

UNCLASSIFIED

AD 272 002

*Reproduced
by the*

**ARMED SERVICES TECHNICAL INFORMATION AGENCY
ARLINGTON HALL STATION
ARLINGTON 12, VIRGINIA**



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

272 002

CATALOGED BY ASTIA
CATALOGED BY ASTIA
AS AD NO. 272 002

A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE

Progress Report No. 9
May 16, 1961 – September 15, 1961

IRVING A. SINGER AND CONSTANCE M. NAGLE

September 1961



Prepared for
U.S. Army Signal Research and Development Laboratory
Fort Monmouth, New Jersey
Under Contract No. R-65-8-99812 SC-04-91
DA Project No. 3A99-07-001-03

BROOKHAVEN NATIONAL LABORATORY
Associated Universities, Inc.
under contract with the
United States Atomic Energy Commission

A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE

**Progress Report No. 9
May 16, 1961 - September 15, 1961**

IRVING A. SINGER AND CONSTANCE M. NAGLE

The object of this study is to obtain a reliable estimate of the wind profile between 37 and 355 ft above ground, based on a single wind measurement at 37 ft and associated simple measurements or observations.

Prepared for
U.S. Army Signal Research and Development Laboratory
Fort Monmouth, New Jersey

Under Contract No. R-65-8-99812 SC-04-91
Technical Requirements SCL-2101-K, dated 20 April 1959
SCL-5496, dated 5 November 1957

DA Project No. 3A99-07-001-03

**BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK**

LEGAL NOTICE

This report was prepared as an account of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission:

A. Makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or

B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.

As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission, or employee of such contractor, to the extent that such employee or contractor of the Commission, or employee of such contractor prepares, disseminates, or provides access to, any information pursuant to his employment or contract with the Commission, or his employment with such contractor.

PRINTED IN USA
PRICE \$1.25

Available from the
Office of Technical Services
Department of Commerce
Washington 25, D.C.

January 1962

1050 copies

CONTENTS

I. Purpose.....	1
II. Abstract.....	1
III. Reports and Conferences.....	2
IV. Factual Data.....	2
A. Data Collection.....	2
B. Error Analysis.....	2
1. Horizontal Displacement of Reference Level.....	2
2. Prediction by Components.....	4
V. Summary.....	4
VI. Program for the Next Interval.....	4
VII. Identification of Key Technical Personnel.....	4
VIII. References.....	4
IX. Appendix I.....	6
X. Appendix II.....	32

LIST OF ILLUSTRATIONS

1. Error curves for various time lags, Run No. 106, downwind case. T and $S = 30$ sec; mast displacement, 152 meters	3
2. Error curves for various time lags, Run No. 108, upwind case. T and $S = 30$ sec; mast displacement, 152 meters	3

A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE

Progress Report No. 9
May 16, 1961 - September 15, 1961

I. PURPOSE

Since the wind exerts a force upon any structure or object exposed to it, and since it is difficult to measure this force with precision at heights appreciably above the ground, some means of estimating or predicting the wind at such heights is essential in the solution of many operational and theoretical problems. The purpose of this study is to describe the vertical wind profile and to relate it to other meteorological parameters that can readily be obtained. Since the wind profile is a function of space and time, the effect of these variables must also be assessed.

The primary objectives of the project in this period were (1) collection of additional wind speed data by utilizing a 50-ft portable mast in conjunction with the Ace meteorological tower, (2) analysis of mast data by using previously developed

models, and (3) prediction of wind speed from components at the reference level.

II. ABSTRACT

This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error.

A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.

Table 1

Summary of Mast Runs

Run No.	Wind condition		Mast displacement from Ace tower		Mean 300-ft direction, degrees	Mean wind speed, m/sec			Standard deviation, m/sec			$T_{100 ft} - T_{300 ft}$, (°C)
	Gustiness	Mast location	Distance, m	Bearing, degrees		75 ft	50 ft	300 ft	75 ft	50 ft	300 ft	
102	B ₁	downwind	152	150	315	6.1	6.2	8.4	2.1	2.0	2.3	-2.2
104	B ₁	upwind	152	150	159	4.8	4.1	6.2	1.4	1.3	1.0	-1.9
106	B ₁	downwind	152	150	345	4.6	4.1	5.9	1.8	1.2	1.3	-2.3
107	B ₁	upwind	152	150	165	4.2	3.6	5.4	1.2	1.3	1.1	-2.1
108	B ₂	upwind	152	150	152	4.9	4.2	6.0	1.1	1.2	0.8	-1.9
112	B ₁	upwind	225	244	225	4.4	4.3	6.0	1.4	1.5	1.0	-1.7
113	B ₁ -B ₂	upwind	225	244	225	3.7	3.9	5.5	1.3	1.4	1.1	-1.4
119	B ₁	upwind	68	210	210	4.0	3.2	5.9	1.3	3.1	1.0	-1.4
120	B ₁	upwind	68	210	210	3.4	2.0	4.5	1.0	0.9	0.5	-1.3
121	B ₁	upwind	68	210	210	3.9	3.1	5.4	1.2	1.3	0.7	-1.4
122	B ₁	upwind	68	210	210	3.5	2.7	5.5	1.0	1.1	0.6	-0.8
125	B ₁	upwind	68	210	210	5.1	4.2	7.8	1.6	1.6	1.3	-1.2
126	B ₁	downwind	68	210	015	3.5	3.0	4.5	1.1	1.0	1.0	-1.5

III. REPORTS AND CONFERENCES

On August 31, 1961, M. E. Smith and I. A. Singer met with Signal Corps personnel to discuss current results and plans for the final phase of the project.

