FLUX (Watts/m2) -2.54E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.066E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 7.187E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.98E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.431E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.67E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.054 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
36%	37%	42%	6%	143%	0%	8%	196%	21%	25%	134%	48%	39%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79050R1400
START TIME: 14: 0:40 PST
END TIME: 14:30:50 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.430	4.536	9.095	8.314	4.614	5.937	5.074

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.232	3.934	2.547	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128382	1421 128648	0.183	141	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.93

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.939	17.46	6.15	NO DATA		317.5	1009.00	-8.20E 02	13.873	286.012

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.865	15.41	6.40	NO DATA	-0.46	1010.10

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.019	13.850	14.030	7.123E-03	63.74	5.816E-03	9.401	14.750	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.955	13.694	13.985	7.259E-03	64.78	5.921E-03	9.582	14.791	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79050R1400
START TIME: 14: 0:40 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.005 AT GMH	MOMENTUM FLUX (N:/m2) -1.62E 00	FRICTION VELOCITY (Meters/sec) 1.151E 00	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)* (Z1*Z2)1 [illegible]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.12E-04	SCALING SPEC.HUMD. (Kg/Kg) -7.930E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.28E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.48E-01
Z/L AT GMH 0.006	LAT.HEAT FLUX (Watts/m2) 2.76E 02	SCALING POT. TEMP. (Kelvin) 4.782E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -1.18E-05	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.81E 03
Z/L AT Z1 1.007	SEN.HEAT FLUX (Watts/m2) 6.81E 01	ROUGHNESS LENGTH (Meters) 3.637E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 7.09E-03	N=POT.TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.13E 01
Z/L AT Z2 0.005	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.28E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.814E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN OBUKHOV LENGTH (Meters) -2.92E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.20E 02			
PSI1 AT Z1 0.042500 PSI1 AT Z2= 0.021498 PSI2 AT Z1= -0.057433 PSI2 AT Z2= 0.028795	BOWEN RATIO (no units) -0.247			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.795V	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2254

AIR SPECIFIC HEAT (Ltcal./Kg Kel.) 2.4127E 02

WATER LAT.HEAT VAP. (Ltcal./Kg) 5.9005E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.862	15.66	6.37	NO DATA	1010.01	13.873	-1.012	-0.914	0.016	0.114

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.960	13.889	13.987	7.243E-03	64.66	5.908E-03	9.560	14.786	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -5.00E-01	FRICTION VELOCITY (Meters/sec) 6.388E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.080E-01	AIR DENSITY (Kg/m3) 1.2258
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.71E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.240E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 9.707E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.412BE 02
Z/L AT GMH -0.010	LAT.HEAT FLUX (Watts/m2) 2.40E 02	SCALING POT.TEMP. (Kelvin) -2.374E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.516E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9004E 05
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 1.88E 01	ROUGHNESS LENGTH (Meters) 1.065E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.814
MONIN-OBUKHOV LENGTH (Meters) -1.255E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.28E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.664E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.194E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.69E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.21
	BOWEN RATIO (no units) 0.078			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
58%	60%	51%	105%	41%	5%	25%	146%	26%	79%	16%	46%	51%
185%	185%	46%	37%	113%	5%	9%	149%	23%	60%	136%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 0:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.002 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.03E 00 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.810E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.01E-04 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -1.048E-04 [3.0E-05]
Z/L AT GMH 0.002 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.49E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 4.041E-02 [2.0E-02]
Z/L AT 10 METERS 0.002 [0.02]	SEN.HEAT FLUX (Watts/m2) -4.48E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.313E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 5.691E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.28E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.046E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.83E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.086 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	36%	54%	8%	107%	0%	5%	109%	29%	22%	113%	56%	52%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081430
START TIME: 14:31: 0 PST
END TIME: 15: 1:10 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.488	4.590	8.890	8.095	4.612	5.347	5.078

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.231	3.846	2.552	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIDFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 128462	1421 128619	0.183	135	-0.008	-0.050	0.000	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.846	17.07	6.50	NO DATA	317.7	1008.98	-7.46E 02	13.867	286.014

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.862	15.01	6.66	NO DATA	-0.36	1010.07

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.026	13.892	14.062	7.297E-03	65.27	5.959E-03	9.631	14.756	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.952	13.910	14.080	7.390E-03	65.96	6.029E-03	9.755	14.788	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081430
START TIME: 14:31: 0 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.005 AT GMH	MOMENTUM FLUX (Nt/m2) -1.62E 00	FRICTION VELOCITY (Meters/sec) 1.151E 00	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.43E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.977E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.29E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.48E-01
Z/L AT GMH 0.007	LAT.HEAT FLUX (Watts/m2) 2.09E 02	SCALING POT. TEMP. (Kelvin) 5.527E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.04E 03
Z/L AT 10 METERS 0.006	SEN.HEAT FLUX (Watts/m2) -7.87E 01	ROUGHNESS LENGTH (Meters) 3.637E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.25E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 9.78E 00
Z/L AT Z1 0.010	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.46E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.051E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.005	TOTAL HEAT BUDGET FLUX (Watts/m2) -6.16E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.757E 03	BOWEN RATIO (no units) -0.378			
PSI1 AT Z1= -0.049098 PSI1 AT Z2= -0.024616 PSI2 AT Z1= -0.066349 PSI2 AT Z2= -0.033265				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2253

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.900AE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.860	15.26	6.64	NO DATA	1009.98	13.867	-1.007	-0.989	0.040	0.138

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.958	13.907	14.005	7.379E-03	65.88	6.020E-03	9.740	14.784	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.009 AT GMH	-4.67E-01	6.175E-01	-3.813E-01	1.2257
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99 *	9.17E-05	-1.212E-04	9.175E-05	2.4130E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.011	2.27E 02	-2.391E-02	1.477E-02	5.9004E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.009	1.83E 01	9.587E-04		15.807
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.164E 03	-7.46E 02	1.637E-03		1.193E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-5.01E 02			1011.18
	BOWEN RATIO (no units)			
	0.081			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
54%	57%	50%	128%	39%	5%	26%	166%	25%	103%	14%	45%	50%
185%	185%	46%	37%	113%	5%	9%	150%	23%	60%	136%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:31: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.002 [0.02] AT GMH	-1.02E 00 [6.0E-02]	8.739E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	9.01E-05 [8.0E-06]	-9.865E-05 [5.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
0.003 [0.02]	2.23E 02 [2.0E+01]	4.798E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
0.002 [0.02]	-5.40E 01 [3.0E+00]	2.270E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
4.329E 03	-7.46E 02 [2.0E+01]	3.161E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-5.31E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	-0.137 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
39%	40%	56%	5%	100%	0%	12%	168%	31%	32%	106%	59%	54%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081500
START TIME: 15: 1:20 PST
END TIME: 15:31:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.205	0.061	0.061	4.577	4.670	8.786	8.055	4.606	4.686	5.053

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.239	3.776	2.548	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 1280??	1421 128078	0.183	126	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).062V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.805	16.87	7.03	NO DATA	316.8	1008.89	-6.53E 02	13.875	285.966

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.809	14.94	7.21	NO DATA	-0.24	1009.99

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.983	13.877	14.057	7.568E-03	67.88	6.180E-03	9.987	14.713	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.899	13.897	13.987	7.671E-03	68.70	6.258E-03	10.124	14.735	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081500
START TIME: 15: 1:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable, -Unstable) 0.007 AT GMH	MOMENTUM FLUX (N1/m2) -1.40E 00	FRICTION VELOCITY (Meters/sec) 1.070E 00	GENERAL FORM:DN/DZ= ((N1-N2))/(ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.73E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.899E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.15E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.74E-01
Z/L AT GMH 0.010	LAT.HEAT FLUX (Watts/m2) 1.91E 02	SCALING POT. TEMP. (Kelvin) 6.152E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.16E 03
Z/L AT 10 METERS 0.007	SEN.HEAT FLUX (Watts/m2) -8.15E 01	ROUGHNESS LENGTH (Meters) 3.435E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 9.30E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 8.79E 00
Z/L AT Z1 0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) 6.53E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.476E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.007	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.44E 02			
MONIN OBUKHOV LENGTH (Meters) 1.364E 03	BOWEN RATIO (no units) -0.427			
PSI1 AT Z1= -0.063211 PSI1 AT Z2= -0.031692 PSI2 AT Z1= -0.085421 PSI2 AT Z2= -0.042827				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2252

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4134E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9007E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081500
START TIME: 15: 1:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.808	15.17	7.18	NO DATA	1009.89	13.875	-1.067	-0.969	0.020	0.118

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.996	13.895	13.993	7.659E-03	68.60	6.249E-03	10.107	14.733	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -4.60E-01	FRICTION VELOCITY (Meters/sec) 6.128E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.756E-01	AIR DENSITY (Kg/m3) 1.2256
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.57E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.141E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 8.570E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4135E 02
Z/L AT GMH -0.012	LAT.HEAT FLUX (Watts/m2) 2.12E 02	SCALING POT.TEMP. (Kelvin) -2.533E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.552E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9007E 05
Z/L AT 10 METERS -0.009	SEN.HEAT FLUX (Watts/m2) 1.92E 01	ROUGHNESS LENGTH (Meters) 9.361E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.814
MONIN-OBUKHOV LENGTH (Meters) -1.082E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.53E 02	DRAG COFF.AT 10 METERS (Dimensionless) 1.631E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.194E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.23E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.09
	BOWEN RATIO (no units) 0.091			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
56%	60%	52%	129%	39%	5%	27%	168%	26%	103%	13%	46%	52%
182%	182%	46%	37%	110%	5%	10%	147%	23%	60%	133%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081500
START TIME: 15: 1:20 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.003 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -9.01E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.266E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.38E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.376E-05 [3.0E-05]
Z/L AT GMH 0.004 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.07E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 5.393E-02 [2.0E-02]
Z/L AT 10 METERS 0.003 [0.02]	SEN.HEAT FLUX (Watts/m2) -5.51E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.141E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 3.088E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.53E 02 [2.0E+01]	DRAG COFF.AT 10 METERS (Meters) 2.863E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.55E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.150 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
45%	46%	52%	6%	101%	0%	15%	172%	28%	30%	104%	58%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

** * * * MICROMETEOROLOGICAL DATA * * * **

RUN NUMBER: 7905081530
START TIME: 15:31:30 PST
END TIME: 16: 1:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR
6.205	0.001	0.001	4.520	4.606	9.647	9.012	4.597	4.074	5.138

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.220	3.796	2.548	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	W1BFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 128323	1421 127993	0.183	117	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.5	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.832	18.51	6.68	NO DATA	319.7	1008.75	-5.69E 02	13.856	285.976

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.799	16.69	6.82	NO DATA	-0.10	1009.85

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	13.012	13.882	14.062	7.390E-03	66.17	6.036E-03	9.753	14.740	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.889	13.859	13.949	7.470E-03	66.95	6.094E-03	9.858	14.724	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081530
START TIME: 15:31:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -1.17E 00	FRICTION VELOCITY (Meters/sec) 9.789E-01	GENERAL FORM:DN/DZ= I(N1-N2)1/ILn(Z1/Z2)* (Z1*Z2)1/2	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.80E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.672E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.03E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.09E-01
Z/L AT GMH 0.016	LAT.HEAT FLUX (Watts/m2) 1.68E 02	SCALING POT. TEMP. (Kelvin) 8.701E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.53E 03
Z/L AT 10 METERS 0.012	SEN.HEAT FLUX (Watts/m2) -1.05E 02	ROUGHNESS LENGTH (Meters) 3.054E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.37E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 6.21E 00
Z/L AT Z1 0.025	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.69E 02	DRAG COEF. AT 10 METERS (Dimensionless) 3.081E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.011	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.06E 02			
MONIN-OBUKHOV LENGTH (Meters) 8.078E 02	BOWEN RATIO (no units) -0.627			
PSI1 AT Z1= -0.106761 PSI1 AT Z2= -0.053526 PSI2 AT Z1= -0.144271 PSI2 AT Z2= -0.072332				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2251	2.4131E 02	5.9007E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .001 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081530
START TIME: 15:31:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.803	16.91	6.80	NO DATA	1009.75	13.856	-1.053	-0.955	0.005	0.103

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.901	13.862	13.960	7.460E-03	66.86	6.087E-03	9.845	14.726	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHF ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) -0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -6.12E-01	FRICTION VELOCITY (Meters/sec) 7.068E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.996E-01	AIR DENSITY (Kg/m3) 1.2256
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.95E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.150E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 9.963E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4131E 02
Z/L AT GMH -0.009	LAT.HEAT FLUX (Watts/m2) 2.46E 02	SCALING POT.TEMP. (Kelvin) -2.386E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.686E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9007E 05
Z/L AT 10 METERS -0.007	SEN.HEAT FLUX (Watts/m2) 2.09E 01	ROUGHNESS LENGTH (Meters) 1.439E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.793
MONIN-OBUKHOV LENGTH (Meters) -1.528E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.69E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.746E-03		ABS.HUMID.AT WT LEVEL (K /m3) 1.192E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.02E 02			BAR.PRES.AT WT LEVEL (Millibar) 1010.95
	BOWEN RATIO (no units) 0.085			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
61%	68%	61%	134%	41%	5%	28%	175%	31%	104%	10%	51%	61%
182%	182%	46%	37%	110%	5%	12%	147%	23%	60%	133%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081530
START TIME: 15:31:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) 0.007 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.53E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.233E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.28E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -9.365E-05 [3.0E-05]
Z/L AT GMH 0.009 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.29E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 7.915E-02 [2.0E-02]
Z/L AT 10 METERS 0.007 [0.02]	SEN.HEAT FLUX (Watts/m2) -7.13E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.180E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 1.377E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -5.69E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.272E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.63E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.240 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
50%	52%	33%	20%	98%	0%	30%	149%	17%	32%	92%	37%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081600
START TIME: 16: 1:50 PST
END TIME: 16:32: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	4.562	4.648	9.483	8.742	4.611	3.244	5.167

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.179	3.794	2.550	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 147987	1421 127613	0.199	76	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
12.799	18.20	6.93	NO DATA	320.7	1008.96	-4.52E 02	13.817	285.940

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.761	16.15	7.67	NO DATA	0.04	1010.06

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.979	13.866	14.046	7.521E-03	67.47	6.141E-03	9.925	14.710	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.851	13.839	13.929	7.603E-03	68.29	6.201E-03	10.033	14.690	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081600
START TIME: 16: 1:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -1.54E 00	FRICTION VELOCITY (Meters/sec) 1.120E 00	GENERAL FORM:DN/DZ= [(N1-N2)]/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.93E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.77BE-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.29E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.57E-01
Z/L AT GMH 0.013	LAT.HEAT FLUX (Watts/m2) 1.9/E 02	SCALING POT. TEMP. (Kelvin) 9.179E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.36E 03
Z/L AT 10 METERS 0.010	SEN.HEAT FLUX (Watts/m2) -1.27E 02	ROUGHNESS LENGTH (Meters) 3.576E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.42E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 5.89E 00
Z/L AT Z1 0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.52E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.179E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009				
MONIN-OBUKHOV LENGTH (Meters) 1.002E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.84E 02			
PSI1 AT Z1= -0.086102	BOWEN RATIO (no units) -0.650			
PSI1 AT Z2= -0.043168				
PSI2 AT Z1= -0.116314				
PSI2 AT Z2= -0.058335				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.05E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2355

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4133E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9009E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 1550 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.766	16.40	7.06	NO DATA	1009.96	13.817	-1.051	-0.953	0.026	0.124

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.864	13.843	13.941	7.593E-03	68.19	6.194E-03	10.020	14.693	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.007 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.009

Z/L AT 10 METERS
-0.007

MONIN-OBUKHOV LENGTH (Meters)
-1.392E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.64E-01

HUMIDITY FLUX (Kg/sec m2)
9.31E-05

LAT.HEAT FLUX (Watts/m2)
2.30E 02

SEN.HEAT FLUX (Watts/m2)
2.03E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.52E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.02E 02

BOWEN RATIO (no units)
0.088

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.784E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.120E-04

SCALING POT.TEMP. (Kelvin)
-2.413E-02

ROUGHNESS LENGTH (Meters)
1.277E-03

DRAG COEF.AT 10 METERS (Dimensionless)
1.712E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.602E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
9.311E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.637E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2259

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4134E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9009E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.755

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.190E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.16

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
53%	58%	53%	130%	36%	5%	33%	166%	27%	103%	9%	47%	53%
188%	184%	46%	37%	110%	5%	13%	148%	23%	60%	133%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 1550 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,- Unstable)
0.006 [6.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.008 [0.02]

Z/L AT 10 METERS
0.006 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.712E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.02E 00 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
9.00E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.22E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-9.11E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.52E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.53E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.260 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.834E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-9.196E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
8.418E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.381E-03 [6.0E-05]

DRAG COEF AT 10 METERS (Meters)
2.773 -03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPUTED VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
47%	48%	48%	9%	91%	0%	39%	142%	25%	30%	91%	48%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081630
START TIME: 16:32:10 PST
END TIME: 17: 2:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): x/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
6.205	0.081	0.061	4.612	4.695	9.265	8.481	4.599	2.418	5.136

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.149	3.808	2.551	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND MEAN	UPWIND LAND	OPTICAL	DRIFTING	WIRELESS	WSLIT	WSPEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 127235	1421 126901	0.183	96	0.808	-0.050	0.533	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.).5V)	(No.)Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.723	17.78	7.23	NO DATA	319.3	1008.78	-3.37E 02	13.187	285.86

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.690	15.68	7.36	NO DATA	0.19	1009.89

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID 1	VAP.PRES.1	% VAP.PRES 1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.903	13.813	13.993	7.679E-03	69.22	6.270E-03	10.131	14.635	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID 2	VAP.PRES.2	% VAP.PRES 2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.780	13.789	13.879	7.752E-03	69.96	6.323E-03	10.207	14.619	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081630
START TIME: 16:32:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): x/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1 UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.009 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.012

Z/L AT 10 METERS
0.009

Z/L AT Z1
0.017

Z/L AT Z2
0.008

MONIN-OBUKHOV LENGTH (Meters)
1.087E 03

PSI1 AT Z1= -0.079372
PSI1 AT Z2= -0.049794
PSI2 AT Z1= -0.107259
PSI2 AT Z2= -0.053776

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.62E 00

HUMIDITY FLUX (Kg/sec m2)
8.20E-05

LAT.HEAT FLUX (Watts/m2)
2.03E 02

SEN.HEAT FLUX (Watts/m2)
-1.27E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.37E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.62E 02

BOWEN RATIO (no units)
-0.629

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.151E 00

SCALING SPEC.HUMD. (Kg/Kg)
-5.813E-05

SCALING POT. TEMP. (Kelvin)
8.941E-02

ROUGHNESS LENGTH (Meters)
3.638E-03

DRAG COEF. AT 10 METERS (Dimensionless)
4.636E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= ((N1-N2)1/(ln(Z1/Z2)*(Z1*Z2)1/2))

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.34E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 1.37E-02

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(lnZ1-PSI)-(lnZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.47E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -9.30E-03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 6.05E 00

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT^2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3)
1.2255

AIR SPECIFIC HEAT (Ical./Kg Kel.)
2.41.3E 02

WATER LAT.HEAT VAP. (Ical./Kg)
5.5013E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .008E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081630
START TIME: 16:32:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.694	15.94	7.34	NO DATA	1009.78	13.787	-1.093	-0.995	0.005	0.103

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.792	13.792	13.890	7.744E-03	69.87	6.316E-03	10.216	14.622	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.008 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.011

Z/L AT 10 METERS
-0.008

MONIN-OBUKHOV LENGTH (Meters)
-1.228E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.24E-01

HUMIDITY FLUX (K,/sec m2)
8.69E-05

LAT.HEAT FLUX (Watts/m2)
2.15E 02

SEN.HEAT FLUX (Watts/m2)
2.06E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.37E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.02E 02

BOWEN RATIO (no units)
0.096

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.536E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.084E-04

SCALING POT.TEMP. (Kelvin)
-2.538E-02

ROUGHNESS LENGTH (Meters)
1.143E-03

DRAG COEF.AT 10 METERS (Dimensionless)
1.682E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.272E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
8.686E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.659E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2259

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4134E 02

WATER LAT.HEAT VAP. (ITcal /Kg)
5.9013E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.722

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.187E-02

BAR.PRES.AT WT LEVEL (Millibar)
1010.98

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
51%	55%	50%	128%	35%	5%	40%	163%	25%	103%	9%	45%	50%
180%	180%	46%	38%	108%	5%	15%	146%	23%	61%	131%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081630
START TIME: 16:32:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.005 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.007 [0.02]

Z/L AT 10 METERS
0.005 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.953E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.05E 00 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
8.5HE-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.12E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-9.15E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.37E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.40E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.247 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.908E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.975E-05 [3.0E-05]

SCALING POT TEMP. (Kelvin)
8.171E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.358E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.918E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
47%	49%	53%	3%	91%	0%	60%	147%	28%	29%	93%	53%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081700
START TIME: 17: 2:30 PST
END TIME: 17:32:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVE. GING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.061	4.623	4.709	9.464	8.590	4.594	1.667	5.233

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.111	5.977	2.554	0.001	0.001	0.001	0.001	6.285

* DIGITAL CHANNEL RAW DATA (AVERAGE). ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIDFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 126402	1421 126240	0.199	62	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	3	180	0	0	0	0	0	115.5	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.649	18.17	7.30	NO DATA	322.9	1008.69	-2.32E 02	13.751	285.792

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.624	15.87	7.44	NO DATA	0.33	1009.79

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.820	13.735	13.914	7.715E-03	69.91	6.298E-03	10.175	14.554	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.714	13.729	13.819	7.797E-03	70.65	6.358E-03	10.283	14.555	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081700
START TIME: 17: 2:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD RICHARDSON NUMBER (+=Stable, Unstable) 0.006 AT GMH	MOMENTUM FLUX (Nt/m2) -2.00E 00	FRICTION VELOCITY (Meters/sec) 1.277E 00	GENERAL FORM:DN/DZ= [(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 9.29E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.935E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.56E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.13E-01
Z/L AT GMH 0.009	LAT.HEAT FLUX (Watts/m2) 2.30E 02	SCALING POT. TEMP. (Kelvin) 7.853E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.11E 03
Z/L AT 10 METERS 0.007	SEN.HEAT FLUX (Watts/m2) -1.24E 02	ROUGHNESS LENGTH (Meters) 3.671E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.18E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 6.88E 00
Z/L AT Z1 0.013	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.32E 02	DRAG COEF. AT 10 METERS (Dimensionless) 5.459E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.27E 02			
MONIN OBUKHOV LENGTH (Meters) 1.522E 03	BOWEN RATIO (no units) -0.541			
PSI1 AT Z1= 0.056655				
PSI1 AT Z2= 0.028405				
PSI2 AT Z1= 0.076560				
PSI2 AT Z2= 0.033385				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2257

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4137E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9017E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2= +/- .00E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.626	16.15	7.42	NO DATA	1009.69	13.751	-1.125	-1.027	-0.021	0.077

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.724	13.730	13.828	7.787E-03	70.56	6.351E-03	10.271	14.555	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHF ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.008 AT GMH	MOMENTUM FLUX (Nt/m2) -5.42E-01	FRICTION VELOCITY (Meters/sec) 6.649E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.422E-01	AIR DENSITY (Kg/m3) 1.2261
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.65E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.061E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 8.648E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4137E 02
Z/L AT GMH -0.010	LAT.HEAT FLUX (Watts/m2) 2.14E 02	SCALING POT.TEMP. (Kelvin) -2.594E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.725E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9017E 05
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 2.14E 01	ROUGHNESS LENGTH (Meters) 1.203E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.683
MONIN-OBUKHOV LENGTH (Meters) -1.243E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.32E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.696E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.184E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.61E 00			BAR.PRES.AT WT LEVEL (Millibar) 1010.89
	BOWEN RATIO (no units) 0.100			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
49%	52%	47%	126%	34%	5%	50%	160%	23%	103%	10%	43%	47%
179%	179%	46%	38%	107%	5%	18%	145%	23%	61%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081700 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17: 2:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.003 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.26E 00 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 9.679E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.80E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.867E-05 [3.0E-05]
Z/L AT GMH 0.004 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.17E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 7.086E-02 [2.0E-02]
Z/L AT 10 METERS 0.003 [0.02]	SEN.HEAT FLUX (Watts/m2) -8.92E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.430E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 3.059E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.32E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.429E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.20E 01 [3.0E+01]	
	BOWEN RATIO (no units) -0.204 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
41%	42%	58%	4%	92%	0%	224%	157%	32%	27%	97%	51%	55%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081730
START TIME: 17:32:50 PST
END TIME: 18: 3: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.631	4.716	9.599	8.825	4.579	0.868	5.212

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.065	3.776	2.549	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1BFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124619	1421 124956	0.199	57	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.462	18.42	7.35	NO DATA	322.2	1008.47	-1.21E 02	13.706	285.639

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.496	16.30	7.48	NO DATA	0.45	1009.57

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.642	13.559	13.739	7.742E-03	70.96	6.318E-03	10.206	14.382	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.586	13.603	13.693	7.822E-03	71.46	6.377E-03	10.312	14.429	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081730
START TIME: 17:32:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.004 AT GMH	MOMENTUM FLUX (Nt/m2) -1.77E 00	FRICTION VELOCITY (Meters/sec) 1.200E 00	GENERAL FORM:DN/DZ= [(N1-N2))/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.91E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.058E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.37E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIM WS SLOPE= 3.33E-01
Z/L AT GMH 0.005	LAT.HEAT FLUX (Watts/m2) 2.20E 02	SCALING POT. TEMP. (Kelvin) 4.240E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIH SH SLOPE= -8.92E 03
Z/L AT 10 METERS 0.004	SEN.HEAT FLUX (Watts/m2) -6.30E 01	ROUGHNESS LENGTH (Meters) 3.691E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 6.24E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIH PTK SLOPE= 1.27E 01
Z/L AT Z1 0.007	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.21E 02	DRAG COEF. AT 10 METERS (Dimensionless) 4.678E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.004	TOTAL HEAT BUDGET FLUX (Watts/m2) 3.62E 01			
MONIN-OBUKHOV LENGTH (Meters) 2.487E 03	BOWEN RATIO (no units) -0.286			
PSI1 AT Z1= -0.034672 PSI1 AT Z2= -0.017383 PSI2 AT Z1= -0.046854 PSI2 AT Z2= -0.023491				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2260

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4137E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9026E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .88E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081730
START TIME: 17:32:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.492	16.56	7.47	NO DATA	1009.48	13.706	-1.214	-1.116	-0.108	-0.010

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.590	13.598	13.696	7.812E-03	71.40	6.370E-03	10.299	14.424	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.008 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.010

Z/L AT 10 METERS
-0.008

MONIN-OBUKHOV LENGTH (Meters)
-1.245E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.79E-01

HUMIDITY FLUX (Kg/sec m2)
8.74E-05

LAT.HEAT FLUX (Watts/m2)
2.16E 02

SEN.HEAT FLUX (Watts/m2)
2.36E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.21E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.18E 02

BOWEN RATIO (no units)
0.109

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.872E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.037E-04

SCALING POT.TEMP. (Kelvin)
-2.765E-02

ROUGHNESS LENGTH (Meters)
1.327E-03

DRAG COEF.AT 10 METERS (Dimensionless)
1.723E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-4.722E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
8.735E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.900E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2264

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4138E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9025E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.634

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.181E-02

BAR.PRES.AT WT LEVEL (Millibar)
1010.68

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
60%	62%	52%	129%	44%	6%	71%	173%	26%	103%	17%	46%	52%
175%	175%	46%	38%	103%	6%	24%	141%	23%	61%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081730
START TIME: 17:32:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL.

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.001 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.001 (0.02)

Z/L AT 10 METERS
0.001 (0.02)

MONIN-OBUKHOV LENGTH (Meters)
1.176E 04

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.13E 00 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
8.70E-05 (8.0E-06)

LAT.HEAT FLUX (Watts/m2)
2.17E 02 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
-3.73E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.21E 02 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
9.77E 01 (3.0E+01)

BOWEN RATIO (no units)
-0.068 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.274E-01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
8.765E-05 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
3.384E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
2.468E-03 (6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
3.005E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
33%	33%	52%	1%	125%	0%	47%	248%	28%	25%	130%	48%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081800
START TIME: 18: 3:10 PST
END TIME: 18:33:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.061	0.061	4.675	4.758	9.482	8.662	4.588	0.240	5.308

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.041	3.798	2.550	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WI8FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 123415	1421 124308	0.199	52	-0.008	-9.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No .5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.5	59.60

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.342	18.20	7.61	NO DATA	325.5	1008.60	-3.35E 01	13.682	285.546

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.431	16.00	7.73	NO DATA	0.55	1009.70

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.521	13.458	13.648	7.886E-03	72.81	6.433E-03	10.391	14.270	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.521	13.557	13.648	7.960E-03	73.01	6.488E-03	10.492	14.370	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.001 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.001

Z/L AT 10 METERS
-0.001

Z/L AT Z1
-0.001

Z/L AT Z2
-0.000

MONIN-OBUKHOV LENGTH (Meters)
-1.897E 04

PSI1 AT Z1= 0.003610
PSI1 AT Z2= 0.001814
PSI2 AT Z1= 0.002169
PSI2 AT Z2= 0.001089

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.00E 00

HUMIDITY FLUX (Kg/sec m2)
9.82E-05

LAT.HEAT FLUX (Watts/m2)
2.43E 02

SEN.HEAT FLUX (Watts/m2)
9.92E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.35E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.19E 02

BOWEN RATIO (no units)
0.041

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.276E 00

SCALING SPEC.HUMD. (Kg/Kg)
6.271E-05

SCALING POT. TEMP. (Kelvin)
-6.273E-03

ROUGHNESS LENGTH (Meters)
3.672E-03

DRAG COEF. AT 10 METERS (Dimensionless)
5.450E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.45E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.13E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.62E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -8.62E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2265

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4140E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9031E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- 0.0E-4 Kg/Kg
PTK1 PTK2 +/- 0.00 Kel

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 3:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.M-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.420	16.27	7.72	NO DATA	1009.61	13.682	-1.262	-1.164	-0.137	-0.039

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.M-2/3)
10.00	12.518	13.545	13.643	7.952E-03	72.99	6.481E-03	10.480	14.358	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.009 AT GMH	-5.53E-01	6.71E-01	-4.50BE-01	1.2268
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	8.25E-05	-1.002E-04	8.251E-05	2.4140E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.011	2.04E 02	-2.893E-02	1.943E-02	5.9029E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.009	2.41E 01	1.239E-03		15.613
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.136E 03	-3.35E 01	1.704E-03		1.179E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	1.95E 02			1010.81
	BOWEN RATIO (no units)			
	0.118			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
144%	144%	58%	136%	136%	7%	116%	272%	29%	107%	107%	49%	58%
173%	173%	46%	38%	101%	7%	31%	139%	23%	61%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 3:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.004 [0.02] AT GMH	-1.19E 00 [6.0E-02]	9.390E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	8.60E-05 [0.0E-06]	-8.653E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.006 [0.02]	2.12E 02 [2.0E+01]	-1.678E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.004 [0.02]	1.81E 01 [3.0E+00]	2.376E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-2.335E 03	-3.35E 01 [2.0E+01]	3.225E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	2.00E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.092 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
21%	21%	61%	10%	40%	0%	7%	44%	32%	22%	57%	51%	59%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081830
START TIME: 18:33:30 PST
END TIME: 19: 3:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.730	4.814	8.706	7.885	4.619	-0.066	5.389

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.045	3.747	2.552	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WSIFC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122347	1421 123542	0.199	49	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.75

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.235	16.72	7.94	NO DATA	328.2	1009.97	9.20E 00	13.686	285.454

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.354	14.58	8.07	NO DATA	0.61	1010.17

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.415	13.376	13.556	8.072E-03	74.99	6.579E-03	10.632	14.177	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.444	13.587	13.597	8.150E-03	75.07	6.639E-03	10.739	14.304	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081830
START TIME: 18:33:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.002 AT GMH	-1.92E 00	1.249E 00		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	9.66E-05	-6.301E-05	DWS/DZ= 2.30E-01	PSI=PSI1 WS SLOPE= 3.20E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
-0.003	2.39E 02	-2.352E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.5HE 03
-0.002	3.65E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.693E-03	Z=HEIGHT (Meters)	Z-HEIGHT (M) Vert.Axis
-0.004	9.20E 00		DPT/DZ= -3.33E-03	PSI=PSI2 PTK SLOPE= -2.30E 01
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
-0.002	TOTAL HEAT BUDGET FLUX (Watts/m2)	6.222E-03		Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	2.84E 02			PSI=NONE CT2 SLOPE=NO DATA
-4.825E 03				
PSI1 AT Z1= 0.014015	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.007987	0.153			
PSI2 AT Z1= 0.008449				
PSI2 AT Z2= 0.004263				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2274	2.4143E 02	5.9036E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081830 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 18:33:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.340	14.84	8.05	NO DATA	1010.08	13.686	-1.346	-1.248	-0.195	-0.097

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.438	13.491	13.589	8.141E-03	75.06	6.631E-03	10.726	14.298	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.012 AT GMH	MOMENTUM FLUX (Nt/m2) -4.35E-01	FRICTION VELOCITY (Meters/sec) 5.953E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.544E-01	AIR DENSITY (Kg/m3) 1.2276
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.17E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.813E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.171E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4143E 02
Z/L AT GMH -0.016	LAT.HEAT FLUX (Watts/m2) 1.77E 02	SCALING POT.TEMP. (Kelvin) -3.198E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.904E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9033E 05
Z/L AT 10 METERS -0.012	SEN.HEAT FLUX (Watts/m2) 2.36E 01	ROUGHNESS LENGTH (Meters) 8.540E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.623
MONIN-OBUKHOV LENGTH (Meters) -8.075E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.20E 00	DRAG COEF.AT 10 METERS (Dimensionless) 1.609E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.188E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.10E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.28
	BOWEN RATIO (no units) 0.133			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	68%	48%	127%	54%	13%	107%	182%	24%	103%	30%	44%	48%
170%	170%	46%	39%	98%	13%	35%	137%	23%	62%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081830 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 18:33:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.005 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.16E 00 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 9.156E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.75E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.49AE-05 [3.0E-05]
Z/L AT GMH -0.007 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.92E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.521E-02 [2.0E-02]
Z/L AT 10 METERS -0.005 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.19E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.258E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.995E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.20E 00 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.708E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.28E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.142 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
28%	28%	64%	18%	21%	0%	18%	7%	36%	21%	20%	63%	62%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081900
START TIME: 19: 3:50 PST
END TIME: 19:34: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.675	4.767	9.235	8.441	4.630	-0.103	5.514

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.027	3.735	2.553	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP 1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121309	1421 122534	0.206	39	-0.008	-0.050	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.5	59.73

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.131	17.71	7.61	NO DATA	332.5	1009.25	1.44E 01	13.669	285.352

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.253	15.56	7.78	NO DATA	0.64	1010.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMIT.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.311	13.247	13.427	7.899E-03	73.85	6.434E-03	10.400	14.083	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM-2/3)
9.20	12.344	13.383	13.473	7.990E-03	74.13	6.511E-03	10.535	14.212	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081900
START TIME: 19: 3:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.002 AT GMH	MOMENTUM FLUX (Nt/m2) -1.94E 00	FRICTION VELOCITY (Meters/sec) 1.257E 00	GENERAL FORM:DN/DZ= I(N1-N2)I/(ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.79	HUMIDITY FLUX (Kg/sec m2) 9.73E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.305E-05	N=WIND SPEED (M/sec) Z=HEICHT (Meters) DWS/DZ= 2.39E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.18E-01
Z/L AT GMH -0.003	LAT.HEAT FLUX (Watts/m2) 2.41E 02	SCALING POT. TEMP. (Kelvin) -2.588E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.57E 03
Z/L AT 10 METERS -0.002	SEN.HEAT FLUX (Watts/m2) 4.04E 01	ROUGHNESS LENGTH (Meters) 3.689E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.66E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -2.89E 0
Z/L AT Z1 -0.004	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF. AT 10 METERS (Dimensionless) 5.575E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.002	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.95E 02			
MONIN-OBUKHOV LENGTH (Meters) -4.433E 03	BOWEN RATIO (no units) 0.168			
PSI1 AT Z1= 0.015231 PSI1 AT Z2= 0.007708 PSI2 AT Z1= 0.009187 PSI2 AT Z2= 0.004637				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2281

AIR SPECIFIC HEA (ITcal./Kg Kel.) 2.4148E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9042E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19: 3:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.239	15.82	7.76	NO DATA	1010.25	13.669	-1.430	-1.332	-0.302	-0.204

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.337	13.367	13.465	7.986E-03	74.09	6.502E-03	10.519	14.197	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.011 AT GMH	MOMENTUM FLUX (Nt/m2) -5.15E-01	FRICTION VELOCITY (Meters/sec) 6.475E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.192E-01	AIR DENSITY (Kg/m3) 1.2283
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.95E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.994E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.948E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4140E 02
Z/L AT GMH -0.014	LAT.HEAT FLUX (Watts/m2) 1.96E 02	SCALING POT.TEMP. (Kelvin) -3.304E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.139E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9039E 05
Z/L AT 10 METERS -0.011	SEN.HEAT FLUX (Watts/m2) 2.66E 01	ROUGHNESS LENGTH (Meters) 1.110E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.609
MONIN-OBUKHOV LENGTH (Meters) -9.241E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.674E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.179E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.37E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.45
	BOWEN RATIO (no units) 0.135			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	68%	50%	129%	53%	10%	105%	182%	25%	103%	28%	45%	50%
168%	168%	46%	39%	96%	10%	34%	134%	23%	62%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19: 3:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERROR'S WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.005 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.20E 00 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 9.384E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.36E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.61HE-05 [3.0E-05]
Z/L AT GMH -0.006 [0.02]	LAT.HEAT FLUX (Watts/m2) 2.07E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.724E-02 [2.0E-02]
Z/L AT 10 METERS -0.005 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.54E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.368E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -2.117E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.44E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.402E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.51E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.149 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
23%	23%	60%	12%	26%	0%	13%	11%	32%	22%	15%	54%	58%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905081930
START TIME: 19:34:10 PST
END TIME: 20: 4:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.657	4.747	8.959	8.162	4.647	-0.104	5.496

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.006	3.733	2.552	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DPJFCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 120492	1421 121761	0.206	49	-0.008	-0.050	0.000	0.991	0.947

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.73

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.049	17.18	7.50	NO DATA	331.8	1009.51	1.45E 01	13.648	285.273

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.176	15.05	7.67	NO DATA	0.63	1010.60

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.229	13.156	13.336	7.843E-03	73.68	6.385E-03	10.324	14.011	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.266	13.297	13.387	7.930E-03	73.91	6.459E-03	10.454	14.144	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905081930
START TIME: 19:34:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL.

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.003 AT GMH	-1.91E 00	1.247E 00	I(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	I(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
12.99	9.67E-05	6.311E-05	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 2.37E-01	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 3.21E-01
-0.003	2.39E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		-2.934E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.003	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -8.92E-06	PSI=PSI2
	4.54E 01			SH SLOPE= -8.56E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.005	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.694E-03	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT Z2			DPT/DZ= -4.15E-03	PSI=PSI2
0.002	1.45E 01			PTK SLOPE= -1.84E 01
		DRAG COEFF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	5.850E-03		Z=HEIGHT (M) Vert.Axis
-3.845E 03	2.99E 02			PSI=NONE
				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.017312	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.008875	0.190			
PSI2 AT Z1= 0.010570				
PSI2 AT Z2= 0.005341				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COFF.	BULK MOISTURE TRANSF.COFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2288
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4139E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9046E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- 0E(-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905081930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:34:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.161	15.31	7.65	NO DATA	1010.51	13.648	-1.487	-1.389	-0.368	-0.276

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	12.259	13.280	13.378	7.927E-03	73.88	6.450E-03	10.438	14.128	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.012 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.016

Z/L AT 10 METERS
-0.012

MONIN-OBUKHOV LENGTH (Meters)
-8.053E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.73E-01

HUMIDITY FLUX (Kg/sec m2)
7.77E-05

LAT.HEAT FLUX (Watts/m2)
1.92E 02

SEN.HEAT FLUX (Watts/m2)
2.68E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.34E 02

BOWEN RATIO (no units)
0.139

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.202E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.022E-04

SCALING POT.TEMP. (Kelvin)
-3.478E-02

ROUGHNESS LENGTH (Meters)
9.718E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.641E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.846E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
7.786E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.157E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2290

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4139E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9044E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.592

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.178E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.71

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
64%	64%	49%	128%	49%	10%	102%	177%	24%	103%	25%	44%	49%
166%	166%	46%	38%	94%	10%	33%	132%	23%	61%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905081930 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19:34:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.005 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.007 [0.02]

Z/L AT 10 METERS
-0.005 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.875E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.17E 00 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
8.22E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.03E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
3.90E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.50E 02 [3.0E+01]

BOWEN RATIO (no units)
0.161 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.237E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.760E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.029E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.310E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
3.533E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFFRENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
27%	27%	62%	13%	25%	0%	15%	16%	34%	23%	11%	59%	60%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 2905082000
START TIME: 20: 4:30 PST
END TIME: 20:34:48 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	4.679	4.763	8.705	7.989	4.636	-0.164	5.278

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.978	4.957	2.547	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2		UPWIND NEAR	UPWIND LAND	OPTICAL	OPTICAL	WIRE CAL	WSCF1	WSCF2
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
[illegible]	[illegible]		0.199	50	0.006	0.050	0.003	0.996	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BACK	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQUENCY	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.96

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
12.987	16.71	7.64	NO DATA	324.4	1009.33	1.45E 01	14.621	285.252

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.137	14.63	7.76	NO DATA	0.58	1010.43

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.187	13.124	13.304	7.916E-03	74.58	6.445E-03	10.418	13.969	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.227	13.264	13.355	7.990E-03	74.59	6.501E-03	10.520	14.105	NO DATA

* CONTINUED BELOW

RUN NUMBER: 2905082000
START TIME: 20: 4:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM DX/DZ:	GENERAL FORM (N=SPEE.:
-0.003 AT GMH	-1.85E 00	1.28E 00	I(N1 N2)/(Z1-Z2)* (Z1*Z2)1.5	I(LnZ1-PSI)-(LnZ2-PSI))/ (n1-n2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	9.53E-05	-6.316E-05	DN/DZ= 2.33E 01	PSI=PSI1 W/ SLOPE= 3.20E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.004	2.35E 02	SCALING POT. TEMP. (Kelvin)	N=SPEE.HUMIDITY (Kg/Kg)	N=SPEC HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-3.163E-02	Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.5/E-03
-0.003	4.82E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT TEMP (Kelvin)
Z/L AT Z1	SKY AND SOLAR HEAT FLUX	3.69HE-03	Z=HEIGHT (Meters) DPT/DZ= -4.47E-03	Z HEIGHT (M) Vert Axis PSI=PSI2
-0.005	(Watts/m2)			PTK SLOPE= 1.71E 01
Z/L AT Z2	1.45E 01	DRAG COEF. AT 10 METERS		
0.003		(Dimensionless)		N=POTENTIAL TEMP (K+M-2 S
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	6.0HVE-03		Z=HEIGHT (M) Vert Axis
(Meters)	(Watts/m2)			PSI=NONE
-3.453E 03	2.98E 02			DTP SLOPE=NO DATA
PSI1 AT Z1= 0.019450	BOWEN RATIO			
PSI1 AT Z2= 0.009867	(no units)			
PSI2 AT Z1= 0.011748	0.265			
PSI2 AT Z2= 0.005941				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK GEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3)
1 2.87
AIR SPECIFIC HEAT (Cal/ Kg Kel)
2.41AE 02
WATER LAT HEAT VAP (Cal/ Kg)
5.98AE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082000 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 20: 4:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.121	14.88	7.75	NO DATA	1010.34	13.621	-1.500	-1.402	-0.373	-0.275

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.219	13.248	13.346	7.982E-03	74.59	6.495E-03	10.598	14.089	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978).

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.014 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.013

Z/L AT 10 METERS
-0.014

MONIN-OBUKHOV LENGTH (Meters)
-7.324E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.38E-01

HUMIDITY FLUX (Kg/sec m2)
7.42E-05

LAT.HEAT FLUX (Watts/m2)
1.83E 02

SEN.HEAT FLUX (Watts/m2)
2.63E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.24E 02

BOWEN RATIO (no units)
0.144

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.973E-01

SCALING SPEC.HUMID. (Kg/Kg)
-1.010E-04

SCALING POT.TEMP. (Kelvin)
-3.547E-02

ROUGHNESS LENGTH (Meters)
8.632E-04

DRAG COFF.AT 10 METERS (Dimensionless)
1.612E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.568E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
7.416E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.118E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2289

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4140E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9046E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.561

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.176E-02

BAR.PRES.AT WT LEVEL (Millibar)
101.54

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD RICH. NO AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
62%	62%	48%	127%	47%	10%	101%	175%	24%	103%	23%	44%	48%
166%	166%	46%	39%	94%	10%	33%	132%	23%	62%	117%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905082000 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 20: 4:30 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
0.006 [6.0E-02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1*Z2)1/2
12.99

Z/L AT GMH
0.008 [0.02]

Z/L AT 10 METERS
0.006 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.713E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.13E 00 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
2.91E 05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.95E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
4.09E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.43E 02 [3.0E+01]

BOWEN RATIO (no units)
0.170 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.517E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.687E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.224E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.262E-03 [6.0E-05]

DRAG COFF.AT 10 METERS (Meters)
3.600E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
30%	30%	63%	15%	28%	0%	17%	18%	35%	22%	7%	63%	61%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905082030
START TIME: 20:34:50 PST
END TIME: 21: 5: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
V.T.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.682	4.759	8.711	8.069	4.635	-0.104	5.158

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.960	3.930	2.544	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1FC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119632	1421 120895	0.199	54	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX >	>FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.93

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.963	16.73	7.65	NO DATA	320.4	1009.32	1.45E 01	13.603	285.186

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.090	14.92	7.24	NO DATA	0.50	1010.42

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	12.143	13.082	13.262	7.926E-03	74.67	6.452E-03	10.429	13.929	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
2.20	12.180	13.215	13.305	7.979E-03	74.70	6.491E-03	10.503	14.061	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905082030
START TIME: 20:34.50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.003 AT GMH	MOMENTUM FLUX (Nt/M2) -1.40E 00	FRICTION VELOCITY (Meters/sec) 1.066E 00	GENERAL FORM:DN/DZ= I(N1-N2)I/Ln(Z1/Z2)* (Z1*Z2)1/2	GENERAL FORM:'N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.29E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.328E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.02E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.75E+01
Z/L AT GMH -0.005	LAT.HEAT FLUX (Watts/m2) 2.05E 02	SCALING POT. TEMP. (Kelvin) -2.898E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.54E 03
Z/L AT 10 METERS -0.004	SEN.HEAT FLUX (Watts/m2) 3.84E 01	ROUGHNESS LENGTH (Meters) 3.423E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -4.08E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PT SLOPE= 1.87E 01
Z/L AT Z1 -0.006	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF. AT 10 METERS (Dimensionless) 4.528E-03		N=STRUC.PARAM (xM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.003	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.58E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.838E 03	BOWEN RATIO (No units) 0.187			
PSI1 AT Z1= 0.073542				
PSI1 AT Z2= 0.011974				
PSI2 AT Z1= 0.014238				
PSI2 AT Z2= 0.307914				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2289

AIR SPECIFIC HEAT (1Cal./Kg Kel.)
2.414E 02

WATER LAT.HEAT VAP. (1Cal./Kg)
5.905IE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2: +/- .00E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082030 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 20:34:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.074	15.14	7.73	NO DATA	1010.32	13.603	-1.529	-1.431	-0.404	-0.306

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.172	13.199	13.297	7.972E-03	74.72	6.486E-03	10.495	14.045	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -4.59E-01	FRICTION VELOCITY (Meters/sec) 6.108E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.731E-01	AIR DENSITY (Kg/m3) 1.2291
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.54E-05	SCALING SPEC.HUMID. (Kg/Kg) -1.004E-04	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.537E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4140E 02
Z/L AT GMH -0.017	LAT.HEAT FLUX (Watts/m2) 1.86E 02	SCALING POT.TEMP. (Kelvin) -3.590E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.193E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9049E 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 2.72E 01	ROUGHNESS LENGTH (Meters) 9.267E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.544
MONIN-OBUKHOV LENGTH (Meters) -7.567E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.629E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.28E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.5
	BOWEN RATIO (no units) 0.146			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	71%	56%	132%	54%	10%	105%	185%	28%	104%	25%	48%	56%
165%	165%	46%	39%	93%	10%	33%	132%	23%	62%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905082030 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 20:34:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.81E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.158E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.71E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.655E-05 [3.0E-05]
Z/L AT GMH -0.008 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.91E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.022E-02 [2.0E-02]
Z/L AT 10 METERS -0.006 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.43E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.105E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.554E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.834E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.35E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.163 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
26%	26%	54%	6%	17%	0%	7%	13%	28%	22%	14%	59%	52%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905082100
START TIME: 21: 5:10 PST
END TIME: 21:35:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.717	4.799	8.166	7.488	4.643	-0.104	5.131

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.939	3.808	2.538	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 119169	1421 120486	0.183	83	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.917	15.69	7.86	NO DATA	319.5	1009.45	1.45E 01	13.583	285.143

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.049	13.90	7.98	NO DATA	0.38	1010.55

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.097	13.051	13.231	8.041E-03	76.17	6.544E-03	10.579	13.888	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.139	13.193	13.283	8.112E-03	76.13	6.598E-03	10.677	14.025	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905082100
START TIME: 21: 5:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,-Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
-0.004 AT GMH	-1.37E 00	1.056E 00	{(N1-N2)}/{ln(Z1/Z2)* (Z1*Z2)1/2}	{(LnZ1-PSI)-(LnZ2-PSI)}/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	8.23E-05	-6.339E-05	DWS/DZ= 1.99E-01	PSI=PSI1 WS SLOPE= 3.79E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.005	2.03E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-3.330E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.53E 03
-0.004	4.37E 01			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert.Axis
-0.003	SKY AND SOLAR HEAT FLUX (Watts/m2)	3.386E-03	DPT/DZ= -4.68E-03	PSI=PSI2 PTK SLOPE= -1.62E 01
Z/L AT Z2	1.45E 01			
-0.004		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	5.086E-03		PSI=NONE CT2 SLOPE=NO DATA
-2.418E 03	2.62E 02			
PSI1 AT Z1= 0.027505	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.014023	0.215			
PSI2 AT Z1= 0.016657				
PSI2 AT Z2= 0.008454				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2292	2.4142E 02	5.9054E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082100 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 21: 5:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.033	14.11	7.96	NO DATA	1010.45	13.583	-1.550	-1.452	-0.408	-0.310

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.131	13.176	13.274	8.104E-03	76.14	6.591E-03	10.666	14.009	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.017 AT GMH	-3.82E-01	5.577E-01	-3.111E-01	1.2294
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	6.76E-05	-9.859E-05	6.760E-05	2.4142E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.021	1.67E 02	-3.740E-02	2.086E-02	5.9051E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.017	2.59E 01	6.918E-04		15.525
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-6.053E 02	1.45E 01	1.562E-03		1.173E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	2.08E 02			1011.65
	BOWEN RATIO (no units)			
	0.155			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
65%	65%	53%	130%	49%	10%	101%	179%	27%	103%	22%	47%	53%
164%	164%	46%	39%	92%	10%	33%	131%	23%	62%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905082100 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 21: 5:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.008 [0.02] AT GMH	-8.41E-01 [6.0E-02]	7.890E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	7.10E-05 [8.0E-06]	-8.539E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.010 [0.02]	1.76E 02 [2.0E+01]	-3.396E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.008 [0.02]	3.75E 01 [3.0E+00]	1.986E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-1.305E 03	1.45E 01 [2.0E+01]	3.076E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	2.21E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.180 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
35%	34%	59%	12%	25%	0%	14%	17%	32%	21%	7%	68%	58%

* END OF DATA RUN

MARINE SURFACE LAYER METEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905082130
START TIME: 21:35:30 PST
END TIME: 22: 5:40 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.205	0.001	0.001	4.733	4.812	8.348	7.707	4.634	-0.104	5.096

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
3.916	3.795	2.535	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WTBFCAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
1411 118145	1421 119494	0.183	92	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.4	59.80

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.814	16.03	7.95	NO DATA	318.3	1009.31	1.45E 01	13.560	285.042

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
11.949	14.30	8.05	NO DATA	0.24	1010.41

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	11.994	12.956	13.136	8.095E-03	77.19	6.587E-03	10.646	13.793	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.040	13.099	13.189	8.155E-03	77.02	6.632E-03	10.730	13.931	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905082130
START TIME: 21:35:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.005 AT GMH	-1.29E 00	1.026E 00		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	8.01E-05	-6.349E-05	DWS/DZ= 1.93E-01	PSI=PSI1 WS SLOPE= 3.90E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.006	1.90E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		-3.595E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -8.51E 03
-0.005	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	4.58E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.009		3.271E-03	DPT/DZ= -5.05E-03	PSI=PSI2 PTK SLOPE= -1.50E 01
	SKY AND SOLAR HEAT FLUX (Watts/m2)			
Z/L AT Z2	1.45E 01			
-0.004		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	4.586E-03		PSI=NONE
-2.111E 03	2.58E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.031348	BOWEN RATIO			
PSI1 AT Z2= 0.016019	(no units)			
PSI2 AT Z1= 0.019008	0.231			
PSI2 AT Z2= 0.009664				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2294	2.4143E 02	5.9059E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:35:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.933	14.51	8.04	NO DATA	1010.31	13.560	-1.627	-1.529	-0.478	-0.380

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.031	13.082	13.180	8.148E-03	77.04	6.626E-03	10.720	13.915	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.016 AT GMH	MOMENTUM FLUX (Nt/m2) -4.11E-01	FRICTION VELOCITY (Meters/sec) 5.782E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.343E-01	AIR DENSITY (Kg m3) 1.2296
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.83E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.606E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.829E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4143E 02
Z/L AT GMH -0.021	LAT.HEAT FLUX (Watts/m2) 1.69E 02	SCALING POT.TEMP. (Kelvin) -3.876E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.241E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9056E 05
Z/L AT 10 METERS -0.016	SEN.HEAT FLUX (Watts/m2) 2.79E 01	ROUGHNESS LENGTH (Meters) 7.776E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.500
MONIN-OBUKHOV LENGTH (Meters) -6.275E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.588E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.11E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.51
	BOWEN RATIO (no units) 0.165			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
67%	67%	56%	131%	49%	10%	101%	180%	28%	103%	21%	48%	56%
163%	163%	46%	39%	91%	10%	34%	130%	23%	62%	114%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905082130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:35:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -8.10E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 7.804E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.10E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.383E-05 [3.0E-05]
Z/L AT GMH -0.010 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.76E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.639E-02 [2.0E-02]
Z/L AT 10 METERS -0.008 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.95E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.956E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.251E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.838E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.23E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.193 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
31%	30%	55%	9%	24%	0%	12%	17%	29%	20%	5%	64%	54%

* END OF DATA MIN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790508220[illegible]
START TIME: 22: 5.50 PST
END TIME: 22:[illegible]5.0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANN., RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPEC.COEFF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.102	0.[illegible]	0.[illegible]	4.275	5.815	8.857	8.176	4.618	-0.104	5.088

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.928	3.765	2.542	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT Data, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	DOWND FAR	DPTECAL	DPTECAL	WIPECAL	WSTEC	WSPEC
AIR TMP.1	AIR TMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
111.11767	14.1.119159		0.183	183	0.008	-0.050	0.000	0.992	0.952

* SYSTEM & IDENTIFICATION PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

PERIODIC FLAG	ERROR COUNT	DATA DATE	ZERO REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

Air TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(MilliBar)	(Watt/m2)	(Celsius)	(Kelvin)
11.787	17.30	2.97	NO DATA	318.0	1009.06	1.45E 0	13.542	285.014

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.926	15.15	8.87	NO DATA	0.09	1010.16

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.967	12.930	13.109	8.103E-03	77.41	6.594E-03	10.655	13.764	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.010	13.071	13.161	8.163E-03	77.26	6.639E-03	10.740	13.901	NO DATA

* CONTINUED BELOW

RUN NUMBER: 790508[illegible]220
START TIME: 22: 5:50 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* END ITERATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

BULK RICHARDSON NUMBER
(+:Stable, -:Unstable)
0.004 AT GMH

GEOMETRIC MEAN HEIGHT
(Meters) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.662

Z/L AT 10 METERS
-0.756

Z/L AT Z1
-0.807

Z/L AT Z2
0.004

MONIN-OBUKHOV LENGTH
(Meters)
2.53E 03

PSI1 AT Z1= 0.[illegible]A305
PSI1 AT Z2= 0.013492
PSI2 AT Z1= 0.015924
PSI2 AT Z2= 0.00[illegible]078

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(N1/m2)
-1.47E 00

HUMIDITY FLUX
(Kg/sec m2)
8.52E-05

LAT.HEAT FLUX
(Watts/m2)
2.11E 02

SEN.HEAT FLUX
(Watts/m2)
4.65E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
2.72E 02

BOWEN RATIO
(no units)
0.2/0

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.095E 00

SCALING SPEC.HUMD.
(Kg/Kg)
-6.335E-05

SCALING POT. TEMP.
(Kelvin)
-3.417E-02

ROUGHNESS LENGTH
(Meters)
3.511E-03

DRAG COEF. AT 10 METERS
(Dimensionless)
4.60E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.07E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.81E-03

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.65E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.53E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -1.5HE 01

N=LnTEMP.STRUC.(KxM 2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(Dimensionless)	(M/sec2)	(Dimensionless)	(Dimensionless)	(Dimensionless)	(Dimensionless)
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.1292

AIR SPECIFIC HEAT
(1Cal./kg Kel.)
2.4143E 02

WATER LAT HEAT VAP.
(1Cal./Kg)
5.7961E 02

* GENERAL NOTE:
Accuracy limitation encountered for measurement of Profile Slope and/or Partial Derivative.
Computation executed by inversion of.

[illegible] (DN 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.904	15.37	8.06	NO DATA	1010.06	13.542	-1.638	-1.540	-0.489	-0.391

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.002	13.054	13.152	8.156E-03	77.28	6.634E-03	10.730	13.885	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.014 AT GMH	MOMENTUM FLUX (Nt/m2) -4.78E-01	FRICTION VELOCITY (Meters/sec) 6.235E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.888E-01	AIR DENSITY (Kg/m3) 1.2295
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.17E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.377E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.188E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4143E 02
Z/L AT GMH -0.018	LAT.HEAT FLUX (Watts/m2) 1.78E 02	SCALING POT.TEMP. (Kelvin) -3.815E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.379E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9058E 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 2.96E 01	ROUGHNESS LENGTH (Meters) 9.882E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.478
MONIN-OBUKHOV LENGTH (Meters) -7.413E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.645E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.170E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.22E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.28
	BOWEN RATIO (no units) 0.166			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
67%	67%	55%	131%	50%	10%	102%	181%	28%	103%	22%	48%	55%
162%	162%	46%	39%	90%	10%	34%	130%	23%	62%	113%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905082200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22: 5:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable, -Unstable) -0.007 [0.12] AT GMH	MOMENTUM FLUX (Nt/m2) -9.29E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 8.371E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.50E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.234E-05 [3.0E-05]
Z/L AT GMH -0.009 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.85E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.482E-02 [2.0E-02]
Z/L AT 10 METERS -0.007 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.05E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.184E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) [illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.88[illegible]-03 [1.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.54E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.189 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
76%	76%	54%	10%	22%	0%	12%	15%	28%	19%	7%	58%	52%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905082230
START TIME: 22:36:10 PST
END TIME: 23: 6:20 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.068	0.601	4.732	4.809	9.032	8.331	4.625	0.164	5.227

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.873	3.785	2.542	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1CAL	DP2CAL	WIDCAL	WSDIF	WSCOR
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Counts)	(Counts)
1411 117936	1421 119769	0.199	32	-0.008	-0.050	0.303	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.).5V)	(No.).1Hz)	(VAC)	(Hz)
0	9	180	0	0	0	0	0	115.5	59.5

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	BULK AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.794	17.34	7.95	NO DATA	322.5	1009.17	1.45E 01	13.519	285.829

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm-2/3)	(Meter MSL)	(Millibar)
11.927	15.46	8.63	NO DATA	-0.07	1015.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF. INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xm-2/3)
18.35	11.973	12.934	13.114	8.692E-03	77.27	6.585E-03	10.641	13.772	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xm-2/3)
9.29	12.017	13.075	13.165	8.142E-03	77.02	6.622E-03	10.713	13.909	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905082230
START TIME: 22:36:10 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+:Stable, -:Unstable)
0.004 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH (Z1*Z2)1/2
12.99

Z/L AT GMH
-0.005

Z/L AT 10 % ITEMS
-0.004

Z/L AT Z1
-0.007

Z/L AT Z2
0.903

MONIN-OBUKHOV LENGTH
(Meters)
-2.752E 03

PSI1 AT Z1= 0.024260
PSI1 AT Z2= 0.012345
PSI2 AT Z1= 0.014676
PSI2 AT Z2= 0.002438

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(N/m2)
-1.61E 00

HUMIDITY FLUX
(Kg/sec m2)
8.92E-05

LAT.HEAT FLUX
(Watts/m2)
2.21E 02

SEN.HEAT FLUX
(Watts/m2)
4.91E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
2.84E 02

BOWEN RATIO
(no units)
0.223

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.146E 00

SCALING SPEC.HUMD.
(Kg/Kg)
-6.330E-05

SCALING POT. TEMP.
(Kelvin)
-3.450E-02

ROUGHNESS LENGTH
(Meters)
3.629E-03

DRAG COEF. AT 10 METERS
(Dimensionless)
4.848E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 2.17E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -4.85E-03

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM (N)SLOPE=
[(LnZ1 PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert Axis
PSI=PSI1
WS SLOPE 3.49E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
SH SLOPE= -8.54E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert Axis
PSI=PSI2
PTN SLOPE= 1.51E 01

N=LnTEMP.STRUC (K*M 2/3)
Z=HEIGHT (M) Vert Axis
PSI=NONE
LT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2294

AIR SPECIFIC HEAT
(Ltal./Kg Kel.)
2.414E 02

WATER LAT.HEAT VAP
(Ltal./Kg)
5.996E 01

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by in-action of:

DH SH: +/- .08E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:36:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR.WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
11.911	15.63	8.02	NO DATA	1010.17	13.519	-1.608	-1.510	-1.461	-0.363

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES. (Millibars)	SAT.VAP.PRES (millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.009	13.058	13.156	8.136E-03	77.95	6.617E-03	10.704	13.893	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.013 AT GMH	MOMENTUM FLUX (Nt/m2) -4.99E-01	FRICTION VELOCITY (Meters/sec) 6.372E-01	WITH LONG. VELOCITY (Meter2/sec2) -4.060E-01	AIR DENSITY (Kg/m3) 1.2296
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.32E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.338E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 7.31GE-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4143E 02
Z/L AT GMH -0.016	LAT.HEAT FLUX (Watts/m2) 1.81E 02	SCALING POT.TEMP. (Kelvin) -3.722E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.372E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.965GE 05
Z/L AT 10 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 2.95E 01	ROUGHNESS LENGTH (Meters) 1.057E-03		VAP.PRES.AT WT LEVEL (Millibar) 15.456
MONIN-OBUKHOV LENGTH (Meters) -7.935E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.662E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.168E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.25E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.37
	BOWEN RATIO (no units) 0.163			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
65%	65%	54%	130%	49%	10%	101%	179%	27%	103%	20%	42%	54%
163%	163%	46%	39%	91%	10%	34%	139%	23%	62%	114%	43%	43%

* CONTINUED BELOW

RUN NUMBER: 7905082230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:36:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.006 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -1.01E 00 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 8.716E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.69E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -8.202E-05 (3.0E-05)
Z/L AT GMH -0.008 (0.02)	LAT.HEAT FLUX (Watts/m2) 1.90E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 3.494E-02 (2.0E-02)
Z/L AT 10 METERS -0.006 (0.02)	SEN.HEAT FLUX (Watts/m2) 4.23E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 2.287E-03 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -1.612E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 3.0[illegible] (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.40E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.188 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
25%	24%	55%	12%	24%	0%	14%	16%	29%	19%	5%	56%	55%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79/05/08/430
START TIME: 24:00:30 PST
END TIME: 23:35:41 PST
DATA DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW Data (VOLTAGE VDC):

No.01	No.11	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES 2	SKY RAD.	WIND DIR.
6.005	6.008	6.111	4.767	4.842	8.677	7.970	4.616	-0.104	5.134

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
SPARE B (ONLY IF FREQUENCY AC VOLTAGE			MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
0.0	0.010	0.000	0.001	0.001	0.001	0.001	6.205

* ANALOG CHANNEL RAW Data (VOLTAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	OPTICAL	DP2rCAL	WIBECAL	WS1EC	WS2EC
ESCARPMENT	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
14.1 13:853	14.1 13:853	0.105	1%	0.308	0.959	0.009	0.992	0.952

* ANALOG/DIGITAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

CLOCK TIME	SCAN COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(Hr:Min:Sec)	(No.Scans)	(No.Scans)	A(No.)(.05V)	B(No.)(.05V)	(No.)(.002V)	(No.)(5V)	(No.)(1Hz)	(VAC)	(Hz)
1	0	101	0	0	0	0	0	115.3	59.81

* 30 MIN MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE DATA, AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

CLOCK TIME	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Hr:Min)	(Meters/Sec)	(Celsius)	(Kel.xM**2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11:30	10.66	8.16	NO Data	319.6	1009.34	1.45E 01	13.496	284.976

BAR.PRES.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Millibar)	(meter/sec)	(Celsius)	(Kel.xM**2/3)	(Meter MSL)	(Millibar)
11.839	14.78	8.23	NO Data	-0.23	1010.14

* 30 MIN Derived MICROMETEOROLOGICAL PARAMETERS:

Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM**2/3)
10.35	11.920	12.965	13.038	8.208E 03	78.61	6.679E-03	10.792	13.729	NO Data

Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (kg/kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM**2/3)
2.03	11.974	13.048	13.118	8.255E-03	78.30	6.714E-03	10.859	13.868	NO Data

* CONTINUED BELOW

RUN NUMBER: 79/05/08/430
START TIME: 24:00:30 PST
START DATE: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PARAMETER CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BULK RICHARDSON NUMBER (+=Stable, -=Unstable) 1.004 AT GMH	MOMENTUM FLUX (N1/m2) -1.51E 00	FRICTION VELOCITY (Meters/sec) 1.110E 00	GENERAL FORM:DN/DZ= 1(N1-N2))/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
ESTIMATED MIXING HEIGHT (Meters GMH (Z1*Z2)1/2 12.99	BUOYANCY FLUX (Kg/sec m2) 8.654E 05	SCALING SPEC.HUMD. (Kg/kg) 6.339E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.09E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIl WS SLOPE= 3.60E-01
PSI AT GMH 0.695	LAT.HEAT FLUX (Watts/m2) 2.14E 02	SCALING POT. TEMP. (Kelvin) -3.709E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.53E 03
Z/L AT (1 M TERMS) 0.004	SEN.HEAT FLUX (Watts/m2) 5.11E 01	ROUGHNESS LENGTH (Meters) 3.552E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.22E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.47E 01
PSI AT Z1 3.000				
PSI AT Z2 0.004	SEA AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF. AT 10 METERS (Dimensionless) 4.944E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
ROUGHNESS LENGTH (Meters) 2.352E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.80E 02			
Z1 AT Z1 1.627E-02	BOWEN RATIO (No units) 4.239			
PSI AT Z1 3.114E 00				
Z2 AT Z2 6.615E-03				
PSI AT Z2 3.400E 00				

* CONSTANTS

SOLAR CONSTANT (Cal/cm2/Min)	TRANSMISSION COEFFICIENT	PROFILE DRY PRANDTL NUMBER	PROFILE MOIST SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
1.94	0.72	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2293

AIR SPECIFIC HEAT (ITcal/Kg Kel.) 2.4145E 02

WATER LAT.HEAT VAP. (ITcal/Kg) 5.9863E 05

* NOTES:
Accuracy limitation encountered for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

DPT DPDZ +/- .05E 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905082300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 6:39 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM^2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
11.868	15.01	8.27	NO DATA	1010.04	13.496	-1.638	-1.530	-0.465	-0.367

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP PRES. (Millibars)	S.VAP PRES. (Millibars)	REF.INDEX (Kel xM^2/3)
10.00	11.966	13.031	13.129	8.249E-03	70.34	6.705E-03	10.851	13.852	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

QUAD.RICHARDSON NUMBER (+=Stable,-=Unstable): 0.015 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2: 12.99

Z/L AT GMH: -0.019

Z/L AT 10 METERS: -0.014

MONIN OBUKHOV LENGTH (Meters): -6.940E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N1/m2): -4.49E-01

HUMIDITY FLUX (Kg/sec m2): 6.77E-05

LAT.HEAT FLUX (Watts/m2): 1.67E 02

SEN.HEAT FLUX (Watts/m2): 2.87E 01

SKY AND SOLAR HEAT FLUX (Watts/M2): 1.45E 01

TOTAL HEAT BUDGET FLUX (Watts/m2): 2.11E 02

BOWEN RATIO (no units): 0.172

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 6.043E-01

SCALING SPEC.HUMID. (kg/kg): -9.106E-05

SCALING POT.TEMP. (Kelvin): -3.827E-02

ROUGHNESS LENGTH (Meters): 8.954E-04

DRAG COEF.AT 10 METERS (Dimensionless): 1.621E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2): -3.651E-01

WITH ABS. HUMIDITY (Meter kg/sec m3): 6.765E-05

WITH POT.TEMPERATURE (Meter Kel/sec): 2.312E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3): 1.2295

AIR SPECIFIC HEAT (Ideal/kg Kel): 2.414E 02

WATER LAT.HEAT VAP. (Ideal/kg): 5.906E 05

VAP PRES.AT WT LEVEL (Millibar): 15.430

ABS.HUMID AT WT LEVEL (Kg/m3): 1.166E 02

PAR.PRES.AT WT LEVEL (Millibar): 1011.24

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"%:

QUAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT. TEMP.	ROUGH LENGTH	DRAG COEF.
64%	64%	53%	130%	47%	10%	100%	177%	27%	103%	20%	47%	53%
163%	163%	46%	43%	91%	10%	34%	136%	23%	63%	114%	43%	40%

> CONTINUED BELOW

RUN NUMBER: 7905082300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23: 6:39 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

QUAD.RICHARDSON NUMBER (+=Stable, -=Unstable): 0.007 [6.6E-02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2: 12.99

Z/L AT GMH: 1.70E 00 [3.0E-02]

Z/L AT 10 METERS: 0.007 [6.6E-02]

MONIN OBUKHOV LENGTH (Meters): 1.41GE 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N1/m2): -2.41E 01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2): 2.21E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2): 1.70E 02 [2.0E+011]

SEN.HEAT FLUX (Watts/m2): 4.35E 01 [3.0E+001]

SKY AND SOLAR HEAT FLUX (Watts/M2): 1.45E 01 [2.0E+011]

TOTAL HEAT BUDGET FLUX (Watts/m2): 2.28E 02 [3.0E+011]

BOWEN RATIO (no units): 0.298 [3.0E1]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 8.38DE-01 [6.0E-02]

SCALING SPEC.HUMID. (kg/kg): 8.961E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin): 5.727E-02 [2.0E-01]

ROUGHNESS LENGTH (Meters): 2.168E-03 [6.6E-05]

DRAG COEF.AT 10 METERS (Meters): 3.04E-03 [4.0E-04]

> DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE 100% WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"%:

QUAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEA. FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL POT TEMP	ROUGH LENGTH	DRAG COEF
0%	0%	5%	1%	7%	0%	1%	1%	30%	10%	2%	61%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905082330
START TIME: 23:36:50 PST
END TIME: 0: 7: 0 PST
START DATE: 8 May 1979 (DAY 128)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2 /SEC
DATA AVERAGING PERIOD: 30 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.06	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND VANE	WIND SPEED	ERROR CNT	SPARE	WIND DIR
6.205	0.060	0.061	4.771	4.852	7.931	7.402	4.517	0.164	5.110

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF B
3.818	3.793	2.531	0.001	0.301	0.301	0.301	6.200

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED IS MEAN OF 2 SENSORS

No.1	No.2	UPWIND NEAR	UPWIND LAND	DIFFCAL	[illegible]	[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	[illegible]	[illegible]	[illegible]	[illegible]
1411 117281	1491 118666	9.183	136	-9.000	3.057	3.218	2.502	3.955

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.) (.02V)	AC VOLTAGE (No. 120)	AC FREQUENCY (No. 180)	[illegible]	[illegible]
0	0	180	0	0	1	0	0	[illegible]	[illegible]

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kelvin**2/3)	WIND DIR. (Deg.True)	BAR PRESS1 (Millibars)	NET RAD. (Watts/m2)	[illegible]	[illegible]
11.728	15.24	6.18	NO DATA	313.4	1009.45	1.47E 02	17.425	284.928

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kelvin**2/3)	TIDE TABLE (Meter MSL)	BAR PRESS.2 (Millibars)
11.867	13.74	8.29	NO DATA	-0.3	1010.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (kg/kg)	VAP.PRES.1 (Millibars)	[illegible]	[illegible]
9.35	11.980	12.837	13.067	8.229E-03	78.6	6.691E-03	10.31	[illegible]	[illegible]

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (kg/kg)	VAP.PRES.2 (Millibars)	[illegible]	[illegible]
9.20	11.957	13.045	14.125	8.990E-03	78.99	6.742E-03	10.934	[illegible]	NO DATA

* CONTINUED BELOW

RUN NO: 7905082330
START: 23:36:50 PST
START D: 8 May 1979 (DAY 128)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2 /SEC
DATA AVERAGING PERIOD: 30 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (version with height)
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable) -0.007 AT GMH	MOMENTUM FLUX (N/m2) -9.82E-01	FRICTION VELOCITY (meters/sec) 0.939E+01	GENERAL FORM IN DZ [illegible]	GENERAL FORM IN SLOPE: [illegible]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.07E-05	SCALING SPEC HUMD (Kg/Kg) 6.365E-05	N-WIND SPEED (M/sec) [illegible]	N-WIND SPEED (M/sec) [illegible]
Z/L AT GMH -0.009	LAT HEAT FLUX (Watts/m2) 1.74E 02	SCALING POT. TEMP (Kelvin) -3.893E-02	N-SPEC. HUMIDITY (Kg/Kg) [illegible]	N-SPEC. HUMIDITY (Kg/Kg) [illegible]
Z/L AT 10 METERS -0.007	SEN.HEAT FLUX (Watts/m2) 4.33E 01	ROUGHNESS LENGTH (Meters) 2.582E-03	N-POT TEMP (Kelvin) [illegible]	N-POT TEMP (Kelvin) [illegible]
Z/L AT Z1 -0.012	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF. AT 10 METERS (Dimensionless) [illegible]		[illegible]
Z/L AT Z2 -0.006	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.31E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.470E 03	BOWEN RATIO (no units) 0.249			
PSI1 AT Z1= 0.044309 PSI1 AT Z2= 0.022815 PSI2 AT Z1= 0.0269 PSI2 AT Z2= 0.013795				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR PRANDTL NUMBER	PROFILE TUR SCHMIDT NUMBER	[illegible] TRANSFER [illegible]	[illegible] [illegible] [illegible]
0.4	9.7959	0.74	0.74	0.99 [illegible]	[illegible] [illegible]

[illegible]

[illegible]

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of [illegible]
Computation executed by insertion of

SH1 SH2= +/- 0BE-3 Kg/Kg

[illegible]

[illegible]

[illegible]

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79050H2330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE: [illegible]
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kelvin**2/3)	BAR.PRES. (Millibar)	BULK WT.TEMP (Celsius)	AIR-WT.TEMP (Kelvin)	POT.WT.TEMP (Kelvin)	VIR.WT.TEMP (Kelvin)	V.POT.WT.TEMP (Kelvin)
11.850	13.92	8.28	NO DATA	1010.05	13.46%	-1.61%	+1.517	6.44%	+.3%

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	% VAP.PRES. (Millibars)	REF.INDEX (Kelvin**2/3)
10.00	11.948	13.017	14.115	8.282E 03	78.74	6.735E 03	10.664	13.84%	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL.,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -3.69E-01	FRICTION VELOCITY (Meters/sec) 5.479E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.002E-01	AIR DENSITY (Kg/m3) 1.229%
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.17E 05	SCALING SPEC.HUMID. (Kg/Kg) -9.166E 05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.175E-05	AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.414E 03
Z/L AT GMH -0.023	LAT.HEAT FLUX (Watts/m2) 1.53E 02	SCALING POT.TEMP. (Kelvin) -3.912E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.143E-02	WATER LAT.HEAT VAP. (1Cal./Kg) 5.96E1E 05
Z/L AT 10 METERS -0.018	SEN.HEAT FLUX (Watts/m2) 7.66E 01	ROUGHNESS LENGTH (Meter,) 6.525E-04		VAP.PRES.AT WT.LEVEL (Millibar) 15.400
MONIN-OBUKHOV LENGTH (Meter,) -5.581E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.549E-03		ABS.HUMID.AT WT.LEVEL (Kg/m3) 1.1o4E 02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.94E 02			EAR.PRES.AT WT.LEVEL (millibar) [illegible]
	BOWEN RATIO (no units) 0.174			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSISTENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"%:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF.
71%	71%	62%	135%	51%	10%	101%	185%	31%	104%	20%	51%	3
163%	163%	46%	40%	91%	10%	34%	131%	24%	65%	114%	45%	3%

* CONTINUED BELOW

RUN NUMBER: 79050H2330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:36:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE: [illegible] / min
START DATE: 8 May 1979 (DAY 128) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ACCURACIES WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.010 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -6.31E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.952E 01 [6.0E 0.1]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.37E 05 [8.0E 06]	SCALING SPEC.HUMID. (Kg/Kg) 8.117E-05 [3.0E-05]
Z/L AT GMH -0.013 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.57E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.826E-02 [2.0E 02]
Z/L AT 10 METERS -0.010 [0.02]	SEN.HEAT FLUX (Watts/m2) 8.73E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.539E 03 [6.0E-05]
MONIN OBUKHOV LENGTH (Meters) -9.837E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.46E-03 [4.0E-04]
	TOTAL 10 AT BUDGE. FLUX (Watts/m2) 2.03E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.205 [0.09]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE [illegible] DIVISION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF.
31%	30%	49%	8%	23%	0%	10%	10%	5%	10%	6%	6%	1 %

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79052/0111
START TIME: 0 2110 PST
END TIME: 0 2340 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* CHANNEL LABELS : RAW DATA (AVERAGE VOLTS).

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SCANNER ID	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
0.000	7.553	6.611	4.792	4.876	7.668	7.121	4.630	-0.104	4.962
No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17		
DATA WORD ID	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT.REF.B		
5.000	0.004	0.502	0.001	0.001	0.001	0.001	7.205		

* CHANNEL LABELS : RAW DATA (VOLTAGES). ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2		No.3	No.4	No.5	No.6	No.7	No.8
Time (GMT)	Min (Time)		U.WIND NEAR HEIGHT/LENGTH	UPWIND LAND Path(Meters)	DPTEMP (Volts)	DPTEMP.CAL (Volts)	WIND.CAL (Volts)	WSPEED (Coeff.)	WSPEED (Coeff.)
1441.000	24.1 1159.0		3.183	144	-0.008	-0.050	0.000	0.992	0.992

* CHANNEL NUMBER/PARAMETER ITEMS (1-17) TRANSLATED INTO ENGINEERING UNITS.

Scanner ID	Data Word	DATA Word	VOLT.REF.DEV (Volts)	VOLT.REF.DEV (Volts)	ZERO REF.DEV (Volts)	AC VOLT FLUX (No Units)	AC FREQ FLUX (No.)(Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0.000	5.000	12.0	0.000	0.000	0.000	0.000	0.000	115.3	59.80

* CHANNEL NUMBER/PARAMETER ITEMS (1-17) TRANSLATED INTO ENGINEERING UNITS.

Scanner ID	WIND SPEED.1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	DUCK WT TEMP	MEAN AIR TEMP
0.000	(Meters/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
0.000	14.22	8.31	NO DATA	313.7	1009.05	1.45E-01	13.436	284.963
Scanner ID	WIND SPEED.2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2			
0.000	(Meters/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)			
0.000	13.23	8.44	NO DATA	-0.500	1010.35			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

Meas.Height	SFC Temp 1	AIR Temp 1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID 1	VAP PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.0	11.914	13.963	14.083	8.293E-03	79.48	6.247E-03	10.963	13.719	NO Data
Scanner ID	SFC Temp 2	AIR Temp 2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP PRES.2	S.VAP.PRES.2	REF.INDEX 2
Meters	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
2.000	11.962	13.050	13.192	8.371E-03	99.45	6.307E-03	11.01	13.860	NO DATA

* CONTINUED FROM PAGE 435

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

RUN NUMBER: 79052/0111
START TIME: 0 2110 PST
END TIME: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CA

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

Stability	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (=INPUT WITH M.O.)
(-ROU ROUGHNESS LENGTH) (-1 Unstable) 0.000 AT 0.00M	MOMENTUM FLUX (N/m2) -8.60E-01	FRICTION VELOCITY (Meters/sec) 8.362E-01	GENERAL FORM DM/DZ= (N1-N2)*(LOG(Z1/Z2)+4.7*(Z1-Z2)/L)/(Z1*Z2*(1-15*Z/L)^.5)	GENERAL FORM N=S(DZ)+ (1+0.7*S/L+0.75*Z2-P*(1-14*Z/L)^.25)*(N1-N2)
GEOMETRIC MEAN HEIGHT (Meters) (M=(Z1*Z2)^1/2) 1.99	HUMIDITY FLUX (Kg/sec m2) 6.50E-05	SCALING SPEC.HUMID. (Kg/Kg) 6.497E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.55E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert Axis PSI=PSI1 WS SLOPE 4.78E-01
Z/L AT 0M 0.000	LAT.HEAT FLUX (Watts/m2) 1.63E 02	SCALING POT. TEMP. (Kelvin) -3.881E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= 8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE 8.44E-04
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 4.03E 01	ROUGHNESS LENGTH (Meters) 2.235E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.41E-03	N=POT TEMP (Kelvin) Z HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE 1.39E-01
Z/L AT Z1 -0.014	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.704E-03		N=ENTHALPY STRUC (kJ/M^2.K) Z=HEIGHT (M) Vert Axis PSI=NONE CTQ SLOPE=NO DATA
Z/L AT Z2 0.000				
STABILITY LENGTH (Meters) 1.80E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.18E 02			
P-11 AT Z1= 1.050239 P-11 AT Z2= 1.050977 P-12 AT Z1= 1.036642 P-12 AT Z2= 1.037211	BOWEN RATIO (no units) 0.248			

* GENERAL CONSTANTS.

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.400	9.8000	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2296

AIR SPECIFIC HEAT (ITcal/Kg Kel.) 0.4148E 02

WATER LAT.HEAT VAP (ITcal/Kg) 5.9064E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Correction executed by insertion of:

SAL 5002 +/- 0.0 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* [illegible] METEOROLOGICAL PARAMETERS AT TEN METERS:

[illegible]	Wind Speed (Meters/sec)	Dew Point (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
[illegible]	13.30	0.42	NO DATA	1010.25	13.436	-1.581	-1.483	-0.402	-0.304

[illegible]	[illegible]	SVIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
[illegible]	11.934	13.034	13.132	8.362E-03	79.46	6.800E-03	10.999	13.843	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

[illegible] (Watts/m2)	FLUX PARAMETERS (+UP, -DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
[illegible]	MOMENTUM FLUX (N/m2) -3.34E-01	FRICTION VELOCITY (Meters/sec) 5.212E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.716E-01	AIR DENSITY (Kg/m3) 1.2298
[illegible]	HUMIDITY FLUX (Kg/sec m2) 5.77E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.998E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.766E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4147E 02
[illegible] 0.000	LAT.HEAT FLUX (Watts/m2) 1.43E 02	SCALING POT.TEMP. (Kelvin) -3.890E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.027E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9061E 05
[illegible] (Meters) [illegible]	SEN.HEAT FLUX (Watts/m2) 2.52E 01	ROUGHNESS LENGTH (Meters) 5.529E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.374
[illegible] (Meters) [illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.514E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.162E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.82E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.45
	BOWEN RATIO (no units) 0.177			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. [illegible] ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

[illegible]	[illegible] AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
[illegible]	1%	64%	136%	52%	10%	102%	188%	32%	104%	20%	52%	64%
[illegible]	[illegible]	46%	40%	92%	10%	34%	132%	23%	63%	115%	43%	40%

* [illegible]

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* [illegible] AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS [illegible] CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

[illegible]	FLUX PARAMETERS (+UP, -DOWN)	SCALING PARAMETERS
[illegible]	MOMENTUM FLUX (N/m2) -3.50E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.534E-01 [6.0E-02]
[illegible]	HUMIDITY FLUX (Kg/sec m2) -5.27E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.015E-05 [3.0E-05]
[illegible]	LAT.HEAT FLUX (Watts/m2) 1.47E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.882E-02 [2.0E-02]
[illegible]	SEN.HEAT FLUX (Watts/m2) 3.49E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.316E-03 [6.0E-05]
[illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.49E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.369E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.91E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.096 [0.08]	

* [illegible] ERROR VALUES AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE [illegible] OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE [illegible] AND ARE "+or-":

[illegible]	[illegible] AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
[illegible]	1%	48%	8%	23%	0%	10%	18%	24%	17%	0%	64%	40%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090030
START TIME: 0:37:30 PST
END TIME: 1: 7:40 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE: [illegible] CHANNELS) /Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	[illegible]	[illegible]
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	[illegible]	[illegible]	[illegible]
6.265	0.000	0.081	4.824	4.908	7.901	7.411	4.614	[illegible]	[illegible]

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLOW	ZERO REF	SPARE A	SPARE B	VOLT REF B
3.750	3.775	2.541	0.401	0.331	0.191	7.595	

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ASSESSMENT

No.1	No.2	UPWIND NEAR	UPWIND FAR	IRIDIUM	[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	[illegible]	[illegible]	[illegible]
141, 116424	142, 113284	0.193	151	0.308	[illegible]	[illegible]	[illegible]

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS

MANUAL FLAG	ERROR COUNT	DATA SAVE	VOLT REF.2.2	VOLT REF. DEV	ZERO REF. DEV	AC [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(No.scans)	(No.scans)	(No.scans)	(Volts)	(Volts)	(Volts)	(Volts)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	0	180	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING DP ABOVE DP AND ESCARPMENT CORRECTIONS FROM [illegible]

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	DEW POINT 1	[illegible]	[illegible]	[illegible]
(Celsius)	(Meter/Sec)	(Celsius)	(Kelvin**2/3)	(Deg.True)	(Millibar)	[illegible]	[illegible]	[illegible]
11.682	15.18	8.48	NO DATA	334.4	[illegible]	[illegible]	[illegible]	[illegible]

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDAL TABLE	DEW PR
(Celsius)	(Meter/Sec)	(Celsius)	(Kelvin**2/3)	(Meter MLLW)	(Millibar)
11.826	15.76	8.58	NO DATA	0.59	[illegible]

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SAT.HUMID.1	SAT.PR.1	[illegible]	[illegible]
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/Kg)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	[illegible]
18.35	11.862	12.869	13.049	8.39E-03	80.21	8.82E-03	11.233	13.9[illegible]	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SAT.HUMID.2	SAT.PR.2	[illegible]	[illegible]
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/Kg)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	[illegible]
9.20	11.911	13.012	13.192	8.45E-03	89.52	9.43E-03	11.233	13.[illegible]	[illegible]

* CONTINUED BELOW

RUN NUMBER: 7905090030
START TIME: 0:37:30 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE: [illegible] CHANNELS) /Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (N/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM: DN/DZ=	GENERAL FORM: N=S.DZ+
-0.007 AT GMH	-8.93E-01	0.522E-01	K(N1-N2))/(ln(Z1/Z2)+ (Z1-Z2)/2)	[illegible] (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING [illegible] HUMID. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	6.70E-05	6.39[illegible]	DWS/DZ= 1.53E-01	PSI-PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 4.69E-01
-0.010	1.63E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-3.865E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.007	4.09E 01			SH SLOPE= 8.45E 03
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
-0.014	SKY AND SOLAR HEAT FLUX (Watts/m2)	2.334E-03	DPT/DZ= -5.39E-03	PSI=PSI2
Z/L AT Z2	1.45E 01			PTK SLOPE= 1.40E 01
0.007		DRAG COEF. AT 10 METERS		N=ENTH. STRUC. (K**2/3)
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	(Dimensionless) 1.55E 03		Z=HEIGHT (M) Vert.Axis
-1.343E 03	2.23E 02			PSI=PSIN
PSI1 AT Z1= 0.048253	BOWEN RATIO (no units)			ETP SLOPE=NO DATA
PSI1 AT Z2= 0.024982	0.247			
PSI2 AT Z1= 0.029413				
PSI2 AT Z2= 0.015DAB				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
(No units)	(M/sec.2)				
0.4	9.799	0.74	0.74	0.9[illegible] 03	1.3[illegible]-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2294

AIR SPECIFIC HEAT (Cal./Kg Kel.)
2.414[illegible]E 02

WATER LAT.HEAT VAP (Cal./Kg)
5.9962E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2 +/- DHF 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:37:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP STRUC. (Kel xM-2/3)	BAR.PRES (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V POT WT TEMP (Kelvin)
11.804	13.93	8.57	NO DATA	1010.01	13.400	-1.596	-1.498	-0.406	-0.308

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.902	12.994	13.092	8.447E-03	80.54	6.870E-03	11.109	13.793	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978).

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,--Unstable)
-0.018 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.018

MONIN-OBUKHOV LENGTH (Meters)
-5.655E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.70E-01

HUMIDITY FLUX (Kg/sec m2)
5.79E-05

LAT.HEAT FLUX (Watts/m2)
1.43E 02

SEN.HEAT FLUX (Watts/m2)
2.63E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.84E 02

BOWEN RATIO (no units)
0.184

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.483E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.584E 05

SCALING POT.TEMP. (Kelvin)
-3.866E-02

ROUGHNESS LENGTH (Meters)
6.541E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.549E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.066E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.787E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.119E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2296

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4148E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9064E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.334

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.159E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.21

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
74%	74%	65%	136%	53%	10%	103%	189%	32%	104%	20%	52%	65%
163%	163%	46%	41%	91%	10%	34%	132%	23%	64%	114%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 0:37:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,--Unstable)
-0.011 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.014 [0.02]

Z/L AT 10 METERS
-0.011 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-9.413E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-5.87E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
6.00E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.48E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
3.56E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.45E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.93E 02 [3.0E+01]

BOWEN RATIO (no units)
0.210 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.746E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.259E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.865E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.412E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.314E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
28%	27%	45%	9%	21%	0%	11%	15%	23%	15%	0%	60%	44%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090100
START TIME: 1: 7:50 PST
END TIME: 1:38: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.804	4.882	7.810	7.295	4.616	-0.104	5.099

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.223	3.276	2.538	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WTBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 117247	1421 116091	0.183	755	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	1	179	0	0	9	0	0	115.3	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.735	15.90	8.38	NO DATA	318.4	1009.34	1.45E 01	13.372	284.952

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES 2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.859	13.55	8.47	NO DATA	-0.65	1010.14

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.905	12.899	13.079	8.332E-03	79.91	6.780E-03	10.954	13.708	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.949	13.042	13.142	8.390E-03	79.71	6.834E-03	11.036	13.845	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090100
START TIME: 1: 7:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.006 AT CRH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L
0.0

Z/L AT ... ERS
-0.007

Z/L AT Z1
-0.01?