IV. FACTUAL DATA

A. Data Collection

During the period covered by this report, 13 additional runs were completed with the 50-ft portable mast displaced horizontally from the Ace tower. Pertinent data on orientation of the mast are presented in Table 1 for each run.

B. Error Analysis

1. *Horizontal Displacement of Reference Level.* In a previous progress report¹ a study was made of the predictability of wind speed by using a time coordinate system based on the relationship

$$\text{Lag} = |S| - L - T, \quad (1)$$

where lag is defined as the difference in ending time, L refers to the difference in starting time between T and S , T refers to the prediction length, and S refers to the length of the predictor. These data were analyzed to determine the error in predicting the wind speed at 300 ft from a 75-ft reference level. The averaging lengths studied were 3, 12, 30, 60, and 180 sec. The reference level was lagged 0, 30, 60, 90, and 120 sec, and its averaging length was increased by factors of 1, 2, and 4.

From previous studies, the L that produces the minimum error for a vertical coordinate system (75 to 300 ft) is known to be negative; therefore the error should be reduced if the reference instrument is displaced upwind. According to Taylor's hypothesis,² the distance of displacement should follow the relationship $x=ut$, and the minimum error should then occur when $L=0$. To test this effect, a 50-ft portable mast was placed 68, 152, and 225 meters from the 410-ft meteorological tower during various wind conditions.

With an anemometer mounted on top of the mast, it was possible to test prediction of the wind speed in a horizontal as well as a vertical direction. Runs were analyzed only during unstable conditions by using 30-sec averages, since previous studies had revealed that there was little coupling between levels during stable conditions. Prediction

Table 2
Observed and Expected L
for Minimum Prediction Errors Between 75 and 50 Ft

Run No.	Wind condition		Expected L , sec	Observed L , sec
	Gustiness	Mast location		
102	B ₁	downwind	+24	+42
104	B ₁	upwind	-37	-48
106	B ₁	downwind	+37	+54
107	B ₁	upwind	-41	-39
108	B ₂	upwind	-36	-45
112	B ₂	upwind	-50	-33
113	B ₁ -B ₂	upwind	-57	-54
119	B ₁	upwind	-21	-24
120	B ₁	upwind	-25	-18
121	B ₁	upwind	-22	-30
122	B ₁	upwind	-25	-24
125	B ₁	upwind	-16	-18
126	B ₁	downwind	+22	+18

errors and spectral data for all runs analyzed during this period are presented in Appendix I.

Table 2 presents the expected (Taylor's hypothesis) and observed L for minimum prediction errors between 75 ft on the Ace tower and the top of the 50-ft mast during upwind and downwind cases. It is assumed that the effect of this height difference (75 vs 50 ft) is small. The results are reasonable, as all cases have the appropriate sign according to the mean wind direction, and most differences in L are not too large, considering the degree of accuracy of the instrumentation and computations.

Figure 1 presents the error curves for Run 106, a typical downwind case. The solid line shows the error of predicting wind speed measured on the top of the mast from a reference instrument located at 75 ft on the Ace tower as a function of L . The minimum error occurs with $L = +54$ sec, while the L expected from Taylor's hypothesis (x/u) is 37 sec. L is positive, since the instrument was placed 152 meters downwind. The broken line is the associated error curve when the wind speed at 300 ft is predicted from 75 ft on the Ace tower; it can be seen that the minimum error occurs with $L = -18$ sec. Therefore, if the reference instrument is displaced 152 meters downwind, the minimum error according to Taylor's hypothesis should occur at -55 sec [$(-18) - (37) = -55$]. The dotted line shows the error curve at 152

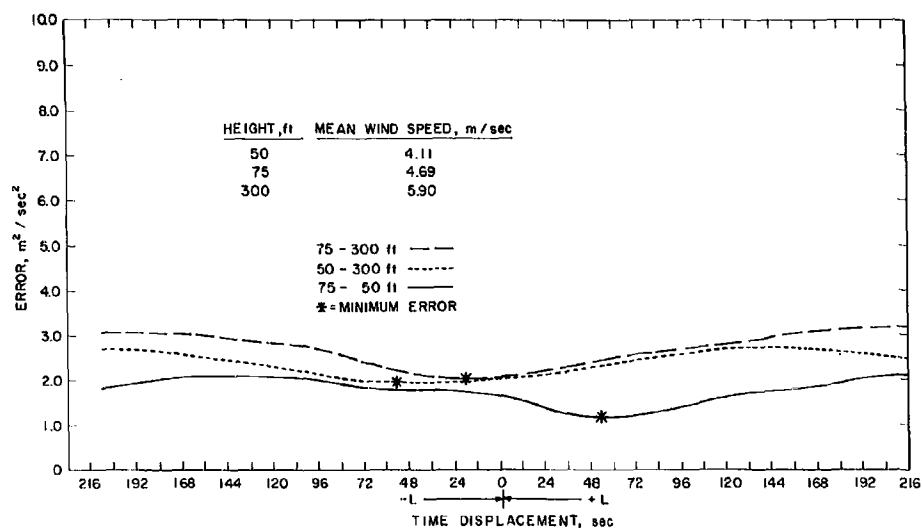


Figure 1. Error curves for various time lags, Run No. 106, downwind case.
 T and $S=30$ sec; mast displacement, 152 meters.