Z/L AT Z2
-0.006

MONIN-OBUKHOV LENGTH (Meters)
-1.926E 03

PSI1 AT Z1= 0.042767
PSI1 AT Z2= 0.032001
PSI2 AT Z1= 0.026025
PSI2 AT Z2= 0.015300

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-9.33E-01

HUMIDITY FLUX
(Kg/sec m2)
6.83E-05

LAT.HEAT FLUX
(Watts/m2)
1.69E 02

SEN.HEAT FLUX
(Watts/m2)
3.86E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.45E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
2.22E 02

BOWEN RATIO
(no units)
0.248

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
8.713E-01

SCALING SPEC.HUMD.
(Kg/Kg)
6.381E-05

SCALING POT. TEMP.
(Kelvin)
-3.566E-02

ROUGHNESS LENGTH
(Meters)
2.451E-03

DRAG COEF. AT 10 METERS
(Dimensionless)
3.805E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.63E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z-HEIGHT (Meters)
DPT/DZ= -4.98E-03

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 4.59E-01

N=SPEC HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.47E 03

N=POT.TEMP.(Kelvin)
Z-HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -1.52E 01

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2293

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4147E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9064E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2: +/- .001-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.843	13.72	8.46	NO DATA	1010.04	13.372	-1.529	-1.431	-0.348	-0.250

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.941	13.024	13.122	8.384E-03	79.74	6.810E-03	11.027	13.829	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -3.56E-01	FRICTION VELOCITY (Meters/sec) 5.377E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.891E-01	AIR DENSITY (Kg/m3) 1.2295
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.78E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.744E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.781E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4147E 02
Z/L AT GMH -0.023	LAT.HEAT FLUX (Watts/m2) 1.43E 02	SCALING POT.TEMP. (Kelvin) -3.732E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.007E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9062E 05
Z/L AT 10 METERS -0.018	SEN.HEAT FLUX (Watts/m2) 2.49E 01	ROUGHNESS LENGTH (Meters) 6.135E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.307
MONIN-OBUKHOV LENGTH (Meters) -5.635E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.536E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.158E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.82E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.24
	BOWEN RATIO (no units) 0.174			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
73%	73%	62%	135%	53%	10%	103%	188%	31%	104%	22%	51%	62%
165%	165%	46%	41%	93%	10%	34%	133%	23%	64%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1: 7:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,--Unstable) -0.010 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -6.01E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.793E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.00E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.847E-05 [3.0E-05]
Z/L AT GMH -0.013 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.49E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.592E-02 [2.0E-02]
Z/L AT 10 METERS -0.010 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.37E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.452E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.002E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.422E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.92E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.197 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
31%	30%	49%	16%	21%	0%	12%	14%	25%	15%	3%	64%	48%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090130
START TIME: 1:38:10 PST
END TIME: 2: 8:20 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.000	0.001	4.773	4.852	8.570	7.901	4.589	-0.164	5.027

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.685	3.775	2.531	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WI#FCAL	WSIEC	WS2EC
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 116616	1421 118002		0.183	156	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
11.662	16.46	8.20	NO DATA	315.9	1008.61	1.46E 01	13.336	284.891

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
11.800	14.66	8.30	NO DATA	-0.67	1009.71

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	11.841	12.821	13.001	8.278E-03	79.27	6.697E-03	10.816	13.645	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	11.898	12.968	13.058	8.289E-03	79.08	6.742E-03	10.901	13.785	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090130
START TIME: 1:38:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.005 AT GMH	MOMENTUM FLUX (Nt/m2) -1.40E 00	FRICTION VELOCITY (Meters/sec) 1.067E 00	GENERAL FORM:DN/DZ= [(N1-N2)]/[(ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 8.33E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.347E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.01E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.75E-01
Z/L AT GMH -0.006	LAT.HEAT FLUX (Watts/m2) 2.86E 02	SCALING POT. TEMP. (Kelvin) -3.881E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.51E 03
Z/L AT 10 METERS -0.005	SEN.HEAT FLUX (Watts/m2) 5.15E 01	ROUGHNESS LENGTH (Meters) 3.426E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.45E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.39E 01
Z/L AT Z1 -0.009	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF. AT 10 METERS (Dimensionless) 4.694E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.004	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.72E 02			
MONIN-OBUKHOV LENGTH (Meters) -2.114E 03	BOWEN RATIO (no units) 0.250			
PSI1 AT Z1= 0.031311 PSI1 AT Z2= 0.015999 PSI2 AT Z1= 0.018985 PSI2 AT Z2= 0.009652				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2291

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4145E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.996BE 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090130
START TIME: 1:38:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.783	14.87	8.28	NO DATA	1009.61	13.336	-1.552	-1.454	-0.385	-0.287

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.881	12.951	13.049	8.282E-03	79.10	6.737E-03	10.891	13.769	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.014 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.018

Z/L AT 10 METERS
-0.014

MONIN-OBUKHOV LENGTH (Meters)
-7.069E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.38E-01

HUMIDITY FLUX (Kg/sec m2)
6.41E-05

LAT.HEAT FLUX (Watts/m2)
1.58E 02

SEN.HEAT FLUX (Watts/m2)
2.72E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.00E 02

BOWEN RATIO (no units)
0.172

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.971E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.726E-05

SCALING POT.TEMP. (Kelvin)
-3.668E-02

ROUGHNESS LENGTH (Meters)
8.622E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.612E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/ser2)
-3.565E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.405E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.190E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2293

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414AE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9065E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.264

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.154E-02

BAR.PRES.AT WT LEVEL (Millibar)
1010.81

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
65%	65%	55%	131%	47%	10%	99%	178%	28%	103%	20%	48%	55%
164%	164%	46%	40%	92%	10%	34%	133%	23%	63%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090130
START TIME: 1:38:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.007 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.010 [0.02]

Z/L AT 10 METERS
-0.007 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.353E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-8.76E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
6.86E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.70E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
4.33E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.19E 02 [3.0E+01]

BOWEN RATIO (no units)
0.295 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.112E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.824E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.850E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.080E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.909E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
26%	26%	55%	16%	29%	0%	18%	19%	29%	16%	3%	62%	54%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7965090200
START TIME: 2: 8:30 PST
END TIME: 2:38:40 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	6.661	6.661	4.771	4.848	8.054	7.512	4.605	-0.104	5.185

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.682	3.986	2.540	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP 1	AIR TEMP 2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 116467	1421 117826	0.199	110	-0.008	0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.79

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
11.647	10.47	8.18	NO DATA	321.3	1008.86	1.45E 01	13.332	284.875

AIR TEMP 2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.783	13.71	8.27	NO DATA	-0.65	1009.96

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(Millibar)	(Kel.xM-2/3)
15.35	11.827	12.805	12.985	8.222E-03	79.26	6.690E-03	10.807	13.635	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.44	11.893	12.948	13.049	8.277E-03	79.92	6.729E-03	10.683	13.373	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7965090200
START TIME: : 8:30 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BRAD.RICHARDSON NUMB.R	MOMENTUM FLUX	FRICTION VELOCITY	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
(+=Stable, -=Unstable)	(NT/M2)	(Meters/sec)	[(N1-N2)1/(ln(Z1/Z2)+	[(LnZ1-PSI)-(LnZ2-PSI)]/
0.006 wf GMH	1.08E 01	9.357E-01	(Z1*Z2)1/2]	[N1-N2]
AEROLOGIC MEAN HEIGHT	HUMIDITY FLUX	SCALING SPEC.HUMID	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
(Meter) GMH (Z1*Z2)1/2	(Kg/sec M2)	(Kg/Kg)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
12.99	2.33E 05	6.369E-04	DWS/DZ= 1.75E-01	PSI=PSI1
				WS SLOPE= 4.27E-01
Z/L AT GMH	LAT HEAT FLUX			
-0.068	(Watts/M2)			
	1.81E 02	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.006		3.676E-01	DSH/DZ= -8.92E-06	PSI=PSI2
	SEN.HEAT FLUX			SH SLOPE= -8.49E 03
Z/L AT Z1	(Watts/m2)			
-0.011	4.78E 01	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT Z2	SKY AND SOLAR HEAT FLUX	2.827E 03	DPT/DZ= -5.15E 03	PSI=PSI2
-0.005	(Watts/m2)			PTK SLOPE= 1.47E 01
	1.45E 01			
MONIN OBUKHOV LENGTH		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC.(KxM 2/3)
(Meters)	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert.Axis
1.210E 03	(Watts/m2)	4.113E 03		PSI=NONE
	2.35E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 1.063372	BOWEN RATIO			
PSI1 AT Z2= 0.819628	(No units)			
PSI2 AT Z1= 0.023319	0.236			
PSI2 AT Z2= 0.011693				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec2)	PRDTLE TUR.PRANDTL NUMBER	PRDTLE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.93E 03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2295
AIR SPECIFIC HEAT (Ical/Kg Kel.)
2.4145E 02
WATER LAT HEAT VAP (Ical/Kg)
5.9969E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative computation executed by insertion of

SH1 SH2 +/- DH= 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 8:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.766	14.09	8.26	NO DATA	1009.86	13.332	-1.566	-1.468	-0.401	-0.303

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.864	12.931	13.029	8.270E-03	79.05	6.725E-03	10.874	13.756	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL.,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.017 AT GMH	MOMENTUM FLUX (Nt/m2) -3.81E-01	FRICTION VELOCITY (Meters/sec) 5.565E-01	WITH LONG. VELOCITY (Meter2/sec2) -3.096E-01	AIR DENSITY (Kg/m3) 1.2297
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.09E-05	SCALING SPEC.HUMID. (Kg/Kg) 8.902E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 6.092E-05	AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.4145E 02
Z/L AT GMH -0.022	LAT.HEAT FLUX (Watts/m2) 1.51E 02	SCALING POT.TEMP. (Kelvin) -3.779E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.103E-02	WATER LAT.HEAT VAP. (Ical./Kg) 5.9066E 05
Z/L AT 10 METERS -0.017	SEN.HEAT FLUX (Watts/m2) 2.61E 01	ROUGHNESS LENGTH (Meters) 6.866E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.264
MONIN-OBUKHOV LENGTH (Meters) -5.957E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.560E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.155E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.91E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.06
	BOWEN RATIO (no units) 0.174			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
70%	70%	60%	133%	51%	10%	102%	184%	30%	104%	21%	50%	60%
164%	1.4%	46%	40%	92%	10%	34%	132%	23%	63%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2: 8:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.009 [6.02] AT GMH	MOMENTUM FLUX (Nt/m2) -6.84E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 7.217E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.38E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 7.942E-05 [3.0E-05]
Z/L AT GMH -0.012 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.58E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.692E-02 [2.0E-02]
Z/L AT 10 METERS -0.009 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.69E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.679E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.098E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.585E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.04E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.200 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
30%	29%	51%	11%	23%	0%	13%	16%	26%	16%	1%	64%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090230
START TIME: 2:38:50 PST
END TIME: 3: 9: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.776	4.854	8.122	7.495	4.592	-0.104	5.221

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.688	3.777	2.530	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPTCAL	DPTCAL	WSTEST	WSTEST	WSCOR
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 116505	1421 117895	0.199	100	-0.008	-0.050	0.005	3.599	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.651	15.60	8.21	NO DATA	322.5	1008.67	1.40E 01	13.338	284.860

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.790	13.87	8.31	NO DATA	-0.60	1009.77

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.830	12.812	12.991	8.239E-03	79.42	6.765E-03	10.829	13.634	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.680	12.959	13.049	8.297E-03	79.20	6.748E-03	10.910	13.776	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090230
START TIME: 2:38:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable,-=Unstable)
-0.005 AT GMH

GEOMETRIC MEAN HEIGHT
(Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.007

Z/L AT 10 METERS
-0.005

Z/L AT Z1
-0.009

Z/L AT Z2
0.005

MONIN-OBUKHOV LENGTH
(Meters)
-1.942E 03

PSI1 AT Z1= 0.033971
PSI1 AT Z2= 0.017336
PSI2 AT Z1= 0.020615
PSI2 AT Z2= 0.010494

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.30E 00

HUMIDITY FLUX
(Kg/sec m2)
8.04E-05

LAT.HEAT FLUX
(Watts/m2)
1.99E 02

SEN.HEAT FLUX
(Watts/m2)
5.01E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
2.63E 02

BOWEN RATIO
(no units)
0.252

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
1.029E 00

SCALING SPEC.HUMD.
(Kg/Kg)
-6.35?E-05

SCALING POT. TEMP.
(Kelvin)
-3.920E-02

ROUGHNESS LENGTH
(Meters)
3.281E-03

DRAG COEF. AT 10 METERS
(Dimensionless)
4.883E-03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
((N1-N2))/(ln(Z1/Z2)+
(Z1*Z2)1/2)

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.93E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -5.50E-03

PROFILE SLOPES (+=INCR WITH HEIGHT)

GENERAL FORM:DN/SLOPE=
((lnZ1-PSI)-(lnZ2-PSI))/
(N1-N2)

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 3.87E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -8.50E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PT SLOPE= 1.39E 01

N=LnTEMP STRUC (KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2293

AIR SPECIFIC HEAT
(1Cal./Kg Kel.)
2.4145E 02

WATER LAT.HEAT VAP
(1Cal./Kg)
5.9069E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V POT-WT TEMP (Kelvin)
11.773	14.08	8.38	NO DATA	1009.67	13.338	-1.565	-1.467	-0.397	-0.299

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.871	12.941	13.039	8.290E-03	79.22	6.743E-03	10.901	13.760	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.017 AT GMH	-3.80E-01	5.558E-01	-3.089E-01	1.2295
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	6.05E-05	8.856E-05	6.051E-05	2.4146E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.022	1.50E 02	-3.778E-02	2.100E-02	5.9066E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.017	2.61E 01	6.840E-04		15.267
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-5.946E 02	1.46E 01	1.559E-03		1.155E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	1.90E 02			1010.87
	BOWEN RATIO (no units)			
	0.174			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
64%	64%	54%	130%	47%	10%	99%	177%	27%	103%	20%	47%	54%
164%	164%	46%	40%	92%	10%	34%	132%	23%	63%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.008 [0.02] AT GMH	-8.03E-01 [6.0E-02]	7.729E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	6.52E-05 [8.0E-06]	-7.904E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.011 [0.02]	1.61E 02 [2.0E+01]	-3.899E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.008 [0.02]	4.20E 01 [3.0E+00]	1.923E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-1.188E 03	1.46E 01 [2.0E+01]	2.973E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	2.09E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.298 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
33%	32%	58%	17%	30%	0%	19%	19%	31%	16%	2%	68%	57%

* END OF DATA RUN

RUN NUMBER: [illegible]
START TIME: [illegible] PST
START DATE: [illegible] (DAY [illegible])

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* CONTINUED BELOW

RUN NUMBER: 79050719Bb
START TIME: 8 9:11 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE WATER
ARL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CA

PRINT DATE: 11 JUN 1981
DATA SAMPLING RATE (ALL CHANNELS): 7/MIN
DATA AVERAGING PERIOD: 30 MIN
NUMBER/ALTITUDE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.665 AT GRH	MOMENTUM FLUX (Nt/m2) -1.32E 00	FRICTION VELOCITY (Meters/sec) 1.055E 00	GENERAL FORM DM/DZ= [illegible]	GENERAL FORM M SLOPE= [illegible]
GEOMETRIC MEAN HGT RT (meters) GRH=(Z1xZ2)1/2 12.77	HUMIDITY FLUX (Kg/sec m2) 8.29E 05	SCALING REF.TEMP (Kelvin) 6.503E-03	M WIND SPEED (m/sec) Z HEIGHT (Meters) DWS/DZ= 1.95E 01	M:WIND SPEED (m/sec) Z HEIGHT (M) Vert Axis PSI=PSIi WS SLOPE 3.79E-01
Z/L AT GRH 0.006	LATENT HEAT FLUX (Watts/m2) 2.04E 02	SCALING POT. TEMP (Kelvin) 3.974E 02	M:SPEC.HUMIDITY (Kg/Kg) Z HEIGHT (Meters) DSH/DZ= 8.92E-06	M:SPEC HUMIDITY (Kg/Kg) Z:HEIGHT (M) Vert Axis PSI=PSIZ SH SLOPE= 8.51E 03
Z/L AT 10 METERS 0.005	SENSIBLE HEAT FLUX (Watts/m2) 9.22E 01	ROUGHNESS LENGTH (Meters) 5.383E-03	M:POT.TEMP (Kelvin) Z HEIGHT (Meters) DPT/DZ= -5.58E 03	M:POT TEMP (Kelvin) Z:HEIGHT (M) Vert Axis PSI=PSIQ PTH SLOPE= 1.32E 01
Z/L AT Z1 0.009	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF. AT 10 METERS (Dimensionless) 5.547E 0-		M:HUMIDITY (Kg/Kg) (x10**-3) Z:HEIGHT (M) Vert Axis PSI=NONE EVP SLOPE=NO DATA
Z/L AT Z2 0.005	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.71E 02			
POINT OF ZERO FLUX (meters) 2.502E 03	BOWEN RATIO (no units) 0.296			
K-H1 AT Z1= 8.637E03				
K-H1 AT Z2= 8.116E12				
K-H2 AT Z1= 6.647E04				
K-H2 AT Z2= 8.910E08				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.SCHMIDT NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANS.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	6.93E 03	1.32E 03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2296

AIR SPECIFIC HEAT (Cal/gm Kel) 2.414E 02

WATER LAT HEAT VAP (Cal/gm) 5.97E 02

* GENERAL NOTES:
Accuracy limitation expected for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SHI SH= +Z -.08 3 KG/KG.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 3: 9:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.726	13.76	8.34	NO DATA	1009.76	13.344	-1.618	-1.520	-0.448	-0.350

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.30	11.824	12.696	12.994	8.310E-03	79.64	6.757E-03	10.926	13.718	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.019 AT GMH	MOMENTUM FLUX (Nt/m2) -3.58E-01	FRICTION VELOCITY (Meters/sec) 5.398E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.914E-01	AIR DENSITY (Kg/m3) 1.2298
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.89E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.072E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.889E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4146E-02
Z/L AT GMH -0.024	LAT.HEAT FLUX (Watts/m2) 1.46E 02	SCALING POT.TEMP. (Kelvin) -3.936E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 2.125E-02	WATER LAT HEAT VAP. (ITcal./Kg) 5.9068E 05
Z/L AT 10 METERS -0.019	SEN.HEAT FLUX (Watts/m2) 2.64E 01	ROUGHNESS LENGTH (Meters) 6.213E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.274
MONIN-OBUKHOV LENGTH (Meters) -5.382E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.538E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.155E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.87E 02			BAR.PRES.AT WT LEVEL (Millibar) 1010.96
	BOWEN RATIO (no units) 0.181			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
61%	61%	52%	129%	45%	10%	98%	174%	26%	103%	19%	46%	52%
163%	163%	46%	40%	91%	10%	34%	131%	23%	63%	114%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 3: 9:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable, -Unstable) -0.009 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -3.69E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 7.830E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.45E 05 [8.0E-05]	SCALING SPEC.HUMID. (Kg/Kg) -7.914E-05 [3.0E-05]
Z/L AT GMH -0.011 [0.01]	LAT.HEAT FLUX (Watts/m2) 1.60E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.968E-02 [2.0E-02]
Z/L AT 10 METERS -0.009 [0.01]	SEN.HEAT FLUX (Watts/m2) 4.30E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.960E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.15E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 3.199E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.08E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.211 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
39%	37%	61%	21%	31%	6%	22%	18%	33%	16%	1%	71%	60%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090330
START TIME: 3:39:30 PST
END TIME: 4: 9:40 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	6.000	6.001	4.783	4.865	7.615	7.593	4.597	-0.104	5.386

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.788	3.773	2.541	0.001	0.001	0.301	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1	No.2	UPWIND NEAR	UPWIND LAND	OPTICAL	OPTICAL	WIBERAL	WIBERAL	WIBERAL
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Counts)	(Counts)
1411 116101	1421 117501	0.199	99	-0.000	0.050	0.103	0.552	1.792

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC ERROR FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.).1V)	(Counts)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.77

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.610	14.63	8.36	NO DATA	335.4	1008.75	1.40E 01	13.457	284.848

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.750	13.13	8.37	NO DATA	-0.42	1009.85

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.790	12.774	12.954	8.265E-03	79.86	6.724E-03	10.861	13.600	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.840	12.824	13.014	8.333E-03	79.74	6.776E-03	10.957	13.740	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090330
START TIME: 3:39:30 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER	*MOMENTUM FLUX*	*FRICTION VELOCITY*	GENERAL FORM:DN/DZ=	GENERAL FORM:N'SLOPE=
(+=Stable,-=Unstable)	(N1/m2)	(Meters/sec)	[(N1-N2)]/[ln(Z1/Z2)*	[(LnZ1-PSI)-(LnZ2-PSI)]/
-0.007 AT GMH	-9.90E-01	8.972E-01	(Z1*Z2)1/2]	[N1-N2]
GEOMETRIC MEAN HEIGHT	HUMIDITY FLUX	SCALING SPEC.HUMD.	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
(Meter) GMH=(Z1*Z2)1/2	(Kg/sec m2)	(Kg/Kg)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
12.99	7.05E-05	-6.380E-05	DWS/DZ= 1.67E-01	PSI=PSI1
				WS SLOPE= 4.46E-01
Z/L AT GMH	LAT.HEAT FLUX			
-0.009	(Watts/m2)	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
	1.74E 02	(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS		4.018E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.007	SEN.HEAT FLUX			SH SLOPE= -8.47E 03
	(Watts/m2)			
Z/L AT Z1	4.48E 01	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.011		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
	SKY AND SOLAR HEAT FLUX	2.607E-03	DPT/DZ= -5.61E-03	PSI=PSI2
Z/L AT Z2	(Watts/m2)			PTK SLOPE= 1.37E 01
-0.006	1.46E 01			
		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC (K**2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert.Axis
(Meters)	(Watts/m2)	4.45e 03		PSI=NONE
-1.433E 03	2.34E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.045378	BOWEN RATIO			
PSI1 AT Z2= 3.323380	(no units)			
PSI2 AT Z1= 0.027636	0.257			
PSI2 AT Z2= 0.014140				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec**2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2295

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.414E 02

WATER LAT.HEAT VAP
(ITcal./kg)
5.907IE 02

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0HE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:39:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kel.in)	V.POT-WT TEMP (Kelvin)
11.733	13.31	8.36	NO DATA	1009.75	13.357	-1.624	-1.526	-0.452	-0.354

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	11.831	12.906	13.004	8.325E-03	79.75	6.770E-03	10.946	13.725	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable)
-0.021 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH-(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.027

Z/L AT 10 METERS
-0.021

MONIN-OBUKHOV LENGTH (Meters)
-4.859E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.29E-01

HUMIDITY FLUX (Kg/sec m2)
5.69E-05

LAT.HEAT FLUX (Watts/m2)
1.41E 02

SEN.HEAT FLUX (Watts/m2)
2.57E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.81E 02

BOWEN RATIO (no units)
0.183

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.171E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.944E-05

SCALING POT.TEMP. (Kelvin)
-4.002E-02

ROUGHNESS LENGTH (Meters)
5.388E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.509E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.674E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.680E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
2.069E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2297

AIR SPECIFIC HEAT (ITcal./Kg Kel)
2.414?E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9068? 05

VAP.PRES.AT WT LEVEL (Millibar)
15.288

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.156E-02

BAR.PRES.AT WT LEVEL (Millibar)
1010.95

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	68%	59%	133%	49%	16%	100%	182%	29%	104%	19%	49%	59%
163%	163%	46%	40%	91%	10%	34%	131%	23%	63%	114%	46%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:39:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,- Unstable)
-0.011 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH-(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.014 [0.02]

Z/L AT 10 METERS
-0.011 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-9.111E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-6.19E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
6.80E 05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.48E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
3.81E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.94E 02 [3.0E+01]

BOWEN RATIO (no units)
0.214 [0.98]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.837E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.974E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-4.016E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.50GE-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.620E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
38%	37%	54%	13%	26%	0%	15%	18%	28%	16%	0%	69%	5.5

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090405
START TIME: 04:05:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* RAW DATA (CHANNEL RAW DATA AVERAGED OVER):

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
TEMP.SIRUC.1	TEMP.SIRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR
1.775	1.775	4.224	4.077	7.265	6.299	4.611	-5.104	5.293

No.11	No.12	No.13	No.14	No.15	No.16	No.17
RAIN WT.TRACE	# FREQUENCY	MASON FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.P
5.000	4.611	3.901	3.101	5.311	5.295	

* PROFILE CHANNEL RAW DATA (AVERAGED): ESCARPMENT Data, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1	No.2	DOWIND NEAR	DOWIND LAND	DWIFCAL	DPSFCAL	WIFFCAL	W.FFF	W.SFF
SFC TEMP.1	SFC TEMP.2	DISTANCE/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Volts/M.P.H.)	(Volts/M.P.H.)
14.3 15:41	13	3.192	93	5.190	5.954	5.556	5.245	5.245

* ALL MEASUREMENTS IN FARADAY CAGE DIGITIZED INTO ENGINEERING UNITS:

SYNC.PULSE FLAG	PSYCHR.CHART	DATA CAGE	VOLT.REF.DEW	VOLT.REF.DEW	ZERO REF.DEW	DC VOLT.REF	C.FREQ.REF	LF SPECTRUM	ZERO FREQUENCY
(No.=1.0)	(No.=1.0)	(No.=1.0)	(No.=5.0150)	(No.=5.0150)	(No.=1.6222)	(No.=2.55)	(No.=1Hz)	(Volts)	(Hz)
1	1	1	0	0	0	1	3	11.2	29.50

* ON-SURFACE MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE DAT, AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.SIRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD	DELK WT TRACE	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.78	13.76	2.28	NO DATA	324.9	1008.55	1.4E-01	17.256	284.854

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.SIRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.764	12.68	8.33	NO DATA	4.2	1010.65

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	SLOPE PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
15.35	11.804	12.734	12.964	8.234E-03	79.48	6.693E-03	11.822	1.447	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	SLOPE PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.23	11.654	12.534	13.045	8.312E-03	79.43	6.756E-03	11.944	13.250	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090400
START TIME: 04:05:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.008 AT GMH	MOMENTUM FLUX (N/m2) -8.28E-01	FRICTION VELOCITY (Meters/sec) 8.204E-01	GENERAL FORM:DN/DZ= (N1-N2)/(Ln(Z1/Z2)* (Z1xZ2)/Z1)	GENERAL FORM: N=S(Z) E=[Ln(Z1/Z2)]/[S(Z1)-S(Z2)] [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.47E-05	SCALING SPEC.HUMD. (Kg/Kg) 6.413E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.52E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Wind Axis PSI-PSI2 WS SLOPE 4.9[illegible]E-01
Z/L AT GMH -0.011	LAT.HEAT FLUX (Watts/m2) 1.60E 02	SCALING POT. TEMP. (Kelvin) 4.036E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Wind Axis PSI-PSI2 SH SLOPE -8.4[illegible]E-06
Z/L AT 10 METERS -0.008	SEN.HEAT FLUX (Watts/m2) 4.12E 01	ROUGHNESS LENGTH (Meters) 2.13AE-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.41E-03	N=POT TEMP (Kelvin) Z=HEIGHT (M) Wind Axis PSI-PSI2 PTP SLOPE 1.3[illegible]E-01
Z/L AT Z1 -0.01[illegible]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.93[illegible]E-03		N=WIND SPEED (Kg/M...) Z=HEIGHT (M) Wind Axis PSI=NONE (3D FIELD NO DATA
Z/L AT Z2 -0.008				
MONIN-OBUKHOV LENGTH (Meters) -1.19BE 03	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.16E 02			
PSI1 AT Z1= 0.054137 PSI1 AT Z2= 0.028034 PSI2 AT Z1= 0.033059 PSI2 AT Z2= 0.016980	BOWEN RATIO (no units) 0.257			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS:

AIR DENSITY (Kg/M3) 1.[illegible]

AIR SPECIFIC HEAT (Ttl/gm Kg Kel) 2.414AE 07

WATER VAPOR HEAT CON (Ttl/gm Kg) 5.[illegible]E 07

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SHI SH2 +/- .00 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79150904CC MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 4: 9:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.747	12.76	8.31	NO DATA	1009.95	13.356	-1.609	-1.511	-0.440	-0.342

WAVE HT (Meters)	PDT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
11.10	11.945	12.916	13.014	8.301E-03	79.43	6.749E-03	10.915	13.740	NO DATA

* B-R-B BODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+ Stable, - Unstable) 1.024 AT GM4	MOMENTUM FLUX (Nt/m2) -2.95E-01	FRICTION VELOCITY (Meters/sec) 4.896E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.397E-01	AIR DENSITY (Kg/m3) 1.2299
STABILITY MEAN HEIGHT (Meters) [M(Z)*Z(I)]/2 12.59	HUMIDITY FLUX (Kg/sec m2) 5.49E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.125E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.494E-05	AIR SPECIFIC HEAT (ITcal /Kg Kel) 2.414E-02
Z/L AT GM4 0.838	LAT.HEAT FLUX (Watts/m2) 1.36E 02	SCALING POT.TEMP. (Kelvin) -4.032E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.974E-02	WATER LAT HEAT VAP (ITcal /Kg) 5.906E 05
Z/L AT 10 METERS 0.033	SEN.HEAT FLUX (Watts/m2) 2.45E 01	ROUGHNESS LENGTH (Meters) 4.483E-04		VAP.PRES AT WT LEVEL (Millibar) 15.290
MONIN-OBUKHOV LENGTH (Meters) -4.673E 0	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01	DRAG COEF AT 10 METERS (Dimensionless) 1.472E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.156E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.75E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.15
	BOWEN RATIO (no units) 6.181			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. AT GM4	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
36%	70%	62%	135%	51%	10%	100%	185%	31%	104%	20%	51%	62%
163%	164%	46%	40%	91%	10%	34%	131%	23%	63%	114%	45%	40%

* CONTINUED BELOW

RUN NUMBER: 79150904CC MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 4: 9:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CA DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+ Stable, - Unstable) 9.213 (6.0E-01) AT GM4	MOMENTUM FLUX (Nt/m2) -5.22E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 6.385E-01 (6.0E-01)
STABILITY MEAN HEIGHT (Meters) [M(Z)*Z(I)]/2 12.59	HUMIDITY FLUX (Kg/sec m2) 5.72E-05 (3.0E-06)	SCALING SPEC HUMID. (Kg/Kg) -9.12E-05 (3.0E-05)
Z/L AT GM4 0.017 (1.0E)	LAT.HEAT FLUX (Watts/m2) 1.41E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -4.535E-02 (2.0E-02)
Z/L AT 10 METERS 0.013 (0.02)	SEN.HEAT FLUX (Watts/m2) 3.52E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 1.120E-03 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -1.772E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01 (2.0E+01)	DRAG COEF AT 10 METERS (Meters) 2.43BE-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.8BE 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.312 (0.38)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE COMPOSITE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE CALCULATED TO PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. AT GM4	Z/L at 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH. LENGTH	DRAG COEF
40%	41%	5%	10%	2%	0%	12%	18%	22%	17%	0%	69%	3

* END OF DATA (4M

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090430
START TIME: 4:40:10 PST
END TIME: 5:10:20 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.265	0.000	0.011	4.796	4.882	6.977	6.951	4.624	0.033	5.331

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.715	3.773	2.530	0.001	0.001	0.001	0.001	6.235

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP/EQAL	DP/EQAL	WIREQAL	WSLOP	WSLES
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 116236	1421 117613	0.199	86	0.398	0.951	1.300	0.992	1.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA SAVE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.=.6050)	B(No.=.6050)	(No.=.6020)	(No.=59)	(No.=1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	1	0	117.3	59.72

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM^2/3)	(Deg.True)	(Millibar)	(Watts/M2)	(Celsius)	(Kelvin)
11.624	13.41	8.33	NO DATA	326.3	1009.16	1.16E 01	13.364	284.862

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM^2/3)	(Meter MSL)	(Millibar)
11.743	12.11	8.47	NO DATA	-0.16	1010.26

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
18.35	11.803	12.294	12.974	8.389E-03	80.19	6.758E-03	10.921	13.618	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
9.23	11.80	12.943	13.033	8.493E-03	80.22	6.824E-03	11.037	13.757	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090430
START TIME: 4:40:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING Per 30 Min
NOMENCLATURE: 1=UPPER LEVEL, LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RI-HARDSON NUMBER (+ Stable,- Unstable) 0.009 AT GMH	MOMENTUM FLUX (N1/M2) 7.63E-01	FRICTION VELOCITY (Meters/sec) 7.874E-01	GENERAL FORM:DN/DZ= ((N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) (GMH=(Z1*Z2))1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 6.22E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.418E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.46E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIM WS SLOPE= 5.08E-01
Z/L AT GMH -0.011	LAT.HEAT FLUX (Watts/m2) 1.54E 02	SCALING POT. TEMP. (Kelvin) 3.853E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIH SH SLOPE= -8.47E 03
Z/L AT 10 METERS -0.009	SEN.HEAT FLUX (Watts/m2) 3.77E 01	ROUGHNESS LENGTH (Meters) 1.930E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.35E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIH PTK SLOPE= -1.40E 01
Z/L AT Z1 -0.016	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.16E 01	DRAG COEF. AT 10 METERS (Dimensionless) 3.948E 03		N=LnTEMP.STRUC.(K*M^2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
Z/L AT Z2 -0.008				C12 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters) -1.146E 03	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.03E 02			
PSI1 AT Z1= 0.056025 PSI1 AT Z2= 0.029042 PSI2 AT Z1= 0.034231 PSI2 AT Z2= 0.017596	BOWEN RATIO (no units) 0.245			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec^2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2299

AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.414E 02

WATER LAT.HEAT VAP. (Ical./kg) 5.923E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .08E 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:40:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.745	12.26	8.45	NO DATA	1010.16	13.364	-1.619	-1.521	-0.439	0.341

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	11.843	12.925	13.023	8.384E-03	80.22	6.815E-03	11.023	13.741	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.027 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.034

Z/L AT 10 METERS
-0.026

MONIN-OBUKHOV LENGTH (Meters)
-3.821E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.66E-01

HUMIDITY FLUX (Kg/sec m2)
5.15E-05

LAT.HEAT FLUX (Watts/m2)
1.28E 02

SEN.HEAT FLUX (Watts/m2)
2.38E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.16E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.63E 02

BOWEN RATIO (no units)
0.187

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.653E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.016E-05

SCALING POT.TEMP. (Kelvin)
-4.119E-02

ROUGHNESS LENGTH (Meters)
3.771E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.439E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.165E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
5.160E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.917E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2361

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4142E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9067E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.301

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.157E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.36

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
71%	71%	62%	135%	52%	11%	103%	186%	31%	104%	20%	51%	62%
163%	163%	46%	41%	91%	11%	34%	131%	23%	64%	114%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 4:40:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.014 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.018 [0.02]

Z/L AT 10 METERS
-0.014 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-7.121E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-4.77E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
5.40E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.34E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
3.27E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.16E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.73E 02 [3.0E+01]

BOWEN RATIO (no units)
0.211 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.022E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.029E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.894E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.086E-03 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
2.421E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
49%	47%	53%	11%	22%	0%	13%	14%	27%	17%	4%	72%	53%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090500
START TIME: 5:10:30 PST
END TIME: 5:40:40 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07		No.	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2		NO.	WIND DIR.
6.205	0.666	0.001	4.797	4.882	7.157	6.679	4.635		8	5.388

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.715	5.819	2.530	0.911	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPTICAL	DP/DTCAL	WTFECAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 11.849	1421 11.582	0.199	80	-0.008	-0.050	0.000	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MINUTE FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.915	13.76	8.34	NO DATA	328.2	1009.33	-2.76E 01	13.364	284.837

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.582	12.38	9.47	NO DATA	-0.02	1010.42

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.30	11.780	12.776	12.956	8.316E-03	80.34	6.762E-03	10.929	13.603	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.10	11.819	12.911	13.101	8.390E-03	80.42	6.825E-03	11.042	13.730	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.005 AT GMH	MOMENTUM FLUX (Nt/m2) -8.30E-01	FRICTION VELOCITY (Meters/sec) 8.212E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2 12.79	HUMIDITY FLUX (Kg/sec m2) 6.43E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.364E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.54E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.87E-01
Z/L AT GMH 0.007	LAT.HEAT FLUX (Watts/m2) 1.57E 02	SCALING POT. TEMP. (Kelvin) -2.714E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.49E 03
Z/L AT 10 METERS -0.006	SEN.HEAT FLUX (Watts/m2) 2.77E 01	ROUGHNESS LENGTH (Meters) 2.141E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -3.86E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -1.99E 01
Z/L AT Z1 0.010	SKY AND SOLAR HEAT FLUX (Watts/m2) 2.76E 01	DRAG COEF. AT 10 METERS (Dimensionless) 4.067E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.005	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.59E 02			
MONIN OBUKHOV LENGTH (Meters) -1.785E 03	BOWEN RATIO (no units) 0.174			
PSI1 AT Z1= 0.036026 PSI1 AT Z2= 0.016879 PSI2 AT Z1= 0.022368 PSI2 AT Z2= 0.011401				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (dimensionless)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2302
AIR SPECIFIC HEAT (ITcal./Kg Kel.)	2.414E 02
WATER LAT.HEAT VAP. (ITcal./Kg)	5.907EE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2= +/- .38E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:10:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.714	12.54	8.46	NO DATA	1010.33	13.364	-1.651	-1.553	-0.470	-0.372

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM 2/3)
10.00	11.812	12.895	12.993	8.388E-03	80.41	6.817E-03	11.028	13.715	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.026 AT GMH	MOMENTUM FLUX (Nt/m2) -2.82E-01	FRICTION VELOCITY (Meters/sec) 4.789E-01	WITH LONG. VELOCITY (Meter2/sec2) -2.293E-01	AIR DENSITY (Kg/m3) 1.2305
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.27E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.948E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.272E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4147E 02
Z/L AT GMH -0.032	LAT.HEAT FLUX (Watts/m2) 1.30E 02	SCALING POT.TEMP. (Kelvin) -4.159E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.991E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9069E 05
Z/L AT 10 METERS -0.025	SEN.HEAT FLUX (Watts/m2) 2.48E 01	ROUGHNESS LENGTH (Meters) 4.158E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.303
MONIN-OBUKHOV LENGTH (Meters) -4.009E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.76E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.458E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.157E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.28E 02			BAR.PRES.AT WT LEVEL (Millibar) 1011.53
	BOWEN RATIO (no units) 0.190			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
76%	76%	61%	134%	58%	8%	100%	192%	30%	104%	27%	50%	61%
162%	162%	46%	41%	90%	8%	31%	131%	23%	64%	113%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 5:10:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.012 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -5.18E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 6.261E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.54E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 7.969E-05 [3.0E-05]
Z/L AT GMH -0.015 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.37E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.995E-02 [2.0E-02]
Z/L AT 10 METERS -0.012 [0.02]	SEN.HEAT FLUX (Watts/m2) 2.66E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.210E-03 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 8.475E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.76E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.497E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.33E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.184 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
54%	51%	53%	12%	6%	0%	13%	4%	28%	17%	28%	72%	53%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090530
START TIME: 5:40:50 PST
END TIME: 6:11: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	4.806	4.889	6.619	6.266	4.657	0.847	5.320

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.730	3.282	2.541	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	DPWIND MEAN	DPWIND LAND	DPTEMP	DPTEMP	WSREF.	WSSEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1401 117924	1401 117992	0.199	24	0.008	-0.050	0.380	0.992	0.949

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).02V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.3	59.78

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.732	12.73	8.39	NO DATA	345.9	1009.67	1.18E 02	13.379	284.926

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.866	11.61	8.51	NO DATA	0.10	1010.76

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	11.912	12.908	13.088	8.345E-03	79.95	6.782E-03	10.992	13.723	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	11.898	12.895	13.076	8.422E-03	80.26	6.844E-03	11.075	13.799	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090530
START TIME: 5:40:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+ Stable,- Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM: DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: 'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
0.006 AT GMH	-4.79E-01	6.243E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.25E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	4.58E-05	-5.963E-05		WS SLOPE= 6.41E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.008	1.13E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		1.673E-02		SH SLOPE= -9.07E 03
0.006	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	-1.30E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
0.011	SKY AND SOLAR HEAT FLUX (Watts/m2)	9.922E-04	DPT/DZ= 2.50E-03	PSI=PSI2 PTK SLOPE= 3.23E 01
Z/L AT Z2	1.18E 02			
0.005		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.777E-03		
1.702E 03	-1.77E 01			
PSI1 AT Z1= -0.050659	BOWEN RATIO (no units)			
PSI1 AT Z2= -0.025399	-0.115			
PSI2 AT Z1= -0.068459				
PSI2 AT Z2= -0.034323				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)				
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2302

AIR SPECIFIC HEAT (Ilcal./Kg Kel.) 2.4147E 02

WATER LAT.HEAT VAP. (Ilcal./Kg) 5.9066E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- 68E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090530
START TIME: 5:40:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 1/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
11.792	11.74	8.50	NO DATA	1010.67	13.379	-1.588	-1.490	-0.463	6.305

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/kg)	VAP PRES. (Millibars)	S.VAP PRES (Millibars)	REF INDEX (Kel.xM-2/3)
10.00	11.890	12.976	13.074	8.413E-03	80.22	6.837E-03	11.063	13.790	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.030 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.038

Z/L AT 10 METERS
-0.029

MONIN-OBUKHOV LENGTH (Meters)
-3.429E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.39E-01

HUMIDITY FLUX (Kg/sec m2)
4.92E-05

LAT.HEAT FLUX (Watts/m2)
1.22E 02

SEN.HEAT FLUX (Watts/m2)
2.25E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.18E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.61E 01

BOWEN RATIO (no units)
0.185

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.403E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.086E-05

SCALING POT.TEMP. (Kelvin)
-4.111E-02

ROUGHNESS LENGTH (Meters)
3.120E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.405E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.938E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.922E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.810E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2365

AIR SPECIFIC HEAT (Ilcal./kg kel.)
2.414ME 02

WATER LAT.HEAT VAP. (Ilcal./Kg)
5.9064E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.324

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.159E-02

BAR.PRES.AT WT LEVEL (Millibar)
1011.87

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
97%	102%	72%	141%	77%	6%	66%	218%	36%	105%	41%	56%	72%
164%	164%	46%	41%	92%	6%	21%	132%	23%	64%	115%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090530
START TIME: 5:40:50 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
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* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.008 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.010 [0.02]

Z/L AT 10 METERS
-0.008 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.318E 03

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.33E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.85E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.20E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
3.20E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.18E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.57E 01 [3.0E+01]

BOWEN RATIO (no units)
0.072 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.123E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.912E-05 [3.0E 05]

SCALING POT.TEMP. (Kelvin)
1.497E-03 [2.0E 02]

ROUGHNESS LENGTH (Meters)
6.086E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.897E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
93%	90%	37%	4%	557%	0%	83%	193%	18%	20%	166%	56%	50%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091600
START TIME: 16:11:10 PST
END TIME: 16:41:20 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.245	0.111	0.001	4.807	4.894	6.508	6.127	4.668	1.537	5.377

No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.1A	No.1B
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B		
0.243	3.810	2.583	0.001	0.001	0.001	0.001	6.205		

* SPECIAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1A	No.1B	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1SFCAL	W2SFCAL	W1SFEC	W2SFEC
RAW TEMP.1	RAW TEMP.2	HEIGHT/LENGTH	PATH(meters)	(Volts)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
Init 11899	Init 11299	9.199	60	-0.008	0.050	0.090	0.992	0.949	0.949

* SYSTEM BUDGETING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

SIGNAL FREQ.	ERROR COUNT	DATA CAGE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(Seconds)	(No.Scans)	(No.Scans)	A(No.).065V)	B(No.).065V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
3	0	180	0	0	0	0	0	115.3	59.81

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.099	12.51	8.44	NO DATA	327.8	1009.83	-2.21E 02	13.392	285.074

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE GAGE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
11.929	11.37	8.54	NO DATA	0.21	1010.93

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
13.35	12.179	15.076	13.255	8.344E-03	79.10	6.789E-03	10.977	13.877	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.319	13.117	13.207	8.434E-03	79.71	6.855E-03	11.095	13.920	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091600
START TIME: 16:11:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=Up,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BULK RICHARDSON NUMBER (+=Stable, -Unstable) 0.014 AT GMH	MOMENTUM FLUX (N1/m2) -4.53E-01	FRICTION VELOCITY (Meters/sec) 6.069E-01	GENERAL FORM:DN/DZ= [(N1-N2)1/Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (kg/sec m2) 4.14E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.540E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.28E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIM WS SLOPE= 6.59E-01
Z/L AT GMH 0.020	LAT.HEAT FLUX (Watts/m2) 1.0?E 02	SCALING POT. TEMP. (Kelvin) 4.126E-02	N-SPEC.HUMIDITY (Kg/Kg) Z-HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIH SH SLOPE= 9.74E 03
Z/L AT 10 METERS 0.017	SEN.HEAT FLUX (Watts/m2) -3.11E 01	ROUGHNESS LENGTH (Meters) 9.869E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 6.63E-03	N=POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert.Axis PSI=PSIH PTK SLOPE 1.31E 01
Z/L AT Z1 0.014	SKY AND SOLAR HEAT FLUX (Watts/m2) -2.21E 02	DRAG COEF. AT 10 METERS (Dimensionless) 2.719E-03		N=LnTEMP.STRUC.(K*M 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CTP SLOPE=NO DATA
ROUGHNESS LENGTH (Meters) 6.928E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.50E 02			
PSI1 AT Z1= -0.162115 PSI1 AT Z2= -0.156237 PSI2 AT Z1= -0.178433 PSI2 AT Z2= -0.302513	BOWEN RATIO (no units) -0.304			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E 03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2298

AIR SPECIFIC HEAT (1Tcal./Kg Kel.) 2.4142E 02

WATER LAT.HEAT VAP. (1Tcal./Kg) 5.4058E 05

* GENERAL NOTES:
Accuracy limitation intended for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI 9[illegible] .[illegible]8 kg/kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905079000L MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 0:11:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.926	11.50	8.52	NO DATA	1010.84	13.392	-1.467	-1.369	-0.280	-0.182

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.10	12.324	13.112	13.210	8.423E-03	79.63	6.847E-03	11.081	13.913	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.036 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.037

Z/L AT 10 METERS
0.029

MONIN-OBUKHOV LENGTH (Meters)
-3.48E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.26E-01

HUMIDITY FLUX (Kg/sec m2)
4.82E-05

LAT.HEAT FLUX (Watts/m2)
1.19E 02

SEN.HEAT FLUX (Watts/m2)
2.05E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.21E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-8.16E 01

BOWEN RATIO (no units)
0.172

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.28BE-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.144E-05

SCALING POT.TEMP. (Kelvin)
-3.844E-02

ROUGHNESS LENGTH (Meters)
2.850E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.389E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.839E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.823E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.648E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2301

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.414BE 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9657E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.339

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.160E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.04

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOM.FLUX FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
22%	82%	67%	138%	52%	5%	40%	190%	34%	104%	18%	54%	67%
167%	167%	46%	41%	95%	5%	15%	135%	23%	64%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905079000L MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 0:11:10 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.001 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.001 [0.02]

Z/L AT 10 METERS
0.001 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.218E 04

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.18E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.67E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.15E 02 [7.0E+01]

SEN.HEAT FLUX (Watts/m2)
-1.29E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.21E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.30E 02 [3.0E+01]

BOWEN RATIO (no units)
0.026 [0.00]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.010E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
7.783E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
3.870E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.617E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.885E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF
118%	116%	36%	0%	209%	0%	38%	302%	18%	24%	161%	56%	36%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090630
START TIME: 6:41:30 PST
END TIME: 7:11:30 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ACTUAL/NOMINAL): 2/2 Hz
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: (UPPER CASE), (lower case)

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRESS	RAIN	WIND DIR
6.265	0.381	(.001	4.793	4.875	6.237	5.956	4.279	(.000	5.335

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
DOOR WT TEMP	WT FREQUENCY	AT VOLTAGE	MANUAL FLAG	ZERO SET	SPARE A	SPARE B	VOLT.REF.B
5.779	5.781	2.745	0.111	0.111	0.111	0.111	6.265

* DIGITAL CHANNEL RAW DATA (AVERAGES): ESCAPEMENT Data, Filter Calibration and Wind Vane Data

No.1	No.2	DOWIND N.SR	DOWIND E.WD	CPUTIM	E.FLUX	WIND.V	W.SD	U.V
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(meters)	(volts)	(volts)	(m/s)	(volts)	(m/s)
1411 119661	1421 112997	0.199	64	+0.008	3.953	0.110	0%	0%

* SYSTEM HOUSEKEEPING PARAMETERS (RECALCULATED INTO ENGINEERING UNITS):

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.A	VOLT.REF.DEV	ZERO REF.DEV	VOLT.REF.B	BAR.PRESS	R.H.
(No.scans)	(No.scans)	(No.scans)	(Volts)	(No.counts)	(No.counts)	(Volts)	(mb)	(%)
0	0	180	6.265	0	0	6.265	1017.6	0%

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL AND ESCAPEMENT CORRECTIONS, INTERPOLATED TO DATA RATE):

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRESS.1	U.V.REF	SAT.VAP.PRES.AT.T	R.H.
(Celsius)	(Meters/Sec)	(Celsius)	(Kelvin**2/3)	(Deg.True)	(Millibar)	(Watts/m2)	(mb)	(%)
11.966	11.99	8.31	NO DATA	326.3	1017.96	.5 (1.02	13.415	95%

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIME TAG	BAR.PRES.2
(Celsius)	(Meters/Sec)	(Celsius)	(Kelvin**2/3)	(Meter ISA)	(Millibar)
11.996	11.66	8.43	NO DATA	9.29	1011.61

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT TEMP 1	ABS.HUMID.1	REL HUMID 1	SPEC HUMID 1	SAT PRES 1	V.DEF PRES 1	REF DENSITY
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kg/m3)
10.35	12.146	14.136	13.316	8.296E-03	78.32	6.721E-03	13.96	3.545	1.236

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	SAT.PRES.2	V.DEF.PRES.2	REF.DENSITY
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kg/m3)
9.24	12.070	13.159	13.250	8.352E-03	78.82	6.803E-03	14.26	3.561	1.237

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (SINGER,1973)

STABILITY

RAD.RICHARDSON NUMBER (+:Stable,-:Unstable)
6.027 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.79

Z/L AT GMH
0.041

Z/L AT 10 METERS
0.051

Z/L AT Z1
0.048

Z0 Z2
.024

ROUGHNESS LENGTH (meters)
3.429E-04

FRICTION VELOCITY AT Z1 = 25.2%
FRICTION VELOCITY AT Z2 = 25.2%

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-2.520E-01

HUMIDITY FLUX (Kg/sec m2)
2.278E-05

LAT.HEAT FLUX (Watts/m2)
6.369E 01

SEN.HEAT FLUX (Watts/m2)
-2.65E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
3.33E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
2.911 02

BOWEN RATIO (dimensionless)
-0.397

SCALING PARAMETERS

FRICTION VELOCITY (Meters/Sec)
4.525E-01

SCALING SPECIHUMD. (Kg/Kg)
4.954E-05

SCALING POT. TEMP (Kelvin)
4.711E-02

ROUGHNESS LENGTH (Meters)
3.429E 04

DRAG COEF AT 10 METERS (Dimensionless)
1.652E 03

PARTIAL DERIVATIVES

DENSITY FROM DU DZ (Kg/m3/(Meter/Sec)) = -2.292E-01

N WIND SPEED (M/Sec) Z-HEIGHT (Meters)
DU/DZ= 1.94E 01

N SPEC HUMIDITY (Kg/Kg) Z-HEIGHT (Meters)
DSH/DZ= -8.92E 06

N POT TEMP (Kelvin) Z HEIGHT (Meters)
DT/DZ= 8.48E 03

PROFILE SLOPES (LINEAR WITH HEIGHT)

N WIND SPEED (M/Sec) Z-HEIGHT (M) Vert Axis
U(Z2) PSI-U(Z1) PSI
PSI-PSI2
M SLOPE= 8.84E-01

N SPEC HUMIDITY (Kg/Kg) Z-HEIGHT (M) Vert Axis
PSI-PSI2
SH SLOPE= 1.07E 04

N POT TEMP (Kelvin) Z HEIGHT (M) Vert Axis
PSI PSI2
PTK SLOPE= 1.17E 01

NEUTRAL STRUC TEMP Z Z HEIGHT (M) Vs T Axis
PSIENGN
CT2 SLOPE= NO DATA

* CONTINUED ON NEXT PAGE

* FLUX PROFILE EQUATIONS

VON KARMAN CONSTANT	STABILITY CORRECTION FOR MOMENTUM	PROFILE NUMBER	PROFILE NUMBER	BULK RICHARDSON NO.	BULK MOMENTUM TRANSFER COEF
(dimensionless)	(Meters/Sec**2)	(Dimensionless)	(Dimensionless)	(Dimensionless)	(Dimensionless)
0.4	9.777E-02	0.74	0.74	6.92E 00	1.63E 03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.236

AIR SPECIFIC HEAT (Cp,at Kg/Kg)
414.3 J/C

WATER VAP HEAT (Lv,at Kg)
5.154E 05

* FLUX LIMITATIONS
Accuracy limitation recommended for measurement of Profile Slope and/or Partial Derivative
Computation precluded by insertion of:

DU DZ +/- 0.0 E Kg/Kg

RUN NUMBER: 7905090630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:41:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM**2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
11.978	11.17	8.42	NO DATA	1010.90	13.418	-1.440	-1.342	0.262	-0.164

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM**2/3)
10.00	12.076	13.157	13.255	8.363E-03	78.80	6.799E-03	11.305	13.965	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,- Unstable) -0.032 AT GMH	MOMENTUM FLUX (Nt/m2) -2.10E-01	FRICTION VELOCITY (Meters/sec) 4.132E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.707E-01	AIR DENSITY (Kg/m3) 1.2300
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.80E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.448E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.80?E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.414?E 02
Z/L AT GMH -0.040	LAT.HEAT FLUX (Watts/m2) 1.19E 02	SCALING POT.TEMP. (Kelvin) -3.824E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.580E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9654E 05
Z/L AT 10 METERS -0.031	SEN.HEAT FLUX (Watts/m2) 1.96E 01	ROUGHNESS LENGTH (Meter) 2.506E-04		VAP.PRES AT WT LEVEL (Millibar) 15.366
MONIN-OBUKHOV LENGTH (Meters) -3.249E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.33E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.367E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.162E 02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -1.94E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.10
	BOWEN RATIO (no units) 0.165			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF.
86%	101%	81%	147%	57%	5%	24%	204%	41%	166%	17%	61%	81%
167%	167%	46%	40%	95%	5%	13%	136%	23%	63%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090630 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 6:41:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.008 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.25E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.274E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.36E-05 [8.0E 06]	SCALING SPEC.HUMID. (Kg/Kg) -7.769E-05 [3.0E 05]
Z/L AT GMH 0.010 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.08E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 3.661E-02 [2.0E-02]
Z/L AT 10 METERS 0.008 [0.02]	SEN.HEAT FLUX (Watts/m2) 9.18E 00 [5.0E+00]	ROUGHNESS LENGTH (Meters) 2.847E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 1.251E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -3.33E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.458E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 2.26E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.056 [0.01]	

* = DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE PROFILE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE APPROXIMATE AND ARE "+or-":

*	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	POT TEMP	ROUGH LENGTH	DRAG COEF
*	19%	22%	259%	0%	21%	356%	5%	30%	14%	16%	11%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
TEMP.SENSOR 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
	4.865	4.916	5.576	5.295	4.691	4.375	5.287

No.11	No.12	No.13	No.14	No.15	No.16	No.17
		ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
		0.001	0.001	0.001	6.205

EQUIPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

		ZERO REF.					
		0.000	61	0.008	0.950	3.300	0.992	0.949

			0	0	0	115.4	59.75

OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) *TRANSLATED INTO ENGINEERING* UNITS:

				WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
				(Deg.from)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.978	11.53	3.57	NO DATA	324.8	1010.13	-6.10E 02	13.514	285.153

				TIDE TABLE	BAR.PRES.2
				(Meter MSL)	(Millibar)
			NO Data	0.36	1011.27

				(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
12.534	12.134	13.167	13.345	0.442E-03	79.63	6.868E-03	11.109	13.951	NO DATA

				(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
			13.402	0.514E-03	80.02	6.919E-03	11.203	14.001	NO DATA

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

FLUX PARAMETERS
(Units: Dyne)

SCALING PARAMETERS

PARTIAL DERIVATIVES

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

		FRICTION VELOCITY (meters/sec)	GENERAL FORM: DN/DZ=	GENERAL FORM: N'SLOPE=
		4.44E 01		[(LnZ1-PSI)-(LnZ2-PSI)]/
			(Z1*Z2)1.21	(N1-N2)
		SCALING SPEC HUMID (Kg/Kg)	N WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
		-2.23E-05	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DWS/DZ= 9.04E-02	PSI=PSI1
				WS SLOPE= 8.95E-01
		SCALING POT. TEMP (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
		-4.40E-02	Z HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DSH/DZ= -8.92E-06	PSI=PSI2
				SH SLOPE= -1.03E 04
		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP (Kelvin)
		3.20E 04	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
			DPT/DZ= 5.80E-03	PSI=PSI2
				PT SLOPE= 1.57E 01
		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP STRUC (ks^ 2/3)
		2.08E 05		Z HEIGHT (M) Vert.Axis
				PSI=NONE
				CT2 SLOPE=NO DATA

MISCELLANEOUS

		PROFILE DIF.%HEIGHT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF.
		0.74	0.9.8 03	1.32E-03

AIR DENSITY
(Kg/m3)
1.1298

AIR SPECIFIC HEAT
(Ical /Kg Kel)
2.414E 02

WATER LAT HEAT VAP
(Ical /Kg)
5.905E 05

RUN NUMBER: 79050908B0 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 08 1:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.007	9.90	8.66	NO DATA	1011.18	13.514	-1.507	1.409	-0.308	-0.210

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	% VAP PRES (Millibars)	REF INDEX (Kel xM-2/3)
10.00	12.105	13.296	13.304	8.504E-03	79.97	6.913E 03	11 192	13.99%	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.048 AT GMH	MOMENTUM FLUX (Nt/m2) -1.57E-01	FRICTION VELOCITY (Meters/Sec) 3.570E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.275E-01	AIR DENSITY (Kg/m3) 1.2302
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.19E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.530E 05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.185E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel) 2.414?E 02
Z/L AT GMH -0.058	LAT.HEAT FLUX (Watts/m2) 1.03E 02	SCALING POT.TEMP. (Kelvin) -4.173E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.490E-02	WATER LAT.HEAT VAP (ITcal./Kg) 5.9052E 05
Z/L AT 10 METERS -0.045	SEN.HEAT FLUX (Watts/m2) 1.85E 01	ROUGHNESS LENGTH (Meters) 1.503E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.466
MONIN-OBUKHOV LENGTH (Meters) -2.223E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.10E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.287E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.169E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.88E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.38
	BOWEN RATIO (no units) 0.179			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
81%	97%	76%	144%	59%	5%	15%	203%	38%	106%	21%	58%	76%
164%	163%	46%	41%	93%	5%	8%	134%	23%	64%	116%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 79050908B0 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 08 1:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) -0.002 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -1.90E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 3.90E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1xZ2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.9?E 05 (1.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) 7.91?E-05 (3.0E-05)
Z/L AT GMH -0.005 (0.02)	LAT.HEAT FLUX (Watts/m2) 9.6?E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 2.24?E-02 (2.0E-02)
Z/L AT 10 METERS -0.002 (0.02)	SEN.HEAT FLUX (Watts/m2) 4.4?E 00 (1.0E+00)	ROUGHNESS LENGTH (Meters) 2.2?9E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -5.69?E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -7.10E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.55?E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.11E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.00? (0.00)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPUTED VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
181%	175%	24%	19%	436%	0%	7%	284%	12%	24%	265%	46%	46%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090830
START TIME: 8:30: 0 PST
END TIME: 9: 0:10 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	4.826	4.903	5.349	5.169	4.706	4.986	5.107

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF B
3.905	3.750	2.745	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DPIFCAL	DP2FCAL	WIBFCAL	WSIFC	WS2FC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 121134	1421 121593	0.183	87	-0.398	-0.053	0.000	0.992	0.996

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.4	59.75

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.113	10.30	8.51	NO DATA	318.6	1010.40	-6.95E 02	13.549	285 296

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm-2/3)	(Meter MSL)	(Millibar)
12.159	9.65	8.60	NO DATA	0.33	1011.50

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xm-2/3)
18.35	12.293	13.306	13.480	8.407E-03	78.59	6.841E-03	11.068	14.083	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xm-2/3)
9.20	12.249	13.353	13.443	8.465E-03	78.82	6.882E-03	11.146	14.141	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090830
START TIME: 8:30: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (ters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.032 AT GMH	-1.13E-01	3.029E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.23E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.76E-05	-4.730E-05		WS SLOPE= 1.32E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.050	4.35E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	2.592E-02		SH SLOPE= -1.14E 04
0.039	-9.76E 00			
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 4.89E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
0.071	SKY AND SOLAR HEAT FLUX (Watts/m2)	8.322E-05		PTK SLOPE= 2.09E 01
Z/L AT Z2	-6.95E 02			
0.035		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.035E 03		CT2 SLOPE=NO DATA
2.49E 02	-6.61E 02			
PSI1 AT Z1= -0.332271	BOWEN RATIO (no units)			
PSI1 AT Z2= -0.166588	-0.224			
PSI2 AT Z1= -0.449015				
PSI2 AT Z2= -0.225119				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2295

AIR SPECIFIC HEAT (Ical./Kg Kel.)
2.414E 02

WATER LAT.HEAT VAP (Ical./Kg)
5.904SE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SH1 SH2= +/- .98E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090830 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8:30: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE: ALL CHANNELS: 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.(M-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.154	9.73	8.59	NO DATA	1011.41	13.549	-1.396	-1.298	-1.203	-1.105

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	V.VAP.PRES (Millibars)	REF.INDEX (Kel.M**2/3)
10.00	12.252	13.347	13.445	8.458E-03	98.79	6.027E-03	11.147	14.134	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) -0.048 AT GMH	MOMENTUM FLUX (Nt/m2) -1.48E-01	FRICTION VELOCITY (Meters/sec) 3.468E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.263E-01	AIR DENSITY (Kg/m3) 1.2298
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.17E 05	SCALING SPEC.HUMID. (Kg/Kg) -9.813E 05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.186E-05	AIR SPECIFIC HEAT (ITcal./Kg kel.) 2.4149E 02
Z/L AT GMH -0.058	LAT.HEAT FLUX (Watts/m2) 1.03E 02	SCALING POT.TEMP. (Kelvin) -3.924E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.361E-02	WATER LAT.HEAT VAP (ITcal./Kg) 5.9144E 05
Z/L AT 10 METERS -0.045	SEN.HEAT FLUX (Watts/m2) 1.69E 01	ROUGHNESS LENGTH (Meters) 1.356E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.506
MONIN-OBUKHOV LENGTH (Meters) -2.232E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.95E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.272E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -5.74E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.61
	BOWEN RATIO (no units) 0.164			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
104%	138%	103%	160%	79%	5%	11%	239%	52%	109%	27%	72%	103%
169%	169%	46%	40%	97%	5%	7%	137%	23%	63%	120%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090836 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 8:30: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,- Unstable) 0.001 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.37E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.333E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.70E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 7.94?E-05 [3.0E-05]
Z/L AT GMH 0.001 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.14E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.396E-02 [2.0E-02]
Z/L AT 10 METERS 0.001 [0.02]	SEN.HEAT FLUX (Watts/m2) 2.21E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.160E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 9.572E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -6.95E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.?96E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.07E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.022 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH IS FOR ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
205%	209%	14%	38%	447%	0%	7%	251%	7%	33%	193%	23%	11%

* END OF DATA RUN

MARINE SURFACE LAYER METEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE METEOROLOGY RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * METEOROLOGICAL DATA * * * *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE DATA: 1 RAW DATA (AVERAGE VALS).

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
WIND SPEED 2	TEMP.PROBE 2	DEW POINT2	DEW POINT1	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
(M/S)	(Celsius)	(Celsius)	(Celsius)	(M/S)	(M/S)	(Millibar)	(Watt/M2)	(Deg.True)
6.641	6.861	4.829	4.963	5.665	5.434	4.711	5.585	4.912

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
WIND DIR 2	TEMP.PROBE 1	TEMP.PROBE 2	PROBE TEMP.	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
(Deg.True)	(Celsius)	(Celsius)	(Celsius)	(Volts)	(Volts)	(Volts)	(Volts)
4.945	6.861	6.861	6.331	0.001	0.001	0.001	0.295

* PROFILE DATA: 2= RAW DATA (AVERAGE VALS). F= AVERAGE DATA, FIELD CALIBRATION and WIND SPEED DISPLACEMENT CORRECTIONS.

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9
F1	F2	F1 WIND MEAS.	F2 WIND SPEED	VOLTAGE	BAT.VOLTAGE	WIPER A	WSEN1	WSEN2
(M/S)	(M/S)	RESISTANCE	POTENTIOMETER	(Volts)	(Volts)	(Volts)	(Count)	(Count)
6.641	5.945	0.393	71	0.398	0.350	0.130	0.992	0.995

* PROFILE DATA: 3= RAW DATA CONVERTED INTO ENGINEERING UNITS.

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9
F1	F2	TEMP.PROBE 1	TEMP.PROBE 2	SPECIFIC H2O	SPECIFIC H2O	ZERO REF.(0V)	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(M/S)	(M/S)	(Celsius)	(Celsius)	(Kg/Kg)	(Kg/Kg)	(VAC)	(VAC)	(Hz)	(VAC)	(Hz)
6.641	5.945	6.861	6.861	0.006	0.006	0	0	0	115.4	59.86

* PROFILE DATA: 4= Processed Parameters (including the AERO BAR and SCANNER CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9
F1	F2	F1 WIND	TEMP.PROBE 1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	AERO AIR TEMP
(M/S)	(M/S)	(Fraction)	(Kel.xM.2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
6.641	5.945	1.00	NO DATA	312.3	1013.49	-7.79E 02	14.559	285.559

No.10	No.11	No.12	No.13	No.14	No.15	No.16
WIND DIR 2	F2 WIND	F2 WIND	TEMP.PROBE 2		FIX TABLE	BAR.PRES.2
(Deg.True)	(Fraction)	(Meters/Sec)	(Kel.xM.2/3)		(Meter MSL)	(Millibar)
6.641	1.00	0.00	NO DATA		0.25	1011.58

* DERIVED PROFILE PARAMETERS.

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9
Z1	Z2	SEN.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Meters)	(Celsius)	(Kelvin)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM.2/3)
13.53	11.29	13.343	13.563	8.387E-03	78.18	6.826E-03	11.044	14.126	NO DATA

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19
Z1	Z2	SEN.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Meters)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM.2/3)
2.953	0.000	13.691	13.691	8.426E-03	78.64	6.884E-03	11.349	14.177	NO DATA

* COMPLETED 6/80 *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NPS MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

PROFILE PARAMETERS	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
ROUGHNESS HEIGHT (Meters) (Tabular) AT GMH	MOMENTUM FLUX (N/M2) -1.06E-01	FRICTION VELOCITY (Meters/Sec) 2.93OE 01	GENERAL FORM:DN/DZ= [(N1-N2)*1/(ln(Z1/Z2)* (Z1*Z2)**1/2)]	GENERAL FORM:"N"S SLOPE= [(LnZ1 PSI)-(LnZ2-PSI)] / (N1-N2)
ROUGHNESS HEIGHT (Meters) (Z1*Z2)**1/2 1.57	MOISTURE FLUX (Kg/Sec M2) 1.67E-05	SCALING SPEC.HUMD. (Kg/Kg) -4.50E 05	N=WIND SPEED (M/Sec) Z=HEIGHT (Meters) DWS/DZ= 7.27E-02	N-WIND SPEED (M/Sec) Z=HEIGHT (M) Vert.Axis PSI=PSIU W3 SLOPE= 1.36E 00
ZL AT Z1 1.966	LAT.HEAT FLUX (Watts/M2) 4.31E 01	SCALING POT. TEMP. (Kelvin) 2.929E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N-SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis PSI=PSIQ SH SLOPE= 1.20E 04
ZL AT Z (METERS) 0.045	SEN.HEAT FLUX (Watts/M2) 1.02E 01	ROUGHNESS LENGTH (Meters) 2.373E-05	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 5.86E 03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIP PTK SLOPE= 1.03E 01
ZL AT Z 0.045	SFC A+B SOLAR HEAT FLUX (Watts/M2) 9.79E 02			N=LnTEMP.STRUC (K**2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
ROUGHNESS LENGTH (Meters) 2.452E-02	TOTAL HEAT BUDGET FLUX (Watts/M2) -7.49E 02	DRAG COEF. AT 16 METERS (Dimensionless) 8.258E 04		
PSIE AT Z1 0.460742	BOWEN RATIO (no units) -0.266			
PSIH AT Z1 0.240526				
PSIQ AT Z1 0.231504				
PSIP AT Z1 -5.221598				

* TECHNICAL CONSTANTS.

VON KARMAN CONSTANT	ACCELERATION OF GRAVITY	PROFILE TEMP.PRANDTL NUMBER	PROFILE TEMP.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.40	9.80 (M/S**2)	1.24	0.74	0.92E 03	1.30E-03

MISCELLANEOUS

AIR DENSITY (Kg M3) 1.2294

AIR SPECIFIC HEAT (Heat Kg Kel) 1.013E 03

WATER LAT HEAT VAP (Heat Kg) 5.904E 05

* OPERATOR NOTE *
Accuracy limitation parameter for measurement of Profile Slope and/or Partial Derivative.
Computation executed by subroutine of

[illegible] (Kg/M3)

* CONFIDENTIAL DOCUMENT *

RUN NUMBER: 7905090900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9: 0:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.192	10.21	8.58	NO DATA	1011.49	13.599	-1.407	-1.309	-0.214	-0.116

ALTAIR (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.290	13.385	13.483	8.457E-03	78.59	6.877E-03	11.137	14.171	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-= Unstable)
0.041 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2
12.99

Z/L AT GMH
0.051

Z/L AT 10 METERS
0.039

MONIN OBUKHOV LENGTH (Meters)
2.504E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.67E-01

HUMIDITY FLUX (Kg/sec m2)
4.45E-05

LAT.HEAT FLUX (Watts/m2)
1.10E 02

SEN.HEAT FLUX (Watts/m2)
1.78E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
7.79E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.51E 02

BOWEN RATIO (no units)
0.162

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.687E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.805E-05

SCALING POT.TEMP. (Kelvin)
-3.876E-02

ROUGHNESS LENGTH (Meters)
1.684E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.304E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.360E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.446E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.429E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2298

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4149E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9042E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.557

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.176E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.69

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
165%	145%	109%	164%	79%	5%	9%	243%	54%	109%	25%	74%	109%
134%	168%	46%	40%	96%	5%	7%	136%	23%	63%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 9: 0:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* FINAL BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.053 +or- 16.02% AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2
12.99

Z/L AT GMH
0.049 +or- 0.02%

Z/L AT 10 METERS
0.037 +or- 0.0%

MONIN OBUKHOV LENGTH (Meters)
1.452E 0-

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.49E 01 [4.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.97E 05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.62E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
2.16E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
7.79E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.99E 02 [3.0E+01]

BOWEN RATIO (no units)
0.038 [0.0%]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.462E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.865E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
1.758E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.347E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.189E-03 [4.0E-04]

* DIFFERENCE BETWEEN PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED CORRECTED FINAL OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE EXPRESSED TO PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH. NO AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
2.2%	17%	2.4%	4.0%	476%	0%	7%	278%	12%	35%	263%	37%	20%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905090930
START TIME: 9:30:40 PST
END TIME: 10: 0:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 min
CONVENTION: 1 (UPPER LEVEL, 2=LOWER LEVEL)

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.815	4.984	0.147	0.855	4.712	6.151	4.960

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.D
3.976	3.881	2.540	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FETCH	UPWIND LAND	DPDT/DZ	DPDZ/DZ	WIND/DIR	K/ZIT	WS.ESC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(VOLTS)	(VOLTS)	(Volts)	(Coeff.)	(Coeff.)
1411 12150$	1401 12*00@	0.183	28	0.300	-0.050	1.000	0.992	1.000

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans/min)	(No.).005V)	(No.).005V)	(No.).012V)	(No.25V)	(No.1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	117.4	59.68

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(Millibar)	(Watts/m2)	(Celsius)	(Kelvin)
12.158	11.81	9.44	NO DATA	213.7	1011.59	8.55E 02	13.619	285.33

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM 2/3)	(Meter MSL)	(Millibar)
12.200	10.92	8.60	NO DATA	0.17	1011.60

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM 2/3)
18.35	12.838	13.340	13.420	8.558E-03	76.61	6.861E-03	11.619	14.126	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.293	13.394	13.465	8.457E-03	78.63	6.884E-03	11.159	14.183	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905090930
START TIME: 9:30:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 min
CONVENTION: 1=UPPER LEVEL, 2 LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -2.558E-01	FRICTION VELOCITY (Meters/sec) 4.584E-01	GENERAL FORM DN/DZ= (LN1-N2)*(LnZ1-LnZ2)/(Z1-Z2)* (Z1*Z2)^1/2	GENERAL FORM: N-SLOPE= (LnZ1-PSI1)-(LnZ2-PSI2)/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)^1/2 12.99	HUMIDITY FLUX (kg/sec m2) 5.30E-05	SCALING SPEC.HUMD. (kg/kg) 5.351E-05	N WIND SPEED (m/sec) Z-HEIGHT (Meters) DWS/DZ= 9.96E-02	N-WIND SPEED (m/sec) Z-HEIGHT (M) Vert.Axis PSI-PSI1 WS SLOPE= 8.73E-01
Z/L AT GMH 0.027	LAT.HEAT FLUX (Watts/m2) 7.43E 01	SCALING POT. TEMP. (Kelvin) 3.198E-02	N-SPEC.HUMIDITY (kg/kg) Z-HEIGHT (Meters) DSH/DZ= -8.92E-06	N-SPEC.HUMIDITY (kg/kg) Z=HEIGHT (M) Vert.Axis PSI-PSI2 SH SLOPE= -1.01E 04
Z/L AT 10 METERS 0.021	SEN.HEAT FLUX (Watts/m2) -1.82E 01	ROUGHNESS LENGTH (Meters) 3.594E-04	N-POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= 5.35E-03	N-POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.69E 01
Z/L AT Z1 0.033	SKY AND SOLAR HEAT FLUX (Watts/m2) 8.55E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.758E-03		N=LnTEMP.STRUC.(K*M 2/3) Z-HEIGHT (M) Vert.Axis PSI=NONE CTP SLOPE=NO DATA
Z/L AT Z2 0.019	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.99E 00			
MONIN OBUKHOV LENGTH (Meters) 4.814E 02	BOWEN RATIO (no units) -0.245			
PSI1 AT Z1= -0.179154				
PSI1 AT Z2= -0.089401				
PSI2 AT Z1= -0.242100				
PSI2 AT Z2= -0.121380				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2294

AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.414E 02

WATER LAT.HEAT VAP. (Ical./Kg) 5.904E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Deriv..
Computation executed by insertion of:

SH1 SH2= +/- .08E 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905090930 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9:30:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.195	11.03	8.58	NO DATA	1011.51	13.619	-1.424	-1.326	-0.231	-0.133

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.09	12.293	13.388	13.486	8.455E-03	78.56	6.875E-03	11.135	14.174	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.033 AT GMH	MOMENTUM FLUX (Nt/m2) -2.03E-01	FRICTION VELOCITY (Meters/sec) 4.063E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.651E-01	AIR DENSITY (Kg/m3) 1.2298
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.82E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.655E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.825E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4149E 02
Z/L AT GMH -0.041	LAT.HEAT FLUX (Watts/m2) 1.19E 02	SCALING POT.TEMP. (Kelvin) -3.802E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.545E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9042E 05
Z/L AT 10 METERS 0.032	SEN.HEAT FLUX (Watts/m2) 1.92E 01	ROUGHNESS LENGTH (Meters) 2.365E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.577
MONIN-OBUKHOV LENGTH (Meters) -3.162E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.55E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.358E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.177E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.16E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.71
	BOWEN RATIO (no units) 0.161			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
88%	104%	83%	147%	64%	5%	12%	212%	42%	166%	23%	62%	83%
168%	168%	46%	40%	96%	5%	7%	136%	23%	63%	119%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905090930 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 9:30:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.001 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.23E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 4.249E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.44E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) 8.041E-05 (3.0E-05)
Z/L AT GMH 0.001 (0.02)	LAT.HEAT FLUX (Watts/m2) 1.10E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 2.080E-02 (2.0E-02)
Z/L AT 10 METERS 0.001 (0.02)	SEN.HEAT FLUX (Watts/m2) -3.21E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 2.866E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) 1.412E 04	SKY AND SOLAR HEAT FLUX (Watts/m2) -8.55E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.408E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.45E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.062 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP.	ROUGH. LENGTH	DRAG COEF.
135%	135%	13%	24%	594%	0%	6%	260%	6%	28%	304%	22%	14%

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7707091000 — PRINT DATE: 11 JUN 1980
START TIME: 10: 1: 0 PST — DATA SAMPLING RATE (ALL CHANNELS): 6/Min
END TIME: 10:31:18 PST — DATA AVERAGING PERIOD: 30 Min
START DATE: 9 May 1979 (DAY 129) — NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.844	4.924	5.765	5.563	4.726	6.533	4.983

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.195	5.884	2.540	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND MEAN	UPWIND LAND	OPTICAL	OPTICAL	WIPEAL	WS1EC	WS2EC
MIR TEMP.1	MIR TEMP.2	to Fetch LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
[illegible]	[illegible]	0.183	196	-0.008	0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

SYSTEM TIME	ERROR COUNT	DATA PAGE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(HR:MIN:SEC)	(No. Scan.)	(No. Calc.)	A(No.).005V)	B(No.).005V)	(No.).012V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
[illegible]	0	180	0	0	0	0	0	115.4	59.88

* OBSERVED & CALCULATED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

MIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
[illegible]	11.09	8.62	NO DATA	314.4	1018.71	-9.11E 02	13.647	285.378

MIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
[illegible]	10.37	8.74	NO DATA	0.05	1011.81

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

REF.HGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.573	13.307	13.569	8.469E-03	78.75	6.892E-03	11.152	14.161	NO DATA

REF.HGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.18	12.553	13.447	13.537	8.538E-03	79.07	6.942E-03	11.245	14.223	NO DATA

* CONTINUED BELOW

RUN NUMBER: 9953V1000 — MARINE SURFACE LAYER — PRINT DATE: 11 JUN 1980
START TIME: 10: 1: 0 PST — NRL MICROMETEOROLOGY — DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) — SAN NICOLAS ISLAND, CAL — DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
BSAD.RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.024 AT GMH	-1.50E-01	3.534E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.79	2.25E-05	-5.09E-05	DWS/DZ= 8.06E-02	PSI=PSI1 WS SLOPE= 1.12E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
0.035	5.5?E 01	?.563E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -1.04E 04
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			
0.029	-1.14E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.523E-04	DPT/DZ= 4.49E-03	PSI=PSI2 PTK SLOPE= 2.11E 01
0.030	-9.11E 02			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
0.025	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.241E 03		PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	-8.67E 02			CT2 SLOPE=NO DATA
3.674E 02				
PSI1 AT Z1= -0.234745	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.117642	-6.206			
PSI2 AT Z1= 0.317442				
PSI2 AT Z2= 0.159043				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (m/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.79,9	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2295

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4149E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9040E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2: +/- .68E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091000 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 10: 1: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.232	10.46	8.71	NO DATA	1011.71	13.647	-1.411	-1.313	-6.287	-0.109

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.335	13.440	13.538	8.530E-03	79.03	6.936E-03	11.235	14.216	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.039 AT GMH	MOMENTUM FLUX (Nt/m2) -1.77E-01	FRICTION VELOCITY (Meters/sec) 3.799E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.443E-01	AIR DENSITY (Kg/m3) 1.2298
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.50E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.641E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.504E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4150E 02
Z/L AT GMH -0.048	LAT.HEAT FLUX (Watts/m2) 1.11E 02	SCALING POT.TEMP. (Kelvin) -3.851E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.463E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9039E 05
Z/L AT 10 METERS -0.037	SEN.HEAT FLUX (Watts/m2) 1.82E 01	ROUGHNESS LENGTH (Meters) 1.870E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.610
MONIN-OBUKHOV LENGTH (Meters) -9.729E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.11E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.320E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.179E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.82E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.91
	BOWEN RATIO (no units) 0.163			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	*Z/L AT 10M*	*MOMENTUM FLUX*	*LAT.HEAT FLUX*	*SEN.HEAT FLUX*	*SKY RAD. FLUX*	*TOTAL HEAT FLUX*	*BOWEN RATIO*	*FRICTION VELOCITY*	*SCL.SPEC HUMIDITY*	*SCL.POT. TEMP.*	*ROUGH. LENGTH*	*DRAG COEF.*
103%	127%	98%	156%	76%	5%	10%	233%	49%	107%	27%	69%	98%
168%	168%	46%	40%	96%	5%	6%	136%	23%	63%	119%	43%	40%

x CONTINUED BELOW

RUN NUMBER: 7905091000 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 10: 1: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE AEDC RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT O. THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.060 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.71E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.738E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.04E-05 [8.9E-06]	SCALING SPEC.HUMID. (Kg/Kg) 2.957E-05 [3.8E-05]
Z/L AT GMH -0.048 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.99E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 1.364E-02 [2.0E-02]
Z/L AT 10 METERS -0.060 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.69E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.737E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -3.421E 04	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.11E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.299E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.15E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.027 [6.0E]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	*Z/L AT 10M*	*MOMENTUM FLUX*	*LAT.HEAT FLUX*	*SEN.HEAT FLUX*	*SKY RAD. FLUX*	*TOTAL HEAT FLUX*	*BOWEN RATIO*	*FRICTION VELOCITY*	*SCL.SPEC HUMIDITY*	*SCL.POT. TEMP.*	*ROUGH. LENGTH*	*DRAG COEF.*
164%	161%	6%	3.1%	497%	0%	5%	248%	3%	78%	189%	10%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091030
START TIME: 10:31:20 PST
END TIME: 11: 1:30 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.265	0.001	0.001	4.877	4.961	6.081	5.871	4.729	6.872	4.947

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.019	4.914	2.540	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	W1FCAL	WSLEC	WSSEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 122122	1421 122792	0.183	115	-0.008	-0.050	0.010	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.97

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM^2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.212	11.70	8.81	NO DATA	313.2	1019.77	-9.51E 02	13.66	285.4

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM^2/3)	(Meter MSL)	(Millibar)
12.279	10.84	8.95	NO DATA	-0.07	1011.67

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
18.35	12.392	13.424	13.604	8.583E-03	79.71	6.985E-03	11.303	14.18v	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
9.20	12.369	13.502	13.593	8.667E-03	80.08	7.048E-03	11.417	14.258	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091030
START TIME: 10:31:20 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.009 AT GMH	MOMENTUM FLUX (Nt/m2) -2.66E-01	FRICTION VELOCITY (Meters/sec) 4.652E-01	GENERAL FORM:DN/DZ= I(N1-N2)1/I(n(Z1/Z2)* (Z1*Z2)1/2)	GENERAL FORM:N'SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ IN1-N2I
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.30E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.764E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.52E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.60E-01
Z/L AT GMH 0.013	LAT.HEAT FLUX (Watts/m2) 8.15E 01	SCALING POT. TEMP. (Kelvin) 1.630E-02	N=SPEC.HUMIDITY (Kg/Kg) Z-HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.21E 03
Z/L AT 10 METERS 0.010	SEN.HEAT FLUX (Watts/m2) -9.43E 00	ROUGHNESS LENGTH (Meters) 3.770E-04	N=POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= 2.52E-03	N=POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 3.32E 01
Z/L AT Z1 0.019	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.51E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.85uE-03		N=LnTEMP.STRUC.(KxM-2/3) Z-HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009				
MONIN-OBUKHOV LENGTH (Meters) 9.727E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.79E 00			
PSI1 AT Z1= -0.088666 PSI1 AT Z2= -0.044454 PSI2 AT Z1= -0.119819 PSI2 AT Z2= -0.060073	BOWEN RATIO (no units) -0.116			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2293

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4.0E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9039E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0RE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79050910300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 10:31:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 7 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meters/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM 2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
2.271	10.95	8.93	NO DATA	1011.77	13.666	-1.389	-1.291	-0.167	-0.069

Z/L (Meters)	POT TEMP. (Celsius)	VIR TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	12.369	13.494	13.591	8.652E-03	80.93	7.040E-03	11.404	14.249	NO DATA

* FOR AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.033 AT 6M	MOMENTUM FLUX (Nt/m2) -1.99E-01	FRICTION VELOCITY (meters/sec) 4.025E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.620E-01	AIR DENSITY (Kg/m3) 1.2296
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1xZ2)1/2 12.9	HUMIDITY FLUX (Kg/sec m2) 4.25E-05	SCALING SPEC.HUMID. (Kg/kg) -9.183E-05	WITH ABS. HUMIDITY (Meter kg/sec m3) 4.545E-05	AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.415E+02
Z/L AT GMH -0.344	LAT.HEAT FLUX (Watts/m2) 1.12E 02	SCALING POT.TEMP. (Kelvin) -3.727E-02	WITH POT.TEMPERATURE (Meter Kel./Sec) 1.500E-02	WATER LAT.HEAT VAP. (Ical./Kg) 5.963E 05
Z/L AT 10 METERS -0.052	SEN.HEAT FLUX (Watts/m2) 1.87E 01	ROUGHNESS LENGTH (Meters) 2.289E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.624
ROUGH ROUGHNESS LENGTH (Meters) 2.168E-3	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.51E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.350E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.180E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.20E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.92
	BOWEN RATIO (no units) 0.166			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
THE ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
169%	130%	87%	150%	85%	5%	13%	235%	43%	106%	42%	63%	87%
169%	169%	46%	41%	99%	5%	6%	132%	23%	64%	140%	43%	40%

* [illegible] BELOW

RUN NUMBER: 79050910300 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 10:31:20 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS
WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.007 [6.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.22E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.243E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1xZ2)1/2 12.9	HUMIDITY FLUX (Kg/sec m2) 4.23E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.90.E-05 [3.0E-05]
Z/L AT GMH -0.037 [1.0E-1]	LAT.HEAT FLUX (Watts/m2) 1.06E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.447E-03 [2.0E-02]
Z/L AT 10 METERS -0.007 [0.02]	SEN.HEAT FLUX (Watts/m2) 3.71E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.088E-04 [6.0E-05]
MOMIN OBUKHOV LENGTH (Meters) 1.413E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.51E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.502E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 8.40E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.062 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE
LISTED IN PERCENT DIFFERENCES AND ARE "+or-".

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
169%	166%	16%	17%	379%	0%	4%	183%	8%	20%	149%	26%	18%

* END OF DATA RUN

MARINE SURFACE WATER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091100
START TIME: 11: 1:40 PST
END TIME: 11:31:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 30 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES 2	SKY RAD	WIND DIR
6.205	0.001	0.001	4.891	4.976	5.928	5.627	4.734	7.022	4.977

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	V_REF B
4.059	3.901	2.536	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND FAR	MULTIPL	ADDITIVE	WIFCAL	WSIFC	WSCEC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(METERS)	(VOLTS)	(VOLTS)	(VOLTS)	(Coeff 2)	(Coeff 3)
1411 122907	1431 123671	0.183	123	50.398	2.453	0.010	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT REF DEV	VOLT REF DEV	ZERO REF DEV	AC VOLT FLUX	AC FREQ FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No scans)	(No.scans)	A(No.) 8050	B(No.) 8050	(No.) 8022	(No.) 2599	(No.) (Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	117.4	59.90

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING IMP ARSL CA AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP STRUC 1	WIND DIR	IBR [illegible] 1	SKY RAD	BAR PRES 1	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.=C+273)	(Deg.from	(millibar)	(Watt/m2)	(millibar)	(Celsius)
12.291	11.50	8.93	NO DATA	244.3	1017.1	7.058.22	1013.699	285.4??

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP STRUC 2	TIDAL TABLE	BAR [illegible] 2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.=C+273)	(Meter.MSL)	(millibar)
12.367	10.58	9.03	NO DATA	0.29	1011.??

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT TEMP.1	ABS HUMID.1	REL HUMID 1	SPEC HUMID 1	VAP PRES.1	SVAP PRES 1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(millibar)	(Kel.=C+273
18.35	12.471	13.510	13.682	8.628.-04	79.74	5.245.-03	11.366	14.254	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR TEMP 2	V.POT TEMP 2	ABS HUMID.2	REL HUMID 2	SPEC HUMID 2	VAP PRES.2	SVAP PRES 2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(millibar)	(Kel.=C+273
9.20	12.457	13.598	13.668	8.71?E-03	98.07	5.66?E-03	11.4?4	14.4?6	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	RATIO DERIVATIONS	PROFILE SLOPES
GRAD.RICHARDSON NUMBER	MOMENTUM FLUX	FRICTION VELOCITY	[illegible]	[illegible]
(-=Stable, +=Unstable)	(N/m2)	(Meter/Sec)	[illegible]	[illegible]
0.005 AT ZMH	5.09E-01	5.17?-03	[illegible]	[illegible]
GEOMETRIC MEAN HEIGHT	HUMIDITY FLUX	SCALING SPEC HUMID	[illegible]	[illegible]
(Meter) ZMH (Z1*Z2)1/2	(Kg/m2-sec)	(Kg/Kg)	[illegible]	[illegible]
12.79	3.?E-05	6.03?E-05	[illegible]	[illegible]
Z/L AT ZMH	LAT HEAT FLUX			
0.007	(Watts/m2)			
	9.4?E-01	SCALING POT TEMP	N SPEC HUMIDITY (Kg/Kg)	ADIABATIC SPEC HUMID
Z/L AT 10 METERS		(Kelvin)	ZENITH (Meters)	[illegible]
0.005	SEN HEAT FLUX	5.?42E-03	DSH DZ= 5.?1E-06	PSI FROM
	(Watts/m2)			[illegible]
Z/L AT Z1	6.40E 00			
0.007		MONIN-OBUKHOV LENGTH	MOIST TEMP GRADIENT	ADIAB TEMP GRAD
		(Meters)	ZENITH (Meters)	[illegible]
Z/L AT Z2	MOMENTUM AND SOLAR HEAT FLUX	5.408E 04	DET DZ= 1.43E-03	[illegible]
0.005	(Watts/m2)			[illegible]
	9.?9E 02			
MONIN-OBUKHOV LNGTH	TOTAL HEAT BUDGET FLUX	DRAG COEF AT 10 METERS		ADIAB SPEC HUMID
(Meters)	(Watts/m2)	(Dimensionless)		[illegible]
1.?73E 03	8.9?E 02	2.??E-03		FOR NON
PSI1 AT Z1 -0.043709	BOWEN RATIO			
PSI1 AT Z2 -0.021914	(No units)			
PSI2 AT Z1= 0.059862	0.078			
PSI2 AT Z2 0.029614				

* GENERAL CONSTANTS

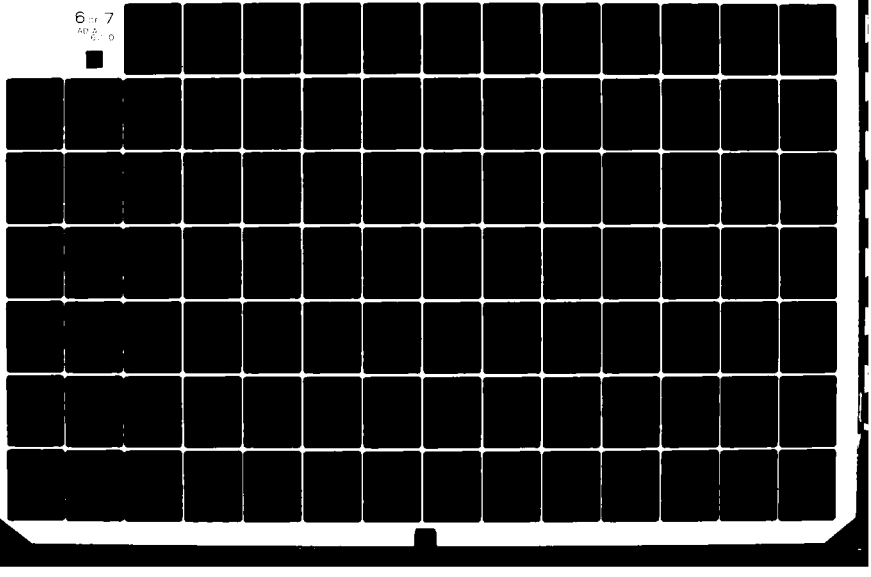
VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	FLUX HEAT TRANSF COEF	BULK AEROSOLVE TRANSF COEF
0.4	9.7959	0.74	0.74	6.9?1.04	1.3?.-3

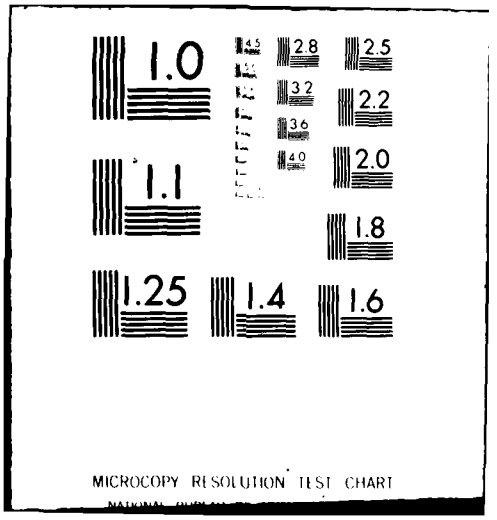
* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and or Partial Derivative
Computation executed by insertion of

SH1 SH2 +/- .00? 3 Kg/Kg

* CONTINUED ON NEXT PAGE

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/G 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART

RUN NUMBER: 7905091100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11: 1:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.358	10.69	9.02	NO DATA	1011.83	13.699	-1.341	-1.243	-0.112	-0.014

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
14.00	12.456	13.587	13.685	8.705E-03	80.03	7.081E-03	11.470	14.331	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable, --Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
0.034 AT GMH	-1.80E-01	3.906E-01	-1.526E-01	1.2293
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	4.41E-05	-9.190E-05	4.413E-05	2.4153E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.043	1.09E 02	-3.643E-02	1.423E-02	5.9032E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.033	1.77E 01	2.061E-04		15.664
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-3.052E 02	-9.79E 02	1.335E-03		1.183E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-8.53E 02			1013.03
	BOWEN RATIO (no units)			
	0.162			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
127%	134%	81%	147%	108%	5%	14%	255%	40%	107%	67%	60%	81%
176%	170%	46%	41%	98%	5%	6%	139%	23%	64%	121%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091100 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11: 1:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
-0.012 [0.02] AT GMH	-2.39E-01 [6.0E-02]	4.367E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/kg)
12.99	1.28E-05 [8.0E-06]	-8.000E-05 [3.0E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
0.015 [0.02]	1.06E 02 [2.0E+01]	-6.606E-03 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.012 [0.02]	6.20E 00 [3.0E+00]	3.453E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-3.6+8E 02	-9.79E 02 [2.0E+01]	1.600E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	-8.65E 02 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.081 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
99%	95%	31%	0%	194%	0%	2%	149%	15%	21%	121%	49%	33%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091130
START TIME: 11:32: 0 PST
END TIME: 12: 2:10 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
6.265	0.061	0.001	4.897	4.980	5.909	5.661	4.736	7.169	4.987

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.B
4.078	3.873	2.535	0.001	0.001	0.001	0.001	6.235

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WSIFC (Coeff.)	WSOFC (Coeff.)
1411 123399	1421 124109	0.183	131	-3.008	-3.050	0.300	0.992	0.950

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	180	0	0	0	0	0	115.3	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.340	11.37	8.93	NO DATA	314.6	1013.87	-1.00E 03	14.718	285.53

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.411	10.55	9.06	NO DATA	-0.31	1011 96

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.520	13.562	13.742	8.648E-03	79.68	7.041E-03	11.395	14.301	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.501	13.644	13.734	8.730E-03	79.99	7.102E-03	11.506	14.383	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091130
START TIME: 11:32: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.009 AT GMH	MOMENTUM FLUX (N1/m2) -2.47E-01	FRICTION VELOCITY (Meters/sec) 4.482E-01	GENERAL FORM DN/DZ= [(N1-N2))/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM N'SLOPE= [(LnZ1-PSI1)-(LnZ2-PSI2)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.20E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.811E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.17E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.93E-01
Z/L AT GMH 0.012	LAT.HEAT FLUX (Watts/m2) 7.91E 01	SCALING POT. TEMP. (Kelvin) 1.361E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 9.30E 03
Z/L AT 10 METERS 0.009	SEN.HEAT FLUX (Watts/m2) -7.58E 00	ROUGHNESS LENGTH (Meters) 3.317E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 2.09E-03	N=POT TEMP (Kelvin) Z HEIGHT (M) Vert Axis PSI=PSI2 PTK SLOPE= 3.97E 01
Z/L AT Z1 0.017	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.00E 03	DRAG COEF. AT 10 METERS (Dimensionless) 1.826E-03		N=LnTEMP STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.009	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.28E 02			
MONIN-OBUKHOV LENGTH (Meters) 1.081E 03	BOWEN RATIO (no units) -0.096			
PSI1 AT Z1= -0.079784 PSI1 AT Z2= -0.043001 PSI2 AT Z1= -0.107816 PSI2 AT Z2= -0.054055				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2289

AIR SPECIFIC HEAT (1Cal, kg Kel.) 2.415JE 02

WATER LAT.HEAT VAP. (1Cal /Kg) 5.9031E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of.

SH1 SH2= +/- .0BE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11:32: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.402	10.65	9.04	NO DATA	1011.87	13.718	-1.316	-1.218	-0.884	6.014

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.500	13.634	13.732	8.721E-03	79.96	7.095E-03	11.493	14.374	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.034 AT GMH	MOMENTUM FLUX (Nt/m2) -1.86E-01	FRICTION VELOCITY (Meters/sec) 3.887E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.511E-01	AIR DENSITY (Kg/m3) 1.2292
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.39E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.195E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.393E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4153E 02
Z/L AT GMH -0.042	LAT.HEAT FLUX (Watts/m2) 1.09E 02	SCALING POT.TEMP. (Kelvin) -3.583E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.393E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9030E 05
Z/L AT 10 METERS -0.033	SEN.HEAT FLUX (Watts/m2) 1.73E 01	ROUGHNESS LENGTH (Meters) 2.026E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.684
MONIN-OBUKHOV LENGTH (Meters) -3.073E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.00E 03	DRAG COEF.AT 10 METERS (Dimensionless) 1.333E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.185E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.74E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.27
	BOWEN RATIO (no units) 0.159			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
118%	128%	89%	151%	94%	5%	12%	245%	44%	107%	49%	64%	89%
171%	171%	46%	41%	99%	5%	6%	140%	23%	64%	122%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 11:32: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.009 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.07E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.090E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.14E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.927E-05 [3.0E-05]
Z/L AT GMH -0.011 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.02E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -6.426E-04 [2.0E-02]
Z/L AT 10 METERS -0.009 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.52E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.544E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.160E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -1.00E 03 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.486E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.92E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.067 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
108%	106%	16%	17%	275%	0%	3%	165%	8%	22%	134%	26%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091200
START TIME: 12: 2:20 PST
END TIME: 12:32:30 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	6.661	6.661	4.849	4.940	6.161	5.876	4.724	7.235	4.965

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.175	5.972	4.537	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND REAR	UPWIND LAND	DP.FCAL	DP1FCAL	W1SFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124620	1421 125144	0.183	158	-0.050	-0.050	0.300	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.87

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.462	11.65	8.63	NO DATA	313.8	1010.69	-1.01E 03	13.762	285.648

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.514	10.78	8.82	NO DATA	-0.41	1011.79

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.642	13.661	13.841	8.479E-03	77.54	6.907E-03	11.175	14.414	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.646	13.728	13.916	8.565E-03	78.17	6.986E-03	11.319	14.479	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091200
START TIME: 12: 2:20 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.014 AT GMH	MOMENTUM FLUX (Nt/M2) -2.82E-01	FRICTION VELOCITY (Meters/sec) 4.793E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.79	HUMIDITY FLUX (Kg/sec m2) 3.30E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.603E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.01E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.35E-01
Z/L AT GMH 0.020	LAT.HEAT FLUX (Watts/m2) 8.15E 01	SCALING POT. TEMP. (Kelvin) 2.586E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -9.01E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.65E 03
Z/L AT 10 METERS 0.015	SEN.HEAT FLUX (Watts/m2) -1.54E 01	ROUGHNESS LENGTH (Meters) 4.171E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 4.16E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 2.09E 01
Z/L AT Z1 0.020	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.01E 03	DRAG COEF. AT 10 METERS (Dimensionless) 1.909E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.014	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.43E 00			
CROSS OVER LENGTH (Meters) 6.515E 02	BOWEN RATIO (no units) -6.187			
PSI1 AT Z1 -1.142476				
PSI1 AT Z2= -1.066359				
PSI2 AT Z1= -0.178187				
PSI2 AT Z2= -0.099787				

* GENERAL CONSTANTS:

VON KARMEN CONSTANT (K) (dim.less)	EVAPORATION ACCELERATION (M/sec/sec)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.79.9	0.74	0.74	0.920 -03	1.32E 03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2282

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4150E 02

WATER LAT.HEAT VAP (ITcal./Kg) 5.9025E 05

* GENERAL NOTES:
NONE

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12: 2:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.508	11.05	8.80	NO DATA	1011.69	13.762	-1.254	-1.156	-0.042	0.056

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.606	13.720	13.818	8.573E-03	78.10	6.970E-03	11.302	14.472	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHF ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.029 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.036

Z/L AT 10 METERS
-0.028

MONIN-OBUKHOV LENGTH (Meters)
-3.596E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.04E-01

HUMIDITY FLUX (Kg/sec m2)
4.82E-05

LAT.HEAT FLUX (Watts/m2)
1.19E 02

SEN.HEAT FLUX (Watts/m2)
1.71E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.01E 03

TOTAL HEAT BUDGET FLUX (Watts/m2)
-8.73E 02

BOWEN RATIO (no units)
0.143

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.075E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.628E-05

SCALING POT.TEMP. (Kelvin)
-3.376E-02

ROUGHNESS LENGTH (Meters)
2.389E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.359E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.661E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.820E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.376E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2286

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9024E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.726

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.188E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.89

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
92%	105%	82%	146%	68%	5%	12%	214%	41%	105%	27%	61%	82%
173%	173%	46%	40%	101%	5%	6%	141%	23%	63%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12: 2:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,- Unstable)
-0.001 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.001 [0.02]

Z/L AT 10 METERS
-0.001 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.675E 04

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.36E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.49E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.11E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-2.32E 00 [4.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.01E 03 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-8.92E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.011 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.333E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.114E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.515E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.126E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.540E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
112%	111%	17%	19%	552%	0%	4%	212%	9%	26%	177%	29%	19%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091230
START TIME: 12:32:40 PST
END TIME: 13: 2:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.1	SKY RAD.	WIND DIR.
6.205	0.001	0.001	4.893	4.967	6.428	6.031	4.726	7.046	4.996

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.133	3.074	2.538	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	OPTICAL	OPTICAL	WIPEOFF	WSTEL	WSTEL
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124969	1421 125402	0.184	143	-0.308	0.059	0.300	0.992	0.990

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).012V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.497	12.17	8.85	NO DATA	314.8	1010.72	-9.03E 02	13.772	285.679

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.540	11.23	8.98	NO DATA	-0.47	1011.81

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.677	13.713	13.893	8.595E-03	78.43	7.662E-03	11.330	14.447	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.630	13.767	13.857	8.679E-03	78.90	7.865E-03	11.443	14.504	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091230
START TIME: 12:32:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.016 AT GMH	MOMENTUM FLUX (Nt/m2) -2.97E-01	FRICTION VELOCITY (Meters/sec) 4.914E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.29E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.446E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.05E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.14E-01
Z/L AT GMH 0.023	LAT.HEAT FLUX (Watts/m2) 8.12E 01	SCALING POT. TEMP. (Kelvin) 3.158E-02	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -9.93E 03
Z/L AT 10 METERS 0.018	SEN.HEAT FLUX (Watts/m2) -1.93E 01	ROUGHNESS LENGTH (Meters) 4.539E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 5.17E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.71E 01
Z/L AT Z1 0.055	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.83E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.895E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.016	TOTAL HEAT BUDGET FLUX (Watts/m2) -9.21E 02			
MONIN-OBUKHOV LENGTH (Meters) 5.610E 02	BOWEN RATIO (no units) -0.237			
PSI1 AT Z1= -0.153736 PSI1 AT Z2= -0.077078 PSI2 AT Z1= -0.207752 PSI2 AT Z2= -0.104159				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2281

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415?E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9023E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:32:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.535	11.34	8.97	NO DATA	1011.72	13.772	-1.237	-1.139	-0.011	0.087

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.533	13.761	13.859	8.669E-03	78.84	7.057E-03	11.430	14.498	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.026 AT GMH	MOMENTUM FLUX (Nt/m2) -2.18E-01	FRICTION VELOCITY (Meters/sec) 4.210E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.773E-01	AIR DENSITY (Kg/m3) 1.2284
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.81E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.304E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.812E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4152E 02
Z/L AT GMH -0.033	LAT.HEAT FLUX (Watts/m2) 1.19E 02	SCALING POT.TEMP. (Kelvin) -3.297E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.388E-02	WATER LAT.HEAT VA . (ITcal./Kg) 5.9022E 05
Z/L AT 10 METERS -0.026	SEN.HEAT FLUX (Watts/m2) 1.72E 01	ROUGHNESS LENGTH (Meters) 2.675E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.736
MONIN-OBUKHOV LENGTH (Meters) -3.920E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.83E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.378E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.188E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.46E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.92
	BOWEN RATIO (no units) 0.145			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
87%	101%	81%	146%	63%	5%	12%	209%	40%	106%	23%	60%	81%
174%	174%	46%	40%	102%	5%	6%	142%	23%	63%	125%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 12:32:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 6.002 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.46E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.466E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.48E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.854E-05 [3.0E-05]
Z/L AT GMH 0.003 [0.02]	LAT.HEAT FLUX (Watts/m2) 1.11E 02 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.159E-02 [2.0E-02]
Z/L AT 10 METERS 0.002 [0.02]	SEN.HEAT FLUX (Watts/m2) -5.29E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.451E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 5.150E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.83E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.549E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.72E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.010 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION ERROR EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
112%	112%	17%	70%	355%	0%	4%	243%	8%	25%	182%	27%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091300
START TIME: 15: 3: 0 PST
END TIME: 13:33:16 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
5.205	0.061	0.081	4.911	4.994	6.565	6.226	4.720	6.867	5.047

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.165	5.506	2.536	0.001	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WT1FCAL	WS1ECC	WS2ECC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125109	1401 1:5387	0.183	145	-0.308	-0.059	0.030	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FRLQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.>5V)	(No.>1Hz)	(VAC)	(Hz)
0	1	179	0	0	0	0	0	115.4	59.89

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.511	12.62	9.02	NO DATA	316.6	1010.65	-9.50E 02	13.804	285.685

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.539	11.58	9.14	NO DATA	-0.51	1011.75

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.691	13.741	13.921	8.696E-03	79.24	7.081E-03	11.457	14.459	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.629	13.779	13.849	8.772E-03	79.76	7.141E-03	11.566	14.501	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091300
START TIME: 15: 3: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.018 AT GMH	MOMENTUM FLUX (Nt/m2) -3.52E-01	FRICTION VELOCITY (Meters/sec) 5.356E-01	GENERAL FORM:DN/DZ= [(N1-N2))/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.53E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.372E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.16E 01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 7.47E-01
Z/L AT GMH 0.026	LAT.HEAT FLUX (Watts/m2) 8.73E 01	SCALING POT. TEMP. (Kelvin) 4.151E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= 1.01E 04
Z/L AT 16 METERS 0.020	SEN.HEAT FLUX (Watts/m2) -2.76E 01	ROUGHNESS LENGTH (Meters) 6.054E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 6.89E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE 1.30E 01
Z/L AT Z1 0.035	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.58E 02	DRAG COEF. AT 16 METERS (Dimensionless) 2.060E-03		N=LnTEMP.STRUC (K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.018				
MONIN-OBUKHOV LENGTH (Meters) 5.071E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.98E 02			
PSI1 AT Z1= -6.170847 PSI1 AT Z2= -6.985275 PSI2 AT Z1= -6.229847 PSI2 AT Z2= -6.115247	BOWEN RATIO (no units) -0.316			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2279

AIR SPECIFIC HEAT (ITcal/Kg Kel) 2.415E 02

WATER LAT HEAT VAP (ITcal/Kg) 5.902E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SHI SH2 +/- .001 E Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 3: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.535	11.71	9.13	NO DATA	1011.65	13.804	-1.268	-1.170	-6.029	0.069

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.633	13.775	13.873	8.763E-03	79.70	7.134E-03	11.553	14.497	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.024 AT GMH	MOMENTUM FLUX (Nt/m2) -2.36E-01	FRICTION VELOCITY (Meters/sec) 4.386E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.923E-01	AIR DENSITY (Kg/m3) 1.2283
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.86E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.020E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.859E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4154E 02
Z/L AT GMH -0.031	LAT.HEAT FLUX (Watts/m2) 1.20E 02	SCALING POT.TEMP. (Kelvin) -3.336E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.461E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9022E 05
Z/L AT 10 METERS -0.024	SEN.HEAT FLUX (Watts/m2) 1.81E 01	ROUGHNESS LENGTH (Meters) 3.079E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.768
MONIN-OBUKHOV LENGTH (Meters) -4.211E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.58E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.403E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.191E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.19E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.85
	BOWEN RATIO (no units) 0.151			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
78%	92%	76%	143%	56%	5%	13%	199%	38%	105%	18%	58%	76%
173%	173%	46%	41%	101%	5%	7%	141%	23%	64%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 13: 3: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.004 (0.02) AT GMH	MOMENTUM FLUX (Nt/m2) -2.80E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 4.752E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2))1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.56E-05 (8.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.644E-05 (3.0E-05)
Z/L AT GMH 0.006 (0.02)	LAT.HEAT FLUX (Watts/m2) 1.13E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 3.194E-02 (2.0E-02)
Z/L AT 10 METERS 0.005 (0.02)	SEN.HEAT FLUX (Watts/m2) -1.13E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 4.348E-04 (6.0E-05)
MONIN OBUKHOV LENGTH (Meters) 2.166E 03	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.58E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.637E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.4.E 02 (3.0E+01)	
	BOWEN RATIO (no units) -0.043 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE BULK WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH LENGTH	DRAG COEF
112%	114%	21%	17%	211%	6%	5%	296%	11%	25%	146%	35%	17%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091330
START TIME: 13:33:20 PST
END TIME: 14: 3:30 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.061	0.061	4.921	5.062	6.147	5.883	4.722	6.481	5.647

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.167	3.818	2.538	0.001	0.001	0.001	0.001	6.215

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	DP1FCAL	DP2FCAL	WS1FCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 125928	1421 125926	0.183	145	0.908	-9.050	0.039	0.992	0.990

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.82

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.593	11.82	9.07	NO DATA	318.0	1019.65	-9.04E 02	13.835	285.756

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.593	10.96	9.19	NO DATA	-0.51	1011.75

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.773	13.828	14.008	8.722E-03	99.12	7.109E-03	11.502	14.537	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.683	13.837	13.928	8.830E-03	79.74	7.165E-03	11.605	14.553	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091330
START TIME: 13:33:20 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.037 AT GMH	MOMENTUM FLUX (Nt/m2) -1.84E-01	FRICTION VELOCITY (Meters/sec) 3.869E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(lnZ1-PS1)-(lnZ2-PS1)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.14E-05	SCALING SPEC.HUMD. (Kg/Kg) -4.513E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 9.58E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PS1=PS1 WS SLOPE= 1.03E 00
Z/L AT GMH 0.066	LAT.HEAT FLUX (Watts/m2) 5.29E 01	SCALING POT. TEMP. (Kelvin) 5.069E-02	N=SPEC.HUMIDITY (Kg/Kg) Z-HEIGHT (Meters) DSH/DZ= -6.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -1.20E 04
Z/L AT 10 METERS 0.046	SEN.HEAT FLUX (Watts/m2) -2.43E 01	ROUGHNESS LENGTH (Meters) 1.991E-04	N=POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= 1.00E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.07E 01
Z/L AT Z1 0.043	SKY AND SOLAR HEAT FLUX (Watts/m2) 9.04E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.249E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.042	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.75E 00			
MONIN-OBUKHOV LENGTH (Meters) 2.170E 02	BOWEN RATIO (no units) -6.460			
PSI1 AT Z1= -0.397508 PSI1 AT Z2= -0.199295 PSI2 AT Z1= -0.537172 PSI2 AT Z2= -0.269318				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)	WATER LAT.HEAT VAP. (ITcal./Kg)
1.2276	2.4154E 02	5.9319E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .001 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091330
START TIME: 13:33:20 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.593	11.07	9.18	NO DATA	1011.66	13.805	-1.213	-1.115	0.031	0.129

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.691	13.836	13.934	8.791E-03	79.67	7.158E-03	11.593	14.552	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL. 978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.028 AT GMH	MOMENTUM FLUX (Nt/m2) -2.05E-01	FRICTION VELOCITY (Meters/sec) 4.082E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.667E-01	AIR DENSITY (Kg/m3) 1.228U
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.55E-05	SCALING SPEC HUMID. (Kg/Kg) -9.083E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.554E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4155E 02
Z/L AT GMH -0.035	LAT.HEAT FLUX (Watts/m2) 1.13E 02	SCALING POT.TEMP. (Kelvin) -3.270E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.335E-02	WATER LAT.HEAT VA. . (ITcal./Kg) 5.9019E 05
Z/L AT 10 METERS -0.027	SEN.HEAT FLUX (Watts/m2) 1.66E 01	ROUGHNESS LENGTH (Meters) 2.404E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.770
MONIN-OBUKHOV LENGTH (Meters) -3.717E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.04E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.360E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.191E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.75E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.86
	BOWEN RATIO (no units) 0.147			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
83%	114%	89%	152%	61%	5%	10%	213%	45%	107%	16%	65%	89%
175%	175%	46%	41%	103%	5%	7%	144%	23%	64%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091330
START TIME: 13:33:20 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-=Unstable) 0.016 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.98E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.009E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.04E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.379E-05 [3.0E-05]
Z/L AT GMH 0.022 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.99E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 4.112E-02 [2.0E-02]
Z/L AT 10 METERS 0.017 [0.02]	SEN.HEAT FLUX (Watts/m2) -9.13E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.239E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 5.794E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -9.04E 02 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.376E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) -8.15E 02 [3.0E+01]	
	BOWEN RATIO (no units) -0.097 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF
173%	186%	6%	34%	231%	0%	6%	318%	3%	32%	128%	9%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79265091401
START TIME: 14: 3:40 PST
END TIME: 14:33:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

> CHECK SUMS: Raw Data Checksums (Z=0):

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
Cal Check	Temp Check 1	Temp Check 2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.000	0.000	0.000	6.936	6.015	6.470	6.194	4.713	6.011	4.936

No.11	No.12	No.13	No.14	No.15	No.16	No.17
Not Used	Not Used	Not Used	Not Used	SPARE A	SPARE B	VOLT.REF.B
0	0.000	0.000	0.000	0.000	0.000	6.200

> IF Time Constant Raw Data Checksums: ESCARPMENT PATH, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

		DOWND NEAR	DOWND FAR	DPTEMP	DPREF	WTBFCAL	WSFEL	WSZEC
		DOWNWIND FETCH	DOWNWIND FETCH	DPTEMP	DPREF	WTBFCAL	WSFEL	WSZEC
		UPWIND FETCH	UPWIND FETCH	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
		(Meters)	(Meters)					
		0.000	143	-0.340	-0.050	0.000	0.992	0.952

> [illegible] Parameters Translated into Engineering Units:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		(C)						
		0	0	0	0	0	115.4	59.74

> IF [illegible] Parameters (Including the Angle of [illegible] and Escarpment Corrections) Translated into Engineering Units:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	0.44	9.16	NO DATA		210.6	1010.51	-8.3E-02	13.819	285.991

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	11.5	9.27	NO DATA		-0.46	1011.61	

> [illegible] Micrometeorological Parameters:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	0.44	14.043	8.774E-03	29.46	7.153E-03	11.571	14.562	NO DATA

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	12.652	13.854	1.044	8.787E-03	81.13	7.204E-03	11.466	14.568	NO DATA

> Continued Below

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

RUN NUMBER: 79265091401
START TIME: 14: 3:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NPS MICROMETEOROLOGY
SAN NICOLAS ISLAND, Cal

> PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (0=Stable, Unstable)	MOMENTUM FLUX (N/M2)	FRICTION VELOCITY (Meters/Sec)	GENERAL FORM: DW/DZ=	GENERAL FORM: N SLOPE=
0.039 AT GMH	2.12E-01	9.654E-01	I(N1-N2)/I(Z1-Z2)+ (Z1-Z2)+ Z]	I(LnZ1-PSI)-(LnZ2-PSI)I
			(Z1-Z2)+ Z]	IN1-N2I
ROUGHNESS HEIGHT (Meters) Ln0=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/Sec M2)	SCALING SPEC HUMD. (Kg/Kg)	N=WIND SPEED (M/Sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/Sec) Z=HEIGHT (M) Vert Axis
12.77	2.20E-05	-4.442E-04	DW5/DZ= 1.3.7E-01	P1=PSI1
				WS SLOPE= 9.87E-01
VON KARMAN CONSTANT AT GMH	LAT.HEAT FLUX (Watts/M2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert Axis
0.364	-5.44E 01	-5.978E-02	DSH/DZ= -8.9[illegible] 06	PSI=PSIP
				SH SLOPE= 1.2[illegible] 04
ZETA AT 2 METERS	SENS.HEAT FLUX (Watts/M2)			
-0.45	-5.01E 01			
ZETA AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert Axis
-0.51		2.347E 04	DPT/DZ= 1.21E-02	PSI=PSIP
ZETA AT Z2	SKY AND SOLAR HEAT FLUX (Watts/M2)			PTK SLOPE= 9.04[illegible] 00
-0.41	6.48E 02	DRAG COEF. AT 10 METERS (Dimensionless)		N=INTERMEDIATE STRUC (KxM-2/3) Z=HEIGHT (M) Vert Axis
ROUGHNESS LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/M2)	1.63E-03		PSI=NONE
2.35E 02	-8.14E 02			CTP SLOPE=NO DATA
PSIM AT Z= 0.4/0.50	BOWEN Ratio (no units)			
PSIH AT Z= 0.213845	-6.58[illegible]			
PSIM AT Z1= 0.5/0.490				
PSIH AT Z1= 0.268960				

> [illegible] Constants

VON KARMAN CONSTANT	GRAVITATION ACCELERATION (M/Sec2)	PROFILE NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.79[illegible]	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.2273

AIR SPECIFIC HEAT (Ical/Kg Kel.) 2.41558 02

WATER LAT.HEAT VAP. (Ical/Kg) 5.9018E 05

> CAUTION NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

50[illegible] 02 00 5 Kg/Kg

> CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 3:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.604	11.64	9.26	NO DATA	1011.51	13.819	-1.215	-1.117	0.636	0.134

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel xM-2/3)
10.00	13.702	13.855	13.953	8.838E-03	80.05	7.190E-03	11.655	14.561	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.024 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.030

Z/L AT 10 METERS
-0.023

MONIN-OBUKHOV LENGTH (Meters)
-4.303E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.32E-01

HUMIDITY FLUX (Kg/sec m2)
4.73E 05

LAT.HEAT FLUX (Watts/m2)
1.17E 02

SEN.HEAT FLUX (Watts/m2)
1.73E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
8.30E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.04E 02

BOWEN RATIO (no units)
0.148

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.350E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.851E-05

SCALING POT.TEMP. (Kelvin)
3.207E-02

ROUGHNESS LENGTH (Meters)
2.995E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.398E-03

INFERRED MEAN VERTICAL VELOCITY EQUIVARIANCE

WITH LONG. VELOCITY (Meter**2/sec**2)
-1.872E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.225E-05

WITH POT TEMPERATURE (Meter Kel./sec)
1.395E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2278

AIR SPECIFIC HEAT (Cal/Kg Kel)
2.415E 02

WATER LAT HEAT VAP. (Cal/Kg)
5.901E 05

VAP.PRES AT WT LEVEL (Millibar)
15.781

ABS.HUMID AT WT LEVEL (Kg/m3)
1.192E-02

BAR.PRES AT WT LEVEL (Millibar)
1012.71

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
81%	113%	85%	15%	59%	5%	10%	216%	44%	187%	35%	64%	88%
17%	17%	46%	41%	103%	5%	7%	144%	23%	64%	176%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091400 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14: 3:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.019 (0.01) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.03 (0.02)

Z/L AT 10 METERS
0.021 (0.02)

MONIN-OBUKHOV LENGTH (Meters)
4.76E 0

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.32E-01 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
4.15E 05 (8.0E 06)

LAT.HEAT FLUX (Watts/m2)
1.04E 02 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.20E 01 (3.0E+01)

SKY AND SOLAR HEAT FLUX (Watts/m2)
8.30E 02 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
-7.46E 02 (3.0E+01)

BOWEN RATIO (no units)
0.136 (0.20)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.249E-01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-9.191E 05 (3.0E 05)

SCALING POT.TEMP. (Kelvin)
5.069E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
2.735E-04 (6.0E-05)

DRAG COEF AT 10 METERS (Meters)
1.345E 03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS FORMULATED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR ITS MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT TEMP	ROUGH. LENGTH	DRAG COEF.
169%	177%	2	3%	192%	0%	2%	262%	4%	32%	117%	12%	2%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905051430
START TIME: 14:34: 0 PST
END TIME: 15: 4:10 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1981
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	TAR/REF.1.2	SPEC RAD	WIND DIR
6.265	6.061	6.041	4.946	5.026	6.777	6.933	4.694	5.519	4.926

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.181	5.276	5.041	0.031	0.031	0.031	0.031	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1	No.2	UPWIND NEAR	UPWIND LAND	SPECIAL	DPST(mb)	WIND(m	WSIG(	WSIG(
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(mb/mV)	(m/sec)	(Coeff.)	(Error)
1411 126879	1421 126442	0.183	138	0.308	20.203	0.329	1.992	3.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF. DEV	AC VOLT FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.Scans)	(No.Scans)	(No.Scans)	A(No.).0050	B(No.).0050	(No.).0020	(No.)50	(No.)180	(Vac)	(Hz)
0	0	180	0	0	0	0	0	115.4	59.74

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	PRESSURE1	SKY RAD	RAD WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Deg.True)	(MilliBar)	(Watt/m2)	(Celsius)	(Kelvin)
12.468	13.83	9.22	NO DATA	314.3	1013.23	-5.07E 02	13.618	285.82

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM 2/3)	(Meter ASL)	(MilliBar)
12.648	11.96	9.33	NO DATA	-0.48	1011.33

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(MilliBar)	(MilliBar)	(Kel.xM 2/3)
18.35	12.869	13.956	14.116	8.8E9E-03	79.43	7.182E-03	11.614	14.620	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(MilliBar)	(MilliBar)	(Kel.xM 2/3)
9.23	12.734	13.781	13.991	8.828E-03	80.23	7.24E-03	11.711	14.596	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905051430
START TIME: 14:34: 6 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1981
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)	MOMENTUM FLUX (N1/m2)	FRICTION VELOCITY (meters/sec)	GENERAL FORM:DN/DZ= ((N1-N2)/ln(Z1/Z2)+ (Z1+Z2)1/2)	GENERAL FORM:"N"SLOPE= ((lnZ1-PSI)-(lnZ2-PSI))/ (N1-N2)
0.036 AT GMH	-2.85E-01	4.826E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1xZ2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (m/sec) Z=HEIGHT (Meters) DWS/DZ= 1.19E-01	N=WIND SPEED (m/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.29E-01
12.99	2.70E-05	-4.56E-05		
Z/L AT GMH 0.659	LAT.HEAT FLUX (Watts/m2) 6.67E 01	SCALING POT. TEMP. (Kelvin) 2.602E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -1.19E 04
Z/L AT 10 METERS 0.344	SEN.HEAT FLUX (Watts/m2) 4.55E 01			
Z/L AT Z1 0.081		ROUGHNESS LENGTH (Meters) 4.270E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 1.49E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 7.11E 00
Z/L AT Z2 0.041	SKY AND SOLAR HEAT FLUX (Watts/m2) 7.70E 02			
MONIN-OBUKHOV LENGTH (Meters) -1.53E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.49E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.578E 03		N=LATENT.STRUC (xxM 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
PSI1 AT Z1= -0.392833 PSI1 AT Z2= -0.191940 PSI2 AT Z1= -0.517342 PSI2 AT Z2= -0.259376	BOWEN RATIO (no units) -0.682			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF	MISCELLANEOUS
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03	AIR DENSITY (Kg/m3) 1.2267
						AIR SPECIFIC HEAT (Cal./Kg Kel.) 2.415AE 02
						WATER LAT.HEAT VAP. (Cal./Kg) 5.9015E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .0RE 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:34: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.649	12.09	9.32	NO DATA	1011.23	13.818	1.169	1.071	6.087	6.185

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.747	13.905	14.003	3.870E-03	80.13	2.927E-03	11.699	14.630	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.020 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.026

Z/L AT 10 METERS
-0.026

MONIN-OBUKHOV LENGTH (Meters)
-5.063E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.56E-01

HUMIDITY FLUX (Kg/sec m2)
4.86E-05

LAT.HEAT FLUX (Watts/m2)
1.20E 02

SEN.HEAT FLUX (Watts/m2)
1.73E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.70E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.32E 02

BOWEN RATIO (no units)
0.144

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.570E-01

SCALING SPEC.HUMID. (Kg/Kg)
8.669E 05

SCALING POT.TEMP. (Kelvin)
-3.045E-02

ROUGHNESS LENGTH (Meters)
3.546E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.428E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.088E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.857E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.391E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2272

AIR SPECIFIC HEAT (Ilcal./kg Kel.)
2.415E 02

WATER LAT.HEAT VAP. (Ilcal./Kg)
5.910E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.772

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.191E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.43

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
72%	98%	78%	145%	51%	5%	12%	197%	39%	106%	12%	59%	78%
177%	177%	46%	41%	105%	5%	7%	146%	23%	64%	15%	47%	48%

* CONTINUED BELOW

RUN NUMBER: 7905091430 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 14:34: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.020 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.028 [0.02]

Z/L AT 10 METERS
0.021 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
4.659E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.67E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.38E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.08E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
2.49E 01 [3. E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.70E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-6.76E 02 [3.0 +01]

BOWEN RATIO (no units)
0.208 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.665E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.117E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
6.667E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.851E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.479E 03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
153%	156%	6%	28%	134%	0%	9%	201%	3%	30%	163%	10%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79050/1500
START TIME: 15: 4:20 GMT
END TIME: 17:34:56 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* MEAN (CHANNEL RAW DATA COVERAGE VOLTS):

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
Time (Sec)	Temp.Struc.1	Temp.Struc.2	Dew Point1	Dew Point2	Wind Speed1	Wind Speed2	Bar.Pres.2	Sky Rad.	Wind Dir.
2667	0.061	0.001	4.931	5.000	6.432	6.139	4.690	4.897	5.033

No.11	No.12	No.13	No.14	No.15	No.16	No.17
Precipitation Frequency	Co Index	Manual Flag	Zero Ref.	Spare A	Spare B	Volt.Ref.B
3.542	2.543	0.001	0.001	0.001	0.001	6.205

* CALIBRATION CHANNEL RAW DATA COVERAGE: ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	Upwind Near	Upwind Land	Dp1Cal	Dp2Cal	Wi8Cal	WS1EC	WS2EC
Calibration	Calibration	Height/Length	Path(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
0.000	0.000	0.105	140	0.308	0.950	0.000	0.992	0.952

* [illegible] RAW DATA TRANSLATED INTO ENGINEERING UNITS:

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
Zero Ref.(0V)	Volt.Ref.(5V)	Volt.Ref.Dew	Zero Ref.Dew	AC Volt Flux	AC Freq.Flux	AC Voltage	AC Frequency
Mv/Degree C	Deg.C (Range)	A(No.)+B(No.)(5V)	A(No.)+B(No.)(5V)	(No.)(5V)	(No.)(1Hz)	(VAC)	(Hz)
0	100	0	0	0	0	115.4	59.75

* [illegible] METEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

Wind Speed 1	Dew Point1	Temp Struc.1		Wind Dir.	Bar.Pres.1	Sky Rad.	Bulk Wt Temp	Mean Air Temp
(meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
2.37	9.37	NO DATA		316.1	1010.17	-6.83E 02	13.804	285.904

Wind Speed 2	Dew Point2	Temp Struc.2		Tide Table	Bar.Pres.2
(meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
2.43	9.18	NO DATA		-0.30	1011.27

* [illegible] MICROMETEOROLOGICAL PARAMETERS:

Pot.Temp.1	Vir.Temp.1	V.Pot.Temp.1	Abs.Humid.1	Rel.Humid.1	Spec.Humid.1	Vap.Pres.1	S.Vap.Pres.1	Ref.Index 1
(Celsius)	(Kelvin)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
14.284	14.636	14.196	8.712E-03	78.15	7.109E-03	11.496	14.716	NO DATA

Pot.Temp.2	Vir.Temp.2	V.Pot.Temp.2	Abs.Humid.2	Rel.Humid.2	Spec.Humid.2	Vap.Pres.2	S.Vap.Pres.2	Ref.Index 2
(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
13.991	14.903	14.943	8.796E-03	79.09	7.168E-03	11.591	14.656	NO DATA

* [illegible] BELOW

RUN NUMBER: 79050/1500
START TIME: 15: 4:20 GMT
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATION BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (N*/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ=	GENERAL FORM:'N'SLOPE=
0.656 AT GMH	-1.68E-01	3.704E-01	[(N1-N2)/(Ln(Z1/Z2)+(Z1-Z2)1/21	[(LnZ1-PSI)-(LnZ2-PSI)]/(N1-N21
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
1.99	1.23E-05	3.807E-05	DW5/DZ= 1.95E 01	PSI=PSI1
				W5 SLOPE= 1.0HE 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
0.100	4.77E 01	7.747E-02	DSH/DZ= -8.92E-06	PSI=PSI2
Z/L AT 1: METERS	SEN.HEAT FLUX (Watts/m2)			SH SLOPE= -1.42E 04
0.159	-3.56E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	1.711E-04	DPT/DZ= 1.81E-02	PSI=PSI2
0.141	-6.83E 02			PTK SLOPE= 6.99E 00
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis
0.171		1.039E 03		PSI=NONE
ROUGH.ROUGHOO LENGTH (meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)			CT2 SLOPE=NO DATA
1.305E 02	-6.76E 02			
PSIT AT Z1= 0.666944	BOWEN RATIO (no units)			
PSIT AT Z2= 0.731422	0.033			
PSIQ AT Z1= 0.995167				
PSIQ AT Z2= 0.447030				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No Units)	GRAVITATION ACCELERATION (M/sec2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.2959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	1.2264
AIR SPECIFIC HEAT (1Cal./Kg Kel.)	2.4154E 02
WATER LAT HEAT VAP. (1Cal./Kg)	5.9011E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

Sat Spec. Hy. .ub.-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 4:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.716	11.54	9.17	NO DATA	1011.17	13.864	-1.088	-0.990	0.155	0.253

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.814	13.959	14.057	8.777E-03	78.98	7.154E-03	11.580	14.663	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH-(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.023

Z/L AT 10 METERS
-0.022

MONIN OBUKHOV LENGTH (Meters)
-4.651E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.27E-01

HUMIDITY FLUX (Kg/sec m2)
4.77E-05

LAT.HEAT FLUX (Watts/m2)
1.18E 02

SEN.HEAT FLUX (Watts/m2)
1.55E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-6.83E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.50E 02

BOWEN RATIO (no units)
0.132

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.304E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.008E-05

SCALING POT.TEMP. (Kelvin)
-2.906E-02

ROUGHNESS LENGTH (Meters)
2.886E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.392E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.852E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.757E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.251E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2269

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9012E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.761

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.190E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.37

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	118%	80%	153%	58%	5%	10%	211%	44%	109%	14%	64%	88%
181%	181%	46%	41%	109%	5%	8%	149%	23%	64%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091500 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 15: 4:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD RICHARDSON NUMBER (+-Stable, -Unstable)
0.033 [6.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH-(Z1*Z2)1/2
12.99

Z/L AT GMH
0.149 [3.02]

Z/L AT 10 METERS
0.038 [6.02]

MONIN OBUKHOV LENGTH (Meters)
2.43E 0

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.07E 01 [6.0E 02]

HUMIDITY FLUX (Kg/sec m2)
4.62E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.02E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.78E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
6.83E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
6.00E 02 [3.0E+01]

BOWEN RATIO (no units)
0.268 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.098E 01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.084E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
6.741E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.414E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.282E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
1.0%	150%	15%	4.2%	150%	0%	11%	182%	8%	38%	102%	25%	15.

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091530
START TIME: 15:34:40 PST
END TIME: 16: 4:40 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.1	BAR.PRES.2	WIND DIR.
6.205	0.001	0.001	4.875	4.957	5.187	5.912	4.694	4.170	4.994

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF B
4.145	3.743	2.542	0.001	0.001	5.151	0.101	6.134

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1	No.2	UPWIND NEAR	UPWIND LAND	UPFETCH	EP FETCH	WEST FETCH	WEST	EAST
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	FETCH (Meters)	FETCH (Meters)
1411 129004	1421 128093	0.183	121	9.308	-0.053	0.000	1.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT FLUX	AC FREQ FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).0022V)	(No. /52)	(No. /167)	(Volts)	(Hz)
0	0	180	0	0	0	0	0	115.5	59.94

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTION / TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SAT.VAP	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.990	11.90	8.89	NO DATA	314.8	1014.18	5.02E-03	13.83	286.07

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDAL RANGE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.869	11.01	8.92	NO DATA	-0.17	1011.28

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3
18.35	13.080	14.114	14.294	8.550E-03	76.13	6.979E-03	11.237	14.826	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3
9.00	12.999	14.033	14.123	8.632E-03	77.22	7.037E-03	11.393	14.754	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091530
START TIME: 15:34:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+-INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/Sec)	GENERAL FORM DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
0.069 AT GMH	-1.22E-01	3.156E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N-WIND SPEED (M/sec) Z=HEIGHT (Meters)	N-WIND SPEED (M/sec) Z-HEIGHT (M) Vert.Axis
12.99	1.36E-05	-3.354E-05	DWS/DZ= 9.97E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 1.22+ 00
0.134	3.21E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N-SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	7.577E-02	DSH/DZ= -8.92E 06	PSI=PSI2
0.103	-2.96E 01			SH SLOPE= 1.61E 04
Z/L AT Z1		ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
0.139	SKY AND SOLAR HEAT FLUX (Watts/m2)	9.673E-05	DPT/DZ= 2.01E-02	PSI=PSI2
Z/L AT Z2	-5.82E 02			PTK SLOPE= 7.15E 00
0.095		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(Kelvin**2/3)
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	0.198E 04		Z=HEIGHT (M) Vert.Axis
9.703E 01	-5.79E 02			PSI=NONE
PSI1 AT Z1= -0.888840	BOWEN RATIO (no units)			CT2 SLOPE=NO DATA
PSI1 AT Z2= -0.445631	-0.925			
PSI2 AT Z1= -1.201135				
PSI2 AT Z2= -0.602204				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION	PRDTLE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
(No units)	(M/sec 2)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2260

AIR SPECIFIC HEAT (Ital./kg Kel.) 2.41*01 02

WATER LAT.HEAT VAP (Ital./kg) 5.9084E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091530
START TIME: 15:34:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.820	11.12	8.91	NO DATA	1011.18	13.783	-0.963	-0.865	0.259	0.357

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.918	14.043	14.141	8.623E-03	77.08	7.030E-03	11.380	14.764	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1976):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.022 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.028

Z/L AT 10 METERS
-0.021

MONIN-OBUKHOV LENGTH (Meters)
-4.655E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.07E-01

HUMIDITY FLUX (Kg/sec m2)
4.79E-05

LAT.HEAT FLUX (Watts/m2)
1.18E 02

SEN.HEAT FLUX (Watts/m2)
1.35E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.82E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-4.50E 02

BOWEN RATIO (no units)
0.114

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.105E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.510E-05

SCALING POT.TEMP. (Kelvin)
-2.642E-02

ROUGHNESS LENGTH (Meters)
2.450E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.364E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.685E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.768E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.085E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2266

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4152E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9086E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.740

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.189E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.38

* *MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":*

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
76%	129%	93%	157%	62%	5%	10%	219%	47%	111%	15%	67%	93%
188%	108%	46%	40%	116%	5%	8%	156%	23%	63%	139%	45%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091530
START TIME: 15:34:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.043 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.068 [0.02]

Z/L AT 10 METERS
0.052 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.968E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.79E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.08E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.01E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-1.47E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-5.82E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-5.0?E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.318 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.791E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.272E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
6.570E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.858E-04 [6.0E-05]

DRAG COEF AT 10 METERS (Meters)
1.200E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. -/ AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
116%	121%	25%	0%	154%	0%	13%	165%	13%	44%	100%	41%	34%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
8.864	8.864	4.864	4.949	6.320	6.051	4.690	3.370	4.958

No.11	No.12	No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible]	RAIN FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.001	2.296	0.301	0.301	0.301	0.301	6.205

ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

		UPWIND REAP	UPWIND LAND	DPIFCAL	DP2FCAL	WIDFCAL	WS1EC	WS2EC
		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
		0.033	111	-0.008	-0.050	0.000	0.992	0.952

DIGITAL MICROMETEOROLOGICAL PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
	(No. Words)	(No. Words)	R(No.).LESS	R(No.).GREA	(No.).002V	(No.)5V	(No.)1Hz	(VAC)	(Hz)
	0	180	0	0	0	0	0	115.4	59.66

DIGITAL MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
	(Meters/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
	12.749	8.75	NO DATA		313.6	1010.17	-4.70E 02	13.755	286.053
	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2			
	(Meters/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)			
	11.26	8.87	NO DATA		-0.02	1011.27			

DERIVED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
17.39	13.173	14.191	14.341	8.510E-03	75.57	6.947E-03	11.236	14.867	NO DATA
HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.84	12.955	13.362	14.102	8.601E-03	76.77	7.012E-03	11.352	14.786	NO DATA

* CONTINUED @ BOTTOM

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.075 AT SMH

[illegible] (PSI, SEAN BLOCK)
(Meters) Grad Z1(Z2)1/2
12.79

Z/L AT SMH
0.142

Z/L AT 10 METERS
0.112

Z/L AT Z1
0.05

Z/L AT Z2
0.143

MONIN OBUKHOV LENGTH
(Meters)
8.904E 01

PSI1 AT Z1 0.2VARABZ
PSI1 AT Z2 0.465625
PSI2 AT Z1 1.366929
PSI2 AT Z2 0.650240

FLUX PARAMETERS
(+=UP, -=DOWN)

MOMENTUM FLUX
(Nt/m2)
-1.13E-01

HUMIDITY FLUX
(Kg/sec m2)
1.20E-05

LAT.HEAT FLUX
(Watts/m2)
2.96E 01

SEN.HEAT FLUX
(Watts/m2)
2.87E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
4.70E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-4.69E 02

BOWEN RATIO
(no units)
0.971

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.035E-01

SCALING SPEC.HUMD.
(Kg/Kg)
3.020E-05

SCALING POT. TEMP.
(Kelvin)
7.637E-02

ROUGHNESS LENGTH
(Meters)
8.385E-05

DRAG COEF. AT 10 METERS
(Dimensionless)
7.246E 04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 9.92E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP (elvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.12E-02

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.32E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -1.68E 04

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 7.08E 00

N=LnTEMP STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

[illegible]

[illegible]	EVAPORATION	PROFILE	PROFILE	BULK	BULK
[illegible]	ACCELERATION	TUR.PRANDTL	TUR.SCHMIDT	SEN.HEAT	MOISTURE
[illegible]	(Meters/sec)	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
0.4	9.29E-07	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2259

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4151E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9002E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Evaporation computed by insertion of:

[illegible] 0.5 g/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 4:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.858	11.37	8.85	NO DATA	1011.17	13.755	-6.901	-0.863	0.317	0.415

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.953	14.073	14.171	8.590E-03	76.63	7.004E-03	11.338	14.797	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) -0.019 AT GMH	MOMENTUM FLUX (N/m2) -2.19E-01	FRICTION VELOCITY (Meters/Sec) 4.225E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.785E-01	AIR DENSITY (Kg/m3) 1.2264
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 4.93E-05	SCALING SPEC.HUMID. (Kg/Kg) -9.488E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 4.916E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4151E 02
Z/L AT GMH -0.025	LAT.HEAT FLUX (Watts/m2) 1.21E 02	SCALING POT.TEMP. (Kelvin) -2.461E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.040E-02	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9004E 05
Z/L AT 10 METERS -0.019	SEN.HEAT FLUX (Watts/m2) 1.29E 01	ROUGHNESS LENGTH (Meters) 2.707E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.711
MONIN-OBUKHOV LENGTH (Meters) -5.294E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.70E 02	DRAG COEF.AT 10 METERS (Dimensionless) 1.380E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.187E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) -3.36E 02			BAR.PRES.AT WT LEVEL (Millibar) 1012.37
	BOWEN RATIO (no units) 0.106			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENT. FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
78%	135%	97%	160%	64%	5%	11%	225%	48%	112%	16%	68%	97%
17%	19%	46%	40%	120%	5%	9%	161%	23%	63%	143%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091600 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 16: 4:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable, -Unstable) -0.047 -15.0% AT GMH	MOMENTUM FLUX (N/m2) -1.80E-01 (6.0E-02)	FRICTION VELOCITY (Meters/sec) 3.84E-01 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH (Z1*Z2)1/2 12.99	HUMIDITY FLUX (kg/sec m2) 4.17E 05 (6.0E 04)	SCALING SPEC HUMID. (kg/kg) -2.22E-05 (3.0E-05)
Z/L AT GMH -0.026 (0.02)	LAT.HEAT FLUX (Watts/m2) 1.03E 02 (2.0E+01)	SCALING POT.TEMP. (Kelvin) 6.63E-02 (2.0E-02)
Z/L AT 10 METERS -0.019 (0.02)	SEN.HEAT FLUX (Watts/m2) 1.4E 01 (3.0E+00)	ROUGHNESS LENGTH (Meters) 1.98E-04 (6.0E-05)
MONIN-OBUKHOV LENGTH (Meters) -1.21E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) -4.70E 02 (2.0E+01)	DRAG COEF.AT 10 METERS (Meters) 1.18E-03 (4.6E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) -4.59E 02 (3.0E+01)	
	BOWEN RATIO (no units) 0.344 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
100%	114%	30%	50%	155%	0%	17%	159%	16%	45%	98%	48%	30%

MARINE SURFACE [illegible]

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS DIVISION
MARINE METEOROLOGY RESEARCH STATION
SAN NICOLAS I. (NRL - MMRS)

* * * * MATHEMATICAL MODEL DATA * * * *

RUN NUMBER: 7905091A30
START TIME: 1A:35: 0 PST
END TIME: 17: 5: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 5 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.061	0.061	4.962	4.944	6.455	6.413	4.698	2.547	4.976

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.098	3.752	2.746	0.001	1.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	DP1(mA) (Volts)	DP2(mA) (Volts)	SLOPE (Volts)	WSCF1 (Coeff.)	WSCF2 (Coeff.)
AIR TEMP.1	AIR TEMP.2							
1411 128896	1421 129721	0.183	130	-0.048	0.950	0.333	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA RATE (No.scans)	VOLT.REF.DEV A(No.).6050V)	VOLT REF.DEV B(No.).6050V)	ZERO REF.DEV (No.).600V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	(80)	0	0	0	0	0	115.5	59.95

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.893	12.41	9.38	NO DATA	314.2	1013.17	-3.55E-02	13.738	286.594

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.779	11.56	9.68	NO DATA	0.14	1011.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	13.069	14.119	14.299	8.663E-03	77.19	7.671E-03	11.436	14.816	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.869	14.016	14.196	8.724E-03	78.20	7.713E-03	11.515	14.725	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091630
START TIME: 1A:35: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
0.084 AT GMH	-8.51E-02	2.635E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 7.50E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSTI WS SLOPE= 1.52E 00
12.99	9.89E-06	-2.874E-05		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIQ SH SLOPE= 1.83E 04
0.182	2.27E 01	7.190E-02		
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			
0.140	-2.35E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= 2.23E-02	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIQ PTK SLOPE= 7.57E 00
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.941E-05		
0.157	-3.55E 02			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE DT2 SLOPE=NO DATA
0.129	TOTAL HEAT BUDGET FLUX (Watts/m2)	5.221E 04		
MONIN-OBUKHOV LENGTH (Meters)	-3.56E 02			
7.138E 01	BOWEN RATIO (No units)			
PSI1 AT Z1= -1.208321	-1.024			
PSI1 AT Z2= -0.605807				
PSI2 AT Z1= -1.632866				
PSI2 AT Z2= -0.811658				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7939	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2260
AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4153E 02
WATER LAT.HEAT VAP. (ITcal./Kg)
5.9006E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091630
START TIME: 16:45: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/Sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT W. TEMP (Kelvin)
12.792	11.66	9.87	NO DATA	1011.17	13.738	-0.946	0.845	0.276	0.354

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF INDEX (Ref to 1000 mb)
10.00	12.890	14.028	14.176	8.713E-03	78.07	7.133E-03	11.596	14.747	(no data)

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.019 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.024

Z/L AT 10 METERS
-0.018

MONIN-OBUKHOV LENGTH (Meters)
-5.464E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.34E-01

HUMIDITY FLUX (Kg/sec m2)
4.83E-05

LAT.HEAT FLUX (Watts/m2)
1.19E 02

SEN.HEAT FLUX (Watts/m2)
1.38E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.55E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.22E 02

BOWEN RATIO (no units)
0.115

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.363E-01

SCALING SPEC.HUMID. (Kg/Kg)
-9.016E-05

SCALING POT.TEMP. (Kelvin)
-2.543E-02

ROUGHNESS LENGTH (Meters)
3.026E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.400E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.904E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.825E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.110E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.226

AIR SPECIFIC HEAT (1Kcal./Kg Kel.)
2.415E 02

WATER LAT.HEAT VAP. (1Kcal./Kg)
5.900BE 05

VAP.PRES.AT WT LEVEL (Millibar)
15.694

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.185E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.37

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
83%	153%	108%	169%	73%	5%	11%	241%	54%	115%	19%	24%	108%
189%	189%	46%	41%	117%	5%	11%	158%	23%	64%	140%	4.3%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091630
START TIME: 16:35: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.053 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.090 [0.02]

Z/L AT 10 METERS
0.069 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
1.442E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.89E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.07E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.00E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
-9.23E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-3.55E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
-2.80E 02 [3.0E+01]

BOWEN RATIO (no units)
-0.335 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.847E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
6.820E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
6.650E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.095E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.167E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM ERROR IN ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
104%	115%	42%	56%	267%	0%	23%	174%	24%	4%	101%	6%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 299509[illegible]00
START TIME: 17: 5:10 PST
END TIME: 17:30:00 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 25 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* [illegible] RAW DATA (AVERAGE VEC):

[illegible]	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRES.2	No.08 SKY RAD.	No.09 WIND DIR.
[illegible]	6.661	6.661	4.930	5.066	6.407	6.119	4.690	1.800	5.061

[illegible]	No.11	No.12	No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible] AC VOLTAGE	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
[illegible]	5.862	2.542	0.001	0.001	0.001	0.001	6.205

* [illegible] RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

[illegible]	[illegible] MIN.TEMP.2	UPWIND NEAR HEIGHT/LENGTH	UPWIND LAND PATH(meters)	SPECAL (Volts)	SPECAL (Volts)	WIBECAL (Volts)	WS1EC (Coeff.)	WS2EC (Coeff.)
[illegible]	[illegible] 12:55:45	5.183	98	-3.008	5.050	0.000	0.992	0.992

* [illegible] DATA TRANSLATED INTO ENGINEERING UNITS:

[illegible]	[illegible]	[illegible] DATA VALID	VOLT.REF.DEV A(No.).005V)	VOLT.REF.DEV B(No.).005V)	ZERO REF.DEV (No.).002V)	AC VOLT.FLUX (No.)5V)	AC FREQ.FLUX (No.)1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
[illegible]	0	1.0	0	0	0	0	0	115.5	59.87

SEA MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

[illegible]	WIND SPEED1 (meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT.TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
[illegible]	12.32	9.15	NO DATA	317.1	1010.16	-2.51E 02	13.713	285.969

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(meter/sec)	(Celsius)	(Kel.xM-2/3)	(meter MSL)	(Millibar)
12.766	11.39	9.21	NO DATA	0.28	1011.26

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.058	14.120	14.299	8.742E-03	77.95	7.135E-03	11.540	14.805	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.24	12.82	14.647	14.117	8.804E-03	78.99	7.177E-03	11.618	14.725	NO DATA

* CONTINUED BELOW

RUN NUMBER: 299509[illegible]00
START TIME: 17: 5:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 25 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

BULK RICHARDSON NUMBER
(+ Stable,-=Unstable)
0.066 AT GMH

GEOMETRIC MEAN HEIGHT
(meter) GMH=(Z1*Z2)1/2
12.97

Z/L AT GMH
0.126

Z/L AT 10 METERS
0.099

Z/L AT Z1
0.173

Z/L AT Z2
0.087

MONIN OBUKHOV LENGTH
(Meters)
1.03E 02

PSI1 AT Z1= 0.835181
PSI AT Z= -0.418678
PSI2 AT Z1= 1.120483
PSI2 AT Z2= 0.565781

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(Nt/m2)
1.40E-01

HUMIDITY FLUX
(Kg/sec m2)
1.43E-05

LAT.HEAT FLUX
(Watts/m2)
3.54E 01

SEN.HEAT FLUX
(Watts/m2)
-3.40E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
2.51E 02

TOTAL HEAT BUDGET FLUX
(Watts/m2)
-2.50E 02

BOWEN RATIO
(no units)
-0.965

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
3.375E-01

SCALING SPEC.HUMD.
(Kg/Kg)
-3.451E-05

SCALING POT. TEMP.
(Kelvin)
8.135E-02

ROUGHNESS LENGTH
(Meters)
1.230E-04

DRAG COEF. AT 10 METERS
(Dimensionless)
8.699E-04

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 1.94E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= 2.10E-02

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 1.19E 00

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= -1.57E 04

N=POT.TEMP.(Kelvin)
Z=HEIGH1 (M) Vert.Axis
PSI=PSI2
PTK SLOPE= 6.64E 00

N=LnTEMP.STRUC.(KxM-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION (M/sec-2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7977	0.74	0.74	0.93E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2260

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4155E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9006E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SAT.VAP. +/- 08E 5 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 2965891700 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 17: 5:19 GMT NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1929 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 25 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.791	11.50	9.28	NO DATA	1011.16	13.713	-0.922	-0.824	0.325	0.423

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	14.389	14.038	14.136	8.797E-03	78.78	7.172E-03	11.609	14.735	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

BULK RICHARDSON NUMBER (+=Stable,-=Unstable)
0.619 AT GMH

LOGARITHIC HEIGHT (Meter) GMH=(Z1XZ2)1/2
12.99

Z/L AT GMH
0.024

Z/L AT 10 METERS
0.019

MONIN-OBUKHOV LENGTH (Meters)
5.363E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-2.25E-01

HUMIDITY FLUX (Kg/sec m2)
4.61E-05

LAT.HEAT FLUX (Watts/m2)
1.14E 02

SEN.HEAT FLUX (Watts/m2)
1.33E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.51E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.24E 02

BOWEN RATIO (no units)
0.117

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.286E-01

SCALING SPEC.HUMID. (Kg/Kg)
8.771E-05

SCALING POT.TEMP. (Kelvin)
-2.506E-02

ROUGHNESS LENGTH (Meters)
2.845E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.389E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.837E-01

WITH ABS. HUMIDITY (Meter kg/sec m3)
4.611E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.071E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2266

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415%E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.900BE 05

VAP.PRES.AT WT LEVEL (Millibar)
15.668

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.183E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.36

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	12%	91%	156%	60%	5%	19%	216%	46%	110%	14%	66%	91%
191%	191%	46%	41%	119%	5%	14%	160%	23%	64%	142%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 2965891700 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 17: 5:19 GMT NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1929 (DAY 129) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 25 Min

* CONSTANT PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOW & LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD RICHARD NO AT GMH
0.062 (0.021) AT GMH

LOGARITHIC MEAN HEIGHT
(Meter) GMH=(Z1XZ2)1/2
12.

Z/L AT GMH
0.021 (0.021)

Z/L AT 10 METERS
0.021 (0.021)

MONIN-OBUKHOV LENGTH (Meters)
1.258E

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
1.92E 01 (6.6E 02)

HUMIDITY FLUX (Kg/sec m2)
4.57E 05 (6.0E 06)

LAT.HEAT FLUX (Watts/m2)
9.75E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.01E 01 (2.0E+01)

SKY AND SOLAR HEAT FLUX (Watts/m2)
-2.51E 02 (2.5E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.27E 02 (3.3E+01)

BOWEN RATIO (no units)
0.343 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meter/sec)
3.98E 01 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
8.1E-05 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
-2.15E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
2.28E 04 (6.0E 05)

DRAG COEF.AT 10 METERS (Meter..)
1.23E 03 (4.0E-04)

* DIFFERENCE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE MEAN, WEIGHTED FOR PROFILE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE GIVEN IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD. RICH NO.AT GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL.POT TEMP.	ROUGH LENGTH	DRAG COEF
113%	113%	21%	47%	132%	0%	36%	159%	12%	40%	96%	37%	23%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE METEOROLOGICAL RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790507/1730
START TIME: 17:30:30 PST
END TIME: 18: 0:46 PST
START DATE: 7 May 1979 (DAY 127)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 30 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPD.2	BAR.PRES.1	SAT.PRES.	WIND DIR
6.205	0.001	0.001	4.075	4.776	0.364	0.397	4.638	1.056	1.107

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SPARE A	SPARE B	VOLT REF.B
4.035	1.033	2.545	0.911	0.011	0.101	0.111	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATIONS AND WIND FIELD ESTIMATES

No.1	No.2	DOWNWIND RANGE	CROSSWIND RANGE	SPARE 3	SPARE 4	WIND FILE	MAST	MAST
AIR TEMP.1	AIR TEMP.2	HEIGHT-LENGTH	(METERS)	(SPARE)	(SPARE)	(UNITS)	(UNITS)	(UNITS)
1411 138224	1421 138168	3.159	5%	0.310	0.000	0.000	0.000	0.000

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT REF.DEV	VOLT REF.DEV	ZERO REF.DEV	DC PULSE CTR	DC FREQ/VOLTS	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans/	(MIN. 4.9990	(MAX. 5.0010	(MIN.-.0020	(MIN.3500	(MIN.3100	(MIN.	(MIN.
0	0	180	1	1	1	1	1	31.4	59.8

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING TOP, MIDDLE, AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SAT.PRES.	BULK WI TEMP	AIR DEN
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin**2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(kg/m3)
12.877	13.00	8.72	NO DATA	270.5	1014.19	-1.42E 02	11.459	1.1.03

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin**2/3)	(Meter MSL)	(Millibar)
12.819	11.86	9.63	NO DATA	0.41	1011.20

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX
(Meters)	(Celsius)	(Celsius)	(Celsius)	(kg/m3)	(Percent)	(kg/kg)	(Millibar)	(Millibar)	(ref.m 2/3)
18.35	13.057	14.101	14.261	8.619E-03	76.36	7.036E-03	11.377	14.903	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX
(Meters)	(Celsius)	(Celsius)	(Celsius)	(kg/m3)	(Percent)	(kg/kg)	(Millibar)	(Millibar)	(ref.m 2/3)
9.23	12.789	14.041	14.149	8.690E-03	77.75	7.094E-03	11.462	14.743	NO DATA

* CONTINUED BELOW

RUN NUMBER: 790507/1730
START TIME: 17:30:30 PST
START DATE: 7 May 1979 (DAY 127)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CA

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 30 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (N/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DW/DZ=	GENERAL FORM:(N-S.OPE=
0.031 AT GMH	-4.03E-01	5.728E-01	I(N1-N2)/(LN(Z1/Z2)+PSI2-PSI1)I/ (Z1*Z2)**2	(LnZ1-PSI1-(LnZ2-PSI2))/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N-WIND SPEED (M/sec) Z-HEIGHT (Meters)	N-WIND SPEED (M/sec) Z-HEIGHT (M) Vert.Axis
12.99	3.36E-05	4.70E-03	DWS/DZ= 1.3E 01	PSI=PSI1 WS SLOPE= 6.93E-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT. TEMP. (Kelvin)	N-SPEC.HUMIDITY (Kg/Kg) Z-HEIGHT (Meters)	N-SPEC.HUMIDITY (Kg/Kg) Z-HEIGHT (M) Vert.Axis
0.048	8.38E 01	8.868E-02	DSH/DZ= -8.92E-06	PSI=PSI2 SH SLOPE= -1.1SE 04
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)	N-POT.TEMP.(Kelvin) Z-HEIGHT (Meters)	N-POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert.Axis
0.037	-6.30E 01	7.546E-04	DPT/DZ= 1.65E-02	PSI=PSI2 PTK SLOPE= 6.10E 00
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF. AT 10 METERS (Dimensionless)		N-ENTHALPY.STRUC.(cm/m 2/3) Z-HEIGHT (M) Vert.Axis
0.062	1.48E 02	2.206E 03		PSI=NONE
Z/L AT Z2				CTP SLOPE=NO DATA
0.034				
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)			
2.72JE 02	-1.26E 02			
PSI1 AT Z1= -0.316970	BOWEN RATIO (No units)			
PSI1 AT Z2= 0.158907	-0.759			
PSI2 AT Z1= -0.428365				
PSI2 AT Z2= 0.214766				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.920E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (kg/m3) 1.2259

AIR SPECIFIC HEAT (Cal/gm Kel.) 2.415E 02

WATER LAT.HEAT VAP. (Cal/gm) 5.980E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2= +/- .0HE 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79050917308 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:40:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.526	12.01	9.02	NO DATA	1011.10	13.677	-0.851	-0.753	0.381	0.479

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.924	14.057	14.105	8.687E-03	77.64	7.083E-03	11.465	14.768	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.015 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.020

Z/L AT 10 METERS
-0.015

MONIN-OBUKHOV LENGTH (Meters)
-6.572E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.52E-01

HUMIDITY FLUX (Kg/sec m2)
4.95E-05

LAT.HEAT FLUX (Watts/m2)
1.22E 02

SEN.HEAT FLUX (Watts/m2)
1.28E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-1.46E 02

TOTAL HEAT BUDGET FLUX (Watts/m2)
-1.14E 01

BOWEN RATIO (no units)
0.105

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.529E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.904E-05

SCALING POT.TEMP. (Kelvin)
-2.278E-02

ROUGHNESS LENGTH (Meters)
3.439E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.423E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-2.051E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.947E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.032E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.22-4

AIR SPECIFIC HEAT (Ilcal./Kg Kel.)
2.415?E 02

WATER LAT.HEAT VAP. (Ilcal./Kg)
5.9006E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.630

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.181E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.30

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
63%	82%	68%	139%	44%	5%	41%	183%	34%	105%	16%	54%	68%
196%	196%	46%	41%	134%	0%	19%	165%	23%	64%	147%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 79050917308 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 17:30:30 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.020 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.028 [0.02]

Z/L AT 10 METERS
0.021 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
4.667E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-3.13E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
4.79E-05 [6.9E-06]

LAT.HEAT FLUX (Watts/m2)
1.13E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
4.31E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 02 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.79E 01 [3.0E+01]

BOWEN RATIO (no units)
0.305 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
5.01?E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.347E 05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
8.128E 02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
5.263E 04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.713E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN HEAT FLUX	SKY RAD. FLUX	TOTAL H.AT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT TEMP.	ROUGH LENGTH	DRAG COEF.
130%	131%	25%	20%	97%	0%	120%	142%	1?%	29%	91%	39%	29%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN SUMMARY: [illegible]
START TIME: [illegible]
END TIME: [illegible]
START DATE: [illegible]

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* [illegible] DATA COVERAGE VECTOR:

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
0.661	1.000	0.928	0.661	0.269	0.976	4.696	0.335	5.155

No.11	No.12	No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible]	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
[illegible]	[illegible]	0.001	0.000	0.000	0.001	0.295

* [illegible] DATA (PERCENT): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
[illegible]	[illegible]	DOWNWIND NEAR DUCT LENGTH	DOWNWIND FAR Parameter "3"	UPSTEAM (Volts)	UPSTEAM (Volts)	WINDCAL (Volts)	WSCOEF (Coeff.)	WSPEC (Coeff.)
[illegible]	[illegible]	0.192	*3	3.000	0.050	0.303	0.992	0.949

* [illegible] DATA CONVERTED INTO ENGINEERING UNITS:

[illegible]	[illegible]	[illegible]	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	DC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
[illegible]	[illegible]	[illegible]	A(No.)(6000)	B(No.)(6050)	(No.)(6040)	(No.)(5V)	(No.)(1Hz)	(VAC)	(Hz)
[illegible]	[illegible]	10.0	0	0	0	0	3	115.4	59.85

* [illegible] PARAMETERS (DATA FROM CALIBRATION, THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

[illegible]	[illegible]	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
[illegible]	[illegible]	[illegible]	[illegible]	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
[illegible]	14.85	9.42	NO DATA	298.3	1010.4	-4.5E-01	13.636	286.845

[illegible]	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
[illegible]	(meter/sec)	(Celsius)	(Kelvin^2/3)	Meter MSL)	(Millibar)
16.525	11.17	9.18	NO DATA	1.53	1011.35

* [illegible] AND MICROMETEOROLOGICAL PARAMETERS:

No.01, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
1.65	15.08	15.915	14.695	8.741E-03	78.91	7.130E-03	11.536	14.611	NO DATA

No.02, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM^2/3)
7.00	15.04	14.936	14.078	8.783E-03	99.17	7.161E-03	11.593	14.644	NO DATA

* [illegible] BELOW

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

[illegible]
MARINE SURFACE LAYER
NAVAL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

PARAMETERS (*=USED,-=NOUSE)	FLUX PARAMETERS (*=USED,-=NOUSE)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (*=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+ Stable, - Unstable) 0.025 AT 0.88	MOMENTUM FLUX (Nt/m2) -2.41E-01	FRICTION VELOCITY (Meters/sec) 4.663E-01	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)*(Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ1 PSI)-(LnZ2-PSI)]/(N1-N2)
EXPONENTIAL DIAM.HEIGHT (Meters) GAM=(Z1*Z2)1/2 12.92	HUMIDITY FLUX (Kg/sec m2) 2.84E-05	SCALING SPEC.HUMD. (Kg/Kg) -5.829E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.05E-01	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE 8.69E-01
Z/L AT DAM 0.038	LAT.HEAT FLUX (Watts/m2) 7.03E 01	SCALING POT. TEMP. (Kelvin) 4.536E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -1.07E 04
Z/L AT 10 METERS 0.09	SEN.HEAT FLUX (Watts/m2) 2.59E 01	ROUGHNESS LENGTH (Meters) 3.634E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= 8.04E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= 1.19E 01
Z/L AT Z1 -0.03	SKY AND SURF HEAT FLUX (Watts/m2) 4.53E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.696E-03		N=LATEMP.STRUC.(KxM^2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.027				
ROUGHNESS LENGTH (Meters) 3.431E-02	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.01E 00			
POT AT Z1 0.2161E01	BOWEN RATIO (No units) 0.37			
POT AT Z2 0.1760E01				
PSI2 AT Z1 0.3062E04				
PSI2 AT Z2 0.1208E04				

* GENERAL CONSTANTS

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK S.N.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEFF.
.4	9.7979	0.74	0.74	0.95E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2269

AIR SPECIFIC HEAT (ITCal./Kg Kel.) 2.410E 02

WATER LAT.HEAT VAP. (ITCal./Kg) 5.901E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by suspension of

[illegible] .4/ -.8, 5 Kg/Kg

* [illegible] ON NEXT PAGE

RUN NUMBER: 7905091800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 0:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.692	11.23	9.17	NO DATA	1011.26	13.636	-0.944	-0.846	0.306	0.398

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. ((Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.790	13.935	14.033	8.783E-03	79.14	7.157E-03	11.586	14.641	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,- Unstable)
-0.021 AT GRA

GEOMETRIC MEAN HEIGHT (Meter) GM=(Z1*Z2)1/2
12.99

Z/L AT GRA
-0.022

Z/L AT 10 METERS
-0.020

MONIN-OBUKHOV LENGTH (Meters)
-4.832E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.12E-01

HUMIDITY FLUX (Kg/sec m2)
4.49E-05

LAT.HEAT FLUX (Watts/m2)
1.10E 02

SEN.HEAT FLUX (Watts/m2)
1.33E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.53E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.78E 01

BOWEN RATIO (no units)
0.121

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.158E-01

SCALING SPEC.HUMID. (Kg/Kg)
8.705E-05

SCALING POT.TEMP. (Kelvin)
-2.583E-02

ROUGHNESS LENGTH (Meters)
2.562E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.371E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.729E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.44/E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.074E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2271

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.415?E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9014E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.591

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.178E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.46

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GRA	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
86%	106%	81%	146%	58%	7%	74%	204%	41%	106%	17%	61%	81%
169%	169%	46%	41%	117%	7%	29%	158%	23%	64%	140%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091800 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18: 0:50 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,- Unstable)
-0.021 [0.01] AT GRA

GEOMETRIC MEAN HEIGHT (Meter) GM=(Z1*Z2)1/2
12.99

Z/L AT GRA
-0.020 [0.01]

Z/L AT 10 METERS
-0.020 [0.01]

MONIN-OBUKHOV LENGTH (Meters)
-4.832E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.27E-01 [7.6E-02]

HUMIDITY FLUX (Kg/sec m2)
4.95E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
1.03E 02 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.30E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
-4.53E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
7.72E 01 [3.0E+01]

BOWEN RATIO (no units)
0.123 [0.10]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.31?E-01 [6.1E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-?.31?E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.?3?E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
3.02?E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.47?E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GRA	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
124%	150%	11%	2?%	166%	0%	77%	266%	5%	26%	120%	18%	1?%

* END OF DATA ROW

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091830
START TIME: 18:31:10 PST
END TIME: 19: 1:10 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	[illegible]	[illegible]	[illegible]
6.205	-0.001	0.001	4.946	5.618	5.863	5.624	4.725	6.656	[illegible]

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.939	3.842	2.543	0.001	0.001	0.001	0.001	6.206

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AN[illegible] WIND SPEED ES[illegible]

No.1	No.2		UPWIND NEAR	UPWIND LAND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2		HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	[illegible]	[illegible]
1411 124647	1421 125677		0.183	65	3.306	-1.357	3.733	[illegible]	[illegible]

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF DEV	AC VOLTAGE	AC FREQUENCY	AC SIGNAL	[illegible]
(No.scans)	(No.scans)	(No.scans)	A(No.)-6650V	B(No.)-6650V	(No.)-6650V	(No.)-2500	(No.)/Hz	(Volts)	(Volts)
0	0	180	0	0	0	0	0	115.4	[illegible]

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING IR ABOVE CAL. AND ESCARPMENT CORRECTIONS, TRANSLATED INTO ENGINEERING UNITS):

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	[illegible]	[illegible]	[illegible]	AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm 2/3)		(Deg True)	(mLiLiCal)	(Watt/m^2)	[illegible]	[illegible]
12.465	11.28	9.22	NO DATA		316.3	1[illegible]	[illegible]	13.582	[illegible]

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xm-2/3)		(Meter MSL)	(Millibar)
12.568	10.48	9.29	NO DATA		0.65	1011.96

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	SAT.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(millibar)	(Kel.xM 2/3)
18.35	12.645	13.712	13.892	8.815E-03	86.6[illegible]	7.182E-03	11.619	14.416	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	SAT.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(millibar)	(Kel.xM 2/3)
9.20	12.658	13.821	13.911	8.858E-03	88.39	7.21[illegible] E-03	11.681	14.549	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091830
START TIME: 18:31:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [illegible]	GENERAL FORM:[illegible]
0.006 AT GMH	-2.79E-01	4.767E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	3.73E-05	-6.380E-05	DWS/DZ= 8.90E-02	PSI=PSI1 WS SLOPE= 8.39[illegible]-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.008	9.23E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	-1.065E-02	Z-HEIGHT (Meters) DSH/DZ= -8.92E-06	Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE 8.4[illegible] 03
-0.007	6.30E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.695E-04	Z-HEIGHT (Meters) DPT/DZ= -1.49E 03	Z=HEIGHT (M) Vert.Axis PSI=PSI2 PT[illegible] SLOPE= -5.38E 01
-0.012	7.26E 00			
Z/L AT Z2		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(K*M 2/3)
-0.006		[illegible]		Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)			PSI=NONE
-1.534E 03	1.06E 02			CTP SLOPE=NO DATA
PSI1 AT Z1= 0.042555	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.021887	0.068			
PSI2 AT Z1= 0.025894				
PSI2 AT Z2= 0.013231				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2[illegible]80

AIR SPECIFIC HEAT (Ical./Kg Kel.) 2.41[illegible]E 02

WATER LAT.HEAT VAP. (Ical./Kg) 5.9024E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:31:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM**2/3)	BAR.PRES. (Millibar)	BULK WT.TEMP (Celsius)	AIR-WT.TEMP (Kelvin)	POT.WT.TEMP (Kelvin)	VIR.WT.TEMP (Kelvin)	V.POT-WT.TEMP (Kelvin)
12.555	10.58	9.28	NO DATA	1011.71	13.582	-1.027	0.939	0.295	0.343

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM**2/3)
10.00	12.653	13.807	13.905	8.853E-03	89.42	7.208E-03	11.674	14.517	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
0.027 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.034

Z/L AT 10 METERS
0.026

MONIN-OBUKHOV LENGTH (Meters)
-3.783E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.87E-01

HUMIDITY FLUX (Kg/sec m2)
4.08E 05

LAT.HEAT FLUX (Watts/m2)
9.98E 01

SEN.HEAT FLUX (Watts/m2)
1.37E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
7.26E 00

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.21E 02

BOWEN RATIO (no units)
0.137

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.855E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.530E 05

SCALING POT.TEMP. (Kelvin)
-2.864E-02

ROUGHNESS LENGTH (Meters)
1.968E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.328E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.486E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.039E-01

WITH POT.TEMPERATURE (Meter Kel./sec)
1.104E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2282

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.417E-02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.962IE 05

VAP.PRES.AT WT LEVEL (Millibar)
15.544

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.175E-02

BAR.PRES.AT WT LEVEL (Millibar)
1012.91

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
136%	136%	91%	152%	112%	15%	133%	265%	45%	107%	67%	65%	91%
184%	184%	46%	42%	112%	15%	37%	154%	23%	6%	135%	45%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 18:31:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.015 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.019 [0.02]

Z/L AT 10 METERS
-0.015 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-6.667E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.15E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.99E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.82E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.00E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
7.26E 00 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.18E 02 [3.0E+01]

BOWEN RATIO (no units)
0.112 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/Sec)
4.162E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.720E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-1.662E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.813E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.565E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
53%	50%	24%	4%	37%	0%	7%	32%	12%	14%	47%	39%	18%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 2V05091980
START TIME: 17: 1:20 PST
END TIME: 19:31:30 PST
START DATE: 9 May 1980 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPARE A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	SKY RAD.	WIND DIR.
0.765	0.000	0.001	4.961	5.132	6.622	5.216	4.744	-0.104	5.119

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
SPARE B	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT REF B
5.002	0.012	0.007	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FREQ CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND FAR	DeltaCal	Ref.Cal	WIRECAL	WSLOPE	WSSEC
AIR Temp 1	Mix Temp 2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
14:11 19/05/80	14:11 19/05/80	0.185	61	-0.008	1.501	9.038	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MASTER 1 MV	ERROR CODE	DATA SET	SOLT.REF. DEV	SOLT.REF. DEV	ZERO REF DEV	AC SPIKE INDX	AC FREQ/10 INDX	AC VOLTAGE	AC FREQUENCY
(Reserved)	(Reserved)	(Reserved)	#ENC:2:61SEC	#ENC:2:61SEC	(No.:6:02)	(No.:05)	(No.:01Hz)	(VAC)	(Hz)
0	0	1001	0	0	0	0	0	115.5	59.82

* DIGITAL & MICRO METEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

SPD.TURB.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Meters/sec)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
1.348	11.26	9.32	NO DATA	319.0	1016.69	1.4CE 01	13.542	285.604

AIR TEMP 2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR PRES.2			
(Celsius)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)			
12.559	10.21	9.32	NO DATA	0.26	1012.69			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
1.85	13.017	13.692	14.072	8.873E-03	81.24	7.226E-03	11.655	14.395	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
0.61	13.043	13.810	13.938	8.911E-03	80.94	7.253E-03	11.720	14.517	NO DATA

* CONTINUED 8/1/04

RUN NUMBER: 2V05091980
START TIME: 17: 1:20 PST
START DATE: 9 May 1980 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (ROSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
RICHARDSON NUMBER (+=stable, -=unstable)	MOMENTUM FLUX (N1/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N' SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)] (N1-N2)
0.009 AT GRH	-3.41E 01	5.266E-01		
GEOMETRIC MEAN HEIGHT (Meters) Gm=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
1.229	4.17E-05	-6.482E-05	DWS/DZ= 9.71E-02	PSI=PSI1
ZL AT GRH	LAT.HEAT FLUX (Watts/m2)			WS SLOPE= 7.60E-01
0.012	1.03E 02	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
ZL AT 16 METERS	SEN.HEAT FLUX (Watts/m2)	1.835E-02	DSH/DZ= -8.92E-06	PSI=PSI2
-0.009	1.20E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters)	SH SLOPE= -8.41E 03
ZL AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	5.724E-04	DPT/DZ= -2.55E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis
0.012	1.46E 01			PSI=PSI2
ZL AT Z2		DRAG COEF. AT 16 METERS (Dimensionless)		PTK SLOPE= -2.95E 01
0.009	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.430E-03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis
MONIN OBUKHOV LENGTH (Meters)	1.29E 01			PSI=NONE
-1.077E 03				CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.059336	BOWEN RATIO (N1 units)			
PSI1 AT Z2= 0.038817	8.117			
PSI2 AT Z1= 0.036396				
PSI2 AT Z2= 0.012682				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7969	0.74	0.74	6.92E 03	1.32E 03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2384

AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.41E 02

WATER LAT.HEAT VAP. (1Cal./Kg) 5.98E 01

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of

SH: SH= +/- .00E 3 kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19: 1:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS.

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	P.T-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.536	10.82	9.36	NO DATA	1011.99	13.542	-1.006	-0.908	0.254	0.352

HEIGHT (Meters)	POT TEMP (Celsius)	VIR.TEMP (Celsius)	V.POT.TEMP (Celsius)	ABS.HUMID (Kg/m3)	REL.HUMID. (Percent)	SPEC HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.634	13.796	13.894	8.982E-03	80.98	7.249E-03	11.744	14.503	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.025 AT GAM

GEOMETRIC MEAN HEIGHT (Meter) GAM=(Z1*Z2)1/2
12.79

Z/L AT GAM
-0.052

Z/L AT 10 METERS
-0.024

MONIN-OBUKHOV LENGTH (Meters)
-4.120E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.93E-01

HUMIDITY FLUX (Kg/sec m2)
4.07E-05

LAT.HEAT FLUX (Watts/m2)
9.93E 01

SEN.HEAT FLUX (Watts/m2)
1.37E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.28E 02

BOWEN RATIO (no units)
0.138

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.965E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.245E 05

SCALING POT.TEMP. (Kelvin)
-2.782E 02

ROUGHNESS LENGTH (Meters)
2.172E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.344E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.572E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
4.014E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.103E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2286

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9032E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.507

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.172E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.19

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GAM	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
10%	10%	83%	14%	82%	10%	11%	209%	41%	166%	41%	61%	83%
185%	185%	66%	40%	113%	10%	35%	155%	23%	65%	136%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091900 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 19: 1:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
-0.615 (0.021) AT GAM

GEOMETRIC MEAN HEIGHT (Meter) GAM=(Z1*Z2)1/2
12.79

Z/L AT GAM
-1.319 (0.052)

Z/L AT 10 METERS
-0.615 (0.021)

MONIN-OBUKHOV LENGTH (Meters)
-0.775E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-7.46E-01 (+-1.1E-02)

HUMIDITY FLUX (Kg/sec m2)
4.05E-05 (+-8.0E-06)

LAT.HEAT FLUX (Watts/m2)
1.00E 02 (+-2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.27E 01 (+-3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01 (+-2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.23E 02 (+-3.0E+01)

BOWEN RATIO (no units)
0.130 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.42E-01 (+-6.6E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-7.55E-05 (+-3.0E-05)

SCALING POT.TEMP. (Kelvin)
-2.67E-02 (+-2.0E-02)

ROUGHNESS LENGTH (Meters)
3.63E-04 (+-6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
1.69E-03 (+-4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GAM	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
41%	39%	31%	0%	7%	0%	1%	8%	15%	12%	26%	50%	34%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905091930
START TIME: 19:31:40 PST
END TIME: 20: 1:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1986
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR
6.265	0.060	0.081	4.954	5.031	5.832	5.589	4.756	-0.165	5.141

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.884	3.684	2.555	0.001	0.001	0.001	0.001	6.235

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND REAR	UPWIND LAND	DPTEMP	DPFLUX	WINDCAL	WSLED	WDLED
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124585	1421 125732	0.183	-8	-0.398	0.059	0.005	0.992	0.992

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA PAGE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	0	180	0	0	0	0	0	115.6	59.68

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.458	11.32	9.27	NO DATA	319.1	1011.17	1.460 J1	13.529	285.e/8

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.573	10.42	9.36	NO DATA	0.73	1012.27

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.638	13.710	13.890	8.848E-03	80.89	7.205E-03	11.663	14.417	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	12.663	13.833	13.973	8.908E-03	80.78	7.250E-03	11.747	14.542	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905091930
START TIME: 19:31:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1986
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1-UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER	MOMENTUM FLUX	FRICTION VELOCITY	GENERAL FORM:DN/DZ=	GENERAL FORM: N SLOPE=
(+=Stable,-=Unstable)	(Nt/m2)	(Meters/sec)	(N1-N2)1/(ln(Z1/Z2)*	((LnZ1-PSI)-(LnZ2-PSI))/
-0.009 AT GMH	-3.64E-01	5.441E-0	(Z1xZ2))1/2)	(N1-N2)
GEOMETRIC MEAN HEIGHT	HUMIDITY FLUX	SCALING SPEC.HUMD.	N=WIND SPEED (M/sec)	N=WIND SPEED (M/sec)
(Meter) GMH=(Z1*Z2)1/2	(Kg/sec m2)	(Kg/Kg)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert Axis
12.99	4.30E-05	-6.431E-05	DWS/DZ= 1.00E-01	PSI=PSI1
				WS SLOPE= 7.39E-01
Z/L AT GMH	LAT.HEAT FLUX			
-0.012	(Watts/m2)			
	1.06E 02	SCALING POT. TEMP.	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert Axis
-0.010		-2.011E-02	DSH/DZ= -8.92E-06	PSI=PSI2
	SEN.HEAT FLUX			SH SLOPE= -8.40E-03
Z/L AT Z1	(Watts/m2)			
-0.017	1.36E 01	ROUGHNESS LENGTH	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert Axis
Z/L AT Z2	SKY AND SOLAR HEAT FLUX	6.377E-04	DPT/DZ= -2.79E-03	PSI=PSI2
-0.009	(Watts/m2)			PTK SLOPE= 2.65E 01
	1.46E 01			
		DRAG COFF. AT 10 METERS		N=LnTEMP.STRUC (xM-2/3)
MONIN-OBUKHOV LENGTH	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M) Vert Axis
(Meters)	(Watts/m2)	2.718E 03		PSI=NONE
-1.049E 03	1.34E 02			CT2 SLOPE=NO DATA
PSI1 AT Z1= 0.060816	BOWEN RATIO			
PSI1 AT Z2= 0.031612	(no units)			
PSI2 AT Z1= 0.037211	0.128			
PSI2 AT Z2= 0.019169				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2285

AIR SPECIFIC HEAT (1Cal./Kg Kel.)
2.415E 02

WATER LAT.HEAT VAP. (1Cal./Kg)
5.902E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905091930
START TIME: 19:31:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.559	10.52	9.35	NO DATA	1012.18	13.529	-0.969	-0.871	0.289	0.387

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.657	13.818	13.916	8.901E-03	83.79	7.244E-03	11.737	14.527	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.026 AT GMH	MOMENTUM FLUX (Nt/m2) -1.80E-01	FRICTION VELOCITY (Meters/sec) 3.830E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.467E-01	AIR DENSITY (Kg/m3) 1.2287
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.91E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.298E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.905E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.415AE 02
Z/L AT GMH -0.033	LAT.HEAT FLUX (Watts/m2) 9.65E 01	SCALING POT.TEMP. (Kelvin) -2.725E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.044E-02	WATER LAT.HEAT VAP (ITcal./Kg) 5.9021F 05
Z/L AT 10 METERS -0.025	SEN.HEAT FLUX (Watts/m2) 1.30F 01	ROUGHNESS LENGTH (Meters) 1.925E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.496
MONIN-OBUKHOV LENGTH (Meters) -3.926E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.325F-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.24E 02			BAR.PRES.AT WT LEVEL (Millibar) 1013.38
	BOWEN RATIO (no units) 0.134			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
100%	106%	78%	144%	76%	10%	114%	221%	39%	105%	37%	59%	78%
187%	187%	46%	42%	115%	10%	35%	158%	23%	65%	138%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905091930
START TIME: 19:31:40 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.015 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.48E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 4.427E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.99E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.584E-05 [3.0E-05]
Z/L AT GMH -0.020 [0.02]	LAT.HEAT FLUX (Watts/m2) 9.87E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.162E-02 [2.0E-02]
Z/L AT 10 METERS -0.015 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.33E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 3.799E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -6.638E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.296E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.27E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.132 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
44%	42%	38%	6%	2%	0%	5%	2%	19%	13%	19%	59%	41%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79156/9/000
START TIME: 00: 2: 0 PST
END TIME: 24:30:10 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
Volt Ref.m	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.260	0.000	0.001	4.991	5.041	5.517	5.271	4.780	-0.105	4.987

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
Thrm Wt Temp	RF FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.659	5.656	2.557	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND FAR	DPIFCAL	DP2FCAL	WIBFCAL	WS1EC	WS2EC
AIR TEMP.1	AIR Temp.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 (243%)	1451 (250%)	0.103	59	-0.008	-0.050	0.000	0.992	0.952

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR FLAG	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.>0.001)	(No.>0.0)	(No./Sec.)	A(No.).005V)	B(No.).005V)	(No.).01(2V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	0	168	0	0	0	0	0	115.6	59.69

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.409	13.66	9.77	NO DATA	314.6	1011.54	1.46E 01	13.530	285.628

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE HEIGHT	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.568	9.83	9.43	NO DATA	0.72	1012.64

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
10.35	12.587	13.669	13.849	8.914E-03	81.72	7.255E-03	11.748	14.376	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
2	12.744	13.774	13.631	8.950E-03	81.37	7.280E-03	11.800	14.503	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79156/9/000
START TIME: 00: 2: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

GRAD.RICHARDSON NUMBER
(+=Stable, -=Unstable)
0.014 AT GMH

Reference Wind Height
(Meters) GMH=(Z1*Z2)1/2
12.7

Z/L AT GMH
0.018

Z/L AT 10 METERS
-0.014

Z/L AT Z1
0.017

Z/L AT Z2
-0.013

MONIN-OBUKHOV LENGTH
(Meters)
-7.415E 02

PSII AT Z1= 0.084714
PSII AT Z2= 0.044621
PSI2 AT Z1= 0.052190
PSI2 AT Z2= 0.027169

FLUX PARAMETERS
(+=UP,-=DOWN)

MOMENTUM FLUX
(N1/m2)
-2.85E-01

HUMIDITY FLUX
(Kg/sec m2)
3.65E-05

LAT.HEAT FLUX
(Watts/m2)
9.51E 01

SEN.HEAT FLUX
(Watts/m2)
1.34E 01

SKY AND SOLAR HEAT FLUX
(Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX
(Watts/m2)
1.23E 02

BOWEN RATIO
(no units)
0.141

SCALING PARAMETERS

FRICTION VELOCITY
(Meters/sec)
4.818E-01

SCALING SPEC.HUMD.
(Kg/Kg)
6.495E-05

SCALING POT. TEMP.
(Kelvin)
-2.232E-02

ROUGHNESS LENGTH
(Meters)
4.247E-04

DRAG COEFF. AT 10 METERS
(Dimensionless)
2.449E 03

PARTIAL DERIVATIVES

GENERAL FORM:DN/DZ=
[(N1-N2)]/[Ln(Z1/Z2)*
(Z1*Z2)1/2]

N=WIND SPEED (M/sec)
Z=HEIGHT (Meters)
DWS/DZ= 8.73E-02

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (Meters)
DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin)
Z=HEIGHT (Meters)
DPT/DZ= -3.07E-03

PROFILE SLOPES
(+=INCR.WITH HEIGHT)

GENERAL FORM:'N'SLOPE=
[(LnZ1-PSI)-(LnZ2-PSI)]/
[N1-N2]

N=WIND SPEED (M/sec)
Z=HEIGHT (M) Vert.Axis
PSI=PSI1
WS SLOPE= 8.30E-01

N=SPEC.HUMIDITY (Kg/Kg)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
SH SLOPE= 8.32E 03

N=POT.TEMP.(Kelvin)
Z=HEIGHT (M) Vert.Axis
PSI=PSI2
PTK SLOPE= -2.42E 01

N=LnTEMP.STRUC.(K*M-2/3)
Z=HEIGHT (M) Vert.Axis
PSI=NONE
CT2 SLOPE=NO DATA

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (NO UNITS)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
.4	9.799	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2291

AIR SPECIFIC HEAT
(ITcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP.
(ITcal./Kg)
5.9026E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

DN1-DN2 +/- .GE. 3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 2: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.512	9.93	9.42	NO DATA	1012.54	13.530	-1.818	-0.920	0.246	0.344

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.610	13.776	13.874	8.946E-03	81.41	7.2778-03	11.794	14.488	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+ Stable,-Unstable)
0.035 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.041

Z/L AT 10 METERS
-0.032

MONIN-OBUKHOV LENGTH (Meters)
-3.160E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.56E-01

HUMIDITY FLUX (Kg/sec m2)
3.63E-05

LAT.HEAT FLUX (Watts/m2)
8.97E 01

SEN.HEAT FLUX (Watts/m2)
1.29E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.17E 02

BOWEN RATIO (no units)
0.144

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.559E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.301E-05

SCALING POT.TEMP. (Kelvin
-2.922E-02

ROUGHNESS LENGTH (Meters)
1.486E-04

DRAG COEF.AT 10 METERS (Dimensionless)
1.285E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.266E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.631E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.040E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2294

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4157E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9024E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.503

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.172E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.74

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
102%	102%	84%	148%	77%	10%	114%	224%	42%	106%	35%	62%	84%
184%	184%	46%	42%	112%	10%	35%	155%	23%	65%	135%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905092000 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 20: 2: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable)
0.021 [0.001] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.025 [0.02]

Z/L AT 10 METERS
-0.020 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-4.980E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.11E-01 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
3.71E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
9.09E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
1.34E 01 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.19E 02 [3.0E+01]

BOWEN RATIO (no units)
0.143 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.004E 01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
7.611E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.376E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.615E-04 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.560E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
49%	47%	54%	3%	2%	0%	3%	1%	16%	12%	17%	54%	32%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905092030
START TIME: 21: 0: 0 PST
END TIME: 21:27:50 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/min
DATA AVERAGING PERIOD: 28 min
NUMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.1	BAR.PRES.2	WIND DIR
6.265	0.000	0.001	4.956	5.040	[illegible]	5.017	4.224	[illegible]	[illegible]

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17		
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF	SLOPE 1	SLOPE 2	SOLT REF B		
3.919	3.854	2.552	0.031	0.031	0.031	[illegible]	4.247		

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND [illegible]

No.1	No.2	UPWIND NEAR	UPWIND FAR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH-Meters	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1411 124885	1421 125247	0.133	[illegible]	3.000	[illegible]	3.03	[illegible]	[illegible]

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.D/2	VOLT.REF.D/5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(No.scans)	(No.scans)	(No.scans)	A(No.).0659V	B(No.).0659V	(No.).0659V	(No. VDC)	(No. VDC)	(VDC)	(Hz)
0	0	168	0	0	0	0	0	815.0	59.85

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) [illegible]

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	NET RAD.	BULK WT TEMP	AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin 2/3)	(Deg True)	(Millibar)	(Watts/m2)	(Celsius)	(Kelvin)
12.488	11.27	9.28	NO DATA	315.0	1011.71	1.46E 01	13.563	285.647

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE INFO	BAR.PRES.2			
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin-2/3)	(Meter MSL)	(Millibar)			
12.525	10.46	9.36	NO DATA	0.58	1012.80			

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	SVAP.PRES.1	REF INDEX 1
(Meters)	(Cels.ds)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kelvin/m^2/3)
18.35	12.583	13.668	13.846	8.861E-03	81.22	7.211E-03	11.678	14.372	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	SVAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	Ref.Ind.-1
9.20	12.615	13.783	13.873	8.910E-03	81.33	7.24cE-03	11.747	14.510	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905J92030
START TIME: 21: 0: 0 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL.
DATA SAMPLING RATE (ALL CHANNELS): 2/min
DATA AVERAGING PERIOD: 28 min
NUMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+-INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)x (Z1*Z2)1/2]	GENERAL FORM:N SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/[(N1-N2)
-0.012 AT GMH	-3.80E-01	4.984E-01		
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DW5/DZ= 9.00E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	3.97E-05	-6.47cE-05		WS SLOPE= 8.0x7-01
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.016	9.81E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg)	N=SPEC.HUMIDITY (Kg/Kg)
Z/L AT 10 METERS		-2.150E-02	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
-0.012	SEN.HEAT FLUX (Watts/m2)		DSH/DZ= -8.92E-06	PSI=PSIZ SH SLOPE= 0.3x 03
Z/L AT Z1	1.33E 01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin)	N=POT.TEMP.(Kelvin)
-0.022	SKY AND SOLAR HEAT FLUX (Watts/m2)	4.762E-04	Z=HEIGHT (Meters) DPT/DZ= -2.96E 03	Z=HEIGHT (M) Vert.Axis PSI=PSIt PTK SLOPE= 2.51x 01
Z/L AT Z2	1.46E 01			
-0.011		DRAG COEF. AT 10 METERS (Dimensionless)		N=POTEM.STRUC.(Kelvin 2/3) Z=HEIGHT (M) Vert.Axis
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.300E-03		PSI=PSIN CT2 SLOPE=NO DATA
-8.176E 02	1.26E 02			
PSI1 AT Z1= 0.076552	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.040142	0.136			
PSI2 AT Z1= 0.042654				
PSI2 AT Z2= 0.024408				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

DENSITY (Kg/m^3)
1.0294

AIR SPECIFIC HEAT (Cal Kg Kel)
.241x4 02

WATER LAT.HEAT VAP (Cal/Kg)
5.93x8E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .0RE-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PDT | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
START DATE: 9 MAY 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 MIN

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC (Kel.xM**2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.511	10.56	9.35	NO DATA	1012.71	13.563	-1.052	-0.954	0.205	0.303

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM**2/3)
10.00	12.609	13.256	13.866	8.904E-03	81.02	7.242E-03	11.739	14.489	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1980):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-6.0.8 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.035

Z/L AT 10 METERS
-0.027

MONIN-OBUKHOV LENGTH (Meters)
-3.678E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.82E-01

HUMIDITY FLUX (Kg/sec m2)
3.95E 05

LAT.HEAT FLUX (Watts/m2)
9.78E 01

SEN.HEAT FLUX (Watts/m2)
1.46E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.26E 02

BOWEN RATIO (no units)
0.143

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.845E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.368E 05

SCALING POT.TEMP. (Kelvin)
-2.931E-02

ROUGHNESS LENGTH (Meters)
1.951E 04

DRAG COEF AT 10 METERS (Dimensionless)
1.327E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (meter2/sec2)
1.478E 01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.958E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.127E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2396

AIR SPECIFIC HEAT (Ilcal./kg Kel.)
2.415AE 02

WATER LAT.HEAT VAP. (Ilcal./Kg)
5.9024E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.539

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.174E-02

BAR.PRES.AT WT LEVEL (Millibar)
1013.91

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
105%	105%	86%	149%	79%	10%	116%	227%	43%	106%	36%	63%	86%
182%	184%	46%	42%	110%	10%	35%	150%	23%	65%	134%	43%	49%

* CONTINUED BELOW

RUN NUMBER: 7905092030 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21: 0: 0 PDT | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
START DATE: 9 MAY 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 28 MIN

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE R SPECIFIC MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.018 (0.021) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.023 (0.021)

Z/L AT 10 METERS
-0.018 (0.021)

MONIN-OBUKHOV LENGTH (Meters)
-5.653E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-2.20E-01 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
3.93E 05 (8.9E 04)

LAT.HEAT FLUX (Watts/m2)
9.78E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
1.34E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.26E 02 (3.0E+01)

BOWEN RATIO (no units)
0.140 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
4.242E 01 (6.1E-02)

SCALING SPEC.HUMID. (Kg/kg)
7.64?E 05 (1.1E-05)

SCALING POT.TEMP. (Kelvin)
2.315E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
5.092E 04 (6.6E-05)

DRAG COEF AT 10 METERS (Dimensionless)
1.83?E 03 (4.0E 04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION ERROR FORMULA TO ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
41%	39%	29%	0%	3%	6%	0%	3%	14%	1?%	19%	46%	1?

* END OF DATA RUN

MARINE BOUNDARY LAYER MICROMETEOROLOGY EXPERIMENT

[illegible]
AIR-SEA INTERACTION PROGRAM
MARINE METEOROLOGY DIVISION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 29059Z10A
START TIME: 1500Z 0 PST
END TIME: 2100Z 0 PST
START DATE: 29 May 1979 (DAY 149)

PRINT DATE: 30 Nov 1979
DATA RATE: 10 SAMPLES/SEC
DATA AVG. TIME: 5 MIN
[illegible]

* MEAN BL PARAMETER AND DATA RECORDS VARIABLES:

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
[illegible]	[illegible]	[illegible]	BOW HEIGHT	BOW HEIGHT	WIND [illegible]	WIND SPEED	[illegible]	[illegible]
0.000	0.000	0.001	3.900	0.157	[illegible]	5.826	0.754	0.167

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible]	[illegible]	MAST TEMP	ZERO REF	[illegible]	MAST R	VERT REF
0.000	0.000	2.268	9.181	0.181	0.181	0.181	2.205

* [illegible] [illegible] RAW DATA RECORDS: ENGAGEMENT Data, Field CO [illegible] and Wind & Field Engagement [illegible]

N.01	W.02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.185	[illegible]	0.308	[illegible]	[illegible]	[illegible]

[illegible] [illegible] Position Parameters [illegible] [illegible] [illegible] [illegible]

Position [illegible]	[illegible]	Data [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	0	128	0	0	0	0	0

* [illegible] [illegible] [illegible] PARAMETERS [including the above data and Engagement [illegible] from [illegible] [illegible]

[illegible]	Wind Direction	[illegible]	[illegible]	Wind Dir	Barometric	Sky Cond	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	(Deg True)	(Millibar)	[illegible]	[illegible]
[illegible]	[illegible]	NO DATA		316.2	[illegible]	3 ALT CU	[illegible]

Wet Bulb	Wind Speed	[illegible]	[illegible]	[illegible]	Rain Rate
[illegible]	[illegible]	[illegible]	[illegible]	Meter Corr	[illegible]
[illegible]	[illegible]	NO DATA		0.45	1012.40

* [illegible] [illegible] MICROMETEOROLOGICAL PARAMETERS:

[illegible]	Mom Flux	Vel Temp	[illegible]	Obs Buoy	Air Density	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	12.461	[illegible]	15.2%	0.9778	[illegible]	[illegible]	[illegible]

Buoyant Flux	Mom Flux	Vel Temp	Vel Humid	Air Density	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	12.515	15.28	13.938	2.818E-03	50.44	[illegible]	[illegible]

* [illegible] BUOY

[illegible]	[illegible]
RUN NUMBER: 29059Z10A	MARINE BOUNDARY LAYER
START TIME: 1500Z 0 PST	ARL MICROMETEOROLOGY
START DATE: 29 May 1979 (DAY 149)	SAN NICOLAS ISLAND, CA

[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]

* [illegible] [illegible] based on mean observed and calculated values of [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MARINE SURFACE LAYER
NR MICROMETEOROLOGY
SAN DIEGO BAY, CA

PLOT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 20 MIN

* MEAN VALUES FOR TOWER AT 10 METERS

WIND SPEED (Meters/sec)	WIND DIR (Degrees)	STD DEV WIND DIR (Degrees)	TEMP STRUC PARAM (Kelvin**2/3)	BAROMETRIC PRESS (Millibars)	AIR WET TEMP (Kelvin)	AIR WET TEMP (Kelvin)	POT WET TEMP (Kelvin)	VIR WET TEMP (Kelvin)	V POT WET TEMP (Kelvin)
13.41	177.1	11.1	No Data	1012.76	13.556	1.155	1.657	0.117	0.225

WIND SPEED (Meters/sec)	STD DEV WIND SPEED (Meters/sec)	VIR POT TEMP (Millibars)	V POT TEMP (Millibars)	ABS HUMID (Kg/m3)	REL HUMID (Percent)	SPEC HUMID (Kg/Kg)	VAP PRES (Millibars)	% VAP PRES (Millibars)	REF INDEX (Relative)
13.41	1.539	13.785	13.784	9.0057-03	92.49	9.3561-03	11.693	94.394	NO DATA

* * MICROMETEOROLOGICAL PARAMETERS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (PERIOD OF AVG 1220)

ROUGHNESS PARAMETER (Meters)	FLUX PARAMETERS (FROM, TOWARD)	INTERMED SCALING PARAMETERS	INTERMED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
ZOM ROUGHNESS NUMBER (Meters) 0.030	MOMENTUM FLUX (N/m2) -2.06E-01	FRICTION VELOCITY (Meters/sec) 4.088E-01	WITH LONG VELOCITY (Meters**2/sec**2) 1.671E-01	AIR DENSITY (Kg/m3) 1.23CE
ZOC ROUGHNESS NUMBER (Meters) 12.99	HUMIDITY FLUX (Kg/sec m2) 4.90E-05	SCALING SPEC HUMID (Kg/Kg) -2.963E-05	WITH ABS HUMIDITY (Meter Kg/sec m3) 4.00E-05	AIR SPECIFIC HEAT (ITcal/Kg Kel) 0.415CE-02
Z/C AT OMH 0.333	LAT HEAT FLUX (Watts/m2) 9.69E-01	SCALING POT.TEMP. (Kelvin) -7.124E-02	WITH POT.TEMPERATURE (Meter Kel/sec) 1.227E-02	WATER LAT HEAT VAP (ITcal/Kg) 5.962E-05
Z/C AT 10 METERS 0.003	SEN HEAT FLUX (Watts/m2) 1.59E-01	ROUGHNESS LENGTH (Meter) 2.415E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.543
MONIN OBUKHOV LENGTH (Meters) -3.876E-02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E-01	DRAG COEF.AT 10 METERS (Dimensionless) 1.361E-03		ABS HUMID AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.29E-02			PAR PRES.AT WT LEVEL (Millibar) 1013.90
	BOWEN RATIO (no units) 0.161			

* MEASUREMENT ERROR ANALYSIS - PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
*IF NEW ARE FIGURES ERROR VALUES AND LOWER ROW ARE TOWER AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE *###*

ZOM / ZOC RATIO	ZOM (Meters)	MOMENTUM FLUX	LAT HEAT FLUX	SENSIBLE HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT TEMP	ROUGH LENGTH	DRAG COEF
70%	90%	80%	145%	91%	10%	113%	210%	46%	105%	31%	60%	86%
130%	110%	90%	93%	109%	10%	95%	140%	23%	66%	1.8%	44%	41%

* CONTINUED BELOW

PLOT DATE	DATA SAMPLING RATE (ALL CHANNELS)	DATA AVERAGING PERIOD
11 JUN 1980	2/MIN	20 MIN

MARINE SURFACE LAYER
MICROMETEOROLOGY
SAN DIEGO BAY, CA

* FLUX PARAMETERS AND INTERMEDIATE SCALING PARAMETER VALUES WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS
AVERAGE OF TWO SETS OF TEN HOURLY SCALING MEASUREMENT DETERMINANTS INDICATED IN I J:

ROUGHNESS PARAMETER	FLUX PARAMETERS	SCALING PARAMETERS
ZOM ROUGHNESS NUMBER (Meters) 0.030	MOMENTUM FLUX (N/m2) -2.06E-01 [-2.25E-01 -1.87E-01]	FRICTION VELOCITY (Meters/sec) 4.088E-01 [4.45E-01 3.73E-01]
ZOC ROUGHNESS NUMBER (Meters) 12.99	HUMIDITY FLUX (Kg/sec m2) 4.90E-05 [5.34E-05 4.46E-05]	SCALING SPEC HUMID (Kg/Kg) -2.963E-05 [-3.23E-05 -2.69E-05]
Z/C AT OMH 0.333	LAT HEAT FLUX (Watts/m2) 9.69E-01 [1.06E+00 8.78E-01]	SCALING POT TEMP (Kelvin) -7.124E-02 [-7.77E-02 -6.47E-02]
Z/C AT 10 METERS 0.003	SEN HEAT FLUX (Watts/m2) 1.59E-01 [1.74E-01 1.44E-01]	ROUGHNESS LENGTH (Meters) 2.415E-04 [2.63E-04 2.19E-04]
MONIN OBUKHOV LENGTH (Meters) -3.876E-02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E-01 [1.59E-01 1.32E-01]	DRAG COEF AT 10 METERS (Dimensionless) 1.361E-03 [1.48E-03 1.24E-03]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.29E-02 [1.41E-02 1.17E-02]	
	BOWEN RATIO (no units) 0.159 [0.163 0.155]	

* * THE ABOVE VALUES ARE THE MOST PROBABLE AERODYNAMIC ESTIMATE ERROR VALUES AT ONE SET STD DEV STANDARD DEVIATION FROM EITHER THE
* * MEAN OF TWO SETS OF A DIURNAL ENTERTAINED VALUE (WHICH EVER APPLIED - USED TO CHARTER). ALL VALUES ARE
* * OF TEMPORAL DIFFERENCES WITHIN ONE SET *###*

ZOM / ZOC RATIO	ZOM (Meters)	MOMENTUM FLUX	LAT HEAT FLUX	SENSIBLE HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT TEMP	ROUGH LENGTH	DRAG COEF
7	7%	4%	5%	4%	1%	9%	1%	1%	10%	14%	14%	1%

NAVAL RESEARCH LABORATORY
ATMOSPHERIC SCIENCE BRANCH
MARINE METEOROLOGY OCEAN & SURFACE
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 2905b/2130
START TIME: 21:55:20 PST
END TIME: 22:24:50 PST
START DATE: 2 May 1979 (DAY 122)

PRINT DATE: 11 JUN 1980
DATA ACQUISITION RATE (SECONDS): 0.500
DATA AVERAGING PERIOD: 30 MIN
NUMBER OF SCANS: 3600

* ANALOG CHANNEL RAW DATA (VOLTAGE) :

No. 00	No. 01	No. 02	No. 03	No. 04	No. 05	No. 06	No. 07	No. 08	No. 09
DIFF PRESS. (Volts)	TEMP. DIFF. (Volts)	DEW POINT (Volts)	RAD. (Volts)	WIND SPEED (Volts)	WIND DIR. (Volts)	AIR TEMP. 1 (Volts)	AIR TEMP. 2 (Volts)	WIND FLAG
0.205	0.017	2.111	5.253	1.609	1.001	3.794	0.165	5.001

No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17
CLOCK MINUTES OF EPOCH (GMT)	CLOCK SECONDS	MONTH FLAG	DAY FLAG	YEAR	SPARE 1	SPARE 2	SPARE 3
1.740	1.000	2.000	1.000	1.979	0.000	0.000	0.000

* DIGITAL CHANNEL RAW DATA RECORDED : [illegible] Data [illegible] Word [illegible]

No. 1	No. 2	Decimal Word Number	Position	Width	Mask	Type
MIN ITEM 1	MIN ITEM 2	(Octal Equivalent)	(Bits)	(Bits)	(Octal)	(Integer)
DATE 1/31/79	DATE 1/31/79	0 (000)	0	16	177777	0

* SCALING AND ENGINEERING PARAMETERS (MUST AGREE WITH INSTRUMENTATION SETUP) :

MEAN FLOW (No. Scans)	ERROR COUNT (No. Scans)	DATA RATE (Hz)	SCALE FACTOR (V/Unit)	ZERO OFFSET (V)	FREQ. RESP. (Hz)	AVG. PERIOD (Min)	NO. OF SCANS	NO. ENGINEER UNITS
1	0	10%	1	0	1	1	3600	3600

* OBSERVED MINIMUM TEMPERATURE/DEW POINT DEPRESSION DURING THIS RUN (USED TO ADJUST RELATIVE HUMIDITY) (DEGREES C) :

AIR TEMP.1 (Celsius)	WIND SPEED (Meters/sec)	DEW POINT (Celsius)	DEPRESSION (Celsius)	Wind Dir. (Deg. from true N)	Air Pres. (Millibars)	Air Temp. (Meters)	Tot. Air Temp. Down Rad. (Watts/m2)	Air Temp (Kelvin)
12.312	11.16	9.94	NO DATA	329.3	1.127E+03	1.402E+04	1.323E+03	285.50

AIR TEMP.2 (Celsius)	WIND SPEED (Meters/sec)	DEW POINT (Deg. C)	TEMP. DIFF. (Deg. C)	TIME (Hrs.) (Meter Mode)	BAR. PRESS. (Millibars)
12.435	10.37	9.57	NO DATA	0.33	1013.30

* CALCULATED MICROMETEOROLOGICAL PARAMETERS :

Ref. Ht. 1 (Meters)	Pot. Temp. (Celsius)	Vap. Temp. (Celsius)	Spec. Hum. (Kg/Kg)	Mass Mixing Ratio (Kg/Kg)	Rel. Humidity (Percent)	Sat. Ref. Press. (Kg/Kg)	Vap. Press. (Millibars)	Scale Press. (Millibars)	Ref. Ht. 2 (Meters)
19.35	12.492	11.53	9.916E-03	9.916E-03	93.04	1.065E-02	1.107	14.287	NO DATA

Ref. Ht. 2 (Meters)	Pot. Temp. (Celsius)	Vap. Temp. 2 (Celsius)	Pot. Temp. 2 (Celsius)	Air Density (Kg/m3)	Relative Humidity (Percent)	Sat. Ref. Press. (Kg/Kg)	Vap. Press. (Millibars)	Scale Press. (Millibars)	Ref. Ht. 3 (Meters)
7.20	12.503	11.711	12.501	1.202E+00	90.01	2.762E-02	11.502	14.41	19.35

* CONTINUED BELOW

RUN NUMBER: 2905b/2130
START TIME: 21:55:20 PST
START DATE: 2 May 1979 (DAY 122)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA ACQUISITION RATE (SECONDS): 0.500
DATA AVERAGING PERIOD: 30 MIN
MEASUREMENTS: 1 UPPER LEVEL, 2 LOWER LEVEL

* PRECISE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (DEGINGOR,1973) :

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=K WITH HEIGHT)
GRAD RICHARDSON NUMBER (1/Scale, Dimensionless)	MOMENTUM FLUX (N/M2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM IN SCI. NOTATION	GENERAL FORM IN SCI. NOTATION
0.015 AT DRM	2.911E-01	4.351E-01	LEVEL N2 (Z=Z2/Z1) = (Z2-D)/(Z1-D)	EXP(N2)=(Z2-D)/(Z1-D))**(N1-N2)
VON KARMAN CONSTANT (Dimensionless) EMPIRICAL	MOISTURE FLUX (Kg/sec-m2)	SCALING PARAMETER, (Kg/Kg)	WIND SPEED (M/Sec) Z-RELIGHT (Meters)	WIND SPEED (M/Sec) Z-SCALING (M) Vert. Axis
0.39	5.90E-05	6.502E-05	1.00/DZ= 8.72E-02	P(Z)=P(Z1) W. SLOPE 8.23E-01
ZZL AT DRM 0.626	LAT. HEAT FLUX (Watts/m2) 9.60E-01	SCALING POT. TEMP. (Kelvin)	N SPEC. HUMIDITY (Kg/Kg) Z-RELIGHT (Meters)	N SPEC HUMIDITY (Kg/Kg) Z-SCALING (M) Vert. Axis
ZZL AT 10 M TERMS -0.015	SEN. HEAT FLUX (Watts/m2)	2.530E-02	DSH/DZ= -8.92E-06	P(Z)=P(Z1) SLOPE 8.25E-04
ZZL AT Z1 -0.621	1.55E-01	ROUGHNESS LENGTH (Meters)	N POT. TEMP. Kelvin Z-RELIGHT (Meters)	N POT. TEMP. (Kelvin) Z-RELIGHT (M) Vert. Axis
ZZL AT Z2 0.014	SPECIFIC SCALAR HEAT FLUX (Watts/m2) 1.42E-01	4.37E-04	DTH/DZ= 3.40E-03	P(Z)=P(Z1) SLOPE -2.12E-01
LOWER DETERMINED Z WIDTH (Meters) 6.55E-02	TOTAL HEAT ENERGY FLUX (Watts/m2) 1.24E-01	DRAG COEF. AT 10 M TERMS (Dimensionless) 2.230E-03		N TURBULENCE (TKE) Z-RELIGHT (M) Vert. Axis P(Z)=NONE (I) = NO DATA
P(1) AT Z1= 1.023E+4 P(2) AT Z2= 1.022E+4 P(3) AT Z3= 1.017E+4 P(0) AT Z= 1.030E+4	BOWEN RATIO (H/LE) 1.61			

* GENERAL CONSTANTS :

VON KARMAN CONSTANT	EVAPORATION CONSTANT (CC/CM2-MIN)	PROFILE NUMBER	PROFILE NUMBER	AIR SENSIBLE HEAT TRANSFER CODE	BULK TRANSFER CODE
0.4	9.9999	0.24	0.24	0.92E-03	1.67E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.1297

AIR SPECIFIC HEAT (Heat-Kg Kel.) 2.417E-02

WATER LAT HEAT VAP. (Heat/Kg) 5.933E+02

* GENERAL NOTES :
Accuracy limitation preempted for measurement of Pot. Te Slope and/or Partial Derivative
Computation executed by insertion of

SHI SHC HZ .00L 5 Kpsrn

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:56:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
START DATE: 9 MAY 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 20 MIN

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.-SPEED (Kel.xM**2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.418	10.47	9.59	NO DATA	1012.75	13.573	1.155	-1.057	0.123	6.251

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP PRES. (Millibars)	S.VAP PRES (Millibars)	REF TEMP (Kel.xM**2/3)
10.00	12.516	13.696	13.794	9.056E-03	92.84	7.360E-03	11.930	14.401	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable): 0.032 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2: 12.99

Z/L AT GMH: -0.007

Z/L AT 10 METERS: -0.030

MONIN OBUKHOV LENGTH (Meters): -3.296E 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2): -1.78E-01

HUMIDITY FLUX (Kg/sec m2): 3.73E-05

LAT.HEAT FLUX (Watts/m2): 9.22E 01

SEN.HEAT FLUX (Watts/m2): 1.52E 01

SKY AND SOLAR HEAT FLUX (Watts/m2): 1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2): 1.22E 02

BOWEN RATIO (no units): 0.164

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 3.805E-01

SCALING SPEC.HUMID. (Kg/Kg): -2.970E-05

SCALING POT.TEMP. (Kelvin): -3.201E 02

ROUGHNESS LENGTH (Meters): 1.886E-04

DRAG COEF AT 10 METERS (Dimensionless): 1.421E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2): -1.448E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3): 3.738E-05

WITH POT.TEMPERATURE (Meter Kel./sec): 1.210E-02

MISCELLANEOUS

AIR DENSITY (Kg/m3): 1.230E

AIR SPECIFIC HEAT (Ideal /kg Kel.): 2.401E 03

WATER LAT.HEAT VAP (Ideal /kg): 5.902E 05

VAP PRES at WT LEVEL (Millibar): 15.550

ABS.HUMID.AT WT LEVEL (Kg/m3): 1.175E-02

BAR PRES.AT WT LEVEL (Millibar): 1013.95

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "for"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
103%	103%	81%	150%	75%	10%	115%	225%	44%	166%	31%	64%	80%
177%	177%	46%	43%	185%	10%	9%	140%	23%	66%	123%	43%	46%

* CONTINUED BELOW

RUN NUMBER: 7905092130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 21:56:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
START DATE: 9 MAY 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 20 MIN

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable): 0.021 (0.02) AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2: 12.99

Z/L AT GMH: 0.029 (0.02)

Z/L AT 10 METERS: 0.021 (0.02)

MONIN-OBUKHOV LENGTH (Meters): 4.81OE 02

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (Nt/m2): -2.17E-01 (4.0E-02)

HUMIDITY FLUX (Kg/sec m2): 4.99E-05 (6.8E-06)

LAT.HEAT FLUX (Watts/m2): 9.31E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2): 1.52E 01 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2): 1.46E 01 (2.0E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2): 1.27E 02 (3.0E+01)

BOWEN RATIO (no units): 0.162 (0.38)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 4.167E 01 (6.6E-02)

SCALING SPEC.HUMID. (Kg/Kg): 2.41OE-05 (3.3E-06)

SCALING POT.TEMP. (Kelvin): -2.652E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters): 2.893E-04 (6.6E-05)

DRAG COEF.at 10 METERS (Meters): 1.507E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD OF STATISTICAL ERROR EQUATION THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "for":

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL SPEC HUMIDITY	SCL POT. TEMP	ROUGH. LENG TH	DRAG COEF.
39%	38%	27%	3%	0%	0%	2%	2%	13%	16%	15%	44%	26%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

PRINT DATE : 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 20 MIN
NOM RELATIVE: 1-UPPER LEVEL, 2-LOWER LEVEL

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
[illegible]	[illegible]	DEW POINT	DEW POINT	WIND SPEED	WIND SPEED	BAR PRES 2	SKY RAD.	WIND DIR.
[illegible]	[illegible]	4.992	5.062	5.000	4.992	4.992	0.115	5.179

No.11	No.12	No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.011	1.011	0.001	0.111	6.295

[illegible] Thermistor Data Fields Calculated and Wind Speed Slippage Corrections.