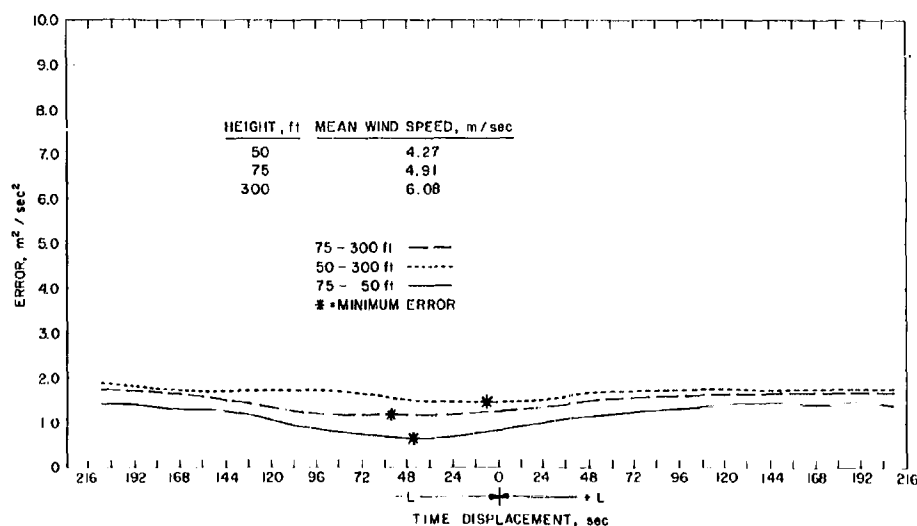


Figure 2. Error curves for various time lags, Run No. 108, upwind case.
 T and $S=30$ sec; mast displacement, 152 meters.

meters downwind; the actual minimum error occurs at -54 sec. The curves show that by use of Taylor's hypothesis the minimum errors move in the appropriate direction and are of reasonable magnitude, considering the degree of accuracy of the instrumentation.

Figure 2 presents the error curves for Run 108, a typical upwind case with the mast displaced 152 meters from the Ace Tower. A prediction of the wind speed at mast height from the 75-ft level on this tower revealed that the minimum error occurred when $L = -45$ sec, while the L expected

from Taylor's hypothesis is -36 sec. The broken line is the associated error curve when predicting the wind speed at 300 ft from 75 ft on the Ace Tower, and it can be seen that the minimum error occurs when $L = -58$ sec. Therefore, if the reference instrument is displaced 152 meters upwind, the minimum error according to Taylor's hypothesis would be expected to occur at $L = -12$ sec $[(-58) - (-36) = -12]$. The dotted line shows the error curve at 152 meters upwind; the actual minimum error occurs at -6 sec.

2. Prediction by Components. An analysis of the prediction of wind speed obtained by using the horizontal components of the wind speed at the reference level was made by means of the two-layer model formulated in Progress Report No. 5.³ These errors were compared with those obtained in that report, and the results show that the prediction was not improved for the cases tested. Spectral and error data used in the analyses (Runs 913 and 023) are listed in Appendix II.

V. SUMMARY

Analysis of the data collected with the mast displaced 68, 152, and 225 meters from the Ace Tower revealed that when 30-sec averages were used the minimum error between 75 and 50 ft occurred with a negative L for upwind cases and a positive L for downwind cases. Analysis also revealed that reasonable prediction errors are obtained for various lag times by means of Taylor's

hypothesis for winds either upstream or downstream.

The use of horizontal components of the wind speed at the reference level did not improve the prediction of upper level winds.

VI. PROGRAM FOR THE NEXT INTERVAL

A final report will be prepared comprising all the methods of investigation and the results of analysis of all the data presented in this and previous progress reports.

VII. IDENTIFICATION OF KEY TECHNICAL PERSONNEL

NAME	TITLE	HOURS
I.A. SINGER	Meteorologist	80
M.E. SMITH	Meteorologist	15
J.D. WALSH	Junior Meteorologist	688
C.M. NAGLE	Meteorology Associate	688

VIII. REFERENCES

1. I.A. SINGER AND C.M. NAGLE, *A Study of the Wind Profile in the Lowest 400 Feet of the Atmosphere*, Progress Report No. 7, BN1. 635 (T-198), Sept. 1960.
2. G.I. TAYLOR, The spectrum of turbulence, *Proc. Roy. Soc. London* **164A**, 476-90 (1938).
3. I.A. SINGER, *A Study of the Wind Profile in the Lowest 400 Feet of the Atmosphere*, Progress Report No. 5, BN1. 596 (T-170), Jan. 1960.

Appendices

APPENDIX I

Wind Speed, B, Gustiness, Run No. 102									

Prediction Errors, B, Gustiness, Run No. 102, Mast Displacement = 152 m				
	75-ft level	50-ft level	300-ft level	
Mean wind speed, m/sec	6.16	6.23	8.45	
Variance	4.80	4.37	5.29	
S and T = 30 sec				
L, sec	75-50	75-300	50-300	(ft)
-6	2.273	2.681	3.310	
-12	2.351	2.612	3.246	
-18	2.432	2.575	3.181	
-24	2.516	2.573	3.131	
-30	2.606	2.610	3.092	
-36	2.700	2.689	3.052	
-42	2.791	2.801	3.016	
-48	2.880	2.931	2.986	
-54	2.968	3.079	2.950	
-60	3.055	3.247	2.912	
90	3.138	1.163	2.902	
-120	3.660	4.933	3.076	
-150	3.714	5.405	3.328	
150	2.886	4.984	4.544	
120	2.659	4.766	4.571	
90	2.305	4.479	4.525	
60	2.014	4.067	4.272	
54	1.982	3.969	4.184	
48	1.959	3.860	4.097	
42	1.953	3.739	4.007	
36	1.963	3.609	3.904	
30	1.982	3.471	3.801	
24	2.010	3.321	3.703	
18	2.046	3.168	3.606	
12	2.090	3.027	3.512	
6	2.143	2.897	3.432	

Figures in boldface represent least error for a given time lag.