[illegible]	[illegible]	WSREC	WSFEC	WSFEL	WSLEC	WSLEC
[illegible]	[illegible]	[illegible]	[illegible]	(Volts)	(Coeff.)	(Coeff.)
[illegible]	[illegible]	5.159	[illegible]	4.015	1.051	0.990	0.949

[illegible] Data Recorded Immediately Before Each Hourly Period.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	AC FREQUENCY (Hz)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	59.84
		5.0				0	115.5	

[illegible] Meteorological Data Recorded Each Hour Including Engineering Calibrations (Translated Into Engineering Units):

[illegible]	[illegible]	[illegible]	[illegible]	WIND DIR.	BAR PRES 1	SKY RAD.	ILLR WT TEMP	MEAN AIR TEMP
[illegible]	[illegible]	[illegible]	[illegible]	(Deg.True)	(Millibar)	(Watt/m2)	(Kelvin)	(Kelvin)
[illegible]	[illegible]	[illegible]		NO DATA	991.1	1111.80	1.4E+ 01	14.580	285.580

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	NO DATA	6.17	1017.90

[illegible] Meteorological Data Recorded Each Hour:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	REL.HUMID 1	SPEC.HUMID 1	VAP PRES 1	S VAP PRES 1	REF INDEX 1
[illegible]	[illegible]	[illegible]	[illegible]	(Celsius)	(Percent)	(kg/kg)	(Millibar)	(Millibar)	(REF xM 2/3)
[illegible]	[illegible]	[illegible]	[illegible]	14.580	87.67	7.812E-03	11.856	14.334	NO DATA

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	REL.HUMID 2	SPEC.HUMID 2	VAP PRES 2	S VAP PRES 2	REF INDEX 2
[illegible]	[illegible]	[illegible]	[illegible]	(Celsius)	(Percent)	(kg/kg)	(Millibar)	(Millibar)	(REF xM 2/3)
[illegible]	[illegible]	13.704	13.844	2.040E-03	77.63	7.594E-03	11.970	14.471	NO DATA

[illegible] 04

PRINT DATE : 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 2/MIN
DATA AVERAGING PERIOD: 20 MIN
NOM RELATIVE: 1-UPPER LEVEL, 2-LOWER LEVEL

[illegible] 1979 PARTIAL SUMMER LAYER
[illegible] MAY MICROMETEOROLOGY
[illegible] 1979 SAN NICOLAS ISLAND, CAL

[illegible] MICROMETEOROLOGICAL RECORDED AND CALCULATED VALUES (BOWINGER,1973):

[illegible]	FLUX PARAMETERS [illegible]	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (W INCH WITH HEIGHT)
[illegible]	MOMENTUM FLUX (N/m2) -2.73E-01	FRICTION VELOCITY (Meters/Sec) 4.658E-01	GENERAL FORM:DN/DZ [illegible] (Z1*Z2)1/2	LINEAR FORM:N SLOPE= [illegible] (N1-N2)
[illegible] AT 6M				
[illegible] HEIGHT (Meters) 12.99	HORIZONTAL FLUX (Kg/Sec m2) 3.2 E-05	SCALING SPEC.HUMID. (Kg/kg) 6.54E-05	N:WIND SPD (M/Sec) Z=HEIGHT (Meters) DWS/DZ= 8.40E-02	N:WIND SPEED (M/Sec) Z:HEIGHT (M) Vert.Axis PSI-PSI1 WS SLOPE= 8.52E-01
[illegible]	LAT HEAT FLUX (Watts/m2) 5.2 E 01	SCALING POT. TEMP. (Kelvin) 2.987E 02	N:SPEC.HUMIDITY (Kg/Kg) Z:HEIGHT (Meters) DSH/DZ= -8.99E-06	N:SPEC HUMIDITY (Kg/Kg) Z:HEIGHT (M) Vert.Axis PSI-PSI2 SH SLOPE= 8.17E 03
[illegible]	SENSIBLE HEAT FLUX (Watts/m2) 1.35E 01	ROUGHNESS LENGTH (Meters) 5.72mE 04	N:POT TEMP (Kelvin) Z:HEIGHT (Meters) DPT/DZ= 3.13E 03	N:POT TEMP (Kelvin) Z:HEIGHT (M) Vert.Axis PSI-PSI3 PTK SLOPE= 9.30E 01
[illegible]	[illegible] HEAT FLUX (Watts/m2) 1.40E 01			
[illegible]	[illegible] HEAT FLUX (Watts/m2) 1.20E 02	DRAG COEF. AT 10 M (Dimensionless) 2.500E-03		N:[illegible] STRUC (KxM 2/3) Z:HEIGHT (M) Vert.Axis PSI=PSI3 [illegible] SLOPE=NO DATA
[illegible]	BOWEN RATIO (Dimensionless) 1.044			

[illegible] Meteorological Constants:

[illegible]	[illegible]	[illegible]	PROFILE	BULK	BULK
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	NUMBER	[illegible]	[illegible]
0.4	2.952E-02	1.34	0.74	0.925 03	1.92 03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2.96

AIR SPECIFIC HEAT (Ltcal./Kg Kel.) 2.415GE 02

WATER LAT HEAT VAP. (Ltcal./Kg) 5.90.9E 05

[illegible] Note: Limitation Extended for Measurement of Profile Slope and/or Partial Derivative
[illegible] Calculation Executed by Inspection of

[illegible] .000 Kg/Kg

[illegible] 04

RUN NUMBER: 7905092200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:04:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kelvin**2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.464	9.39	9.55	NO DATA	1012.80	13.580	-1.116	1.018	0.159	0.[illegible]

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES (Millibars)	REF INDEX (Kelvin**2/3)
10.00	12.562	13.749	13.837	9.029E-03	80.57	7.340E-03	11.969	14.446	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (ERIENE ET AL.,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.043 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.9y

Z/L AT GMH
-0.353

Z/L AT 10 METERS
-0.040

MONIN-OBUKHOV LENGTH (Meters)
-2.489E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.35E-01

HUMIDITY FLUX (Kg/sec m2)
3.38E-05

LAT.HEAT FLUX (Watts/m2)
8.36E 01

SEN.HEAT FLUX (Watts/m2)
1.34E 01

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.46E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.12E 02

BOWEN RATIO (no units)
0.161

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.319E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.290E-05

SCALING POT.TEMP. (Kelvin)
-3.251E-02

ROUGHNESS LENGTH (Meters)
1.159E-04

DRAG COEF AT 10 METERS (Dimensionless)
1.256E-03

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. V.VELOCITY (Meter**2/sec**2)
-1.101E-01

WITH ABS. HUMIDITY (Meter Kg/sec m3)
3.384E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
1.079E-02

MISCELLANEOUS

AIR DENSITY (Kg/m**3)
1.229[illegible]

AIR SPECIFIC HEAT (Ideal/Kg Kel.)
2.41[illegible]-02

WATER LAT.HEAT VAP. (Ideal/Kg)
5.962[illegible]-05

VAP.PRES AT WT LEVEL (Millibars)
15.558

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.176E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.29

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. BULK VALUES ARE APPROXIMATE AND ARE "***":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
106%	106%	83%	147%	75%	10%	113%	227%	41%	106%	34%	61%	83%
179%	179%	46%	43%	102%	10%	34%	150%	7*%	66%	130%	4*%	40%

* CONTINUED BELOW

RUN NUMBER: 7905092200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 22:04:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)
-0.[illegible] [illegible].021 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.9y

Z/L AT GMH
-0.351 [illegible].321

Z/L AT 10 METERS
-0.024 [illegible].021

MONIN-OBUKHOV LENGTH (Meters)
-4.139E 02

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.[illegible]-01 [illegible].0E-021

HUMIDITY FLUX (Kg/sec m2)
3.[illegible]-05 [illegible].0E-[illegible]

LAT.HEAT FLUX (Watts/m2)
8.56E 01 [illegible].0E+011

SEN.HEAT FLUX (Watts/m2)
1.33E 01 [illegible].0E+011

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.4AE 01 [illegible].0E+011

TOTAL HEAT BUDGET FLUX (Watts/m2)
1.14E 02 [illegible].0E+011

BOWEN RATIO (no units)
0.154 [illegible].381

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
3.[illegible]-01 [illegible].6E-021

SCALING SPEC.HUMID. (Kg/Kg)
-7.611E-05 [illegible].8E-051

SCALING POT.TEMP. (Kelvin)
-2.[illegible]E-02 [illegible].6E-021

ROUGHNESS LENGTH (Meters)
2.246E-04 [illegible].6E-051

DRAG COEF AT 10 METERS (Meters)
1.[illegible]-03 [illegible].4E-041

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "***":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
5%	5%	1%	6%	1%	0%	4%	6%	10%	1.%	2.%	60%	4.%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7965092236
START TIME: 22:53: 0 PST
END TIME: 23:26:58 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 2& min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.265	6.666	6.061	4.989	5.054	5.243	5.139	4.796	6.169	5.292

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP	AC FREQUENCY	AC VOLTAGE	RAMDV FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.933	3.876	2.546	3.331	0.331	0.331	0.331	6.265

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED EXPONENT CORRECTIONS

No.1	No.2	UPWIND FETCH	DOWNWIND FETCH	ROUGHNESS	EXPONENT	WIND SPEED	WIND DIR.	WIND SPEED
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Volts)	(Volts)
1411 124230	1491 125349	0.199	99	-0.048	0.050	0.308	0.556	0.562

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR FLAG	DATA SAVE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLTAGE	AC FREQUENCY	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.errors)	(No.scans)	A(No.).005V	B(No.).005V	(No.).005V	(No. 5V)	(Reg.)1Hz)	(VAC)	(Hz)
0	0	168	0	0	0	0	0	115.0	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CHL AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	FLUX OF I.R. FROM AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Rel.to 2/3)		(Deg.True)	(Millibar)	(Watt/M^2)	(Kelvin)
12.493	10.17	9.45	NO DATA		324.9	1011.28	1.4E-L 11	283.49

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Rel.to 2/3)	(Meter MSL)	(Millibar)
12.534	9.39	9.58	NO DATA	-0.66	1012.03

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REL.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Rel to 2/3)
16.35	12.663	13.699	13.899	8.961E-03	82.06	7.292E-03	11.810	14.392	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REL INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Rel.to 2/3)
2.29	13.624	13.805	13.695	8.998E-03	81.75	7.310E-03	11.824	14.513	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7965092236
START TIME: 22:53: 0 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NPL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL.

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+FOR,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.010 AT GMH	MOMENTUM FLUX (Nt/m2) 2.84E-01	FRICTION VELOCITY (Meters/sec) 4.805E-01	GENERAL FORM:DN/DZ= [(N1-N2)/(Z1-Z2)]x (Z1xZ2)1/2	GENERAL FORM: N'SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1xZ2)1/2 12.79	HUMIDITY FLUX (Kg/sec m2) 3.91E-05	SCALING SPEC.HUMD. (Kg/Kg) -6.440E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 8.82E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 8.32E-01
Z/L AT GMH -0.014	LAT.HEAT FLUX (Watts/m2) 9.41E 01	SCALING POT. TEMP. (Kelvin) -1.709E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.32E 03
Z/L AT 16 METERS -0.013	SEN.HEAT FLUX (Watts/m2) 1.02E 01	ROUGHNESS LENGTH (Meters) 4.208E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -9.38E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PT SLOPE= 3.1?E 01
Z/L AT Z1 -0.012	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF. AT 16 METERS (Dimensionless) 2.675E 03		N=LnTEMP.STRUC (K*M 2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CTP SLOPE=NO DATA
Z/L AT Z2 -0.010				
MONIN OBUKHOV LENGTH (Meters) -9.606E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.19E 02			
PSI1 AT Z1= 0.066662 PSI1 AT Z2= 0.034498 PSI2 AT Z1= 0.040446 PSI2 AT Z2= 0.020883	BOWEN RATIO (no units) 0.168			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
0.4	9.7999	0.74	0.74	0.90E-03	1.3.0E 03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2093

AIR SPECIFIC HEAT (Ideal/Kg Kel.) 2.415E 02

WATER LAT HEAT VAP (Ideal/Kg) 5.902E 02

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2= +/- .0N. 5 Pg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092.46 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1981
START TIME: 22:53: 1 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): /min
START DATE: 9 May 1979 (DAY 12 SAN NICOLAS ISLAND, CA DATA AVERAGING PERIOD: 28 min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	VAP PRES. (Millibars)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.520	9.47	9.50	NO DATA	1012.79	13.522	-1.057	-0.959	0.214	0.31

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP PRES. (millibars)	S.VAP PRES. (millibars)	RSI INDEX (Kel.xm**2/3)
10.00	12.618	13.791	13.669	8.994E-03	81.78	7.415E-03	11.670	14.459	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,19[illegible]):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	[illegible]
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.040 AT GMH	MOMENTUM FLUX (Nt/m2) -1.39E-01	FRICTION VELOCITY (Meters/sec) 3.357E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.127E-01	AIR DENSITY (kg/m3) 1.2295
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.45E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.364E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 3.452E-05	AIR SPECIFIC HEAT (Total /Kg Kel.) 2.417[illegible]E 02
Z/L AT GMH -0.047	LAT.HEAT FLUX (Watts/m2) 8.53E 01	SCALING POT.TEMP. (Kelvin) -3.085E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 1.036E-02	WATER LAT HEAT VAP (Total/Kg) 5.902[illegible]E 05
Z/L AT 10 METERS 0.038	SEN.HEAT FLUX (Watts/m2) 1.29E 01	ROUGHNESS LENGTH (Meters) 1.207E-04		VAP.PRES.AT WT LEVEL (Millibar) 15.555
MONIN-OBUKHOV LENGTH (Meters) -2.663E 02	SKY AND SO.AR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.255E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.13E 02			SAT.PRES AT WT LEVEL (Millibar) 1013.99
	BOWEN RATIO (no units) 0.151			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "for "

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC. HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
107%	167%	81%	146%	84%	10%	116%	230%	40%	166%	43%	60%	3 %
182%	182%	46%	42%	113%	10%	35%	153%	24%	65%	15%	43%	4%

* CONTINUED BELOW

RUN NUMBER: 7905092230 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1981
START TIME: 22:53: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): /min
START DATE: 9 May 1979 (DAY 129) SAN NICOLAS ISLAND, CA DATA AVERAGING PERIOD: 28 min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT [illegible]
WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.021 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.91E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.883E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.03E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.630E-05 [3.0E-05]
Z/L AT GMH -0.027 [0.02]	LAT.HEAT FLUX (Watts/m2) 8.73E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.047E-02 [2.0E-02]
Z/L AT 10 METERS 0.020 [0.02]	SEN.HEAT FLUX (Watts/m2) 1.14E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 2.455E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -4.891E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.2[illegible]E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.14E 02 [3.0E+01]	
	BOWEN RATIO (no units) 0.134 [1.0E]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FORMULA FOR THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER) ARE VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "for "

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC. HUMIDITY	SCL.POT. TEMP	ROUGH. LENGTH	DRAG COEF.
21%	69%	39%	6%	12%	0%	3%	16%	19%	13%	8%	7%	4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790129/1618
START TIME: 1621 GMT
END TIME: 2345 GMT
START DATE: 29 JAN 1979 (DAY 029)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* RAW DATA FROM THE DATA ACQUISITION SYSTEM:

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
TEMP.1 (Deg.C)	TEMP.2 (Deg.C)	DEW POINT 1 (Deg.C)	DEW POINT 2 (Deg.C)	WIND SPEED 1 (m/sec)	WIND SPEED 2 (m/sec)	BAR.PRES.2 (millibar)	SKY RAD. (Watts/m2)	WIND DIR (Deg.)
5.666	5.611	5.089	5.024	4.695	4.420	4.803	-6.165	5.411

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
PRES.DIFF.1 (millibar)	PRES.DIFF.2 (millibar)	MARINE FLUX (Watts/m2)	ZERO REF. (Volts)	SPARE A (Volts)	SPARE B (Volts)	VOLT.REF.1 (Volts)	VOLT.REF.2 (Volts)
5.594	5.584	1.341	2.811	1.331	3.351	6.205	

* DATA FROM CHANNELS NOT USED (REVERSED): ESCARPMENT DATA FIELD IRRIGATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.18	No.19	UPWIND ROUGHNESS LENGTH (Meters)	UPWIND ROUGHNESS LENGTH (Meters)	DELTA T (Volts)	IRRIGATION (Volts)	WIRETAIL (Volts)	K.DIF (Coeff.)	WSPEC (Coeff.)
24.1	24.1	0.172	.07	1.180	3.750	6.335	0.992	0.949

* CALCULATED ELECTRICAL POWER DATA CONVERTED INTO ENGINEERING UNITS:

CHARGE CURRENT (Amps/Cell)	CHARGE VOLTAGE (Volts/Cell)	SOLAR FLUX (Watts/m2)	BATT.VOLT.1 (Volts)	BATT.VOLT.2 (Volts)	AC POWER FLUX (No.01Hz)	AC POWER FLUX (No.02Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
9	9	164	0	0	0	0	115.4	59.79

* MARINE SURFACE LAYER PARAMETERS (INCLUDING THE ALBEDO AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

WIND SPEED 1 (meters/sec)	WIND SPEED 2 (meters/sec)	SOLAR FLUX (Watts/m2)	SKY RAD. (Deg. Kelvin)	BAR.PRES.1 (millibar)	SKY RAD. (Watts/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
7.99	7.74	164	50 DATA		1.48E 01	14.568	285.686

WIND DIR. (Deg. from)	WIND SPEED (meters/sec)	TEMP.DIFF.1 (Celsius)	TEMP.DIFF.2 (Celsius)	WIND DIR. (Deg. from)	BAR PRES.2 (millibar)
5.411	7.74	5.666	5.611	5.411	1013.00

* CALCULATED MARINE SURFACE LAYER PARAMETERS:

Ri(1-2) (dimensionless)	Ri.Stab.1 (dimensionless)	STAB.Ri.1 (dimensionless)	V.POT.TEMP.1 (Celsius)	ABS.Humid.1 (Kg/m3)	REL HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (millibar)	S.VAP.PRES.1 (millibar)	REF.INDEX 1 (Kel.xM 2/3)
-.35	12.550	1 Axis	14.947	9.174E-03	93.08	7.35E-03	11.931	14.361	NO DATA

Ri(2-1) (dimensionless)	Ri.Stab.2 (dimensionless)	STAB.Ri.2 (dimensionless)	V.POT.TEMP.2 (Celsius)	ABS.Humid.2 (Kg/m3)	REL HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (millibar)	S.VAP.PRES.2 (millibar)	REF.INDEX 2 (Kel.xM-2/3)
-.314	12.774	1 Axis	13.825	9.322E-03	92.76	7.457E-03	11.961	14.486	NO DATA

* COMPUTER RUN

RUN NUMBER: 790129/1618
START TIME: 1621 GMT
START DATE: 29 JAN 1979 (DAY 029)

MARINE SURFACE LAYER
NAVAL RESEARCH LABORATORY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
STABILITY PARAMETER (Z/L Stable, -Z/L Unstable) -.035 NEUTRAL	MOMENTUM FLUX (Nt/m2) -2.42E-01	FRICTION VELOCITY (Meters/Sec) 4.438E-01	GENERAL FORM:DN/DZ= I(N1-N2)I/In(Z1/Z2)* (Z1*Z2)1.21	GENERAL FORM:N'SLOPE= I(N1-N2)I/(InZ2-PSI)-(InZ1-PSI)
ROUGHNESS HEIGHT (Meters) GM=(Z1*Z2*Z3)1/3 12.99	HUMIDITY FLUX (Kg/sec M2) 3.57E-05	SCALING SPEC HUMID. (Kg/Kg) 6.52E-05	N=WIND SPEED (m/sec) Z=HEIGHT (Meters) DWS/DZ= 7.95E-02	N=WIND SPEED (m/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 9.02E-01
Z/L AT GRH -0.05	LAT.HEAT FLUX (Watts/m2) 8.72E 01	SCALING POT. TEMP. (Kelvin) -2.08E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -8.29E 03
Z/L AT 10 Meters -0.015	SN.HEAT FLUX (Watts/m2) 1.15E 01	ROUGHNESS LENGTH (Meters) 3.199E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -2.86E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI3 PTK SLOPE= -2.59E 01
Z/L AT Z1 -.003	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.45E 01			
Z/L AT Z2 0.014		DRAG COEF. AT 10 METERS (Dimensionless) 2.95E 03		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NON. CT2 SLOPE=NO DATA
ROUGHNESS LENGTH (Meters) 9.310E 02	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.14E 02			
PSI1 AT Z1= 1.699E+04 PSI1 AT Z2= 1.134E+04 PSI2 AT Z1= 1.65E+06 PSI2 AT Z2= 1.102E+06	BOWEN RAT IO (no unit) 8.13E			

* GENERAL EQUATIONS:

VON KARMAN CONSTANT	GRAVITATION ACCELERATION (m/sec2)	PROFILE EXPONENT	PROFILE TO % HUMIDITY	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.79E+0	0.74	0.74	8.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2296
AIR SPECIFIC HEAT (Ical /kg Kel.) 2.41E 02
WATER LAT.HEAT VAP (Ical /kg) 5.902E 05

* CALCULATION EXECUTED BY INSERTION OF:

DAY 029 +/- 0.8 .5 Kg/kg

* Error limitation exceeded for measurement of Profile Slope and/or Partial Derivative.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:21: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.490	8.41	9.62	NO DATA	1012.90	13.568	-1.078	-0.980	0.263	0.361

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.588	13.771	13.869	2.070E-03	82.63	7.375E-03	11.957	14.472	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) 0.059 AT GMH	MOMENTUM FLUX (Nt/m2) -1.03E-01	FRICTION VELOCITY (Meters/sec) 2.894E-01	WITH LONG. VELOCITY (Meter2/sec2) -8.375E-02	AIR DENSITY (Kg/m3) 1.2298
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 2.97E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.354E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 2.973E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4159E 02
Z/L AT GMH -0.070	LAT.HEAT FLUX (Watts/m2) 7.35E 01	SCALING POT.TEMP. (Kelvin) -3.311E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 9.582E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9025E 05
Z/L AT 10 METERS 0.054	SEN.HEAT FLUX (Watts/m2) 1.19E 01	ROUGHNESS LENGTH (Meters) 7.038E-05		VAP.PRES AT WT LEVEL (Millibar) 15.548
MONIN-OBUKHOV LENGTH (Meters) -1.844E 02	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01	DRAG COEF.AT 10 METERS (Dimensionless) 1.185E-03		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.175E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.00E 02			BAR.PRES.AT WT LEVEL (Millibar) 1014.10
	BOWEN RATIO (no units) 0.162			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. THE ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"%:

GRAD.RICH. NO.AT GMH	Z/L AT 10m	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
99%	99%	99%	145%	76%	10%	113%	221%	39%	105%	37%	59%	79%
101%	101%	46%	43%	109%	10%	34%	152%	23%	66%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905092300 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:21: 0 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable, --Unstable) -0.031 [6.0E-02] AT GMH	MOMENTUM FLUX (Nt/m2) -1.58E-01 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 3.462E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 3.11E-05 [8.9E-06]	SCALING SPEC.HUMID. (Kg/Kg) -7.642E-05 [3.0E-05]
Z/L AT GMH -0.038 [3.0E-02]	LAT.HEAT FLUX (Watts/m2) 7.68E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) 2.354E-02 [2.0E-02]
Z/L AT 10 METERS 0.029 [3.0E-02]	SEN.HEAT FLUX (Watts/m2) 1.17E 01 [3.0E+00]	ROUGHNESS LENGTH (Meters) 1.752E-04 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) 3.459E 0.	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.46E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 1.78E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 1.03E 02 [3.6E+01]	
	BOWEN RATIO (no units) 9.15E 00 [6.0E 00]	

DIFFERENCE BETWEEN PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE MEASURED COMPOSITE VALUE OR A MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE CONVERTED TO PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10m	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
74%	76%	4%	11%	2%	6%	8%	11%	23%	1%	30%	7%	5%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE AIR-OCEAN/ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790509/330
START TIME: 23:49:10 PST
END TIME: 0:17:26 PST
START DATE: 9 May 1979 (DAY 129)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6 min
DATA AVERAGING PERIOD: 20 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (VOLTAGE VALUES):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLTAGE REF	TEMP.STRUCT 1	TEMP.STRUCT 2	DEW POINT 1	DEW POINT 2	WIND SPEED 1	WIND SPEED 2	BAR.PRESS.1	BAT.MON.	WIND DIR.
6.265	0.000	0.011	5.056	5.019	1.842	1.672	4.85	0.105	0.515

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WI TEMP AT CRYOGENIC	AC VOLTAGE	MARINE FLUG	ZERO REF	SPARE A	SPARE B	SPARE C	VOLTAGE
3.975	3.816	0.145	0.111	0.001	0.001	0.001	6.295

* DIGITAL CHANNEL RAW DATA (COUNTS): ES ANEMOMETER DATA FOLLOW CALIBRATION AND WIND SPEED INSTRUMENT CORRECTIONS

No.1	No.2							
AIR TEMP.1	AIR TEMP.2	DEWPOINT HYGROMETER	DEWPOINT CHILLED MIRROR	SPARE	SPARE	WIND SPEED	WIND DIR.	U, E/W
1411.125125	1421.124095	2.206	75	1.393	3.603	1.310	5.991	3.917

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.Scans)	ERROR COUNT (No.Scans)	DATA SCANS (No.Scans)	VOLTAGE REFERENCE (No.),(Volts)	ZERO REFERENCE (No.),(Volts)	AC VOLTAGE (No.),(Volts)	AC FREQUENCY (No.),(Hz)	SPARE (Volts)	AC FREQUENCY (Hz)
0	0	168	3	0	1	0	4.995	59.87

* OLS RVLB MICROMETEOROLOGICAL PARAMETERS (SPARE) FOR MEAN OF ... AND STANDARD DEVIATIONS (TRANSMITTED FROM SHORE UNIT):

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUCT.1 (Kelvin**2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SPEC.HUMID.1 (Kg/kg)	BULK WI TEMP (Celsius)	BULK AIR TEMP (Kelvin)
12.410	3.56	9.69	NO DATA	334.6	1013.34	1.06E-01	11.569	285.549

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUCT.2 (Kelvin**2/3)	TIDE INDEX (Meter MSL)	BAR.PRES.2 (Millibar)
12.410	3.22	9.33	NO DATA	-0.33	1013.48

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.IN.S.A.1 (Kelvin**2/3)
18.31	12.497	13.621	13.861	9.234E-03	80.07	7.508E-03	12.164	14.561	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.IN.S.A.2 (Kelvin**2/3)
9.29	12.538	13.709	13.799	9.208E-03	84.96	7.486E-03	12.135	14.404	NO DATA

* CONTINUED BELOW

RUN NUMBER: 790509/330
START TIME: 23:49:10 PST
START DATE: 9 May 1979 (DAY 129)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6 min
DATA AVERAGING PERIOD: 20 min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,--DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+ IN X WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable, -=Unstable) 0.021 AT GMH	MOMENTUM FLUX (N/m2) 5.67E-02	FRICTION VELOCITY (Meters/sec) 2.148E-01	GENERAL FORM DN/DZ= [(N1-N2)*(Z1*Z2)**(Z1+Z2)/(Z1-Z2)**2]**(1/(Z1-Z2)) (N1-N2)	GENERAL FORM DN/DLN(Z)= [(N1-N2)*(Z1*Z2)**(Z1+Z2)/2]**(1/(Z1-Z2)) (N1-N2)
AERODYNAMIC DRAG HEIGHT (Meters) GMH-(Z1*Z2)**1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.29E-05	SCALING SPEC.HUMID. (Kg/kg) 6.697E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DW/DZ= 3.79E-02	N-WIND SPEED (M/sec) ZEHEIGHT (M) Vert Axis PSI=PSIM Ws SLOPE 1.46E 00
Z/L AT GMH 0.027	LAT.HEAT FLUX (Watts/m2) 4.31E 01	SCALING POT. TEMP. (Kelvin) -6.607E-03	N-SPEC HUMIDITY (Kg/kg) Z-HEIGHT (Meters) DS4/DZ= -8.92E-06	N-SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (M) Vert Axis PSI=PSIQ SH SLOPE 8.19E 05
Z/L AT 10 METERS -0.021	SEN.HEAT FLUX (Watts/m2) 1.77E 00	ROUGHNESS LENGTH (Meters) 2.146E-05	N-POT.TEMP.(Kelvin) Z-HEIGHT (Meters) DPT/DZ= -8.92E-04	N-POT.TEMP.(Kelvin) Z-HEIGHT (M) Vert Axis PSI=PSIQ PTK SLOPE 8.19E 01
Z/L AT Z1 -0.034	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.48E 01	DRAG COEF. AT 10 METERS (Dimensionless) 6.42E-03		N-POT.TEMP.STRUC.(K**2/3) Z-HEIGHT (M) Vert Axis PSI=PSIQ CT2 SLOPE=NO DATA
Z/L AT Z2 0.019	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.97E 01			
MONIN OBUKHOV LENGTH (Meters) 4.830E 02	BOWEN RATIO (P2 units) 0.041			
PSI1 AT Z1= 0.122512 PSI1 AT Z2= 0.365092 PSI2 AT Z1= 0.676231 PSIQ AT Z2= 0.040340				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec2)	PROFILE FOR PRANDTL NUMBER	PROFILE FOR SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.(CE)	BULK MOISTURE TRANSF.(CHE)
0.4	9.2979	0.74	0.74	0.92E-03	1.35E-03

MISCELLANEOUS
AIR DENSITY (Kg/m3) 1.1704
AIR SPEC.HUMID. (Kg/Kg) 7.41E-03
WATER VAPOR MIX. RAT. 5.74E-03

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and or Partial Derivative
Computation preceded by inversion of

SH1 SG = +/- .08, .5 Kg/Kg.
PTK1 PT=2 +/- .008 Kel

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905092330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:49:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 20 MIN

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.cm-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT-TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.398	3.26	9.84	NO DATA	1013.35	13.569	-1.171	1.074	0.122	0.322

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR TEMP. (Celsius)	V.POT. TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC HUMID. (Kg/kg)	VAP PRES. (Millibars)	SAT VAP PRES (Millibars)	REF INDEX (Kel at Z/2)
10.00	12.496	13.698	13.576	9.212E-03	84.35	7.485E-03	1.113%	14.791	10.0mBar

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -1.025 AT GMH	MOMENTUM FLUX (Nt/m2) -1.11E-02	FRICTION VELOCITY (Meters/sec) 9.477E-02	WITH LONG. VELOCITY (Meter2/sec2) -8.981E-03	AIR DENSITY (Kg/m3) 1.2307
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.09E-05	SCALING SPEC.HUMID (Kg/Kg) -9.385E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.09E-05	AIR SPECIFIC HEAT (Ithal./Kg Kel) 2.401E 02
Z/L AT GMH -1.093	LAT.HEAT FLUX (Watts/m2) 2.71E 01	SCALING POT.TEMP. (Kelvin) -5.565E-02	WITH POT.TEMPERATURE (Meter Kel /sec) 5.217E-03	WATER LAT.HEAT VAP. (Ithal./Kg) 5.91.3E 05
Z/L AT 10 METERS -0.841	SEN.HEAT FLUX (Watts/m2) 6.50E 00	ROUGHNESS LENGTH (Meters) 7.338E-08		VAP.PRES.AT WT LEVEL (Millibar) 15.555
MONIN-OBUKHOV LENGTH (Meters) -1.189E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.48E 01	DRAG COEF.AT 10 METERS (Dimensionless) 8.451E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.176E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.83E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.55
	BOWEN RATIO (no units) 0.240			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES.
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"%:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
156%	156%	73%	146%	146%	10%	105%	291%	32%	169%	169%	57%	73%
177%	177%	46%	44%	185%	10%	28%	148%	23%	67%	167%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905092330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 23:49:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
START DATE: 9 May 1979 (DAY 129) | SAN NICOLAS ISLAND, CA | DATA AVERAGING PERIOD: 20 MIN

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+-Stable,-+Unstable) -0.491 [0.02] AT GMH	MOMENTUM FLUX (Nt/m2) -2.86E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.410E-01 [6.0E-2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.24E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.329E-05 [3.0E-05]
Z/L AT GMH 0.526 [0.02]	LAT.HEAT FLUX (Watts/m2) 3.08E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -2.891E-02 [2.0E-2]
Z/L AT 10 METERS 0.405 [0.02]	SEN.HEAT FLUX (Watts/m2) 4.52E 00 [3.0E+00]	ROUGHNESS LENGTH (Meters) 9.297E-06 [6.0E-05]
MONIN OBUKHOV LENGTH (Meters) -2.468E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.48E 01 [2.0E+01]	DRAG COEF.AT 10 METERS (Meters) 2.811E-03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.07E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.173 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER OR ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-"%:

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF
102%	101%	39%	30%	53%	0%	1%	61%	44%	17%	84%	10%	10%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

RAW DATA (AVERAGE VDC):

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
WET BULB TEMP.1	DRY BULB TEMP.1	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
2.07	6.866	6.651	5.867	5.618	1.212	1.101	4.834	-6.106	5.945

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
WET BULB TEMP.2	DRY BULB TEMP.2	AC VOLTAGE	MANUAL FLUX	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
2.063	5.884	2.48	0.131	0.333	5.111	0.391	6.295

CALIBRATED ENGINEERING RAW DATA CONVERSION: ESCARPMENT DATA - FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	OPENING SPEED	CLOSING SPEED	BAROMETER	IR.VOLTAGE	WIDEBAL	WSLOPE	WSSEC
DATA SAMPLE	AIR TEMP.2	HEIGHT/LENGTH	PATH/Meter	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1	6.866	0.142	0.142	0.000	-0.050	0.030	0.991	0.947

CALIBRATED ENGINEERING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

DATA SAMPLE	CHOPPER FREQUENCY	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.)	(Kc/Scans)	(Sc/Scan)	(No.).0625V)	(No.).0625V)	(No.).0625V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
1	3	120	0	0	0	0	0	115.4	59.81

CALIBRATED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE RAW, AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

DATA SAMPLE	WIND SPEED1	DEW POINT1	TEMP.SPEC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
1	(Meter/Sec)	(Celsius)	(Kelvin 2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
1	2.447	2.94	NO DATA	347.1	1013.37	1.47E 01	13.564	285.441

DATA SAMPLE	WIND SPEED2	DEW POINT2	TEMP.SPEC.2	TIDE TABLE	BAR.PRES.2
1	(Meter/Sec)	(Celsius)	(Kelvin 2/3)	(Meter MSL)	(Millibar)
1	2.026	2.384	NO DATA	-6.43	1013.47

CALCULATED MICROMETEOROLOGICAL PARAMETERS:

DATA SAMPLE	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
1	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
1	12.465	13.545	13.715	9.275E-03	85.93	7.539E-03	12.215	14.216	NO DATA

DATA SAMPLE	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
1	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
1	12.455	13.618	13.789	9.248E-03	85.13	7.519E-03	12.181	14.314	NO DATA

CALCULATED B-VAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
RAMD/EXCHANGE/ION NUMBER	MOMENTUM FLUX	FRICTION VELOCITY	GENERAL FORM:DN/DZ=	GENERAL FORM: N'SLOPE=
Ri=-.051 AT 6m	(N/m2)	(Meters/sec)	[(N1-N2)]/[(Ln(Z1/Z2)x	[(LnZ1-PSI)-(LnZ2-PSI)]/
	-.57E-02	1.56E-01	(Z1xZ2)1/2]	[N1-N2]
[illegible]	HUMIDITY FLUX	SCALING SPEC.HUMD.	N:WIND SPEED (M/sec)	N:WIND SPEED (M/sec)
(Meters [illegible])	(Kg/sec M2)	(Kg/Kg)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
10.42	1.07E 05	6.952E-05	DWS/DZ= 2.45E-02	PSI:PSI1
				WS SLOPE= 2.67E 00
[illegible] 6m	LAT.HEAT FLUX			
0.65	(Watts/m2)			
	3.10E 01	SCALING POT. TEMP.	N:SPEC.HUMIDITY (Kg/Kg)	N:SPEC HUMIDITY (Kg/Kg)
[illegible] METERS		(Kelvin)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
0.042	SEN.HEAT FLUX	6.952E-03	DSH/DZ= -8.92E-06	PSI=PSI2
	(Watts/m2)			SH SLOPE= -7.77E 03
Z1 or Z2	1.30E 00			
0.662		ROUGHNESS LENGTH	N:POT.TEMP.(Kelvin)	N:POT.TEMP.(Kelvin)
		(Meters)	Z=HEIGHT (Meters)	Z=HEIGHT (M) Vert.Axis
Z1 or Z2	SKY AND SOLAR HEAT FLUX	3.40%E-04	DPT/DZ= 8.93E-04	PSI=PSI2
1.44	(Watts/m2)			PTK SLOPE= -7.77E 01
	-.47E 01			
[illegible]		DRAG COEF. AT 10 METERS		N=LnTEMP.STRUC.(KxM-2/3)
(Meters)	TOTAL HEAT BUDGET FLUX	(Dimensionless)		Z=HEIGHT (M Vert.Axis
0.10E 02	(Watts/m2)	9.49%E 03		PSI=NONE
	4.78E 01			CT2 SLOPE=NO DATA
P.E.T. At Z1 6.242E02	BOWEN RATIO			
P.E.T. at Z2 6.139E02	(No units)			
[illegible] At Z1 6.175E04	0.041			
[illegible] at Z2 1.000E 05				

[illegible]

STABILITY [illegible]	[illegible] CORRELATION FOR PRANDTL	PROFILE FOR SCHMIDT	PROFILE FOR SCHMIDT	BULK SEN.HEAT	BULK MOISTURE
[illegible]	[illegible]	NUMBER	NUMBER	TRANSF.COEF.	TRANSF.COEF.
[illegible]	[illegible]	1.28	0.74	6.92E-03	1.32E 03

[illegible] is ratio selected for measurement of Profile Slope and/or Partial Derivative
[illegible] stability condition of:

[illegible] Z2 [illegible]

MISCELLANEOUS

AIR DENSITY
(Kg/m3)
1.2300

AIR SPECIFIC HEAT
(Ltcal./Kg Kel.)
2.4163E 02

WATER LAT.HEAT VAP
(Ltcal./Kg)
5.9037E 05

RUN NUMBER: [illegible] MARINE SURFACE LAYER PRINT DATE: 11 JUN 1986
START TIME: 1:07:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 20 Min

* ESTIMATED MEAN METEOROLOGICAL PARAMETERS AT TEN METERS:

WIND SPEED (Meters/sec)	WIND DIR. (Degrees)	DEW POINT (Celsius)	TEMP.SENSOR (Kelvin-273)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.308	272.3	9.87	NO DATA	1013.37	13.564	-1.260	-1.162	0.044	0.142

ROUGHNESS (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (millibars)	S.VAP.PRES. (millibars)	REF.INDEX (Kelvin-273)
10.30	12.402	13.608	13.706	9.250E-03	85.20	7.513E-03	12.186	14.303	NO DATA

* MOST AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRADIENT RICHARDSON NUMBER (+=Stable,-=Unstable)
5.162 AT GRH

GEOPOTENTIAL MEAN HEIGHT (Meter) GMH=(21xZ/Z1)/2
12.99

Z/L AT GRH
-3.269

Z/L AT 10 METERS
2.516

MONIN OBUKHOV LENGTH (Meters)
[illegible] 06

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-4.924E-03

HUMIDITY FLUX (Kg/sec m2)
2.30E 06

LAT.HEAT FLUX (Watts/m2)
1.82E 01

SEN.HEAT FLUX (Watts/m2)
5.46E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.84E 01

BOWEN RATIO (no units)
0.300

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.206E-02

SCALING SPEC.HUMID. (Kg/Kg)
-9.629E 05

SCALING POT.TEMP. (Kelvin)
-7.059E-02

ROUGHNESS LENGTH (Meters)
1.340E-10

DRAG COEF.AT 10 METERS (Dimensionless)
7.769E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.851E 03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
7.355E-06

WITH POT.TEMPERATURE (Meter Kel./sec)
4.381E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.231

AIR SPECIFIC HEAT (Ideal /Kg Kel.)
2.416[illegible] 02

WATER LAT.HEAT VAP (Ideal/Kg)
5.9036[illegible] 05

VAP.PRES.AT WT LEVEL (Millibar)
15.551

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.175E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.57

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "[illegible]":

GRAD.RICH. AT GRH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCA.SPEC HUMIDITY	SCA.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
159%	159%	80%	150%	150%	10%	106%	300%	40%	110%	110%	66%	80%
173%	173%	46%	44%	101%	10%	96%	145%	23%	67%	174%	43%	40%

* [illegible]

RUN NUMBER: [illegible] MARINE SURFACE LAYER PRINT DATE: 11 JUN 1986
START TIME: 1:07:50 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 20 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRADIENT RICHARDSON NUMBER (+=Stable, -=Unstable)
[illegible] (0.01) AT GRH

GEOPOTENTIAL MEAN HEIGHT (Meter) GMH=(Z1xZ/Z1)/2
12.99

Z/L AT GRH
[illegible] (0.02)

Z/L AT 10 METERS
[illegible] (0.01)

MONIN OBUKHOV LENGTH (Meters)
8.[illegible]E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N/m2)
-1.32E-02 (6.0E-02)

HUMIDITY FLUX (Kg/sec m2)
8.69E-06 (3.8E-06)

LAT.HEAT FLUX (Watts/m2)
2.13E 01 (2.0E+01)

SEN.HEAT FLUX (Watts/m2)
5.78E 00 (3.0E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01 (2.5E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.09E 01 (3.0E+01)

BOWEN RATIO (no units)
3.16 (0.08)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.429E-02 (6.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-8.615E 05 (3.9E-05)

SCALING POT.TEMP. (Kelvin)
3.69[illegible]E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
1.[illegible]E 00 (2.0E-05)

DRAG COEF.AT 10 METERS (Meters)
3.69[illegible]E-03 (4.0E-04)

* DIFFERENCE QUOTIENT FOR PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA TH STANDARD DEVIATION ERROR FITTING TO ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE EXPRESSED AS PERCENT DIFFERENCE AND ARE "[illegible]":

GRAD.RICH. AT GRH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCA.SPEC HUMIDITY	SCA.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
101%	101%	20%	3%	0%	0%	14%	64%	40%	16%	86%	3%	1.4%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
AIRBORNE PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905100930
START TIME: 0:45:46 PST
END TIME: 1:13:50 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
DATA AVERAGING PERIOD: 6 MIN
NOMENCLATURE: U=UPPER LEVEL, L=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00 VOLT.REF.A	No.01 TEMP.STRUC.1	No.02 TEMP.STRUC.2	No.03 DEW POINT1	No.04 DEW POINT2	No.05 WIND SPEED1	No.06 WIND SPEED2	No.07 BAR.PRESS.2	No.08 SKY RAD.	No.09 WIND DIR
5.205	0.006	0.061	5.665	5.121	2.979	2.811	4.812	5.107	6.6

No.10 BULK WT TEMP	No.11 AC FREQUENCY	No.12 AC VOLTAGE	No.13 MANUAL FLAG	No.14 ZERO REF.	No.15 SPARE A	No.16 SPARE B	No.17 VOLT.REF.1
5.876	5.839	2.546	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTION:

No.1 AIR TEMP.1	No.2 AIR TEMP.2	UPWIND FEAR HEIGHT/LENGTH	UPWIND LAND PATH(Meters)	OPTICAL (Volts)	DEWPNT (Volts)	WIPFLAG (Volts)	WHEEL (Coeff.)	[illegible]
1411 121828	1421 172888	0.286	65	5.388	5.034	5.000	1.553	1.552

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT REF.D/V (Avg.).6[illegible]V	VOLT.REF.D/V ERR.(.6[illegible]V	ZERO REF.D/V (No.).6[illegible]V	AC VOLT.FLUX (No.)5V	AC FREQ.FLUX (No.)HZ	AC VOLTAGE (VAC)	AC FREQUENCY (HZ)
0	0	168	5	0	0	0	0	115.5	59.84

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kelvin**2/3)	WIND DIR. (Deg.true)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	PLOW AIR TEMP (Celsius)
12.184	5.95	9.94	NO DATA	335.6	1017.03	1.47E 01	13.502	385.45

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kelvin**2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.287	5.39	9.90	NO DATA	-0.61	1013.15

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	SAT.PRES.1 (millibar)	[illegible]
38.35	12.354	13.491	13.671	9.268E-03	86.13	7.535E-03	12.205	14.171	[illegible]

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	SAT.PRES.2 (millibar)	[illegible]
9.70	12.379	13.594	13.684	9.255E-03	85.23	7.517E-03	12.189	14.305	[illegible]

* CONTINUED BELOW

RUN NUMBER: 7905100930
START TIME: 0:45:46 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
DATA AVERAGING PERIOD: 6 MIN
NOMENCLATURE: U=UPPER LEVEL, L=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPE (+=INCR WITH HEIGHT)
GRADIENTRICHARDSON NUMBER (+=stable,-=unstable) 0.036 AT GMH	MOMENTUM FLUX (N/m2) -6.92E-02	FRICTION VELOCITY (Meters/sec) 2.32E-01	GENERAL FORM dX/dZ= (ONE HZ)*[illegible] dX/(Z1-Z2)= (Z1-Z2)*(Z1*Z2)	GENERAL FORM X=X(Z1) X(Z2)=X(Z1)+[illegible] (M=N/A)
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1*Z2)**1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.91E-05	SCALING SPEC.HUMID. (Kg/Kg) 6.600E-05	X WIND SPEED (M/SEC) Z=HEIGHT (Meters) dW/dZ= 4.31E 00	X=WIND SPEED (M/SEC) Z=HEIGHT (M) VERT AXIS PSI=PSI W/ SLOPE= 1.25E 00
Z/L AT GMH -0.045	LAT.HEAT FLUX (Watts/m2) 4.91E 01	SCALING POT. TEMP. (Kelvin) -1.306E-02	X=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) dQ/dZ= 8.92E 00	X=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) VERT AXIS PSI=PSI W/ SLOPE= 2.51E 00
Z/L AT 10 METERS -0.035	SEN.HEAT FLUX (Watts/m2) 3.86E 00	ROUGHNESS LENGTH (Meters) 3.259E-05	X POT.TEMP.(Kelvin) Z HEIGHT (Meters) dPT/dZ= -1.71E 03	X=POT TEMP (Kelvin) Z HEIGHT (M) VERT AXIS PSI=PSI W/ SLOPE= 4.14E 02
Z/L AT Z1 -0.054	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01	DRAG COEF. AT 10 METERS (Dimensionless) 2.375E 03		X=POTTEMP (Kelvin) Z HEIGHT (M) VERT AXIS PSI=NON ETA SLOPE= 4.14E 02
Z/L AT Z2 -0.032	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.76E 01			
MONIN OBUKHOV LENGTH (Meters) 2.15E 02	BOWEN RATIO (no units) 0.079			
PSI1 AT Z1= 0.102574				
PSI1 AT Z2= 0.105152				
PSI2 AT Z1= 0.119648				
PSI2 AT Z2= 0.067126				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (no units)	GRAVITATION ACCELERATION (M/SEC**2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANS.COEF.	BULK MOISTURE TRANSF.COEF
0.4	9.79E 00	0.74	.74	0.92E-03	1.30E-03

MISCELLANEOUS

AIR DENSITY (Kg/m**3)
1.1305

AIR SPECIFIC HEAT (Cp=1.0/Kg Kel.)
2.41E-02

WATER LAT HEAT VAP (Cp=1/Kg)
5.9078E 01

* GENERAL NOTE 1:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Computation executed by insertion of:

SHI SH2 +/- 0.0E 3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905100630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 1979
START TIME: 0:45:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (SECONDS): 0.50
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 10 MIN

* MEAN METEOROLOGICAL PARAMETERS AT 10 METERS:

WIND SPEED (meters/sec)	DEW POINT (Celsius)	TEMP SENSOR (Resistance/Volt)	BAR PRES (millibar)	REF WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Celsius)	VIR WT TEMP (Celsius)	V POT WT TEMP (Celsius)
7.43	9.98	NO DATA	1013.03	13.502	1.345	1.14	0.000	0.17

REF TEMP (Celsius)	VIR TEMP (Celsius)	V POT TEMP (Celsius)	ABS HUMID (Kg/m3)	REL HUMID (Percent)	SPEC HUMID (Kg/Kg)	VAP PRES (millibar)	S VAP PRES (millibar)	REL HUMID (Percent)
11.14	13.581	13.679	9.255E-03	80.43	7.502E-03	10.292	14.221	72.38

* 10-MIN AVERAGES BASED ON ABOVE ESTIMATED VALUES AT 10 METERS (FROM 11:46 1979):

STABILITY	FLUX PARAMETERS (+UP, -DOWN)	INFERRED SCALING PARAMETERS	INTERPOLATED MEAN VERTICAL WIND FIT COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+Stable, Unstable) -0.131 (0.02) AT 6M	MOMENTUM FLUX (N/m2) -5.57E-02	FRICTION VELOCITY (Meter/Sec) 1.207E-01	WIND DIR. VELOCITY (Meter2/Sec2) 2.914E-02	AIR DENSITY (Kg/m3) 1.230
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/Sec m2) 1.72E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.349E-05	WITH HOR. HUMIDITY (Meter Kg/Sec m2) 1.767E-05	AIR SPECIFIC HEAT (Ideal Kg Gas) 2.41E+02
Z/L AT GMH 0.148 (0.02)	LAT.HEAT FLUX (Watts/m2) 4.36E 01	SCALING POT.TEMP. (Kelvin) -4.531E-02	WITH POT.TEMPERATURE (Meter Kel/Sec) 2.733E-03	WATER LAT.HEAT VAP (Ideal Kg Gas) 5.96E+01
Z/L AT 10 METERS -0.114 (0.02)	SEN.HEAT FLUX (Watts/m2) 9.69 01	ROUGHNESS LENGTH (Meter) 7.131E 00		VAP PRES AT WT LEVEL (millibar) 10.503
MONIN OBUKHOV LENGTH (Meters) -8.764E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01	DRAG COEF AT 10 METERS (Dimensionless) 9.834E-04		ABS HUMID AT WT LEVEL (Kg/m3) 1.193E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.79E 01			PARTICLES AT WT LEVEL (Particles) 1314.22
	BOWEN RATIO (no units) 0.221			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONDITIONS MEASUREMENT ACCURACY. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROPRIATE AND ARE %

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCA SPEC HUMIDITY	SC. POT TEMP	ROUGH LENGTH	DRAG COEF
139%	139%	104%	160%	112%	10%	117%	224%	52%	169%	31%	5%	14%
174%	174%	46%	44%	132%	10%	9%	146%	2%	65%	1.5%	4%	3%

* CONTINUED BELOW

RUN NUMBER: 7905100630 MARINE SURFACE LAYER PRINT DATE: 11 JUN 79
START TIME: 0:45:40 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (SECONDS): 0.50
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 10 MIN

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE ERROR ANALYSIS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+UP, -DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+Stable, Unstable) -0.131 (0.02) AT 6M	MOMENTUM FLUX (N/m2) -4.61E-02 (6.0E-02)	FRICTION VELOCITY (Meter/Sec) 1.97E-01 (2.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/Sec m2) 1.81E-05 (6.0E-06)	SCALING SPEC.HUMID. (Kg/Kg) -7.55E-05 (2.5E-05)
Z/L AT GMH 0.148 (0.02)	LAT.HEAT FLUX (Watts/m2) 4.48E 01 (2.0E+01)	SCALING POT.TEMP. (Kelvin) -3.53E-02 (2.0E-02)
Z/L AT 10 METERS -0.114 (0.02)	SEN.HEAT FLUX (Watts/m2) 9.87E 00 (3.0E+00)	ROUGHNESS LENGTH (Meters) 1.03E-01 (1.1E-02)
MONIN OBUKHOV LENGTH (Meters) -8.764E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01 (2.0E+01)	DRAG COEF AT 10 M (No Units) 1.34E-03 (4.1E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2) 6.79E 01 (3.1E+01)	
	BOWEN RATIO (no units) 0.171 (0.08)	

* DIFFERENCE BETWEEN BULK PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AT LOCATION WHERE THE SENSORS ARE LOCATED. THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE ENTERED FOR EACH VALUE IN CONFORMANCE WITH THE ERROR ANALYSIS LISTED IN PERCENT DIFFERENCE AND ARE "ZERO"

GRAD.RICH NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCA SPEC HUMIDITY	SC. POT TEMP	ROUGH LENGTH	DRAG COEF
82%	79%	38%	7%	42%	0%	0%	43%	32%	11%	.	.	.

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE METEOROLOGY RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
DATA AVERAGING PERIOD: 20 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
[illegible]	[illegible]	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
0.00	0.01	9.021	9.122	1.865	1.793	4.821	0.105	5.648

No.13	No.14	No.15	No.16	No.17
[illegible]	[illegible]	MANUAL FLAG	SPARE A	SPARE B
0.0	0.00	0.001	0.001	0.295

2nd Data Address 1: ESCARPMENT Data, Field CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

	UPWIND MEAN HEIGHT/LENGTH	DOWNWIND TREND PATH(meters)	EPROM (Volts)	BATTERY (Volts)	WINDFOIL (Volts)	WSPEC (Coeff.)	WSPEC (Coeff.)
[illegible]	0.274	59	5.038	8.054	0.013	0.991	0.947

Parameters transmitted into English Units:

STEP FIELD	DATA BITS	Voltage for ZERO REF.	ZERO REF DEV	FC VOLT FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
Mode Number	(No. Bits)	Range (Volts)	Range (Volts)	(No.)-DEV	(No./250)	(No./2INCH)	(VAC)	(HZ)
1	10	0	0	9	0	3	115.5	59.60

Atmospheric Model Parameters (for Bonin Is. Area) and ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

U.COMP. PREV.	V.COMPONENT	Z/L STABIL. 1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP MIN	AIR TEMP
(Meters/sec)	(Meters/sec)	(Meters/m 2/3)	(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Kelvin)
0.00	2.92	NO DATA	337.0	1012.17	1.42E 01	13.530	286.680

WIND SPEED2	DEW POINT2	Z/L STABIL.2	WIND DIR.	BAR.PRES.2
(Meters/sec)	(Kelvin/273)	(Meters/m 2/3)	(Deg.True)	(Millibar)
2.93	2.94	NO DATA	0.00	1013.26

Level 1 Micrometeorological Parameters:

U.COMP. PREV.	U.COMPONENT	V.COMPONENT	POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters/sec)	(Meters/sec)	(Meters/sec)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel xM^2/3)
1.53	1.53	1.53	15.459	9.391E 03	86.52	9.562E 03	12.234	14.140	NO DATA

Level 2 Micrometeorological Parameters:

U.COMP. PREV.	U.COMPONENT	V.COMPONENT	POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(Meters/sec)	(Meters/sec)	(Celsius)	(Celsius)	(Kg/M3)	(Percent)	(Kg/Kg	(Millibar)	(Millibar)	(Kel xM^2/3)
1.53	1.53	15.554	15.644	9.223E 03	85.92	9.536E-03	12.220	14.240	NO DATA

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/MIN
DATA AVERAGING PERIOD: 20 MIN
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

[illegible] 1 14, 1 PST
[illegible] 11 JUN 1980 (DAY 163)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

Flux Calculations based on above observed and calculated values (Businger,1973):

Quantity	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
[illegible]	MOMENTUM FLUX (N/M2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM: DN/DZ= F(N1-N2)/ln(Z1/Z2)* (Z1*Z2)1.2)	GENERAL FORM: N SLOPE= F(-PSI)-(-PSI)/ln(Z2-Z1) (N1-N2)
[illegible] AT 6MIN	-1.19E-02	9.672E-02		
[illegible]	HUMIDITY FLUX (Kg/Sec M2)	SCALING, SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.31E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 4.14E 00
[illegible]	-9.80E 00	-7.881E-05		
[illegible] AT 6MIN	LAT.HEAT FLUX (Watt/m2)	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-04	N=SPEC HUMIDITY (Kg/kg) Z=HEIGHT (M) Vert Axis PSI=PSI2 SH SLOPE= -6.82E 04
[illegible]	-2.63E 01	8.153E-03		
[illegible] AT 10 METERS	SEN.HEAT FLUX (Watt/m2)	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -9.23E-04	N POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI3 PTK SLOPE= -8.65E 01
0.00	5.02E 01	9.172E-04		
[illegible]	SFC AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF. AT 10 METERS (Dimensionless)		N=INTERM.STRUC (KxM^2/3) Z=HEIGHT (M) Vert Axis PSI=NONE PTK SLOPE= NO DATA
[illegible]	1.43E 01	1.316E 03		
[illegible]	TOTAL HEAT BUDGET FLUX (Watts/m2)			
Note: [illegible]	5.85E 01			
[illegible]	BOWEN RATIO (no units)			
[illegible]	1.842			

Micrometeorological Units:

MOMENTUM FLUX	EVAPORATION	PROFILE	PROFILE	BULK	BULK
[illegible]	[illegible]	FLUX/GRADIENT	Thermal/Humidity	SEN.HEAT	MOISTURE
[illegible]	[illegible]	BOWEN RATIO	Number	TRANSF.COEF.	TRANSF.COEF
1.4	9.2E-02	0.74	0.74	6.9XE-03	1.4X 03

Miscellaneous:

AIR DENSITY
[illegible] M
1.230

AIR SPECIFIC HEAT
[illegible] Kg Kel
1.41E 03

WATER LAT HEAT [illegible]
[illegible] Kg
9.72E 05

Miscellaneous:

No resolution limitation exceeded for measurement of Profile Slope and/or Partial Derivative
Calculation preceded by inspection of:

[illegible] 0.3 Kg/Kg

RUN NUMBER: [illegible] MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 1:14: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CAL DATA AVERAGING PERIOD: 20 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC (Kel.xM-2/3)	BAR.PRES. (millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.245	3.44	9.94	NO DATA	1013.17	13.508	-1.273	- .175	0.035	0.133

DATUM (Meters)	POT TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.333	13.543	13.641	9.780E-03	65.86	7.537E-03	12.222	14.235	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978).

INFERRED STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
[illegible] NUMBER (-=unstable, +=stable) -.933 AT GMH	MOMENTUM FLUX (Nt/m2) 1.25E-02	FRICTION VELOCITY (Meters/sec) 1.068E-01	WITH LONG. VELOCITY (Meter2/sec2) -1.016E-02	AIR DENSITY (Kg/m3) 1.2311
[illegible] (Meters) DM=(Z1*Z2)**1/2 5.599	HUMIDITY FLUX (Kg/sec m2) 1.19E-05	SCALING SPEC.HUMID. (Kg/Kg) -8.898E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 1.104E-05	AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4163E-02
Z/L AT GMH -0.592	LAT.HEAT FLUX (Watts/m2) 2.73E 01	SCALING POT.TEMP. (Kelvin) -5.677E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 5.721E-03	WATER LAT.HEAT VAP. (ITcal./Kg) 5.9639E 05
Z/L AT 10 METERS -0.767	SEN.HEAT FLUX (Watts/m2) 7.13E 00	ROUGHNESS LENGTH (Meters) 1.413E-07		VAP.PRES.AT WT LEVEL (Millibar) 15.491
MONIN-OBUKHOV LENGTH (Meters) -1.363E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01	DRAG COEF.AT 10 METERS (Dimensionless) 8.572E-04		ABS.HUMID.AT WT LEVEL (Kg/m3) 1.171E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.91E 01			BAR.PRES.AT WT LEVEL (Millibar) 1014.37
	BOWEN RATIO (no units) 0.261			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES FOR ROW ARE PROBABLE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
263%	263%	221%	247%	234%	10%	142%	471%	110%	127%	124%	130%	221%
173%	174%	46%	44%	101%	10%	29%	145%	23%	67%	124%	43%	40%

* CONTINUED BELOW

RUN NUMBER: [illegible] MARINE SURFACE LAYER PRINT DATE: 11 JUN 1980
START TIME: 1:14: 0 PST NRL MICROMETEOROLOGY DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) SAN NICOLAS ISLAND, CA DATA AVERAGING PERIOD: 20 Min

* [illegible] PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS
[illegible] NUMBER (-=unstable, +=stable) -.933 TO 0.00 AT GMH	MOMENTUM FLUX (Nt/m2) 1.25E-02 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 1.001E-01 [6.0E-02]
[illegible] MEAN HEIGHT Meters) DM=(Z1*Z2)**1/2 5.99	HUMIDITY FLUX (Kg/sec m2) 1.08E-05 [8.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) 8.544E-05 [3.0E-05]
Z/L AT GMH -0.592 [0.0]	LAT.HEAT FLUX (Watts/m2) 2.66E 01 [2.0E+01]	SCALING POT.TEMP. (Kelvin) -3.246E-02 [2.0E-02]
Z/L AT 10 METERS -0.767 [0.0]	SEN.HEAT FLUX (Watts/m2) 5.28E 00 [3.0E+01]	ROUGHNESS LENGTH (Meters) 1.292E-07 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters) -1.82E 01	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01 [5.0E+01]	DRAG COEF.AT 10 METERS (Meters) 9.227E-04 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.74E 01 [3.0E+01]	
	BOWEN RATIO (no units) 0.419 [0.08]	

* [illegible] BOWEN RATIO AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE [illegible] WEIGHTED COMPUTED VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
21%	59%	1%	9%	63%	0%	13%	59%	2%	6%	75%	0%	30%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE MICROMETEOROLOGY SECTION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 790510013B
START TIME: 1:42:10 PST
END TIME: 2:16: 0 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

* ANALOG CHANNEL RAW Data (AVG Volts):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUCT.1	TEMP.STRUCT.2	DEW POINT.1	DEW POINT.2	WIND SPEED.1	WIND SPEED.2	TOW.PRESS	SOLAR	WIND DIR
6.205	0.666	0.661	5.494	5.642	2.159	2.662	4.858	1.225	2.74

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	RAW BAT.VOLTS	ZERO REF	SPARE A	SPARE B	VOLT REF B
3.814	5.594	2.545	3.191	0.131	0.111	0.111	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGES): ESCARPMENT DATA, TOP E ENCLOSURE AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	DOWN NEAR HEIGHT	DOWN LEAD LENGTH	OPTICAL	DC FLUX	WIRELINE	WSCALE	WSLOPE
AIR TEMP.1	AIR TEMP.2	(Meters)	(Meters)	(Volts)	(Volts)	(Volts)	(Counts)	(Counts)
1411 121555	1421 124202	0.211	4.3	1.040	1.761	0.004	0.592	2.760

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT REF.D/V	VOLT REF.D/P	ZERO REF.D/V	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	(Nom.=5.000V)	(Nom.=5.000V)	(Nom.=2.500V)	(No.=2.500)	(No.=2.500)	(VAC)	(Hz)
0	0	205	5	5	3	3	3	115.4	59.59

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING TOP ARRAY DATA AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED	DEW POINT1	TEMP.STRUCT.1	WIND DIR.	PRESSURE.1	SKY RAD.	TOWER WIRE ROPE AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin/m^2/3)	(Deg.True)	(Millibar)	(Watts/m2)	(Celsius) (Kelvin)
12.155	4.14	11.11	NO DATA	305.9	1012.16	1.47E 01	13.961 286.261

AIR TEMP.2	WIND SPEED	DEW POINT2	TEMP.STRUCT.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kelvin/m^2/3)	(Meter MSL)	(Millibar)
12.258	3.91	11.60	NO DATA	-0.27	1013.25

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX.1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kelvin^2/3)
18.35	12.335	13.498	13.657	9.376E-03	87.27	7.622E-03	12.346	14.146	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX.2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kelvin^2/3)
9.20	12.348	13.507	13.657	9.305E-03	96.42	7.559E-03	12.302	14.258	NO DATA

* CONTINUED BELOW

RUN NUMBER: 790510013B
START TIME: 1:42:10 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 min
NOMENCLATURE: 1-UPPER LEVEL, 2-LOWER LEVEL

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (meters/sec)	GENERAL FORM: DX/DZ=	GENERAL FORM: N'SLOPE=
-0.074 AT GMH	-3.44E 02	1.659E-01	EXP[N*KAPPA*(Z1/Z2)^x (Z1^Z2)^1/2]	[LnZ1 PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)^1/2	HUMIDITY FLUX (kg/sec m2)	SCALING SPEC.HUMD (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters)	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis
12.99	1.47E-05	7.17IE-04	DW/DZ= 2.69E-02	PSI=PSI1
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters)	WS SLOPE= 2.40E 01
-0.088	3.64E 01	1.174E-02	DQ/DZ= -8.92E 06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)			PSI=PSIQ
-0.067	2.44E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP (Kelvin) Z=HEIGHT (Meters)	SH SLOPE= -7.54E 04
Z/L AT Z1	SKY AND SOLAR HEAT FLUX (Watts/m2)	6.311E 04	DT/DZ= 1.45E 03	N=POT.TEMP (Kelvin) Z=HEIGHT (M) Vert.Axis
-0.174	1.47E 01			PSI=PSIT
Z/L AT Z2		DRAG COEF AT 10 METERS (Dimensionless)		PTK SLOPE= 4.60E 01
-0.062	TOTAL HEAT BUDGET FLUX (Watts/m2)	1.61E 03		N=ENTH.STRUC.(K*M^2/3) Z=HEIGHT (M) Vert.Axis
MONIN OBUKHOV LENGTH (Meters)	5.35E 01			PSI=NON:
-1.485E 02	BOWEN RATIO (no units)			C1,2 SLOPE=NO DATA
PSI1 AT Z1= 0.316229	0.067			
PSI1 AT Z2= 0.185201				
PSI2 AT Z1= 0.204316				
PSI2 AT Z2= 0.116922				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (NO units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF	BULK MOISTURE TRANSF.COEF
0.4	9.7959	0.74	0.74	0.92E-03	1.3E-03

MISCELLANEOUS

AIR DENSITY (Kg/m^3)
1.2307

AIR SPECIFIC HEAT (Ical./Kg Kel.)
2.41E 02

WATER LAT HEAT VAP. (Ical./Kg)
5.93E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SHI SH2= +/- .10E-3 Kg/Kg

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905100130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:42:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.246	3.94	10.07	NO DATA	1013.16	13.461	-1.215	-1.117	0.104	0.202

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.344	13.565	13.663	9.358E-03	86.52	7.601E-03	12.325	14.245	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-0.617 AT GMH	-1.70E-02	1.175E-01	-1.381E-02	1.2310
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter Kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	1.21E-05	-8.330E-05	1.205E-05	2.4164E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-0.665	2.98E 01	-5.148E-02	6.049E-03	5.9039E 05
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
-0.512	7.53E 00	5.878E-07		15.443
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
-1.954E 01	1.47E 01	8.900E-04		1.168E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	5.20E 01			1014.36
	BOWEN RATIO (no units)			
	0.253			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
158%	158%	119%	171%	132%	10%	116%	383%	60%	111%	72%	80%	119%
175%	175%	46%	45%	103%	10%	30%	148%	23%	68%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905100130 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 1:42:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.331 [0.02] AT GMH	-2.18E-02 [6.0E-02]	1.313E-01 [6.0E-02]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	1.36E-05 [6.0E-06]	-7.890E-05 [3.9E-05]
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
-0.361 [0.02]	3.12E 01 [2.0E+01]	-2.626E-02 [2.0E-02]
Z/L AT 10 METERS	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
-0.278 [0.02]	5.30E 00 [3.0E+00]	2.594E-06 [6.0E-05]
MONIN-OBUKHOV LENGTH (Meters)	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
-3.595E 01	1.47E 01 [2.0E+01]	1.322E 03 [4.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	5.23E 01 [3.0E+01]	
	BOWEN RATIO (no units)	
	0.192 [0.08]	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF
82%	80%	16%	12%	48%	0%	2%	51%	21%	8%	78%	5%	73%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * MICROMETEOROLOGICAL DATA * * *

RUN NUMBER: 79051[illegible]
START TIME: [illegible]
END TIME: 2:39: 0 PST
START DATE: 19 May 1979 (DAY 139)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNELS RAW DATA (AVERAGE VOLTS):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
SPECIAL REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD	WIND DIR.
6.205	6.166	6.011	5.097	5.153	2.063	1.974	4.620	-0.166	6.456

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.276	3.556	2.786	0.001	0.001	0.301	0.301	6.295

* DIGITAL CHANNELS RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS

No.1	No.2	UPWIND NEAR	UPWIND LAND	BPRICAL	BPR.CAL	WIDCAL	WSLOC	WGSEC
A/R FLAG 1	A/R FLAG 2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
[illegible]	[illegible]	0.186	65	-0.306	-0.053	0.130	0.992	0.991

* SYS. HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA BASE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).005V)	B(No.).005V)	(No.).002V)	(No.)5V)	(No.)1Hz)	(VAC)	(Hz)
0	4	180	0	0	0	0	0	115.5	59.60

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.145	5.98	10.15	NO DATA	4.5	1012.16	1.47E 01	13.444	285.358

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/Sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(Millibar)
12.256	5.76	10.09	NO DATA	-0.79	1013.26

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	12.345	13.489	13.649	9.390E-03	87.46	7.633E-03	12.364	14.137	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF.INDEX 2
(meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.29	12.340	13.491	13.661	9.374E-03	86.65	7.614E-03	12.348	14.250	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79051[illegible]
START TIME: 2:16:16 PST
START DATE: 19 May 1979 (DAY 139)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (N1/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)]/[Ln(Z1/Z2)* (Z1*Z2)1/2]	GENERAL FORM:'N'SLOPE= [(LnZ)-PSI)-(LnZ2-PSI)]/ [N1-N2]
-0.099 AT GMH	-3.17E-02	1.604E-01		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 2.40E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1
12.99	1.46E-05	7.379E-05		WS SLOPE= 2.49E 00
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
0.115	3.60E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2
Z/L AT 10 METERS		1.376E-02		
-0.089	SENS.HEAT FLUX (Watts/m2)			SH SLOPE= -7.33E 03
Z/L AT Z1	2.75E 00	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.67E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2
-0.164	SKY AND SOLAR HEAT FLUX (Watts/m2)	5.064E-06		PTK SLOPE= -3.93E 01
Z/L AT Z2	1.47E 01			
0.082		DRAG COEF. AT 10 METERS (Dimensionless)		N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN-OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	2.677E 03		CT2 SLOPE=NO DATA
-1.122E 02	5.14E 01			
PSI1 AT Z1= 0.384503	BOWEN RATIO (no units)			
PSI1 AT Z2= 0.339976	0.076			
PSI2 AT Z1= 0.258799				
PSI2 AT Z2= 0.147146				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SENS.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.799	0.74	0.74	0.920-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2308

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.4165E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9042E 05

* GENERAL NOTE:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .0E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905100200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:10:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.237	5.79	10.10	NO DATA	1013.17	13.444	-1.206	-1.108	6.115	0.213

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUM'D. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.335	13.559	13.657	7.327E-03	86.75	7.617E-03	12.350	14.237	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+ Stable,--Unstable)
0.684 AT GMH

GEOMETRIC MEAN HEIGHT (meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.736

Z/L AT 10 METERS
-0.566

MONIN-OBUKHOV LENGTH (Meters)
-1.767E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.56E-02

HUMIDITY FLUX (Kg/sec m2)
1.14E-05

LAT.HEAT FLUX (Watts/m2)
2.83E 01

SEN.HEAT FLUX (Watts/m2)
7.31E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.03E 01

BOWEN RATIO (no units)
0.258

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.125E-01

SCALING SPEC.HUMID. (Kg/Kg)
-8.268E 05

SCALING POT.TEMP. (Kelvin)
-5.216E-02

ROUGHNESS LENGTH (Meters)
4.028E-07

DRAG COEF.AT 10 METERS (Dimensionless)
8.802E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-1.265E-02

WITH ABS. HUMIDITY (Meter Kg/sec m3)
1.144E-05

WITH POT.TEMPERATURE (Meter Kel./sec)
5.866E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2311

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9039E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.426

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.166E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.37

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
154%	154%	125%	175%	128%	10%	118%	303%	63%	112%	66%	83%	125%
175%	175%	46%	45%	103%	10%	30%	149%	23%	68%	126%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905100200 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:10:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+ Stable, - Unstable)
-0.373 [0.021] AT GMH

GEOMETRIC MEAN HEIGHT (meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.106 [0.02]

Z/L AT 10 METERS
0.312 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-3.262E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.99E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
1.21E-05 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.99E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
5.28E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
5.09E 01 [3.0E+01]

BOWEN RATIO (no units)
0.198 [0.38]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
1.254E-01 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.924E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-2.691E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
2.000E-06 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.31nE-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
77%	77%	15%	15%	43%	0%	4%	48%	21%	6%	75%	4%	77%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905100230
START TIME: 2:38:10 PST
END TIME: 3: 6:10 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/min
DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	0.001	5.144	5.191	1.712	1.646	4.827	-0.106	0.699

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF B
3.808	3.918	2.546	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS.

No.1	No.2	UPWIND FETCH/LENGTH	UPWIND LAND PATH(Meters)	DP1FCAL (Volts)	DP2FCAL (Volts)	WIBFCAL (Volts)	WSICC (Coeff.)	WSPEC (Coeff.)
AIR TEMP.1	AIR TEMP.2							
1411 121779	1421 122793	0.168	60	-0.008	-0.050	0.000	0.993	0.556

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA BASE (No.scans)	VOLT.REF.DEV A(No.)*.0050V)	VOLT.REF.DEV B(No.)*.0050V)	ZERO REF.DEV (No.)*.0020V)	AC VOLT.FLUX (No.)*5V)	AC FREQ.FLUX (No.)*1Hz)	AC VOLTAGE (VAC)	AC FREQUENCY (Hz)
0	0	168	0	0	0	0	0	115.5	59.92

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS.

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.xM-2/3)	WIND DIR. (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watt/m2)	BULK WT TEMP (Celsius)	MEAN AIR TEMP (Kelvin)
12.178	3.33	10.40	NO DATA	10.9	1012.27	1.47E 01	13.455	285.369

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.xM-2/3)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.279	3.20	10.32	NO DATA	-0.76	1013.37

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REF.INDEX 1 (Kel.xM-2/3)
18.35	12.358	13.527	13.707	9.564E-03	88.89	7.775E-03	12.594	14.169	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REF.INDEX 2 (Kel.xM-2/3)
9.20	12.370	13.621	13.712	9.520E-03	87.83	7.733E-03	12.541	14.279	NO DATA

* CONTINUED BELOW

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+-Stable,--Unstable) -0.215 AT GMH	MOMENTUM FLUX (Nt/m2) -1.49E-02	FRICTION VELOCITY (Meters/sec) 1.099E-01	GENERAL FORM:DN/DZ= I(N1-N2))/(Ln(Z1/Z2)* (Z1*Z2)1/2	GENERAL FORM:N SLOPE= I(LnZ1-PSI)-(LnZ2-PSI)I/ (N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.08E-05	SCALING SPEC.HUMD. (Kg/Kg) -8.019E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.44E-02	N=WIND SPEED (M/sec.) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 3.64E 00
Z/L AT GMH -0.241	LAT.HEAT FLUX (Watts/m2) 2.68E 01	SCALING POT. TEMP. (Kelvin) -1.179E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -6.74E 03
Z/L AT 10 METERS -0.185	SEN.HEAT FLUX (Watts/m2) 1.61E 00	ROUGHNESS LENGTH (Meters) 3.271E-07	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -1.31E-03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -4.59E 01
Z/L AT Z1 -0.540	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.47E 01			N=LnTEMP.STRUC.(KxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.170		DRAG COEFF. AT 10 METERS (Dimensionless) 2.011E-03		
MONIN-OBUKHOV LENGTH (Meters) -5.398E 01	TOTAL HEAT BUDGET FLUX (Watts/m2) 4.32E 01			
PSI1 AT Z1= 0.616188 PSI1 AT Z2= 0.396900 PSI2 AT Z1= 0.410375 PSI2 AT Z2= 0.259203	BOWEN RATIO (no units) 0.060			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2307

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4167E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9049E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905100230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR.WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.267	3.22	10.33	NO DATA	1013.27	13.455	-1.188	-1.090	0.155	0.253

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (ref.xM-2/3)
10.00	12.365	13.610	13.708	9.326E-03	87.95	7.738E-03	12.548	14.266	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
1.075 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-1.146

Z/L AT 10 METERS
-0.882

MONIN-OBUKHOV LENGTH (Meters)
-1.134E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.07E-02

HUMIDITY FLUX (Kg/sec m2)
9.11E-06

LAT.HEAT FLUX (Watts/m2)
2.25E 01

SEN.HEAT FLUX (Watts/m2)
6.51E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.38E 01

BOWEN RATIO (no units)
0.289

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.334E-02

SCALING SPEC.HUMID. (Kg/Kg)
-7.931E-05

SCALING POT.TEMP. (Kelvin)
-5.598E-02

ROUGHNESS LENGTH (Meters)
6.185E-08

DRAG COEF.AT 10 METERS (Dimensionless)
8.423E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.712E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
9.112E-06

WITH POT.TEMPERATURE (Meter Kel./sec)
5.225E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2310

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.416/E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9038E 05

VAP.PRES.AT WT LEVEL (Millibar)
5.439

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.167E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.47

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES
TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-"

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
209%	209%	187%	217%	185%	10%	135%	402%	94%	123%	91%	114%	187%
176%	176%	46%	47%	104%	10%	29%	151%	23%	70%	127%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905100230 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 2:38:10 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
0.68, [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
0.733 [0.02]

Z/L AT 10 METERS
0.564 [0.02]

MONIN OBUKHOV LENGTH (Meters)
1.773E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.15E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
9.42E-06 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.33E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
4.75E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.37E 01 [3.0E+01]

BOWEN RATIO (no units)
0.227 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.660E-02 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-7.963E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.026E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
1.346E-07 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.048E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH LENGTH	DRAG COEF.
63%	62%	4%	11%	54%	0%	1%	55%	10%	1%	74%	0%	66%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL POSTGRADUATE LABORATORY
METEOROLOGY PROJECT - R.W. [illegible]
MARINE MICROMETEOROLOGY SECTION - [illegible]
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79051J0300 — PRINT DATE: 11 JUN 1980
START TIME: 3: 6:20 PST — DATA SAMPLING RATE (ALL CHANNELS): 6/Min
END TIME: 3:26:20 PST — DATA AVERAGING PERIOD: 20 Min
START DATE: 10 May 1979 (DAY 130) — NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* UNCORRECTED, RAW DATA (AS SENSED):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
Data Rec'd	ID 2 (STRUC 1	TEMP (STRUC 2	DEWPOINT1	DEWPOINT2	WIND SPEED1	WIND SPEED2	BAR PRES.2	SKY RAD	WIND DIR
5.245	0.106	0.111	5.147	5.231	1.162	1.156	4.828	-0.106	6.224

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
GUAGE 01 (cm of H2O above MSL)	ID 1 (HIGH/LOW)	RC VOLTAGE	MANUAL FLAG	Test Rec	SPARE A	SPARE B	VOLT REF.B
0.000	5.272	7.244	5.000	5.000	0.000	0.000	7.205

* SPECIAL ENGRG. RAW DATA (AS SENSED): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2		UpWind Near	UpWind Tower	DPTEMP	DPTEMP	WIFCAL	WSIEL	WSREC
HUM.TEMP.1	HUM.TEMP.2		Height/Length	Path(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
2.221 1.52741	1.4621 1.45717		0.201	62	3.038	3.450	3.338	0.992	0.940

* CALIBRATION SETTING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

Ref.Temp. (Deg C)	Temp.Probe	Data Rec'd	Volt.Ref. Dev (Volt Ref. 5.0 V)	Zero Ref Dev	No. of Volt.Pulses	No. of Freq.Pulses	AC Voltage	AC Frequency
(Deg.Celsius)	No Sensor	(Yes, 1; No, 0)	(Volts)	(No.).6(2V)	(No. 25V)	(No.)1Hz)	(VAC)	(Hz)
0	0	1	0	0	0	0	115.4	59.92

* CAL PSEUDO-DATA RECORD (DATA ITEMS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

Air Temp.1	Wind Speed1	Dew Point1	Temp.Struc.1	Wind Dir.	Bar.Press.1	Sky Rad.	Bulk Wt Temp	Mean Air Temp
(Celsius)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Deg.True)	(millibar)	(Watt/m2)	(Celsius)	(Kelvin)
11.774	1.55	11.42	NO DATA	336.8	1017.28	1.47E 01	13.476	286.483

Air Temp.2	Wind Speed2	Dew Point2	Temp.Struc.2	Tide Table	Bar.Press.2
(Celsius)	(Meters/sec)	(Celsius)	(Kel.xM-2/3)	(Meter MSL)	(millibar)
12.332	2.21	11.44	NO DATA	-0.74	1013.39

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

Ref.Hgt. 1	Pot.Temp.1	Vir.Temp.1	V.Pot.Temp.1	Abs.Humid.1	Rel.Humid.1	Spec.Humid.1	Vap.Press.1	S.Vap.Press.1	Ref.Index 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(millibar)	(Kel.xM-2/3)
5.43	12.454	13.662	13.805	9.570E-03	88.46	7.7?2E-03	12.613	14.259	NO DATA

Ref.Hgt. 2	Pot.Temp.2	Vir.Temp.2	V.Pot.Temp.2	Abs.Humid.2	Rel.Humid.2	Spec.Humid.2	Vap.Press.2	S.Vap.Press.2	Ref.Index 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(millibar)	(millibar)	(Kel.xM-2/3)
5.43	12.462	13.775	13.615	9.597E-03	87.98	7.794E-03	12.639	14.366	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79051J0300 — MARINE SURFACE LAYER — PRINT DATE: 11 JUN 1980
START TIME: 3: 6:20 PST — NRL MICROMETEOROLOGY — DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) — SAN NICOLAS ISLAND, CAL — DATA AVERAGING PERIOD: 20 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY

DRAG/RICHARDSON NUMBER (+:Stable, -:Unstable): 0.186 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GM=(Z1*Z2)1/2: 12.99

Z/L AT GMH: -0.264

Z/L AT 10 METERS: -0.157

Z/L AT Z1: -0.287

Z/L AT Z2: 0.144

MONIN-OBUKHOV LENGTH (Meters): -6.494E 01

Ri AT Z1: 0.5576??
Ri AT Z2: 1.353146
Ri AT Z1: 0.369465
Ri AT Z2: 1.209338

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (N/m2): -1.13E-02

HUMIDITY FLUX (Kg/sec m2): 9.27E-06

LAT.HEAT FLUX (Watts/m2): 2.29E 01

SEN.HEAT FLUX (Watt/m2): 9.38E-01

SKY AND SOLAR HEAT FLUX (Watts/m2): 1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2): 3.86E 01

BOWEN RATIO (no units): 0.041

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec): 9.586E-02

SCALING SPEC.HUMD. (Kg/Kg): -7.858E-05

SCALING POT. TEMP. (Kelvin): 7.859E-03

ROUGHNESS LENGTH (Meters): 8.328E-08

DRAG COEF. AT 10 METERS (Dimensionless): 4.359E-03

PARTIAL DERIVATIVES

GENERAL FORM: DN/DZ= [(N1-N2)1/[Ln(Z1/Z2)*(Z1*Z2)1/2]

N=WIND SPEED (m/sec) Z=HEIGHT (Meters): DWS/DZ= 1.36E-02

N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters): DSH/DZ= -8.92E-06

N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters): DPT/DZ= -8.92E-04

PROFILE SLOPES (+=INCR.WITH HEIGHT)

GENERAL FORM: N'SLOPE= [(nZ1-PSI)-(nZ2-PSI)]/[N1-N2]

N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1: WS SLOPE= 4.17E 00

N=SPEC HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2: SH SLOPE= -6.81E 03

N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2: PTK SLOPE= -6.81E 01

N=LnTEMP.STRUC (kxM-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE: (1) SLOPE: NO DATA

* GENERAL CONSTANTS:

Von Karman Constant (No units)	Gravitation Acceleration (M/sec/sec)	Profile Tur.Prandtl Number	Profile Tur.Schmidt Number	Bulk Sen.Heat Transf.Coef	Bulk Moisture Transf.Coef
0.4	9.79??	0.74	0.74	0.92E 03	1.50E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3): 1.2303

AIR SPECIFIC HEAT (1Cal./Kg Kel): 2.416?E 02

WATER LAT HEAT VAP. (1Cal./Kg): 5.9034E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1 SH2 +/- .008 3 Kg/Kg.
PTK1 PTK2 +/- .1E8 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 790516L3EC
START TIME: 15:6:20 PST
START DATE: 16 May 1979 (DAY 136)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CA

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
12.360	2.23	10.46	NO DATA	1013.28	13.476	-1.116	-1.618	0.237	0.335

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.39	12.458	13.714	13.811	9.590E-03	88.04	7.793E-03	12.647	14.354	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (-=Stable, +=Unstable)
2.884 AT GMH

GEOPOTENTIAL MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-3.040

Z/L AT 10 METERS
2.340

MONIN-OBUKHOV LENGTH (Meters)
-4.274E 00

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (N1/m2)
-4.75E-03

HUMIDITY FLUX (Kg/sec m2)
6.17E-06

LAT.HEAT FLUX (Watts/m2)
1.52E 01

SEN.HEAT FLUX (Watts/m2)
5.09E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.51E 01

BOWEN RATIO (no units)
0.334

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.213E-02

SCALING SPEC.HUMID. (Kg/Kg)
-8.871E-05

SCALING POT.TEMP (Kelvin)
-6.586E-02

ROUGHNESS LENGTH (Meters)
1.367E-10

DRAG COEF.AT 10 METERS (Dimensionless)
7.771E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-3.860E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
6.170E 06

WITH POT.TEMPERATURE (Meter Kel /sec)
4.080E 03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2305

AIR SPECIFIC HEAT (ITcal /Kg Kel.)
2.4160E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.9032E 05

VAP.PRES.AT WT LEVEL (Millibar)
15.460

ABS.HUMID.AT WT LEVEL (Kg/m3)
1.169E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.48

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
209%	209%	151%	197%	197%	10%	117%	394%	76%	121%	121%	96%	151%
179%	179%	46%	47%	107%	10%	76%	154%	25%	70%	130%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 790516L3EC
START TIME: 15:6:20 PST
START DATE: 16 May 1979 (DAY 136)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CA

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min

* CORRESPONDING PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT 0. THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY

GRADIENT RICHARDSON NUMBER (-=Stable, +=Unstable)
-1.637 (0.47) AT GMH

GEOPOTENTIAL MEAN HEIGHT (Meters) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-1.540 (0.02)

Z/L AT 10 METERS
1.334 (0.47)

MONIN-OBUKHOV LENGTH (Meters)
-7.504E 00

FLUX PARAMETERS (+=UP, -=DOWN)

MOMENTUM FLUX (N1/m2)
-4.24E-03 (6.6E-02)

HUMIDITY FLUX (Kg/sec m2)
5.77E-06 (8.0E-06)

LAT.HEAT FLUX (Watts/m2)
1.47E 01 (2.6E+01)

SEN.HEAT FLUX (Watts/m2)
3.63E 00 (3.6E+00)

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01 (2.1E+01)

TOTAL HEAT BUDGET FLUX (Watts/m2)
3.52E 01 (5.0E+01)

BOWEN RATIO (no units)
0.251 (0.30)

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
6.999E-02 (0.0E-02)

SCALING SPEC.HUMID. (Kg/Kg)
-2.993E-05 (3.0E-05)

SCALING POT.TEMP. (Kelvin)
-3.579E-02 (2.0E-02)

ROUGHNESS LENGTH (Meters)
2.591E-08 (6.0E-05)

DRAG COEF.AT 10 METERS (Meters)
1.524E-03 (4.0E-04)

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE SETS OF MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRADIENT RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
0%	82%	6%	22%	66%	0%	6%	64%	27%	1%	81%	0%	136%

* END OF DATA ***

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905100330
START TIME: 3:34:20 PST
END TIME: 4: 2:30 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.265	0.000	0.111	5.096	5.148	1.645	1.595	4.826	0.105	5.025

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQU.ONLY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
3.050	3.916	2.343	0.001	0.001	0.001	0.001	7.265

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND FETCH	UPWIND LAND	TIDAL	DRY CAL	WET CAL	WS ESC.	WD ESC.
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
1411 124378	1421 124198	0.001	61	0.000	0.500	0.333	0.990	0.985

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG (No.scans)	ERROR COUNT (No.scans)	DATA RATE (No.scans)	VOLT.REF DEV A-No.2 (.005V)	VOLT.REF DEV B-No.2 (.005V)	ZERO REF.DEV (No.2).002V)	AC VOLT.FLUX (No.=5V)	AC FREQ FLUX (No.=1Hz)	AC VOLTAGE (VAC)	AC FREQ.ONLY (Hz)
3	0	168	0	0	1	0	0	115.4	59.99

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1 (Celsius)	WIND SPEED1 (Meter/sec)	DEW POINT1 (Celsius)	TEMP.STRUC.1 (Kel.=M 273)	WIND DIR (Deg.True)	BAR.PRES.1 (Millibar)	SKY RAD. (Watts/m2)	BULK WT TEMP (Celsius)	SURFACE AIR TEMP (Celsius)
12.338	3.21	10.12	NO DATA	258.5	1012.05	1.42E 01	13.502	12.85

AIR TEMP.2 (Celsius)	WIND SPEED2 (Meter/sec)	DEW POINT2 (Celsius)	TEMP.STRUC.2 (Kel.=M 273)	TIDE TABLE (Meter MSL)	BAR.PRES.2 (Millibar)
12.420	3.68	10.07	NO DATA	-0.67	1013.35

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1 (Meters)	POT.TEMP.1 (Celsius)	VIR.TEMP.1 (Celsius)	V.POT.TEMP.1 (Celsius)	ABS.HUMID.1 (Kg/m3)	REL.HUMID.1 (Percent)	SPEC.HUMID.1 (Kg/Kg)	VAP.PRES.1 (Millibar)	S.VAP.PRES.1 (Millibar)	REL.HUM.1 (Kg/Kg-M/S)
18.35	12.518	13.662	13.842	9.381E-03	86.32	7.63EE-03	12.386	14.319	NO DATA

HEIGHT, Z2 (Meters)	POT.TEMP.2 (Celsius)	VIR.TEMP.2 (Celsius)	V.POT.TEMP.2 (Celsius)	ABS.HUMID.2 (Kg/m3)	REL.HUMID.2 (Percent)	SPEC.HUMID.2 (Kg/Kg)	VAP.PRES.2 (Millibar)	S.VAP.PRES.2 (Millibar)	REL.HUM.2 (Kel.=M/S)
9.20	12.519	13.739	13.830	9.353E-03	85.54	7.60IE-03	12.322	14.41	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905100330
START TIME: 3:34:20 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	GENERAL FORM:DN/DZ= [(N1-N2)/(Ln(Z1/Z2)* (Z1*Z2)^1/2]	GENERAL FORM: N SLOPE= [(LnZ1^2)-(LnZ2^2)]/2 (N1-N2)
0.166 AT GMH	-1.22E-02	9.972E-02		
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMD. (Kg/Kg)	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 1.38E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIM WS SLOPE= 4.015 00
12.99	9.51E-06	-7.751E-05		
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)			
-0.181	2.39E 01	SCALING POT. TEMP. (Kelvin)	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/kg) Z=HEIGHT (M) Vert.Axis PSI=PSIH SH SLOPE= 6.90E 03
Z/L AT 16 METERS		7.751E-03		
-0.140	SEN.HEAT FLUX (Watts/m2)			
Z/L AT Z1	9.62E-01	ROUGHNESS LENGTH (Meters)	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIH PTK SLOPE 6.97E 01
-0.176		1.269E-07		
Z/L AT Z2	SKY AND SOLAR HEAT FLUX (Watts/m2)			
0.128	1.47E 01	DRAG COEF. AT 16 METERS		N=LnTEMP.STRUC.(Kelvin^2) Z=HEIGHT (M) Vert.Axis PSI=NONE
MONIN OBUKHOV LENGTH (Meters)	TOTAL HEAT BUDGET FLUX (Watts/m2)	(Dimensionless) 1.835E 03		
-7.165E 01	3.91E 01			CTP SLOPE=NO DATA
PSIT AT Z1= 0.518079	BOWEN RATIO (no units)			
PSIT AT Z2= 0.325135	0.041			
PSIQ AT Z1= 0.342866				
PSIQ AT Z2= 0.210344				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec^2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)	AIR SPECIFIC HEAT (Cal/Kg Kel.)	WATER LAT.HEAT VAP (Cal/Kg)
1.2301	2.416E 02	5.903IE 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH: SH2 +/- .0E-3 Kg/Kg.
PTK: PTK2 +/- .00 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905106330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:34:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT-WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT.WT TEMP (Kelvin)
12.410	3.10	10.07	NO DATA	1013.25	13.502	-1.092	-0.994	0.228	0.328

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP.PRES. (Millibars)	REF.INDEX (Kel.xM-2/3)
10.00	12.508	13.730	13.828	9.357E-03	85.63	7.665E-03	12.332	14.401	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-1.129 AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-1.202

Z/L AT 10 METERS
-0.925

MONIN-OBUKHOV LENGTH (Meters)
-1.081E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-9.83E-03

HUMIDITY FLUX (Kg/sec m2)
9.60E-06

LAT.HEAT FLUX (Watts/m2)
2.37E 01

SEN.HEAT FLUX (Watts/m2)
6.02E 00

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.44E 01

BOWEN RATIO (no units)
0.253

INFERRED SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
8.949E-02

SCALING SPEC.HUMID. (Kg/Kg)
-8.722E-05

SCALING POT.TEMP. (Kelvin)
-5.400E-02

ROUGHNESS LENGTH (Meters)
3.786E-08

DRAG COEF.AT 10 METERS (Dimensionless)
8.345E-04

INFERRED MEAN VERTICAL VELOCITY COVARIANCE

WITH LONG. VELOCITY (Meter2/sec2)
-8.069E-03

WITH ABS. HUMIDITY (Meter Kg/sec m3)
9.604E-06

WITH POT.TEMPERATURE (Meter Kel./sec)
4.833E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3)
1.2304

AIR SPECIFIC HEAT (ITcal./Kg Kel.)
2.4164E 02

WATER LAT.HEAT VAP. (ITcal./Kg)
5.963LE 05

VAP.PRES.AT WT LEVEL (Millibar)
15.486

ABS HUMID.AT WT LEVEL (Kg/m3)
1.171E-02

BAR.PRES.AT WT LEVEL (Millibar)
1014.45

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
242%	242%	188%	217%	217%	10%	131%	434%	94%	123%	123%	114%	188%
180%	180%	46%	45%	108%	10%	28%	153%	23%	68%	131%	43%	43%

* CONTINUED BELOW

RUN NUMBER: 7905106330 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 3:34:20 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 6/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 28 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

STABILITY

GRAD.RICHARDSON NUMBER (+-Stable,--Unstable)
-0.715 [0.02] AT GMH

GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2
12.99

Z/L AT GMH
-0.766 [0.02]

Z/L AT 10 METERS
0.590 [0.02]

MONIN-OBUKHOV LENGTH (Meters)
-1.695E 01

FLUX PARAMETERS (+=UP,-=DOWN)

MOMENTUM FLUX (Nt/m2)
-1.63E-02 [6.0E-02]

HUMIDITY FLUX (Kg/sec m2)
9.59E-06 [8.0E-06]

LAT.HEAT FLUX (Watts/m2)
2.37E 01 [2.0E+01]

SEN.HEAT FLUX (Watts/m2)
4.33E 00 [3.0E+00]

SKY AND SOLAR HEAT FLUX (Watts/m2)
1.47E 01 [2.0E+01]

TOTAL HEAT BUDGET FLUX (Watts/m2)
4.33E 01 [3.0E+01]

BOWEN RATIO (no units)
0.198 [0.08]

SCALING PARAMETERS

FRICTION VELOCITY (Meters/sec)
9.150E-02 [6.0E-02]

SCALING SPEC.HUMID. (Kg/Kg)
-8.376E-05 [3.0E-05]

SCALING POT.TEMP. (Kelvin)
-3.613E-02 [2.0E-02]

ROUGHNESS LENGTH (Meters)
6.223E-08 [6.0E-05]

DRAG COEF.AT 10 METERS (Meters)
1.010E-03 [4.0E-04]

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FORMULA FOR THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICH EVER ABSOLUTE VALUE IS LARGER). REL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
68%	67%	2%	1%	61%	0%	7%	59%	2%	6%	22%	0%	59%

* END OF DATA RUN

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 79051004@0
START TIME: 4: 2:40 PST
END TIME: 4:30:30 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.M	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR.
6.205	0.000	6.001	5.145	5.199	0.952	0.948	4.828	-0.106	6.577

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
5.8.2	5.461	2.544	0.001	0.001	0.001	0.001	6.205

* DIGITAL CHANNEL RAW DATA (AVERAGE): ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND MEAN	UPWIND LAND	OPTICAL	DPSEED	WINDCAL	WS1EC	WS2EC
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Coeff.)	(Coeff.)
[411 [93=47	1421 1?49%6	3 106	5%	-0.008	0.050	0.000	0.992	0.951

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.=Scan)	(No.=Scans)	(No.=Scans)	#(No.) 005V)	#(No.=.005V)	(No.=.005V)	(No.=5V)	(No.=Hz)	(VAC)	(Hz)
0	0	168	0	0	0	0	0	115.4	59.86

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING THE ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1	WIND DIR	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meters/sec)	(Celsius)	(DEL.K-M-2/3)	(Deg.True)	(Millibar)	(Watt/m2)	(Celsius)	(Kelvin)
12.505	1.94	11.41	NO DATA	8.6	1012.20	1.46E 01	13.517	285.509

AIR TEMP.	WIND SPEED2	DEW POINT2	TEMP.STRUC.2	TIDE TABLE	BAR.PRES.2
(Celsius)	(Meters/sec)	(Celsius)	(Kel.K-M-2/3)	(Meter MSL)	(Millibar)
13.494	1.92	10.37	NO DATA	-0.57	1013.38

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP PRES.1	REF INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.K-M-2/3)
14.35	12.535	13.705	13.835	9.563E-03	87.91	7.779E-03	12.661	14.336	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/kg)	(Millibar)	(Millibar)	(Kel.K-M-2/3)
9.28	12.534	13.791	13.881	9.546E-03	87.17	7.759E-03	12.583	14.434	NO DATA

* CONTINUED BELOW

RUN NUMBER: 79051004@0
START TIME: 4: 2:40 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973).

STABILITY	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) 0.836 AT GMH	MOMENTUM FLUX (N/m2) -4.59E-03	FRICTION VELOCITY (Meters/sec) 6.166E-02	GENERAL FORM:DN/DZ= [(N1-N2)]/[ln(Z1/Z2)+ (Z1*Z2)1/2]	GENERAL FORM:/N=SLOPE= [(LnZ1-PSI)-(LnZ2-PSI)]/ [N1-N2]
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 7.02E-06	SCALING SPEC.HUMD. (Kg/Kg) 9.394E-05	N=WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= 6.03E-03	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSI1 WS SLOPE= 6.55E 00
Z/L AT GMH 0.894	LAT.HEAT FLUX (Watt-/m2) 1.74E 01	SCALING POT. TEMP. (Kelvin) -9.394E-03	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSI2 SH SLOPE= -5.75E 03
Z/L AT 10 M TERS -0 688	SEN.HEAT FLUX (Watt-/m2) 7.14E-01	ROUGHNESS LENGTH (Meters) 9.751E-11	N=POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -8.92E-04	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSI2 PTK SLOPE= -5.75E 01
Z/L AT Z1 -1.253	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.48E 01	DRAG COEF. AT 10 METERS (Dimensionless) 1.301E 03		N=LnTEMP.STRUC (K-M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 0.633	TOTAL HEAT BUDGET FLUX (Watts/m2) 3.29E 01			
MONIN OBUKHOV LENGTH (meters) -1.953E 01	BOWEN RATIO (no units) 6.041			
PSI1 AT Z1= 1.220534				
PSI1 AT Z2= 0.667910				
PSI2 AT Z1= 0.804641				
PSI2 AT Z2= 0.584725				

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/Sec.2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	HEAT SEN.HEAT TRANSF.COEFF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/m3) 1.2299

AIR SPECIFIC HEAT (ITcal./Kg Kel.) 2.416@E 02

WATER LAT.HEAT VAP. (ITcal./Kg) 5.9030E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

WS1 WS2= +0.0?% of Mean Value.
SH1 SH2= +/- .0@E-3 Kg/Kg.
PTK1-PTK2= +/- .008 Kel.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 79051004A0
START TIME: 4: 2:40 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR WT TEMP (Kelvin)	V.POT WT TEMP (Kelvin)
12.433	1.93	10.38	NO DATA	1013.28	13.517	-1.084	-0.9RA	0.263	0.361

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID. (Kg/kg)	VAP.PRES (Millibars)	S.VAP.PRES (Millibars)	REF INDEX (Ref. fm 2-3)
10.00	12.531	13.781	13.379	9.549E-03	87.26	7.762E-03	12.585	14.423	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+:Stable,-:Unstable) -4.254 AT GRH	MOMENTUM FLUX (Nt/m2) -3.46E-03	FRICTION VELOCITY (Meters/sec) 5.301E-02	WITH LONG. VELOCITY (Meter2/sec2) -2.810E-03	AIR DENSITY (Kg/m3) 1.230
GEOMETRIC MEAN HEIGHT (Meters) GMH=(Z1xZ2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 5.51E-06	SCALING SPEC.HUMID. (Kg/Kg) -8.455E-05	WITH ABS. HUMIDITY (Meter Kg/sec m3) 5.514E-06	AIR SPECIFIC HEAT (Cp(a) /Kg Kel) 2.416E-02
Z/L AT GMH -0.0001	LAT.HEAT FLUX (Watts/m2) 1.36E-01	SCALING POT.TEMP. (Kelvin) -7.670E-02	WITH POT.TEMPERATURE (Meter Kel./sec) 3.740E-03	WATER LAT HEAT VAP (Ltnt./Kg) 5.902E-05
Z/L AT 10 METERS -0.0002	SEN.HEAT FLUX (Watts/m2) 4.67E-00	ROUGHNESS LENGTH (Meters) 4.610E-12		VAP PRES AT WT LEVEL (Millibar) 15.502
MONIN OBUKHOV LENGTH (Meters) 1.87E+04	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.40E-01	DRAG COEF.AT 10 METERS (Dimensionless) 7.571E-04		ABS HUMID AT WT LEVEL (Kg/m3) 1.172E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2) 5.31E-01			BAR.PRES.AT WT LEVEL (Millibar) 1014.48
	BOWEN RATIO (no units) 8.342			

* ESTIMATED ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROBABLE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NUMB GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
300%	300%	300%	364%	364%	10%	193%	728%	182%	182%	182%	202%	364%
151%	151%	46%	46%	109%	10%	95%	155%	23%	69%	132%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 79051004A0
START TIME: 4: 2:40 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 6/Min
DATA AVERAGING PERIOD: 28 Min

* ESTIMATED PROFILE AND FLUX AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN [ ]:

[Inverse]	FLUX PARAMETERS (+=UP, -=DOWN)	SCALING PARAMETERS
[Richardson number]	MOMENTUM FLUX (Nt/m2) -3.46E-03 [6.0E-02]	FRICTION VELOCITY (Meters/sec) 5.301E-02 [6.0E-02]
[Humidity flux]	HUMIDITY FLUX (Kg/sec m2) 5.51E-06 [10.0E-06]	SCALING SPEC.HUMID. (Kg/Kg) -8.714E-05 [3.0E-05]
[Lat heat flux]	LAT.HEAT FLUX (Watts/m2) 1.41E-01 [2.6E+01]	SCALING POT.TEMP. (Kelvin) -8.497E-02 [2.0E-02]
[Sen heat flux]	SEN.HEAT FLUX (Watts/m2) 4.72E-00 [5.0E+00]	ROUGHNESS LENGTH (Meters) [6.0E-05]
[Sky and solar heat flux]	SKY AND SOLAR HEAT FLUX (Watts/m2) 1.40E-01 [2.6E+01]	DRAG COEF.AT 10 METERS (Dimensionless) [5.0E-04]
	TOTAL HEAT BUDGET FLUX (Watts/m2) [2.6E+01]	
	BOWEN RATIO (no units) [5.0E+00]	

* ESTIMATED ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT DEVIATION FROM EITHER THE [illegible] COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE [illegible] WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE EXPRESSED IN PERCENT DEVIATION AND ARE "+or-":

GRAD.RICH. NUMB GMH	Z/L AT GMH	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
75%	75%	1%	1%	5%	0%	0%	6%	8%	6%	69%	0%	16%

* END OF DATA ***

MARINE SURFACE LAYER MICROMETEOROLOGICAL EXPERIMENT

NAVAL RESEARCH LABORATORY
ATMOSPHERIC PHYSICS BRANCH
MARINE ATMOSPHERIC RESEARCH STATION
SAN NICOLAS ISLAND, CALIFORNIA

* * * * MICROMETEOROLOGICAL DATA * * * *

RUN NUMBER: 7905100830
START TIME: 8:59:40 PST
END TIME: 9:29:30 PST
START DATE: 10 May 1979 (DAY 130)

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 0/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* ANALOG CHANNEL RAW DATA (AVERAGE VDC):

No.00	No.01	No.02	No.03	No.04	No.05	No.06	No.07	No.08	No.09
VOLT.REF.A	TEMP.STRUC.1	TEMP.STRUC.2	DEW POINT1	DEW POINT2	WIND SPEED1	WIND SPEED2	BAR.PRES.2	SKY RAD.	WIND DIR
6.205	0.001	0.001	5.310	5.360	1.115	1.130	5.013	5.720	6.942

No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17
BULK WT TEMP	AC FREQUENCY	AC VOLTAGE	MANUAL FLAG	ZERO REF.	SPARE A	SPARE B	VOLT.REF.B
4.033	3.791	2.540	0.001	7.091	0.001	0.911	4.895

* DIGITAL CHANNEL RAW DATA (AVERAGE) ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED ESCARPMENT CORRECTIONS:

No.1	No.2	UPWIND NEAR	UPWIND LAND	OPTICAL	DEW CAL	WIND CAL	WSPEED	WDIR
AIR TEMP.1	AIR TEMP.2	HEIGHT/LENGTH	PATH(Meters)	(Volts)	(Volts)	(Volts)	(Counts)	(Counts)
1411 13448	1421 13582	0.170	46	0.036	4.850	6.380	1.994	1.926

* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ENGINEERING UNITS:

MANUAL FLAG	ERROR COUNT	DATA RATE	VOLT.REF.DEV	VOLT.REF.DEV	ZERO REF.DEV	AC VOLT.FLUX	AC FREQ.FLUX	AC VOLTAGE	AC FREQUENCY
(No.scans)	(No.scans)	(No.scans)	A(No.).0625V)	B(No.).0625V)	(No.).0022V)	(No.)5V)	(No.)1HZ)	(VAC)	(HZ)
0	0	178	0	0	0	0	0	115.6	59.29

* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING TAP ABOVE CAL. AND ESCARPMENT CORRECTIONS) TRANSLATED INTO ENGINEERING UNITS:

AIR TEMP.1	WIND SPEED1	DEW POINT1	TEMP.STRUC.1		WIND DIR.	BAR.PRES.1	SKY RAD.	BULK WT TEMP	MEAN AIR TEMP
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Deg.True)	(Millibar)	(Watt/M2)	(Celsius)	(Celsius)
13.448	2.25	11.39	NO DATA		21.2	1015.12	-7.98E 02	13.675	13.674

AIR TEMP.2	WIND SPEED2	DEW POINT2	TEMP.STRUC.2		TIDE TABLE	BAR.PRES.2
(Celsius)	(Meter/sec)	(Celsius)	(Kel.xM-2/3)		(Meter MSL)	(Millibar)
13.583	2.38	11.33	NO DATA		0.34	1016.21

* CALCULATED MICROMETEOROLOGICAL PARAMETERS:

HEIGHT, Z1	POT.TEMP.1	VIR.TEMP.1	V.POT.TEMP.1	ABS.HUMID.1	REL.HUMID.1	SPEC.HUMID.1	VAP.PRES.1	S.VAP.PRES.1	REF.INDEX 1
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
18.35	13.628	14.896	15.676	1.020E-02	87.36	8.367E-03	13.490	15.442	NO DATA

HEIGHT, Z2	POT.TEMP.2	VIR.TEMP.2	V.POT.TEMP.2	ABS.HUMID.2	REL.HUMID.2	SPEC.HUMID.2	VAP.PRES.2	S.VAP.PRES.2	REF INDEX 2
(Meters)	(Celsius)	(Celsius)	(Celsius)	(Kg/m3)	(Percent)	(Kg/Kg)	(Millibar)	(Millibar)	(Kel.xM-2/3)
9.20	13.673	15.025	15.115	1.016E-02	86.26	8.274E-03	13.451	15.595	NO DATA

* CONTINUED BELOW

RUN NUMBER: 7905100830
START TIME: 8:59:40 PST
START DATE: 10 May 1979 (DAY 130)

MARINE SURFACE LAYER
NRL MICROMETEOROLOGY
SAN NICOLAS ISLAND, CAL

PRINT DATE: 11 JUN 1980
DATA SAMPLING RATE (ALL CHANNELS): 0/Min
DATA AVERAGING PERIOD: 30 Min
NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL

* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED AND CALCULATED VALUES (BUSINGER,1973):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS	PARTIAL DERIVATIVES	PROFILE SLOPES (+=INCR.WITH HEIGHT)
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable) -0.938 AT GMH	MOMENTUM FLUX (Nt/m2) -2.41E-02	FRICTION VELOCITY (Meters/sec) 1.401E-01	GENERAL FORM:DN/DZ= ((N1-N2)/(LnZ1/Z2)*(Z1*Z2)1/2)	GENERAL FORM,'N'SLOPE= ((LnZ1-PSI)-(LnZ2-PSI))/(N1-N2)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2 12.99	HUMIDITY FLUX (Kg/sec m2) 1.64E-05	SCALING SPEC.HUMD. (Kg/Kg) -9.511E-05	N-WIND SPEED (M/sec) Z=HEIGHT (Meters) DWS/DZ= -1.35E-02	N=WIND SPEED (M/sec) Z=HEIGHT (M) Vert.Axis PSI=PSIi WS SLOPE= 2.86E 00
Z/L AT GMH -1.061	LAT.HEAT FLUX (Watts/m2) 4.04E 01	SCALING POT. TEMP. (Kelvin) -5.351E-02	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (Meters) DSH/DZ= -8.92E-06	N=SPEC.HUMIDITY (Kg/Kg) Z=HEIGHT (M) Vert.Axis PSI=PSIi SH SLOPE= 5.66E 03
Z/L AT 10 METERS -0.771	SEN.HEAT FLUX (Watts/m2) 9.32E 00	ROUGHNESS LENGTH (Meters) 2.187E-06	N-POT.TEMP.(Kelvin) Z=HEIGHT (Meters) DPT/DZ= -5.02E 03	N=POT.TEMP.(Kelvin) Z=HEIGHT (M) Vert.Axis PSI=PSIi PTK SLOPE= -1.01E 01
Z/L AT Z1 -1.414	SKY AND SOLAR HEAT FLUX (Watts/m2) 7.98E 02	DRAG COEF. AT 10 METERS (Dimensionless) 1.037E 02		N=LnTEMP.STRUC.(K*M-2/3) Z=HEIGHT (M) Vert.Axis PSI=NONE CT2 SLOPE=NO DATA
Z/L AT Z2 -0.709				
MONIN-OBUKHOV LENGTH (Meters) -1.298E 01	TOTAL HEAT BUDGET FLUX (Watts/m2) -7.48E 02			
PSI1 AT Z1= 1.263071 PSI1 AT Z2= 0.918736 PSI2 AT Z1= 0.855430 PSI2 AT Z2= 0.619683	BOWEN RATIO (no units) 0.231			

* GENERAL CONSTANTS:

VON KARMAN CONSTANT (No units)	GRAVITATION ACCELERATION (M/sec 2)	PROFILE TUR.PRANDTL NUMBER	PROFILE TUR.SCHMIDT NUMBER	BULK SEN.HEAT TRANSF.COEF.	BULK MOISTURE TRANSF.COEF.
0.4	9.7959	0.74	0.74	0.92E-03	1.32E-03

MISCELLANEOUS

AIR DENSITY (Kg/M3) 1.228+

AIR SPECIFIC HEAT (1Cal./Kg Kel.) 2.4129E 02

WATER LAT.HEAT VAP (1Cal./Kg) 5.8967E 05

* GENERAL NOTES:
Accuracy limitation exceeded for measurement of Profile Slope and/or Partial Derivative.
Computation executed by insertion of:

SH1-SH2= +/- .08E-3 Kg/Kg.

* CONTINUED ON NEXT PAGE

RUN NUMBER: 7905100830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:59:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* ESTIMATED MICROMETEOROLOGICAL PARAMETERS AT TEN METERS:

AIR TEMP. (Celsius)	WIND SPEED (Meter/sec)	DEW POINT (Celsius)	TEMP.STRUC. (Kel.xM-2/3)	BAR.PRES. (Millibar)	BULK WT TEMP (Celsius)	AIR-WT TEMP (Kelvin)	POT WT TEMP (Kelvin)	VIR-WT TEMP (Kelvin)	V.POT-WT TEMP (Kelvin)
13.566	2.36	11.34	NO DATA	1016.12	13.675	-0.108	-0.010	1.336	1.434

HEIGHT (Meters)	POT.TEMP. (Celsius)	VIR.TEMP. (Celsius)	V.POT.TEMP. (Celsius)	ABS.HUMID. (Kg/m3)	REL.HUMID. (Percent)	SPEC.HUMID (Kg/Kg)	VAP.PRES. (Millibars)	S.VAP PRES. (Millibars)	REF INDEX (Ref xM-2/3)
10.00	13.664	15.010	15.108	1.017E-02	86.39	8.270E-03	13.457	15.577	NO DATA

* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE ESTIMATED VALUES AT TEN METERS (FRIEHE ET AL,1978):

INFERRED STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	INFERRED SCALING PARAMETERS	INFERRED MEAN VERTICAL VELOCITY COVARIANCE	MISCELLANEOUS
GRAD.RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)	WITH LONG. VELOCITY (Meter2/sec2)	AIR DENSITY (Kg/m3)
-1.164 AT GMH	-5.38E-03	6.618E-02	-4.300E-03	1.224
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)	WITH ABS. HUMIDITY (Meter kg/sec m3)	AIR SPECIFIC HEAT (ITcal./Kg Kel.)
12.99	5.28E-06	-6.498E-05	5.786E-06	2.4129E 02
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)	WITH POT.TEMPERATURE (Meter Kel./sec)	WATER LAT.HEAT VAP. (ITcal./Kg)
-1.239	1.30E 01	-3.056E-03	2.023E-03	5.8964E 05
Z/L AT 10 METERS				
-0.954	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)		VAP.PRES.AT WT LEVEL (Millibar)
MONIN-OBUKHOV LENGTH (Meters)	2.52E 00	4.420E-10		15.765
-1.049E 01	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Dimensionless)		ABS.HUMID.AT WT LEVEL (Kg/m3)
	-7.98E 02	7.858E-04		1.186E-02
	TOTAL HEAT BUDGET FLUX (Watts/m2)			BAR.PRES.AT WT LEVEL (Millibar)
	-7.82E 02			1017.30
	BOWEN RATIO (no units)			
	0.193			

* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN PERCENT MEAN ERROR AS COMPUTED FROM CONSTITUENT MEASUREMENT ACCURACIES. TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE APPROXIMATE AND ARE "+or-":

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
125%	125%	182%	229%	146%	5%	12%	375%	91%	130%	55%	111%	182%
4936%	4936%	46%	50%	4864%	5%	16%	4916%	23%	75%	4867%	43%	40%

* CONTINUED BELOW

RUN NUMBER: 7905100830 | MARINE SURFACE LAYER | PRINT DATE: 11 JUN 1980
START TIME: 8:59:40 PST | NRL MICROMETEOROLOGY | DATA SAMPLING RATE (ALL CHANNELS): 2/Min
START DATE: 10 May 1979 (DAY 130) | SAN NICOLAS ISLAND, CAL | DATA AVERAGING PERIOD: 30 Min

* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUE WEIGHTED AS A FUNCTION OF THE ABOVE RESPECTIVE MEASUREMENT ERRORS WITH THE LOWER LIMIT OF THE CORRESPONDING MEASUREMENT UNCERTAINTY INDICATED IN ( ):

STABILITY	FLUX PARAMETERS (+=UP,-=DOWN)	SCALING PARAMETERS
GRAD RICHARDSON NUMBER (+=Stable,-=Unstable)	MOMENTUM FLUX (Nt/m2)	FRICTION VELOCITY (Meters/sec)
0.944 (0.02) AT GMH	-9.15E-03 (4.0E-02)	8.107E-02 (6.0E-02)
GEOMETRIC MEAN HEIGHT (Meter) GMH=(Z1*Z2)1/2	HUMIDITY FLUX (Kg/sec m2)	SCALING SPEC.HUMID. (Kg/Kg)
12.99	7.32E-06 (8.0E-06)	7.557E-05 (3.0E-05)
Z/L AT GMH	LAT.HEAT FLUX (Watts/m2)	SCALING POT.TEMP. (Kelvin)
1.007 (0.02)	1.81E 01 (2.0E+01)	-5.300E-02 (2.0E-02)
Z/L AT 10 METERS		
0.775 (0.02)	SEN.HEAT FLUX (Watts/m2)	ROUGHNESS LENGTH (Meters)
MONIN-OBUKHOV LENGTH (Meters)	9.12E 00 (3.0E+00)	6.164E-07 (8.0E-05)
-1.298E 01	SKY AND SOLAR HEAT FLUX (Watts/m2)	DRAG COEF.AT 10 METERS (Meters)
	7.98E 02 (2.0E+01)	2.511E-03 (4.0E-04)
	TOTAL HEAT BUDGET FLUX (Watts/m2)	
	7.63E 02 (3.0E+01)	
	BOWEN RATIO (no units)	
	0.220 (0.08)	

* DIFFERENCE BETWEEN THE PROFILE AND BULK AERODYNAMIC DERIVED PARAMETER VALUES AS COMPUTED VIA THE STANDARD DEVIATION FROM EITHER THE ABOVE WEIGHTED COMPOSITE VALUE OR MEASUREMENT UNCERTAINTY VALUE (WHICHEVER ABSOLUTE VALUE IS LARGER). ALL VALUES ARE LISTED IN PERCENT DIFFERENCE AND ARE "+or-".

GRAD.RICH. NO.AT GMH	Z/L AT 10M	MOMENTUM FLUX	LAT.HEAT FLUX	SEN.HEAT FLUX	SKY RAD. FLUX	TOTAL HEAT FLUX	BOWEN RATIO	FRICTION VELOCITY	SCL.SPEC HUMIDITY	SCL.POT. TEMP.	ROUGH. LENGTH	DRAG COEF.
17%	16%	18%	81%	51%	0%	2%	11%	53%	21%	30%	2%	2.1%

* END OF DATA RUN

4. Aerosol Size Distribution Observations

Approximately 160 typically half hour averaged aerosol size distribution observations made at an altitude of 14.4 m are presented in tabular form. The observations were made by Dr. Richard Jeck of the Naval Research Laboratory with a Particle Measurement Systems (Knollenberg) model ASSP for particular sizes ranging from 0.3 to 14.0 μm radius. The julian day number indicated in the table, minus 120, is equal to the May 1979 date. For example: Day 122 = 2 May 1979. The time of day indicated is the observation start time. The aerosol values in the table are expressed in units of $\log_{10}$ [No. of particles/cm^3/μm (radius)]. The calibration data in Table 4.1 and the tabular data are presented courtesy of Gathman and Jeck (1981).

Table 4.1 — Calibration Values for the NRL Particle Measurement System Model ASSP

Size Channel Number	Range 4		Range 2	
	Radius at Center of Size Channel (μm)	Size Channel Width (μm)	Radius at Center of Size Channel (μm)	Size Channel Width (μm)
1	0.29	0.0048	0.58	0.037
2	0.37	0.042	0.86	0.28
3	0.47	0.147	1.36	0.85
4	0.55	0.250	2.9	2.5
5	0.63	0.360	3.8	1.6
6	0.72	0.315	4.8	1.9
7	0.79	0.115	5.9	1.7
8	0.86	0.14	7.0	1.25
9	1.0	0.195	8.0	1.60
10	1.15	0.25	9.0	1.45
11	1.36	0.30	10.0	1.8
12	1.6	0.325	11.0	1.25
13	1.85	0.38	12.0	1.1
14	2.15	0.22	13.0	1.0
15	2.45	0.20	14.0	1.0

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SNI Knollenberg Log Data May79, range 4

DAY	TIME	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	H10	CH11	CH12	CH13	CH14	CH15
122	1145	2.72	3.52	4.08	4.27	4.21	4.20	3.98	3.48	3.27	3.25	3.15	3.04	2.85	2.76	2.33
122	1200	2.69	3.56	4.17	4.33	4.27	4.26	4.03	3.53	3.31	3.31	3.17	3.07	2.89	2.76	2.35
122	1230	2.74	3.57	4.15	4.32	4.27	4.25	4.03	3.53	3.31	3.31	3.18	3.07	2.90	2.75	2.34
122	1300	2.70	3.55	4.16	4.32	4.26	4.25	4.01	3.49	3.29	3.29	3.16	3.05	2.88	2.74	2.32
122	1330	2.69	3.43	4.04	4.21	4.16	4.14	3.91	3.39	3.18	3.18	3.05	2.96	2.77	2.65	2.21
122	1400	2.71	3.41	3.97	4.14	4.09	4.07	3.83	3.31	3.12	3.11	2.98	2.88	2.70	2.57	2.14
122	1430	2.69	3.42	3.94	4.11	4.06	4.03	3.80	3.29	3.07	3.09	2.96	2.85	2.69	2.57	2.16
122	1500	2.69	3.43	4.04	4.22	4.17	4.15	3.92	3.41	3.20	3.21	3.07	2.98	2.80	2.71	2.23
122	1530	2.68	3.44	3.93	4.08	4.05	4.02	3.79	3.29	3.07	3.07	2.95	2.85	2.68	2.55	2.13
122	1600	2.70	3.52	3.98	4.15	4.11	4.09	3.86	3.35	3.15	3.14	3.04	2.91	2.75	2.64	2.16
122	1630	2.70	3.52	4.02	4.19	4.14	4.11	3.89	3.38	3.17	3.17	3.05	2.96	2.77	2.68	2.20
122	1700	2.69	3.53	4.07	4.25	4.20	4.18	3.95	3.43	3.24	3.24	3.12	3.01	2.85	2.71	2.26
122	1730	2.67	3.51	4.01	4.17	4.13	4.10	3.90	3.42	3.19	3.17	3.04	2.93	2.80	2.68	2.27
122	1800	2.73	3.57	4.10	4.27	4.24	4.23	4.03	3.56	3.33	3.32	3.19	3.09	2.96	2.84	2.41
122	1830	2.73	3.56	4.05	4.22	4.20	4.20	4.00	3.54	3.30	3.28	3.15	3.05	2.91	2.83	2.38
122	1900	2.69	3.56	4.06	4.23	4.20	4.19	3.99	3.52	3.29	3.27	3.14	3.04	2.91	2.79	2.36
122	1930	2.68	3.55	4.07	4.25	4.22	4.22	4.01	3.54	3.32	3.28	3.17	3.06	2.91	2.81	2.37
122	2000	2.68	3.57	4.08	4.26	4.24	4.22	4.03	3.56	3.34	3.31	3.19	3.08	2.92	2.83	2.43
122	2030	2.68	3.55	4.09	4.27	4.25	4.24	4.04	3.56	3.34	3.31	3.21	3.09	2.93	2.86	2.40
122	2100	2.74	3.57	4.09	4.25	4.24	4.22	4.02	3.57	3.34	3.30	3.19	3.07	2.93	2.83	2.43
122	2130	2.67	3.56	4.03	4.20	4.19	4.17	3.98	3.53	3.29	3.26	3.12	3.04	2.88	2.81	2.36
122	2200	2.67	3.57	4.07	4.24	4.22	4.22	4.03	3.60	3.35	3.31	3.17	3.08	2.92	2.85	2.45
122	2230	2.68	3.63	4.13	4.30	4.27	4.27	4.08	3.66	3.41	3.36	3.23	3.15	2.99	2.90	2.49
122	2300	2.68	3.61	4.06	4.22	4.21	4.20	4.03	3.64	3.38	3.31	3.20	3.10	2.95	2.86	2.44
122	2330	2.68	3.60	4.04	4.20	4.18	4.17	4.00	3.62	3.34	3.28	3.18	3.07	2.93	2.84	2.45
123	0	2.68	3.57	4.04	4.18	4.17	4.16	3.99	3.62	3.33	3.29	3.16	3.04	2.91	2.84	2.49
123	30	2.69	3.60	4.05	4.21	4.19	4.19	4.02	3.62	3.35	3.30	3.18	3.07	2.91	2.85	2.43
123	100	2.67	3.60	4.03	4.19	4.18	4.17	4.00	3.59	3.33	3.28	3.16	3.05	2.89	2.83	2.40
123	130	2.67	3.59	4.03	4.17	4.15	4.15	3.97	3.58	3.30	3.27	3.14	3.04	2.87	2.82	2.39
123	200	2.69	3.58	4.03	4.18	4.15	4.15	3.97	3.57	3.30	3.26	3.15	3.03	2.89	2.80	2.41
123	230	2.67	3.55	4.01	4.15	4.13	4.12	3.94	3.54	3.29	3.24	3.14	3.03	2.86	2.79	2.37
123	300	2.68	3.39	3.93	4.06	4.05	4.04	3.87	3.51	3.23	3.18	3.05	2.95	2.82	2.74	2.38
123	330	2.65	3.31	3.86	3.99	3.97	3.95	3.80	3.46	3.15	3.10	2.99	2.87	2.72	2.70	2.31
123	400	2.65	3.22	3.81	3.93	3.92	3.90	3.75	3.44	3.09	3.06	2.94	2.82	2.69	2.64	2.27
123	430	2.65	3.27	3.84	3.95	3.93	3.90	3.74	3.41	3.09	3.03	2.93	2.81	2.67	2.60	2.25
123	500	2.65	3.23	3.79	3.90	3.88	3.85	3.68	3.32	3.00	2.96	2.86	2.74	2.58	2.54	2.17
123	530	2.68	3.32	3.85	3.95	3.92	3.89	3.71	3.34	3.04	3.01	2.90	2.77	2.64	2.57	2.21
123	600	2.67	3.37	3.90	4.00	3.97	3.95	3.78	3.42	3.12	3.09	2.98	2.88	2.72	2.66	2.28
123	630	2.65	3.36	3.88	3.98	3.94	3.92	3.74	3.37	3.08	3.06	2.93	2.82	2.68	2.61	2.27
123	700	2.62	3.32	3.84	3.94	3.89	3.85	3.66	3.24	2.98	2.95	2.84	2.73	2.56	2.52	2.11
123	730	2.63	3.21	3.72	3.80	3.75	3.70	3.51	3.10	2.80	2.80	2.67	2.53	2.40	2.34	1.98
123	800	2.62	3.18	3.69	3.76	3.71	3.66	3.47	3.05	2.76	2.74	2.64	2.50	2.33	2.29	1.93
123	830	2.63	3.14	3.67	3.75	3.70	3.65	3.43	3.03	2.74	2.74	2.63	2.50	2.33	2.26	1.87
123	946	2.64	2.97	3.54	3.61	3.54	3.47	3.23	2.82	2.49	2.50	2.39	2.28	2.04	2.03	1.73
123	946	2.64	2.97	3.54	3.61	3.54	3.47	3.23	2.82	2.49	2.50	2.39	2.28	2.04	2.03	1.73
123	1000	2.65	3.28	3.75	3.79	3.70	3.65	3.41	2.97	2.68	2.68	2.58	2.44	2.27	2.22	1.90
123	1030	2.66	3.54	4.00	4.04	3.95	3.90	3.68	3.30	3.02	2.99	2.85	2.77	2.60	2.49	2.21
123	1100	2.64	3.63	4.08	4.13	4.04	4.00	3.78	3.38	3.13	3.11	2.96	2.87	2.69	2.61	2.30
123	1130	2.65	3.56	4.07	4.13	4.03	4.00	3.79	3.45	3.15	3.14	3.03	2.92	2.74	2.67	2.40
123	1200	2.65	3.56	4.08	4.14	4.04	4.00	3.79	3.47	3.15	3.15	3.02	2.92	2.73	2.65	2.40
123	1230	2.60	3.59	4.09	4.14	4.03	4.00	3.78	3.41	3.11	3.09	2.98	2.85	2.67	2.61	2.32
123	1300	2.61	3.46	3.91	3.94	3.84	3.78	3.55	3.15	2.85	2.86	2.71	2.60	2.42	2.33	2.02
123	1330	2.64	3.35	3.82	3.86	3.77	3.71	3.45	3.02	2.75	2.76	2.66	2.52	2.33	2.23	1.89
123	1400	2.66	3.22	3.76	3.85	3.80	3.75	3.53	3.14	2.87	2.87	2.75	2.65	2.44	2.38	2.04
123	1430	2.69	3.19	3.73	3.84	3.80	3.75	3.51	3.07	2.86	2.87	2.74	2.66	2.46	2.37	1.96
123	1500	2.64	3.19	3.67	3.78	3.71	3.66	3.36	2.89	2.70	2.69	2.58	2.48	2.28	2.13	1.78
123	1530	2.68	3.18	3.69	3.79	3.73	3.68	3.41	2.92	2.74	2.72	2.63	2.49	2.33	2.28	1.79
123	1545	2.59	3.07	3.60	3.70	3.63	3.58	3.31	2.83	2.65	2.65	2.51	2.42	2.24	2.18	1.71
123	1600	2.59	3.12	3.62	3.70	3.60	3.53	3.25	2.76	2.60	2.59	2.44	2.33	2.16	2.09	1.65
123	1630	2.64	3.21	3.69	3.80	3.71	3.64	3.35	2.87	2.69	2.67	2.56	2.45	2.24	2.13	1.67
123	1700	2.71	3.12	3.61	3.74	3.67	3.61	3.33	2.85	2.68	2.63	2.54	2.42	2.22	2.13	1.71
123	1730	2.68	3.32	3.78	3.87	3.77	3.69	3.39	2.85	2.69	2.64	2.55	2.43	2.24	2.12	1.62
123	1800	2.67	3.21	3.68	3.81	3.73	3.68	3.41	2.92	2.73	2.69	2.61	2.49	2.31	2.17	1.77
123	1830	2.68	3.28	3.76	3.89	3.81	3.77	3.50	2.98	2.83	2.80	2.68	2.58	2.40	2.28	1.84
123	1900	2.66	3.18	3.65	3.80	3.75	3.74	3.49	3.01	2.86	2.83	2.73	2.60	2.44	2.32	1.92
123	1930	2.63	3.16	3.61	3.76	3.70	3.67	3.42	2.93	2.78	2.76	2.68	2.51	2.38	2.27	1.91
123	2000	2.67	3.08	3.51	3.66	3.62	3.59	3.35	2.88	2.70	2.69	2.57	2.45	2.30	2.17	1.80
123	2030	2.69	3.06	3.52	3.67	3.65	3.61	3.39	2.93	2.75	2.73	2.61	2.50	2.35	2.24	1.91
123	2100	2.68	3.09	3.55	3.73	3.69	3.68	3.47	3.02	2.84	2.82	2.71	2.59	2.43	2.34	1.97
123	2130	2.68	3.18	3.64	3.78	3.75	3.72	3.51	3.04	2.86	2.84	2.73	2.58	2.44	2.37	2.01
123	2200	2.68	3.18	3.63	3.78	3.75	3.73	3.52	3.07	2.88	2.85	2.72	2.62	2.47	2.41	1.97
123	2230	2.69	3.22	3.67	3.82	3.80	3.78	3.57	3.16	2.95	2.91	2.80	2.68	2.55	2.47	2.04
123	2300	2.67	3.27	3.73	3.87	3.85	3.83	3.64	3.21	3.00	2.97	2.86	2.75	2.61	2.53	2.11
123	2330	2.65	3.39	3.83	3.94	3.88	3.86	3.64	3.18	2.99	2.95	2.87	2.73	2.57	2.51	2.10
124	0	2.62	3.43	3.82	3.92	3.85	3.82	3.60	3.16	2.95	2.93	2.84	2.70	2.52	2.44	2.08
124	30	2.63	3.42	3.81	3.91	3.84	3.82	3.60	3.15	2.94	2.94	2.79	2.71	2.51	2.46	2.10
124	100	2.62	3.45	3.81	3.88	3.81	3.77	3.55	3.12	2.91	2.89	2.75	2.65	2.47	2.43	2.06
124	130	2.64	3.44	3.82	3.90	3.84	3.81	3.60	3.17	2.96	2.90	2.79	2.69	2.52	2.45	2.08
124	200	2.63	3.38	3.79	3.87	3.81	3.78	3.59	3.17	2.94	2.90	2.78	2.68	2.52	2.45	2.11
124	230	2.67	3.19	3.71	3.80	3.77	3.73	3.57	3.19	2.94	2.91	2.79	2.68	2.53	2.49	2.11
124	300	2.69	3.14	3.66	3.77	3.74	3.72	3.56	3.22	2.95	2.91	2.80	2.68	2.52	2.48	2.18

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DAY	TIME	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
122	1145	2.52	3.47	3.60	3.43	2.95	2.53	2.21	1.92	1.62	1.65	1.23	1.29	0.99	0.81	0.39
122	1200	2.50	3.55	3.67	3.50	3.00	2.54	2.21	1.91	1.63	1.49	1.22	1.15	0.95	0.75	0.50
122	1230	2.53	3.54	3.66	3.50	3.01	2.52	2.18	1.89	1.62	1.56	1.33	1.10	0.96	0.73	0.61
122	1300	2.50	3.48	3.63	3.45	2.95	2.46	2.17	1.89	1.62	1.40	1.23	1.06	0.93	0.67	0.33
122	1330	2.49	3.37	3.54	3.36	2.89	2.40	2.07	1.75	1.36	1.31	1.08	0.98	0.85	0.76	0.24
122	1400	2.49	3.28	3.45	3.28	2.79	2.29	1.99	1.72	1.45	1.24	1.12	0.94	0.68	0.70	0.35
122	1430	2.49	3.25	3.41	3.25	2.78	2.26	1.95	1.67	1.35	1.11	0.84	0.68	0.80	0.61	0.63
122	1500	2.46	3.36	3.54	3.38	2.91	2.39	2.03	1.71	1.46	1.35	1.12	0.95	0.61	0.52	0.39
122	1530	2.47	3.26	3.39	3.24	2.79	2.28	1.97	1.55	1.30	1.20	0.93	0.67	0.38	0.16	0.06
122	1600	2.48	3.33	3.47	3.31	2.85	2.30	1.90	1.60	1.45	1.12	0.91	0.55	0.54	0.49	-0.17
122	1630	2.49	3.36	3.51	3.36	2.89	2.34	2.03	1.67	1.45	1.24	1.00	0.88	0.63	0.31	0.18
122	1700	2.48	3.41	3.58	3.42	2.95	2.43	2.06	1.74	1.50	1.29	0.98	0.78	0.64	0.46	0.20
122	1730	2.46	3.37	3.50	3.36	2.91	2.36	2.06	1.73	1.55	1.28	1.05	0.78	0.77	0.42	0.13
122	1800	2.52	3.52	3.66	3.50	3.06	2.57	2.24	1.88	1.70	1.54	1.30	1.00	0.98	0.67	0.66
122	1830	2.49	3.51	3.62	3.47	3.04	2.51	2.24	1.89	1.59	1.53	1.26	1.04	0.86	0.76	0.38
122	1900	2.49	3.48	3.60	3.44	3.02	2.51	2.19	1.80	1.59	1.45	1.35	1.00	0.92	0.51	0.51
122	1930	2.49	3.51	3.63	3.49	3.03	2.53	2.21	1.80	1.57	1.41	1.23	0.86	0.64	0.61	0.37
122	2000	2.49	3.53	3.64	3.50	3.07	2.55	2.25	1.94	1.64	1.51	1.40	1.17	0.97	0.88	0.59
122	2030	2.48	3.53	3.66	3.50	3.04	2.52	2.21	1.86	1.55	1.56	1.29	1.02	0.83	0.76	0.54
122	2100	2.51	3.53	3.63	3.50	3.05	2.53	2.19	1.85	1.62	1.52	1.21	1.06	0.85	0.76	0.37
122	2130	2.47	3.49	3.60	3.44	3.00	2.47	2.14	1.80	1.60	1.35	1.04	1.06	0.81	0.72	0.32
122	2200	2.46	3.55	3.65	3.50	3.07	2.56	2.17	1.87	1.60	1.44	1.21	0.97	0.90	0.55	0.38
122	2230	2.48	3.60	3.71	3.55	3.14	2.59	2.26	1.90	1.65	1.46	1.35	1.13	0.84	0.66	0.42
122	2300	2.46	3.58	3.66	3.51	3.11	2.57	2.26	1.87	1.61	1.46	1.20	1.02	0.82	0.71	0.54
122	2330	2.47	3.55	3.63	3.48	3.07	2.55	2.18	1.88	1.61	1.42	1.16	0.88	0.86	0.59	0.31
123	0	2.47	3.54	3.61	3.47	3.06	2.52	2.18	1.81	1.54	1.34	1.03	0.84	0.76	0.47	0.33
123	30	2.48	3.56	3.64	3.49	3.08	2.56	2.16	1.84	1.55	1.38	1.13	0.79	0.59	0.41	0.31
123	100	2.47	3.55	3.60	3.47	3.04	2.51	2.13	1.69	1.48	1.29	0.97	0.77	0.76	0.57	0.12
123	130	2.47	3.50	3.59	3.45	3.02	2.48	2.13	1.75	1.44	1.35	1.07	0.81	0.50	0.22	0.00
123	200	2.48	3.51	3.60	3.45	3.02	2.49	2.16	1.74	1.44	1.23	1.02	0.64	0.52	0.35	-0.03
123	230	2.46	3.46	3.57	3.43	3.01	2.47	2.16	1.75	1.51	1.24	0.87	0.90	0.52	0.38	-0.03
123	300	2.45	3.39	3.49	3.37	2.97	2.43	2.10	1.69	1.39	1.20	1.10	0.58	0.62	0.23	0.20
123	330	2.43	3.31	3.41	3.28	2.89	2.33	2.03	1.56	1.37	1.15	0.76	0.64	0.32	-0.11	-0.10
123	400	2.42	3.24	3.35	3.23	2.85	2.30	1.93	1.51	1.30	1.04	0.73	0.63	0.20	-0.04	0.04
123	430	2.44	3.23	3.33	3.21	2.83	2.26	1.85	1.45	1.16	0.91	0.43	0.11	0.17	-0.51	-0.49
123	500	2.41	3.15	3.26	3.14	2.74	2.15	1.82	1.30	1.11	0.79	0.47	0.38	-0.14	-0.37	-0.37
123	530	2.45	3.19	3.31	3.18	2.78	2.18	1.87	1.43	1.22	0.73	0.49	0.30	0.13	-0.26	-0.09
123	600	2.44	3.27	3.39	3.26	2.87	2.37	2.07	1.63	1.33	1.09	0.75	0.54	0.38	0.03	-0.08
123	630	2.46	3.20	3.34	3.22	2.84	2.30	1.96	1.63	1.24	1.11	0.91	0.45	0.24	-0.47	-0.08
123	700	2.42	3.10	3.24	3.11	2.70	2.17	1.79	1.31	0.98	0.90	0.31	-0.52	-0.11	-0.15	-9.00
123	730	2.41	2.92	3.08	2.95	2.55	1.98	1.59	1.12	0.83	0.59	0.33	-0.04	-0.57	-0.30	-9.00
123	800	2.41	2.85	3.02	2.89	2.48	1.89	1.60	1.21	0.79	0.66	0.48	0.22	0.22	-1.22	-9.00
123	830	2.41	2.81	2.99	2.86	2.46	1.84	1.53	1.16	0.68	0.58	0.08	0.15	-0.66	-0.39	-9.00
123	946	2.46	2.57	2.77	2.61	2.22	1.74	1.38	1.02	0.71	0.48	0.41	-9.00	-9.00	-9.00	-0.37
123	946	2.46	2.57	2.77	2.61	2.22	1.74	1.38	1.02	0.71	0.48	0.41	-9.00	-9.00	-9.00	-0.37
123	1000	2.46	2.77	2.98	2.85	2.46	1.94	1.62	1.30	0.94	0.85	0.35	-0.17	-0.34	-0.04	-1.52
123	1030	2.48	3.12	3.31	3.17	2.76	2.25	1.91	1.57	1.15	0.86	0.55	0.24	0.23	-1.15	-9.00
123	1100	2.48	3.26	3.41	3.28	2.90	2.48	2.18	1.81	1.42	1.25	0.82	0.03	0.09	-0.08	-0.55
123	1130	2.46	3.25	3.44	3.30	2.96	2.55	2.24	1.81	1.44	1.21	0.87	0.57	-0.19	-0.21	-0.07
123	1200	2.47	3.25	3.44	3.30	2.93	2.47	2.14	1.70	1.34	1.02	0.72	0.49	0.03	-0.52	-0.59
123	1230	2.45	3.26	3.41	3.25	2.86	2.32	1.93	1.42	1.14	0.61	0.36	0.43	0.17	-0.24	-0.07
123	1300	2.42	2.95	3.12	2.97	2.58	2.02	1.63	1.27	0.90	0.64	0.48	-0.29	0.09	-0.15	-1.22
123	1330	2.45	2.83	3.04	2.90	2.48	1.84	1.42	1.05	0.75	0.55	0.24	-0.54	-0.47	-0.52	-0.60
123	1400	2.46	2.92	3.16	3.04	2.60	2.06	1.66	1.20	0.74	0.62	0.34	-0.15	-0.29	-0.57	-9.00
123	1430	2.48	2.86	3.14	3.01	2.57	2.00	1.60	1.24	0.86	0.66	0.01	0.42	-1.40	-1.70	-0.54
123	1500	2.43	2.68	2.97	2.83	2.39	1.78	1.36	1.03	0.64	0.45	-0.27	0.17	-0.29	-0.60	-0.54
123	1530	2.46	2.73	2.99	2.88	2.42	1.82	1.54	1.07	0.84	0.55	0.57	-0.70	-0.23	-1.52	-1.40
123	1545	2.41	2.61	2.89	2.77	2.29	1.77	1.40	0.95	0.69	0.25	0.25	-0.05	-9.00	0.13	-0.35
123	1600	2.45	2.48	2.82	2.70	2.25	1.56	1.35	1.01	0.61	0.41	0.23	-0.14	-0.05	-0.51	-0.60
123	1630	2.45	2.65	2.94	2.81	2.32	1.72	1.40	1.05	0.57	0.41	0.24	-0.10	-0.49	-1.52	-1.70
123	1700	2.51	2.61	2.87	2.76	2.30	1.69	1.27	0.98	0.52	0.57	-0.20	-0.03	-0.23	-9.00	-0.55
123	1730	2.48	2.71	2.90	2.77	2.28	1.72	1.24	0.79	0.40	0.46	-0.04	-0.03	-0.51	-0.57	-1.70
123	1800	2.49	2.77	2.98	2.88	2.41	1.81	1.54	1.11	0.78	0.61	0.19	0.10	0.10	-0.19	-0.52
123	1830	2.49	2.83	3.06	2.92	2.46	1.94	1.61	1.23	0.99	0.46	0.55	0.36	-1.00	-0.46	-0.48
123	1900	2.49	2.88	3.09	2.97	2.50	2.00	1.73	1.33	1.03	0.92	0.54	0.33	-0.03	0.29	-0.46
123	1930	2.48	2.80	3.04	2.91	2.46	1.95	1.65	1.28	0.97	0.81	0.64	0.38	0.22	-0.89	-1.70
123	2000	2.48	2.68	2.95	2.86	2.44	1.90	1.65	1.22	0.94	0.73	0.55	0.41	0.29	-0.52	-9.00
123	2030	2.51	2.72	2.98	2.88	2.48	1.96	1.71	1.32	1.04	0.76	0.66	0.26	0.11	-1.70	0.09
123	2100	2.50	2.84	3.08	2.98	2.56	2.08	1.84	1.48	1.20	1.09	0.54	0.59	0.22	0.39	0.00
123	2130	2.50	2.89	3.09	2.97	2.55	2.05	1.77	1.36	1.08	0.73	0.47	0.37	0.15	-0.34	-0.01
123	2200	2.48	2.89	3.11	2.98	2.55	2.10	1.78	1.40	1.07	0.90	0.61	0.51	0.30	-0.02	-0.01
123	2230	2.49	2.97	3.17	3.03	2.63	2.16	1.81	1.52	1.30	0.97	0.83	0.66	0.49	0.11	-0.09
123	2300	2.50	3.05	3.25	3.13	2.73	2.25	1.92	1.60	1.36	1.25	0.95	0.83	0.29	0.26	0.07
123	2330	2.48	3.03	3.23	3.10	2.66	2.20	1.81	1.43	1.14	0.87	0.75	0.53	0.27	0.24	-1.00
124	0	2.48	2.99	3.20	3.06	2.67	2.16	1.83	1.49	1.10	1.10	0.73	0.44	0.58	0.27	0.23
124	30	2.47	2.96	3.17	3.04	2.66	2.14	1.85	1.45	1.18	0.87	0.62	0.56	-0.01	-0.15	-0.85
124	100	2.46	2.91	3.13	3.01	2.61	2.13	1.74	1.46	1.17	0.85	0.56	0.52	0.15	0.03	-9.00
124	130	2.48	2.98	3.17	3.05	2.67	2.13	1.85	1.47	1.17	0.92	0.53	0.23	0.36	-0.07	-9.00
124	200	2.44	3.00	3.17	3.04	2.68	2.20	1.83	1.45	1.17	1.00	0.83	0.58	0.14	-0.25	0.00
124	230	2.47	2.98	3.17	3.05	2.66	2.17	1.88	1.42	1.18	0.94	0.81	0.46	0.40	-0.08	0.03
124	300	2.54	2.97	3.15	3.05	2.69	2.20	1.89	1.46	1.27	0.96	0.86	0.37	0.49	0.00	-0.26

SNI Knollenberg Log Data May79, range 4

DAY	TIME	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
124	330	2.67	3.21	3.73	3.86	3.82	3.80	3.63	3.29	3.04	3.00	2.89	2.76	2.61	2.56	2.23
124	400	2.60	3.14	3.66	3.76	3.72	3.69	3.53	3.21	2.92	2.89	2.76	2.64	2.50	2.44	2.11
124	430	2.54	3.13	3.62	3.67	3.61	3.56	3.36	3.01	2.74	2.72	2.57	2.46	2.33	2.27	1.93
124	500	2.47	3.20	3.59	3.56	3.43	3.30	3.07	2.67	2.39	2.35	2.22	2.10	1.95	1.90	1.57
124	530	2.47	3.04	3.46	3.47	3.36	3.21	3.02	2.63	2.33	2.31	2.18	2.04	1.88	1.88	1.53
124	600	2.35	3.03	3.37	3.31	3.18	3.00	2.76	2.37	2.07	2.03	1.89	1.76	1.63	1.54	1.31
124	630	2.13	2.86	3.10	3.05	2.93	2.74	2.52	2.09	1.80	1.74	1.65	1.55	1.37	1.27	0.99
124	700	2.45	2.56	2.34	1.79	1.49	1.39	1.25	0.84	0.59	0.56	0.48	0.51	0.33	0.05	0.00
124	730	1.43	2.73	2.49	1.84	1.48	1.37	1.25	0.87	0.76	0.56	0.58	0.34	0.22	-0.02	0.03
124	800	1.28	1.77	1.50	1.15	0.90	0.68	-9.00	-0.05	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
124	830	1.24	1.69	1.50	1.13	0.89	0.61	0.30	-0.24	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
124	900	1.93	2.90	2.97	2.87	2.71	2.48	2.23	1.81	1.47	1.40	1.28	-9.00	-9.00	-9.00	-9.00
124	930	1.95	3.00	2.99	2.88	2.71	2.46	2.20	1.77	1.42	1.36	1.30	-9.00	1.04	-9.00	0.59
124	1000	2.05	3.24	3.38	3.28	3.09	2.84	2.56	2.11	1.74	1.69	1.55	1.47	-9.00	-9.00	0.91
124	1030	2.14	3.30	3.37	3.30	3.15	2.90	2.65	2.21	1.79	1.79	1.68	1.55	1.41	1.24	-9.00
124	1100	2.41	3.59	3.97	3.89	3.68	3.42	3.11	2.68	2.20	2.19	2.04	1.91	1.70	-9.00	-9.00
124	1130	2.64	3.83	4.27	4.21	4.02	3.80	3.51	3.14	2.67	2.66	2.52	2.41	2.21	2.22	2.00
127	1309	2.64	3.47	4.10	4.26	4.20	4.20	3.96	3.49	3.33	3.34	3.22	3.09	2.92	2.81	2.35
127	1330	2.68	3.37	4.02	4.19	4.14	4.13	3.91	3.44	3.28	3.30	3.15	3.04	2.87	2.75	2.38
127	1400	2.64	3.27	3.91	4.10	4.04	4.04	3.78	3.32	3.17	3.18	3.07	2.95	2.77	2.64	2.22
127	1430	2.69	3.30	3.94	4.11	4.06	4.05	3.82	3.34	3.19	3.18	3.08	2.96	2.78	2.67	2.30
127	1500	2.67	3.45	4.04	4.18	4.12	4.12	3.85	3.41	3.25	3.26	3.14	3.02	2.85	2.72	2.28
127	1530	2.66	3.38	4.00	4.18	4.11	4.09	3.82	3.37	3.21	3.23	3.13	3.00	2.82	2.68	2.28
127	1600	2.68	3.33	3.97	4.15	4.10	4.09	3.84	3.39	3.22	3.23	3.13	3.01	2.82	2.71	2.29
127	1630	2.66	3.35	3.96	4.13	4.06	4.05	3.76	3.32	3.18	3.17	3.08	2.97	2.78	2.62	2.21
127	1700	2.64	3.36	3.98	4.15	4.09	4.08	3.84	3.38	3.22	3.24	3.11	3.02	2.83	2.68	2.26
127	1730	2.64	3.27	3.88	4.08	4.04	4.03	3.81	3.36	3.19	3.18	3.07	2.96	2.81	2.69	2.26
127	1800	2.66	3.22	3.84	4.03	4.00	3.98	3.76	3.27	3.12	3.13	3.01	2.90	2.72	2.60	2.18
127	1830	2.67	3.14	3.73	3.92	3.87	3.86	3.59	3.11	2.98	2.96	2.84	2.76	2.59	2.42	2.03
127	1900	2.66	3.09	3.70	3.89	3.84	3.83	3.57	3.08	2.94	2.92	2.81	2.73	2.56	2.46	2.00
127	1930	2.68	3.15	3.73	3.92	3.87	3.86	3.61	3.14	2.98	2.98	2.87	2.75	2.61	2.46	2.04
127	2000	2.66	3.22	3.81	4.00	3.94	3.94	3.67	3.21	3.07	3.08	2.98	2.84	2.68	2.54	2.14
127	2030	2.66	3.25	3.85	4.03	3.97	3.97	3.70	3.25	3.11	3.10	3.00	2.88	2.73	2.59	2.15
127	2100	2.66	3.28	3.88	4.07	4.01	4.00	3.73	3.29	3.14	3.13	3.04	2.92	2.76	2.65	2.20
127	2130	2.68	3.29	3.89	4.08	4.04	4.02	3.75	3.30	3.18	3.14	3.05	2.94	2.77	2.63	2.22
127	2200	2.66	3.34	3.96	4.13	4.07	4.07	3.75	3.32	3.20	3.18	3.07	2.95	2.80	2.64	2.18
127	2230	2.69	3.30	3.90	4.11	4.06	4.04	3.75	3.31	3.17	3.16	3.06	2.95	2.78	2.63	2.19
127	2300	2.64	3.30	3.91	4.09	4.04	4.02	3.73	3.29	3.15	3.16	3.07	2.95	2.79	2.66	2.15
127	2330	2.65	3.26	3.86	4.06	4.01	4.00	3.72	3.27	3.14	3.12	3.04	2.91	2.75	2.64	2.18
128	0	2.65	3.28	3.84	4.04	4.00	3.98	3.72	3.25	3.14	3.11	3.02	2.90	2.73	-9.00	2.19
128	30	2.63	3.27	3.81	4.00	3.96	3.95	3.67	3.21	3.09	3.06	2.97	2.86	2.70	2.58	2.14
128	100	2.61	3.24	3.82	4.02	3.98	3.96	3.68	3.23	3.11	3.09	3.01	2.90	2.73	2.59	2.14
128	130	2.65	3.20	3.81	4.02	3.97	3.95	3.66	3.23	3.14	3.07	2.97	2.88	2.71	2.57	-9.00
128	200	2.62	3.15	3.73	3.93	3.88	3.86	3.54	3.12	3.00	2.97	2.88	2.79	2.61	2.43	-9.00
128	230	2.64	3.16	3.65	3.83	3.79	3.77	3.50	3.05	2.92	2.90	2.82	2.68	2.55	2.39	-9.00
128	300	2.62	3.14	3.62	3.81	3.77	3.75	3.47	3.02	2.92	2.88	2.80	2.68	2.51	2.41	-9.00
128	330	2.65	3.13	3.60	3.79	3.74	3.72	3.47	3.01	2.88	2.87	2.77	2.65	-9.00	-9.00	1.99
128	400	2.64	3.10	3.56	3.73	3.70	3.67	3.42	2.98	2.84	2.82	2.72	-9.00	2.44	2.33	1.92
128	430	2.66	3.05	3.55	3.71	3.68	3.65	3.43	2.98	2.83	2.81	2.72	2.58	2.44	2.35	1.89
128	500	2.66	3.06	3.53	3.71	3.66	3.63	3.37	2.91	2.78	2.77	2.68	2.58	-9.00	2.29	-9.00
128	530	2.66	2.99	3.49	3.68	3.62	3.60	3.28	2.85	2.72	2.69	2.64	2.51	2.34	2.16	1.65
128	600	2.72	2.97	3.46	3.64	3.59	3.56	3.24	2.83	2.69	2.68	2.60	2.48	2.31	2.18	1.67
128	630	2.66	3.07	3.53	3.70	3.68	3.65	3.41	2.94	2.80	2.77	2.67	2.57	2.40	2.30	1.81
128	700	2.67	2.91	3.41	3.57	3.54	3.50	3.25	2.81	2.67	2.62	2.53	2.43	2.26	2.16	1.64
128	730	2.67	3.04	3.56	3.75	3.70	3.68	3.40	2.95	2.80	2.78	2.68	2.61	2.41	2.29	1.71
128	800	2.66	3.05	3.57	3.76	3.72	3.70	3.41	2.96	2.81	2.80	2.71	2.58	-9.00	2.23	1.71
128	830	2.68	3.04	3.67	3.86	3.78	3.76	3.41	2.98	2.85	2.85	2.75	2.62	2.46	2.28	1.78
128	900	2.65	3.16	3.79	3.96	3.86	3.84	3.47	3.09	2.94	2.95	2.87	2.75	2.55	2.37	1.87
128	930	2.66	3.17	3.80	3.97	3.88	3.86	3.47	3.13	2.97	2.99	2.88	2.77	2.56	2.38	1.94
128	1000	2.69	3.22	3.88	4.04	3.96	3.93	3.57	3.20	3.05	3.07	2.96	2.85	2.66	2.45	-9.00
128	1030	2.68	3.40	4.00	4.14	4.04	4.02	3.62	3.27	3.13	3.15	3.04	2.91	2.73	2.54	2.10
128	1100	2.83	3.54	4.11	4.23	4.13	4.10	3.67	3.33	3.19	3.21	3.11	3.00	2.78	2.58	2.19
128	1130	2.72	3.56	4.10	4.22	4.10	4.09	3.65	3.33	3.19	3.21	3.11	3.00	2.78	2.60	2.24
128	1200	2.72	3.73	4.24	4.35	4.23	4.23	3.79	3.47	3.34	3.34	3.25	3.12	2.95	2.70	2.35
128	1230	2.70	3.83	4.32	4.42	4.29	4.29	3.83	3.53	3.37	3.39	3.31	3.19	2.96	2.74	2.43
128	1300	2.57	3.78	4.28	4.33	4.23	4.22	3.76	3.48	3.31	3.35	3.24	3.11	2.91	2.68	2.35
128	1330	2.71	3.97	4.46	4.52	4.42	4.42	3.94	3.65	3.51	3.54	3.43	3.33	3.09	2.87	2.53
128	1400	2.81	3.95	4.44	4.21	4.38	4.38	3.88	3.62	3.46	3.50	3.39	3.27	3.06	2.84	2.49
128	1430	2.72	3.99	4.48	4.18	4.44	4.43	3.95	3.66	3.50	3.54	3.44	3.33	3.10	2.86	2.56
128	1500	2.74	4.05	4.51	3.68	4.50	4.51	4.07	3.72	3.58	3.61	3.51	3.39	3.18	2.97	2.63
128	1530	2.69	4.11	4.35	3.92	4.53	4.55	4.07	3.76	3.60	3.64	3.56	3.43	3.20	2.99	2.67
128	1600	2.70	4.12	4.27	3.98	4.51	4.47	4.09	3.77	3.61	3.66	3.56	3.44	3.21	3.01	2.71
128	1630	2.73	4.11	4.29	3.95	4.56	4.51	4.12	3.77	3.61	3.65	3.55	3.43	3.24	3.03	2.66
128	1647	2.73	4.14	3.82	4.02	4.50	4.44	4.17	3.79	3.64	3.65	3.56	3.43	3.26	3.02	2.72
128	1700	2.85	4.12	3.78	4.03	4.49	4.03	4.13	3.78	3.62	3.65	3.55	3.43	3.24	3.01	2.72
128	1730	2.71	4.18	3.67	4.22	3.96	3.69	4.21	3.84	3.68	3.71	3.61	3.49	3.30	3.08	2.77
128	1802	2.72	4.19	3.80	4.25	3.52	3.88	4.26	3.87	3.70	3.74	3.63	3.51	3.32	3.13	2.76
128	1831	2.69	4.13	3.75	4.22	3.67	3.89	4.27	3.84	3.68	3.71	3.61	3.49	3.32	3.14	2.73
128	1900	2.73	4.16	3.70	4.21	3.52	3.87	4.27	3.84	3.69	3.70	3.61	3.47	3.31	3.12	2.79
130	746	2.40	2.14	2.87	3.12	3.14	3.05	2.90	2.59	2.20	2.23	2.07	1.95	-9.00	1.80	-9.00
130	800	2.41	2.13	2.90	3.16	3.18	3.08	2.95	2.63	2.25	2.27	2.12	2.00	1.89	-9.00	-9.00

SNI Knollenberg Log Data May79, range 2

DAY	TIME	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
124	330	2.41	3.09	3.26	3.14	2.77	2.27	1.95	1.60	1.30	1.05	0.84	0.70	0.20	0.12	0.17
124	400	2.41	2.96	3.14	3.02	2.67	2.17	1.79	1.46	1.18	0.89	0.77	0.46	0.14	0.05	-0.03
124	430	2.37	2.74	2.95	2.83	2.47	1.96	1.62	1.16	0.98	0.73	0.35	0.18	[illegible]	-0.08	-0.57
124	500	2.34	2.37	2.60	2.47	2.11	1.51	1.18	0.89	0.43	0.11	0.07	-0.32	[illegible]	-0.82	-0.89
124	530	2.34	2.30	2.57	2.42	2.05	1.49	1.14	0.73	0.33	-0.10	-0.10	-0.20	[illegible]	-0.59	-2.00
124	600	2.26	2.07	2.34	2.18	1.78	1.22	0.89	0.48	-0.01	-0.09	-0.47	-1.15	-1.00	-0.96	-9.00
124	630	2.09	1.80	2.00	1.86	1.49	0.89	0.63	0.32	-0.02	-0.17	-0.77	-1.30	-2.00	-2.00	-9.00
124	700	1.65	1.35	0.99	0.92	0.71	-0.03	-0.09	-0.44	-0.89	-1.40	-1.40	-1.40	-9.00	-9.00	-9.00
124	730	1.62	1.44	1.11	0.92	0.60	0.16	-0.31	-0.38	-1.30	-9.00	-9.00	-0.82	-9.00	-9.00	-9.00
124	800	1.45	0.85	0.57	0.46	0.10	-0.62	-9.00	-1.10	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
124	830	1.37	0.67	0.66	0.47	0.00	-0.36	-0.74	-0.96	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
124	900	1.94	1.67	1.73	1.62	1.30	0.72	0.39	-0.02	-0.49	-0.49	-1.10	-9.00	-9.00	-9.00	-9.00
124	930	1.98	1.66	1.66	1.52	1.21	0.54	0.18	-0.18	-0.18	-0.48	-1.22	-9.00	-1.22	-9.00	-1.22
124	1000	2.07	1.91	1.95	1.83	1.46	0.94	0.56	0.32	-0.19	-0.44	-0.82	-1.15	-9.00	-9.00	-1.15
124	1030	2.16	1.97	2.01	1.88	1.51	1.09	0.80	0.50	0.10	-0.08	-0.42	-0.72	-1.10	-0.82	-9.00
124	1100	2.29	2.47	2.46	2.27	1.92	1.40	1.11	0.54	0.24	-0.57	-0.28	-0.40	-0.57	-9.00	-9.00
124	1130	2.54	2.92	2.95	2.77	2.48	2.05	1.83	1.41	1.12	1.04	0.64	0.30	0.37	0.10	-0.14
127	1309	2.52	3.38	3.68	3.52	3.04	2.55	2.21	1.90	1.64	1.38	1.40	1.14	0.97	0.41	0.54
127	1330	2.49	3.31	3.62	3.47	2.98	2.51	2.18	1.73	1.39	1.25	1.05	0.92	0.89	0.53	0.59
127	1400	2.52	3.17	3.49	3.35	2.88	2.37	2.07	1.73	1.40	1.30	1.12	1.10	0.53	0.83	0.55
127	1430	2.51	3.23	3.53	3.38	2.91	2.45	2.15	1.73	1.56	1.32	1.03	0.96	0.79	0.60	0.66
127	1500	2.50	3.30	3.56	3.43	2.96	2.50	2.23	1.82	1.53	1.42	1.06	0.89	0.92	0.73	0.43
127	1530	2.49	3.23	3.53	3.39	2.90	2.43	2.11	1.75	1.52	1.34	1.13	0.95	1.13	0.45	0.23
127	1600	2.51	3.27	3.55	3.41	2.91	2.47	2.13	1.80	1.51	1.21	1.19	0.87	0.84	0.37	0.25
127	1630	2.50	3.18	3.49	3.36	2.85	2.32	2.11	1.65	1.48	1.16	1.13	0.86	0.79	0.05	0.23
127	1700	2.49	3.24	3.55	3.40	2.92	2.42	2.15	1.72	1.47	1.33	1.09	0.82	1.03	0.20	0.36
127	1730	2.49	3.24	3.51	3.36	2.92	2.44	2.11	1.71	1.47	1.21	0.97	0.84	0.87	0.17	0.54
127	1800	2.51	3.18	3.40	3.29	2.84	2.34	2.01	1.70	1.34	1.15	1.00	0.76	0.75	0.44	0.53
127	1830	2.50	2.96	3.22	3.11	2.63	2.16	1.85	1.60	1.13	1.19	0.86	0.86	0.56	0.49	-0.29
127	1900	2.50	2.93	3.23	3.09	2.63	2.22	1.90	1.50	1.22	1.13	0.93	0.78	0.68	0.49	-0.28
127	1930	2.50	2.96	3.25	3.15	2.70	2.23	1.99	1.57	1.31	1.33	0.78	0.88	0.71	0.71	0.48
127	2000	2.52	3.03	3.33	3.23	2.77	2.24	2.03	1.61	1.30	1.10	0.96	0.77	0.54	0.42	0.60
127	2030	2.55	3.10	3.39	3.28	2.80	2.35	2.04	1.63	1.48	1.13	1.10	0.86	0.80	0.62	0.32
127	2100	2.50	3.08	3.41	3.30	2.83	2.36	2.07	1.66	1.52	1.24	1.01	0.76	0.56	0.57	0.26
127	2130	2.51	3.14	3.43	3.32	2.85	2.36	2.11	1.70	1.53	1.31	1.20	0.82	0.88	0.61	0.31
127	2200	2.49	3.16	3.47	3.36	2.87	2.34	2.07	1.68	1.40	1.26	0.82	0.85	0.77	0.17	0.17
127	2230	2.51	3.14	3.43	3.34	2.82	2.29	2.01	1.67	1.27	1.06	1.09	0.39	0.54	0.30	0.00
127	2300	2.48	3.12	3.43	3.32	2.83	2.28	2.03	1.70	1.25	1.05	0.88	0.89	0.58	0.11	-0.30
127	2330	2.49	3.15	3.41	3.30	2.83	2.30	2.05	1.62	1.38	1.30	0.86	0.61	0.36	0.51	0.14
128	0	2.52	3.12	3.39	3.28	2.80	2.28	2.02	1.61	1.34	1.06	0.61	0.65	0.57	-9.00	-0.02
128	30	2.50	3.03	3.35	3.24	2.76	2.23	1.90	1.46	1.28	0.93	0.83	0.50	-0.05	0.25	-0.35
128	100	2.49	3.10	3.36	3.28	2.80	2.30	1.98	1.61	1.09	1.00	0.62	0.62	0.52	0.27	-0.31
128	130	2.50	3.06	3.35	3.26	2.78	2.26	1.92	1.47	1.22	1.07	0.90	0.75	0.63	-0.33	-9.00
128	200	2.50	2.92	3.22	3.14	2.65	2.13	1.82	1.40	1.14	0.85	0.62	0.64	0.38	0.16	-9.00
128	230	2.48	2.85	3.17	3.08	2.63	2.07	1.83	1.38	1.14	0.83	0.64	0.08	-0.10	-0.10	-9.00
128	300	2.47	2.87	3.14	3.05	2.55	2.02	1.79	1.40	0.99	0.90	0.48	0.17	-0.08	-0.08	-9.00
128	330	2.47	2.81	3.12	3.04	2.57	2.07	1.68	1.23	1.08	0.89	0.37	0.07	-9.00	-9.00	-0.11
128	400	2.48	2.77	3.08	2.99	2.56	1.98	1.71	1.20	1.03	0.85	0.36	-9.00	0.05	-0.10	-0.40
128	430	2.48	2.76	3.07	2.96	2.52	2.03	1.73	1.23	1.01	0.82	0.57	0.47	-0.43	-0.13	-0.43
128	500	2.50	2.85	2.99	2.93	2.46	1.84	1.61	1.08	0.96	0.54	0.71	-0.38	-9.00	-0.38	-9.00
128	530	2.50	2.61	2.91	2.86	2.34	1.81	1.55	1.06	0.79	0.52	0.31	0.39	0.09	0.09	0.21
128	600	2.51	2.47	2.87	2.80	2.30	1.73	1.49	1.15	0.94	0.46	0.31	0.37	0.39	0.31	-0.19
128	630	2.48	2.69	3.00	2.93	2.48	1.84	1.55	1.20	0.98	0.57	0.61	0.35	0.52	0.27	0.17
128	700	2.50	2.51	2.82	2.79	2.33	1.63	1.41	1.07	0.77	0.49	0.63	0.16	-0.40	-0.40	-0.40
128	730	2.50	2.73	3.05	2.94	2.42	1.78	1.37	0.94	0.72	0.34	-0.06	0.12	0.42	-0.36	-0.36
128	800	2.50	2.73	3.04	2.96	2.44	1.81	1.51	1.06	1.05	0.76	0.65	0.20	-9.00	-0.33	-0.43
128	830	2.54	2.78	3.11	3.02	2.45	1.89	1.70	1.23	1.04	0.94	0.76	0.19	0.32	0.19	0.01
128	900	2.53	2.89	3.21	3.10	2.58	2.09	1.78	1.39	1.31	1.07	1.09	0.68	0.44	0.42	0.01
128	930	2.54	2.88	3.22	3.10	2.54	2.11	1.87	1.52	1.29	1.02	0.95	1.00	0.59	0.35	0.35
128	1000	2.56	2.99	3.31	3.21	2.69	2.26	1.99	1.58	1.35	1.30	1.10	1.03	1.03	0.66	-9.00
128	1030	2.55	3.07	3.40	3.29	2.75	2.30	2.09	1.71	1.41	1.26	1.25	1.13	0.96	0.74	0.26
128	1100	2.58	3.12	3.48	3.36	2.80	2.30	2.12	1.81	1.43	1.33	1.12	1.20	1.06	0.86	0.91
128	1130	2.58	3.08	3.45	3.34	2.81	2.44	2.23	1.90	1.64	1.61	1.37	1.36	1.26	0.94	0.73
128	1200	2.61	3.27	3.61	3.50	2.97	2.60	2.42	2.13	1.84	1.70	1.56	1.46	1.45	1.41	0.70
128	1230	2.61	3.30	3.64	3.54	2.97	2.62	2.41	2.21	1.90	1.75	1.72	1.59	1.53	1.05	1.17
128	1300	2.47	3.24	3.58	3.49	2.92	2.57	2.40	2.10	1.85	1.80	1.58	1.59	1.47	1.28	0.94
128	1330	2.61	3.42	3.76	3.67	3.08	2.71	2.51	2.37	2.02	1.96	1.76	1.67	1.77	1.51	1.24
128	1400	2.62	3.43	3.77	3.67	3.11	2.78	2.56	2.40	2.14	1.98	1.83	1.81	1.62	1.58	1.23
128	1430	2.80	3.40	3.75	3.66	3.09	2.73	2.57	2.34	2.08	1.92	1.87	1.65	1.66	1.47	1.35
128	1500	2.64	3.54	3.88	3.78	3.26	2.86	2.68	2.47	2.16	2.09	1.98	1.91	1.83	1.59	1.54
128	1530	2.62	3.56	3.89	3.79	3.23	2.84	2.69	2.54	2.24	2.09	1.90	1.94	1.95	1.73	1.38
128	1600	2.58	3.58	3.90	3.81	3.29	2.87	2.72	2.57	2.26	2.17	2.00	1.86	1.93	1.67	1.55
128	1630	2.61	3.59	3.90	3.80	3.28	2.90	2.70	2.48	2.24	2.03	1.89	1.88	1.93	1.94	1.49
128	1647	2.59	3.58	3.91	3.81	3.29	2.91	2.77	2.61	2.28	2.16	1.97	1.90	1.93	1.72	1.50
128	1700	2.59	3.62	3.91	3.82	3.30	2.88	2.74	2.55	2.30	2.13	1.98	1.88	1.85	1.74	1.34
128	1730	2.60	3.68	3.96	3.87	3.33	2.94	2.76	2.59	2.35	2.11	1.99	1.92	1.92	1.76	1.56
128	1802	2.60	3.69	3.99	3.90	3.37	2.97	2.78	2.60	2.31	2.14	1.91	1.86	1.88	1.76	1.55
128	1831	2.57	3.68	3.98	3.89	3.38	2.97	2.80	2.57	2.35	2.17	2.01	1.98	2.06	1.75	1.37
128	1900	2.63	3.69	3.97	3.89	3.37	2.94	2.83	2.56	2.36	2.18	1.96	1.97	1.89	1.72	1.53
130	746	2.23	2.20	2.51	2.32	1.97	1.34	0.98	0.56	0.32	-0.42	-0.42	-0.72	-9.00	-0.72	-9.00
130	800	2.23	2.21	2.52	2.38	2.00	1.37	0.99	0.51	0.01	-0.10	-0.47	-1.30	-1.30	-9.00	-9.00

5. Wave Period and Wave Height Observations

One hundred and seventy-one wave period and wave height observations made 15.6 km upwind of the micrometeorological observations in water approximately 100 m deep are presented in tabular form. The values presented are based upon measurements averaged by eye over a 3 min period. They were recorded in increments of 1 sec for wave period and 0.5 m for wave height. The observations were made by the Geophysics Division, Pacific Missile Test Center, Point Mugu, California, with a Datawell "Waverider" buoy model 6900. The data are presented courtesy of deViolini (1980).

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Day	Approximate Time (PST)	Av. Wave Period (sec)	Av. Wave Height (meters)
1 May	12:00	8	0.5
	13:00	7	0.5
	14:00	9	0.5
	15:00	7	1.5
	16:00	7	2.0
	17:00	6	2.0
	18:00	6	2.0
	19:00	7	2.0
	20:00	7	2.0
	21:00	7	2.0
	22:00	7	2.0
	23:00	8	2.0
2 May	00:00	7	2.0
	01:00	6	2.5
	02:00	6	2.5
	03:00	7	2.0
	04:00	7	2.0
	05:00	7	2.0
	06:00	7	2.0
	07:00	8	2.0
	08:00	8	2.0
	09:00	7	2.0
	10:00	8	2.0
	11:00	8	2.0
	12:00	8	2.0
	13:00	8	2.0
	14:00	8	2.0
	15:00	8	2.0
	16:00	8	2.0
	17:00	9	1.5
	18:00	7	2.0
	19:00	6	2.0
	20:00	6	2.0
	21:00	8	2.0
	22:00	6	2.0
	23:00	8	2.0
3 May	00:00	8	2.0
	01:00	8	2.0
	02:00	7	2.0
	03:00	7	2.0
	04:00	8	1.5
	05:00	8	1.5
	06:00	8	1.5
	07:00	9	1.0
	08:00	10	1.0
	09:00	11	1.0
	10:00	11	1.0
	11:00	11	1.0
	12:00	10	1.0
	13:00	10	1.0
	14:00	10	1.0
	15:00	10	1.0
	16:00	11	1.5
	17:00	13	1.0
	18:00	9	1.5
	19:00	11	1.5
	20:00	11	1.5
	21:00	12	1.5
	22:00	11	1.5
	23:00	12	1.5
4 May	00:00	12	1.0
	01:00	13	1.0
	02:00	11	1.0
	03:00	14	1.5
	04:00	11	1.5
	05:00	14	1.0
	06:00	13	1.0
	07:00	13	1.0
	08:00	13	1.0
	09:00	12	1.0
	10:00	12	1.5
	11:00	12	1.5
	12:00	12	1.5
	13:00	11	1.5
	14:00	11	1.5
	15:00	11	1.5
	16:00	8	1.5
	17:00	12	1.5
	18:00	9	1.5
	19:00	13	1.0
	20:00	11	1.5
	21:00	13	1.5
	22:00	12	1.0
	23:00	12	1.5
5 May	00:00	14	1.0
	01:00	13	1.0
	02:00	13	1.0
	03:00	15	1.0
	04:00	20	1.0
	05:00	11	1.5
	06:00	7	1.0
	07:00	6	1.5
	08:00	5	2.0
	09:00	9	2.0
	10:00	8	2.0
	11:00	7	3.0
	12:00	7	2.0
	13:00	7	1.5
	14:00	8	2.0
	15:00	6	2.0
	16:00	8	1.5
	17:00	8	1.5
	18:00	8	1.5
7 May	06:00	9	2.0
	07:00	10	2.0
	08:00	12	1.5
	09:00	9	2.0
	10:00	10	2.0
	11:00	10	2.0
	12:00	10	2.0
	13:00	8	1.5
	14:00	9	2.0
	15:00	9	2.0
	16:00	12	2.0
	17:00	11	2.5

Day	Approximate Time (PST)	Av. Wave Period (sec)	Av. Wave Height (meters)
	18:00	11	2.5
	19:00	11	2.0
	20:00	11	2.0
	21:00	11	2.0
	22:00	11	2.0
	23:00	11	2.0
8 May	00:00	11	2.0
	01:00	10	2.0
	02:00	10	2.0
	03:00	10	2.0
	04:00	9	2.0
	05:00	10	2.0
	06:00	9	2.0
	07:00	10	1.5
	08:00	12	2.0
	09:00	10	1.5
	10:00	11	2.0
	11:00	9	2.0
	12:00	9	2.0
	13:00	9	2.0
	14:00	8	2.0
	15:00	8	2.0
	16:00	8	2.0
	17:00	8	3.0
	18:00	8	2.5
	19:00	8	2.5
	20:00	8	3.5
	21:00	8	2.5
	22:00	9	3.0
	23:00	9	3.0

Day	Approximate Time (PST)	Av. Wave Period (sec)	Av. Wave Height (meters)
9 May	00:00	9	3.0
	01:00	8	2.5
	02:00	8	2.5
	03:00	8	2.5
	04:00	9	2.5
	05:00	8	3.0
	06:00	9	4.0
	07:00	9	4.0
	08:00	9	4.0
	09:00	9	3.5
	10:00	9	3.5
	11:00	9	3.5
	12:00	–	–
	13:00	–	–
	14:00	–	–
	15:00	11	2.5
	16:00	–	–
	17:00	–	–
	18:00	–	–
	19:00	6	2.0
	20:00	8	2.0
	21:00	8	2.0
	22:00	7	2.5
	23:00	8	2.0
10 May	00:00	9	3.0
	01:00	8	2.0
	02:00	8	2.0
	03:00	8	2.0
	04:00	8	2.0
	05:00	8	2.0
	06:00	9	1.0
	07:00	9	1.0
	08:00	9	1.5
	09:00	9	1.5
	10:00	–	–
	11:00	–	–
	12:00	–	–

6. Atmospheric Radon Observations

Fifty-nine hourly atmospheric radon (^{222}Rn) observations taken at a height of 5.3 m are presented in tabular form. The values presented are based upon measurements typically sampled for 20 min. The observations were made by Dr. Richard Jeck of the Naval Research Laboratory with a device described by Larson (1973). Values less then 5 pC_i/m^3 are believed to be typically indicative of an air mass of open ocean origin and values greater than 50 pC_i/m^3 are typically indicative of an air mass of coastal origin. The tabular data are presented courtesy of Larson (1980).

Day	Approximate StartTime(PST)1979	Radon (pCi/m^3)
1 May	12:00	2.0
	13:00	1.9
	14:00	2.3
	15:00	1.8
	17:00	1.6
	18:00	2.3
	19:00	2.0
2 May	08:00	4.9
	09:00	6.3
	10:00	6.6
	11:00	5.6
	12:00	5.3
	13:00	6.0
	14:00	7.1
	15:00	6.4
	17:00	6.8
	18:00	6.9
	19:00	9.7
3 May	08:00	14.0
	09:00	17.0
	10:00	18.0
	11:00	18.2
	12:00	18.1
	13:00	12.4
	14:10	5.8
	18:30	7.3
4 May	08:00	32.0
	09:00	25.5
	10:00	24.7
	11:00	27.2
	12:00	16.8
7 May	10:00	2.2
	11:00	1.8
	12:10	2.0
	14:00	1.5
8 May	07:05	0.8
	08:00	0.8
	09:05	1.5
	10:05	6.0
	11:00	9.0
	12:05	1.2
	13:00	1.3
	14:00	0.8
	18:00	1.0
	19:00	1.0
	20:00	2.4
9 May	07:20	6.9
	08:00	6.7
	09:00	7.5
	10:05	6.4
	12:00	8.2
	13:00	4.1
	14:10	5.5
	18:05	5.5
	19:00	4.5
10 May	07:15	10.7
	08:20	15.1
	09:10	18.0
	10:00	14.7

7. Inversion-Base Height Observations

Twenty inversion-base height observations launched 2.1 km downwind from the micrometeorological observations are presented in tabular form. The observations were made by the Geophysics Division, Pacific Missile Test Center, Point Mugu, California, with a National Weather Service radiosonde model J005 modified to take 10 readings/min. The data are presented courtesy of deViolini (1980).

Day	Approx. Launch Time (PST)	Height of Lowest Inversion Base (meters)
1 May	07:00	230
	13:50	510
2 May	07:30	520
	15:30	810
3 May	08:00	660
	14:30	670
4 May	07:50	540
	14:20	540
5 May	06:50	480
	11:00	630
	14:50	590
	18:50	500
7 May	08:00	1,150
	13:40	1,100
8 May	07:00	330
9 May	06:50	370
	11:30	420
	14:50	270
10 May	09:40	130
	13:30	140

8. Statistics for the Micrometeorological Observations

PARAMETER* SYMBOL	No. OF DATA RUNS	PARAMETER MIN. VALUE	DATE & TIME OF MIN. VALUE	PARAMETER MAX. VALUE	DATE & TIME OF MAX. VALUE	PARAMETER MEAN VALUE	PARAMETER STD. DEVIATION
AH1	272	7.123E-03	08 may 14:00	1.062E-02	05 may 17:30	9.047E-03	6.525E-04
AH2	272	7.259E-03	08 may 14:00	1.019E-02	05 may 02:30	9.050E-03	5.984E-04
AHW	272	1.147E-02	05 may 05:30	1.215E-02	01 may 15:30	1.177E-02	1.315E-04
AIRD	270	1.223E 00	05 may 17:00	1.239E 00	03 may 23:30	1.230E 00	3.787E-03
AIRDB	272	1.223E 00	05 may 17:00	1.239E 00	03 may 23:30	1.231E 00	3.757E-03
AT1	272	1.144E 01	08 may 06:30	1.420E 01	05 may 15:30	1.248E 01	5.753E-01
AT2	272	1.151E 01	08 may 06:30	1.423E 01	05 may 15:30	1.257E 01	5.606E-01
ATB	272	1.150E 01	08 may 06:30	1.422E 01	05 may 15:30	1.256E 01	5.622E-01
ATKM	272	2.846E 02	08 may 06:30	2.874E 02	05 may 15:30	2.857E 02	5.675E-01
ATWTB	272	-2.051E 00	08 may 06:30	6.039E-01	05 may 16:30	-1.014E 00	4.985E-01
BP1	272	1.008E 03	08 may 17:30	1.017E 03	04 may 10:00	1.013E 03	2.581E 00
BP2	272	1.010E 03	08 may 17:30	1.019E 03	04 may 10:00	1.014E 03	2.581E 00
BPB	272	1.009E 03	08 may 17:30	1.018E 03	04 may 10:00	1.014E 03	2.581E 00
BPM	272	1.009E 03	08 may 17:30	1.018E 03	04 may 10:00	1.013E 03	2.581E 00
BPW	272	1.011E 03	08 may 17:30	1.020E 03	04 may 10:00	1.015E 03	2.581E 00
BR	270	-1.024E 00	09 may 16:30	3.639E-01	03 may 12:00	2.239E-02	2.184E-01
BRB	272	-8.571E-02	05 may 17:00	3.424E-01	10 may 04:00	1.613E-01	8.007E-02
DFBR	270	2.282E-01	03 may 11:00	3.534E 02	09 may 06:30	6.284E 01	7.001E 01
DFDRAG	270	1.452E-01	08 may 02:30	2.266E 02	10 may 08:30	3.111E 01	2.964E 01
DFFRIC	270	5.157E-02	05 may 14:00	5.307E 01	10 may 08:30	1.234E 01	1.024E 01
DFHEFX	270	4.889E-01	09 may 21:30	5.941E 02	09 may 09:30	7.205E 01	9.921E 01
DFLHFX	270	1.746E-01	09 may 20:30	6.142E 02	01 may 15:30	4.215E 01	1.009E 02
DFMOFX	270	8.788E-02	05 may 14:00	6.382E 01	08 may 18:30	2.129E 01	1.743E 01
DFRI	270	1.293E 00	03 may 13:00	2.659E 02	08 may 05:30	5.574E 01	4.026E 01
DFRUFL	270	9.229E-05	10 may 04:00	7.491E 01	01 may 19:30	2.816E 01	2.311E 01
DFSLPT	270	8.994E-03	09 may 00:30	2.052E 02	09 may 08:00	5.634E 01	4.377E 01
DFSLSH	270	7.690E-02	03 may 10:00	3.508E 02	04 may 09:00	3.530E 01	7.138E 01
DFSR	270	0.000E 00	01 may 15:30	0.000E 00	01 may 15:30	0.000E 00	0.000E 00
DFTHFX	270	2.844E-02	04 may 12:30	2.239E 02	08 may 17:00	1.527E 01	2.578E 01
DFZOLT	270	1.217E 00	03 may 13:00	2.617E 02	08 may 05:30	5.504E 01	4.054E 01
DP1	272	6.145E 00	08 may 14:00	1.207E 01	05 may 17:30	9.546E 00	1.083E 00
DP2	272	6.405E 00	08 may 14:00	1.133E 01	05 may 02:30	9.544E 00	9.900E-01
DPB	272	6.374E 00	08 may 14:00	1.140E 01	05 may 17:30	9.545E 00	9.997E-01
DPTDZ	272	-7.925E-03	03 may 12:00	2.231E-02	09 may 16:30	-3.582E-04	4.955E-03
DRAG	270	1.982E-04	05 may 15:30	1.037E-02	10 may 08:30	2.214E-03	1.478E-03
DRAGB	272	7.571E-04	10 may 04:00	1.746E-03	08 may 15:30	1.225E-03	2.110E-04
DSHDZ	272	-1.476E-05	08 may 13:00	1.038E-04	01 may 17.00	-5.442E-06	1.221E-05
DWSDZ	272	-1.610E-02	04 may 08:30	2.558E-01	08 may 17:00	7.739E-02	5.653E-02
EBR	272	1.169E 02	01 may 17:00	9.452E 02	04 may 10:30	2.804E 02	9.902E 01
EBRB	272	1.226E 02	08 may 06:30	1.724E 04	07 may 13:00	2.688E 02	1.130E 03
EDRAG	272	4.697E 01	08 may 17:00	5.250E 02	04 may 11:00	1.169E 02	6.050E 01
EDRAGB	272	4.000E 01	01 may 15:30	4.000E 01	01 may 15:30	4.000E 01	0.000E 00
EFRICB	272	2.300E 01	01 may 15:30	2.300E 01	01 may 15:30	2.300E 01	0.000E 00
EFRICV	272	2.348E 01	08 may 17:00	2.625E 02	04 may 11:00	5.846E 01	3.025E 01
EHEFLX	272	3.376E 01	08 may 17:00	4.525E 02	04 may 10:30	1.156E 02	5.746E 01
EHEFXB	272	8.360E 01	08 may 06:30	1.719E 04	07 may 13:00	2.252E 02	1.130E 03
ELHFLX	272	5.183E 01	01 may 17:00	4.927E 02	04 may 10:30	1.648E 02	4.668E 01
ELHFXB	272	3.652E 01	08 may 14:00	5.729E 01	05 may 02:30	4.353E 01	3.587E 00
EMOFLX	272	4.697E 01	08 may 17:00	5.250E 02	04 may 11:00	1.169E 02	6.050E 01
EMOFXB	272	4.600E 01	01 may 15:30	4.600E 01	01 may 15:30	4.600E 01	0.000E 00
ERI	272	4.909E 01	08 may 17:00	3.000E 02	10 may 04:00	1.391E 02	5.046E 01
ERIB	272	1.556E 02	08 may 06:30	1.726E 04	07 may 13:00	2.962E 02	1.130E 03
ERUFL	272	4.348E 01	08 may 17:00	2.825E 02	04 may 11:00	7.846E 01	3.025E 01
ERUFLB	272	4.300E 01	01 may 15:30	4.300E 01	01 may 15:30	4.300E 01	0.000E 00
ESCLPT	272	9.385E 00	08 may 16:00	1.913E 02	04 may 10:30	5.713E 01	3.589E 01
ESCLSH	272	1.387E 01	01 may 17:00	2.315E 02	04 may 10:30	1.063E 02	2.134E 01
ESLPTB	272	1.066E 02	08 may 06:30	1.721E 04	07 may 13:00	2.482E 02	1.130E 03
ESLSHB	272	5.952E 01	08 may 14:00	8.029E 01	05 may 02:30	6.653E 01	3.587E 00
ESR	272	5.069E 00	09 may 12:00	2.435E 01	04 may 05:30	7.968E 00	2.927E 00
ESRB	272	5.069E 00	09 may 12:00	2.435E 01	04 may 05:30	7.968E 00	2.927E 00
ETHFLX	272	7.729E 00	05 may 15:30	2.097E 02	04 may 05:30	7.849E 01	5.895E 01
ETHFXB	272	5.471E 00	05 may 11:30	4.333E 01	07 may 13:00	2.289E 01	1.273E 01
EZOLT	272	5.211E 01	08 may 17:00	3.000E 02	10 may 04:00	1.452E 02	4.937E 01
EZOLTB	272	1.556E 02	08 may 06:30	1.726E 04	07 may 13:00	2.972E 02	1.130E 03
FRICV	270	6.106E-02	10 may 04:00	1.277E 00	08 may 17:00	4.135E-01	2.781E-01
FRICVB	272	5.301E-02	10 may 04:00	7.068E-01	08 may 15:30	3.237E-01	1.402E-01
HEFLX	270	-1.275E 02	08 may 16:30	5.218E 01	09 may 03:00	1.834E 00	2.417E 01
HEFLXB	272	-5.316E 00	05 may 17:00	2.956E 01	08 may 22:00	1.207E 01	6.844E 00
HUFLX	270	-4.231E-04	01 may 17:00	1.388E-04	08 may 13:00	2.372E-05	4.714E-05
HUFLXB	272	5.282E-06	10 may 08:30	9.963E-05	08 may 15:30	3.423E-05	1.937E-05
LHFLX	270	-1.045E 03	01 may 17:00	3.430E 02	08 may 13:00	5.863E 01	1.164E 02
LHFLXB	272	1.304E 01	10 may 08:30	2.462E 02	08 may 15:30	8.459E 01	4.788E 01
LHV	272	5.893E 05	05 may 15:30	5.908E 05	08 may 06:30	5.902E 05	3.208E 02
LHVB	272	5.893E 05	05 may 15:30	5.908E 05	08 may 06:30	5.902E 05	3.178E 02
MOFLX	270	-1.999E 00	08 may 17:00	0.000E 00	01 may 15:30	-3.050E-01	4.454E-01
MOFLXB	272	-6.123E-01	08 may 15:30	0.000E 00	01 may 15:30	-1.529E-01	1.287E-01
MOL	270	-1.897E 04	08 may 18:00	5.297E 03	08 may 13:00	-4.810E 02	1.720E 03
MOLB	272	-3.874E 03	05 may 10:00	3.632E 03	05 may 11:30	-2.711E 02	6.561E 02
OPTIR1	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
OPTIR2	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
OPTIRT	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
PSI1Z1	270	-1.759E 00	05 may 15:30	1.336E 00	03 may 09:00	9.344E-02	3.517E-01
PSI1Z2	270	-8.820E-01	05 may 15:30	9.805E-01	03 may 09:00	6.465E-02	2.096E-01
PSI2Z1	270	-2.377E 00	05 may 15:30	9.043E-01	03 may 09:00	1.047E-02	3.614E-01
PSI2Z2	270	-1.192E 00	05 may 15:30	6.622E-01	03 may 09:00	1.595E-02	1.972E-01
PT1	272	1.162E 01	08 may 06:30	1.438E 01	05 may 15:30	1.266E 01	5.753E-01
PT2	272	1.160E 01	08 may 06:30	1.432E 01	05 may 15:30	1.266E 01	5.606E-01
PTB	272	1.160E 01	08 may 06:30	1.432E 01	05 may 15:30	1.266E 01	5.622E-01

*See pp. 564-581

PARAMETER* SYMBOL	No. OF DATA RUNS	PARAMETER MIN. VALUE	DATE & TIME OF MIN. VALUE	PARAMETER MAX. VALUE	DATE & TIME OF MAX. VALUE	PARAMETER MEAN VALUE	PARAMETER STD DEVIATION
PTKSLOP	270	8.617E 01	08 may 18:00	1.137E 02	04 may 06:00	-2.290E 01	4.004E 01
PTWTP	272	-1.953E 00	0C may 06:30	7.019E-01	05 may 16:30	-9.160E 01	4.985E 01
REHL	270	0.000E 00	04 may 08:30	2.070E-01	04 may 05:00	1.797E-01	2.01HE 02
RH1	272	6.374E 01	08 may 14:00	9.322E 01	05 may 02:30	8.245E 01	5.644E 00
RH2	272	6.478E 01	08 may 14:00	9.217E 01	05 may 02:30	8.193E 01	5.284E 00
RHB	272	6.466E 01	08 may 14:00	9.230E 01	05 may 02:30	8.199E 01	5.317E 00
RI	272	-2.712E 00	04 may 11:00	1.044E-01	05 may 15:30	-6.600E-02	2.578E-01
RIB	272	-4.264E 00	10 may 04:00	1.607E-02	05 may 15:30	-1.914E 01	5.403E-01
RUFL	270	9.751E-11	10 may 04:00	3.698E-03	08 may 20:00	5.668E 04	1.047E-03
RUFLB	272	4.610E-12	10 may 04:00	1.439E-03	08 may 15:30	1.985E 04	2.873E-04
SCLPT	270	-7.411E-02	03 may 12:00	9.179E-02	08 may 16:00	-6.579E 03	2.860E-02
SCLPTB	272	-7.070E-02	10 may 04:00	1.230E-02	05 may 16:30	-3.239E-02	1.510E-02
SCLSH	270	-1.020E-04	08 may 13:00	6.581E-04	01 may 12:00	-4.375E 05	7.745E-05
SCLSHB	272	-1.240E-04	08 may 14:00	0.000E 00	01 may 15:30	-8.306E-05	1.501E-05
SDBR	270	5.069E-04	03 may 11:00	5.821E-01	09 may 16:30	8.581E-02	9.864E-02
SDDRAG	270	1.718E-06	08 may 02:30	5.691E-03	10 may 08:30	5.760E-04	7.379E 04
SDFRIC	270	1.589E-04	05 may 14:00	3.270E-01	08 may 18:30	5.521E-02	7.391E-02
SDHEFX	270	3.768E-02	07 may 13:30	8.323E 01	08 may 16:30	7.479E 00	1.226E 01
SDLHFX	270	8.566E-02	03 may 03:30	5.750E 02	01 may 17:00	2.272E 01	5.171E 01
SDMOFX	270	1.021E-04	05 may 14:00	7.403E-01	08 may 18:30	8.354E-02	1.620E-01
SDRI	270	4.713E-04	07 may 14:00	1.766E 00	10 may 04:00	7.390E-02	2.290E-01
SDRUFL	270	5.537E-11	10 may 04:00	1.419E 03	08 may 18:30	1.933E-04	3.855E-04
SDSLPT	270	3.476E-06	09 may 00:30	7.678E-02	08 may 16:00	1.608E-02	1.590E-02
SDSLSH	270	6.175E-08	03 may 10:00	4.407E-04	01 may 17:00	2.163E-05	4.215E-05
SDSR	270	0.000E 00	01 may 15:30	0.000E 00	01 may 15:30	0.000E 00	0.000E 00
SDTHFX	270	7.332E-02	04 may 17:30	6.557E 02	01 may 17:00	2.806E 01	5.907E 01
SDZOLT	270	4.585E-04	08 may 09:00	1.424E 00	10 may 04:00	6.270E-02	1.850E-01
SH1	272	5.816E-03	08 may 14:00	8.691E-03	05 may 17:30	7.357E-03	5.250E-04
SH2	272	5.921E-03	08 may 14:00	8.274E-03	05 may 02:30	7.353E-03	4.793E-04
SHB	272	5.908E-03	08 may 14:00	8.314E-03	05 may 17:30	7.354E-03	4.839E-04
SHSLOP	270	-1.881E 04	09 may 16:30	1.805E 04	04 may 06:00	-7.094E 03	4.486E 03
SPHEAT	272	2.413E 02	08 may 14:00	2.418E 02	05 may 17:30	2.416E 02	1.080E-01
SPHEATB	272	2.413E 02	08 may 14:00	2.418E 02	05 may 17:30	2.416E 02	1.045E-01
SR	270	-1.009E 03	09 may 12:00	1.478E 01	10 may 04:00	-2.290E 02	3.277E 02
SVP1	272	1.346E 01	08 may 06:30	1.618E 01	05 may 15:30	1.447E 01	5.571E-01
SVP2	272	1.354E 01	08 may 06:30	1.622E 01	05 may 15:30	1.457E 01	5.475E-01
SVPB	272	1.353E 01	08 may 06:30	1.622E 01	05 may 15:30	1.456E 01	5.486E-01
THFLX	270	-1.288E 03	01 may 17:00	2.989E 02	08 may 11:30	-1.685E 02	3.701E 02
THFLXB	272	-9.291E 02	05 may 11:30	2.374E 02	08 may 12:00	-1.332E 02	3.229E 02
TIDE	272	-7.919E-01	10 may 02:00	7.301E-01	09 may 19:30	-3.960E-02	3.487E-01
TUR1	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
TUR2	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
TURSLOP	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
TURT	272	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
UWPL	270	0.000E 00	04 may 08:30	1.564E 02	09 may 01:30	9.982E 01	2.886E 01
VP1	272	9.401E 00	08 may 14:00	1.407E 01	05 may 17:30	1.193E 01	8.679E-01
VP2	272	9.582E 00	08 may 14:00	1.345E 01	10 may 08:30	1.193E 01	7.955E-01
VPB	272	9.560E 00	08 may 14:00	1.348E 01	05 may 17:30	1.193E 01	8.029E-01
VPT1	272	1.275E 01	08 may 06:30	1.577E 01	05 may 15:30	1.394E 01	6.146E-01
VPT2	272	1.273E 01	08 may 06:30	1.566E 01	05 may 15:30	1.394E 01	5.935E-01
VPTB	272	1.273E 01	08 may 06:30	1.567E 01	05 may 15:30	1.394E 01	5.959E-01
VPTWTB	272	-8.198E-01	08 may 06:30	2.073E 00	05 may 16:30	3.615E-01	5.441E-01
VPW	272	1.516E 01	05 may 05:30	1.611E 01	01 may 15:30	1.557E 01	1.840E-01
VT1	272	1.257E 01	08 may 06:30	1.559E 01	05 may 15:30	1.376E 01	6.146E-01
VT2	272	1.264E 01	08 may 06:30	1.557E 01	05 may 15:30	1.385E 01	5.935E-01
VTB	272	1.263E 01	08 may 06:30	1.557E 01	05 may 15:30	1.384E 01	5.959E-01
VTWTB	272	-9.178E-01	08 may 06:30	1.975E 00	05 may 16:30	2.635E-01	5.441E-01
VVHC	272	5.282E-06	10 may 08:30	9.963E-05	08 may 15:30	3.423E-05	1.937E-05
VVLC	272	-4.996E-01	08 may 15:30	0.000E 00	01 may 15:30	-1.244E-01	1.049E-01
VVPTC	272	-4.294E-03	05 may 17:00	2.379E-02	08 may 22:00	9.694E-03	5.509E-03
WD	272						
WMBR	270	-3.433E-01	09 may 17:00	2.895E-01	10 may 04:00	1.077E-01	1.183E-01
WMDRAG	270	8.431E-04	04 may 06:00	3.708E-03	08 may 18:30	1.557E-03	6.067E-04
WMFRIC	270	5.391E-02	10 may 04:00	9.679E-01	08 may 17:00	3.632E-01	1.991E-01
WMHEFX	270	-9.154E 01	08 may 16:30	4.365E 01	09 may 03:00	5.826E 00	1.776E 01
WMHUFX	270	-1.684E-04	01 may 17:00	1.041E-04	08 may 13:00	3.104E-05	2.583E-05
WMLHFX	270	-4.159E 02	01 may 17:00	2.573E 02	08 may 13:00	7.671E 01	6.383E 01
WMMOFX	270	-1.263E 00	08 may 17:00	0.000E 00	01 may 15:30	-2.207E-01	2.719E-01
WMMOL	270	-2.919E 05	05 may 08:30	4.995E 04	05 may 08:00	-8.728E 02	1.847E 04
WMRI	270	-2.976E 00	10 may 04:00	6.814E-02	05 may 15:30	-1.114E-01	3.112E-01
WMRUFL	270	2.091E-11	10 may 04:00	2.468E-03	08 may 17:30	3.703E-04	6.445E-04
WMSLPT	270	-6.727E-02	03 may 12:00	8.418E-02	08 may 16:00	-1.301E-02	2.701E-02
WMSLSH	270	-1.114E-04	08 may 13:00	5.289E-04	01 may 17:00	-6.346E-05	5.649E-05
WMSR	270	-1.009E 03	09 may 12:00	1.478E 01	10 may 04:00	-2.290E 02	3.277E 02
WMTHFX	270	-9.822E 02	05 may 11:30	2.515E 02	08 may 19:00	-1.423E 02	3.345E 02
WMZOL	270	-3.135E 00	10 may 04:00	1.319E-01	05 may 15:30	-1.221E-01	3.307E-01
WMZOLT	270	-2.413E 00	10 may 04:00	1.016E-01	05 may 15:30	-9.393E-02	2.546E-01
WS	272	1.942E 00	10 may 04:00	1.851E 01	08 may 15:30	9.617E 00	3.618E 00
WSB	272	1.924E 00	10 may 04:00	1.669E 01	08 may 15:30	8.924E 00	3.140E 00
WSB	272	1.926E 00	10 may 04:00	1.691E 01	08 may 15:30	9.008E 00	3.197E 00
WSMB	270	3.132E 01	08 may 17:00	6.551E 00	10 may 04:00	1.402E 00	9.230E-01
WTB	272	1.315E 01	05 may 05:30	1.414E 01	01 may 15:30	1.358E 01	1.880E-01
	270	1.614E 00	03 may 09:00	3.743E-01	15 may 15:30	7.064E-02	2.167E-01
	270	8.092E-01	03 may 09:00	1.877E-01	05 may 15:30	3.541E-02	1.086E-01
	270	1.143E 00	03 may 09:00	2.650E-01	05 may 15:30	5.032E-02	1.534E-01
	270	4.485E 00	10 may 04:00	2.329E-02	05 may 15:30	-2.089E 01	5.691E-01
	270	8.796E 01	03 may 09:00	2.040E 01	05 may 15:30	3.849E 02	1.181E 01
	270	1.452E 00	10 may 04:00	1.792E-02	05 may 15:30	1.606E 01	4.380E-01

9. Micrometeorological Shorthand Symbol† to Disk Storage Variable Label Conversion Table

10-digit run number* (year, month, day, hour, minutes) = D(20)

AIRD	= P(54)	ELHFXB	= B(99)	RUFL	= P(50)	VVLC	= B(35)
AIRDB	= B(54)	EMOFLX	= B(90)	RUFLB	= B(50)	VVPTC	= B(38)
AH1	= P(21)	EMOFXB	= B(102)	SCLPT	= P(52)	WD	= P(11), B(11)
AH2	= P(22)	ERI	= B(82)	SCLPTB	= B(52)	WMBR	= S(9)
AHB	= B(26)	ERIB	= B(108)	SCLSH	= P(51)	WMDRAG	= S(14)
AHW	= B(62)	ERUFL	= B(86)	SCLSHB	= B(51)	WMFRIC	= S(10)
AT1	= P(1), B(1)	ERUFLB	= B(104)	SDBR	= S(26)	WMHEFX	= S(6)
AT2	= P(2), B(2)	ESCLPT	= B(89)	SDDRAG	= S(31)	WMHUFX	= S(4)
ATB	= B(13)	ESCLSH	= B(87)	SDFRIC	= S(27)	WMLHFX	= S(5)
ATKM	= P(14)	ESLPTB	= B(106)	SDHEFX	= S(23)	WMMOFX	= S(3)
ATWTB	= B(18)	ESLSHB	= B(105)	SDLHFX	= S(22)	WMMOL	= S(15)
BP1	= P(77)	ESR	= B(94)	SDMOFX	= S(21)	WMRI	= S(1)
BP2	= P(10), B(10)	ESRB	= B(100)	SDRI	= S(19)	WMRUFL	= S(13)
BPB	= P(78)	ETHFLX	= B(95)	SDRUFL	= S(30)	WMSLPT	= S(12)
BPM	= P(79)	ETHFXB	= B(101)	SDSLPT	= S(29)	WMSLSH	= S(11)
BPW	= P(80)	EZOLT	= B(83)	SDSLSH	= S(28)	WMSR	= S(7)
BR	= P(39)	EZOLTB	= B(107)	SDSR	= S(24)	WMTHFX	= S(8)
BRB	= B(39)	FRICV	= P(49)	SDTHFX	= S(25)	WMZOL	= S(16)
DFBR	= S(41)	FRICVB	= B(49)	SDZOLT	= S(20)	WMZOLT	= S(2)
DFDRAG	= S(46)	GMH	= P(64), B(64)	SH1	= P(25)	WS1	= P(5), B(5)
DFFRIC	= S(42)	HEFLX	= P(57)	SH2	= P(26)	WS1EC	= P(75)
DFHEFX	= S(38)	HEFLXB	= B(57)	SHB	= B(28)	WS2	= P(6), B(6)
DFLHFX	= S(37)	HUFLX	= P(56)	SHSLOP	= P(60)	WS2EC	= P(76)
DFMOFX	= S(36)	HUFLXB	= B(56)	SPHEAT	= P(71)	WSB	= B(14)
DFRI	= S(34)	LHFLX	= P(81)	SPHEATB	= B(71)	WSSLOP	= P(59)
DFRUFL	= S(45)	LHFLXB	= B(81)	SR	= P(12), B(12)	WTB	= P(9), B(9)
DFSLPT	= S(44)	LHV	= P(13)	SVP1	= P(19)	WTBFCAL	= P(74)
DFSLSH	= S(43)	LHVB	= B(60)	SVP2	= P(20)	Z1	= P(65)
DFSR	= S(39)	MOFLX	= P(55)	SVPB	= B(30)	Z2	= P(66)
DFTHFX	= S(40)	MOFLXB	= B(55)	THFLX	= P(58)	ZB	= P(16), B(22)
DFZOLT	= S(35)	MOL	= P(42)	THFLXB	= B(58)	Z1OL	= P(43)
DP1	= P(3), B(3)	MOLB	= B(42)	TTABLE	= P(68)	Z2OL	= P(44)
DP1FCAL	= P(72)	OPTIR1	= P(27)	TUR1	= P(7), B(7)	ZOL	= P(41)
DP2	= P(4), B(4)	OPTIR2	= P(26)	TUR2	= P(8), B(8)	ZOLB	= B(41)
DP2FCAL	= P(73)	OPTIRT	= B(31)	TURSLOP	= P(63)	ZOLT	= P(70)
DPB	= B(15)	PSI1Z1	= P(45)	TURT	= B(16)	ZOLTB	= B(70)
DPTDZ	= P(37)	PSI1Z2	= P(46)	UWPL	= P(62)		
DRAG	= P(69)	PSI2Z1	= P(47)	VP1	= P(17)		
DRAGB	= B(69)	PSI2Z2	= P(48)	VP2	= P(18)		
DSHDZ	= P(36)	PT1	= P(31)	VPB	= B(29)		
DWSDZ	= P(35)	PT2	= P(32)	VPT1	= P(33)		
EBR	= B(91)	PTB	= B(23)	VPT2	= P(34)		
EBRB	= B(98)	PTKSLOP	= P(61)	VPTB	= B(25)		
EDRAG	= B(85)	PTWTB	= B(19)	VPTWTB	= B(21)		
EDRAGB	= B(96)	REHL	= P(38)	VPW	= B(61)		
EFRICB	= B(103)	RH1	= P(23)	VT1	= P(29)		
EFRICV	= B(84)	RH2	= P(24)	VT2	= P(30)		
EHEFLX	= B(92)	RHB	= B(27)	VTB	= B(24)		
EHEFLXB	= B(97)	RI	= P(40)	VTWTB	= B(20)		
ELHFLX	= B(93)	RIB	= B(40)	VVHC	= B(36)		

†See pp. 564-581

*See footnote p. 2

10. Disk Storage Variable Label to Micrometeorological Shorthand Symbol† Conversion Table

D(20) = 10 digit run number* (year, month, day, hour, minutes).