Wind Speed, B _i Gustiness, Run No. 104									

Prediction Errors, B ₁ Gustiness, Run No. 104, Mast Displacement = 152 m				
	75-ft level	50-ft level	300-ft level	
Mean wind speed, m/sec	4.89	4.14	6.28	
Variance	2.13	1.77	1.08	
<i>S</i> and <i>T</i> = 30 sec				
<i>L</i> , sec	75-50	75-300	50-300	(ft)
-6	1.101	1.685	2.345	
-12	1.060	1.649	2.325	
-18	1.019	1.622	2.306	
-24	0.980	1.606	2.289	
-30	0.945	1.601	2.277	
-36	0.916	1.608	2.272	
-42	0.896	1.627	2.274	
-48	0.886	1.655	2.283	
-54	0.888	1.692	2.301	
-60	0.902	1.735	2.324	
-90	1.081	2.003	2.511	
-120	1.285	2.237	2.750	
-150	1.457	2.430	2.995	
150	1.855	2.736	2.893	
120	1.669	2.587	2.757	
90	1.448	2.406	2.637	
60	1.305	2.237	2.552	
54	1.290	2.198	2.535	
48	1.278	2.155	2.518	
42	1.268	2.109	2.503	
36	1.258	2.060	2.488	
30	1.248	2.007	2.472	
24	1.235	1.951	2.453	
18	1.219	1.892	2.433	
12	1.198	1.833	2.410	
6	1.171	1.778	2.388	

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 106									
		A=75		B=50		C=300		(ft)	
Mean (m/sec)		4.69		4.11		5.90			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.09370	0.04169	0.09099	0.03375	-0.00160	0.06473	-0.00180	0.04172	-0.00080
5	0.04626	0.02072	0.04465	0.01462	-0.00229	0.03037	-0.00396	0.01677	-0.00171
10	0.04236	0.02190	0.03274	0.01195	0.00274	0.02210	-0.00366	0.00823	-0.00262
15	0.04147	0.02147	0.02071	0.01019	0.01274	0.01274	-0.00253	0.00345	-0.00577
20	0.03554	0.02586	0.02073	0.01043	0.01832	0.00833	0.00278	0.00903	-0.00557
25	0.02331	0.02378	0.01674	0.00635	0.01417	0.00810	0.00152	0.00884	-0.00628
30	0.01322	0.01130	0.01666	-0.00041	0.00419	0.00571	-0.00298	0.00040	-0.00273
35	0.01458	0.00838	0.01133	-0.00247	0.00074	0.00330	-0.00396	-0.00079	0.00127
40	0.01917	0.00845	0.00851	-0.00193	-0.00067	0.00059	-0.00197	0.00024	0.00187
45	0.02305	0.01110	0.00673	-0.00276	0.00027	-0.00151	-0.00063	-0.00053	-0.00067
50	0.02140	0.01154	0.00716	-0.00522	0.00188	0.00194	-0.00174	-0.00044	-0.00101
55	0.02036	0.00930	0.00693	-0.00524	0.00221	0.00457	-0.00204	0.00125	0.00012
60	0.01983	0.00800	0.00472	-0.00448	0.00248	-0.00049	-0.00235	-0.00062	0.00124
80	0.00600	0.00690	0.00259	-0.00111	0.00226	-0.00126	-0.00055	0.00049	0.00150
100	0.00319	0.00468	0.00203	0.00001	0.00034	-0.00023	0.00017	0.00051	0.00063
120	0.00305	0.00312	0.00146	0.00007	-0.00037	-0.00002	0.00051	-0.00014	-0.00024
140	0.00343	0.00259	0.00149	0.00012	-0.00033	-0.00041	0.00027	-0.00038	-0.00014
160	0.00218	0.00202	0.00151	-0.00004	0.00004	-0.00047	0.00028	0.00001	-0.00013
180	0.00125	0.00143	0.00095	-0.00004	0.00003	-0.00014	-0.00007	0.00029	0.00006
200	0.00128	0.00105	0.00085	-0.00004	0.00001	0.	-0.00004	0.00001	0.00006
250	0.00128	0.00068	0.00064	-0.00008	-0.00016	0.00028	0.00002	-0.00017	0.00012
300	0.00115	0.00029	0.00044	-0.00009	0.00010	0.00002	0.00003	0.00003	0.00007
350	0.00062	0.00044	0.00036	-0.00007	-0.00002	0.00002	-0.00011	-0.00004	-0.00006
400	0.00076	0.00050	0.00033	-0.00005	-0.00016	0.	0.00003	0.00008	-0.00002
Coherence									
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.29225	0.49183	0.45901		60	0.16528	0.06157	0.05090	
5	0.22847	0.45413	0.30715		80	0.15313	0.12163	0.13934	
10	0.16203	0.36183	0.10404		100	0.00775	0.01263	0.06915	
15	0.29892	0.19644	0.10164		120	0.01490	0.05850	0.01695	
20	0.48354	0.10467	0.20998		140	0.01388	0.04716	0.04250	
25	0.43497	0.17406	0.29538		160	0.00073	0.09092	0.00557	
30	0.11865	0.18836	0.04044		180	0.00140	0.02063	0.06456	
35	0.05442	0.16085	0.02356		200	0.00126	0.00147	0.00415	
40	0.02577	0.02592	0.04943		250	0.03676	0.09619	0.09949	
45	0.03006	0.01726	0.00977		300	0.05427	0.00257	0.04545	
50	0.12465	0.04432	0.01469		350	0.01943	0.05600	0.03283	
55	0.17081	0.17752	0.02447		400	0.07395	0.00359	0.04121	