P	B	S
P(1) = AT1	B(1) = AT1	S(1) = WMRI
P(2) = AT2	B(2) = AT2	S(2) = WMZOLT
P(3) = DP1	B(3) = DP1	S(3) = WMMOFX
P(4) = DP2	B(4) = DP2	S(4) = WMHUFX
P(5) = WS1	B(5) = WS1	S(5) = WMLHFX
P(6) = WS2	B(6) = WS2	S(6) = WMHEFX
P(7) = TUR1	B(7) = TUR1	S(7) = WMSR
P(8) = TUR2	B(8) = TUR2	S(8) = WMTHFX
P(9) = WTB	B(9) = WTB	S(9) = WMBR
P(10) = BP2	B(10) = BP2	S(10) = WMFRIC
P(11) = WD	B(11) = WD	S(11) = WMSLSH
P(12) = SR	B(12) = SR	S(12) = WMSLPT
P(13) = LHV	B(13) = ATB	S(13) = WMRUFL
P(14) = ATKM	B(14) = WSB	S(14) = WMDRAG
	B(15) = DPB	S(15) = WMMOL
P(16) = ZB	B(16) = TURT	S(16) = WMZOL
P(17) = VP1		
P(18) = VP2	B(18) = ATWTB	
P(19) = SVP1	B(19) = PTWTB	S(19) = SDRI
P(20) = SVP2	B(20) = VTWTB	S(20) = SDZOLT
P(21) = AH1	B(21) = VPTWTB	S(21) = SDMOFX
P(22) = AH2	B(22) = ZB	S(22) = SDLHFX
P(23) = RH1	B(23) = PTB	S(23) = SDHEFX
P(24) = RH2	B(24) = VTB	S(24) = SDSR
P(25) = SH1	B(25) = VPTB	S(25) = SDTHFX
P(26) = SH2	B(26) = AHB	S(26) = SDBR
P(27) = OPTIR1	B(27) = RHB	S(27) = SDFRIC
P(28) = OPTIR2	B(28) = SHB	S(28) = SDSLSH
P(29) = VT1	B(29) = VPB	S(29) = SDSLPT
P(30) = VT2	B(30) = SVPB	S(30) = SDRUFL
P(31) = PT1	B(31) = OPTIRT	S(31) = SDDRAG
P(32) = PT2		
P(33) = VPT1		
P(34) = VPT2		S(34) = DFRI
P(35) = DWSDZ	B(35) = VVLC	S(35) = DFZOLT
P(36) = DSHDZ	B(36) = VVHC	S(36) = DFMOFX
P(37) = DPTDZ		S(37) = DFLHFX
P(38) = REHL	B(38) = VVPTC	S(38) = DFHEFX
P(39) = BR	B(39) = BRB	S(39) = DFSR
P(40) = RI	B(40) = RIB	S(40) = DFTHFX
P(41) = ZOL	B(41) = ZOLB	S(41) = DFBR
P(42) = MOL	B(42) = MOLB	S(42) = DFFRIC
P(43) = Z1OL		S(43) = DFSLSH
P(44) = Z2OL		S(44) = DFSLPT
P(45) = PSI1Z1		S(45) = DFRUFL
P(46) = PSI1Z2		S(46) = DFDRAG
P(47) = PSI2Z1		
P(48) = PSI2Z2		
P(49) = FRICV	B(49) = FRICVB	
P(50) = RUFL	B(50) = RUFLB	
P(51) = SCLSH	B(51) = SCLSHB	
P(52) = SCLPT	B(52) = SCLPTB	
P(54) = AIRD	B(54) = AIRDB	
P(55) = MOFLX	B(55) = MOFLXB	
P(56) = HUFLX	B(56) = HUFLXB	
P(57) = HEFLX	B(57) = HEFLXB	
P(58) = THFLX	B(58) = THFLXB	
P(59) = WSSLOP		
P(60) = SHSLOP	B(60) = LHVB	

P	B
P(61) = PTKSLOP	B(61) = VPW
P(62) = UWPL	B(62) = AHW
P(63) = TURSLOP	
P(64) = GMH	B(64) = GMH
P(65) = Z1	
P(66) = Z2	
P(68) = TTABLE	
P(69) = DRAG	B(69) = DRAGB
P(70) = ZOLT	B(70) = ZOLTB
P(71) = SPHEAT	B(71) = SPHEATB
P(72) = DP1FCAL	
P(73) = DF2FCAL	
P(74) = WTBFCAL	
P(75) = WS1EC	
P(76) = WS2EC	
P(77) = BP1	
P(78) = BPB	
P(79) = BPM	
P(80) = BPW	
P(81) = LHFLX	B(81) = LHFLXB
	B(82) = ERI
	B(83) = EZOLT
	B(84) = EFRICV
	B(85) = EDRAG
	B(86) = ERUFL
	B(87) = ESCLSH
	B(89) = ESCLPT
	B(90) = EMOFLX
	B(91) = EBR
	B(92) = EHEFLX
	B(93) = ELHFLX
	B(94) = ESR
	B(95) = ETHFLX
	B(96) = EDRAGB
	B(97) = EHEFXB
	B(98) = EBRB
	B(99) = ELHFXB
	B(100) = ESRB
	B(101) = ETHFXB
	B(102) = EMOFXB
	B(103) = EFRICB
	B(104) = ERUFLB
	B(105) = ESLSHB
	B(106) = ESLPTB
	B(107) = EZOLTB
	B(108) = ERIB

†See pp. 564-581
*See footnote p. 2

11. Glossary of Micrometeorological Shorthand Symbols and Calculations

[May 1979 Data]

General Rules for Notation

AIRD	AIR Density
AH	Absolute Humidity
AT	Air Temperature
BP	Barometric Pressure
BR	Bowen Ratio
D□ □ □	Incremental change in □ □ □ equivalent to the calculated error.
D □ □ DZ	$\frac{\partial \square\square}{\partial Z}$, the partial derivative of □ □ with respect to height (z)
DF □ □ □	Difference betweeen the profile and bulk derived □ □ □ values as computed by the standard deviation from the composite error weighted mean.
DP	Dew Point in °C
DRAG	DRAG coefficient (neutral) computed for 10 m altitude
E □ □ □	Error (approximate) as computed from constituent measurement uncertainties for □ □ □.
FRICV or FRIC	FRICtion Velocity
GGC □ □	Goff-Gratch Constant □ □
GMH	Geometric Mean Height
HEFLX or HEFX	HEat (sensible) FLuX
HUFLX or HUFX	HUmidity FLuX
LHFLX or LHFX	Latent Heat FLuX
LHV	Latent Heat of Vaporization
MOFLX or MOFX	MOmentum FLuX
MOL	Monin-Obukhov Length
$N(\ )_n$	digital channel Number ( ), character n
OPTIR	OPTical Refractive Index (C_n^2)
PSI1Z□	ψ_1, wind speed log profile stability correction at Z□ height
PSI2Z□	ψ_2, temperature and humidity log profile stability correction at height Z□
PT	Potential Temperature in °C
RH	Relative Humidity
RI	RIchardson (gradient) number stability
RUFL	Roughness Length
SCL □ □ □ or SL □ □ □	SCaLing □ □ □ parameter.
SD □ □ □	Standard Deviation of the profile and bulk derived □ □ □ values from the composite error weighted mean.
SH	Specific Humidity
SPHEAT	SPecific HEAT
SR	Sky and solar short wave Radiation heat flux
SVP	Saturated Vapor Pressure
THFLX or THFX	Total Heat budget FLuX (sky & solar short wave + sensible + latent)
TUR	microthermal TURbulence temperature structure parameter (C_T^2)
V( )	average raw data Voltage for analog channel ( )
V'( )	average field calibration corrected Voltage for analog channel ( )
VKC	Von Kármán Constant; set equal to 0.4
VP	Vapor Pressure
VPT	Virtual Potential Temperature in °C
VT	Virtual Temperature in °C
VV □ □ C	Vertical Velocity and □ □ Covariance
WD	Wind Direction
WM □ □ □	composite error Weighted Mean of the profile and bulk derived □ □ □ values.
WS	Wind Speed
WTB	Water Temperature (Bulk)
Z	height above escarpment surface which is considered to be equivalent to height above water

ZOL	Z Over L (Z/L or ζ) stability parameter
□ □ □ 1	upper height value for □ □ □
□ □ □ 2	lower height value for □ □ □
□ □ □ B	Bulk aerodynamic derived value or ten meter height value for □ □ □
□ □ □ D	vertical profile Differential value for □ □ □
□ □ □ EC	Escarpment Coefficent correction for □ □ □
□ □ □ FCAL	Field CALibration correction for □ □ □
□ □ K	value of □ □ in °K
□ □ □ M	geometric Mean height value for □ □ □
□ □ □SLOP or □ □ □ SL	profile SLOPe for □ □ □
□ □ □ T	Ten meter height value for □ □ □
□ □ □ W	Water level (or mean sea level) height value for □ □ □
□ □ □ WTB	□ □ □ at ten meter height minus the Water Temperature (Bulk)

Notation Description Listing

Listed below in alphabetical order are the definitions of the English shorthand notation symbols (with units) employed in the computer calculations.

Symbol:	Units:	Description:
A	—	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.
A1	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
A2	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
AB	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
AIRD	kg/m^3	Air density of moist air at the geometric mean height (GMH).
AIRDB	kg/m^3	Air density of moist air at the 10 meter height.
AH1	kg/m^3	Absolute humidity (or water vapor density) at the Z1 height.
AH2	kg/m^3	Absolute humidity (or water vapor density) at the Z2 height.
AHB	kg/m^3	Absolute humidity (or water vapor density) at the 10 meter height.
AHW	kg/m^3	Absolute humidity (or water vapor density) estimated at water level by assuming the dew point temperature is equal to the water temperature.
arctan( )	radians	Arctangent of ( ).
AT1	°C	Air temperature in °C at the Z1 height.
AT2	°C	Air temperature in °C at the Z2 height.
ATB	°C	Air temperature in °C at the 10 meter height.
ATK1	°K	Air temperature in °K at the Z1 height.

ATK2	°K	Air temperature in °K at the Z2 height.
ATKB	°K	Air temperature in °K at the 10 meter height.
ATKM	°K	Air temperature in °K at the geometric mean height (GMH).
ATM	°C	Air temperature in °C at the geometric mean height (GMH).
ATWTB	°K	Air temperature at the 10 meter height minus the bulk water temperature.
AW	—	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
B	—	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.
B1	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 meter height.
B2	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
BB	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
BP1	mb	Barometric pressure estimated for the Z1 height
BP2	mb	Barometric pressure *measured* at the Z2 height.
BPB	mb	Barometric pressure estimated for the ten meter height (ZB).
BPM	mb	Barometric pressure estimated for the geometric mean height (GMH).
BPW	mb	Barometric pressure estimated for mean sea level height.
BR	—	Profile derived Bowen Ratio.
BRB	—	Bulk aerodynamic derived Bowen Ratio.
BW	—	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
C	—	Variable in quadratic solution for profile derived Z/L (or ζ) stability parameter when Richardson's number > 0.
C1	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
C2	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
CB	—	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.

CW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the water level.
D1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
D2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
DB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
DFBR	%	Difference between the profile and bulk derived bowen ratio values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainity value, whichever absolute value is larger).
DFDRAG	%	Difference between the profile and bulk derived drag coefficient values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFFRIC	%	Difference between the profile and bulk derived friction velocity values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty , whichever absolute value value is larger).
DFHEFX	%	Difference between the profile and bulk derived sensisible heat flux values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFLHFX	%	Difference between the profile and bulk derived latent heat flux values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFMOFX	%	Difference between the profile and bulk derived momentum flux values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFRI	%	Difference between the profile and bulk derived gradient Richardson number stability values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFRUFL	%	Difference between the profile and bulk derived roughness length values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFSLPT	%	Difference between the profile and bulk derived scaling potential temperature values as computed by the standard deviation from the composite weighted mean (or measurement uncertainty value, whichever absolute value is larger).

DFSLSH	%	Difference between the profile and bulk derived scaling specific humidity values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFSR	%	Difference between the profile and bulk derived sky and solar radiation heat flux values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFTHFX	%	Difference between the profile and bulk derived total heat budget flux values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DFZOLT	%	Difference between the profile and bulk derived Z/L (or ζ) stability parameter at 10 meters values as computed by the standard deviation from the composite error weighted mean (or measurement uncertainty value, whichever absolute value is larger).
DH	watt/m^2	Sum of the absolute values of the profile derived solar radiation, latent, and sensible heat fluxes.
DHB	watt/m^2	Sum of the absolute values of the bulk derived solar radiaton, latent, and sensible heat fluxes.
DHEFLX	watt/m^2	Incremental change in profile derived heat flux equivalent to the calculated error × 100.
DHEFXB	watt/m^2	Incremental change in bulk aerodynamic derived heat flux equivalent to the calculated error × 100.
DLHFLX	watt/m^2	Incremental change in profile derived latent heat flux equivalent to the calculated error × 100.
DLHFXB	watt/m^2	Incremental change in bulk aerodynamic derived latent heat flux equivalent to the calculated error × 100.
DP1	°C	Dew point in °C at the Z1 height.
DP1FCAL	volt	Dew point field calibration correction at the Z1 height.
DP2	°C	Dew point in °C at the Z2 height.
DP2FCAL	volt	Dew point field calibration correction at the Z2 height.
DPB	°C	Dew point in °C at 10 meter height.
DPK1	°K	Dew point in °K at the Z1 height.
DPK2	°K	Dew point in °K at the Z2 height.
DPKB	°K	Dew point in °K at the 10 meter height.

DPTDZ	°K/m	Profile derived partial derivative of potential temperature with respect to height.
DRAG	—	Profile derived neutral atmospheric drag coefficient computed for the 10 meter height.
DRAGB	—	Bulk aerodynamic derived neutral atmospheric drag coefficient computed for the 10 meter height.
DSHDZ	kg/kg ·m	Profile derived partial derivative of specific humidity with respect to height.
DSR	watt/m^2	Incremental change in the sky and solar radiation heat flux equivalent to the measurement error × 100.
DSRB	watt/m^2	Same as DSR.
DW	—	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
DWSDZ	m/sec · m	Profile derived partial derivative of wind speed with respect to height.
EAHWB	%	Mean error referenced to the measurement accuracy for the computed absolute humidity difference between the 10 meter height and water level.
EBR	%	Mean error referenced to the measurement accuracy for the profile derived Bowen Ratio.
EBRB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived Bowen Ratio.
EDRAG	%	Mean error referenced to the measurement accuracy for the profile derived drag coefficient at the 10 meter height.
EDRAGB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived dray coefficient at the 10 meter height.
EFRICB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived friction (or scaling) velocity.
EFRICV	%	Mean error referenced to the measurement accuracy for the profile derived friction (or scaling) velocity.
EHEFLX	%	Mean error referenced to the measurement accuracy for the profile derived sensible heat flux.
EHEFXB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived sensible heat flux.
EHUFLX	%	Mean error referenced to the measurement accuracy for the profile derived humidity flux.

EHUFXB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived humidity flux.
ELHFLX	%	Mean error referenced to the measurement accuracy for the profile derive latent heat flux.
ELHFXB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived latent heat flux.
EMOFLX	%	Mean error referenced to the measurement accuracy for the profile derived momentum flux.
EMOFXB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived momentum flux.
EMOLB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived Monin-Obukhov (or Obukhov) length.
EMTC	%	Mean error estimated for the bulk aerodynamic moisture transfer coefficient.
EPSID	%	Combined mean error associated with the parameter profile slopes due to the [*Ln*(Z1)−PSI1Z1]−[*Ln*(Z2)−PSI1Z2] or [*Ln*(Z1)−PSI2Z1]−[*Ln*(Z2)−PSI2Z2] terms.
EPTD	%	Mean error referenced to the measurement accuracy for the profile potential temperature differential.
EPTPD	%	Mean error reference to the measurement accuracy for the partial derivative of potential temperature with respect to height.
EPTSLP	%	Mean error referenced to the measurement accuracy for the profile slope of the potential temperature.
EPTWTB	%	Mean error referenced to the measurement accuracy for the difference between the potential temperature at 10 meters and the bulk water temperature.
ERI	%	Mean error referenced to the measurement accuracy for the profile derived gradient Richardson number stability.
ERIB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived gradient Richardson number stability.
ERUFL	%	Mean error referenced to the measurement accuracy for the profile derived roughness length.
ERUFLB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived roughness length.
ESCLPT	%	Mean error referenced to the measurement accuracy for the profile derived scaling potential temperature.

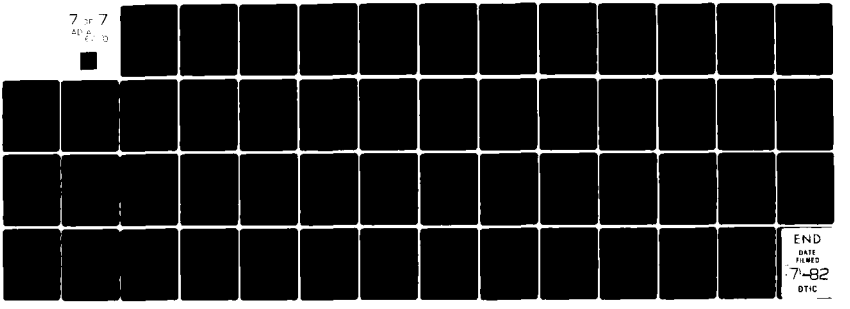
ESCLSH	%	Mean error referenced to the measurement accuracy for the profile derived scaling specific humidity.
ESHD	%	Mean error referenced to the measurement accuracy for the profile specific humidty differential.
ESHPD	%	Mean error referenced to the measurement accuracy for the partial derivative of specific humidity with respect to height.
ESHSLP	%	Mean error referenced to the measurement accuracy for the profile slope of the specific humidity.
ESHTC	%	Mean error estimated for the bulk aerodynamic sensible heat transfer coefficient.
ESLPTB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived scaling potential temperature.
ESLSHB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived scaling specific humidity.
ESR	%	Mean error referenced to the measurement accuracy for sky and solar radiation heat flux.
ESRB	%	Same as ESR.
ESTRES	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived shearing (or surface) stress.
ETHFLX	%	Mean error referenced to the measurement accuracy for the profile derived total heat budget (or net heat) flux.
ETHFXB	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived total heat budget (or net heat) flux.
EVVHC	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived vertical velocity and absolute humidity covariance.
EVVLC	%	Mean error referenced to the measurement accuracy for the bulk aerodynamic derived vertical velocity and longitudinal velocity covariance.
EVVPTC	%	Mean error reference to the measurement accuracy for the bulk aerodynamic derived vertical velocity and potential temperature covariance.
EWSB	%	Mean error referenced to the measurement accuracy for the wind speed at the 10 meter height.
EWSD	%	Mean error referenced to the measurement accuracy fo the profile wind speed differential.
EWSPD	%	Mean error referenced to the measurement accuracy for the partial derivative of the wind speed with respect to height.

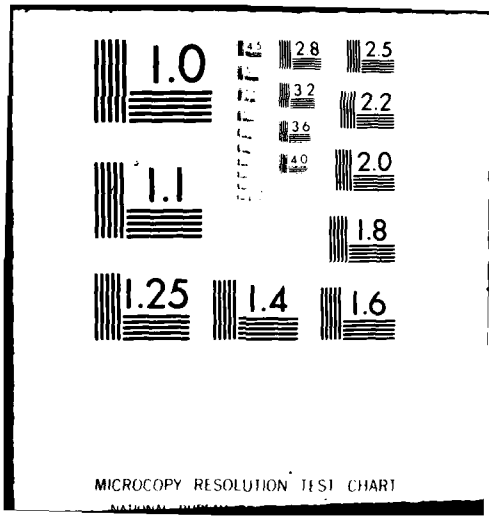
EWSSLP	%	Mean error referenced to the measurement accuracy for the profile slope of the wind speed.
exp( )	–	Exponent to base of natural logarithm e of ( ), e = 2.71828....
EZB	%	Mean error refernced to the measurement accuracy of height at ten meters.
EZOL	%	Mean error referenced to the measurement accuracy of the profile derived Z/L (or ζ) stability parameter as computed at the geometric mean height (GMH).
EZOLB	%	Mean error referenced to the measurement accuracy of the bulk aerodynamic derived Z/L (or ζ) stability parameter as computed at the geometric mean height (GMH).
EZOLT	%	Mean error referenced to the measurement accuracy for the profile derived Z/L (or ζ) stability parameter as computed for the ten meter height.
EZOLTB	%	Mean error referenced to the measurement accuracy of the bulk aerodynamic derived Z/L (or ζ) stability parameter as computed for the ten meter height.
F	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
F′	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
F1	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z1 height.
F2	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the Z2 height.
FB	–	Intermediate step in Goff-Gratch formulation of vapor pressure at the 10 meter height.
FRICV	m/sec	Profile derived friction (or scaling) velocity.
FRICVB	m/sec	Bulk aerodynamic derived friction (or scaling) velocity.
FW	–	Intermediate step in Goff-Gratch formulation of vapor pressure at water level.
G1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
G2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
GA	m/sec^2	Gravitational acceleration constant; set equal to 9.7959 for the San Nicolas Island latitude.

GB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
GGC10	–	Goff-Gratch formulation constant: -3.49149.
GGC11	–	Goff-Gratch formulation constant: 11.344.
GGC12	–	Goff-Gratch formulation constant: 5.02808.
GGC13	–	Goff-Gratch formulation constant: -7.90298.
GGC14	–	Goff-Gratch formulation constant: 8.1328×10^{-3}.
GGC15	–	Goff-Gratch formulation constant: -1.3816×10^{-7}.
GMH	meter	Geometric mean of heights Z1 and Z2. This is the equivalent to the mean measurement height as plotted on a *Ln* (height) vs. linear graph.
HEFLX	watt/m^2	Profile derived sensible heat flux.
HEFLXB	watt/m^2	Bulk aerodynamic derived sensible heat flux.
HUFLX	kg/sec · m^2	Profile derived specific humidity flux.
HUFLXB	kg/sec · m^2	Bulk aerodynamic derived specific humidity flux.
IPRZ	–	Interpolated logarithmic profile ratio of heights Z1 and Z2 employed for computing parameter values at the height of ten meters (ZB).
IPRTUR	–	Interpolated logarthmic profile ratio of heights ZTUR1 and ZTUR2 employed for computing the turbulence parameters values of the height at ten meters (ZB).
J	–	Variable in Newton-Raphson method solution for profile derived Z/L (or ζ) stability parameter when Richardson's number $\leqslant 0$.
J1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
J2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height
JB	–	Intermediate step in Goff-Gratch formulation of saturated vapor at the 10 meter height.
K1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
K2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.

KB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
LAMBDA	meter	Wavelength employed for computing optical refractive index; set equal to 5.4×10^{-6}.
LHFLX	watt/m^2	Profile derived latent heat flux.
LHFLXB	watt/m^2	Bulk aerodynamic derived latent heat flux.
LHV	ITcal/kg	Profile derived latent heat of water vaporation.
LHVB	ITcal/kg	Bulk aerodynamic derived latent heat of water vaporation.
Ln ( )	–	Natural logarithm of ( ) with base e = 2.71828 ....
LOGFV	–	Logarithm to the base 10 of the profile derived friction velocity.
LOGFVB	–	Logarithm to the base 10 of the bulk derived friction velocity.
M1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
M2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
MB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
MOFLX	Nt/m^2	Profile derived momentum flux.
MOFLXB	Nt/m^2	Bulk aerodynamic derived momentum flux.
MOL	meter	Profile derived Monin-Obukhov (or Obukhov) length.
MOLB	meter	Bulk aerodynamic derived Monin-Obukhov (or Obukhov) length.
MTC	–	Bulk aerodynamic moisture transfer coefficient; set equal to 1.32×10^{-3}.
N ( )$_n$	–	Digital channel number ( ) consisting of 10 parallel digital characters, n = 1, 2, . . . 10.
OPTIR1	°K/m$^{-2/3}$	Optical refractive index parameter (C_n^2) at the ZTUR1 height.
OPTIR2	°K/m$^{-2/3}$	Optical refractive index parameter (C_n^2) at the ZTUR2 height.
OPTIRT	°K/m$^{-2/3}$	Optical refractive index parameter (C_n^2) at the 10 meter height.
PSI1Z1	–	Businger wind speed profile stability correction (Ψ_1) for the *Ln* (Z1) height.

AD-A116 210 NAVAL RESEARCH LAB WASHINGTON DC F/6 4/2
THE DATA BASE FOR THE MAY 1979 MARINE SURFACE LAYER MICROMETEOR--ETC(U)
MAY 82 T V BLANC
UNCLASSIFIED NRL-MR-4713 NL




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1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

PSI1Z2	–	Businger wind speed profile stability correction (Ψ_1) for the *Ln* (Z2) height.
PSI2Z1	–	Businger temperature and humidity stability correction (Ψ_2) for the *Ln* (Z1) height.
PSI2Z2	–	Businger temperature and humidity stability correction (Ψ_2) for the *Ln* (Z2) height.
PT1	°C	Potential temperature in °C at the Z1 height.
PT2	°C	Potential temperature in °C at the Z2 height.
PTB	°C	Potential temperature in °C at the 10 meter height.
PTK1	°K	Potential temperature in °K at the Z1 height.
PTK2	°K	Potential temperature in °K at the Z2 height.
PTKB	°K	Potential temperature in °K at the 10 meter height.
PTKD	°K	Potential temperature vertical profile differential in °K.
PTKSLOP	–	*Profile derived physical slope of Ln (height) with Businger* stability corrections vs. potential temperature.
PTWTB	°K	Potential temperature at the 10 meter height minus the bulk water temperature.
Q1	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z1 height.
Q2	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the Z2 height.
QB	–	Intermediate step in Goff-Gratch formulation of saturated vapor pressure at the 10 meter height.
REHL	–	Ratio of the upwind escarpment height to length as computed from the horizontally integrated ($\pm 10°$) near-field topography (within 25 meters of sensors) and the mean wind direction.
RH1	%	Relative humidity at the Z1 height.
RH2	%	Relative humidity at the Z2 height.
RHB	%	Relative humidity at the 10 meter height.
RI	–	Profile derived gradient Richardson number stability.
RIB	–	Bulk aerodynamic flux derived gradient Richardson number stability.
RLC10	–	Roughness length equation constant: −2.501

RLC11	–	Roughness length equation constant: +1.465
RLC12	–	Roughness length equation constant: −6.743
RLC13	–	Roughness length equation constant: −10.700
RLC14	–	Roughness length equation constant: −6.875
RUFL	meter	Profile derived roughness length.
RUFLB	meter	Bulk aerodynamic derived roughness length.
SCLPT	°K	Profile derived scaling potential temperature.
SCLPTB	°K	Bulk aerodynamic derived scaling potential temperature.
SCLSH	kg/kg	Profile derived scaling specific humidity.
SCLSHB	kg/kg	Bulk aerodynamic derived scaling specific humidity.
SDBR	–	Standard deviation of the profile and bulk derived bowen ratio values from the composite error weighted mean.
SDDRAG	–	Standard deviation of the profile and bulk derived drag coefficient values from the composite error weighted mean.
SDFRIC	m/sec	Standard deviation of the profile and bulk derived friction velocity values from the composite error weighted mean.
SDHEFX	watt/m^2	Standard deviation of the profile and bulk derived sensible heat flux values from the composite error weighted mean.
SDLHFX	watt/m^2	Standard deviation of the profile and bulk derived latent heat flux values from the composite error weighted mean.
*SDMOFX	Nt/m^2	Standard deviation of the profile and bulk derived momentum flux values from the composite error weighted mean.
SDRI	–	Standard deviation of the profile and bulk derived gradient Richardson number stability values from the composite error weighted mean.
SDRUFL	meter	Standard deviation of the profile and bulk derived roughness length values from the composite error weighted mean.
SDSLPT	°K	Standard deviation of the profile and bulk derived scaling potential temperature values from the composite error weighted mean.
SDSLSH	kg/kg	Standard deviation of the profile and bulk derived scaling specific humidity values from the composite error weighted mean.
SDSR	watt/m^2	Standard deviation of the profile and bulk derived sky and solar radiation heat flux values from the composite error weighted mean.

SDTHFX	watt/m^2	Standard deviation of the profile and bulk derived total heat budget flux values from the composite error weighted mean.
SDZOLT	—	Standard deviation of the profile and bulk derived Z/L (or ζ) stability parameter at 10 meters values from the composite error weighted mean.
SH1	kg/kg	Specific humidity at the Z1 height.
SH2	kg/kg	Specific humidity at the Z2 height.
SHB	kg/kg	Specific humidity at the 10 meter height.
SHD	kg/kg	Specific humidity vertical profile differential.
SHSLOP	—	Profile derived physical slope of *Ln* (height) with Businger stability corrections vs. specific humidity.
SHTC	—	Bulk aerodynamic sensible heat transfer coefficient; set equal to 0.92×10^{-3}.
SPHEAT	ITcal/kg °K	Profile derived specific heat of moist at constant pressure.
SPHEATB	ITcal/kg °K	Bulk aerodynamic derived specific heat of moist air at constant pressure.
SR	watt/m^2	Sky and solar short wave radiation heat flux.
SSTRES	kg/m · sec^2	Bulk aerodynamic derived shearing (or surface) stress.
SVP1	mb	Saturated water vapor pressure at the Z1 height.
SVP2	mb	Saturated water vapor pressure at the Z2 height.
SVPB	mb	Saturated water vapor pressure at the 10 meter height.
THFLX	watt/m^2	Profile derived total heat budget (sky & solar short wave radiation + sensible heat + latent heat) flux.
THFLXB	watt/m^2	Bulk aerodynamic derived total heat budget (sky & solar short wave radiation + sensible heat + latent heat) flux.
TRT	—	Intermediate step in computing the microthermal turbulence temperature structure parameter (C_t^2) at the 10 meter height from profile C_t^2 measurements.
TTABLE	meter	Tide table referenced to mean sea level.
TUR1	°K/$m^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the ZTUR1 height.
TUR2	°K/$m^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the ZTUR2 height.
TURD	°K/$m^{-2/3}$	Microthermal turbulence temperature structure vertical profile differential.

TURSLOP	–	Profile derived slope of *Ln* (height) vs. *Ln* (microthermal turbulence temperature structure parameter (C_t^2)).
TURT	°K/m$^{-2/3}$	Microthermal turbulence temperature structure parameter (C_t^2) at the 10 meters height.
UWPL	meter	Upwind path length from the water's edge to the sensors as approximated from mean wind direction and tide table data.
V( )	volt	Average raw data voltage for analog channel number ( ).
V' ( )	volt	Field calibration corrected average data voltage for analog channel number ( ).
VKC	–	Von Kármán constant; set equal to 0.4.
VP1	mb	Water vapor pressure at the Z1 height.
VP2	mb	Water vapor pressure at the Z2 height.
VPB	mb	Vapor pressure at the 10 meter height.
VPT1	°C	Virtual potential temperature in °C at the Z1 height.
VPT2	°C	Virtual potential temperature in °C at the Z2 height.
VPTB	°C	Virtual potential temperature in °C at the 10 meter height.
VPTK1	°K	Virtual potential temperature in °K at the Z1 height.
VPTK2	°K	Virtual potential temperature in °K at the Z2 height.
VPTKB	°K	Virtual potential temperature in °K at the 10 meter height.
VPTKM	°K	Virtual potential temperature at the geometric mean height (GMH).
VPTWTB	°K	Virtual potential temperature at the 10 meters height minus the bulk water temperature.
VPW	mb	Water vapor pressure estimated at water level by assuming the dew point temperature is equal to the water temperature.
VT1	°C	Virtual temperature in °C at the Z1 height.
VT2	°C	Virtual temperature in °C at the Z2 height.
VTB	°C	Virtual temperature in °C at the 10 meter height.
VTK1	°K	Virtual temperature in °K at the Z1 height.
VTK2	°K	Virtual temperature in °K at the Z2 height.
VTKB	°K	Virtual temperature in °K at the 10 meter height.

VTKM	°K	Virtual temperature at the geometric mean height (GMH).
VTWTB	°K	Virtual temperature at the 10 meter height minus the bulk water temperature.
VVHC	$m \cdot kg/sec \cdot m^3$	Bulk aerodynamic derived vertical velocity and absolute humidity covariance.
VVLC	m^2/sec^2	Bulk aerodynamic derived vertical velocity and longitudinal velocity covariance.
VVPTC	m °K/sec	Bulk aerodynamic derived vertical velocity and potential temperature covariance.
WD	degree	Wind direction referenced to true North.
WMBR	—	Composite weighted mean for the profile and bulk derived bowen ratio values inversely weighted as a function of the respective measurement error.
WMDRAG	—	Composite weighted mean for the profile and bulk derived drag coefficient values inversely weighted as a function of the respective measurement error.
WMFRIC	m/sec	Composite weighted mean for the profile and bulk derived friction velocity values inversely weighted as a function of the respective measurement error.
WMHEFX	$watt/m^2$	Composite weighted mean for the profile and bulk derived sensible heat flux values inversely weighted as a function of the respective measurement error.
WMHUFX	$kg/sec \cdot m^2$	Composite weighted mean for the profile and bulk derived humidity flux values inversely weighted as a function of the respective measurement error.
WMLHFX	$watt/m^2$	Composite weighted mean for the profile and bulk derived latent heat flux values inversely weighted as a function of the respective measurement error.
WMMOFX	Nt/m^2	Composite weighted mean for the profile and bulk derived momentum flux values inversely weighted as a function of the respective measurement error.
WMMOL	meter	Composite weighted mean for the profile and bulk derived monin-obukhov length values inversely weighted as a function of the respective measurement error.
WMRI	—	Composite weighted mean for the profile and bulk derived gradient Richardson number stability values inversely weighted as a function of the respective measurement error.

WMRUFL	meter	Composite weighted mean for the profile and bulk derived roughness length values inversely weighted as a function of the respective measurement error.
WMSLPT	°K	Composite weighted mean for the profile and bulk derived scaling potential temperature values inversely weighted as a function of the respective measurement error.
WMSLSH	kg/kg	Composite weighted mean for the profile and bulk derived scaling specific humidity values inversely weighted as a function of the respective measurement error.
WMSR	watt/m^2	Composite weighted mean for the profile and bulk derived sky and solar radiation heat flux inversely weighted as a function of the respective measurement error.
WMTHFX	watt/m^2	Composite weighted mean for the profile and bulk derived total heat budget flux values inversely weighted as a function of the respective measurement error.
WMZOL	—	Composite weighted mean for the profile and bulk derived Z/L (or ζ) stability parameter at the geometric mean height values inversely weighted as a function of the respective measurement error.
WMZOLT	—	Composite weighted mean for the profile and bulk derived Z/L (or ζ) stability parameter at 10 meters values inversely weighted as a function of the respective measurement error.
WS1	m/sec	Wind speed at the Z1 height.
WS1EC	—	Wind speed escarpment correction coefficient for the Z1 height.
WS2	m/sec	Wind speed at the Z2 height.
WS2EC	—	Wind speed escarpment correction coefficient for the Z2 height.
WSB	m/sec	Wind speed at the 10 meter height.
WSD	m/sec	Wind speed vertical profile differential.
WSM	m/sec	Mean wind speed of the measurements at the Z1 and Z2 heights.
WSSLOP	—	Profile derived physical slope of Ln (height) with Businger stability corrections vs. wind speed.
WTB	°C	Bulk water temperature in °C.
WTBFCAL	volt	Bulk water temperature field calibration correction.
WTKB	°K	Bulk water temperature in °K.
WVGC	Nt · m/kg °K	Water vapor gas constant; set equal to 4.6150×10^2.

W1	–	Intermediate step in computation of the Businger stability correction for wind speed profile when Richardson number $\leqslant 0$ at the Z1 height.
W2	–	Intermediate step in computation of the Businger stability correction for wind speed profile when Richardson number $\leqslant 0$ at the Z2 height.
Y1	–	Intermediate step in computation of Businger stability correction for temperature and humidity profiles when Richardson number $\leqslant 0$ at the Z1 height.
Y2	–	Intermediate step in computation of Businger stability correction for temperature and humidity profiles when Richardson number $\leqslant 0$ at the Z2 height.
Z1	meter	Upper level average measurement height of profile instruments (except C_t^2) referenced to ground surface.
Z2	meter	Lower level average measurement height of profile instruments (except C_t^2) referenced to ground surface.
ZB	meter	This is the standard height for the bulk aerodynamic calculations; set equal to 10 meters as referenced to ground surface.
Z1OL	–	Profile derived Z/L (or ζ) stability parameter computed for the Z1 height.
Z2OL	–	Profile derived Z/L (or ζ) stability parameter computed for the Z2 height.
ZOL	–	Profile derived Z/L (or ζ) stability parameter computed for the geometric mean height which is the relevant height for the conversion of Richardson number to Z/L.
ZOLB	–	Bulk aerodynamic flux derived Z/L (or ζ) stability parameters computed for the geometric mean height.
ZOLT	–	Profile derived Z/L (or ζ) stability parameter computed for the 10 meter height.
ZOLTB	–	Bulk aerodynamic flux derived Z/L (or ζ) stability parameter computed for the 10 meter height.
ZTUR1	meter	Upper level measurement height of microthermal turbulence temperature structure (C_t^2) sensors referenced to the ground surface.
ZTUR2	meter	Lower level measurement height of microthermal turbulence temperature structure (C_t^2) sensors referenced to the ground surface.

Computer Calculations: [May 1979 Data]

Presented below are the calculations performed to obtain the micrometeorological parameters. They are listed in a simple algebraic form and utilize a shorthand English notation developed for computer programming purposes. The calculations include the curve-fit equations for converting the raw average voltages into engineering units, the field calibration and wind speed escarpment corrections, the equations for computing the various profile and bulk aerodynamic derived stability and flux parameters, and the computations for the error analysis of various parameters. The MKS International System of units is employed throughout this work, with the exception of millibars (mb) for barometric and vapor pressures instead of newton/meter^2 or pascal, and International Steam Table calories (ITcal.) instead of joules. Both °K and °C are employed.

1 millibar = 10^2 newton/meter^2 = 10^2 Pascal
1 ITcal. = 4.18684 joules

The symbol * to the left of an equation indicates a modification or addition made since the previous experiment. Equations and symbols deleted since the previous experiment are listed at the end of this section.

$AT1 = N(1)_5 N(1)_6 \,.\, N(1)_7 N(1)_8 N(1)_9 N(1)_{10}$

and

$N(1)_1$ Mode: 1 = Primary Sensor, 2 = Backup Sensor

$N(1)_2$ Resolution: $3 = N(1)_7 \,.\, N(1)_8$, $4 = N(1)_6 \,.\, N(1)_7$

$N(1)_3$ Interface Number: 1 = 1, 2 = 2, 3 = 3, 4 = 4

$N(1)_4$ Polarity: 1 = +, 2 = −

$AT2 = N(2)_5 N(2)_6 \,.\, N(2)_7 N(2)_8 N(2)_9 N(2)_{10}$

and

$N(2)_1$ Mode: 1 = Primary Sensor, 2 = Backup Sensor.

$N(2)_2$ Resolution: $3 = N(2)_7 \,.\, N(2)_8$, $4 = N(2)_6 \,.\, N(2)_7$

$N(2)_3$ Interface Number: 1 = 1, 2 = 2, 3 = 3, 4 = 4

$N(2)_4$ Polarity: 1 = +, 2 = −

If $V(09) < 6.324$ volt, then:
$WD = 145 + 34 \times V(09)$

If $V(09) \geqslant 6.324$ volt, then:
$WD = -215 + 34 \times V(09)$

* If $-1 < WD < 10$, then: $WS1EC = .992$ and $WS2EC = .951$

REHL = .186 and UWPL = 17 + 24.2 (1.18 − TTABLE)

* If $10 \leqslant WD < 20$, then: $WS1EC = .993$ and $WS2EC = .956$

REHL = .168 and UWPL = 19 + 20.8 (1.18 − TTABLE)

* If $20 \leqslant WD < 30$, then: $WS1EC = .994$ and $WS2EC = .960$
REHL = .152 and UWPL = 20 + 21.2 (1.18 − TTABLE)

* If $30 \leqslant WD < 40$, then: $WS1EC = .994$ and $WS2EC = .965$
REHL = .136 and UWPL = 20 + 25.0 (1.18 − TTABLE)

* If $40 \leqslant WD < 230$, then: $WS1EC = 1.000$ and $WS2EC = 1.000$
REHL = "NOT COMPUTED" and UWPL = "NOT COMPUTED"

* If $230 \leqslant WD < 240$, then: $WS1EC = .998$ and $WS2EC = .985$
REHL = .087 and UWPL = 30 + 16.1 (1.18 − TTABLE)

* If $240 \leqslant WD < 250$, then: $WS1EC = .998$ and $WS2EC = .984$
REHL = .089 and UWPL = 30 + 14.8 (1.18 − TTABLE)

* If $250 \leqslant WD < 260$, then: $WS1EC = .998$ and $WS2EC = .983$
REHL = .090 and UWPL = 32 + 13.6 (1.18 − TTABLE)

* If $260 \leqslant WD < 270$, then: $WS1EC = .998$ and $WS2EC = .983$
REHL = .090 and UWPL = 36 + 10.6 (1.18 − TTABLE)

* If $270 \leqslant WD < 280$, then: $WS1EC = .997$ and $WS2EC = .982$
REHL = .092 and UWPL = 39 + 8.9 (1.18 − TTABLE)

* If $280 \leqslant WD < 290$, then: $WS1EC = .997$ and $WS2EC = .977$
REHL = .103 and UWPL = 38 + 14.4 (1.18 − TTABLE)

* If $290 \leqslant WD < 300$, then: $WS1EC = .995$ and $WS2EC = .969$
REHL = .125 and UWPL = 41 + 29.7 (1.18 − TTABLE)

* If $300 \leqslant WD < 310$, then: $WS1EC = .993$ and $WS2EC = .959$
REHL = .157 and UWPL = 34 + 65.3 (1.18 − TTABLE)

* If $310 \leqslant WD < 320$, then: $WS1EC = .992$ and $WS2EC = .952$
REHL = .183 and UWPL = 27 + 69.9 (1.18 − TTABLE)

* If $320 \leqslant WD < 330$, then: $WS1EC = .992$ and $WS2EC = .949$
REHL = .199 and UWPL = 21 + 48.7 (1.18 − TTABLE)

* If $330 \leqslant WD < 340$, then: $WS1EC = .991$ and $WS2EC = .947$
REHL = .206 and UWPL 19 + 36.9 (1.18 − TTABLE)

* If $340 \leqslant WD < 350$, then: $WS1EC = .991$ and $WS2EC = .947$
  REHL = .207 and UWPL = 16 + 29.7 (1.18 − TTABLE)

* If $350 \leqslant WD < 361$, then: $WS1EC = .992$ and $WS2EC = .948$
  REHL = .201 and UWPL = 16 + 24.2 (1.18 − TTABLE)

* If $V(05) \leqslant 2.570$ volt, then:
  $WS1 = [-6.32834 \times 10^{-2} + 2.42269 \times V(05) - 0.399002 \times V(05)^2 + 8.72726 \times 10^{-2} \times V(05)^3] \times WS1EC$

* If $V(05) > 2.570$ volt, then:
  $WS1 = [3.08914 \times 10^{-2} + 1.93793 \times V(05) - 6.72817 \times 10^{-4} \times V(05)^2] \times WS1EC$

* If $V(06) \leqslant 2.558$ volt, then:
  $WS2 = [-7.13544 \times 10^{-2} + 2.52039 \times V(06) - 0.404911 \times V(06)^2 + 8.22668 \times 10^{-2} \times V(06)^3] \times WS2EC$

* If $V(06) > 2.558$ volt, then:
  $WS2 = [0.181091 + 1.92438 \times V(06) + 1.55926 \times 10^{-4} \times V(06)^2] \times WS2EC$

* $DP1FCAL$ = (*as indicated on data printout*)

* $DP2FCAL$ = (*as indicated on data printout*)

$V'(03) = V(03) + DP1FCAL$

$DP1 = -20.825 + 6.25047 \times V'(03) - 4.04968 \times 10^{-2} \times V'(03)^2 + 1.43719 \times 10^{-3} \times V'(03)^3$

$V'(04) = V(04) + DP2FCAL$

$DP2 = -20.5158 + 6.06103 \times V'(04) - 2.15130 \times 10^{-2} \times V'(04)^2 + 1.890459 \times 10^{-3} \times V'(04)^3$

If $|V(01)| > 1.0$ volt, then:

$$TUR1 = \left[1.07722 \times 10^{\left[1 - \frac{|V(01)|}{2}\right]}\right]^2$$

If $|V(01)| \leqslant 1.0$ volt, then:
$TUR1$ = " NO DATA"

If $|V(02)| > 1.0$volt, then:

$$TUR2 = \left[1.07722 \times 10^{\left[1 - \frac{|V(02)|}{2}\right]}\right]^2$$

If $|V(02)| \leqslant 1.0$ volt, then:
$TUR2$ = " NO DATA"

* $BP2 = 941.51 + 14.123\ V(07) + 0.22644 \times V(07)^2 - 1.41907 \times 10^{-2} \times V(07)^3$

* $SR = -139.46 \times V(08)$

* $WTBFCAL$ = (*as indicated on data printout*)

* $V'(10) = V(10) + WTBFCAL$

* $WTB = 9.75329 + 0.969791 \times V'(10) + 6.10709 \times 10^{-4} \times V'(10)^2$

* $Z1 = 18.35$

$*Z2 = 9.20$

$ZB = 10.000$

$ZTUR1 = Z1 + 0.60$

$ZTUR2 = Z2 + 0.60$

$GMH = \sqrt{Z1 \times Z2}$

$*BP1 = BP2 - [(Z1-Z2) \times 0.12]$

$*BPB = BP1 + [(Z1-ZB) \times 0.12]$

$*BPM = BP1 + [(Z1-GMH) \times 0.12]$

$*BPW = BP1 + [(Z1) \times 0.12]$

$ATK1 = AT1 + 273.160$

$ATK2 = AT2 + 273.160$

$DPK1 = DP1 + 273.160$

$DPK2 = DP2 + 273.160$

$A1 = 373.160/DPK1$

$A2 = 373.160/DPK2$

$B1 = A1 - 1.000$

$B2 = A2 - 1.000$

$$Ci = 1.000 - \left(\frac{1}{A1}\right)$$

$$C2 = 1.000 - \left(\frac{1}{A2}\right)$$

$GGC10 = -3.49149$

$GGC11 = 11.344$

$GGC12 = 5.02808$

$GGC13 = -7.90298$

$GGC14 = 8.1328 \times 10^{-3}$

$GGC15 = -1.3816 \times 10^{-7}$

$D1 = [10^{(GGC10)\times(B1)}] - 1.000$

$D2 = [10^{(GGC10)\times(B2)}] - 1.000$

$*F1 = [10^{(GGC11)\times(C1)}] - 1.000$

$*F2 = [10^{(GGC11)\times(C2)}] - 1.000$

$VP1 = BP1 \times (A1)^{GGC12} \times 10^{[GGC13\times B1]+[GGC14\times D1]+[GGC15\times F1]}$

$VP2 = BP2 \times (A2)^{GGC12} \times 10^{[GGC13\times B2]+[GGC14\times D2]+[GGC15\times F2]}$

$G1 = 373.160/ATK1$

$G2 = 373.160/ATK2$

$Q1 = G1 - 1.000$

$$Q2 = G2 - 1.000$$

$$J1 = 1.000 - \left[\frac{1}{G1}\right]$$

$$J2 = 1.000 - \left[\frac{1}{G2}\right]$$

$$K1 = [10^{(GGC10)\times(Q1)}] - 1.000$$

$$K2 = [10^{(GGC10)\times(Q2)}] - 1.000$$

$$M1 = [10^{(GGC11)\times(J1)}] - 1.000$$

$$M2 = [10^{(GGC11)\times(J2)}] - 1.000$$

$$* SVP1 = BP1 \times (G1)^{GGC12} \times 10^{[GGC13\times Q1]+[GGC14\times K1]+[GGC15\times M1]}$$

$$* SVP2 = BP2 \times (G2)^{GGC12} \times 10^{[GGC13\times Q2]+[GGC14\times K2]+[GGC15\times M2]}$$

$$WVGC = 4.6150 \times 10^2$$

$$AH1 = (VP1) \times \left[\frac{100}{(WVGC)(ATK1)}\right]$$

$$AH2 = (VP2) \times \left[\frac{100}{(WVGC)(ATK2)}\right]$$

$$RH1 = \left[\frac{VP1}{SVP1}\right] \times 100$$

$$RH2 = \left[\frac{VP2}{SVP2}\right] \times 100$$

$$* SH1 = \frac{0.622 \times VP1}{BP1 - (0.378 \times VP1)}$$

$$* SH2 = \frac{0.622 \times VP2}{BP2 - (0.378 \times VP2)}$$

$$VTK1 = (ATK1) \times [1.000 + (SH1 \times 0.608)]$$

$$VTK2 = (ATK2) \times [1.000 + (SH2 \times 0.608)]$$

$$VT1 = VTK1 - 273.160$$

$$VT2 = VTK2 - 273.160$$

$$PTK1 = (ATK1) + (0.0098 \times Z1)$$

$$PTK2 = (ATK2) + (0.0098 \times Z2)$$

$$PT1 = PTK1 - 273.160$$

$$PT2 = PTK2 - 273.160$$

$$VPTK1 = (VTK1) + (0.0098 \times Z1)$$

$$VPTK2 = (VTK2) + (0.0098 \times Z2)$$

$$VPT1 = VPTK1 - 273.160$$

$VPT2 = VPTK2 - 273.160$

$$WSM = \frac{WS1 + WS2}{2}$$

$* WSD = (WS1 - WS2)$

If $|WSD| < (WSM \times .028)$, then set:

$$WSD = +(WSM \times .028)$$

$SHD = (SH1 - SH2)$

$*$If $|SHD| < .08 \times 10^{-3}$ and $DP2 > WTB$, then set:

$$SHD = +.08 \times 10^{-3}$$

$*$If $|SHD| < .08 \times 10^{-3}$ and $DP2 \leqslant WTB$, then set:

$$SHD = -.08 \times 10^{-3}$$

$*PTKD = (PTK1 - PTK2)$

$*$If $|PTKD| < .008$ and $PT2 \geqslant WTB$, then set:

$$PTKD = +.008$$

$*$If $|PTKD| < .008$ and $PT2 < WTB$, then set:

$$PTKD = -.008$$

$$* DWSDZ = \frac{WSD}{GMH \times Ln(Z1/Z2)}$$

$$* DSHDZ = \frac{SHD}{GMH \times Ln(Z1/Z2)}$$

$$* DPTDZ = \frac{PTKD}{GMH \times Ln(Z1/Z2)}$$

$$ATKM = \frac{ATK1 + ATK2}{2}$$

$$VPTKM = \frac{VPTK1 + VPTK2}{2}$$

$GA = 9.7959$

$$RI = \frac{(GA) \times (DPTDZ)}{(VPTKM) \times [DWSDZ]^2}$$

If $RI < -2.0$, then $ZOL =$ "NOT COMPUTED"

If $-2.0 \leqslant RI \leqslant 0$, then compute ZOL as a function of RI solving the below equation in reverse via the Newton-Raphson Method for:

$$RI = [0.74(ZOL)] \times \frac{[1 - 15(ZOL)]^{1/2}}{[1 - 9(ZOL)]^{1/2}}$$

Let $J = RI$ as an arbitrary starting point and

$$ZOL^{J+1} = ZOL^J - \frac{F(ZOL^J)}{F'(ZOL^J)}$$

Where:

ZOL^J is the current guess.

ZOL^{J+1} is the next iteration.

and

$$F(ZOL) = \frac{.74(ZOL)[1 - 15(ZOL)]^{1/2}}{[1 - 9(ZOL)]^{1/2}} - RI$$

$$F'(ZOL) = \left[(.74)[1 - 15(ZOL)]^{1/2}\right] - \left[\frac{11.1(ZOL)}{[2-30(ZOL)]^{1/2}}\right] + \left[\frac{9(RI)}{[2-18(ZOL)]^{1/2}}\right]$$

Execute the iterations until:

$$\frac{|ZOL^{J+1} - ZOL^J|}{|ZOL^{J+1}|} < .0005$$

At which point an exceptable value for ZOL has been computed.

Then:

$$MOL = \frac{GMH}{ZOL}$$

$$Z1OL = \frac{Z1}{MOL}$$

$$Z2OL = \frac{Z2}{MOL}$$

$$W1 = [1 - 15(Z1OL)]^{1/4}$$

$$W2 = [1 - 15(Z2OL)]^{1/4}$$

$$Y1 = [1 - 9(Z1OL)]^{1/2}$$

$$Y2 = [1 - 9(Z2OL)]^{1/2}$$

With *arctan* expressed in radians:

$$PSI1Z1 = 2 \times Ln\left(\frac{1 + W1}{2}\right) + Ln\left(\frac{1 + (W1)^2}{2}\right) - [2\ arctan(W1)] + \frac{\pi}{.2}$$

$$PSI1Z2 = 2 \times Ln\left(\frac{1 + W2}{2}\right) + Ln\left(\frac{1 + (W2)^2}{2}\right) - [2\ arctan(W2)] + \frac{\pi}{2}$$

$$PSI2Z1 = Ln\left(\frac{1 + Y1}{2}\right)$$

$$PSI2Z2 = Ln\left(\frac{1 + Y2}{2}\right)$$

If $RI > +0.2$, then $ZOL =$ "NOT COMPUTED"

If $+0.2 \geq RI > 0$, then compute ZOL as a function of RI solving the below equation in reverse via the Quadratic Solution for:

$$RI = \frac{0.74(ZOL) + 4.7(ZOL)^2}{[1 + 4.7(ZOL)]^2}$$

Let:

$$ZOL = \frac{-B - \sqrt{B^2 - 4(A \times C)}}{2(A)}$$

Where:

$$A = (22.09 \times RI) - 4.7$$

$$B = (9.4 \times RI) - 0.74$$

$$C = RI$$

Then:

$$MOL = \frac{GMH}{ZOL}$$

$$Z1OL = \frac{Z1}{MOL}$$

$$Z2OL = \frac{Z2}{MOL}$$

$$PSI1Z1 = -4.7\,(Z1OL)$$

$$PSI1Z2 = -4.7\,(Z2OL)$$

$$PSI2Z1 = \frac{-4.7(Z1OL)}{0.74}$$

$$PSI2Z2 = \frac{-4.7(Z2OL)}{0.74}$$

$$ZOLT = \frac{ZB}{MOL}$$

$*VKC = 0.4$

$$*WSSLOP = \left|\frac{[Ln(Z1) - PSI1Z1] - [Ln(Z2) - PSI1Z2]}{WSD}\right|$$

$$*SHSLOP = \frac{[Ln(Z1) - PSI2Z1] - [Ln(Z2) - PSI2Z2]}{SHD}$$

$$*PTKSLOP = \frac{[Ln(Z1) - PSI2Z1] - [Ln(Z2) - PSI2Z2]}{PTKD}$$

$*TURD = (TUR1 - TUR2)$

*If $|TURD| < .05$, then set $[Ln(TUR1) - Ln(TUR2)] = -3.0$

$$*TURSLOP = \frac{[Ln(ZTUR1) - Ln(ZTUR2)]}{[Ln(TUR1) - Ln(TUR2)]}$$

$$FRICV = \frac{VKC}{WSSLOP}$$

$$*RLC10 = -2.501$$

$$*RLC11 = +1.465$$

$$*RLC12 = -6.743$$

$$*RLC13 = -10.700$$

$$*RLC14 = -6.875$$

$$*LOGFV = Log_{10}(FRICV)$$

$$*RUFL = 10^{RLC10 + RLC11(LOGFV) + RLC12(LOGFV)^2 + RLC13(LOGFV)^3 + RLC14(LOGFV)^4}$$

$$SCLSH = \frac{VKC}{0.74(SHSLOP)}$$

$$SCLPT = \frac{VKC}{0.74(PTKSLOP)}$$

$$VTKM = \frac{VTK1 + VTK2}{2}$$

$$*AIRD = \frac{.34838(BPM)}{VTKM}$$

$$SPHEAT = 0.240\left[1 + 0.90\left[\frac{SH1 + SH2}{2}\right]\right] \times 10^3$$

$$MOFLX = -(AIRD) \times (FRICV)^2$$

$$HUFLX = -(AIRD) \times (FRICV) \times (SCLSH)$$

$$HEFLX = -(AIRD) \times (FRICV) \times (SCLPT) \times [(SPHEAT) \times 4.18684]$$

$$ATM = ATKM - 273.160$$

$$LHV = \{597.31 - [.56525(ATM)]\} \times 10^3$$

$$*LHFLX = (HUFLX) \times [(LHV) \times (4.18684)]$$

$$*THFLX = HEFLX + LHFLX + SR$$

$$*BR = \frac{HEFLX}{LHFLX}$$

$$LAMBDA = 5.4 \times 10^{-6}$$

$$*OPTIR1 = \left[\frac{77.6(BP1)}{(ATK1)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TUR1) \times 10^{-12}$$

$$*OPTIR2 = \left[\frac{77.6(BP2)}{(ATK2)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TUR2) \times 10^{-12}$$

$$*IPRZ = \frac{Ln(Z1) - Ln(ZB)}{Ln(Z1) - Ln(Z2)}$$

$$*IPRTUR = \frac{Ln(Z1) - Ln(ZB)}{Ln(ZTUR1) - LN(ZTUR2)}$$

$$*WSB = WS1 - [IPRZ\ (WS1 - WS2)]$$

$$*DPKB = DPK1 - [IPRZ(DPK1 - DPK2)]$$

$$*ATKB = ATK1 - [IPRZ\ (ATK1 - ATK2)]$$

$$*TRT = Ln\ (TUR1) - \left[IPRTUR \times Ln\left[\frac{TUR1}{TUR2}\right]\right]$$

$$TURT = exp(TRT)$$

$$*DRAG = \left[\frac{FRICV}{WSB}\right]^2$$

$$DPB = DPKB - 273.160$$

$$ATB = ATKB - 273.160$$

$$AB = 373.160/DPKB$$

$$BB = AB - 1.000$$

$$CB = 1.000 - \left[\frac{1}{AB}\right]$$

$$DB = [10^{(GGC10)\times(BB)}] - 1.000$$

$$FB = [10^{(GGC11)\times(CB)}] - 1.000$$

$$*VPB = BPB \times (AB)^{GGC12} \times 10^{[GGC13\times BB]+[GGC14\times DB]+[GGC15\times FB]}$$

$$GB = 373.160/ATKB$$

$$QB = GB - 1.000$$

$$JB = 1.000 - \left[\frac{1}{GB}\right]$$

$$KB = [10^{(GGC10)\times(QB)}] - 1.000$$

$$MB = [10^{(GGC11)\times(JB)}] - 1.000$$

$$*SVPB = BPB \times (GB)^{GGC12} \times 10^{[GGC13\times QB]+[GGC14\times KB]+[GGC15\times MB]}$$

$$AHB = (VPB) \times \left[\frac{100}{(WVGC) \times (ATKB)}\right]$$

$$RHB = \left[\frac{VPB}{SVPB}\right] \times 100$$

$$*SHB = \frac{0.622 \times VPB}{BPB - (0.378 \times VPB)}$$

$$VTKB = (ATKB) \times [1.000 + (SHB \times 0.608)]$$

$$VTB = VTKB - 273.160$$

$$PTKB = (ATKB) + [0.0098 \times ZB]$$

$$PTB = PTKB - 273.160$$

$$VPTKB = (VTKB) + [0.0098 \times ZB]$$

$$VPTB = VPTKB - 273.160$$

$$WTKB = WTB + 273.160$$

$$ATWTB = ATKB - WTKB$$

$$PTWTB = PTKB - WTKB$$

$$VTWTB = VTKB - WTKB$$

$$VPTWTB = VPTKB - WTKB$$

$$SHTC = 0.92 \times 10^{-3}$$

$$SPHEATB = (\ )40[1 + 0.90\ (SHB)] \times 10^{3}$$

$$*AIRDB = \frac{.34838(BPB)}{VTKB}$$

$$VVPTC = 0.002 - [(SHTC) \times (WSB) \times (PTWTB)]$$

$$HEFLXB = (AIRDB) \times (VVPTC) \times [(SPHEATB) \times 4.18684]$$

$$AW = 373.160/WTKB$$

$$BW = AW - 1.000$$

$$CW = 1.000 - \left|\frac{1}{AW}\right|$$

$$DW = [10^{(GGC10)\times(BW)}] - 1.000$$

$$FW = [10^{(GGC11)\times(CW)}] - 1.000$$

$$*VPW = BPW \times (AW)^{GGC12} \times 10^{[GGC13\times BW]+[GGC14\times DW]+[GGC15\times FW]}$$

$$AHW = (VPW) \times \left[\frac{100}{(WVGC) \times (WTKB)}\right]$$

$$MTC = 1.32 \times 10^{-3}$$

$$VVHC = (MTC) \times (WSB) \times [AHW - AHB]$$

$$HUFLXB = VVHC$$

$$LHVB = \{597.31 - [.56525(ATB)]\} \times 10^{3}$$

$$*LHFLXB = (HUFLXB) \times [(LHVB) \times (4.18684)]$$

$$*THFLXB = HEFLXB + LHFLXB + SR$$

$$*BRB = \frac{HEFLXB}{LHFLXB}$$

$$DRAGB = \{0.63 + [0.066(WSB)]\} \times 10^{-3}$$

$$*SSTRES = (DRAGB) \times (WSB)^{2} \times (AIRDB)$$

$$*VVLC = -SSTRES/AIRDB$$

$$*MOFLXB = -(SSTRES)$$

$$*FRICVB = \left[\frac{(SSTRES)}{(AIRDB)}\right]^{1/2}$$

$$*LOGFVB = Log_{10}(FRICVB)$$

$$*RUFLB = 10^{RLC10 + RLC11(LOGVB) + RLC12(LOGVB)^{2} + RLC13(LOGVB)^{3} + RLC14(LOGVB)^{4}}$$

$$SCLSHB = \frac{-HUFLXB}{(AIRDB) \times (FRICVB)}$$

$$SCLPTB = \frac{-HEFLXB}{(AIRDB) \times (FRICVB) \times [4.18684(SPHEATB)]}$$

$$MOLB = \frac{-(ATKB) \times [FRICVB]^3}{(GA) \times (VVPTC) \times (VKC)}$$

$$ZOLB = \frac{GMH}{MOLB}$$

If $ZOLB \leqslant 0$, then:

$$RIB = [0.74(ZOLB)] \times \frac{[1 - 15(ZOLB)]^{1/2}}{[1 - 9(ZOLB)]^{1/2}}$$

If $ZOLB > 0$, then:

$$RIB = \frac{(ZOLB) \times [0.74 + 4.7(ZOLB)]}{[1 + 4.7(ZOLB)]^2}$$

$$ZOLTB = \frac{ZB}{MOLB}$$

$$*OPTIRT = \left[\frac{(77.6) \times (BPB)}{(ATKB)^2}\right]^2 \times \left[1 + \frac{7.53 \times 10^9}{(LAMBDA)^2}\right]^2 \times (TURT) \times 10^{-12}$$

$$*EWSD = \frac{.028(WSM)}{|WSD|} \times 100$$

$$*ESHD = \frac{.08 \times 10^{-3}}{|SHD|} \times 100$$

$$*EPTD = \frac{.008}{|PTKD|} \times 100$$

$$*EWSPD = EWSD$$

$$*ESHPD = ESHD$$

$$*EPTPD = EPTD$$

$$*ERI = EPTPD + 2(EWSPD)$$

*If $RI \leqslant 0$, then set :

$$EZOL = ERI$$

*If $RI > 0$, then set:

$$EZOL = [1 + (10|RI|)] \times ERI$$

$$*EPSID = \left[\frac{|ZOL| + .2}{4}\right] \times EZOL$$

$$*EZOLT = EZOL$$

$$*EWSSLP = EPSID + EWSD$$

$$*ESHSLP = EPSID + ESHD$$

$$*EPTSLP = EPSID + EPTD$$

$$*EFRICV = EWSSLP$$

$$*EDRAG = 2(EFRICV)$$

$$*ERUFL = EFRICV + 20$$

$$*ESCLSH = ESHSLP$$

$$*ESCLPT = EPTSLP$$

$$*EMOFLX = 2(EFRICV)$$

$$*EHUFLX = EFRICV + ESCLSH$$

$$*EHEFLX = EFRICV + ESCLPT$$

$$*ELHFLX = EHUFLX$$

$$*EBR = EHEFLX + ELHFLX$$

$$*ESR = \frac{(|SR| + 14) \times .05}{|SR|} \times 100$$

$$*DHEFLX = |(HEFLX)| \times (EHEFLX)$$

$$*DLHFLX = |(LHFLX)| \times (ELHFLX)$$

$$*DSR = |(SR)| \times (ESR)$$

$$*DH = |HEFLX| + |LHFLX| + |SR|$$

$$*ETHFLX = \left[\left(\frac{DHEFLX}{DH}\right)^2 + \left(\frac{DLHFLX}{DH}\right)^2 + \left(\frac{DSR}{DH}\right)^2\right]^{1/2}$$

$$*EZB = 3$$

$$*EWSB = 3$$

$$*ESHTC = 55$$

$$*EMTC = 25$$

$$*EDRAGB = 40$$

$$*EPTWTB = \frac{0.5}{|PTWTB|} \times 100$$

$$*EAHWB = \frac{0.4 \times 10^{-3}}{|AHW - AHB|} \times 100$$

$$*EVVPTC = ESHTC + EWSB + EPTWTB$$

$$*EHEFXB = EVVPTC$$

$$*EVVHC = EMTC + EWSB + EAHWB$$

$$*EHUFXB = EVVHC$$

$$*ELHFXB = EHUFXB$$

$$*EBRB = EHEFXB + ELHFXB$$

$$*ESRB = ESR$$

$$*DHEFXB = |(HEFLXB)| \times (EHEFXB)$$

$$*DLHFXB = |(LHFLXB)| \times (ELHFXB)$$

$$*DSRB = DSR$$

$$*DHB = |HEFLXB| + |LHFLXB| + |SR|$$

$$*ETHFXB = \left[\left(\frac{DHEFXB}{DHB}\right)^2 + \left(\frac{DLHFXB}{DHB}\right)^2 + \left(\frac{DSRB}{DHB}\right)^2\right]^{1/2}$$

$*ESTRES = EDRAGB + 2(EWSB)$

$*EVVHC = ESTRES$

$*EMOFXB = ESTRES$

$*EFRICB = 0.5(ESTRES)$

$*ERUFLB = EFRICB + 20$

$*ESLSHB = EHUFXB + EFRICB$

$*ESLPTB = EHEFXB + EFRICB$

$*EMOLB = 3(EFRICB) + EVVPTC$

$*EZOLB = EMOLB + EZB$

$*EZOLTB = EZOLB$

* If $ZOLB \leqslant 0$, then set:

$$ERIB = EZOLB$$

* If $ZOLB > 0$, then set:

$$ERIB = \frac{EZOLB}{1+(10|RIB|)}$$

$$*WMRI = \left(\frac{RI}{ERI} + \frac{RIB}{ERIB}\right) / \left(\frac{1}{ERI} + \frac{1}{ERIB}\right)$$

$$*WMZOLT = \left(\frac{ZOLT}{EZOLT} + \frac{ZOLTB}{EZOLTB}\right) / \left(\frac{1}{EZOLT} + \frac{1}{EZOLTB}\right)$$

$$*WMMOFX = \left(\frac{MOFLX}{EMOFLX} + \frac{MOFLXB}{EMOFXB}\right) / \left(\frac{1}{EMOFLX} + \frac{1}{EMOFXB}\right)$$

$$*WMHUFX = \left(\frac{HUFLX}{ELMFLX} + \frac{HUFLXB}{ELHFXB}\right) / \left(\frac{1}{ELHFLX} + \frac{1}{ELMFXB}\right)$$

$$*WMLHFX = \left(\frac{LHFLX}{ELHFLX} + \frac{LHFLXB}{ELMFXB}\right) / \left(\frac{1}{ELHFLX} + \frac{1}{ELHFXB}\right)$$

$$*WMHEFX = \left(\frac{HEFLX}{EHEFLX} + \frac{HEFLXB}{EHEFXB}\right) / \left(\frac{1}{EHEFLX} + \frac{1}{EHEFXB}\right)$$

$*WMSR = SR$

$$*WMTHFX = \left(\frac{THFLX}{ETHFLX} + \frac{THFLXB}{ETHFXB}\right) / \left(\frac{1}{ETHFLX} + \frac{1}{ETHFXB}\right)$$

$$*WMBR = \left(\frac{BR}{EBR} + \frac{BRB}{EBRB}\right) / \left(\frac{1}{EBR} + \frac{1}{EBRB}\right)$$

$$*WMFRIC = \left(\frac{FRICV}{EFRICV} + \frac{FRICVB}{EFRICB}\right) / \left(\frac{1}{EFRICV} + \frac{1}{EFRICB}\right)$$

$$*WMSLSH = \left(\frac{SCLSH}{ESCLSH} + \frac{SCLSMB}{ESLSMB}\right) / \left(\frac{1}{ESCLSH} + \frac{1}{ESLSHB}\right)$$

$$* WMSLPT = \left(\frac{SCLPT}{ESCLPT} + \frac{SCLPTB}{ESLPTB} \right) / \left(\frac{1}{ESCLPT} + \frac{1}{ESLPTB} \right)$$

$$* WMRUFL = \left(\frac{RUFL}{ERUFL} + \frac{RUFLB}{ERUFLB} \right) / \left(\frac{1}{ERUFL} + \frac{1}{ERUFLB} \right)$$

$$* WMDRAG = \left(\frac{DRAG}{EDRAG} + \frac{DRAGB}{EDRAGB} \right) / \left(\frac{1}{EDRAG} + \frac{1}{EDRAGB} \right)$$

$$* SDRI = \left[\frac{(RI - WMRI)^2 + (RIB - WMRI)^2}{2} \right]^{1/2}$$

$$* SDZOLT = \left[\frac{(ZOLT - WMZOLT)^2 + (ZOLTB - WMZOLT)^2}{2} \right]^{1/2}$$

$$* SDMOFX = \left[\frac{(MOFLX - WMMOFX)^2 + (MOFLXB - WMMOFX)^2}{2} \right]^{1/2}$$

$$* SDLHFX = \left[\frac{(LHFLX - WMLHFX)^2 + (LHFLXB - WMLMFX)^2}{2} \right]^{1/2}$$

$$* SDHEFX = \left[\frac{(HEFLX - WMHEFX)^2 + (HEFLXB - WMHEFX)^2}{2} \right]^{1/2}$$

$$* SDSR = 0$$

$$* SDTHFX = \left[\frac{(THFLX - WMTHFX)^2 + (THFLXB - WMTMFX)^2}{2} \right]^{1/2}$$

$$* SDBR = \left[\frac{(BR - WMBR)^2 + (BRB - WMBR)^2}{2} \right]^{1/2}$$

$$* SDFRIC = \left[\frac{(FRICV - WMFRIC)^2 + (FRICVB - WMFRIC)^2}{2} \right]^{1/2}$$

$$* SDSLSH = \left[\frac{(SCLSH - WMSLSH)^2 + (SCLSHB - WMSLSH)^2}{2} \right]^{1/2}$$

$$* SDSLPT = \left[\frac{(SCLPT - WMSLPT)^2 + (SCLPTB - WMSLPT)^2}{2} \right]^{1/2}$$

$$* SDRUFL = \left[\frac{(RUFL - WMRUFL)^2 + (RUFLB - WMRUFL)^2}{2} \right]^{1/2}$$

$$* SDDRAG = \left[\frac{(DRAG - WMDRAG)^2 + (DRAGB - WMDRAG)^2}{2} \right]^{1/2}$$

$$* \text{If } |WMRI| > .02, \text{ then: } DFRI = \frac{SDRI}{|WMRI|} \times 100$$

$$* \text{If } |WMRI| \leqslant .02, \text{ then: } DFRI = \frac{SDRI}{.02} \times 100$$

$$* \text{If } |WMZOLT| > .02, \text{ then: } DFZOLT = \frac{SDZOLT}{|WMZOLT|} \times 100$$

$$* \text{If } |WMZOLT| \leqslant .02, \text{ then: } DFZOLT = \frac{SDZOLT}{.02} \times 100$$

$*\text{If } |WMMOFX| > .06, \text{ then: } DFMOFX = \frac{SDMOFX}{|WMMOFX|} \times 100$

$*\text{If } |WMMOFX| \leqslant .06, \text{ then: } DFMOFX = \frac{SDMOFX}{.06} \times 100$

$*\text{If } |WMLHFX| > 20, \text{ then: } DFLMFX = \frac{SDLMFX}{|WMLHFX|} \times 100$

$*\text{If } |WMLHFX| \leqslant 20, \text{ then: } DFLHFX = \frac{SDLHFX}{20} \times 100$

$*\text{If } |WMHEFX| > 3, \text{ then: } DFHEFX = \frac{SDHEFX}{|WMHEFX|} \times 100$

$*\text{If } |WMHEFX| \leqslant 3, \text{ then: } DFHEFX = \frac{SDHEFX}{3} \times 100$

$*DFSR = 0$

$*\text{If } |WMTHFX| > 30, \text{ then } DFTMFX = \frac{SDTMFX}{|WMTMFX|} \times 100$

$*\text{If } |WMTHFX| \leqslant 30, \text{ then } DFTMFX = \frac{SDTHFX}{30} \times 100$

$*\text{If } |WMBR| > .08, \text{ then } DFBR = \frac{SDBR}{|WMBR|} \times 100$

$*\text{If } |WMBR| \leqslant .08, \text{ then } DFBR = \frac{SDBR}{.08} \times 100$

$*\text{If } |WMFRIC| > 6 \times 10^{-2}, \text{ then } DFFRIC = \frac{SDFRIC}{|WMFRIC|} \times 100$

$*\text{If } |WMFRIC| \leqslant 6 \times 10^{-2}, \text{ then } DFFRIC = \frac{SDFRIC}{6} \times 10^{-2} \times 100$

$*\text{If } |WMSLSH| > 3 \times 10^{-5}, \text{ then } DFSLSH = \frac{SDSLSH}{|WMSLSH|} \times 100$

$*\text{If } |WMSLSM| \leqslant 3 \times 10^{-5}, \text{ then } DFSLSH = \frac{SDSLSH}{3 \times 10^{-5}} \times 100$

$*\text{If } |WMSLPT| > 2 \times 10^{-2}, \text{ then } DFSLPT = \frac{SDSLPT}{|WMSLPT|} \times 100$

$*\text{If } |WMSLPT| \leqslant 2 \times 10^{-2}, \text{ then } DFSLPT = \frac{SDSLPT}{2 \times 10^{-2}} \times 100$

$*\text{If } |WMRUFL| > 6 \times 10^{-5}, \text{ then } DFRUFL = \frac{SDRUFL}{|WMRUFL|} \times 100$

$*\text{If } |WMRUFL| \leqslant 6 \times 10^{-5}, \text{ then } DFRUFL = \frac{SDRUFL}{|WMDRAG|} \times 100$

$*\text{If } |WMDRAG| > 4 \times 10^{-4}, \text{ then } DFDRAG = \frac{SDDRAG}{|WMDRAG|} \times 100$

$*\text{If } |WMDRAG| \leqslant 4 \times 10^{-4}, \text{ then } DFDRAG = \frac{SDDRAG}{4 \times 10^{-4}} \times 100$

$* WMMOL = \frac{ZB}{WMZOLT}$

$* WMZOL = \frac{GMH}{WMMOL}$

Equations and symbols deleted since the previous experiment:

BP

DVPTDZ

VPTKSLOP

SCLVPT

SCLVPTB

BOYFLX

BOYFLXB

RSTRES

12. Bibliography

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13. Listing of Hewlett-Packard 9825A Computer Programs in HPL Language

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```
"SANNIC":
dim A(0:19,3),B(9,16),B$(300),C(9,16),C$(160),E(13),G(13),G$(12,3)
dim H(4),M(21,5(21,0(0:19),T$(496),D(0:30),V(0:20),Z$(220),Z(15),A$(100)
dim K(10,2),L$(300),D$(20),Y$(4),E$(4),F$(2),W(9,7);1073Q;1111)E(4)
dim W$(2,36),R$(36),U$(2,36)
cfg 1,2
"PRINTER":10)J
files DATE:0,TIDET:0,CW-DAP:0,METDAT:0,PADATA:1,WSEC:0,REHL:0
sread 1,G$,G(*);sread 2,T$;sread 6,W$;sread 7,R$,U$
on end 4,"readS";on end 5,"FMT";dsp "FINDING END OF OLD DATA"
rread 4,1
sread 4,D(*),E(*),K(*),U(*)
for I=1 to 31;sread 4,D;next I;sread 4,F$
for I=1 to 81;sread 4,D;next I;sread 4,F$
gto -3
"readS":sread 5,D;jmp 0
"FMT":0)D;ent "Averaging Period (minutes)",E(9);6#E(9)E(9)
ent "Particle Sampling Period (sec.)",E(13)
ent "DATE (YEAR): ",E$
"------ Format statements follow ------":
fmt 1,2x,f2.3,4x,z
fmt 5,2x,f2.3,6x,f7.3

wtc 11,1;wtc 11,32;wtc 0,0;wait 500
wtc 11,1;wtb 11,64;wtb 11,75;wtb 11,54;wtc 11,0
"first the Micro Met":
"Allocate buffer ""micmet"" ":buf "micmet",B*,1
err 11,4
"Go and accept data":tfr 11,"micmet",280
"will always go to ""READAT"" ":ons 11,"READAT";0)Y
buf "nullen",C*,1
tfr 15,"nullen",136
ons 15,"KNOLDAT"
0)Z;on end 4,"MAIN"

"MAIN":fmt 4,c,fz2.0,c,fz2.0,c,fz2.0,f9.0,c
wrt 4,"TIME ",H(1),":",M(1),":",S(1),E(9) r99," To Go"
if Y;c1) 'MET20'
gto "MAIN"
"MET20":chain "CRUNCH",0,39
dsp "CRUNCH";c11 'CRUNCH'
chain "CRNCH2",0,41
dsp "CRNCH2";c11 'CRNCH2',0)Y
wti 0,10,if not rdi 6mod2;prt "PRINTER DOWN";gto -3D
"PRINT DATE":fzd 0;str(D(30),&" "&G$(D(27)]A" "&E$)D$
))N
dsp "SAVING CRNCH2 DATA";c11 'SAVDATA'
if r40)-2 or r40(-2;sfg 2;gto "SUMPRT"
chain "PRINT1",0,48
dsp "PRINT1";c11 'PRINT1'
chain "PRINT2",0,50
dsp "PRINT2";c11 'PRINT2'
chain "PRINT3",0,52
dsp "PRINT3";c11 'PRINT3'
chain "CRNCH3",0,54
dsp "CRNCH3";c11 'CRNCH3'
dsp "SAVING CRNCH3 DATA",c11 'SAVDATA'
chain "PRINT4",0,57
dsp "PRINT4";c11 'PRINT4'
chain "PRINT5",0,59
dsp "PRINT5";c11 'PRINT5'
chain "KPRINT",0,61
dsp "KPRINT";c11 'KPRINT'
gto "ENDPRINT"
"SUMPRT":
chain "PRINT1",0,65
dsp "PRINT1";c11 'PRINT1'
chain "PRINT6",0,67
dsp "PRINT6";c11 'PRINT6'
chain "PRINT7",0,69
dsp "PRINT7";c11 'PRINT7'
chain "CRNCH3",0,71
dsp "CRNCH3";c11 'CRNCH3'
dsp "SAVING CRNCH3 Data",c11 'SAVDATA
chain "PRINT4",0,74
dsp "PRINT4";c11 'PRINT4
chain "PRINT5",0,76
dsp "PRINT5";c11 'PRINT5'
chain "KPRINT",0,78
dsp "KPRINT";c11 'KPRINT'
"ENDPRINT":
0,1,if E(13)E(4),gsb "Date"
cfg 2;ret

"READAT" dsp "READAT";if f;gto "FLAG"

sfg 14,0)r100,if flg15,1)r100 cfg 1;

for K=1 to 18
13(K 1,*18)r97,if val(B$(r97,r97+2))=K 1 gto "D"+K
if val(B$ r97,r97+2))=K-1 gto "D"+K
"B.OK" val(B$(r97+2 r97+11))=K 11
next K,if flg15,gto "D0.AK"
for K=19 to 20
r97+14)r97
val(B$(r97+1,r97+1+E(12) if val(B$ r97+2 ,r97+ 10 next gto "D"+K
val(B$(r97+4,r97+9),10 (1*
if val(B$(r97+5,r97+6 10 1)=0 1
next K
for K=1,51 to 256,val(B$(K,K+1)B(K 1) next K
for K=260 to 270,val(B$(K,K+1)B(K 1) next K
val(B$(257,262))B(19 11)K 1
val(B$(271,276))B(18,11)E(10 11
if flg1 gto "BELOW"
"Error: data from B$ sfg 14 val(B$(1,2))1 val(B$(2 ,3))
val(B$(4,5 $0000)E(1 $0000)E(2)
val(B$(6,7 $0000)E(3 $0000)E(4)
if M(5 0,M(1)M(1 M(1 M(2 )E(15)
E(10)E(9)E(10)
if E(4)-1111,gsb "Date"
B$(6,for K=0 to 19
D$(K*4,K*4)A$,1) V(K)=D(K)
next K
V(20)+1)V(20)
"V Ref A":if U(0)<=6.198;A(0,3)+1)A(0,3)
if U(0)>=6.21;A(0,3)+1)A(0,3)
"Man Flag":if U(13)=4;A(13,3)+1)A(13,3)
"Zero Ref":if U(14)<=.003;A(14,3)+1)A(14,3)
if U(14)>=.003,A(14,3)+1)A(14,3)
"V Ref D":if U(17)<=6.198;A(17,3)+1)A(17,3)
if U(17)>=6.21;A(17,3)+1)A(17,3)
"AC Freq":if E(5):if abs(U(11)-E(5))>=1;E(6)+1)E(6)
"AC Volt":if E(7);if abs(U(12)-E(7))>=.5;E(8)+1)E(8)
U(11)E(5);U(12)E(7)
"FLAG":if (r99+1)r99))=E(9);1)Y,0)r99
sfg 14;if r100;sfg 15
"Empty buffer ""micmet""":
wtc 11,1;wtb 11,64;wtb 11,75,wtb 11,54,wtc 11,0
"Reset buffer":buf "micmet",tfr 11,"micmet",284
rret
"BELAG":beep
"try to get back into sync":dsp "SYNC" wait 2000;gto "FLAG"
"KNULDAT":dsp "KNULDAT";if C(4)1000;wait 1000,gsb "Date",gto "KELAG"
if Y or V(20)=0;gto "KELAG"
" ")/*11,20);sfg 14,0)r100;if f flg15,1)r100
for K=78 to 130 by 4
num(C$(K))*1e3+num(C$(K+1))*100+num(C$(K+2))*10+num(C$(K+3))U(K-74)/4)
next K
num(C$(134))*1e3+num(C$(135))*100+num(C$(136))*10+num(C$(19))U(15)
"range switch":num(C$(131))1)r90
if r90<1 or r90>4;gto "KELAG"
"get A55" channel width":rread 3,r90,Z(*)
for K=0 to 19;V(K)/V(20))V(K);next K
"WD":-225)K;if V(9)<6.75;13*2K
K+36V(9))V(9)
"WS":.054+2V(5))V(5)
"DP":2.0006208*exp(.2654620*V(3))-5.04533127*exp(-V(3)*2)K
K+3.015040066e 3V(3) 3 /.6768419*exp(-5V(3))*4)V(3)
"BP":9.41177832e2+1.420666650e1V(7)+2.645221*exp(-1V(7)*2)
K 2.525072262e 2V(7)*3+7.80886364e-4V(7)*4)V(7)
"Elevator, set to 1":1)r96;r90+r96&4)r90
for K=1 to 15;U(K)/(Z(K)*100*V(5)*E(13)*.2e-3)+Wir90,K),B(r90,K) next K
.1*V(5)*E(13)*5.2e-3*Wir90,11)Wir90,11)
"BLL,101 = Divisor":B(r90,16)+1)B(r90,16)
fxd 0;for K=1 to 15;str(U(K))2$(7)+(K-1)*5,7*(K-1)*5);next K
for K=14 to 70 by 4
num(C$(K))*1e3+num(C$(K+1))*100+num(C$(K+2))*10+num(C$(K+3))U(K-10)/4)
next K
"get Area data for DAP":rread 3,5,Z(*)
for K=1 to 15;U(K)/(13*Z(K)*E(13)*V(5)*100)+B(19,K))B(19,K);next K
E(13)*V(5)*.001+W(9,11)W(9,11
B(9,16)+1)B(9,16)
fxd 0;for K=1 to 15;str(U(K)-2)*(146+(K-1)*5,150+(K-1)*5);next K
cll 'SAVDADATA'
for K=0 to 20,0)V(K),next K
"Reset buffer":if r100 sfg 15
"KELAG":buf "nullen",tfr 15,"nullen",136
rret

"Date",0,G(13),E(13)E(4)
for M=1 to 5
if E(3)-G(15)-1;jmp 3
U(5)+(60*M))G(13)
next M
M-1)E(1)-E(3)-G(13)-G(M-1)*60)*24),ret

"SAVDATA":
sprt 4,1,2 U(1) M(1),G(1) E(3) ,G(5) r99 V(19) V(1),V(2) ,r99
1)W
rret
"SAVDATA
for I=1 to 81;sprt 4,1;next I;sprt 4,1;"end"
ret

"END":"Save ""ANNIC"" dsp ""ANNIC"" to hold";end
44
```

```
20: "CRUNCH":
21: "Sub ""CRUNCH"" takes data from array A[J,1); puts it into engineering";
22: "units; runs it thru some formulas;stores it in both A[J,2] and A[J,3]";
23: if E[10]=0;gto +5
24: "Average all A[M,1)":for M=0 to 19
25: A[M,1)/E[10))A[M,2];0)A[M,1]
26: next M
27: for M=1 to 10;K[M,1]/E[10))K[M,2];0)K[M,1];next M
28: E[10])D[27];0)E[10];E[4])D[28];E[1])D[29];E[2])D[30]
29: H[1])D[21];N[1])D[23];S[1])D[25];H[2])D[22];N[2])D[24];S[2])D[26];0)H[3]
30: fid 0;val(Y@13,4))*1e8+D[29]*1e6+D[30]*1e4+D[22]*100+D[24])D[20]
31:
32: "WDir":if A[9,2](6.324;145+34A[9,2])A[9,3);jmp 2
33: -215+34A[9,2])A[9,3]
34: "WSEC":
35: 2*(int(A[9,3)/10)+1)-1)W
36: if A[9,3))=230;W-360)W
37: if W)35;35)W
38: if A[9,3))=40 and A[9,3)(230;9)W
39: "TUR1":(1.07722*10^(1-abs(A[1,2)/2)))^2)A[1,3]
40: "TUR2":(1.07722*10^(1-abs(A[2,2)/2)))^2)A[2,3]
41: 'DP1rCAL')r72;A[3,2)+r72)r67
42: "DP1":-20.825+6.25047r67-4.04968e-2r67^2)A[3,3]
43: A[3,3)+1.43719e-3r67^3)A[3,3]
44: 'DP2FCAL')r73;A[4,2)+r73)r67
45: "DP2":-20.5158+6.06183r67-2.1513e-2r67^2)A[4,3]
46: A[4,3)+1.80459e-3r67^3)A[4,3]
47: 'WS1EC')r75;'WS2EC')r76
48: if A[5,2)(=2.57;gto +3
49: "WS1":(3.08914e-2+1.93793A[5,2)-6.72817e-4A[5,2)^2)*r75)A[5,3)
50: gto +3
51: "-WS1":-6.32834e-2+2.42269A[5,2)-.399002A[5,2)^2)A[5,3]
52: (A[5,3)+8.72726e-2A[5,2)^3)*r75)A[5,3]
53: if A[6,2)(=2.558;gto +3
54: "WS2":(.181091+1.92438A[6,2)+1.55926e-4A[6,2)^2)*r76)A[6,3]
55: gto +3
56: "-WS2":-7.13544e-2+2.52039A[6,2)-.404911A[6,2)^2)A[6,3]
57: (A[6,3)+8.22668e-2A[6,2)^3)*r76)A[6,3]
58: "BP2":9.4151e2+1.4123e1A[7,2)+2.2644e-1A[7,2)^2)A[7,3]
59: A[7,3)-1.41907e-2A[7,2)^3)A[7,3]
60: "SR":-139.46A[8,2])A[8,3]
61: 'WTBFCAL')r74;A[10,2)+r74)r67
62: "WTB":9.75329+.969791r67+6.10709e-4r67^2)A[10,3]
63:
64: "ACF":56+A[11,2))A[11,3]
65: "ACV":90+10A[12,2])A[12,3]
66: "AirT1 & T2 ":A[18,2])A[18,3);A[19,2])A[19,3]
67: for M=0 to 19;A[M,3))D[M];0)A[M,3];A[M,2])U[M];next M
68: for M=1 to 9;if B[M,16]=0;gto "KNEXT"
69: for I=1 to 15
70: B[M,I)/B[M,16])C[M,I];0)B[M,I]
71: next I
72: 0)B[M,16]
73: "KNEXT":next M
74: for M=1 to 9;W[M,1))W[M,2];0)W[M,1];next M
75: "now store the data on disk":
76: sprt 4,D[*],E[*],K[*],U[*];0)Y
77: ret
78: "ENZO":resave "CRUNCH";dsp "CRUNCH resaved";end
79:
80: "----- FIELD CALIBRATION FACTORS -----":
81:
82: "DP1FCAL":ret 0
83: "DP2FCAL":ret 0
84: "WS1EC":ret itf(W@[1,W,W+1))/1000
85: "WS2EC":ret itf(W@[2,W,W+1))/1000
86: "WTBFCAL":ret 0
87:
#23022
```