Prediction Errors, B, Gustiness, Run No. 106, Mast Displacement = 152 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	4.69	4.11	5.90
Variance	3.24	1.64	1.85
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	1.684	2.045	1.979
-12	1.728	2.024	1.968
-18	1.762	2.013	1.959
-24	1.785	2.015	1.950
-30	1.800	2.032	1.941
-36	1.808	2.064	1.931
-42	1.812	2.108	1.923
-48	1.815	2.164	1.918
-54	1.821	2.229	1.916
-60	1.831	2.300	1.920
-90	1.987	2.617	2.017
-120	2.164	2.832	2.276
-150	2.142	2.941	2.463
150	1.834	3.036	2.748
120	1.611	2.847	2.702
90	1.349	2.677	2.582
60	1.190	2.493	2.388
54	1.188	2.455	2.338
48	1.200	2.415	2.286
42	1.226	2.374	2.234
36	1.264	2.329	2.184
30	1.313	2.283	2.139
24	1.372	2.236	2.098
18	1.436	2.192	2.063
12	1.503	2.149	2.034
6	1.569	2.110	2.010

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 107									
				A=75	B=50	C=300 (ft)			
Mean (m/sec)				4.28	3.68	5.42			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.05711	0.04606	0.03835	0.02906	-0.00280	0.01435	-0.00400	0.01349	0.00064
5	0.02836	0.02735	0.02253	0.01426	-0.00186	0.01257	-0.00426	0.00730	0.00054
10	0.02556	0.02762	0.02394	0.00573	-0.00782	0.01547	-0.00530	0.00524	0.00436
15	0.02231	0.02716	0.01701	0.00566	-0.00821	0.01192	-0.00594	0.00444	0.00127
20	0.01834	0.02301	0.01504	0.00675	-0.00616	0.01015	-0.00140	0.00154	0.00226
25	0.01593	0.02008	0.01366	0.00651	-0.00598	0.00824	-0.00152	0.00143	0.00413
30	0.01244	0.01495	0.00911	0.00416	-0.00310	0.00419	-0.00194	0.00124	0.00256
35	0.00966	0.00849	0.00737	-0.00009	-0.00161	0.00073	-0.00205	-0.00147	0.00101
40	0.00874	0.00720	0.00632	-0.00023	0.00010	-0.00015	-0.00177	-0.00126	-0.00031
45	0.00657	0.00764	0.00712	0.00025	0.00114	-0.00155	-0.00102	-0.00076	-0.00075
50	0.00610	0.00782	0.00599	0.00039	0.00120	0.00066	0.00002	-0.00009	-0.00044
55	0.00783	0.00804	0.00478	-0.00008	0.00060	0.00020	-0.00002	0.00011	0.00124
60	0.00590	0.00725	0.00357	-0.00056	-0.00235	0.00079	-0.00083	0.00093	0.00150
80	0.00425	0.00570	0.00189	-0.00044	-0.00089	-0.00022	-0.00021	0.00026	0.00131
100	0.00265	0.00441	0.00168	0.00024	-0.00059	-0.00046	-0.00002	-0.00006	0.00075
120	0.00279	0.00281	0.00143	0.00113	-0.00022	-0.00065	0.00005	0.	-0.00004
140	0.00276	0.00223	0.00144	0.00094	0.00009	-0.00036	0.	0.00044	0.00007
160	0.00175	0.00198	0.00110	0.00036	0.00040	0.00015	0.00024	0.00035	0.00026
180	0.00117	0.00158	0.00063	0.00011	0.00019	0.00021	-0.00010	0.00018	-0.00003
200	0.00088	0.00129	0.00065	-0.00004	0.00016	0.00003	0.00020	0.00002	-0.00018
250	0.00093	0.00074	0.00045	0.00004	-0.00006	-0.00010	-0.00001	0.00018	-0.00005
300	0.00044	0.00074	0.00032	0.00005	0.00004	-0.00005	-0.00002	0.00014	-0.00004
350	0.00037	0.00032	0.00014	0.00001	-0.00006	-0.00005	-0.00001	0.00002	-0.00010
400	0.00062	0.00045	0.00030	0.00006	-0.00010	-0.00007	-0.00006	-0.00001	-0.00005
Coherence					Coherence				
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.32402	0.10133	0.10325		60	0.13644	0.06234	0.12035	
5	0.26663	0.27569	0.08696		80	0.04069	0.01152	0.16557	
10	0.13313	0.43701	0.07027		100	0.03472	0.04762	0.07641	
15	0.16411	0.46739	0.04616		120	0.16905	0.10652	0.00040	
20	0.19788	0.38060	0.02161		140	0.14488	0.03261	0.06181	
25	0.24428	0.32264	0.06964		160	0.08358	0.04161	0.08728	
30	0.14472	0.18812	0.05941		180	0.02607	0.07340	0.03345	
35	0.03170	0.06651	0.05084		200	0.02396	0.07150	0.03912	
40	0.00100	0.05712	0.03700		250	0.00756	0.02413	0.10480	
45	0.02714	0.07360	0.02096		300	0.01259	0.02060	0.08953	
50	0.03338	0.01193	0.00431		350	0.03125	0.05019	0.23214	
55	0.00582	0.00108	0.04032		400	0.04875	0.04570	0.01926	

Prediction Errors, B, Gustiness, Run No. 107, Mast Displacement = 152 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	4.28	3.68	5.42
Variance	1.66	1.88	1.37
<i>S</i> and <i>T</i> = 30 sec			
<i>L</i> , sec	75-50	75-300	50-300 (ft)
-6	1.105	1.226	2.307
-12	1.080	1.206	2.341
-18	1.059	1.194	2.373
-24	1.042	1.189	2.399
-30	1.030	1.191	2.419
-36	1.024	1.203	2.433
-42	1.024	1.223	2.443
-48	1.030	1.251	2.450
-54	1.040	1.285	2.456
-60	1.053	1.322	2.461
-90	1.130	1.517	2.469
-120	1.233	1.771	2.553
-150	1.342	1.956	2.591
150	1.616	2.197	2.441
120	1.631	2.054	2.290
90	1.547	1.878	2.216
60	1.415	1.675	2.187
54	1.387	1.631	2.179
48	1.361	1.584	2.171
42	1.337	1.538	2.167
36	1.312	1.492	2.166
30	1.286	1.448	2.170
24	1.257	1.404	2.179
18	1.226	1.360	2.195
12	1.194	1.319	2.217
6	1.162	1.283	2.243

Figures in boldface represent least error for a given time lag.

Wind Speed, B ₂ Gustiness, Run No. 108									

Prediction Errors, B ₂ Gustiness, Run No. 108, Mast Displacement = 152 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	4.91	4.27	6.08
Variance	1.32	1.56	0.71
S and T = 30 sec			
L _z sec	75-50	75-300	50-300 (ft)
-6	0.807	1.240	1.478
-12	0.767	1.224	1.480
-18	0.731	1.213	1.487
-24	0.700	1.205	1.497
-30	0.676	1.198	1.511
-36	0.659	1.192	1.530
-42	0.650	1.187	1.552
-48	0.650	1.184	1.575
-54	0.659	1.183	1.599
-60	0.676	1.185	1.624
-90	0.853	1.234	1.731
-120	1.086	1.372	1.758
-150	1.283	1.552	1.731
150	1.462	1.689	1.788
120	1.417	1.691	1.785
90	1.319	1.662	1.782
60	1.196	1.565	1.720
54	1.168	1.537	1.694
48	1.140	1.505	1.665
42	1.110	1.470	1.634
36	1.078	1.435	1.605
30	1.044	1.400	1.577
24	1.008	1.367	1.550
18	0.970	1.337	1.525
12	0.931	1.309	1.503
6	0.890	1.284	1.488

Figures in boldface represent least error for a given time lag.

Wind Speed, B _z Gustiness, Run No. 112									
	A=75			B=50		C=300			(ft)
	Mean (m/sec)			4.44	4.37	6.03			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.16928	0.13090	0.20493	0.09960	0.00240	0.16564	0.00160	0.12909	0.00040
5	0.06959	0.05230	0.06336	0.03540	0.00702	0.05732	0.00501	0.03741	0.00073
10	0.04461	0.03499	0.03458	0.01514	0.00169	0.03131	-0.00001	0.01087	0.00074
15	0.02737	0.02737	0.03431	0.00655	-0.00429	0.02025	-0.00373	0.00737	0.00480
20	0.02106	0.02740	0.01981	0.00401	-0.00184	0.01157	-0.00320	0.00550	0.00311
25	0.01332	0.02793	0.00967	0.00319	0.00128	0.00436	-0.00060	0.00549	0.00144
30	0.00938	0.02406	0.00891	0.00303	0.00011	0.00088	-0.00068	0.00593	0.00303
35	0.01006	0.02062	0.00742	-0.00013	-0.00075	0.00128	-0.00148	0.00490	0.00224
40	0.01107	0.01970	0.00769	-0.00024	-0.00097	0.00326	-0.00070	0.00341	0.00107
45	0.00754	0.02072	0.00806	-0.00145	-0.00260	0.00158	-0.00025	0.00150	0.00255
50	0.00727	0.02049	0.00603	-0.00290	-0.00504	0.	-0.00154	0.00193	0.00183
55	0.00620	0.01219	0.00511	-0.00179	-0.00411	-0.00083	-0.00086	0.00178	-0.00091
60	0.00550	0.00885	0.00400	-0.00097	-0.00149	-0.00082	-0.00065	0.00284	0.00155
80	0.00379	0.00560	0.00248	-0.00030	-0.00078	-0.00037	-0.00104	0.00215	0.00057
100	0.00310	0.00515	0.00196	0.00102	-0.00038	0.00010	-0.00111	0.00056	0.00034
120	0.00293	0.00428	0.00141	0.00123	0.00050	-0.00010	-0.00058	-0.00075	0.00002
140	0.00238	0.00302	0.00087	0.00030	0.00036	-0.00003	-0.00019	0.00013	0.00012
160	0.00211	0.00233	0.00073	-0.00016	0.00061	-0.00001	0.00019	0.00014	0.00020
180	0.00170	0.00255	0.00097	-0.00006	0.00013	-0.00017	0.00024	0.00009	-0.00004
200	0.00146	0.00209	0.00085	0.00010	-0.00003	-0.00025	0.00017	-0.00011	-0.00014
250	0.00116	0.00110	0.00059	-0.00002	0.00001	0.00023	0.00003	0.00004	-0.00021
300	0.00058	0.00081	0.00051	-0.00053	-0.00022	0.00003	-0.00004	-0.00004	-0.00010
350	0.00068	0.00066	0.00034	-0.00008	0.00007	0.00003	-0.00004	0.00008	0.00008
400	0.00077	0.00070	0.00044	-0.00004	-0.00006	-0.00021	0.	-0.00004	-0.00013
Coherence									
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.44795	0.79097	0.62122		60	0.06494	0.04977	0.29571	
5	0.35786	0.75085	0.42250		80	0.03291	0.12964	0.35624	
10	0.14868	0.63549	0.09811		100	0.07421	0.20443	0.04252	
15	0.08184	0.45149	0.08238		120	0.14058	0.08385	0.09328	
20	0.03373	0.34541	0.07355		140	0.05180	0.01648	0.01781	
25	0.03176	0.15038	0.11927		160	0.11545	0.02288	0.05124	
30	0.04073	0.01480	0.20686		180	0.00473	0.05246	0.00392	
35	0.00279	0.05129	0.18972		200	0.00357	0.07365	0.01784	
40	0.00458	0.13060	0.08567		250	0.00039	0.07861	0.07042	
45	0.05673	0.04211	0.05241		300	0.70094	0.00845	0.02808	
50	0.22698	0.05410	0.05725		350	0.02518	0.01081	0.05704	
55	0.26590	0.04509	0.06416		400	0.00965	0.13017	0.06006	