```
20: "CRNCH0":
21: "This program is for use with (RECRNC)":
22: "Sub ""CRNCH0"" takes data from array A[J,1); puts it into engineering"
23: "units; runs it thru some formulas;stores it in both A[J,2] and A[J,3]"
24: D[27])E[10]
25: E[4])D[28];F[1])D[29];F[2])D[30]
26:
27: "WDir":if A[9,2](6.324;145+34A[9,2])A[9,3);jmp 2
28: -215+34A[9,2])A[9,3]
29: "WSEC":
30: 2*(int(A[9,3)/10)+1)-1)W
31: if A[9,3))+230;W-360)W
32: if W)35;35)W
33: if A[9,3))=40 and A[9,3)(230;9)W
34: "TUR1":(1.07722*10^(1-abs(A[1,2)/2)))^2)A[1,3]
35: "TUR2":(1.07722*10^(1-abs(A[2,2)/2)))^2)A[2,3]
36: 'DP1rCAL')r72;A[3,2)+r72)r67
37: "DP1":-20.825+6.25047r67-4.04968e-2r67^2)A[3,3]
38: A[3,3)+1.43719e-3r67^3)A[3,3]
39: 'DP2FCAL')r73;A[4,2)+r73)r67
40: "DP2":-20.5158+6.06183r67-2.1513e-2r67^2)A[4,3]
41: A[4,3)+1.80459e-3r67^3)A[4,3]
42: 'WS1EC')r75;'WS2EC')r76
43: if A[5,2)(=2.57;gto +3
44: "WS1":(3.08914e-2+1.93793A[5,2)-6.72817e-4A[5,2)^2)*r75)A[5,3)
45: gto +3
46: "-WS1":-6.32834e-2+2.42269A[5,2)-.399002A[5,2)^2)A[5,3]
47: (A[5,3)+8.72726e-2A[5,2)^3)*r75)A[5,3]
48: if A[6,2)(=2.558;gto +3
49: "WS2":(.181091+1.92438A[6,2)+1.55926e-4A[6,2)^2)*r76)A[6,3]
50: gto +3
51: "-WS2":-7.13544e-2+2.52039A[6,2)-.404911A[6,2)^2)A[6,3]
52: (A[6,3)+8.22668e-2A[6,2)^3)*r76)A[6,3]
53: "BP2":9.4151e2+1.4123e1A[7,2)+2.2644e-1A[7,2)^2)A[7,3]
54: A[7,3)-1.41907e-2A[7,2)^3)A[7,3]
55: "SR":-139.46A[8,2])A[8,3]
56: 'WTBrCAL')r74;A[10,2)+r74)r67
57: "WTB":9.75329+.969791r67+6.10709e-4r67^2)A[10,3]
58:
59: "ACF":56+A[11,2))A[11,3]
60: "ACV":90+10A[12,2])A[12,3]
61: "AirT1 & T2 ":A[18,2])A[18,3);A[19,2])A[19,3]
62: for M=0 to 19
63: if M=13 or M=14 or M=17;gto +2
64: A[M,3))D[M]
65: next M
66: ret
67:
68: "ENZO":resave "CRNCH0";dsp "CRNCH0 RESAVED";end
69:
70: "---- FIELD CALIBRATION FACTORS ----"
71: "DP1rCAL":ret r72
72: "DP2FCAL":ret r73
73: "WS1EC":ret itf(W@[1,W,W+1))/1000
74: "WS2EC":ret itf(W@[2,W,W+1))/1000
75: "WTBrCAL":ret r74
76:
#8020
```

```
"CRNCHK":
"Sub ""CRNCHJ"" contains the formulas for the B1 r-variables"
"and the r30 thru r7) for Error ANALYSIS":
"set ctrl 14 to ignore math errors":
rad;ctl 14,cfq 14
D[18]r1,D[19]r2
D[3]r3,D[4]r4
D[5]r5,D[6]r6
D[1]r7;D[2]r8
D[10]r9,D[7]r10
D[9]r11;D[8]r12
"0000000":F4
D[.1]r6?
deq("FTABLE'(E[41+0,D[22]*10+D[24]+E[91/12)-2.5)*.3048)r68;rad
"ATKM":(*ATK1'+'ATK2')/2r14
"Z1":10.5)r65
"Z2":9.2)r66
"Z8":10)r16
"GMM":(r65r66))r64
'BP1')r77;'BPB')r78;'BPM')r79;'BPW')r80
"VP1":10^('GGC13'*'B1'+'GGC14'*'D1'+'GGC15'*'E1'))r17
'BP1'*'A1'+'GGC12'*r17)r17
"VP2":10^('GGC13'*'B2'+'GGC14'*'D2'+'GGC15'*'E2'))r18
'BP'+'A2'+'GGC12'*r18)r18
"SVP1":10^('GGC13'*'B1'+'GGC14'*'K1'+'GGC15'*'M1'))r19
'BP'+'GL'+'GGC12'*r19)r19
"SVP2":10^('GGC13'*'B2'+'GGC14'*'K2'+'GGC15'*'M2'))r20
'BP'+'G2'+'GGC12'*r20)r20
"AM1":r17/(100/('WVGC'*'ATK1'))r21
"AM2":r18/(100/('WVGC'*'ATK2'))r22
"AM":100*r17/r19)r23
"PHC":100*r18/r20)r24
"SM1":.6r197*r17/('BP1'-.378*r17))r25
"SM2":.6r197*r18/('BP2'-.378*r18))r26
"VT1":'VTK1'-273.16)r29
"VT2":'VTK2'-273.16)r30
'PT1':'TK1'-273.16)r31
'PT2':'TK2'-273.16)r32
"VPT1":'VPTK1'-273.16)r33
"VPT2":'VPTK2'-273.16)r34
"DWSVZ":'WSD'/(ln(r65/r66)*r64))r35
"DSHDZ":'SHD'/(ln(r65/r66)*r64))r36
"DPTDZ":'PTKD'/(ln(r65/r66)*r64))r37
"PCW":(R$(W,W+1)/1000)r38
"DWPL":(U$(1,W,W+1)/100+(1-(U$(2,W,W+1)/100*(1.18-.068)))*r2
"R1":GA r37/'VPTKM'*5^2)r40
"NEWTON RAPHSON":'ZDL'-(r40))r41;if r41=0:.00001)r41
"MOL":r64/r41)r42
"710L":r65/r42)r43
"Z70L":r66/r42)r44
'PSI1Z1')r45
'PSI1Z2')r46
'PSI2Z1')r47
'PSI2Z2')r48
"ZOL1":r16/r42)r70
"WSSLOP":abs((ln(r65)-r45-(ln(r66)-r46))/'WSD'))r59
"SHSLOP":(ln(r65)-r47-(ln(r66)-r48))/'SHD')r60
"PTKSLOP":(ln(r65)-r47-(ln(r66)-r48))/'PTKD')r61
"SUNLADP":(ln('ZTUR1'/-ln(r2/'ZTUR2'))/'TURD')r63
"EPTEQV":'VKE'/r59)r49
"DPWP":r49/'W'*2)r69
"RUFL":'TUFV'.1r67
RLC10+'RLC11'r67+'RLC12'r67^2+'RLC13'r67^3+'RLC14'r67^4)r67
10^r67)r68
"SHSLOP":'VKE'/(.24*r68))r51
"SSLOP":'VKE'/(.24*r68))r52
"AIKD":.3883*'BPM'/'VTKM')r54
"SPD.AT":.24*(1+.2*r52+r52^2)/r53)*(1+DD)r71
"MOL":.r54r49^2)r55
"MOL":.r54r49^3)r56
"SHSLOP":.r54r49^3+.4 1868r71)r57
"PTKSLOP":3(-.5r5)5*'ATM')*1e5)r11
"EPTEQV":r57/'TKE')r62
"DPWP":r58/'WE')r63
"RUFL":'TUFV'.1r63
RLC10+'RLC11'r63+'RLC12'r63^2+'RLC13'r63^3+'RLC14'r63^4)r64
"ZOL":r16/r42)r70
"MOL":r64/r41)r42
"710L":r65/r42)r43
"Z70L":r66/r42)r44
'PSI1Z1')r45
'PSI1Z2')r46
'PSI2Z1')r47
'PSI2Z2')r48
"ZOL1":r16/r42)r70
"WSSLOP":abs((ln(r65)-r45-(ln(r66)-r46))/'WSD'))r59
"SHSLOP":(ln(r65)-r47-(ln(r66)-r48))/'SHD')r60
"PTKSLOP":(ln(r65)-r47-(ln(r66)-r48))/'PTKD')r61
"SUNLADP":(ln('ZTUR1'/-ln(r2/'ZTUR2'))/'TURD')r63
"EPTEQV":'VKE'/r59)r49
"DPWP":r49/'W'*2)r69
"RUFL":'TUFV'.1r67
RLC10+'RLC11'r67+'RLC12'r67^2+'RLC13'r67^3+'RLC14'r67^4)r67
10^r67)r68
"SHSLOP":'VKE'/(.24*r68))r51
"SSLOP":'VKE'/(.24*r63
```

```
260: "EGR":(abs(r12)+14)*.05/abs(r12)*100)r94
261: "ETHFLA":(('DHEFLX'/'DH')^2+('DLHFLX'/'DH')^2)r67
262: r67+('DSR'/'DH')^2)r67,\r67)r95
263: ret
264:
265: "----- Functions for Error Analysis-----":
266: "EWSD":ret 'WSM'*.028/abs('WSD')*100
267: "ESHD":ret 8e-5/abs('SHD')*100
268: "EPID":ret .008/abs('PTKD')*100
269: "EWSPD":ret 'EWSD'
270: "ESHPD":ret 'ESHD'
271: "EPTPD":ret 'EPID'
272: "EPSID":ret (abs(r41)+.2)/4*'EZOL'
273: "EWSSLP":ret 'EPSID'+'EWSD'
274: "ESHSLP":ret 'EPSID'+'ESHD'
275: "EPTSLP":ret 'EPSID'+'EPTD'
276: "DHELFX":ret abs(r92)*r93
277: "DLHFLX":ret abs('LHFLX')*r93
278: "DSW":ret abs(r12)*r94
279: "DM":ret abs(r52)+abs('LHFLX')+abs(r12)
280: "FMOLFX":ret r84+r87
281: "EZOL":if r40)0;ret (1+10*abs(r40))*r82
282: ret r82
283:
284: "FNZO":resave "CRNCH2":dsp "CRNCH2 RESAVED";end
*/154
```

```
286: "CRNCH3":
287: "sub""CRNCH3"" contains the bulk formulas for page 3":
288: "and r90 thru r108 for page 3 Error Analysis":
289: "set flag 14 to ignore math errors":
290: rad,fit ,sfq 14,cfq 15
291: D(10)r1,D(9)r2
292: D(3)r3,D(4)r4
293: D(5)r5,D(6)r6
294: D(11)r7,D(12)r8
295: D(10)r9,D(7)r10
296: D(9)r11
297: D(8)r12
298: ZR":16)r22
299: "GMM":\('Z1'/'Z2')r64
300: "WSB":r5 'IPRZ'*(r5-r6))r14
301: "TURT":exp('TRT')r16
302: "DPB":'DPKB' 273.16)r15
303: "ATR":'ATKB' 273.16)r13
304: "BPB":*AR":'GGC12')r67
305: "VPB":r67*10^('GGC13'*'BB'+'GGC14'*'DB'+'GGC15'*'FB'))r29
306: "BPB":*GR":'GGC12')r67
307: "VPBR":r67*10^('GGC13'*'QB'+'GGC14'*'KB'+'GGC15'*'MB'))r30
308: "AMB":r29*100/'WVGC':'ATKB')r26
309: "PMB":r27/r30*100)r27
310: "VMB":.6215*r29/('BPB':.378*r29))r28
311: "VTB":'VTKB'-273.16)r24
312: "PTB":'PTKB' 273.16)r23
313: "VPTB":'VTKB'-273.16)r25
314: "MTWTB":'MTKB':'WTKB')r18
315: "PTWTB":'PTKB':'WTKB')r19
316: "VTWTB":'VTKB':'WTKB')r20
317: "VPTWTB":'VPTKB'-'WTKB')r21
318: "SPHEWTB":.24*(1.9*28)*1=3)r71
319: "AIRDRY":.340384*'BPB'/('VTKB')r14
320: "VVPTT":.002 'SHTC'r14r19)r38
321: "HEFLXB":r54r30*4.1068*r71)r67
322: "DPW":*'AW':'GGC12')r67
323: "VPW":r67*10^('GGC13'*'BW'+'GGC14'*'DW'+'GGC15'*'FW'))r61
324: "AWW":r61*100/'WVGC':'WTKB')r62
325: "VVPT":'MTC'r14r62 r26))r36
326: "HOFLXB":r36)r56
327: "EHWB":(.692_31 .6452Sr14)*1=3)r60
328: "EHBXB":r60)r61
329: "EHFLXB":r52+'EHFLXB'*r12)r58
330: "RRB":r57/r81)r39
331: "DRWB":*.63* .0466r14:*1= 3)r69
332: "VVLT":'VSIBT'/r54)r35
333: "MDTXB":'VSIBTS'/r55
```

```
68: "FRICVB":\abs('SSTRES'/r54))r49
69: "RUFLB":'LOGFVB')r67
70: 'RLC10'+'RLC11'r67+'RLC12'r67^2+'RLC13'r67^3+'RLC14'r67^4)r67
71: )0^r67)r50
72: "SCLSHB":-r56/(r54*r49))r51
73: "SCLPTB":-r57/(r54*r49*4.1868*r71))r52
74: "MOLB":-'ATKB'r49^3/'GA'r38'VAC')r42
75: "ZOLB":r64/r42)r41
76: if r41)0;gto "*RIB"
77: "RIB":.74*r41*((1-15*r41)^.5/(1-9*r41)^.5))r40
78: gto +2
79: "+RIB":r41(.74+4.2*r41)/(1+4.7*r41)^2)r40
80: "ZOLB":r22/r42)r70
81: "OPTIRT":(77.6*'BPB'/'ATKB'^2)^2*(1+7.53e9/'LAMBDA'^2)^2)r31
82: r31*r16*1e-12)r31
83: gto "err"
84:
85:
86:
87: "= ---------- --------Functions used in CRNCH3------- ----------":
88:
89:
90: "GGC10":ret -3.49149
91: "GGC11":ret 11.344
92: "GGC12":ret 5.02808
93: "GGC13":ret -7.90298
94: "GGC14":ret 8.1328e-3
95: "GGC15":ret -1.3816e-7
96: "DPK1":ret r3+273.16
97: "DPK2":ret r4+273.16
98: "ATK1":ret r1+273.16
99: "ATK2":ret r2+273.16
100: "WVGC":ret 4.615e2
101: "VAL":ret -4
102: "GA":ret 9.7959
103: "LHFLXB":ret r56*r60*4.1868
104: "DPIR":ret (ln(r2)-ln('Z2'))/(ln('Z1')-ln('Z2'))
105: "BP1":ret 'BP2'-('Z1'-'Z2')* 12
106: "BP2":ret r10
107: "DPB":ret 'DP1'+('Z1'-r22)*.12
108: "DPW":ret 'BP1'+('Z1'-r64)*.12
109: "BPW":ret 'BP1'+'Z1'-* 12
110: "SSTRES":ret r59*r14^2*r54
111: "LAMBDA":ret 5.4e-6
112: "Z1":ret 18.3
113: "Z2":ret 9.2
114: "ZTUR1":ret 'Z1'*.6
115: "ZTUR2":ret 'Z2'*.6
116: "IPRZ":ret (ln('Z1')-ln(r22))/(ln('Z1')-ln('Z2'))
117: "IPRTUR":ret (ln('Z1'/-ln(r22))/(ln('ZTUR1')-ln('ZTUR2'))
118: "DPKB":ret 'DPK1'-'IPRZ'*('DPK1'-'DPK2')
119: "ATKB":ret 'ATK1'-'IPRZ'*('ATK1'-'ATK2')
120: "TRT":ret ln(r7)-'IPRTUR'*ln(r7/r8)
121: "AB":ret 3/3.1o/'DPKB'
122: "BB":ret 'AB'-1
123: "CB":ret 1-1/'AB'
124: "DB":ret 10^('GGC10'*'BB')-1
125: "EB":ret 10^('GGC11'*'CB')-1
126: "GB":ret 273.16/'ATKB'
127: "QB":ret 'GB'-1
128: "JB":ret 1-1/'GB'
129: "KB":ret 10^('GGC10'*'GB')-1
130: "MB":ret 10^('GGC11'*'JB')-1
131: "VTKB":ret 'ATKB'*(1+r20* 608)
132: "PTKB":ret 'ATKB'(.009*r2)
133: "VPTKB":ret 'VTKB'+.009*r22
134: "WTKB":ret r9+273.16
135: "SHTC":ret 9.2e-4
136: "AW":ret 373.16/'WTKB'
137: "BW":ret 'AW'-1
138: "CW":ret 1-1/'AW'
139: "DW":ret 10^('GGC10'*'BW')-1
140: "EW":ret 10^('GGC11'*'CW')-1
141: "MTC":ret 1.32e-3
142: "RLC10":ret -2.561
143: "RLC11":ret 1.465
144: "RLC12":ret -6.743
145: "RLC13":ret -10.7
146: "RLC14":ret 6.875
147: "LOGFVB":ret log(r49)
148:
149: "err"
150: "Compute the values for r56 thru r108 for page 3 Error Analysis"
151: "EDRAGB":.40)r96
152: "EHFEXB":'EVVPTC')r97
153: "ELHFXB":'EHFEXB')r99
154: "EBRB":r97+r99)r98
155: "ESRB":r98)r100
156: "ETHFXB":('DHEFXB'/'DHB')^2+('DLHFXB'/'DHB')^2)r66
157: r67)('DRB'/'DHB')^2)r67,\r67^2)r103
158: "EMOFXB":'ESTRES')r102
159: "ELRTCB":-50)'STRES')r103
160: "ERUFLB":r103*r20)r104
161: "ESLSHB":'EHUFXB'+r103)r105
162: "ESLPTB":r97+r103)r106
163: "EZOLIB":'EZOLB')r107
164: "ERIB":r107)r108
165: if r41)0,r16/(1+10*abs(r40))-r108
166: ret
167:
168: "--- Functions for Error Analysis
169: "EZB" ret 3
170: "EWSB" ret 3
171: "ESHTC" ret 55
172: "EMTC" ret 35
173: "EPTWTB" ret .5*abs(r5)*.8)r8
174: "EAHWB" ret 4e-4/(r62 r26))r100
175: "EVVPTC" ret 'ESHTC'+'EWSB'+'EPTWTB'
176: "EVVHC" ret 'EMTC'+'EWSB'+'EAHWB'
177: "DHELXB" ret abs(r92)*r77
178: "DLHFXB" ret abs(r81)*r99
179: "DSW" ret abs(r12)*r94
180: "DSRB" ret 'DSW'
181: "DMB" ret abs(r52)+abs('LHFLXB')+abs(r12)
182: "ESTRES" ret r96+.8 EWSB
183: "EVVLC" ret 'ESTRES'
184: "EMUEB" ret 3*r103+'EVVPTC'
185: "EHUBXB" ret 'EVVHC'
186: "EZOLB" ret 'EMOLB'+'EZB'
187:
188: "FNZO" resave "CRNCH3",dsp "CRNCH3 RESAVED",end
*/418
```

```
"SCRNCH"

"Sub SCRNCH computes statistical data for page 3 printout":

"WMRI":"WM"(P[40],P[82],B[40],B[108])S[1]
"WMZULT":"WM"(P[70],P[83],B[70],B[107])S[2]
"WMMOFX":"WM"(P[55],P[96],B[55],B[106])S[3]
"WMHEFX":"WM"(P[56],P[93],B[56],B[99])S[4]
"WMLHFX":"WM"(P[81],P[93],B[81],B[99])S[5]
"WMHLFX":"WM"(P[57],P[92],B[57],B[97])S[6]
"WMSR":P[12]S[7]
"WMTHFX":"WM"(P[58],P[95],B[58],B[101])S[8]
"WMBR":"WM"(P[37],P[111],B[39],B[98])S[9]
"WMFRIC":"WM"(P[49],P[84],B[49],B[103])S[10]
"WMSLSH":"WM"(P[51],P[87],B[51],B[105])S[11]
"WMSLPT":"WM"(P[52],P[89],B[52],B[106])S[12]
"WMRUFL":"WM"(P[50],P[86],B[50],B[104])S[13]
"WMDRAG":"WM"(P[69],P[85],B[69],B[96])S[14]
"WMMOL":P[14]/S[2]S[15]
"WMZOL":P[64]/S[15]S[16]

"SDRI":"SD"(P[40],B[40],S[1])S[19]
"SDZULT":"SD"(P[70],B[70],S[2])S[20]
"SDMOFX":"SD"(P[55],B[55],S[13])S[21]
"SDLHFX":"SD"(P[81],B[81],S[5])S[22]
"SDHEFX":"SD"(P[57],B[57],S[6])S[23]
"SDSR":)S[24]
"SDTHFX":"SD"(P[58],B[58],S[8])S[25]
"SDBR":"SD"(P[37],B[37],S[7])S[26]
"SDFRIC":"SD"(P[49],B[49],S[10])S[27]
"SDSLSH":"SD"(P[51],B[51],S[11])S[28]
"SDSLPT":"SD"(P[52],B[52],S[12])S[29]
"SDRUFL":"SD"(P[50],B[50],S[13])S[30]
"SDDRAG":"SD"(P[69],B[69],S[14])S[31]

"DFRI":"DF"(S[11],S[19],.02)S[34]
"DFZULT":"DF"(S[21,S[20],.02)S[35]
"DFMOFX":"DF"(S[31,S[21],.06))S[36]
"SDLHFX":"DF"(S[51,S[22],20)S[37]
"DFHEFX":"DF"(S[61,S[23],3))S[38]
"DFSR":0)S[39]
"DFTHFX":"DF"(S[8],S[25],30)S[40]
"DFBR":"DF"(S[7],S[26],.08))S[41]
"DFFRIC":"DF"(S[10],S[27],6e-2))S[42]
"DFSLSH":"DF"(S[11],S[28],3e-5))S[43]
"DFSLPT":"DF"(S[12],S[29],2e-2))S[44]
"DFRUFL":"DF"(S[13],S[30],6e-5))S[45]
"DFDRAG":"DF"(S[14],S[31],4e-4))S[46]
ret
"------- FUNCTIONS ---------":

"WM":ret (p1/p2*p3/p4)/(1/p2+1/p4)
"SD":ret .5*((p1-p3)^2+(p2-p4)^2)^(1/2)
"DF":p2/abs(p1)*100)p4
if ans(p1)<(p3,p2/p3#1#0)p4
ret p4

"ENZD"resave "SCRNCH";dsp "SCRNCH RESAVED";end


#1010
```

```
"SANPRT":

"This program prints raw and calculated data previously recorded"
"un disc (d)":


"D contains the final printout values"
"E  contains entered month(1), day(2), julian day(3),"
"   temporary storage for U(1)(S),(6) and U(1,)(7),(8)"
"   averaging period(2), Diveser(10), Parity error(11)"
"   temp range(12),  f(13)=sampling rate for the transverg"
"G contains the number of days in each month"
"H$ contains the names of each month"
"U  contains the line number for chaining subprograms"
"V  contains the converted analog data"
"W contains the averaged digital data"
"D$ contains the year for print date"
"Y$ contains the year for start date"
"Initializing data follows":
dim AL0:17,31,G(13),G$12,31,D(0:30),I(13),K(10,2),U(0 $Y)
dim P(3),P$(2),D$:20),Y$(4),A$(100),B(10H),S(50)
sfg 1;cfg 2,115)0
""):D$;""):$
"PRINTER":10)J
"ASK":files DATE,MEIDAT,spread 1,G$,G(*)
sfg 1;spread 2,1
ent "ENTER BEGINNING RUN# ",P(1),P(1))P(2)
ent "ENTER ENDING RUN# (CONT for single): ",P(2)
ent "ENTER PRINT DATE (DAY):  ",Y$;Y$&" "):D$
ent "ENTER (MONTH):  ",Y$;cap(Y$)):Y$=D$&Y$&" "):D$
ent "ENTER (YEAR): ",Y$,D$&Y$):D$
ent "ENTER BEGINING PAGE NUMBER: ",N
fmt 1.2x,f7.3,4x,z
.mt 5,2x,f7.3,6x,f7.3
dsp "FINDING BEGINING RUN#"
on end ,"next"
"MAIN":spread 2,D(*),E(*),K(*),U(*);gsb "DATA"
if D(.,1)=abs(P(1)):,(1) :DATA",(1)  :DMain":goto "MAIN
if D(2)=abs(P(2)):goto "ASK"
"M":for m=0 to 1%,U(m)):A(m,2);next M
fyd 6," "&str(D(2)*1e R):Y$,"192")Y$(1,2)
if D(2)>P(2),goto "ASK"
cll "111"
spread 2,D(*),E(*),K(*),U(*);cll :DATA
goto "M"
"ENZD":resave "SANPRT";dsp "SANPRT RESAVED":end
"-------- end of main Program ---------":


"-------- PRINT THE RAT DATA ---------":

"111"
if r40),2 or r40):2:sfg 2:goto "SUBPRI"
chain "PRINT1",0,56
dsp "PRINT1";cll :PRINT1
chain "PRINT2",0,60
dsp "PRINT2";cll :PRINT2
chain "PRINT3",0,62
dsp "PRINT3";cll :PRINT3
dsp "READING DATA"
cll :DATA
chain "PRINT4",0,66
dsp "PRINT4";cll :PRINT4
chain "PRINT5",0,68
dsp "PRINT5";cll :PRINT5
dsp "READING DATA"
cll :SDATA
chain "SPRNT1",0,72
dsp "SPRNT1";cll :SPRNT1
ret
"SUBPRI"
chain "PRINT1",0,76
dsp "PRINT1";cll :PRINT1
chain "PRINT2",0,78
dsp "PRINT2";cll :PRINT2
chain "PRINT3",0,80
dsp "PRINT3";cll :PRINT3
dsp "READING DATA"
cll :DATA
chain "PRINT4",0,84
dsp "PRINT4";cll :PRINT4
chain "PRINT5",0,86
dsp "PRINT5";cll :PRINT5
dsp "READING DATA"
cll :DATA
chain "SPRNT2",0,90
dsp "SPRNT2";cll :SPRNT2
ret


"DATA"
spread 1,U(*),G$
for I=1 to U(1):I=I+1
ret


"SDATA
spread 1,U(*)
ret


"next"
beep:dsp "INPUT ";at P(1-1,1):"
n go "MEIDAT"
on end ,"next"
read ,D(*),E(*),K(*),U(*),I(*),DMain
goto "M"


#1499
```

```
"PRINT1":
if DI29]=0;1)DI29]
fmt 9,41x,"MARINE SURFACE LAYER ",z;wrt J+.9,N
fmt 9,"MICROMETEOROLOGICAL EXPERIMENT",/;wrt J+.9
fmt 9,54x,"NAVAL RESEARCH LABORATORY";wrt J+.9
fmt 9,53x,"ATMOSPHERIC PHYSICS BRANCH";wrt J+.9
fmt 9,49x,"MARINE ATMOSPHERIC RESEARCH STATION";wrt J+.9
fmt 9,51x,"SAN NICOLAS ISLAND, CALIFORNIA",/;wrt J+.9
fmt 9,46x,"* * * * MICROMETEOROLOGICAL DATA * * * *",2/;wrt J+.9

fmt 9,"  RUN NUMBER:",f11.0,z;wrt J+.9,DI20]
fmt 2,43x,"PRINT DATE:  ",c12;wrt J+.9,D$
fmt 9,"  START TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,DI22],DI24]
fmt 9,f2.0," PST",41x,"DATA SAMPLING RATE (ALL ",z;wrt J+.9,DI26]
fmt 9,"CHANNELS): 6/Min";wrt J+.9
fmt 2,"  END    TIME: ",f2.0,":",f2.0,":",z;wrt J+.2,DI27],DI29]
fmt 9,f2.0," PST",41x,"DATA AVERAGING PERIOD:",f3.0," Min"
wrt J+.9,DI25],1-DI7/6
fmt 9,"  START DATE:  ",f2.0,1x,c3,1x,c4,z;wrt J+.5,DI30],G$(DI29]),z+
fmt 2," (DAY ",f3.0,")",32x,"NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL"
wrt J+.9,DI4];wrt J
fmt 9,"* ANALOG CHANNEL RAW DATA (AVERAGE VDC):",/;wrt J+.9
fmt 2,"  No.00",8x,"No.01",8x,"No.02",8x,"No.03",8x,"No.04",8x,z;wrt J+.9
fmt 9,"No.05",8x,"No.06",8x,"No.07",8x,"No.08",8x,"No.09";wrt J+.9
fmt 2,"  VOLT.REF.A    T.C. STRUC.1 TEMP.STRUC.2 DEW POINT1    ",z;wrt J+.9
fmt 9,"DEW POINT2   WIND SPEED1  WIND SPEED2  BAR.PRES.2    ",z;wrt J+.9
fmt 2,"SKY RAD.      WIND DIR.";wrt J+.9
for M=6 to 9
wrt J+.1,AIM,2]
next M
fmt 9,/;wrt J+.9
fmt 9,"  No.10",8x,"No.11",8x,"No.12",8x,"No.13",8x,"No.14",/;wrt J+.9
fmt 2,8x,"No.15",8x,"No.16",8x,"No.17";wrt J+.9
fmt 9,"  BULK WT TEMP AC FREQUENCY AC VOLTAGE   MANUAL FLAG ",z;wrt J+.9
fmt 2," ZERO REF.      SPARE A       SPARE B       VOLT.REF.B";wrt J+.9
for M=10 to 17
wrt J+.1,AIM,2]
next M
fmt 9,/;wrt J+.9
fmt 9,"* DIGITAL CHANNEL RAW DATA (AVERAGE):",/;wrt J+.9
fmt 2,4x,"ESCARPMENT DATA, FIELD CALIBRATION AND WIND SPEED",/;wrt J+.9
fmt 9," ESCARPMENT CORRECTIONS:",/;wrt J+.9
fmt 2,"  No.1",9x,"No.2",22x,"UPWIND NEAR  UPWIND LAND",z;wrt J+.9
fmt 9,2x,"DP1FCAL",6x,"DP2FCAL",z;wrt J+.9
fmt 2,6x,"WTBFCAL",6x,"WS1FC",8x,"WS2FC";wrt J+.9
fmt 9,"  AIR TEMP.1   AIR TEMP.2",15x,"HEIGHT/LENGTH ",z;wrt J+.9
fmt 2,"PATH(Meters) (Volts)",6x,"(Volts)",6x,z;wrt J+.9
fmt 9,"(Volts)",6x,"(Coeff.)",5x,"(Coeff.)";wrt J+.9
fmt 2,2x,4f1.0,1x,fz6.0,z;wrt J+.9,KI1],I1],KI2],I1],KI3],I1],KI4],I1],KI9],I1
fmt 9,2x,4f1.0,1x,fz6.0,z;wrt J+.9,KI5],I1],KI6],I1],KI7],I1],KI8],I1],KI10],I1
if r38=0;gto +3
fmt 9,7x,f13.3,f11.0,3x,5f13.3;wrt J+.9,r38,r64,r72,r73,r74,r75,r76
gto +3
fmt 9,15x,"NOT COMPUTED NOT COMPUTED",z;wrt J+.9
fmt 9,/,f7.3,4f13.3;wrt J+.9,r72,r73,r74,r75,r76
fmt 9,/,"* SYSTEM HOUSEKEEPING PARAMETERS TRANSLATED INTO ",z;wrt J+.9
fmt 2,"ENGINEERING UNITS:",/;wrt J+.9
fmt 9,"  MANUAL FLAG  ERROR COUNT  DATA BASE    ",z;wrt J+.9
fmt 2,"VOLT.Ref.Dev VOLT Ref.D.V ZERO ",z;wrt J+.9
fmt 9,"REF.DEV AC VOLT.FLUX AC FREQ.FLUX",1x,"AC VOLTAGE   AC FREQUENCY"
wrt J+.9
fmt 9,"  (No.scans)   (No.scans)   (No.scans)   ",z;wrt J+.9
fmt 2,"(No.).0850) (No.).0850) (No.)",z;wrt J+.9
fmt 9,".0850)  (No.)50)     (No.)1Hz)",4x,"(VAC)",8x,"(Hz)";wrt J+.9
fmt 2,f5.0,7f13.0,f15.1,f14.2
wrt J+.9,DI13],E[9]-D[22],DI27],DI01],DI17],DI14],E[8],E[6],DI12],DI11
fmt 9,/,"* OBSERVED MICROMETEOROLOGICAL PARAMETERS (INCLUDING",z;wrt J+.9
fmt 9," THE ABOVE FAC. AND ESCARPMENT CORRECTIONS)",z;wrt J+.9
fmt 2," TRANSLATED INTO ENGINEERING UNITS:",/;wrt J+.9
fmt 9,"  AIR TEMP.1   WIND SPEED1  DEW POINT1   TEMP.STRUC.1",z;wrt J+.9
fmt 2,14x,"WIND DIR.    BAR.PR.S.1   SKY RAD.     BULK WT T",z;wrt J+.9
fmt 2,"IMP MEAN AIR TEMP";wrt J+.9
fmt 9,"  (Celsius)    (Meter/sec)   (Celsius)     (Kel.sM-2/3) ",z;wrt J+.9
fmt 2,11x,"(Deg.true)   (Millibar)   (Watt/m2)     (Celsius)",z;wrt J+.9
fmt 9,"  (Kelvin) ",wrt J+.9
if AI2,2]=-1 and AI1,2]<5;gto +4
fmt 9,2x,f7.3,f11.2,f14.2,5x,e10.2,13x,f10.1,f15.2,e14.2,f11.3,7x,f7.3,/
wrt J+.9,DI18],DI31],DI33],DI11],DI9],r77,DI8],DI10],r14
gto +3
fmt 9,2x,f7.3,f11.2,f14.2,8x,f7.3,13x,f10.1,f15.2,e14.2,f11.3,7x,f7.3,/
wrt J+.9,DI18],DI5],DI3],"NO DATA",DI21,r77,DI8],DI10],r14
ret

fmt "ENZO" resave "PRINT1",dsp "PRINT1 RESAVED";end
#0525
```

```
"PRINT2":
fmt 9,"  AIR TEMP.2   WIND SPEED2  DEW POINT2   TEMP.STRUC.2",z;wrt
fmt 9,14z,"TIDE (MSL)",3x,"BAR.PRES.2";wrt J+.9
fmt 9,"  (Celsius)    (Meter/sec)   (Celsius)     (Kel.sM-2/3) ",z;wrt J+.9
fmt 2,13z,"(Meter MSL)",2x,"(Millibar)";wrt J+.9
if AI2,2]=-1 or AI2,2]>1;gto +4
fmt 2,/,z,1,f11.2,f14.2,/,"NO DATA  ",10z,f6.2,/,z,/,z
wrt J+.9,DI19],DI21],DI41],r68,r16
gto +5
fmt 9,f9.3,f11.2,f14.2,5x,e16.2,10x,f6.2,f15.2,/
wrt J+.2,DI19],DI61],DI41],D[.2],r68,r14
fmt 9,"* CALCULATED MICROMETEOROLOGICAL PARAMETERS:",/;wrt J+.9
fmt 2,"  HEIGHT, Z1   POT.TEMP.1   VAP.PRES.1   V.POT.TEMP.1 ",z;wrt J+.9
fmt 9,"ABS.HUMID.1  REL.HUMID.1   SPEC.HUMID.1",/;wrt J+.9
fmt 2,"VAP.PRES.1    S.VAP.PRES.1 REL.INDEX 1";wrt J+.9
fmt 9,"  (Meters)     (Celsius)    (Celsius)    (Celsius)    ",z;wrt J+.9
fmt 2,"(kg/m3)      (Percent)    (kg/kg)      ",z;wrt J+.9
fmt 9,"(Millibar)   (Millibar)   (Kel.sM-2/3)",/;wrt J+.9
if AI2,2]< 1 or AI1,2]>1;gto +4
fmt 9,f9.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f6.3,4x,f9.3,7x,"NO DATA",/
wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r12,r19
gto +3
fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f7.3,4x,f9.3,"x,e8.2,/
wrt J+.2,r65,r31,r29,r33,r21,r23,r25,r12,r19,r42
fmt 9,"  HEIGHT, Z2   POT.TEMP.2   VAP.TEMP.2   V.POT.TEMP.2 ",z;wrt J+.9
fmt 9,"ABS.HUMID.2  REL.HUMID.2   SPEC.HUMID.2 ",z;wrt J+.9
fmt 9,"VAP.PRES.2    S.VAP.PRES.2 REL.INDEX 2";wrt J+.9
fmt 2,"  (Meters)     (Celsius)    (Celsius)    (Celsius)    ",z;wrt J+.9
fmt 9,"(kg/m3)      (Percent)    (kg/kg)      ",z;wrt J+.9
fmt 2,"(Millibar)   (Millibar)   (Kel.sM-2/3)",/;wrt J+.9
if AI2,2]< 1 or AI2,2]>1;gto +4
fmt 9,f9.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f7.3,4x,f9.3,7x,"NO DATA",/
wrt J+.2,r66,r32,r30,r34,r22,r24,r26,r13,r20
gto +3
fmt 9,f7.2,1x,3f13.3,7x,e9.3,f9.2,8x,e9.3,1x,f7.3,4x,f9.3,"x,e8.2,/
wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r13,r20,r58
fmt 9,3z;wrt J+.9
fmt 9,"* CONTINUED BELOW";wrt J+.9
wtb J,10

fmt 9,80x,"PRINT DATE: ",c12;wrt J+.9,D$
fmt 9,"  RUN NUMBER:",f11.0,17x,"MARINE SURFACE LAYER",z;wrt J+.9,DI20]
fmt 9,19x,"DATA SAMPLING RATE (ALL CHANNELS)  6/min";wrt J+.9
fmt 9,"  START TIME:  ",f2.0,":",f2.0,":",z;wrt J+.9,DI22],DI24]
fmt 9,f2.0," PST",35x,"NRL MICROMETEOROLOGY",z;wrt J+.9,DI26]
fmt 9,19x,"DATA AVERAGING PERIOD:",f3.0," Min";wrt J+.9,DI25]-6
fmt 9,"  START DATE:  ",f2.0,1x,c3,1x,c4,z;wrt J+.9,DI30],G$(DI29]),z+
fmt 2," (DAY",f4.0,")",6x,"SAN NICOLAS ISLAND, CAL",z;wrt J+.9,I4]
fmt 9,16z,"NOMENCLATURE: 1=UPPER LEVEL, 2=LOWER LEVEL",/;wrt J+.9
fmt 2,"* PROFILE CALCULATIONS BASED ON ABOVE OBSERVED ",z;wrt J+.9
fmt 9,"AND CALCULATED VALUES (BUSINGER,1973):",/;wrt J+.9
fmt 2,33x,"FLUX PARAMETERS",6z,"PROFILE SLOPES";wrt J+.9
fmt 9,10x,"STABILITY",15z,"(+=UP, -=DOWN)",z;wrt J+.9
fmt 2,11x,"SCALING PARAMETERS",7x,"PARTIAL DERIVATIVES",z;wrt J+.9
fmt 9,5x,"(+=INCR.WITH HEIGHT)";wrt J+.9
fmt 2,4x," ----------                                                    ",z;wrt J+.9
fmt 9,5z,"-------------------------                                      ",z;wrt J+.9
fmt 2,3x,"                                                               ",/;wrt J+.9
fmt 9,4x,"GRAD.RICHARDSON NUMBER      MOMENTUM FLUX",z;wrt J+.9
fmt 2,12x,"FRICTION VELOCITY",9x,"GENERAL FORM DM/DZ=",z;wrt J+.9
fmt 9,6x,"GENERAL FORM:N'SLOPE=";wrt J+.9
fmt 2,4x,"(+=Stable, -=Unstable)          (M/sec)^2    ",z;wrt J+.9
fmt 9,14x,"(Meter/sec)",14x,"=(KN1 N2)^(1/2)*(Z1/Z2)^B",z;wrt J+.9
fmt 2,4x,"((LnZ1 PSI) (LnZ2-PSI))^2";wrt J+.2
fmt 9,f10.3,8x,"AT GMH",7x,e9.2,z;wrt J+.2,r46,r56
fmt 2,14x,e12.3,26x,"(Z1*Z2)^(1/2)=",2x,"(KN1 N2)^(1/2)";wrt J+.9,r46
fmt 9,4x,"GEOMETRIC MEAN HEIGHT       HUMIDITY FLUX",z;wrt J+.9
fmt 2,12x,"SCALING SPEC.HUMD.          N-WIND SPEED (M/sec)",z;wrt J+.9
fmt 9,4x,"N=WIND SPEED (M/sec)";wrt J+.9
fmt 2,4x,"(Meter) GMH=(Z1*Z2)^2",5x,"(kg/kg) SPEC.HUMD.",z;wrt J+.9
fmt 9,13z,"(kg/kg)",10x," Z=HEIGHT (Meters)",z;wrt J+.9
fmt 2,7x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,f10.2,2ix,e9.2,z;wrt J+.9,r64,r56
fmt 2,14x,e12.3,16x,"DW5/DZ=",e10.2,8x,"(Z1*Z2)^(1/2)=";wrt J+.9,r64
fmt 9,16z,"MB SLOPE=",e16.2;wrt J+.9,r59
fmt 2,4x,"Z/L AT GMH",17x,"LAT.HEAT FLUX";wrt J+.9
fmt 9,f10.3,21x,"(Watts/m2)",15z,"SCALING POT. TEMP.",z;wrt J+.9,r43
fmt 2,8x,"N=SPEC.HUMIDITY (kg/kg)",2x,"N=SPEC.HUMIDITY (kg/kg)  ";wrt J+.2
fmt 9,31x,e9.2,16x,"(Kelvin)",18x,"Z=HEIGHT (Meters)",z;wrt J+.9,r56
fmt 9,8x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,4x,"Z/L AT 10 METERS",34x,e12.3,16x,"DS=(DZ  ",z;wrt J+.9,r52
fmt 2,e10.2,8x,"PSI=PSI2";wrt J+.9,r36
fmt 9,4x,f6.3,21x,"SEN.HEAT FLUX",z;wrt J+.9,r70
fmt 9,63x,"SH SLOPE=",e10.2,;wrt J+.9,r60
ret
fmt "ENZO":resave "PRINT2";dsp "PRINT2 RESAVED";end
#10359
```

```
"PRINT3":
fmt 9,31x,"(Watts/m2)",/,4x,"Z/L AT Z1",18x,e9.2,z;wrt J+.9,r57
fmt 9,16x,"ROUGHNESS LENGTH",10x,"N=POT.TEMP.",,z;wrt J+.9,r43
fmt 9,"(Kelvin)",6x,"N=POT.TEMP.(Kelvin)",/,4x,f6.3,z;wrt J+.9,r43
fmt 9,46x,"(Meters)",18x,"Z=HEIGHT (Meters)",8x,"Z=HEIGHT (M)",z;wrt J+.9
fmt 9," Vert.Axis",/,31x,"SKY AND SOLAR HEAT FLUX",z;wrt J+.9
fmt 9,e12.3,16x,"DPT/DZ=",e10.2,0x,"PSI=PSI2";wrt J+.9,r50,r37
fmt 9,4x,"Z/L AT Z2",18x,"(Watts/m2)",z;wrt J+.9
fmt 9,66x,"PIK SLOPE=",e10.2,/,4x,f6.3,21x,e9.2;wrt J+.9,r61,r44,D181
fmt 9,56x,"DRAG COEF. AT 10 METERS",z;wrt J+.9
fmt 9,20x,"N=LnTEMP.GIRUC.(KxM^2/3)";wrt J+.9
fmt 9,4x,"MONIN-OBUKHOV LENGTH",7x,"TOTAL HEAT BUDGET FLUX",z;wrt J+.9
fmt 9,3x,"(Dimensionless)",36x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,4x,"(Meters)",19x,"(Watts/m2)",z;wrt J+.9
fmt 9,10x,e10.3,41x,"PSI=NONE";wrt J+.9,r69
fmt 9,4x,e10.3,17x,e9.2,z;wrt J+.9,r42,r58
if A(2,1)=-1 and A(2,1)<1 or A(2,2)=-1 and A(2,2)<1;gto +3
fmt 9,67x,"CT2 SLOPE=",e10.2,/;wrt J+.9,r63
gto +2
fmt 9,67x,"CT2 SLOPE=NO DATA",/;wrt J+.9;"0"}F$(7,7)
fmt 9,4x,"PSI1 AT Z1=",f10.6,6x,"BOWEN RATIO";wrt J+.9,r45
fmt 9,4x,"PSI1 AT Z2=",f10.6,6x,"(no units)";wrt J+.9,r46
fmt 9,4x,"PSI2 AT Z1=",f10.6,2x,f10.3;wrt J+.9,r47,r49
fmt 9,4x,"PSI2 AT Z2=",f10.6,2/;wrt J+.9,r48
fmt 9,"* GENERAL CONSTANTS=",90x,"MISCELLANEOUS";wrt J+.9
fmt 9,167x,"---------- ----------";wrt J+.9;0}F
fmt 9," VON KARMAN   GRAVITATION  PROFILE",6x,"PROFILE",z;wrt J+.9
fmt 9,6x,"BULK",9x,"BULK",35x,z;wrt J+.9
F+1}F;cll 'misc'
fmt 9," CONSTANT",5x,"ACCELERATION TUR.PRANDTL  ",z;wrt J+.9
fmt 9,"TUR.SCHMIDT  SEN HEAT",5x,"MOISTURE",30x,z;wrt J+.9
F+1}F;cll 'misc'
fmt 9," (No units)   (M/sec 2)",4x,"NUMBER",7x,"NUMBER",z;wrt J+.9
fmt 9,7x,"TRANSF.COEF.  TRANSF.COEF.",26x,z;wrt J+.9
F+1}F;cll 'misc'
fmt 9," 0.4 ",9x,"9.7959",7x,"0.74",9x,"0.74",z;wrt J+.9
fmt 9,9x,"0.92E-03",5x,"1.32E-03",30x,z;wrt J+.9
F+1}F;cll 'misc';F+1}F;cll 'misc'
fmt y,"* GENERAL NOTES:",88x,z;wrt J+.9,F+1}F;cll 'misc'
if val(F$)=0;"    NONE"}A$(1,100);gto +7
gxb "7"
for X=3 to 7
if F$(X,X)="0";gto +2
F+1}F;cll 'TT';cll 'prt'
next X
""}A$
for X=1 to 14-F;F+1}F;cll 'prt';""}A$;next X
gto "ENDP3"
"T":F+1}F
"Accuracy limitation exceeded for measurement of Profile "}A$
A$A"Slope and/or Partial Derivative."}A$(1,100);cll 'prt'
"Computation executed by insertion of:"}A$(1,100)
F+1}F;cll 'prt';F+1}F;" "}A$(1,100);cll 'prt';ret
"TT":"    "}A$;jmp X-2
A$A"WD1-WD2= +0.026 of Mean Value."}A$(1,100);ret
A$A"SH1 SH2= +/- .08E-3 Kg/Kg."}A$(1,100);ret
A$&"PTK1-PTK2= +/- .008 Kel."}A$(1,100);ret
A$A"VPTK1-VPTK2= -0.009 Kel."}A$(1,100);ret
A$A"TUR1 TUR2= -0.05 of Mean Value."}A$(1,100);ret

'prt':fmt 9,4x,r100,z;wrt J+.9,A$
cll 'misc';ret

"misc":if F}12;wrt J;ret
jmp F
wrt J;ret
fmt 9,3x,"AIR DENSITY";wrt J+.9;ret
fmt 9,3x,"(Kg/m3)";wrt J+.9;ret
fmt 9,3x,f6.4;wrt J+.9,r54;ret
wrt J;ret
fmt 9,3x,"AIR SPECIFIC HEAT";wrt J+.9;ret
fmt 9,3x,"(Itcal./Kg Kel.)";wrt J+.9;ret
fmt 9,3x,e10.4;wrt J+.9,r71;ret
wrt J;ret
fmt 9,3x,"WATER LAT.HEAT VAP.";wrt J+.9;ret
fmt 9,3x,"(Itcal./Kg)";wrt J+.9;ret
fmt 9,3x,e10.4;wrt J+.9,r13;ret
"END3":if 0 0;"*Astr(N)A" #"}A$
fmt 9,4/,"* CONTINUED ON NEXT PAGE",39x,z;wrt J+.9;wrt J,A$
wtb 1,12;ret
100:
101: "FNZ0":resave "PRINT3";dsp "PRINT3 RESAVED";end
#2166
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"PRINT4":
fmt 9," RUN NUMBER=",f11.6,17x,"MARINE SURFACE LAYER",z;wrt J+.9,D[20]
fmt y,17x,"PRINT UNIT: ",f12;wrt J+.9,D$
fmt 9," START Time: ",f2.0,":",f2.0,":";wrt J+.9,D[21],D[24]
fmt y,f2.0," PST",31x,"EPL MICROMETEOROLOGY";wrt J+.9,D[25]
fmt 9,17x,"DATA SAMPLING RATE (ALL CHANNELS): every",wrt J+.9
fmt y," Data Units: ",2.0,1x,f3.1,x,f4;wrt J+.9,D[30],G$[D[31],1$
fmt 9," Date",f4.0,"/",f2.0,"/",6x,"SAN NICOLAS ISLAND, CAL.";wrt J+.9,E[4]
fmt y,16x,"DATA AVERAGING PERIOD:",13.0," Min";/;wrt J+.9,F[9]/6
fmt 9,"* ESTIMATED MICROMETEOROLOGICAL PARAMETERS";wrt J+.9
fmt y," at TEN METERS:",/;wrt J+.9
fmt 9,2x,"AIR TEMP.",4x,"WIND SPEED",3x,"DEW POINT";wrt J+.9
fmt y,4x,"TEMP.Diff.",5x,"SUR.PRES.",4x,"BULK WT TEMP";wrt J+.9
fmt 9,11x,"AIR WT TEMP",2x,"POT WT TEMP","VIR WT TEMP";wrt J+.9
fmt y,2x,"POT WT TEMP";wrt J+.9
fmt 9,2x,"(Celsius)",4x,"(Meters/sec)",5x,"(Celsius)";wrt J+.9
fmt y,4x,"(Kel.-M^2/3)",3x,"(Millibar)",1x,"(Celsius)";wrt J+.9
fmt 9,4x,"(Kelvin)",5x,"(Kelvin)",5x,"(Kelvin)";wrt J+.9
fmt y,16x,"(Kelvin)";wrt J+.9
if A(1,2)=-1 and A(1,2)<1 or A(2,2)=-1 and A(2,2)<1;gto +5
fmt 9,2x,f7.3,4x,f7.2,7x,f7.2,8x,"NO DATA",f12.2,f12.3,z
wrt J+.9,r13,r14,r15,r70,r9
fmt 9,6x,f7.3,6x,f7.3,6x,f7.3,6x,f7.3,6x,f7.3,/;wrt J+.9,r18,r19,r20,r21
fmt y,2x,"HEIGHT",7x,"POT.TEMP.",4x,"VIR.TEMP.",4x,"V.POT.",z;wrt J+.9
fmt 9,"TEMP.",2x,"ABS.HUMID.",3x,"REL.HUMID.",3x,"SPEC.",z;wrt J+.9
fmt y,"HUMID.",2x,"VAP.PRES.",4x,"S.VAP.PRES.",2x,"REF.INDEX";wrt J+.9
fmt 9,2x,"(Meters)",5x,"(Celsius)",4x,"(Celsius)",z;wrt J+.9
fmt y,4x,"(Celsius)",4x,"(Kg/m3)",6x,"(Percent)",4x,"(Kg/Kg)",z;wrt J+.9
fmt 9,6x,"(Millibars)",2x,"(Millibars)",2x,"(Kel.-M^2/3)";wrt J+.9
if A(1,2)=-1 and A(1,2)<1 or A(2,2)=-1 and A(2,2)<1;gto +4
fmt 9,1x,f7.2,3f13.3,7x,e9.3,f9.2,9x,e9.3,f9.3,4x,f9.3,7x,e8.2,/
wrt J+.9,r22,r23,r24,r25,r26,r27,r28,r29,r30,r31
gto +3
fmt 9,1x,f7.2,3f13.3,7x,e9.3,f9.2,9x,e9.3,f9.3,4x,f9.3,7x,"NO DATA",/
wrt J+.9,r22,r23,r24,r25,r26,r27,r28,r29,r30
ret

"FNZ0":resave "PRINT4";dsp "PRINT4 RESAVED";end
#15254
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"PRINT5":
fmt 9,"* BULK AERODYNAMIC CALCULATIONS BASED ON ABOVE",z;wrt J+.9
fmt y," ESTIMATED VALUES AT TEN METERS ",z;wrt J+.9
fmt 9,"(FRIEHE ET AL,1978):",/;wrt J+.9
fmt 9,10x,"INFERRED",15x,"FLUX PARAMETERS",14x,"INFERRED",z;wrt J+.9
fmt 9,12x,"INFERRED MEAN VERTICAL";wrt J+.9
fmt 9,10x,"STABILITY",19x,"(+=UP, -=DOWN)",18x,"SCALING",z;wrt J+.9
fmt 9,"  PARAMETERS",7x,"VELOCITY COVARIANCE",9x,"MISCELLANEOUS";wrt J+.9
fmt y,4x,"---------- ----------",6x,"---------- ----------",z;wrt J+.9
fmt 9,6x,"---------- ----------",5x,"---------- ----------",z;wrt J+.9
fmt y,4x,"---------- ----------";wrt J+.9
fmt 9,4x,"GRAD.RICHARDSON NUMBER",5x,"MOMENTUM FLUX",12x,z;wrt J+.9
fmt 9,"FRICTION VELOCITY",9x,"WITH LONG. VELOCITY",6x,z;wrt J+.9
fmt 9,"AIR DENSITY";wrt J+.9
fmt 9,4x,"(+=Stable,-=Unstable)",6x,"(Nt/m2)",18x,"(Meters/",z;wrt J+.9
fmt 9,"sec)",14x,"(meter2/sec2)",12x,"(Kg/m3)";wrt J+.9
fmt 9,1x,f9.3,9x,e6.2,6x,e9.2,16x,e10.3,16x,e10.3,11x,f10.4,/
wrt J+.9,r40,"AT GMT",r55,r49,r35,r54
fmt 9,4x,"GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",12x,z;wrt J+.9
fmt 9,"SCALING SPEC.HUMID.",7x,"WITH ABS. HUMIDITY",7x,z;wrt J+.9
fmt 9,"AIR SPECIFIC HEAT";wrt J+.9
fmt 9,4x,"(Meter) GMH=(Z1*Z2)^1/2",5x,"(Kg/sec m2)",14x,"(Kg/",z;wrt J+.9
fmt 9,"kg)",19x,"(Meter Kg/sec m3)",8x,"(Itcal./kg kel.)";wrt J+.9
fmt 9,3x,f7.2,21x,e9.2,16x,e10.3,16x,e10.3,15x,e10.4,/
wrt J+.9,r64,r56,r51,r36,r71
fmt 9,4x,"Z/L AT GMH",17x,"LAT.HEAT FLUX",12x,"SCALING PDI.",z;wrt J+.9
fmt y,"Temp.",9x,"WITH POT.TEMPERATURE",3x,"WATER LAT.HEAT VAP.";wrt J+.9
fmt 9,3x,f7.3,21x,"(Watts/m2)",15x,"(Kelvin)",18x,z;wrt J+.9,r41
fmt 9,"(Meter Kel./sec)",9x,"(Itcal./Kg)";wrt J+.9
fmt 9,31x,e9.2,16x,e10.3,16x,e10.3,15x,e10.4;wrt J+.9,r81,r52,r38,r66
fmt 9,4x,"Z/L AT 10 METERS";wrt J+.9
fmt 9,"  f7.3,21x,"SEN.HEAT FLUX",12x,"ROUGHNESS LENGTH",z;wrt J+.9,r76
fmt 9,3xx,"VAP.PRES.AT WT LEVEL";wrt J+.9
fmt 9,31x,"(Watts/m2)",15x,"(Meters)",4x,"(Millibar)";wrt J+.9
fmt 9,4x,"MONIN OBUKHOV LENGTH",6x,e10.2,15x,e11.3,40x,f8.3
wrt J+.9,r57,r58,r61
fmt 9,4x,"(Meters)",/,4x,e10.3,z;wrt J+.9,r42
fmt 9,17x,"SKY AND SOLAR HEAT FLUX ",z;wrt J+.9
fmt 9,"DRAG COEF.AT 10 METERS",29x,"ABS.HUMID.AT WT LEVEL";wrt J+.9
fmt 9,31x,"(Watts/m2)",15x,"(Dimensionless)",36x,"(kg/m3)";wrt J+.9
fmt 9,36x,e10.2,15x,e11.3,40x,e11.3,  ;wrt J+.9,D[81],r69,r62
fmt 9,31x,"TOTAL HEAT BUDGET FLUX",14x,"  PRES.AT WT LEVEL";wrt J+.9
fmt 9,31x,"(Watts/m2)",66x,"(millibar)";wrt J+.9
fmt 9,46x,e10.2,6xx,e10.2,/;wrt J+.9,r58,r80
fmt 9,31x,"DOWN RATIO",/,31x,"(no units)",27x,f1  ;wrt J+.9,r39
fmt 9,"* MEASUREMENT ERROR ANALYSIS OF PARAMETERS LISTED IN";z;wrt J+.9
fmt 9," PERCENT mean ERROR AS COMPUTED FROM CONSTITUENT",z;wrt J+.9
fmt 9," MEASUREMENT ACCURACIES";wrt J+.9
fmt 9,"  TOP ROW ARE PROFILE ERROR VALUES AND BOTTOM ROW",z;wrt J+.9
fmt 9," ARE BULK AERODYNAMIC ERROR VALUES. ALL VALUES ARE ",z;wrt J+.9
fmt 9," APPROXIMATE AND ARE  for ",",";wrt J+.9
fmt 9,3x,"GRAD RICH.",3x,"Z/L",5x,"MOMENTUM  LAT.HEAT",z;wrt J+.9
fmt 9,"  SEN.HEAT  SKY RAD.  TOTAL HEAT BUDGE  EVICTION",z;wrt J+.9
fmt 9," SPEC.HUM  SPEC.POT.  ROUGH.",5x,"DRAG",wrt J+.9
fmt 9,3x,"NO.AT GMH",3x,"AT 10M",5x,"FLUX",6x,"FLUX",6x,"FLUX",z;wrt J+.9
fmt 9,2x,"FLUX",6x,"FLUX",3x,"RATIO",4x,"VELOCITY  HUMIDITY",z;wrt J+.9
fmt 9,3x,"TEMP.",5x,"LENGTH",5x,"COEF.",z;wrt J+.9
fmt 9,4x,f5.0,"%",z
if not (i0^,gto +3
fmt 8,7x,"N/A",z;wrt J+.9,r82
for I = 1 to 12;wrt I+.8;next I;gto +2
wrt J+.9,r90,r83,r94,r93,r92,r94,r95,r91,r84,r87,r89,r86,r85
wrt J;wrt I
wrt J+.9,r100,r107,r102,r99,r97,r106,r101,r98,r103,r105,r106,r104,r96
fmt 7,x;wrt J+.9
fmt 9,"* CONTINUED BELOW";wrt J+.9
wtb 1,12;ret

"FNZ0":resave "PRINT5";dsp "PRINT5 RESAVED";end
#17663
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"PRINT6":
fmt 9,"  AIR TEMP.2    WIND SPEED2   DEW POINT2    TEMP.STRUC.2",/;wrt J+.9
fmt 9,14x,"TIDE TABLE",3x,"BAR.PRES.2";wrt J+.9
fmt 9,"  (Celsius)      (Meter/sec)   (Celsius)     (kel.xM-2/3) ",/;wrt J+.9
fmt 9,13x,"(Meter MSL)",2x,"(millibar)";wrt J+.9
if A(2,2)<-1 or A(2,2)>1;goto +4
fmt 9,fY.3,f11.2,f14.2,/,," NO DATA  ",15x,f6.2,f15.2,/
wrt J+.9,D(19),D(6),D(4),r68,r10
goto +3
fmt 9,f9.3,f11.2,f14.2,5x,e10.2,18x,f6.2,f15.2,/
wrt J+.9,D(19),D(6),D(4),D(2),r68,r10
fmt 9,"% CALCULATED MICROMETEOROLOGICAL PARAMETERS:",/;wrt J+.9
fmt 9,"  HEIGHT, Z1    POT.TEMP.1    VIR.TEMP.1    V.POT.TEMP.1 ",/;wrt J+.9
fmt 9,"%RH.HUMID.1  REL.HUMID.1  SPEC.HUMID.1 ",/;wrt J+.9
fmt 9,"VAP.PRES.1   S.VAP.PRES.1 REF.IND.A 1";wrt J+.9
fmt 9,"  (Meters)      (Celsius)     (Celsius)     (Celsius)     ",/;wrt J+.9
fmt 9,"(kg/m3)       (Percent)     (Kg/Kg)       ",/;wrt J+.9
fmt 9,"(millibar)    (millibar)    (kel.xM-2/3)";wrt J+.9
if A(1,2)<-1 or A(1,2)>1;goto +4
fmt 9,fY.3,fy.3,3f13.3,7x,e9.3,ey.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19,r27
goto +3
fmt 9,fY.3,1x,3f13.3,7x,e9.3,ey.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
wrt J+.9,r65,r31,r29,r33,r21,r23,r25,r17,r19,r27
fmt 9,"  HEIGHT, Z2    POT.TEMP.2    VIR.TEMP.2    V.POT.TEMP.2 ",/;wrt J+.9
fmt 9,"%RH.HUMID.2  REL.HUMID.2  SPEC.HUMID.2 ",/;wrt J+.9
fmt 9,"VAP.PRES.2   S.VAP.PRES.2 REF.IND.A 2";wrt J+.9
fmt 9,"  (Meters)      (Celsius)     (Celsius)     (Celsius)     ",/;wrt J+.9
fmt 9,"(kg/m3)       (Percent)     (kg/kg)       ",/;wrt J+.9
fmt 9,"(millibar)    (millibar)    (kel.xM-2/3)";wrt J+.9
if A(2,2)<-1 or A(2,2)>1;goto +4
fmt 9,fZ.2,1x,3f13.3,7x,e9.3,ey.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,"NO DATA",/
wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20
goto +3
fmt 9,fZ.2,1x,3f13.3,7x,e9.3,ey.2,8x,e9.3,1x,f9.3,4x,f9.3,7x,e8.2,/
wrt J+.9,r66,r32,r30,r34,r22,r24,r26,r18,r20,r28
fmt 9,3x;wrt J+.9
fmt 9,"% CONTINUED BELOW";wrt J+.9
wtb J.1
;
fmt 9,86x,"PRINT DATE: ",c12;wrt J+.9,D(
fmt 7,"  RUN NUMBER:",f11.0,17x,"MAXIMUM SURFACE LAYER",z;wrt J+.9,D(20)
fmt 9,19x,"DATA SAMPLING RATE (ALL CHANNELS): n/min";wrt J+.9
fmt 9,"  START TIME: ",f2.0,":",f2.0,":",f2.0,z;wrt J+.9,D(21),D(24)
fmt 9,f2.0," PST",15x,"NRL MICROMETEOROLOGY";z;wrt J+.9,D(26)
fmt 9,19x,"DATA AVERAGING PERIOD:",f3.0," min";wrt J+.9,D(19)/6
fmt 9,"  START DATE: ",f2.0,1x,f3.1x,f4.1x,z;wrt J+.9,D(30),D(29),D(28)
fmt 9," CONT",f4.0,"/",f4.0,"SAN NICOLAS ISLAND, CAL",z;wrt J+.9,D(4)
fmt 9,16x,"NOMENCLATURE: 1=BOTTOM LEVEL, 2=UPPER LEVEL",/;wrt J+.9
fmt 9,"% PROFILE CALCULATIONS BASED ON ABOVE OBSERVED ",z;wrt J+.9
fmt 9,"AND CALCULATED VALUES (WIPPERMAN, 1973):",z;wrt J+.9
fmt 9,33x,"FLUX PARAMETERS",62x,"PROFILE SLOPES";wrt J+.9
fmt 9,16x,"STABILITY",15x,"1=UP,-=DOWN";z;wrt J+.9
fmt 9,11x,"CALCULATED PARAMETERS",7x,"FRACTIONAL DERIVATIVES",z;wrt J+.9
fmt 9,5x,"+=ENGR.WITH HEIGHT";wrt J+.9
fmt 9,4x,"                                                                ",z;wrt J+.9
fmt 9,5x,"                                                                ",z;wrt J+.9
fmt 9,3x,"                                ",/;wrt J+.9
fmt 9,4x,"GRAD.RICHARDSON NUMBER     MOMENTUM FLUX",z;wrt J+.9
fmt 9,14x,"FRICTION VELOCITY",7x,"GENERAL FORM:DN/DZ=",z;wrt J+.9
fmt 9,6x,"GENERAL FORM:N^SLOPE=";wrt J+.9
fmt 9,4x,"(unstable -constable)      (N^2)      ",/;wrt J+.9
fmt 9,14x,"(Meters/sec)",14x,"=(N1-N2)*(Ln(Z1/Z2)=",z;wrt J+.9
fmt 9,13x,"NOT COMPUTED",24x,"=(Z1*Z2)/(Z1-Z2)x(N1-N2)",/;wrt J+.9
fmt 9,4x,"GEOMETRIC MEAN HEIGHT      HUMIDITY FLUX",z;wrt J+.9
fmt 7,12x,"SCALING SPEC.HUMD.        N=WIND SPEED (M/sec) ",z;wrt J+.9
fmt 9,4x,"N=WIND SPEED (M/sec)";wrt J+.9
fmt 9,4x,"(Meter) Gmix=(Z1*Z2)^1/2",5x,"(Kg/sec m2) ",z;wrt J+.9
fmt 9,13x,"(kg/kg)",18x," Z=HEIGHT (Meters) ",z;wrt J+.9
fmt 9,7x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,16f9.3,21x,"NOT COMPUTED",13x,"NOT COMPUTED",z;wrt J+.9,r64
fmt 9,14x,"DWs/DZ=",e10.2,8x,"PSI-PSI1";wrt J+.9,r35
fmt 9,16f9.3,"WS SLOPE=","NOT COMPUTED";wrt J+.9
fmt 9,4x,"Z/L AT GM",17x,"LAT.HEAT FLUX";wrt J+.9
fmt 9,4x,"NOT COMPUTED",15x,"(Watts/m2)",15x,"SCALING POT.",z;wrt J+.9
fmt 7,"TEMP.",9x,"N=SPEC.HUMIDITY (kg/kg)",z;wrt J+.9
fmt 9,2x,"N=SPEC.HUMIDITY (kg/kg)";wrt J+.9
fmt 7,31x,"NOT COMPUTED",13x,"(Kelvin)",18x,"Z=HEIGHT",z;wrt J+.9
fmt 9," (Meters)",8x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,4x,"Z/L AT 10 METERS",36x,"NOT COMPUTED",14x,"DSH/DZ=",z;wrt J+.9
fmt 9,e16.2,8x,"PSI=PSI2";wrt J+.9,r36
fmt 9,4x,"NOT COMPUTED",15x,"SCH.HEAT FLUX",z;wrt J+.9
fmt 9,66x,"SH SLOPE= NOT COMPUTED";wrt J+.9
ret
;
fENZO":resave "PRINT6";dsp "PRINT6 RESAVED";end
#7058
```

```
"PRINT7":
fmt 9,31x,"(Watts/m2)";wrt J+.9
fmt 9,4x,"Z/L AT Z1",18x,"NOT COMPUTED",z;wrt J+.9
fmt 9,13x,"ROUGHNESS LENGTH",16x,"N=POT TEMP.(kelvin)",z;wrt J+.9
fmt 9,6x,"N=POT.TEMP.(Kelvin)";wrt J+.9
fmt 9,4x,"NOT COMUTED",41x,"(Meters)",18x,"Z=HEIGHT",z;wrt J+.9
fmt 9," (Meters)",8x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,31x,"SKY AND SOLAR HEAT FLUX",z;wrt J+.9
fmt 9,2x,"NOT COMPUTED",14x,"DPT/DZ=",e10.2,8x,"PSI=PSI2";wrt J+.9,r37
fmt 9,4x,"Z/L AT Z2",18x,"(Watts/m2)",z;wrt J+.9
fmt 9,66x,"PIK SLOPE= NOT COMPUTED";wrt J+.9
fmt 9,4x,"NOT COMPUTED",15x,"NOT COMPUTED";wrt J+.9
fmt 9,56x,"DRAG COEF. AT 10 METERS",z;wrt J+.9
fmt 9,28x,"N=LnTEMP.STRUC.(kxM-2/3)";wrt J+.9
fmt 9,4x,"MONIN-OBUKHOV LENGTH",7x,"TOTAL HEAT BUDGET FLUX",z;wrt J+.9
fmt 9,3x,"(Dimensionless)",36x,"Z=HEIGHT (M) Vert.Axis";wrt J+.9
fmt 9,4x,"(Meters)",19x,"(Watts/m2)",15x,"NOT COMPUTED",z;wrt J+.9
fmt 9,35x,"PSI=NONe";wrt J+.9
fmt 9,4x,"NOT COMPUTED",15x,"NOT COMPUTED",z;wrt J+.9
if A(2,1)>=-1 and A(2,1)<=1 or A(2,2)>=-1 and A(2,2)<=1;goto +3
fmt 9,64x,"CT2 SLOPE=NO DATA",/;wrt J+.9;"0"}F$(7,7]
goto +2
fmt 9,64x,"CT2 SLOPE=",e10.2,/;wrt J+.9,r63
fmt 9,4x,"PSI1 AT Z1=NOT COMPUTED",4x,"BOWEN RATIO";wrt J+.9
fmt 9,4x,"PSI1 AT Z2=NOT COMPUTED",4x,"(no units)";wrt J+.9
fmt 7,4x,"PSI2 AT Z1=NOT COMPUTED",4x,"NOT COMPUTED";wrt J+.9
fmt 9,4x,"PSI2 AT Z2=NOT COMPUTED",2/;wrt J+.9
fmt 7,"% GENERAL CONSTANTS:",90x,"MISCELLANEOUS";wrt J+.9
fmt 9,162x,"                                ";wrt J+.9;0)F
fmt 9," VON KARMAN   GRAVITATION  PROFILE",6x,"PROFILE",z;wrt J+.9
fmt 9,6x,"Bulk",9x,"Bulk",35x,z;wrt J+.9
F+1)F;cll 'misc'
fmt 9," CONSTANT",5x,"ACCELERATION TUR.PRANDTL  ",z;wrt J+.9
fmt 7,"TUR.SCHMIDT  SEN HEAT",5x,"MOISTURE",30x,z;wrt J+.9
F+1)F;cll 'misc'
fmt 9,"  (No units)     (M/sec.2)",4x,"NUMBER",7x,"NUMBER",z;wrt J+.9
fmt 9,7x,"TRANSF.COEF.  TRANSF.COEF.",26x,z;wrt J+.9
F+1)F;cll 'misc'
fmt 9,"  6.4",9x,"0.7959",7x,"6.74",9x,"6.74",z;wrt J+.9
fmt 9,9x,"1.9E-03",5x,"1.32E-03",30x,z;wrt J+.9
F+1)F;cll 'misc';F+1)F;cll 'misc'
fmt 9,"% GENERAL NOTES:",68x,z;wrt J+.9;F+1)F;cll 'misc'
if r4b).2;goto +6
"Profile data Richardson Number (RI) (-2.6; functional")A$
#$A" limitations exceeded for computing Z/L ")A$(1,100);F+1)F;cll 'prt'
"     as a function of RI. Profile Z/L and Z/L dependent ")A$
#$A"calculations not executed.")#$(1,100);F+1)F;cll 'prt'
goto +5
"Profile data Richardson Number (RI) )+0.2; functional")A$
#$A" limitations exceeded for computing Z/L")A$(1,100);F+1)F;cll 'prt'
"     as a function of RI. Profile Z/L and Z/L dependent ")A$
A$A" calculations not executed.")A$(1,100);F+1)F;cll 'prt'
if val(F$(3,7))=0;goto +6
gsb "I"
for X=3 to 7
if F$(X,X)="0";goto +2
F+1)F;cll 'TT';cll 'prt'
next X
""}A$
for X=1 to 16 F;F+1)F;cll 'prt';""}A$;next X
gto "ENDP3"
"T":F+1)F
"Accuracy limitations exceeded for measurement of Profile ")A$
#$A";lope and/or Partial Derivative.")A$(1,100);cll 'prt'
"Computation executed by insertion of:")A$(1,100)
F+1)F;cll 'prt';F+1)F;" ")A$(1,100);cll 'prt';ret
"TT":"     ")A$;jmp X-2
#$A"Ws1-Ws2= +0.628 of Mean Value.")A$(1,100);ret
#$A"SH1-SH2=  /-  .08E-3 Kg/Kg.")A$(1,100);ret
A$A"PTK1-PTK2= +/- 0.008 Kel.")A$(1,100);ret
#$A"VPTK1-VPTK2=  0.009 Kel.")#$(1,100);ret
A$A"TUR1-TUR2=  0.05 of Mean Value.")A$(1,100);ret

"prt":fmt 9,4x,c100,z;wrt J+.9,A$
cll 'erase';ret
;
"misc":if F)12;wrt J;ret
jmp F
wrt J;ret
fmt 9,3x,"AIR DENSITY";wrt J+.9;ret
fmt 9,3x,"(kg/m3)";wrt J+.9;ret
fmt 9,3x,f6.4;wrt J+.9,r54;ret
wrt J;ret
fmt 9,3x,"AIR SPECIFIC HEAT";wrt J+.9;ret
fmt 9,3x,"(Ilcal./Kg.)";wrt J+.9;ret
fmt 9,3x,e10.4;wrt J+.9,r71;ret
wrt J;ret
fmt 9,3x,"WATER LAT.HEAT VAP.";wrt J+.9;ret
fmt 9,3x,"(Ilcal./Kg)";wrt J+.9;ret
fmt 9,3x,e16.4;wrt J+.9,r13;ret
"ENDP3":for 0;"#"&str(N)&" #")A$
fmt 9,2/,"% CONTINUED ON NEXT PAGE",39x,z;wrt J+.9;wrt J.A>
wtb J,1;ret
fENZO":resave "PRINT7";dsp "PRINT7 RESAVED";end
#1934
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0: 'SPRNT1'.
1:
2: fnt 9,"  RUN NUMBER:",f11.6,1x,"MARINE SURFACE LAYER",z;wrt J+.9,DI[6]
3: fnt 9,1x,"PRINT UNIT: ",c1;wrt J+.9,D$
4: fnt 9," START TIME: ",f2.0,":",f2.0,":",f2.0,z;wrt J+.9,DI[21],DI[24]
5: fnt 9,"  ST",1x,"NRL MICROMETEOROLOGY",z;wrt J+.9,DI[26]
6: fnt 9,1x,"DATA SAMPLING RATE (ALL CHANNELS): 6/min";wrt J+.9
7: fnt 9," START DATE: ",i2.0,1x,c3,1x,c4,z;wrt J+.9,DI[30],GA$[DI[29]],f$
8: fnt 9," CRAFT",f4.0,":",6x,"SAN NICOLAS ISLAND, CA",z;wrt J+.9,EI[4]
9: fnt 9,1x,"DATA AVERAGING PERIOD:",f3.0," MIN",z;wrt J+.9,EI[9]20
10: fnt 9,"* COMPOSITE PROFILE AND BULK AERODYNAMIC DERIVED ",z;wrt J+.9
11: fnt 9,"PARAMETER VALUES WEIGHTED AS A FUNCTION OF THE ",z;wrt J+.9
12: fnt 9,"WIND DIRECTION MEASUREMENT ERROR(S)";wrt J+.9
13: fnt 9,"WITH THE LOWER LIMIT OF THE CORRESPONDING",z;wrt J+.9
14: fnt 9," MEASUREMENT UNCERTAINTY INDICATED IN [ ].",z;wrt J+.9
15: fnt 9,1x,"FLUX PARAMETERS",z,1x,"STABILITY",z;wrt J+.9
16: fnt 9 15x,"(eddy  -DOWN)",16x,"SCALING PARAMETERS";wrt J+.9
17: fnt 9,"#z",1x"  ",6x,"z",3x,"L",7x,"z/L";wrt J+.9
18: fnt 9,"#z","GRAD.RICHARDSON NUMBER      MOMENTUM FLUX",z;wrt J+.9
19: fnt 9,1x,"FRICTION VELOCITY";wrt J+.9
20: fnt 9,"#z","(meters/sec)",-DN$(1),"(K/m)",1x,"(meters/sec)";wrt J+.9
21: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
22: wrt J+.9,z,z,z,S[3],S[10]
23: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
24: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
25: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
26: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
27: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
28: wrt J+.9,z,z,z,S[3],S[10]
29: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
30: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
31: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
32: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
33: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
34: wrt J+.9,z,z,z,S[3],S[10]
35: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
36: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
37: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
38: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
39: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
40: wrt J+.9,z,z,z,S[3],S[10]
41: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
42: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
43: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
44: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
45: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
46: wrt J+.9,z,z,z,S[3],S[10]
47: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
48: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
49: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
50: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
51: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
52: wrt J+.9,z,z,z,S[3],S[10]
53: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
54: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
55: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
56: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
57: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
58: wrt J+.9,z,z,z,S[3],S[10]
59: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
60: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
61: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
62: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
63: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
64: wrt J+.9,z,z,z,S[3],S[10]
65: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
66: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
67: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
68: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
69: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
70: wrt J+.9,z,z,z,S[3],S[10]
71: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
72: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
73: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
74: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
75: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
76: wrt J+.9,z,z,z,S[3],S[10]
77: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
78: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
79: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
80: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
81: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
82: wrt J+.9,z,z,z,S[3],S[10]
83: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
84: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
85: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
86: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
87: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
88: wrt J+.9,z,z,z,S[3],S[10]
89: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
90: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
91: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
92: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
93: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
94: wrt J+.9,z,z,z,S[3],S[10]
95: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
96: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
97: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
98: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
99: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
100: wrt J+.9,z,z,z,S[3],S[10]
101: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
102: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
103: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
104: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
105: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
106: wrt J+.9,z,z,z,S[3],S[10]
107: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
108: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
109: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
110: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
111: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
112: wrt J+.9,z,z,z,S[3],S[10]
113: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
114: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
115: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
116: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
117: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
118: wrt J+.9,z,z,z,S[3],S[10]
119: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
120: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
121: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
122: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
123: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
124: wrt J+.9,z,z,z,S[3],S[10]
125: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
126: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
127: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
128: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
129: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
130: wrt J+.9,z,z,z,S[3],S[10]
131: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
132: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
133: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
134: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
135: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
136: wrt J+.9,z,z,z,S[3],S[10]
137: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
138: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
139: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
140: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
141: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
142: wrt J+.9,z,z,z,S[3],S[10]
143: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
144: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
145: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
146: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
147: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
148: wrt J+.9,z,z,z,S[3],S[10]
149: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
150: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
151: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
152: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
153: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
154: wrt J+.9,z,z,z,S[3],S[10]
155: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
156: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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159: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
160: wrt J+.9,z,z,z,S[3],S[10]
161: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
162: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
163: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
164: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
165: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
166: wrt J+.9,z,z,z,S[3],S[10]
167: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
168: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
169: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
170: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
171: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
172: wrt J+.9,z,z,z,S[3],S[10]
173: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
174: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
175: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
176: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
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178: wrt J+.9,z,z,z,S[3],S[10]
179: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
180: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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184: wrt J+.9,z,z,z,S[3],S[10]
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186: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
187: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
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189: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
190: wrt J+.9,z,z,z,S[3],S[10]
191: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
192: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
193: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
194: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
195: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
196: wrt J+.9,z,z,z,S[3],S[10]
197: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
198: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
199: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
200: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
201: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
202: wrt J+.9,z,z,z,S[3],S[10]
203: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
204: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
205: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
206: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
207: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
208: wrt J+.9,z,z,z,S[3],S[10]
209: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
210: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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212: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
213: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
214: wrt J+.9,z,z,z,S[3],S[10]
215: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
216: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
217: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
218: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
219: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
220: wrt J+.9,z,z,z,S[3],S[10]
221: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
222: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
223: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
224: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
225: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
226: wrt J+.9,z,z,z,S[3],S[10]
227: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
228: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
229: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
230: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
231: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
232: wrt J+.9,z,z,z,S[3],S[10]
233: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
234: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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237: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
238: wrt J+.9,z,z,z,S[3],S[10]
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243: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
244: wrt J+.9,z,z,z,S[3],S[10]
245: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
246: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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250: wrt J+.9,z,z,z,S[3],S[10]
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252: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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255: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
256: wrt J+.9,z,z,z,S[3],S[10]
257: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
258: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
259: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
260: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
261: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
262: wrt J+.9,z,z,z,S[3],S[10]
263: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
264: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
265: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
266: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
267: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
268: wrt J+.9,z,z,z,S[3],S[10]
269: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
270: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
271: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
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285: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
286: wrt J+.9,z,z,z,S[3],S[10]
287: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
288: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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293: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
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296: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
297: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
298: wrt J+.9,z,z,z,S[3],S[10]
299: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
300: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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302: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
303: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
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305: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
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309: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
310: wrt J+.9,z,z,z,S[3],S[10]
311: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
312: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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316: wrt J+.9,z,z,z,S[3],S[10]
317: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
318: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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322: wrt J+.9,z,z,z,S[3],S[10]
323: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
324: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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326: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
327: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
328: wrt J+.9,z,z,z,S[3],S[10]
329: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
330: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
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333: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
334: wrt J+.9,z,z,z,S[3],S[10]
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340: wrt J+.9,z,z,z,S[3],S[10]
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345: fnt 9,"#z",f10.0,"  ",f10.0," mT DAR",e15.2,"  ",e10.0,"  ",e11.3,z
346: wrt J+.9,z,z,z,S[3],S[10]
347: fnt 9,"#z","  ",e10.0,"  ",e11.3,z
348: fnt 9,"#z","GEOMETRIC MEAN HEIGHT",6x,"HUMIDITY FLUX",z;wrt J+.9
349: fnt 9,1x,"SONICS SPECIFICHUM.",z;wrt J+.9
350: fnt 9,"#z","(meter)  (m/s)^(2/3)^2",5x,"(kg/sec m^2)",14x,"(kg/kg)";wrt J+.9
351: fnt 9,"#z",f10.0,
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"RECRNC"

"This program tak n raw data from disc in drive (0) and stores"
"raw and re computed values on initialized disc in drive (1)"
"Changes to FCAL values may be added in sub(FCAL)":

" A  contains the averages of the data the Monitor Labs"
"B contains the final printout values"
"C  contains entered month(1)), day(2,3), julian day(3),(4)"
"    temporary storage for D(111)(2),163) and D(12)(71,18)"
"    averaging period(9), Diverse(10), Parity error(11)"
"    Temp range(1,2)   ,(3)=sampling rate for Knollenberg"
"D  contains the no  of days in each month, temp day(13)"
"G$ contains the names of each month"
"Q  contains the line number for chaining subprograms"
"U  contains the converted analog data"
"K contains the averaged digital data"
"Initializing data follows"
dim A(0 to 2 31,1 to 13,,,,(13),G$(1 to ,3)
dim B(9 to 23,19$(496),D(0 to 50),K(10,2),P(1900),D(10B1,5150)
dim F$(71,,,B$(200),E(*4),W$(2,,3),K$(36),U(12,36)
,,,)Q
"")D$,"",F$

drive 0,files DATE,TIDET,METDAT,WSEC,REHL,sread 1,G$,G(*);sread 2,T$
sread 4,W$,sread 5,R$,U$
assn "METDAT",5,1,1
on end 3,"END"
"MAIN":sread 3,D(*),F(*),K(*),U(*)
sread 3,P(*),F$,B(*),T$,S(*)
for I=1 to 100;P(I)=rI;next I
cll 'ROUND OFF'
fxd 0 prt D(20)
D(0))A(0,3);D(13))A(13,3);D(14))A(14,3);D(17))A(17,3)
for M=0 to 19;U(M))=LM,2);next M
chain "CRNCH0",Q,40
gsb "FCAL"
dsp "CRNCH0" ~11 'CRNCH0';cll 'MET20'
gto "MAIN"
"END":sprt 3,"end"
dsp "END";end

"FCAL":
"Enter changes to FCAL values below":



ret

"------ ---------- COMPUTE AND PRINT THE MET DATA----------":
"MET20":chain "CRNCH2",W,55
dsp "CRNCH2";cll 'CRNCH2'
for I=1 to 100;rI)P(I);next I
chain "CRNCH3",Q,58
dsp "CRNCH3";cll 'CRNCH3'
for I=1 to 100;rI)B(I);next I
chain "SCRNCH",Q,61
dsp "SCRNCH";cll 'SCRNCH'
sprt 9,D(*),E(*),K(*),U(*),P(*),I,B(*),F$,S(*)
ret

"ROUND OFF":fxd 0;str(D(20))>D$;val(D$(10,11))>r0
"50")D$(10,11)
if r0(30,"00")D$(10,11)
val(D$(2,3))*1e8+val(D$(4,5))*1e6+val(D$(6,7))*1e4+val(D$(8,9))*1e2)r0
r0+val(D$(10,11))D(20);ret

"ENZO":resave "RECRNC";dsp "RECRNC RESAVED";end
```

```
"WTBCOR"

"This program reads data from the DATA DISKS and creates a new disk"
"with the correct WTB bulk water temperature"
"Data disc must have raw and calculated values stored"
"To delete run number enter (0)"

" A  contains the averages of the data the Monitor Labs"
" B  contains the averages of the data from the Knollenberg"
"  B$ contains the time data"
"C  contains the converted analog data from the Knollenberg"
"C$ contains the analog data from the Knollenberg"
"D contains the final printout values"
"C  contains entered month(1)), day(2,3)  julian day(3),(4)"
"    temporary storage for D(111)(2),163) and D(12)(71,18)"
"    averaging period(9), Diverse(10), Parity error(11)"
"    temp range(1,2),  E(3)=sampling rate for Knollenberg"
"E  contains the no  of days in each month, temp day(13)"
"G$ contains the names of each month"
"H  contains the hours end(1), start(2), flag(3)"
"M  contains the minutes end(1), start(2)"
"Q  contains the line number for chaining subprograms"
"S  contains the seconds end(1), start(2)"
"U  contains the converted analog data"
"V(8)=wtb data used for Knollenberg computations"
"K contains the averaged digital data"
"Initializing data follows"
dim A(0:19,31),B(9,16),B$(306),C(9,16),C$(1501),E(13),G(13),G$(*,3)
dim H(3),M(2),S(2),U(0:191,T$(496),D(0:30),V(0:20),Z$(220),Z(15),P(3)
dim F$(71,K(10,71,1102Q,1111)U(4)
"Averaging Period (minutes)",10E(7),6*E(9)3E(9)
"Particle Sampling Period (sec )",60)E(13)
dsp "INSTALL BLANK DISK IN DRIVE 1",stp
drive 1,open "METDAT",1500
drive 0,files D=TE,TIDET,CW=DAP,METDAT,sread 1,G$,G(*),sread 2,T$
assn "METDAT",7 1,A
"ASK":sread 4,1
"------  format statements follow  ----------"
fmt 1,2x,f7.3,4x,7
fmt 5,2x,f7.3,6x,f7.3
on end 4,"DON"
"MAIN":sread 4,D(*),E(*),K(*),U(*);cll  'rdvar'

dsp str(D(20))&" WTB="&str(D(10))
ent "",D(10)
if D(10)=0;gto "MAIN"
D(10)-10)U(10)
sprt 9,D(*),E(*),K(*),U(*);cll 'prtrv'
gto "MAIN"
"rdvar":for I=1 to 71;sread 4,rI;next I;sread 4,F$
for I=72 to 142;sread 4,rI;next I;sread 4,F$
ret
"prtrv":for I=1 to 71;sprt 9,rI,next I;sprt 9,F$
for I=72 to 142;sprt 9,rI;next I;sprt 9,F$
ret
"DON":dsp "DONE";end
"ENZO":resave "WTBCOR";dsp "WTBCOR RESAVED";end
"------------  End of Main Program  ------------":
*20905
```

```
"TIDEAP"
"sub TIDE, prints tide for day and time entered"
"sub TEST, prints graph of tide table"
"sub LOAD, enters new data in tide table"
dim T$(496),B$(80)
files TIDET;sread 1,T$
ent "Which program: (TIDE=1,TEST=2,LOAD=3)   ",A
if A=2;gto "test"
if A=3;gto "load"
prt "Day Time  Tide"
ent "Day of the Month?",D
if D(1 or D)31;beep;gto -1
ent "Time of Day (HHMM)?",T,if T<0 or T>2400;jmp 0
fxd 0,str(D)&" "&str(T)&" "}B$(3,9),(str 3;str(TIDE (D,T)))B$(10,15)
prt B$;gto 10
"TIDE" T=B*(p1-1)*1)p0,p0+4)p4
if p0(1 or p8(496;gto "terr"
if(T$(p0,p0+1))>p3;if(T$(p8,p8+1))>p5
if (p3*.2400$int((p0 1)/16))p3))(p2*2400$(p1 1))p2);p4 4)p0 p8 4)p8,gto  2
if p5=0;p4+4)p8;gto  3
if (p5*.2400$int((p8-1)/16))p5)(p7;p8+4)p8;p8+4)p8,gto  4
if(i+(p8+2,p4+31)/10)p4,if(T$(p8+2,p8+31)-10)p8
mtd(p2))p7;mtd(p3))p3;mtd(p5))p5
if p3=p5,gto "terr"
ret p8 (p8 p4)$(rem((p2-p3)$100/(p5-p3))+1).2
"mtd":ret int(p1/100)+fr(p1/100)*.6
"terr":ret  999
"load":dsp "If no tide enter (continue), if end of table enter (0)";stp
fxd 0;for I=1 to 496 by 2,fr (0,1)T$(I);next I
for D=1 to 496 by 12,"Day "&str(int(D/12+1))&" "}E$
dsp B$&" Time?",0)X,ent "",X,fr (X))T$(D,D+1),if not X,gto 38
dsp B$&" Time?",X," Tide?",ent "",X,fr (X$10))T$(D+2,D+3)
dsp B$&" Time?",0)X,ent "",X,fr (X))T$(D+4,D+5),if not X,gto 38
dsp B$&" Time?",X," Tide?",ent "",X,fr (X$10))T$(D+6,D+7)
dsp B$&" Time?",0)X,ent "",X,fr (X))T$(D-8,D+9),if not X,gto 38
dsp B$&" Time?",X," Tide?",ent "",X,fr (X$10))T$(D+10,D+11)
dsp B$&" Time?",0)X,ent "",X,fr (X))T$(D-12,D+13),if not X,gto 38
dsp B$&" Time?",X," Tide?",ent "",X,fr (X$10+)T$(D+14,D+15)
next D,rtrend 3,1,sprt 1,T$,end
"test" for D=1 to 31
for I=100 to 2400 by 100
""}B$(1,16);mx=1,(" TIDE"(D,I+1)@2))X,"*"}B$(X,X)
if I=1200 and I@2400,gto *4
fxd 0,str(D))B$(12,19),str(I+)B$(20,24)
if X=7,B$(18,19))B$(10,11),B$(1,4))B$(13,16),gto *.
B$(10,19)?B$()=7,B$(24,24))B$(4,7)
prt B$(1,16)
next I,next D;end

"ENZO":resave "TIDEAP";dsp "TIDEAP RESAVED";end
*29920
```

```
20: "TIDPNT":
21:
22: "This program prints tide data from file TIDET":
23:
24: dim T$(496),A$(10)
25: files TIDET;spread 1,f$
26:
27: ent "ENTER MONTH TABLE BEGINS: ",A$;cap(A$(1,4))A$
28: ent "ENTER YEAR: ",Y
29: "PRINTER":700)P
30: fmt 1,20x,"TIDE TABLE FOR";wrt P+.1
31: fmt 1,22x,c4,1x,f4.0,/;wrt P+.1,A$,Y
32: 1)J;1)D
33: fmt 1,f2.0,2x,z;wrt P+.1,D
34: for I=1 to len(T$) by 4
35: itf(T$(I,I+1))A;itf(T$(I+2,I+3))/10)B
36: fmt 1,f4.0,2x,f4.1,4x,z;wrt P+.1,A,B
37: J+1)J
38: if J<5;gto +4
39: D+1)D
40: if I<len(T$)-4;fmt 1,/,f2.0,2x,z,wrt P+.1,D
41: 1)J
42: next I
43: wrt P;wtb P,12
44: dsp "DONE";end
45:
46: "FNZO":resave "TIDPRT";dsp "TIDPRT RESAVED";end
#7605
```

```
20: "MEAN":
21:
22: "This program reads raw and calculated data previously recorded"
23: "on disc and computes MEAN and STANDARD DEVIATION"
24: "Values can be variables or expressions"
25:
26: "D contains the final printout values"
27: "I  contains entered monthly, daily or julian dates(I,1)"
28: "   temporary storage for data(I,1)= and data(I,2)="
29: "   averaging periods; I=observation, P=daily effects"
30: "   temp range(I,1)   C(I)=Sundring rate for Knollenburg"
31: "X contains the averaged digital data"
32: "Y  contains the converted analog data"
33: "Initializing data tables"
34: dim D(9,5),I(13),K(10,2),U(9,19),G(15,2),S
35: dim X(5,2),B(20),C(10),F(2,6),S(12,3),M(15),Y(13)
36: PRINTER" 10)P
37: cfg 1;"
38: "RUN":"Ex C$;E$
39: files DATA,1;DEL,1;CRE DAP,MEANT;spread 1,f$,C(8)
40: "MSK":spread 4,1;ent "ENTER BEGINNING RUN NUMBER (0 for all)",I(1)
41: if P(1)=0;stg 2 gto +3
42: if flg1;gto "MAIN"
43: ent "ENTER ENDING RUN NUMBER ",P(2)
44: ent "Establishment Date ",A$;cap(A$)
45: ent "Enter EXPRESSION (#1,#2,R1,etc) ",D$ capture;E$
46: ent "UNITS= ",U$ capture$;E$
47: ent "Enter CHANGE EXPRESSION ",E$ capture$;D$
48: if E(1,1)="I";gto **
49: on end #,"END"
50: gto "MAIN"
51:
52: dsp "ENTER EXP1 BELOW [MAIN stmt 407]";stp
53: "Add 10a to all page 1 variables"
54:
55: "EXP1" ret #BW,D: PWSB;;;S
56:
57:
58:
59:
60:
61:
62: "MAIN":dsp "FINDING BEGINING RUN NUMBER"
63: "This routine finds begining data run"
64: cfg 1
65: ctl "READATA"
66: if flg2;D(201)P(1);gto +4
67: if D(20)=P(1);dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000;stg 1
68: if flg1;gto "MSK"
69: if D(20)=abs(P(1));gto "MAIN"
70:
71:
72: 0)A;0)N
73: "mean":
74: "Compute mean and standard deviation":
75: on end #,"END"
76: "EXP3":)X
77: fxd 0;dsp "COMPUTING:  RUN# ",D(20)
78: N+1)N;A+X)A;D+X^2)D
79: ctl "READATA
80: if flg2;gto +2
81: if D(20)>P(2);gto "END"
82: gto -6
83:
84: "READATA":
85: "This sub routine reads data from disc"
86: spread 4,B(8),(A(*),A(*)),U(9)
87: for I=1 to 108;spread 4,r1;next I;spread 4,E$
88: for I=109 to 216;spread 4,r1;next I;spread 4,E$
89: ret
90:
91: "END":
92: "N"}E$;ent "MORE DATA TO RUN? ",E$;cap(E$)E$
93: if E(1,1)="N" gto +3
94: dsp "INSERT NEXT DISC";stp
95: asgn "MEANT",4;spread 4,1;gto "mean"
96: ctl "TITLE"
97: if flg2;D(20)P(1)
98: A/N)M
99: %(DAN M^2/)S
100: fxd 0,str(N)E$,fxd 9;str(M)M$;str(S)S$
101: fmt 1,11x,"BEGINING RUN #=",f11.0,z;wrt P+.1,P(1)
102: fmt 1,11x,"ENDING RUN #=",f11.0,z;wrt P+.1,P(2)
103: fmt 1,10x,"MEAN =",14.4,z;wrt P+.1;wrt P,M$
104: fmt 1,10x,"STANDARD DEV. =",5z,z;wrt P+.1;wrt P,S$
105: fmt 1,10x,"NUMBER OF SAMPLES =",z;wrt P+.1;wrt P,I$
106: wtb P,12
107: dsp "DONE";end
108:
109: "TITLE"
110: R$)R$11,.01,C$)C$11,10)
111: fmt 1,10x,"T. BLANC  NKL (ODE 4320  SN1 ",z;wrt P+.1;wrt P,M$
112: fmt 1,11x,"EXPRESSION= ",c20,2x,"UNITS= ",c10;wrt P+.1,E$,U$
113: ret
114
115: "FN20" resave "MEAN";dsp "MEAN RESAVED";end
116
117: "          FUNCTIONS                "
118: "PWSB":ret P5;P6
119: "RWSB" ret %pwsb (A-B*B^3+ V(1&A-B*C)(1+B*A*B)no(1,...
120: "DAT":ret P*2^9
121: "V(1&A" ret (V(P1&1 + V(P1&...
122: "V(P1)" ret  V(P1)** 009A*B^6
123: "V(P1," ret  V(P1)** 009A*B^6
124:  V1&1" ret "V1&1) A-1*B^2A* 6RH)
125: "V1A)" ret  A1&)* A-1*B^2A* 6RH)
126: "P1A)":ret r1+,Z1 )0
127: "P1A2":ret r2+,Z1 )0
128:
129:
130
131
```

```
"MAXMIN":
"This program reads raw and calculated data previously recorded"
"on disc and computes MAXIMUM and MINIMUM VALUES":
"Values can be variables or expressions":

"D contains the final printout values":
"E  contains entered month(I1), day(I2); julian day(I3),I4)"
"   temporary storage for U[11](I5),I6)) and U[12](I7),I8))"
"   averaging period[9]; Divesor[10]; Parity error[11]"
"   temp range[12],  E[13]=sampling rate for Knollenburg"
"K contains the averaged digital data":
"U  contains the converted analog data":
"Initializing data follows":
dim D[0:30],E(13),K(10,2),U[0:19],G[13],F[5]
dim A$[15],B$[20],C$[10],F$(7),G$[12,3],M$(15),S$[15]
"PRINTER":700)P
cfg 1,2
"NONE")B$)C$)F$
files DATE,TIDET,CW-DAP,METDAT;sread 1,G$,G[8]
"ASK":sread 4,1;ent "ENTER BEGINING RUN NUMBER (0 for all) ...",P[1]
if P[1]=0;sfg 2;gto +3
if flg1;gto "MAIN"
ent "ENTER ENDING RUN NUMBER:...",P[2]
ent "EXPERIMENT DATE ?  ",A$;cap(A$))A$
ent "ENTER EXPRESSION (RI,RIB-RI,etc)...",B$;cap(B$))B$
ent "UNITS: ",C$;cap(C$))C$
ent "ENTER OR CHANGE EXPRESSION? ",F$;cap(F$))F$
if F$[1,1]="Y";gto +3
on end 4,"END"
gto "MAIN"

dsp "ENTER EXP1 BELOW THEN (cont 40)";stp
"Add 100 to all page 3 variables":

"EXP1":ret r121









"MAIN":dsp "FINDING BEGINING RUN NUMBER"
"This routine finds begining data run":
cfg 1
cll 'READATA'
if flg2;D[20])P[1];gto -4
if D[20)>P[1);dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000;sfg 1
if flg1;gto "ASK"
if D[20]#abs(P[1));gto "MAIN"


0)N;'EXP1')A)D
"mean":
"Compute mean and standard deviation":
on end 4,"END"
'EXP1')X
fxd 0;dsp "COMPUTING!  RUN# ",D[20]
N+1)M;if X(A;X)A
if X)0;X)D
cll 'READATA'
if flg2;gto +2
if D[20])P(2);gto "END"
gto -7

"READATA":
"This sub routine reads data from disc":
sread 4,D(*),E(*),K(*),U(*)
for I=1 to 108;sread 4,R[;next I;sread 4,F$
For I=109 to 216;sread 4,R[;next I;sread 4,F$
ret

"END":
"N")F$;ent "MORE DATA TO RUN? ",F$;cap(F$))F$
if F$[1,1]="N";gto +3
dsp "INSERT NEXT DISC' ";stp
asgn "METDAT",4;rread 4,1;gto "mean"
cll 'TITLE'
if flg2;D[20])P(2)
fxd 0;str(N))F$;fxd 3;str(A))M$;str(D))S$
fmt 1,11x,"BEGINING RUN #=",f11.0,z;wrt P+.1,P[1)
fmt 1,2x,"ENDING RUN #=",f11.0,2/;wrt P+.1,P[2)
fmt 1,18x,"MIN =",5x,z;wrt P+.1;wrt P,M$
fmt 1,18x,"MAX =",5x,z;wrt P+.1;wrt P,S$
fmt 1,18x,"NUMBER OF SAMPLES =",z;wrt P+.1;wrt P,F$
wtb P,12
dsp "DONE";end

"TITLE":
B$)B$[1,20];C$)C$[11,10]
fmt 1,18x,"T. BLANC  NRL CODE 4320  ONI ",/;wrt P+.1;wrt P,A$
fmt 1,11x,"EXPRESSION= ",c20,2x,"UNITS= ",c10;wrt P+.1,B$,C$
ret

"FNZO":resave "MAXMIN";dsp "MAXMIN RESAVED";end

"---------- FUNCTIONS ---------- ";
"PWSD":ret r5-r6
"BWSD":ret %abs('GA'#r37/('VPTKM'#r121)/#r648*ln(r65/r66)
"GA":ret 9.7959
"VPTKM":ret (1'VPTK1'+'VPTK2')/2
"VP)K1":ret 'VTK1'+.009B#r65
"VPTK2":ret 'VTK2'+.0098#r66
"VTK1":ret 'ATK1'#(1+r25#.608)
"VTK2":ret 'ATK2'#(1+r26#.608)
"ATK1":ret r1+273.16
"ATK2":ret r2+273.16
```

```
"DELETE"

"This program reads data from [illegible]
"deletes or copys specified run number" [illegible]
"New disc must have all programs and [illegible]
"and file METDAT open to 1100 records"

"Initializing data follows"
dim D(0:30),E(13),K(10,2),U(0:19)
dim N$[2560),F$[2 ,M$[15]
cfg 1
'PRINTER'-700))
files METDAT:0,METDAT:1
sread 2,1
ent "COPY) OR (DELETE) Specified Run# [illegible]
if A$="COPY";sfg 1
"ASK":sread 1,1,""N$
for X=1 to 200
ent "ENTER RUN # <000 to terminate" A$
if A$="000",gto ro
if len(A$)=10;gto +3
beep;prt A$,dsp "TYPE ERROR  RE ENTER NUMBER";wait 1.5
gto -4
N$A" "AA)N$
next X
ent "PRINT LIST OF ENTERED NUMBERS?" [illegible]
if A$[1,1]#"Y",gto +17
for X=1 to len(N$) by 11
wrt 10,N$[X,X+10]
next X
ent "EDIT NUMBERS?",A$;cap(A$
if A$[1,1]#"N",gto +12
ent "ENTER NUMBER TO CHANGE  <000 to exit",A$
if A$="000",gto +19
pos(N$," "AA$)X;if X>0;gto -2
beep;dsp "NUMBER NOT FOUND";wait 500;gto
prt N$[X,X+10]
""A$;ent "ENTER New NUMBER ",A$
if A$="",N$[1,X-1]&N$[X+11]N$;gto -6
if len(A$)=10;gto +2
beep;prt A$;dsp "TYPE ERROR RE ENTER [illegible]
A$)N$[1,X-1)&A$&N$[X+10]N$;gto -9

on end 1 "ASK2"
"MAIN" sread 1,D[*],E[*],K[*],U[*]
for I=1 to 10b;sread 1,R[;next I;sread 1,F$
for I=109 to 216;sread 1 R[;next I;sread 1,F$
fxd 0;str(D[20])A$
if flg1;gto +3
pos(N$,A$+X;if X>0;gsb "PUT"
gto -2
pos(N$,A$,X);if X>0;gsb "PUT"
gto "MAIN"

"PUT"
"store data on disc in drive 1
sprt 2 D[*],E[*],K[*],U[*]
for I=2 to 108;sprt 2,R[;next I;sprt 2,F$
for I=110 to 216 sprt 2,R[;next I;sprt 2,F$
wrt 10,A$
ret

"ASK2"
ent "MORE RUNS TO PUT ON THIS DISC [illegible]
if A$[1,1]="N";gto "END"
dsp "INSERT NEXT DISC IN DRIVE 0";stp
asgn "DATA",1,0;rread 1,1;gto -5

"END"
dsp "END"
end
```

```
itr p1,31,1,cpit  3,P1(41,1b1 "I"
next i
if P1(31 P1(1),gto  >
P1(1)P1(31,96)P1(21)gto -2
ret
P1(1)P1(.5;2%0)P1(.1),P1(21)P1(24)
P1(11)r0,(if P1(11<0,-.01)r0
for i=r0 to P1(24) by r0
if (i/d&10,1)r0;gto  1
in ,,r tigo; in
lbq"(1)2L
cs12 ,,,1,P1(91
if i<r0,csiz .5,2,1,P1(91
if i<r0,csiz 1.2,,.1,P1(91
itr P1(11),cpit  3,0,1b1 "I"
next i
if tigo,gto +2
"ty 0;y<=5"P1(1)!P1(.4);gto  11
if P1(31 91(2),gto +2
"12"  P1(31,96)P1(.91;P1(21))P1(41;cfg 6;gto -13
ret
"lbq":
"returns lbq of nc ber":
if P1(11)0;gto +7
if abs(p1)< 01,-(1)p1
if p1<0.4+ log10(abs(p1)))p1,gto +2
if p1<6;beep,dsp "LOG of 0 or -  #)";wait 500;1e-12)p1
lbq(p1)p1
ret p1
"ROUND OFF":
"Rounds of num# to next even 16 min. und returns":
"new run number in D# and decimal number in r0".
val$(1,11)r6
if round(r6;r6,1e-1)r6;(int(r6)+(int(r6*10)-r6)*.7)*100)r0
str(r0)+$(1,(if$(1,1)="-")+(r0<1000);"0"&r6)f$
if r0<100;"00"&f$!f$
if r0<0,"0000"!f$
f$)D#,111;c11  DECIMAL'
ret
"next":
beep,dsp "INSERT NEXT DISC";stp
osgu "MK:DAT",4,rfeed 4,1
on end 4,"next"
fxd 0;c11 'NEWDATA',str(D(20)+1)D$;c11 'DECIMAL'
gto "plot"
" - - - - - FUNCTIONS - - - - - ":
"PWSD":ret r5 r6
"SWSD":ret sqrt( SA'#r37/(VFTAM-#r121))*#r64*ln(r65/r66)
"SM":ret V 7559
"VFTAM":ret ( VFTK1+(VFTK2*2)/2
"VFTK1":ret "V1K1"*.0098#r05
"VFTK2":ret "V1K2"*.0098#r66
"V1K1":ret "A1K1"*1.r25*.e002
"V1K2":ret "A1K2"*(1+r2e8.e006)
"A1K1":ret r14*23.16
"A1K2":ret r14*23.16
```

```
"DAN11      (4 * 5617
'This program reads raw and calculated data previously recorded'
'on disk and plots user-stored variable or expression'
'with manually entered parameters':
'Plots can be clog or line. Plots can be clone or point)":
'Allows input of axis limits are not plotted":
'Positive or negative values can be plotted on log scale.":
'Allows axis titles of up to 64 for log scale".
"Use of ,,,"&chr(10)!
"Left or Right axis may be omitted for plotting graphs":
"It contains the input printout values":
"  contains stored amplitude, day(2)), julian day(31,141)"
"    temporary storage for U(1),(1),(2) and U(1),(2),(3)"
"    sampling period(2); overflow(3), parity error(4)]":
"    np computes  (1)=sampling rate for Knudlenburg".
" contains the user and digital data":
"    contains the converted double, data":
"Initializing data files":
dim D$@,d1,c1,c2,r10,r2,b$@-1*2,G(13),r(31)
dim c$(2 * 1,3),r(10),a$(30),G*(1),S1,A$(20),b$(20),G$(30),F$(1)
clg 1,,,.4 ,.6
"dA":"DATA"&D$(1,6)+r$
"    Enter (D)ata (A)ccess, M(odified,Stored 1,1,G(0)
"DATA ACCESS 4,1;ent "Enter DISC RUN NUMBER...",P(1);P(1)-P(.2)
if P(1)<0,"dA"
ent "Enter RUN NUMBER  ...",P(.1,P(.1)P(23)
" ent "  ",a$(20)M$,pen  ,2,,,
```

```
if flg3,gto +11
0)P(24),P(3))P(25)
for I=P(7) to P(8) by P(21)
if prnd(frc(I/P(9)),-5)=0;csiz 3.2,2,1,P(24),gto +3
if prnd(frc(I/P(26)),-5)=0;csiz 1.9,2,1,P(24);gto +2
csiz .6,2,1,P(24)
ltr I,P(25);cplt  3,0;lbl "I"
next I
if P(25)=P(4);gto +2
fig 6;gto +2
if P(25)=P(4);cfg 6;gto +2
P(4))P(25),100)P(24),P(30))P(26);cfg 6;gto -13
ret

"tic";
fxd 0,deg
if flg2;gto +13
270)P,24),P(7)P(25)
if A=2,P(8))P(25),90)P(24)
for I=P(3) to P(4) by P(19)
if prnd(frc(I/P(5)),-5)=0;csiz 2.5,2,1,P(24);gto +3
if prnd(frc(I/P(18)),-5)=0;csiz 1.2,2,1,P(24),gto +2
csiz .5,2,1,P(24)
ltr P(25),I,cplt  .3,0;lbl "I"
next I
if A;gto +3
if P(25)=P(8);gto +2
P(8))P(25),90)P(24),P(7)P(25),P(28))P(26)
if abs(P(8))P(25),90)P(24),P(28))P(26)
P(27))r0;if P(27)<6;.01)r0
for I=r0 to P(26) by r0
if I=int(I,1)r0;gto -1
DL;if flg6; DL
cll "log"
csiz .5,2,1,P(24)
if I=r6;csiz 2.5,2,1,P(24)
if I=5r0;csiz 1.2,2,1,P(24)
ltr P(25),I,cplt  -.3,0;lbl "I"
next I
if flg6;gto +2
sfg 6;abs(P(27)))P(26);gto -11
if A;gto +3
if P(25)=P(8);cfg 6;gto +2
P(8))P(25),90)P(24),P(28))P(26);cfg 6,gto -14
ret

"log":
"Find log of number in L":
if P(27)>0 and P(29)>0;gto +3
if abs(L)<.01; 01)L
if L<0, 4-log(abs(L)))L;gto +3
if L=0,neep,dsp "LOG of <0 or =0",wait 500,le 1/0
log(L)L
ret

"next":
neep,dsp "INSERT next DISC",stp
asgn "anDAT",4;fread 4,1
on end 4,"next"
cll "READATA";gto "plot"

"      --  FUNCTIONS ---------- ".
"PWSD" ret r5-r6
"PWSD" ret sqrt(GA'8r37/(VPTkM'8r121))8r648ln(r65/r66)
"GA" ret 9.7959
"VPTkM" ret (VPTk1'+VPTk2')/2
"VPTk1" ret (VTk1'+.1078)8r65
"VPTk2" ret (VTk2'+.06908)8r66
"VTk1" ret (Atk1'8(1+r258.608)
"VTk2" ret (Atk2'8(1+r268.608)
"ATk1" ret r19/23.16
"ATk2" ret r24/23.16
#25966
```

```
"SANDI2"          (4 = by)"

"This program reads raw and calculated data previously retrieved
"on disk and plotts specified data versus run number
"with manually entered parameters  variables"
"or expressions accepted    expressions can be plotted as runs progr
"Y axis scale can be Log or Lin. Plots can be time or per
"values that exceed limits are not plotted"
"any value or expression can be used to  inhibit plotting of
"Positive or Negative values can be plotted or
"Values less than .01 are set= .01 for log scale"
"for HP 7225A PLOTTER".