Prediction Errors, B ₂ Gustiness, Run No. 112, Mast Displacement = 225 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	4.44	4.37	6.03
Variance	2.02	2.28	1.17
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	1.897	1.337	2.425
-12	1.872	1.323	2.487
-18	1.852	1.319	2.560
-24	1.836	1.325	2.640
-30	1.825	1.344	2.721
-36	1.825	1.376	2.799
-42	1.835	1.417	2.871
-48	1.853	1.467	2.935
-54	1.876	1.525	2.989
-60	1.906	1.588	3.034
-90	2.116	1.944	3.141
-120	2.267	2.268	3.197
-150	2.303	2.529	3.242
150	2.313	2.537	3.162
120	2.168	2.327	3.061
90	2.020	2.048	2.909
60	1.982	1.749	2.690
54	1.990	1.697	2.634
48	1.998	1.649	2.575
42	2.004	1.606	2.516
36	2.007	1.567	2.460
30	2.006	1.527	2.411
24	1.998	1.487	2.373
18	1.983	1.450	2.349
12	1.965	1.415	2.342
6	1.945	1.384	2.352

Figures in boldface represent least error for a given time lag.

Wind Speed, B ₁ -B ₂ Gustiness, Run No. 113									
				A=75	B=50	C=300 (ft)			
Mean (m/sec)				3.75	3.97	5.50			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.09583	0.07474	0.20794	0.03111	-0.00560	0.10178	-0.01040	0.06524	0.00240
5	0.04204	0.03842	0.06939	0.01197	-0.00776	0.03721	-0.01474	0.02031	0.00384
10	0.03765	0.04911	0.04277	0.01494	-0.01774	0.02619	-0.01365	0.01635	0.00418
15	0.02796	0.04400	0.03115	0.01446	-0.01745	0.01709	-0.00933	0.01042	0.00495
20	0.01863	0.02498	0.01760	0.00530	-0.00822	0.00860	-0.00451	0.00136	0.00313
25	0.02207	0.01671	0.01138	-0.00177	-0.00635	0.00746	-0.00455	-0.00150	0.00219
30	0.02356	0.01473	0.00793	-0.00174	-0.00561	0.00399	-0.00298	-0.00090	-0.00623
35	0.01612	0.01075	0.00646	-0.00048	-0.00259	0.00095	-0.00147	-0.00009	-0.00164
40	0.01113	0.00915	0.00711	-0.00147	-0.00143	0.00182	-0.00229	-0.00066	-0.00132
45	0.01195	0.00978	0.00981	-0.00014	-0.00518	0.00382	-0.00293	0.00179	0.00103
50	0.00961	0.01150	0.00668	0.00048	-0.00413	0.00202	-0.00025	0.00124	0.00071
55	0.00855	0.01290	0.00499	0.00111	-0.00198	0.00015	0.00029	0.00146	-0.00478
60	0.00675	0.01198	0.00373	-0.00076	-0.00132	0.00047	-0.00165	0.00099	-0.00113
80	0.00448	0.00520	0.00396	-0.00109	-0.00016	0.00026	-0.00096	0.00052	-0.00049
100	0.00413	0.00383	0.00228	0.00046	0.00023	0.00001	-0.00054	0.	-0.00009
120	0.00342	0.00344	0.00098	0.00059	0.00029	-0.00010	0.00018	-0.00011	0.00040
140	0.00279	0.00253	0.00095	-0.00017	-0.00044	0.00008	0.00035	-0.00008	0.00044
160	0.00237	0.00190	0.00090	0.00009	0.00036	0.00019	0.00015	0.00001	0.00011
180	0.00189	0.00169	0.00062	0.00005	-0.00044	-0.00015	0.00012	-0.00003	0.00008
200	0.00126	0.00159	0.00050	-0.00003	-0.00016	0.00011	0.00016	0.00001	-0.00001
250	0.00108	0.00094	0.00050	0.00004	-0.00033	0.00002	0.00004	-0.00002	-0.00013
300	0.00074	0.00068	0.00036	-0.00010	-0.00007	0.00016	0.00006	0.	-0.00011
350	0.00066	0.00073	0.00025	0.00020	0.00002	0.00008	-0.00008	0.00002	-0.00004
400	0.00044	0.00107	0.00014	0.00015	-0.00009	0.00008	0.00001	0.00007	-0.00005
Coherence									
Freq.	75-50			(ft)	Freq.	75-300			(ft)
0	0.13951	0.52529	0.27424		60	0.02869	0.11691	0.05051	
5	0.12599	0.54911	0.16026		80	0.05210	0.05576	0.02479	
10	0.29092	0.54167	0.13559		100	0.01672	0.03098	0.00093	
15	0.41747	0.43529	0.09710		120	0.03674	0.01265	0.05105	
20	0.20555	0.28760	0.02649		140	0.03152	0.04863	0.08321	
25	0.11783	0.30401	0.03705		160	0.03058	0.02747	0.09836	
30	0.09941	0.13274	0.33921		180	0.06139	0.03149	0.00697	
35	0.04004	0.02942	0.03885		200	0.01323	0.05984	0.00025	
40	0.04130	0.10813	0.03348		250	0.10885	0.00370	0.03681	
45	0.22976	0.22015	0.04950		300	0.02961	0.10961	0.04943	
50	0.15642	0.06454	0.02658		350	0.08385	0.07758	0.01096	
55	0.04672	0.00250	0.38806		400	0.06500	0.10552	0.04940	