"Standard error bars, EAP 1 & 2 plotted with variable
"(EAP 1- RUN#offset), (EAP 2- RUN#multiple)"
"left or right edge of axis may be omited for matching plot

"D contains the final printout values"
"X  contains entered monthly, days, run numbers, etc.
"    temporary storage for bridge flow and etc.
"    averaging periods, Dives ratio, Purity
"    Temp Ranges, (1)Std operating rate for
"A contains the averaged digital data"
"U  contains the converted analog data"
"Initializing data values"
dim D(6,20),E(33),F(10,2),gto 17),g(15),r(5,5),t(5)
dim A(10,2),B(600),F(20),S(10),W$(10),r$(5,5),X$(2),Y$(5)
dim B$(1),C$(1),P$(1)
cfg 1,2,3,4,5,6,7,8,9
"RUN"&R$(1)$(1,3)
rstor DAT',TIB(1),CW (inP,M-Dat spread 1,1 ERR
ent "A(1)  BEGINING RUN NUMBER: ",P(1),P(1)=P(1)+1,r(1,3)
ent "A MAIN ENDING RUN NUMBER   ",P(2),P(2)=P(2)+1,r(1,4)
"ASK":spread 4,1;fxd 0 dsp "FINAL RUN# TO READ ";P(2);" OK"
if flg1;gto "MAIN"
"C INPUT RUN# TO PLOT ";P(5);ent "",P(5)
ent "EXPERIMENT DATE ",P$
ent "A MAIN MAJOR TIC MARK SPACING ",P(18)
ent "INTERMEDIATE VALUES ",P(19)
ent "MINOR SPACING ",P(20)
ent "Y MAIN LIMIT (MINIMUM) ",P(14),P(15)=P(14)
ent "Y MAIN LIMIT (MAXIMUM) ",P(15),P(15)=P(14)
ent "NUM MANT EXPRESSIONS (1 or 2) ",P
ent "VARIABLE NAME EXP1 (R1,R2) R1,etc)  ",F$
ent "UNITS (EXP1) ",F$,if VV=1,gto +4
ent "VAR.ABLE NAME EXP2  ",F$
ent "UNITS (EXP2 ",F$
ent "ENTER OFFSET (minutes) ",O
ent "Y MAIN (log or lin) ",Y$
if F$="log";sfg 3,gto +4
ent "TIC MARK (Y axis) (MAJOR)  ",P(6)
ent "TIC MARK (INTERMEDIATE) ",P(7)
ent "TIC MARK (MINOR) ",P(27)
ent "GRAPH AREA (1-88Y, 2=88Y) ",P
if P#1,gto +3
if P=1,sfg 5,gto +2
gto -3
ent "TYPE OF PLOT (Line or Point)=",F$,cap(F$)F$
if F$(1,1)="L",gto +3
sfg 4;ent "CHARACTER FOR POINT (EXP1) ",I
if V=1;ent "CHARACTER FOR POINT (EXP2) ",J
0)A,ent "OMIT AXIS (Right, Left, No) ",F$,cap(F$)F$
if F$(1,1)="R",1)A
if F$(1,1)="L",2)A
"N"F$;ent "CHANGE EXPRESSIONS (yes or no) ",F$,cap(F$)F$
if F$(1,1)="N",gto "ERV"
dsp "ENTER EXP1&2 BELOW THEN (cont S)":stp

"EXP1&2 are Y axis"
"Add 10M to all page 3 variables"

"EXP1" ret r16

"EXP2":ret r146



"ERV" ent "ERROR BARS (yes or no) ",F$,cap(F$)F$
if F$(1,1)="N",gto "IKMP"
sfg 7;ent "CHANGE ERROR VARIABLES (yes or No) ",F$,cap(F$)F$
if F$(1,1)="N",gto "IKMP"

dsp "ENTER EXP1&2 BELOW THEN (cont S)":stp
"EVR1 is for EXP1, 2 for EXP2"

"ERV1" ret r62

"ERV2" ret r164

"IKMP"
"Inh,with plotting of expression if true"
ent "Inh IKMP EXPRESSION (yes or No) ",F$,cap(F$)F$
if F$(1,1)="N",gto "MAIN"
1)I,ent "CHANGE EXP2 EXPRESSION (yes or No) ",F$,cap(F$)F$
if F$(1,1)="N",gto "MAIN"
dsp "IF EXPRESSION IS Not 0, PLOTTING IS INHIBITED (cont)":stp
dsp "ENTER EXP1 BELOW THEN (cont)":stp

"IEXP" ret r46 2 or r46 1



"MAIN" dsp "ENDING BEGINING RUN NUMBER"
"This routine finds beginning data run
cfg 1
cll "REMDATA
if D(26)=0;1)dsp "BEGINING RUN NUMBER NOT FOUND";wait 500;gto "ASK"
if flg1,gto "ASK"
if D(26)=abs(P(3));,gto "MAIN"
if not flg8,gto "111"
fxd 0,str(D(26))8r,cll  DelRec
dsp "CHANGE PEN THEN (cont)":stp
gto "plot"

"END" resave "SANDI2";dsp "SANDI2 resaved":stp
"                end of Main Program
```

```
!
!
!  ----- ---- ---- --DRAW AXIS AND PLOT- ----- ---- ":
!
!
"TTT"
fxd 0,str(P(111))D$
cll 'DECIMAL'
r0)P(11
fxd 0,str(P(112))D$
cll 'DECIMAL'
r0)P(12)
if flg5;gto "pen"
if flg3,'log'(P(14))P(14);'log'(P(15))P(5)
(P(2)-P(11)/100)r0;P(11)-4.5#r0)P(10);P(2)+4.5#r0)P(14)
if flg5;(P(2)-P(11))/100)r0;P(11)-32#r0)P(10);P(2)+32#r0)P(14)
if P(4)<0 and P(5)>0;gto +3
(P(5)-P(4))/100)r0;P(4)-10#r0)P(11);P(5)+8#r0)P(12)
gto +2
(abs(P(4))+abs(P(5)))/100)r0;P(4)-16#r0)P(11);P(5)+8#r0)P(12)
scl P(10),P(14),P(11),P(12)
!
dsp "SET PLOTTER LIMITS TO MAX FOR HEADING";stp
ltr P(10),P(12);csiz .2,.5,1,0
cplt 27, 1
lbl "F: BLANC NRL CODE 4326  FORMAT/DSP  SNI ",A,
fxd 0,lbl "     RUN#=",P(7)," TU",P(8)
ltr P(16),P(12);cplt 27,-2
lbl " EXP1=",Y$," UNITS=",H$
if V=1;lbl "  EXP2=",E$," UNITS=",I$
plt 1;lbl ", LIMIT MIN.=",P(2)," MAX.=",P(22)
dsp "RESET PLOTTER FOR GRAPH";stp
dsp "DRAWING AXIS"
cll 'axis'
"pen":dsp "CHANGE PEN ?,THEN (CONTINUE)";stp
on end 4,"next"
fxd 0,str(P(111))D$;cll 'DECIMAL'
0)AJB
sfg 9
"plot":
dsp "PLOTTING   ",D$
csiz 1,.5,1,0
if not flg8;B$)P$,'EXP1')P(3);if flg3;'log'(P(3)))P(3)
if r(gd(.5)P$,'EXP2')P(3);if flg3;'log'(P(3)))P(3)
cll 'plt'
if flg7;gsb "error"
if D(261)=P(32);gto "nextv"
cll 'READATA'
fxd 0;str(D(261))D$
cll 'DECIMAL'
gto "plot"

"nextv" if flg8 or V=1;gto "END"
if b=1;beep;dsp "INSERT FIRST DATA DISC !";stp
sfg 3;asgn "MFIDAT",4;rread 4,1
on end 4,"next"
gto "RWF"

"READATA":
"This sub routine reads data from disc":
sread 4,D(8),E(8),X(8),U(8)
for I=1 to 168;sread 4,r1;next I;sread 4,F$
for I=192 to 216;sread 4,r1;next I;sread 4,F$
gto +2
if D(261)=7905651200 and D(261)<7905676800;D(261)+1e4)D(26)
ret

"plt"
if P(3)>P(5);A=10A;gto +5
if P(3)<P(4),A=10B;gto +4
if T=1,if "TEXP";gto +9
"EXP1 "):E(1),abs(r(11)/100#(EXV1))L;Y(11+L)Y(2);Y(11-L)Y(3)
if flg3, r(EXP2"):Y(11),abs(r(11)/10d#(EXV2"))A;Y(11+L)Y(2);Y(11-L)Y(3)
if flg3,'log'(Y(11)))Y(11),'log'(Y(2)))Y(2),'log'(Y(3)))Y(3)
if Y(11)<Y(5) or Y(11)<P(4);gto +5
if Y(2)>P(5),P(5)=Y(2)
if Y(3)<P(4),P(4)=Y(3)
plt r0,Y(1),1,plt r0,Y(2),1,plt r0,Y(3),2
plt r0,Y(1),1
ret

"END":dsp "DONE"
prt "      Y axis"
fmt 1,F8.6," POINTS/LIMIT",wrt 16,1,A
fmt 1,F8.6," POINTS/LIMIT",/,wrt 16,1,B
wait 1000
dsp "END",pen,end

"DECIMAL"
"This sub routine converts run # in (D$) to decimal":
fxd 3,D$)F$
0)r6,fxd 4
for H=1 to val(F$[4,5]);r0+UNI)r0;next H
r1)+(10-min(7,7))+val(F$[8,11] /1440)r0
if flg9,gsb "offset"
ret

"offset":
"offsets run# in r6 for -(D)
if not flg8,r0-(81/1440)r0
if flg9,r0+(81/1440)r0
ret

"axis"
"This sub routine draws axis and tic marks":
for X=1 to 2
jmp 20#+1
plt P(1),P(5), ,,plt P(2),P(4);plt P(1),P(4)
plt P(1),P(5),plt P(2),P(5), 1;gto +4
plt P(2),P(4), 2,plt P(1),P(4),plt P(1),P(5),plt P(2),P(5), 1
gto +2
plt P(1),P(5), ,,plt P(2),P(5),plt P(2),P(4),plt P(1),P(4),-1
next X
if flg3 and P(21)<.01;plt P(1), 2,,2;plt P(2), 2, 1
P(4))P(31),0)P(24);P(2))P(30),0)P(29)
fxd 3;deg;str(P(7)))D$;cll 'ROUND OFF'

!
!
!  ----- ---- ---- --FUNCTIONS ----- ---- ":
!
!
!
```

```
!  "SHAPE3          (2 of 3) 86";
!
!  "This program reads raw and calculated data previously recorded";
!  "on disc and plots specified data versus run number";
!  "with manually entered parameters. Variables";
!  "or expressions accepted. 2 expressions can be plotted on same graph";
!  "Y axis scale can be log or lin. Plots can be lines or points";
!  "Values that exceed limits are not plotted";
!  "Any value or expression can be used to inhibit plotting of data point";
!  "Positive or Negative values can be plotted on log scale";
!  "Values less than .01 are set= .01 for log scale";
!  "for HP 7221A PLOTTER";
!
!  "Standard error bars";
!
!  "S contains the final printout values";
!  "  contains entered month(1), day(2); julian day(3,4)";
!  "    temporary storage for D[1]:D[5],[61] and D[47]:D[71],[81]";
!  "    or ranging periods(2); Drives#(10); Parity error(11)";
!  "    temp range(12),  F[13]=sampling rate for Knollenberg";
!  "A contains the averaged digital data";
!  "D  contains the converted analog data";
!  "Initializing data follows";
  dim D(6,36),F(13),A(16,2),D1(:191,G1(3),P(32),T(6)
  dim T$(20),W$(20),I(20),F$(20),N(10),I-(10),G$(2,3),M$(30)
  dim B$(:,C$(1),P$(1)
  cfg 1,2,1,4,",",,2,8
  "NOW"[ins(1:$)]F$(1)$
  titl$ DAT$,TIDE$,IW GAP,ME[DAT;spread 1,6%,G(#)
  ent "A MAIG BEGINING RUN NUMBER...",P(11);P(11)P(7)P(31)
  ent "A MAIG ENDING RUN NUMBER...",P(2);P(2)P(8)P(32)
  "ASK":spread 4,1;rsd u;dsp "FIRST RUN# in PLOT =",P(3);ent "",P(31)
  if F;g;gto "MAIN"
  dsp "LAST RUN# TO PLOT =",P(3);ent "",P(32)
  ent "EXPERIMENT LAB ?  ",A$
  ent "X AXIS MAJOR TIC MARK (HOURS): ",P(18)
  ent "INTERMEDIATE (HOURS): ",P(19)
  ent "MINOR (HOURS): ",P(20)
  ent "Y AXIS LIMIT (MINIMUM)...",P(4);P(4)>P(21)
  ent "Y AXIS LIMIT (MAXIMUM)...",P(5);P(5)>P(22)
  ent "LOW PART EXPRESSIONS () or 0):",V
  ent "VARIABLE NAME FOR (P1,P1B-P1,etc)...",Y$
  ent "UNITS (EXP1):",U$;if V<>0;gto +3
  ent "VARIABLE NAME FOR 2 :",E$
  ent "UNITS (EXP2):",I$
  ent "Y AXIS (log or lin) ?",L$
  if F$="log";sfg 3;gto +4
  ent "TIC MARK (Y axis) (MAJOR)...",P(16)
  ent "TIC MARK (INTERMEDIATE): ",P(16)
  ent "TIC MARK (MINOR): ",P(17)
  ent "GRAPH MARIN (1=889, 2=86#0): ",R0
  if R0=1;gto +3
  if R0=2;sfg 5;gto +2
  gto -3
  ent "TYPE OF PLOT (Line or Point):",F$;cap(F$))F$
  if F$(1,1)="L";gto +3
  sfg 4;ent "CHARACTER FOR POINT (EXP1):",B$
  if V;ent "CHARACTER FOR POINT (EXP2):",C$
  "N")F$;ent "CHANGE EXPRESSIONS (yes or no)",F$;cap(F$))F$
  if F$(1,1)="N";gto "ERV"
  dsp "ENTER EXP1&2 BELOW THEN (cont 70)";stp
!
  "EXP1&2 are Y axis";
  "Add 100 to all page 3 variables";
!
  "EXP1":ret R58
!
!
  "EXP2":ret R166
!
!
!
!
!
!
  "ERV":ent "ERROR BARS (Yes or No):",F$;cap(F$))F$
  if F$(1,1)="N";gto "!RAP"
  sfg 7;ent "CHANGE ERROR VARIABLES (Yes or No):",F$;cap(F$))F$
  if F$(1,1)="N";gto "!RAP"
!
  dsp "ENTER EVR1&2 BELOW THEN (cont 85)";stp
  "EVR1 is for EXP1, EVR2 is for EXP2":
!
  "ERV1":ret R95
!
  "ERV2":ret R161
!
!  "!RAP":
  "Inhibits plotting if expression if true":
  ent ";F1 !RAP EXPRESSION (Yes or No)",F$;cap(F$))F$
  if F$(1,1)="N";gto "MAIN"
  !!!;ent "!RAP2 EXPRESSION (Yes or No)",F$;cap(F$))F$
  if F$(1,1)="N";gto "MAIN"
  dsp "!1 EXPRESSION IS NOT 0, PLOTTING IS INHIBITED. (cont)";stp
  dsp "ENTER (EXP) BELOW THEN (cont)dd";stp
!
  "EXAP":ret R46)-2 or R46(-2
!
!
!
!
!
!
  "MAIN":dsp "FINDING BEGINING RUN NUMBER"
  "This routine finds begining data run":
  cfg 1
  cll 'READATA'
  if D[20])P[31];dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000;sfg 1
  if flg1;gto "ASK"
  if D[2610abs(P[31));gto "MAIN"
  if not flg8;gto "TIF"
  dsp "CHANGE PEN THEN (cont)";stp
  fxd 0;str(D[20]))D$;cll 'DECIMAL';gto "plot"
!
  "FNZU":remove "SHAPE3";dsp "SHAPE3 removed";stp
!                    End of Main Program
!
!
!
!
!
!  "                    DRAW AXIS AND PLOT                    ":
!
  "TIF":
  fxd 6;str(P(11))D$
!
  cll 'DECIMAL'
  r0)P[11]
  fxd 0;str(P[21])D$
  cll 'DECIMAL'
  r0)P[2]
  if flg2;gto "pen"
  if flg3;log(P[41))P[4];log(P[5]))P[5]
  if flg4;log(P[42))P[42];P[11]=4.5*R0/(P[5]-P[4]) 5#r0)P[11]
  if flg5;P[2] P[11]/100)#f;P[11]-32*r0)P[16];P[21]+.5*r0)P[14]
  if P[41]<0 and P[5]>0;gto +3
  P[5] P[41)/100)#f;P[41]+16*r0)P[11];P[5]+8*r0)P[12]
  gto +2
  !abs(P[4]);!abs(P[5]))/100)#r0;P[4] 10*r0)P[11],P[5]+8*r0)P[12]
  set P[10],P[14],P[11),P[12]
!
  dsp "SET PLOTTER LIMITS TO MM& FOR HEADING";stp
  str P[10],P[12];csiz 1,2.5,1,0
  cplt 99, 1
  lbl "F. BLANC NAT CODE 4326  TOMPKINSP  SNT ",R$
  rsd 0,lbl "     RUN#=",P[2],"  to",P[3]
  str P[16],P[17];cplt 2/,-2
  lbl " LAP1=",f$," UNITS=",U$
  if V>0;lbl "  LAP2=",I$," UNITS=",I$
  cll 1,60," LIMIT MIN.=",P[21],"  MAX.=",P[22]
  dsp "WAIT PLOTTER FOR GRAPH";stp
  dsp "GRAPHING AXIS"
  cll 'axis
  "pen":dsp "CHANGE PEN 2,THEN (CONTINUE)";stp
  on end 4,"next"
  fxd 0;str(P[31))D$;cll 'DECIMAL'
  a)A2#
!
  "plot"
  dsp "PLOTTING:   ",I$
  csiz 1,1.5,1,0
  if not flg8;B$)P$,'EXP1')P[3];if flg5;'log'(P[3]>'P[3]
  if flg6;c$)P$;'EXP2')P[3];if flg7;'log'(P[3]>'P[3]
  cll 'plt'
  if flg7;gsb "error"
  if D[76]>P[3]*1;gto "next"
  cll 'READATA
  rsd 0;str(D[26]))D$
  cll 'DECIMAL'
  gto "plot"
!
  "next":if flg8 or V=1;gto "END"
  if 0 1;beep;dsp "INSERT FIRST DATA DISC !";stp
  sfg 8;dsp "BEGIN";4;spread 4,1
  on end 4,"next"
  gto "!RAP"
!
  "READATA":
  "This sub routine reads data from disc":
  spread 4,D[4],E[4:),K[3],U[3]
  for I=1 to 100;spread 4,r1;next 1;spread 4,F$
  for I=100 to 200;spread 4,r2;next 1;spread 4,F$
  ret
!
  'plt':
  if P[3]>P[5];A=1#;gto +5
  if P[3]<P[4];r=1)8;gto +4
  if 1=1;r1 'TEMP';gto +3
  r1#4;str r0,P[3];cplt  .5,  3;lbl P$,gto +2
  plt r0,P[3]
  ret
!
  "error":
  if T=1;r1 'TEMP';gto +9
  'EXP1'>T[1];abs(Y[1]/100#'ERV1'>)Y[1];Y[1]+Y[1]*Y[1]/Y[2]
  if flg6;'EXP2'>T[3];abs(Y[1]/100#'ERV2'>)Y[1];Y[1]+Y[1]*Y[3],Y[1]>Y[3]
  if flg5;'log'(Y[1]))Y[1];'log'(Y[2]))Y[2],'log'(Y[3]))Y[3]
  if Y[1]<P[5] or Y[1]>P[4],gto +5
  if Y[2]<P[5];P[5]>Y[2]
  if Y[3]<P[4];P[4]>Y[3]
  plt r0,Y[1],1;plt r0,Y[2],1.;plt r0,Y[3],2
  plt r0,Y[1],1
  ret
!
  "END":dsp "DONE"
  prt "     Y AXIS"
  fmt 1,f3.0," POINTS@LIMIT";wrt 16,1,A
  fmt 1,f3.0," POINTS@LIMIT",/,wrt 16,1,B
  wait 1000
  dsp "END";pen;end
!
  "DECIMAL":
  "This sub routine converts run # in D[1] to decimal"
  0)r1;fxd 4
  for H=1 to val(D[1],5));r1+G(H)>r1;next H
  r1)val(G$(6,6),7)+val(G$(8,9))/2.4+val(G$(3,4))/144)>r0
  ret
!
  "axis":
  "This sub routine draws axis and tic marks":
  for A=1 to 2
  plt P[2],P[5], 2;plt P[2],P[4];plt P[1],P[4]
  plt P[1],P[5];plt P[2],P[5],-1
  next A
  if flg3 and P[21]<.01;plt P[1],-2, 2;plt P[2],-2, 1
  P[4])P[2]1;3)P[2,4);P[2])P[2]1,9)P[2,9]
  fxd 0;deg;str(P[7]))D$;cll 'ROUND 0#F
  for I=P0 to P[2]1 by P[7]
  prnd(I#24,.5))P[36]
  if frc(P[36]/P[18])=0;csiz .3,.2,1,P[2,-1;gto +4
  if frc(P[36]/P[19])=0;csiz 1.9,.1,1,P[2,9],gto +3
  if frc(P[36]/P[20])=0;csiz .6,.2,1,P[2,9],gto +2
  gto +2
  str I,P[23];cplt  .3,P[24];lbl "I"
  next I
  if P[23]=P[5];gto +2
  P[5])P[23];180)P[29],gto -9
  if flg3;gto +12
  P[11)P[23];60)P[24],P[16])P[25];P[16])P[26]
  P[17)P[27];P[5])P[28];P[19)rd,.2/60)P[29]
  for I=P0 to P[20] by P[27]
  if prnd(rr(I/P[25]), 5)=0;csiz 2.5,.2,1,P[29],gto +3
  if prnd(rr(I/P[26]), .5)=0;csiz 1.2,.2,1,P[29],gto +2
  csiz .5,.2,1,P[29]
  str P[23],I;cplt  .3,P[24];lbl "I"
  next I
  if P[23]=P[2];gto +2
  P[23])P[23],90)P[29];gto -7
```

```
264: ret
265: P[11]P[23];276)P[24];P[22])P[24]
266: P[21)rd;if P[21](=0;.01)rd
267: for I=r0 to P[24] by r6
268: if I-r0#10,1)r0;gto -1
269: ]JL;if flg6;-1)L
270: "log"(L))L
271: csiz .5,2,1,P[29]
272: if I=r];csiz .5,2,1,P[29]
273: if I=5*r6;csiz 1.2,2,1,P[29]
274: jtr P[23],I;cplt .3,0;lbl "1"
275: next I
276: if flg6;gto +2
277: sfg 6;ans(P[21])P[24];gto -11
278: if P[23]=P[2];gto +2
279: P[2])P[2](1,96)P[29];P[22])P[24];cfg 6;gto -13
280: ret
281:
282: "log":
283: "returns log of number":
284: if P[21]<0;gto +3
285: if abs(p1)<.61;.01)p1
286: if p1<0; -1*log(abs(p1)))p1;gto +5
287: if p1<-6;beep;dsp "10e of (L or -0)";wait 500;le 12)p1
288: log(p1))p1
289: ret p1
290:
291: "ROUND UP":
292: "Rounds of run# to next even .6 min. and returns":
293: "new run number in u$ and decimal number in r0":
294: val(D$[8,11])r0
295: if r0mod.6;r0/100)r0;(int(r0)+int((fract(r0)+.7)/.6)*.6)r0
296: str(r0)*1e3;rnd(2)*$11;if ro(1.000;"0"A$)E$
297: if r0<1e6;"66"&E$)E$
298: if r0=0;"0000"E$
299: E$)D$[8,11];cll "DECIMAL"
300: ret
301:
302: "next":
303: beep;dsp "INSERT NEXT DISC";stp
304: msgn "METDAT",4;fread 4,1
305: on end 4,"next"
306: rad 0;cll "READATA ";str(D[26])D$;cll "DECIMAL"
307: )D
308: gto "plot"
309:
310: "---------- FUNCTIONS ---------- ---":
311:
312:
313:
314:
315:
316:
317:
318:
319:
320:
*8402
```

```
21:
22: "This program reads raw and calculated data previously recorded"
23: "on disc and plotts specified data versus run number"
24: "with manually entered parameters. Variables"
25: "or expressions accepted. 2 expressions can be plotted on same graph"
26: "Y axis scale can be Log or Lin. Plots can be (line or point)".
27: "Values that exceed limits are not plotted"
28: "Any value or expression can be used to inhibit plotting of data point"
29: "Positive or Negative values can be plotted on log scale".
30: "Values less than .01 are set= .01 for log scale".
31: "Above default zero value can be changed".
32: "for HP 7470A PLOTTER":
33:
34: "Standard error bars, EXP 1 & 2 plotted with variable offset":
35: "(EXP 1: RUN#-offset, EXP 2: RUN#+offset)":
36: "left or right edge of axis may be omited for matrix plots".
37: "NOTE: This version is for final printers copy ":
38: "profile and bulk data are plotted on seperate sheets":
39:
40: "D contains the final printout values".
41: "E  contains entered month(1), day(2); julian day(3,4)"
42: "   temporary storage for D[1]([5],[6]) and D[2]([7],[8])"
43: "   averaging period(7); Diversor(10), Parity error(11)"
44: "   temp range(12),  F[13]=sampling rate for Knullenburg".
45: "R contains the averaged digital data"
46: "U  contains the converted analog data"
47: "Initializing data follows":
48: dim D[0:36],E[13],R[16,2],U[6:9],G[13],F[32],T[6]
49: dim P$[20],D$[20],T$[20],F$[20],M$[10],I$[13],G$[12,3],A$[30]
50: dim B$[11,C$[1],P$[11],R[16],S[56]
51: cfg 1,2,3,4,5,6,7,8,9
52: "NONE"[M$]1*$]E$)I$
53: files Data,TIDIT,(M-DAP,METDAT;sread 1,64,G[8]
54: ent "A MAJ. BEGINING RUN NUMBER...",P[11],P[1])P[7,.1)[3]1
55: ent "A AXIS ENDING RUN NUMBER...",P[2],P[12])P[10]P[32]
56: "ASK":fread 4,1,fxd 0;dsp "FIRST RUN# TO PLOT =",P[31];ent "",P[31]
57: if flg1;gto "MAIN"
58: dsp "LAST RUN# TO PLOT =",P[3.];ent "",P[32]
59: ent "EXPERIMENT DATE ?  ",A$
60: ent "X AXIS MAJOR TIC MARK (HOURS)  ",P[16]
61: ent "INTERMEDIATE (MINOR)  ",P[17]
62: ent "MINOR (HOURS)  ",P[26]
63: ent "Y AXIS LIMIT (MINIMUM)  ",P[4],P[14];P[24]
64: ent "Y AXIS LIMIT (MAXIMUM)  ",P[5],P[15])P[22]
65: ent "HOW MANY EXPRESSIONS (1 or 2)",V
66: ent "VARIABLE NAME EXP1 (R1,MIR R1,etc)  ",Y$
67: ent "UNITS (EXP1)  ",D$;if V<>;gto +4
68: ent "VARIABLE NAME EXP2 ",E$
69: ent "UNITS (EXP2)  ",I$
70: ent "ENTER OFFSET (minutes) ",O
71: ent "Y AXIS (log or Lin) ?",F$
72: if F$="log";stg 3
73: .01)Z;if flg3;gto +4
74: ent "TIC MARK (Y AXIS) (MAJOR)  ",P[6]
75: ent "TIC MARK (INTERMEDIATE)  ",P[16]
76: ent "TIC MARK MINOR)  ",P[17];gto +2
77: if P[23]<>0;fit 1;dsp "DEFAULT ZERO="&str(Z),ent "",Z;fxd 0
78: ent "GRAPH AREA (1=689, 2=680)  ",r6
79: if r6=1;gto +3
80: if r6=2;sfg 5;gto +2
81: gto -3
82: ent "TYPE OF PLOT (Line or Point):",F$;cap(F$)]F$
83: if F$[1,1]="L",gto +3
84: sfg 4;ent "CHARACTER FOR POINT (EXP1):",F$
85: if V>1;ent "CHARACTER FOR POINT (EXP2)  ",L$
86: 0)A;ent "UNIT AXIS (Right, Left, No):",F$;cap(F$)]F$
87: if F$[1,1]="R",1)A
88: if F$[1,1]="L",2)A
89: "N"]F$;ent "CHANGE EXPRESSIONS (yes or no)",F$;cap(F$)]F$
90: if F$[1,1]="N";gto "ERV"
91: dsp "ENTER EXPRESSION BELOW THEN (cont G)";stp
92:
93: "EXP1" are Y axis".
94: "and add to all page 3 variables":
95:
96: "EXP1":ret r%
97:
98: "EXP2":ret r166
99:
100.
101.
102.
103.
104
105: "ERV" ent "ERROR BARS (Yes or No):",F$;cap(F$)]F$
106: if F$[1,1]="N",gto "TRAP"
107: sfg 7;ent "CHANGE ERROR VARIABLES (Yes or No)",F$;cap(F$)]F$
108: if F$[1,1]="N",gto "TRAP"
109:
110: dsp "ENTER EVR1& FOR THEN (cont 166)";stp
111: "EVR1 is for EXP1, EVR2 is for EXP2":
112:
113: "ERV1" ret r%
114:
115: "ERV2":ret r314
116:
117:
118:
119:
120: "TRAP"
121: "Inhibits plotting if expression if true".
122: ent "CHANGE TRAP EXPRESSION (Yes or No)",F$;cap(F$)]F$
123: if F$[1,1]="N",611,gto "MAIN"
124: 611,ent "CHANGE EXPRESSION (Yes or No)",F$;cap(F$)]F$
125: if F$[1,1]="N",gto "MAIN"
126: dsp "IF EXPRESSION IS NOT 0, PLOTTING IS INHIBITED. (cont)",stp
127: dsp "ENTER EXPRESSION BELOW THEN (cont)1U2",stp
128:
129: "TRAP":ret r46)./ or r466 /
130:
131.
132.
133.
134.
135: "MAIN",dsp "FINDING BEGINING RUN NUMBER"
136: "This routine finds begining data run":
137: cfg 1
138: cll "READATA"
139: if D[26]<P[31];dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000,sfg 1
```

```
140: if flg1,gto "ASK"
141: if D[26]@abs(P[31]),gto "MAIN"
142: if not flg8,gto "fil"
143: fxd 0;str(D[26])D$;cll 'DECIMAL'
144: dsp "CHANGE PEN (UPEN (cont)",stp
145: gto "plot"
146:
147: "FIN/O" resave "SAMPL4",dsp "SAMPL4 resaved";stp
148: "-- -- ---- End of Main Program ---- ---- ---";
149:
150:
151:
152:
153: "-- -- -- -- ---- DRAW AXIS AND PLOT-- - - - --- ";
154:
155:
156: "TTT":
157: fxd 0;str(P[1])D$
158: cll 'DECIMAL'
159: r0)P[1]
160: fxd 0,str(P[2])D$
161: cll 'DECIMAL'
162: r0)P[2]
163: if flg2,gto "pen"
164: if flg3;'log'(P[4])>P[4];'log'(P[5])>P[5]
165: (P[2]-P[1])/210)r0;P[1]-4.5#r0)P[10];P[2]+4.5#r0)P[14]
166: if flg5,(P[2]-P[1])/160)r0;P[11-32#r0)P[16];P[2]+6.5#r0)P[14]
167: if P[4]<1 and P[5])0,gto +3
168: (P[5]-P[4])/166)r0;P[4]-16#r0)P[11];P[5]+8#r0)P[15]
169: gto +2
170: (abs\P[4])+abs(P[5]))/160)r0;P[4]-16#r0)P[11];P[5]+8#r0)P[15]
171: scl P[11],P[14],P[11],P[12]
172:
173: ynt "READING ?",F$,cap(F$)>s;if F$[1,1]="N";gto +11
174: dsp "SET LIMIT TO MAX. FOR READING";stp
175: ltr P[10],P[12],csiz 1,2.5,1,0
176: cplt .7, 1
177: lbl "T. BLANC NBL CODE 4&2% CONST/DUP SNJ ",M$
178: fxd 0,lbl "     RUN#=",P[2]," TO",P[10]
179: ltr P[10],P[12],cplt .7,.7
180: lbl "Expir",r$," UNITS= ",M$
181: if V>1,lbl "  Expir=",F$," UNITS=",I$
182: fit 1,lbl ", Limit MIN.=",P[11]," MAX =",P[12]
183: dsp "RESET PLOTTER FOR GRAPH";stp
184: dsp "DRAWING AXIS"
185: cll 'axis'
186: "pen":dsp "CHANGE PEN ?,then (CONTINUE)",stp
187: on end 4,"next"
188: fxd 0,str(P[31])D$;cll 'DECIMAL'
189: wAJB
190: sfg 9
191: fxd 6,str(DI,61)D$;cll 'DECIMAL'
192: 'plot':
193: dsp "PLOTTING   ",D$
194: csiz 1,1.5,1,0
195: if not flg8,B$)P$,'EXP1'P[3];if flg3,'log'(P[3]))P[3]
196: if flgH,L>P$,'EXP2'P[3];if flg3,'log'(P[3]))P[3]
197: cll 'plt'
198: if flg7,gsb "error"
199: if D[26])=P[3],gto "nextv"
200: cll 'READATA'
201: fxd 6;str(D[26])D$
202: cll 'DECIMAL'
203: gto "plot"
204:
205: "nextv":if flg8 or V=1;gto "END"
206: if B=1;beep;dsp "INSERT FIRST DATA DISC !";stp
207: sfg 8;msgn "MeIDAT",4;rread 4,1
208: on end 4,"next"
209: cll 'nextp'
210: gto "INAP"
211:
212: "READATA":  ____
213: "This sub routine reads data from disc":
214: wread 4,U[8],E[8],K[8],U[8]
215: wread 4,K[8],F$;for I=1 to 108;R[I])rI;next I
216: wread 4,K[8],r$;for I=1 to 108;R[I])r(I)*108);next I
217: wread 4,S[8]
218: gto +2
219: if D[26]=7965651200 and D[26]<7965870000;D[26]+1e4)D[26]
220: ret
221:
222: "nextp":dsp "CHANGE PAPER",stp
223: for I=1 to 2
224: plt P[2],P[5],-2;pen;plt P[2],P[4],-2;pen
225: plt P[1],P[4],-2;pen;plt P[1],P[5],-2;pen;plt P[2],P[5],-1
226: next I
227: ret
228:
229: "plr":
230: if P[3])P[5];A=1)W;gto +5
231: if P[4)(P[4];D=1)B;gto +4
232: if T=1;if 'TEXP';gto +3
233: if flg4;ltr r0,P[3];cplt -.5,-.3;lbl P$;gto +2
234: plt r0,P[3]
235: ret
236:
237: "error":
238: if T=1;if 'TEXP';gto +9
239: 'EXP1')Y[1];abs(Y[1]/100@'ERV1'))L;Y[1]+L)Y[2];Y[1]-L)Y[3]
240: if flgH;'EXP2')Y[1];abs(Y[1]/100@'ERV2'))L;Y[1]+L)Y[2];Y[1]-L)Y[3]
241: if flg3;'log'(Y[1])Y[1];'log'(Y[2])Y[2];'log'(Y[3])Y[3]
242: if Y[1])P[5] or Y[1]<P[4];gto +5
243: if Y[2])P[5];P[5])Y[2]
244: if Y[3]<P[4];P[4])Y[3]
245: for I=1 to 2;plt r6,Y[1],1;plt r0,Y[2],1;plt r6,Y[3],2;next I
246: plt r0,Y[1],1
247: ret
248:
249: "END":dsp "DONE"
250: prt "   Y AXIS"
251: fmt 1,F3.0," POINTS)LIMIT";wrt 16,1,4
252: fmt 1,F3.0," POINTS(LIMIT",/;wrt 16,1,8
253: wait 1666
254: dsp "END",pen;end
255:
256: "DECIMAL":
257: "This sub routine converts run # in (D$) to decimal":
258: fxd 0;D0)F$
259: 0)r6;fxd 4
260: for H=1 to val(F$[4,5]);r0+(H-1)r0;next H
261: r0+val(F$[6,7])+val(F$[8,9])/24+val(F$[10,11])/1440)r0
262: if flg9 gsb "offset"
263: ret
264:
265: "offset":
266: "offsets run# in r1 for -int"
267: if not flg8;r0-681/1440)r0
268: if flg8,r0+681/1440)r0
269: ret
270:
271: "axis":
272: "This sub routine draws axis and its marks".
273: for A=1 to 2
274: jmp 20A-1
275: plt P[2],P[5],-2;plt P[2],P[4],plt P[1],P[4]
276: plt P[1],P[5],plt P[2],P[5],-1,gto +4
277: plt P[2],P[4],-2,plt P[1],P[4];plt P[1],P[5];plt P[2],P[5],-1
278: gto +2
279: plt P[1],P[5],-2,plt P[2],P[4];plt P[1],P[4],-1
280: next A
281: if flg2 and P[3]<>1,'log'<>1)r6;plt P[1],r6,-2,plt P[2],r6,-1
282: P[4]-P[3])/2)P[24];P[2]-P[3])/28),#3)/29)
283: fxd 6,dig;str(P[2])D$;cll 'ROUND DEC'
284: for I=-1 to P[24] by -1/24
285: prod\(#24,.5)P[36]
286: if frc<pi3617/P[10])-6;csiz .5,1,P[2],1,gto +4
287: if frc<P[30)/P[10])-6;csiz 1.2,1,P[2],1,gto +3
288: if frc<P[36]/P[10])-6;csiz .5,1,P[2],1,gto +1
289: gto +2
290: ltr 1,P[25];cplt -.5,P[24],lbl "I"
291: next I
292: if P[25]<P[5];gto +2
293: (P[5]-P[25])/80)P[29],gto -5
294: if flg3;gto +15
295: (P[3]-P[25])/80)P[29];P[3])P[25]-P[29])P[30]
296: P[2]/P[25]/P[5])P[31],P[4]/r0),-r0)P[32]
297: if A#2;gto +2
298: P[25]-P[25],90)P[29]
299: for I=r0 to P[29] by P[29]
300: if prod\frc(I/P[25]),.5)-.5 and frc(I-2.5/P[25])-.5)<>0,gto +3
301: csiz .5,.5,1,P[29]
302: ltr P[2],I;cplt -.5,P[24],lbl "I"
303: next I
304: if A,gto +3
305: if P[25]=P[2],gto +2
306: P[25]P[25],90)P[29]
307: if I=r0,gto +2
308: P[3]-P[31]>P[3];P[3]+P[31]<P[4]
309: if P[3]=P[4],gto +2
310: if P[31]<>0,if flg6;-1)
311: 'log'(-P[3]
312: csiz .5,.7,1,P[29]
313: if I=P[3],csiz 2.5,2,1,P[29]
314: if I=r0,csiz 1.2,2,1,P[29]
315: ltr P[25],L;cplt -.5,0,lbl "I"
316: next I
317: if flg6,gto +2
318: sfg 0;abs(P[31])>1[24],gto -15
319: if A;gto +3
320: if P[25]=-P[5],gto +2
321: P[25]P[25],90)P[29],P[25]P[24],clg 6,gto -10
322: ret
323:
324: "log":
325: "returns log of number".
326: if P[-1])0;gto +3
327: if abs\p1)<2,2)p1
328: if p1<0;-log(-Z)+ log(abs\p1))/.01,gto +3
329: if p1<1,beep,dsp "LOG of <= or =0",wait 500,1>.2)p1
330: log(p1))p1
331: ret p1
332:
333: "ROUND Int":
334: "Rounds of Fun# to next even 10 min and returns
335: "new run number in v$ and decimal number in Z#"
336: val(D$[1,11])r6
337: if round30,r6/100)r0;(centr6*(int(r6/100)*100+r0
338: str(rd)>F$;F$[2,2]F$[1];if r0<1000;"0"\F$
339: if r0<100;"00"\F$
340: if r0=0,"0000"\F$
341: F$)D$[8,11];cll 'DECIMAL'
342: ret
343:
344: "next":
345: beep;dsp "INSERT NEXT DISC!";stp
346: msgn "MeIDAT",4;rread 4,1
347: on end 4,"next"
348: fxd 0;cll 'READATA';str(D[26])D$;cll 'DECIMAL'
349: )D
350: gto "plot"
351:
352: "--- - - --- FUNCTIONS - - - - - -";
353:
354:
355:
356:
357:
358:
359:
360:
361:
362:
363:
364:
365:
366:
367:
#8260
```

```
 20: "COPY"
 21:
 22: "This program copies raw and computed data";
 23: "from drive 0 to drive 1 and allows corrections";
 24: "or modifications to data copied";
 25:
 26: "  A  contains the averages of the data the Monitor Labs";
 27: "D contains the final printout values";
 28: "E  contains entered month(1), day(2); julian day(3),(4)";
 29: "    temporary storage for U(11)(5),(6)) and U(12)(7),(8))";
 30: "    averaging period(9); Divesor(10); Parity error(11)";
 31: "    temp range(12),  E(13)=sampling rate for Knullenburg";
 32: "G  contains the no. of days in each month; temp day(13)";
 33: "G$ contains the names of each month";
 34: "@  contains the line number for chaining subprograms";
 35: "U  contains the converted analog data";
 36: "K contains the averaged digital data";
 37: "Initializing data follows";
 38: dim A(8:19,3),E(13),G(13),G$(4,3)
 39: dim U(0:19),T$(49&),U(0:30),P(5),K(10,2)
 40: dim F$(7),B$(26),T$(4)
 41: "":10$,"":F$
 42: drive 1;open "METDAT",1566
 43: drive 0;files DATE,TIDET,CW OAP,METDAT;sread 1,G$,G(*);sread 2,T$
 44: asgn "METDAT",9,1,1
 45: on end 4,"END"
 46: "MAIN":sread 4,D(*),E(*),K(*),U(*)
 47: for I=1 to 108;sread 4,r1;next I;sread 4,F$
 48: for I=109 to 216,sread 4,r1;next I;sread 4,F$
 49: gsb "CHANGE"
 50: fxd 6;prt D(26)
 51: sprt 9,D(*),E(*),K(*),U(*)
 52: for I=1 to 108;sprt 9,r1;next I;sprt 9,F$
 53: for I=109 to 216,sprt 9,r1;next I;sprt 9,F$
 54: gto "MAIN"
 55: "END":dsp "DONE";end
 56:
 57: "CHANGE":
 58: "Enter expressions below, to modify data";
 59: D(20)=10@D(20)
 60: if D(26)=796506193&;796561193&)D(20)
 61: ret
 62: .061
```

```
 20: "MEANL":
 21:
 22: "This program reads raw and calculated data previously recorded",
 23: "on disc and computes MEAN and STANDARD DEVIATION";
 24: "Values can be variables or expressions";
 25:
 26: "D contains the final printout values";
 27: "E  contains entered month(1)), day(12)); julian day(13),(14))";
 28: "    temporary storage for U(11)(5),(6)) and U(12)(7),(8))";
 29: "    averaging period(9); Divesor(10); Parity error(11)";
 30: "    temp range(12),  E(13)=sampling rate for Knullenburg",
 31: "K contains the averaged digital data";
 32: "U  contains the converted analog data";
 33: "Initializing data follows";
 34: dim D(0:36),E(13),K(10,2),U(0:19),G(13),P(5)
 35: dim A$(15),B$(20),C$(10),F$(7),G$(12,3),M$(15),S$(15)
 36: "PRINTER":700)P
 37: cfg 1,2
 38: "NONE")B$)C$)F$
 39: files DATE,TIDET,CW OAP,METDAT;sread 1,G$,G(*)
 40: "ASK":sread 4,1;ent "ENTER BEGINING RUN NUMBER ...",P(1)
 41: if flg1;gto "MAIN"
 42: ent "ENTER ENDING RUN NUMBER:...",P(2)
 43: ent "EXPERIMENT DATE ?  ",A$;cap(A$))A$
 44: ent "ENTER EXPRESSION (R1,R10 R1,etc)...",B$;cap(B$))B$
 45: ent "UNITS: ",C$;cap(C$))C$
 46: ent "ENTER OR CHANGE EXPRESSION? ",F$;cap(F$))F$
 47: if F$[1,1]="Y";gto -3
 48: on end 4,"END"
 49: gto "MAIN"
 50:
 51: dsp "ENTER EXP1 BELOW THEN (cont 40)";stp
 52: "Add 108 to all page 3 variables";
 53:
 54: "EXP1":ret r5/r6
 55:
 56:
 57:
 58:
 59:
 60:
 61: "MAIN":dsp "FINDING BEGINING RUN NUMBER"
 62: "This routine finds begining data run";
 63: cfg 1
 64: cll 'READATA'
 65: if D(26))P(1);dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000;stg 1
 66: if flg1;gto "ASK"
 67: if D(26)#abs(P(1));gto "MAIN"
 68:
 69: cll 'TITLE'
 70: 0)A)0)N
 71: "mean".
 72: "Compute mean and standard deviation";
 73: on end 4,"END"
 74: /EXP1*)X
 75: fxd 6;dsp "COMPUTING!  RUN# ",D(26)
 76: N+1)N;A+X)A,0+X^2)D
 77: cll 'first'
 78: cll 'READATA'
 79: if D(26))P(2);gto "END"
 80: gto -6
 81:
 82: "READATA".
 83: "This sub routine reads data from disc"
 84: sread 4,D(*),E(*),K(*),U(*)
 85: for I=1 to 108;sread 4,r1;next I;sread 4,F$
 86: for I=109 to 216;sread 4,r1;next I;sread 4,F$
 87: ret
 88:
 89: "END":
 90: "N"}F$;ent "MORE DATA TO RUN? ",F$;cap(F$))F$
 91: if F$[1,1]="N";gto +4
 92: dsp "INSERT NEXT DISC! ";stp
 93: asgn "METDAT",4;sread 4,1
 94: cll 'READATA';gto "mean"
 95: wtb 2,12
 96: dsp "DONE";end
 97:
 98: "TITLE":
 99: B$)D$(1,26);C$)C$(1,16)
100: fmt 1,18x,"T. BLANC  NRL CODE 4326  SNI ",2;wrt P+1;wrt P+1
101: fmt 1,11x,"EXPRESSION ",c20,/x,"UNITS: ",c10;wrt P+1,B$,C$
102: fmt 1,11x,"BEGINING RUN# =",f11.0,2;wrt P+1,P(1)
103: fmt 1,2x,"ENDING RUN# =",f11.0,22;wrt P+1,P(2)
104: fmt 1,6x,"RUN#",7x,"M31",7x,"M32",5x,"M31/M32",5x,"MEAN",wrt P+1
105:
106:
107: ret
108:
109: "list".
110: M/N)M,\(D/N-M^2))S
111: fmt 1,3x,f11.6,5f16.6
112: wrt P+1,D(20),F5,M,A,M
113: ret
114:
115: "  ---  ---  functions  ---  ---  ";
116:
117:
118:
119:
120:
121:
122:
123:
124:
125:
126:
127:
128:
129:
130:
.031:32
```

```
"SANLST":
!
"this program reads raw and calculated data previously recorded"
"on disc, does specified computations and"
"prints out specified values":
!
"D contains the final printout values"
"C  contains entered months(1), day(2); julian day(3),(4)":
"   temporary storage for D(1)(51,61) and D(2)(71,80)":
"   averaging period(2); Diversor(13); Purity error(11)":
"   temp range(12),  C(13)=sampling rate for Knollenburg":
"R contains the averaged digital data":
"B  contains the converted analog data":
"Initializing data values".
dim D(6:361,E[13),R[16,2],U[6:191,G[131,P[5]
dim M$[51,F$[7],G$[13,3]
"PRINTER":760P
cfg 1,2
files DAT,TIDIT,LW DAP;MEMDAT;sread 1,04,G[*]
"MEM":sread 4,1;ent "ENTER BEGINNING RUN NUMBER ...",P[1]
if P[1],=0 "main"
ent "ENTER ENDING RUN NUMBER....",P[2]
ent "EXPERIMENT Date ( ",m$ : ap(A$))A$
!
!
!
on end 4,"END"
"main":dsp "ENTERing BEGINNING RUN NUMBER"
" this routine finds beginning data run":
cfg 1
cll "RFNUMTA"
if D[1,1=[1],dsp "BEGINING RUN NUMBER NOT FOUND";wait 5000;cfg 1
if P[1],gto "main"
if D[1,1=P[1],gto "END"
!
!  !!!.)
cll "heading"
on end 4,"END"
"RAUN
"compute":
!
!
!
rem 6;dsp "COMPUTING  RUN# ",D[26]
cll "list"
cll "RFNUMTA"
if D[2,1/P[2],gto "END"
gto "compute"
!
"RFNUMTA":
"this sub routine reads data from disc":
sread 4,D[*],C[*],K[*],U[*]
for I=1 to 160;sread 4,r[;next I;sread 4,F$
for I=109 to 216;sread 4,r[;next I;sread 4,F$
ret
!
"END":
"N"]F$;ent "MORE DATA TO RUN? ",F$,cap(F$)]F$
if F$[1,1]="N";gto "6
dsp "INSERT NEXT DISC ";stp
asgn "MEMDAT",4;rread 4,1
cll "RFNUMTA"
on end 4,"END"
gto "compute"
wtb P,32
dsp "DONE",end
!
"Title":
fmt 1,35x,"I. BRAG  ARA CODE 4320  SNI ",/;wrt P+1,wrt P,A$
fmt 1,11x,"BEGINING RUN# ",f11.0,2/;wrt P+1,P[1]
fmt 1,2/,"ENDING RUN# ",f11.0,2/;wrt P+1,P[2]
ret
!
"heading":
fmt 1,9x,"RUN#",D,"DP1FCAL",4x,"DP2FCAL",/;wrt P+1
fmt 1,4x,"WTRCAL",4x,"WSITC",6x,"WDVEC",/;wrt P+1
!
!
ret
!
"list":
fmt 1,6/,f11.6,5f11.4
wrt P+1,D[20],r22,r23,r24,r25,r26
!
ret
!
"ENDU":rsave "SANLST";dsp "SANLST RE SAVED";end
!
! -           functions      -- -- "
!
!
!
```

```
"(3 ft &&2"
"This program reads data from table ESC1 and plots Escarpment"
"height versus distance on 2 (turn) graph"
"for hp 2225A PLOTTER"

"note 1  reset plotter then move X limit + & - 1/16 in."
"note 2  use #1 pen with #d needle"

dim F$[2],D$[21],I$[10],H$[10],G$[12],X$,M$[26],B$[26],C$[36],E$[1]
dim P[33],E[25],J[1,6]13
data 0,0,11,0,24,0,21,0,5,0,0[3],0,270,0[4],285,0[5],360,0[6],315,0[7],330,0[8]
data 345,0[2],.000001,0[10],1,0,0[11],.0174533,45,0[13]
cfg 1,2,3,4,5,6
"NAME ";key,M$[6,9]$
files ESC1
creed 1,1;creed 1,E[*]
ent "EXPERIMENT DATE ?",C$;cap(C$))C$
ent "ENTER Y AXIS LIMITS (MINIMUM)...",P[3];P[3]>P[27]
ent "ENTER Y AXIS LIMIT (MAXIMUM)...",P[4];P[4]>P[28]
ent "TIC MARK (Y axis) (MAJOR)...",P[5]
ent "TIC MARK (INTERMEDIATE): ",P[18]
ent "TIC MARK (MINOR): ",P[19]
ent "VARIABLE NAME (RI,WSB,etc)...",A$
ent "UNITS (Y axis)...",H$
ent "ENTER X AXIS LIMIT (MINIMUM)...",P[7];P[7]>P[27]
ent "ENTER X AXIS LIMIT (MAXIMUM)...",P[8];P[8]>P[30]
ent "TIC MARK (X axis) (MAJOR)...",P[9]
ent "TIC MARK (INTERMEDIATE): ",P[20]
ent "TIC MARK (MINOR): ",P[21]
ent "VARIABLE NAME (RI,WSB,etc)...",B$
ent "UNITS (X axis)...",I$
"again":ent "TYPE OF PLOT (line or point)...",L$;cap(F$)>E$
if L$[1,1]="L";cfg 4;gto *4
sfg 4;ent "ENTER CHARACTER FOR POINT: ";I$
ent 1;disp "CHARACTER SIZE="&str(S)&" :"
ent "",S
"N":%
ent "WIND DIRECTION :",R6
for W=1 to 13;if DLW1$r0,next W
if W=13;gto -2
gto "FIT"
"ENTER" receive "ESCPLT";dsp "ESCPLT received";stp


"111":if flg1;gto "pen"
if P[3]<0 and P[4]>0;gto *3
(P[4]-P[3])/166)r6;P[3]-12#r6)P[11];P[4]+12#r6)P[12]
gto *2
(abs(P[3])+abs(P[4]))/166)r6;P[3]-12#r6)P[11];P[4]+12#r6)P[12]
if P[7]<0 and P[8]>0;gto *3
(P[8]-P[7])/166)r6;P[7]-8#r6)P[13];P[8]+8#r6)P[14]
gto *2
(abs(P[7])+abs(P[8]))/166)r6;P[7]-8#r6)P[13];P[8]+8#r6)P[14]
scl P[13],P[14],P[11],P[12]

dsp "SET PLOTTER LIMITS TO MAX FOR HEADING";stp
ltr P[13],P[12],csiz 1,2.5
txt 0,plt 4,0,1
lbl "H. P.-ANC NRL (UDA 4326  EQUIT/DSP  SNI ",C$
ltr P[13],P[12];cplt 7,-2
lbl "  T axis:",A$," (UNITS= ",H$
lbl ", LIMIT MIN.=",P[27]," MAX.=",P[28],")"
lbl " R axis= ",B$," (UNITS= ",Y$
lbl ", LIMIT MIN.=",P[29]," MAX.=",P[30],")"
ltr P[13],P[12],cplt 6,-3
dsp "IF NO LEGEND THEN GOTO";pty0

dsp "SET PLOTTER FOR GRAPH (note 1)";stp
dsp "DRAWING AXIS"
for A=1 to 2
plt P[11],P[4],-2;plt P[11],P[3];plt P[7],P[3]
plt P[7],P[4];plt P[11],P[4],-1
next A
"LL" lbl
lbl "lbl"
"pen" dsp "CHANGE PEN 2, then CONTINUE";stp

"plot"
lbl "plot"
lbl 0;dsp "PLOTTING"
csiz .3,.1,0
lbl "lbl"
if L$[1,1]="L";cplt ,,0;gto *4
if sfg(4)=0;gto *3
cplt I,0;gto *4
"L":plt X,Y;cplt .3, .3;lbl E$,gto *2
plt X,Y

if A=2;gto "next"
gto "plot"

"E":!
for I=1 to dim(A$[*])
if I=6;gto *2
lbl M$[I]
if I=1 or I=11 or I=16;dtr 90-ang(I,M);dtr 0
next I

"END"
plt 0,0,0
lbl "POINT=",str(I),"  ",wrt 16,1,L
lbl "POINT=",str(I),",",wrt 16,1,0
dsp "END";pen;end

"fit"
fxd 1,deg
if flg5;gto *11
dim P[33]
for I=P[1] to P[6] by P[11]
if prod(frc(P[7]/I),5)=0;csiz .3,2,1,P[24];gto *3
if prod(frc(P[7]/I),5)=.5,csiz 1.9,2,1,P[24];gto *2
csiz .5,2,1,P[24]
ltr I,P[3],cplt -.3,6,lbl "1"
next I
if P[11]=P[12];gto *2
P[14]-P[13],1000)P[24];gto -2
ent
for P[5]=P[13],P[14],P[36])P[26]
P[27]=I,if P[27]<P[3],P[3]=0
for I=P[7] to P[26] by P[11]
if I=P[7];gto *2
if prod(frc(I/P[18]),-5)=0;csiz 1.2,2,1,P[24];gto *2
csiz .5,2,1,P[24]
ltr P[25],I,cplt -.3,6,lbl "1"
next I
if P[25]=P[8];gto *2
P[8])P[25];90)P[24];gto -2
ret
270)P[24];P[7])P[25];P[28])P[26]
P[27])=0;if P[27]<0;.01)=0
for I=r6 to P[26] by r6
if I=r0#10;I>0;gto -1
IDL;if flg6;-IDL
call 'log'
csiz .5,2,1,P[24]
if I=r0;csiz 2.5,2,1,P[24]
if I=5r0;csiz 1.2,2,1,P[24]
ltr P[25],I,cplt -.3,0;lbl "1"
next I
if flg6;gto *2
sfg 6;abs(P[27])>P[26];gto -11
if P[25]=P[8];cfg 6;gto *2
P[8])P[25];90)P[24];P[28])P[26];cfg 6;gto -13
ret

"next":sfg 1
pen
ent "P[0] MORE DATA (yes, no)?",F$
pen
if cap(F$[1,1])="N";gto "END"
gto "again"

#2.954
```

```
"WSAPP       (3-12-86)":

"This program computes Wind Speed Amplification factor (WSAF)":
"with Specified Escarpment Ratio (RDIM) and plots WSAF vs. NEH":
"Scale can be (log or lin). Plots can be (line or point)":
"Values that exceed limits are not plotted":
"Positive or Negative values can be plotted on log scale.":
"Values less than .01 are set= .01 for log scale":
"for HP 7225A PLOTTER":

dim P[31]
dim F$[7],D$[26],Y$[10],H$[16],G$[12,3],M$[26],B$[26,1],C$[36],L$[5]
cfg 1,2,3,4,5,6
"NONE"[A$,H$)B$)?$
ent "EXPERIMENT DATE ?",L$;cap(L$)]C$
ent "ENTER Y AXIS LIMITS (MINIMUM)...",P[13];P[13]*P[7]
ent "ENTER Y AXIS LIMIT (MAXIMUM)...",P[14],P[14]*P[7]
ent "Y AxIS (log or lin) ?...",F$;cap(F$)]F$
if F$="LOG";sfg 2;gto +4
ent "TIC MARK (Y axis) (MAJOR)...",P[15]
ent "TIC MARK (INTERMEDIATE): ",P[18]
ent "TIC MARK (MINOR): ",P[19]
ent "VARIABLE NAME (WI,WSB,etc)...",A$
ent "UNITS (Y axis)...",HF
ent "ENTER X AXIS LIMIT (MINIMUM)...",P[7];P[7]*P[29]
ent "ENTER X AXIS LIMIT (MAXIMUM)...",P[28];P[28]*P[26]
ent "X AXIS (log or lin) ?...",F$;cap(F$)]F$
if F$="LOG";sfg 3,gto +4
ent "TIC MARK (X axis) (MAJOR)...",P[9]
ent "TIC MARK (INTERMEDIATE): ",P[20]
ent "TIC MARK (MINOR): ",P[21]
ent "VARIABLE NAME (RI,WSB,etc)...",B$
ent "UNITS (X axis)...",Y$
ent "TYPE OF PLOT (line or point)...",L$;cap(L$)]L$
if L$[1,1]="L";gto +2
ent "ENTER CHARACTER FOR POINT: ",E$
ent "CHAR. SIZE :",S
ent "GRAPH AREA (1-GRP, 2-GRA): ",R
if R=1;gto +3
if R=2;sfg 5;gto +2
gto +3
"N"]F$
ent "(RFHL)=",R
ent "ENTER OR CHANGE EXPRESSION ...",F$;cap(F$)]F$
if F$[1,1]="Y";gto +2
gto "TTT"
dsp "ENTER EXP1 & 2 BELOW THEN (cont SS)";stp
"EXP1 is X axis, EXP2 is Y axis":

"EXP1":ret 'WSAF'

"EXP2":ret N



gto "TTT"
"RNZU":rescave "WSAPP";dsp "WSAPP resaved";stp
"--- - - - - - - End of Main Program - - - - - - - -";


"TTT":
if flg2;P[13]DL;cll 'log';]P[13];P[14]DL;cll 'log';]P[14]
if flg3;P[7]DL;cll 'log';]P[7],P[8]DL;cll 'log';]P[8]

if P[3]<6 and P[4]>6;gto +3
(P[4]-P[3])/100)*0;P[3]-10*R*D)P[13],P[14]+8*R*D)P[14]
gto +2
(abs(P[3])+abs(P[4]))/166)*6;P[3]-16*R*D)P[11],P[4]+8*R*D)P[12]
if P[7]<0 and P[8]>0;gto +4
(P[8]-P[7]))/166)*6;P[7]-4.5*R*0)P[13],P[8]+4.5*R*6)P[14]
if flg5,(P[8]-P[7])/100)*0;P[7]-3*R*D)P[13],P[8]+3*R*D)P[14]
gto +3
(abs(P[7])+abs(P[8]))/166)*6;P[7]-4.5*R*D)P[13],P[8]+4.5*R*6)P[14]
if flg5;(abs(P[7])+abs(P[8]))/100)*0;P[7]-3*R*D)P[13],P[8]+3*R*D)P[14]
scl P[13],P[14],P[15],P[12]

dsp "SET PLOTTER LIMITS TO MAX FOR READING";stp
ltr P[13],P[12];csiz 1,2.5
fxd 0;cplt 46,-1
lbl "(C BLANC MRL CODE 4320  FUMET/OSP  SNI ",C$
ltr P[13],P[12];cplt 7,-2
lbl "  Y AXIS=",A$," (UNITS= ",H$
fit 1;lbl ", CENTER MIN.=",P[27]," MAX.=",P[28],")"
lbl " X AXIS= ",B$," (UNITS= ",Y$
lbl ", LIMIT MIN.=",P[29]," MAX.=",P[30],")"
dsp "RESET PLOTTER FOR GRAPH";stp
dsp "DRAWING AXIS"
for X=1 to 2
plt P[8],P[4], 2;plt P[8],P[3];plt P[7],P[3]
plt P[7],P[4];plt P[8],P[4],-1
next X
cll 'ticX'
cll 'ticY'
dsp "CHANGE PEN ?, THEN CONTINUE";stp

0)A)B)C)D;1)M;1)X
"plot":
fxd 0;dsp "PLOTTING"
csiz 3,1.5,1,0
'EXP1')P[15];if flg3;P[15]DL;cll 'log';]P[15]
if P[15]>P[8];A+1)A;gto +7
if P[15]<P[7];B+1)B;gto +6
'EXP2')P[16];if flg2;P[16]DL;cll 'log';]P[16]
if P[16]>P[4];C+1)C;gto +4
if P[16]<P[3];D+1)D;gto +3
if flg4;ltr P[15],P[16];cplt .3,.3;lbl F$,gto -2
plt P[15],P[16]

if N<P[28],gto "next"
cll 'NEH'
gto "plot"

"NEH":
N+.01)N
ret

"END":
prt "     X AXIS"
prt "  MIN=",P[7],"  MAX=",P[28]
prt "     Y AXIS"
prt "  MIN=",P[13],"  MAX=",P[14]
prt "  LIMIT MIN=",P[29],"  MAX=",P[30]
prt "  CENTER MIN=",P[27],"  MAX=",P[28]
dsp "END";pen;end

"ticA":
fxd 0;deg
if flg3;gto +11
d)P[24],P[31]-P[24]
for I=P[7] to P[8]+.99 by P[15]
if P[7]<0 and P[8]>0 and abs(I)<P[15]/2;0)I
if abs(log(I)-P[24])<.01;gto +2
if abs(I-P[24])<.01;gto +2
csiz .6,.5,1,P[24]
ltr I,P[31]-.3;cplt .3,6;lbl "0"
next I
if P[24]<P[8];gto +2
ltr P[24],P[31]-.3;cplt .3,6;lbl "0"
"log":
csiz .5,.2,1,P[24]
if I<=.1;csiz .4,.2,1,P[24]
if I<=.01;csiz .3,.2,1,P[24]
ltr P[24],P[31]-.3;cplt .3,6;lbl "1"
next I
if P[24]>P[8];gto +2
sfg 0;abs(P[27])-P[26];gto +2
if P[25]<P[8];cfg 0;gto +2
P[8])P[24]-.1;96)P[24]+1;P[26])I;1,0];cfg 0;gto -13
ret

"ticY":
fxd 1,0;deg
if flg3;gto +11
csiz .5,.2,1,P[24]
if I<=.1;csiz .4,.2,1,P[24]
if I<=.01;csiz .3,.2,1,P[24]
ltr P[24],P[31];cplt .3,6;lbl "1"
next I
if P[24]>P[8];gto +2
sfg 0;abs(P[27])-P[26];gto +2
if P[25]<P[8];cfg 0;gto +2
P[8])P[24]-.1;96)P[24]+1;P[26])I;1,0];cfg 0;gto -13
ret
```

```
"WSALST:      (3-13-86)":
"This program computes value for Wind Speed Amplication Factor (WSAF)":
"and print out list of WSAF for NEH vs. REHL":
"initializing data follows":
dim P(19)
dim A$(15),F$(7),G$(12,3)
"PRINTER":60)P
cfg 1,2
ent "EXPERIMENT DATE ?  ",A$;cap(A$))A$
ent "NEH min. :",P(1)
ent "NEH max. :",P(2)
ent "NEH step :",P(3)
ent "REHL min. :",P(4)
ent "REHL max. :",P(5)
ent "REHL step :",P(6)

cll 'TITLE'
cll 'heading'
0)A)0;PE2)N
"compute":
for R=P(4) to P(5) by P(6)
A+1)A
"WSAF"rA
next R
0)A

fxd 0,dsp "COMPUTING! "
cll 'list'
if N=P(1);gto "END"
cll 'NEH'
gto "compute"

"NEH":
N=P(3))N

ret

"END":
wtb P,12
dsp "DONE";end

"TITLE":
fmt 1,26x,"T. B.ANG  NKL CUDA 4526  SNI ",z;wrt P+.1;wrt P,A$
fmt 1,37;wrt P+.1
ret

"heading":
fmt 1,"  NEH",36x,"REHL",/,6z,z;wrt P+.1
for K=P(4) to P(5) by P(6)
fmt 1,f7.2,z;wrt P+.1,R
next R
wrt P
fmt 1,80" ";wrt P+.1

ret

"list":
fmt 1,f5.1,2z,16f7.3;wrt P+.1,N,r1,r2,r3,r4,r5,r6,r7,r8,r9,r10
ret

"FNZ0":resave "WSALST";dsp "WSALST RE-SAVED!";end

"N":1.3688-1.3493*LNEH+.2743*LNEH^2-3.684*LNEH^3)r0
ret r0*7.6052*LNEH^4
"R":.364/-1.121*LNEH+2.2843*LNEH^2-3.6647*LNEH^3)r6
ret r6*1.2184*LNEH^4
"LNEH":ret log(N)
"LREHL":ret log(R)
"WSAF":ret '67'*R*'LREHL'
```

```
"SAMPLE":
"this program reads data on disk and computes ":
"mean, min., max., mean & Std.Dev) for all parameters"
"Parameter name file (STVar) and Variable file STPar":
"Must be on Main disk !":
"File (STDAT) must be open to 66 reads on Main disk":
dim D(6,36),F(13),R(16,2),U(6,12)
dim A$(200,4),V(200,5),D$(11),P$(2),V$(20,4),G$(12),H$(12)
cfg 1,3;sfg 2
"PRINTER":700)P

ent "(1 compute new data, 2=print old files)",A
if A=1;gto "new dat"
if A-2;gto "print"
gto "3

"new dat":
dim P(19)N1),B(108),S(50)
dsp "INSERT MAIN DISC !";stp
file$ STVar
spread 1,P$

fxd 0;str(D(20))D$
fxd 0;str(D(26))D$
D$(6,7)A" may "&D$(8,9)A";"&D$(10,11)DG$
if P(46)-2 or P(46)(-2;sfg 3
for I=1 to N
cll 'Var'
if flg3;gsb "trap"
if flg4;gto +11
V(I,1)+1)V(I,1)
if A2=V(I,2);gto +3
A)V(I,2)
G$)V$(I,1,12)
if A(=V(I,3);gto +3
A)V(I,3)
G$)V$(I,13,24)
V(I,4)+A)V(I,4)
V(I,5)+A^2)V(I,5)

cfg 4
next I
ret

"Var":
"Places variable value in (A)":
if B$(I,1,1)="P";P(val(B$(I,2,4)))A;ret
if B$(I,1,1)="R";R(val(B$(I,2,4)))A;ret
if B$(I,1,1)="S";S(val(B$(I,2,4)))A;ret
if B$(I,1,1)="D";D)A;ret
beep;dsp "variable # ERROR!";end

"trap":
if B$(1,1,1)#"P";gto +4
val(B$(I,2,4))I
if I)=41 and I(=62 or I=12 or I=38 or I=39 or I=65 or I=76 or I=81;sfg 4
gto +3
if B$(I,1,1)#"S";gto +2
sfg 4
ret

"data":
spread 1,D(#),E(#),K(#),U(#)
spread 1,P(#),F$,B(#),F$,S(#)
ret

"init":
preset 1,1
gsb "data"
fxd 0;str(D(20))D$
D$(6,7)A" may "&D$(8,9)A";"&D$(10,11)DG$
for N=1 to 200;if B$(N,1,1)#"";next N
N-1)N
for I=1 to N
cll 'Var'
A)V(I,2)
G$)V$(I,1,12)V$(I,13,24)
next I
cfg 2
ret

"done":
for I=1 to N
V(I,4)/V(I,1))V(I,4)
(V(I,5)/V(I,1)-V(I,4)^2))V(I,5)
next I
dsp "INSERT MAIN DISC !";stp
asgn "STDAT",2
sprt #,V$,V(#)
dsp "MAIN STORED ON DISC!"
end

"print":
dim A$(200),10)
files STVar,STDAT,STVar
spread 1,A$
spread #,V$,V(#)
spread 3,B$
fmt 1,56x,"MAY 19/4 EXPERIMENT",//,47x,"NAVAL RESEARCH ",//,wrt P+.1
fmt 1,"OCEANOGRAPHY",,,40x,"METEOROLOGIC PHYSICS BRANCH",wrt P+.1
fmt 1,47x,"MARINE ATMOSPHERIC RESEARCH STATION",wrt P+.1
fmt 1,44x,"SAN NICOLAS ISLAND, CHLIFORNIA",//,wrt P+.1
fmt 1,44x,"RUN # 7x656165& TO 796516Cnn&",2/,wrt P+.1
fmt 1,4x,"UNIF A TIME",18x,"UNIF A TIME",,2x,"PARAMETER",wrt P+.1
fmt 1,6x,"PARAMETER",5x,"No. OF",,6x,"PARAMETER",8x,"OF",Vx,/,wrt P+.1
fmt 1,"PARAMETER",2x,"OF",11x,"PARAMETER",2x,"STD",wrt P+.1
fmt 1,8x,"SYMBOL",5x,"DATA RUNS",4x,"MIN. VALUE",3x,/,wrt P+.1
fmt 1,"MIN. VALUE",,2x,"MAX. VALUE",5x,"MAX. VALUE",8x,/,wrt P+.1
fmt 1,"MEAN VALUE",5x,"DEVIATION",wrt P+.1
fmt 1,5x,115" ",/,wrt P+.1
fmt 1,9x,c7,f8.6,#17.3,4x,c12,#13.3,4x,c12,2e15.5
fmt 2,9x,c7,f8.4,8x,c7,6x,c7,9x,c7,6x,c7,11x,c7,8x,c7
for I=1 to 206
if I=48 or I=166,wtb P,12
if M$(I)="";gto +8
"      "F$;A$(I)F$(1,7)
V$(1,1,1)G$,V$(I,13,24)H$
if B$(I,1,1)="6","NO DATA"+G$;wrt P+.3,G$,V(I,1),G$,G$,G$,G$,G$,G$,G$,gto +2
wrt P+.1,I,V(I,1),V(I,2),G$,V(I,3),H$,V(I,4),V(I,5),,
next I
dsp "DONE";wtb P,12
end

"FNZ0":resave "SANCLI";dsp "SANCLI RE-SAVED";end
```

```
! "STVAR:        (c) 2-86)":
! "Enter Parameter Symbol and Variable list":
! "Sorts in alphabetical order and stores on disc":
! "as SIPar and SIVar":
! "File (SIPar) must be open to reads and (SIVar) to 5 reads":
! "Note: Enter (0) for variable if (AND DATA) is to be printed":
dim A$(266,16),B$(16),V$(266,4)
"PRINTER":103
files SIPar,SIVar
prt "   COMMAND?";prt "1-ENTER";prt "2-Add";prt "3-EDIT";prt "4-PRINT"
prt "(END)";spc 4
"main":
ent "COMMAND: ",A
if A=1;gsb "enter"
if A=2;cll 'read';gsb "add"
if A=3;gsb "edit"
if A=4;cll 'read';gsb "prt"
if A=5;gto "end"
gto "main"

"enter":
for I=1 to 266;""\A$(I)\V$(i);next I
for i=1 to 200
gsb "ent"
if A$(1)="";gto "sort"
next I

"add":
for I=1 to 266;if A$(I)#"";next I
"aloop":
gsb "ent"
if A$(1)#"";I+1){;gto "aloop"
cll "sort"

"sort":
dsp "SORTING LIST"
cfg 1
for i=1 to 200
if A$(i)="";gto ++
if A$(i)>A$(I+1);gsb "swap"
next I
if t>0;gto "sort"
dsp "DATA SORTED";wait 1000
ent "PRINT LIST?",B$;cap(B$)\B$
if B$(1,1)="Y";gsb "prt"
ent "Store DATA?",B$;cap(B$)\B$
if B$(1,1)="Y";gsb "store"
cfg 0;ret

"swap":
A$(1)\B$;A$(I+1)\A$(I);B$)\A$(I+1)
V$(I)\B$,V$(I+1)\V$(I);B$)\V$(I+1)
cfg 1;ret

"prt":
for I=1 to 200
if A$(I)="";gto +2
prt A$(I)&" "&V$(I)
next I
spc 4

"store":
creno 1,1;creno 2,1
sprt 1,#5;sprt 2,V+
dsp "DATA STORED";wait 1000
cfg 0;ret

"edit":
gsb "read"
"eloop":"?"\B$
ent "PARAMETER SYMBOL (CONT to store)=",B$;cap(B$)\B$
if B$="";gto "sort"
for I=1 to 266
if A$(I)=B$;gto +3
next I
beep;dsp "SYMBOL NOT FOUND";wait 2000;gto "eloop"
prt A$(I)& " "&V$(I)
dsp "ENTER (opt=0) TO DELETE";wait 1500
gsb "ent"
if A$(1)=" ";gsb "del"
gto "eloop"

"del"
A$(I:11)=A$(I+1:11)\V$(I:11)\V$(I)
if A$(I)#"";gto +2
I=I-1;gto -2
ret

"ent"
ent "PARAMETER SYMBOL: ",A$(I);cap(A$(I))\A$(I)
dsp A$(I)& " Var ?"
ent "",V$(I),cap(V$(I))\V$(I)
if "?"=A;dsp A$(I)& " = "&V$(I)& " (CONT if Ok)";ent "",B$;cap(B$)\B$
if B$#"";gto -4
ret

"read":
creno 1,1;creno #,1;creno 1,#5;creno 2,V+
ret

"end" dsp "Done";end

! "ENTER" resave "STVAR";dsp "STVAR RE SAVED";end
```

```
! "TPLOT":
!
! "This program reads tide table from file (TIDE1) and plots tides":
! "versus julian day. Values that exceed limits are not plotted"
! "for DF 222.6 PLOTTER":
! "Q contains the final printout values":
! "I  contains entered month(I1), day(I2), julian day(I3),(I4)"
!    temporary storage for Q1(I=1,3), I=2 and Q1(,,I=2),(I4)"
!    averaging period(Y), DiveSrt(I6), I=city error(I1)"
!    temp range(I=1), I=13-sampling rate for Kaiserburg":
! "K contains the averaged daytol data"
! "U  contains the converted analog data"
! "Initializing data follows":
dim Q1(3:3),I(13),K(10,2),U(#:3?),Y(13),Z(20)
dim F$(20),D$(20),Y$(10),H(10),G$(12,3),T$(49)1,C$(3)
"PRINTER":103
cfg 1
files DATE,TIDE1,CW DAF,METDAT;creno 1,#2;cr(#1;creno 2,1$
ent "ENTER JULIAN DAY TABLE TO PLOT",I5
ent "ENTER FIRST JULIAN DAY TO PLOT",P(1)
ent "ENTER LAST JULIAN DAY TO PLOT",P(2)
ent "EXPERIMENT DATE (",I$,cap(C$)\A$ EXPERIMENT"
ent "TIME BETWEEN DATA POINTS (HOURS)",P(14)
if P(14)<1;P(14)#60;P(15),1;C$(1)=1$(1,1);gto +2
P(14)=10^(P(14)/60)P(1)
ent "TIC MARK INTERVAL (DAYS) (X axis)",P(11)
ent "LABEL INCREMENT (DAYS) (X axis)",P(12)
ent "ENTER Y AXIS LIMITS (min,max)",P(3)
ent "ENTER Y AXIS LIMIT (max,min)",P(4)
ent "TIC MARK INTERVAL (Y axis)",P(5)
ent "LABEL INCREMENTS (Y axis)",P(6)
ent "TYPE OF PLOT (line or points)",F$
if F$="point";sfg 1

cll 'III'
gto "END"
'fnxa":resave "IPLOT";dsp "first resaved";stp
!                    End of Main Program

! "------ --  -- MARK AXIS AND PLOT                "
"III":dsp "DRAWING AXIS"

P(2) P(1)//106)r1;P(1) 26#r1)P(2),P(2)-1)#r6)P(1)
if P(2)<a and P(4)>0,gto +3
(abs(P(4))-abs(P(3))//106)r1;P(3) 26#r1)*91,P(4)-(26#r6)P(1)
gto +2
(abs(P(3))+abs(P(4)))//106)r1;P(3)-26#r1)*91,P(4)-(26#r6)P(1)
scl P(2),P(6),P(9),P(10)
cll 'axis'
dsp "LABELING"
P(1)+(P(8) P(1))//2)r6
ltr rd,P(11),csiz 1.2,1.5,,1,0
lent(B$)/2)r4;cplt -r1, 1;lbl r4
ltr rd,P(14),cplt .12,.5, 2
lbl "NAVAL RESEARCH LABORATORY",cplt .  .5, 1
lbl "MINUSPHERIC  .  .ATES BRANCH",cplt -3.5,.5,1
lbl "MARINE ATMOSPHERIC RESEARCH STATION",cplt .5, .5,-1
lbl "SAN NICOLAS ISLAND, CALIFORNIA"
cll 'BL x'
cll 'LBL y'
dsp "CHANGE PEN ?, THEN CONTINUE";stp
on end 4,"END"

"plot":dsp "PLOTTING"
csiz .3,1.5,,1,0
for I=P(1) to P(2)
for K=0 to 2300 by P(14)
for J=6 to 59 by P(15)
dsp "PLOTTING"
neg;'TIABLE'(1+(,K+J))r8;sro 2 %8.3&%.1r1
if r8<.999,beep;dsp "DATE ERR  SET MAIN LABEL";wait 500,gto +2
if r1)P(4),gto +6
if r1<P(3),gto +5
(r1-P(3))/(P(4)-P(3))r3
if r3<0 or r3>1,gto "END"
if flg1,ltr r3,r1,cplt  .3,  .3,lbl "o",gto +2
plt r3,r1
next J
next K
next I
gto "END"
"END" dsp "END",pen,end

! "LBL x"
! "this sub routine labels x axis"
P(1)+(P(8) P(1))//2)r4
deg;csiz 1.2,1.5,,1;ltr r4,r1,1
cplt -.5, 0,lbl "JULIAN DAY"
deg;csiz .9,1.1,,,6,ltr r1+.1,P(3)
for I=P(1)+P(12) to P(2) by P(12)
sid 0,str$(I)\F$
ltr I,r1-1,cplt 1,  .3,lbl F$
next I
ret
```

```
118: "LBL Y":
119: "This sub routine labels the Y axis":
120: dim P(11),F$(1)
121: cplt 6,.7;lbl "TIME"
122: cplt -.9, 4;lbl "(METERS)"
123: cplt -.6, 1;lbl "(MSL)"
124: P(3)=Plotter
125: for I=P0 to P(4) by P(6)
126: fxd 2;str(I)F$;len(F$)=0
127: ltr P(1),1;cplt -(cw*2),-.3;lbl F$
128: next I
129: ret
130:
131:
132: "TIME":p1-r5+1)p1;fxd 2
133: "pt is the julian date":
134: "(10&":16&(p1-1)+1)p6;p6=4)p8
135: if p6<1 or p8)476;gto "terr"
136: itf(T$(p1,p6+1))p3;itf(T$(p8,p8+1))p5
137: if (p3+(240*8*int((p3-1)/16))p4)/(p2+2400*(p1-1))p7);p4-4)p0;p8-4)p8;gto -2
138: if p5=6;p8+4)p8;gto -3
139: if (p5+2406*int((p8-1)/16))p5)<(p7;p8+4)p8;p6+4)p6;gto -4
140: itf(1*p3+2,p3+3))/10)p4;itf(1*p8+2,p8+3)/10)p6
141: 'mid'(p7))p7;'mid'(p3))p3;'mid'(p5))p5
142: if p3=p1;gto "terr"
143: ret p6-(p6-p4)*(cos((p7-p3)*180/(p5-p3))+1)/2
144: "mid":ret int(p1/100)+frc(p1/100)/.6
145: "terr":ret -999
146:
147: "axis":
148: "This routine draws Axis":
149: plt P(2),P(3),-<;plt P(1),P(3);n * P(1),P(4),-1
150: deg,csiz 1.2,1.5,1,0
151: for I=P(1) to P(2) by P(11)
152: if I=P(1);gto +2
153: ltr I,P(3);cplt -.3,-.3;lbl "I"
154: next I
155: csiz 1.2,1.5,1,276
156: for I=P(3) to P(4) by P(5)
157: if I=P(3);gto +2
158: ltr P(1),I;cplt -.3,-.3;lbl "I"
159: next I
160: ret
****
```

```
"TABLE        (4-14-86)":
"Creates table of run# and numerical value":
"for .dat and RMDAN tables":
"Files .DAT and RMDAN must be an open to 6 recds on data disc":

dim A$(2),F$(1),A$(16),P$(36),F$(1)

prt "  PROGRAMS ";pos 1;prt "1-CREATE";prt "2-LIST";prt "3-STORE"
get "4-DONE ";cnt 4
if cnt=1;gsb "create"
if cnt=2;gsb "list"
if cnt=3;gsb "store"
if cnt=4;gto "done"
gto "cmd"

"create"
for I=1 to 7;"";A$(I,I);next I
wrt "(1)  name  ";A$
ltf
"loop1"
get "run#: ",A
if A=0;ret
wrt "date  ",B
fxd 6;str(A)B$;fxd 1,B$&"  "&str(B)B$
"(1)=any key (OR 7 or N)"
wrt "(2) "&cap(A$(2))&"$;if F$="N";gto "loop1"
num(A$(I,I+1))A
gto "loop1"

"list":
prt " RUN#     "&A$
ltf
"loop2"
if mt(1,1)=1;ret
fxd 6;str(A(1,1);11;1)B$;B$(2)B$(11
fxd 1,B$&str(A(1,1)-1)B$
prt B$
if mt(1,0)=0;gto "loop2"
spc 2
ret

"store":
dsp "IN next DATA disc";stp
wait 45;1
open 1,#1#1
bye,dsp #55;" SHOULD";wait 2000
ret

"done"
dsp "DONE!"
end

"ENZO":renave "TABLE";dsp "TABLE RE-SAVED!",end
#14/24
```

```
"RUN#":
"This program reads disc and prints all two numbers sequentially in".
"columns. Each colmn is 15 char. wide and numbers":
"are progressive from left to right":
"Print out automatically centers on page width":

dim D[6:36],F[131,K[16,21,U[0:19],B[160],S[50]
dim A$[30],D$[20],F$[7]
"PRINTER":266)J
files METDAT

ent "ENTER EXPERIMENT DATE:",A$;cap(A$)&" EXPERIMENT")A$
ent "PAPER WIDTH (80 COLUMNS) ?",C
int(C/15))A;int(C/2) 2)C
gsb "HEADING"
on end 1,"END"
fmt 1,f15.0,z
rread 1,1
"read":
for I=1 to A
sread 1,D[I0],E[I0],K[I0],U[I0]
sread 1,B[I0],F$
sread 1,B[I0],F$
sread 1,S[I0]
wrt J+.1,U[20]
next I
wrt J
goto "read"
"END":dsp "END";wrt J;wtb J,12;end

"HEADING":
(21B-len(A$)/2)B;gsb "tab"
wrt J,A$
(45)B,cll 'tab';wrt J,"NAVAL RESEARCH LABORATORY"
(64)B;cll 'tab';wrt J,"ATMOSPHERIC PHYSICS BRANCH"
(66)B;cll 'tab';wrt J,"MARINE ATMOSPHERIC RESEARCH STATION"
(62)B;cll 'tab';wrt J,"SAN NICOLAS ISLAND, CALIFORNIA"
fmt 2,4/;wrt J+.2
ret
"tab":
for X=1 to B
fmt 1,,z;wrt J+.1
next X
ret
"ENZO":renave "RUN#";dsp "RUN# RE-SAVED!";end
#10546
```

```
20: 'SPCRNC":
21:
22: "This program takes raw data from disc in drive (1) and stores":
23: "raw and re computed values on initialized disc in drive (2)":
24: "Changes to FCAL values may be added in sub(FCAL)":
25:
26:
27: " A  contains the averages of the data the Monitor Labs":
28: "D contains the final printout values":
29: "E  contains entered month(E11), day(E12); julian day(13),[14,1]":
30: "   temporary storage for U1[1:(15),161) and U1[2:(12),161)":
31: "   averaging period[91; Daveour(10); Parity error(11)":
32: "   temp range(1:6),  E13]=sampling rate for Knollenburg":
33: "G  contains the no. of days in each month; temp day(13)":
34: "G$ contains the names of each month":
35: "Q  contains the line number for chaining subprograms":
36: "U  contains the converted analog data :
37: "K contains the averaged digital data":
38: "Initializing data follows":
39: dim A[0:19,3],E[13],G[13],G$[12*3]
40: dim U[0:19],T$[496],D[0:30],K[13,2],P[100],B[108],S[50]
41: dim F$[7],D$[26],T$[4],W$[2,36],R$[36],U$[2,36]
42: 85)Q
43: ""]D$;""]F$
44:
45:
46: drive 6;files DATE,TIDET,METDAT,WSEC,PENC;sread 1,G$,G[*];sread 2,T$
47: sread 4,W$;sread 5,R$,U$
48: assn "METDAT",9,1,1
49: on end 3,"END"
50: on end 9,"next"
51: "MAIN":sread 3,D[*],E[*],K[*],U[*]
52: sread 3,F[*],F$
53: sread 3,B[*],F$
54: for I=1 to 108;P[I]=B[I];next I
55: cll 'ROUND OFF'
56:
57: fxd 0;prt D[26]
58: D[0]=A[6,3];D[13]=A[13,3];D[14]=A[14,3];D[17]=A[17,3]
59: for M=2 to 19;U[M]=A[M,2];next M
60: chain "CRNCH6",Q,41
61: gsb "FCAL"
62: dsp "CRNCH6";cll 'CRNCH6';cll 'MET26'
63: gto "MAIN"
64: "END":dsp "INSERT NEXT DATA DISK!";stp
65: assn "METDAT",3,0
66: on end 3,"END"
67: gto "MAIN"
68:
69: "FCAL":
70: "Enter changes to FCAL values Below":
71:
72:
73:
74: ret
75:
76: "-------  ----  End of Main Program  ----  --  ---":
77: "----  -------  COMPUTE AND PRINT THE M.T DATA  -  -  --":
78: "MET26":chain "CRNCH2",Q,59
79: dsp "CRNCH2";cll 'CRNCH2'
80: for I=1 to 108;P[I]=B[I];next I
81: chain "CRNCH3",Q,62
82: dsp "CRNCH3";cll 'CRNCH3'
83: for I=1 to 108;P[I]=B[I];next I
84: chain "SCRNCH",Q,64
85: dsp "SCRNCH";cll 'SCRNCH'
86: "sprt":sprt 9,D[*],E[*],K[*],U[*],P[*],F$,B[*],F$,S[*]
87: ret
88:
89: "ROUND Off":fxd 0;str(D[26]))D$;val(D$[16,11]))r0
90: "30")D$[10,11]
91: if r0<36;"00")D$[16,11]
92: val(D$[2,3])*1e8+val(D$[4,5])*1e6+val(D$[6,7])*1e4+val(D$[8,9])*1e2)+r0
93: r0=val(D$[10,11]))D[20];ret
94:
95: "next":dsp "INSERT NEXT DESTINATION DISK";stp
96: assn "METDAT",9,1
97: on end 9,"next"
98: gto "sprt"
99:
100: "FNZU":resave "SPCRNC";dsp "SPCRNC RESAVED";end
101:
102:
103:
104:
105:
#9962
```

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