Prediction Errors, B ₁ -B ₂ Gustiness, Run No. 113, Mast Displacement = 225 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	3.75	3.97	5.50
Variance	1.69	2.16	1.30
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	2.024	1.893	2.815
-12	1.953	1.845	2.813
-18	1.888	1.811	2.818
-24	1.829	1.793	2.829
-30	1.778	1.794	2.848
-36	1.736	1.810	2.875
-42	1.704	1.840	2.907
-48	1.684	1.880	2.943
-54	1.675	1.928	2.981
-60	1.679	1.981	3.018
-90	1.794	2.268	3.169
-120	1.936	2.517	3.272
-150	2.078	2.739	3.397
150	2.765	3.497	3.020
120	2.669	3.340	2.888
90	2.622	3.118	2.858
60	2.569	2.800	2.912
54	2.549	2.724	2.920
48	2.524	2.644	2.924
42	2.491	2.561	2.924
36	2.452	2.474	2.918
30	2.407	2.382	2.906
24	2.357	2.289	2.890
18	2.300	2.197	2.871
12	2.238	2.109	2.852
6	2.170	2.026	2.836

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 119									
	A=75			B=50		C=300			(ft)
	Mean (m/sec)			4.05	3.25	5.96			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.06580	0.06543	0.09875	0.05551	0.00160	0.06827	-0.00360	0.05535	-0.00760
5	0.03379	0.03520	0.03620	0.02876	0.00282	0.02548	-0.00698	0.02373	-0.01191
10	0.02906	0.02988	0.01633	0.02312	-0.00080	0.01046	0.00056	0.01240	-0.00168
15	0.01873	0.01876	0.00806	0.01276	-0.00274	0.00314	0.00267	0.00493	0.00242
20	0.01600	0.01602	0.00697	0.00964	-0.00449	0.00451	0.00029	0.00397	0.00130
25	0.01600	0.02006	0.00688	0.00898	-0.00605	0.00397	-0.00102	0.00302	-0.00032
30	0.01450	0.02260	0.00561	0.00751	-0.00778	0.00114	-0.00197	0.00166	-0.00148
35	0.01189	0.02086	0.00415	0.00686	-0.00684	-0.00012	-0.00165	0.00029	-0.00217
40	0.00828	0.01859	0.00335	0.00653	-0.00152	-0.00092	-0.00063	-0.00053	-0.00152
45	0.00748	0.01347	0.00257	0.00327	-0.00079	-0.00102	-0.00031	0.00016	-0.00105
50	0.00840	0.01121	0.00149	0.00080	-0.00424	-0.00077	-0.00005	0.00094	-0.00066
55	0.00838	0.01290	0.00134	-0.00043	-0.00423	-0.00011	-0.00035	-0.00025	-0.00063
60	0.00811	0.01498	0.00126	-0.00226	-0.00033	0.00032	-0.00071	0.00038	-0.00008
80	0.00560	0.01245	0.00130	0.00160	0.00009	0.00047	-0.00082	-0.00085	0.00005
100	0.00277	0.01370	0.00094	-0.00017	-0.00003	0.00011	-0.00008	-0.00033	0.00044
120	0.00164	0.01650	0.00052	0.00046	0.00016	-0.00013	0.00016	0.00017	-0.00021
140	0.00166	0.01700	0.00060	0.00017	0.00011	0.00030	0.00012	0.00002	0.00009
160	0.00111	0.01610	0.00033	0.00060	0.00019	0.00001	0.00023	0.00105	0.00011
180	0.00213	0.01685	0.00071	0.00183	-0.00014	0.00015	0.00024	0.00122	0.00049
200	0.00184	0.01710	0.00043	0.00160	-0.00073	-0.00010	0.00010	0.00010	0.00001
250	0.00072	0.01685	0.00028	-0.00008	-0.00068	0.00005	0.00009	-0.00013	0.00021
300	0.00063	0.01493	0.00014	-0.00041	-0.00003	0.00001	-0.00003	0.00021	0.00030
350	0.00082	0.01700	0.00013	0.00146	0.00152	-0.00011	0.00002	-0.00021	0.00020
400	0.00045	0.01550	0.00012	-0.00034	-0.00003	0.00001	0.00010	-0.00012	-0.00028
Coherence									
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.71631	0.71929	0.48310		60	0.04294	0.05935	0.06799	
5	0.70211	0.57060	0.55324		80	0.03683	0.12271	0.04479	
10	0.61634	0.23122	0.32090		100	0.00079	0.00711	0.02349	
15	0.48474	0.11253	0.19947		120	0.00877	0.04984	0.00851	
20	0.44121	0.18314	0.15629		140	0.01469	0.10482	0.09613	
25	0.36529	0.15263	0.06683		160	0.01155	0.03083	0.09017	
30	0.35682	0.06369	0.03901		180	0.09385	0.05297	0.14448	
35	0.37837	0.05547	0.05537		200	0.09830	0.02528	0.00137	
40	0.29203	0.04482	0.04161		250	0.03864	0.05258	0.01293	
45	0.11232	0.05912	0.03259		300	0.01797	0.01134	0.06416	
50	0.19771	0.04757	0.07898		350	0.31865	0.11726	0.03805	
55	0.16723	0.01199	0.02658		400	0.01670	0.18704	0.04989	

Prediction Errors, B, Gustiness, Run No. 119, Mast Displacement = 68 m				
	75-ft level	50-ft level	300-ft level	
Mean wind speed, m/sec	4.05	3.25	5.96	
Variance	1.77	1.08	1.17	
S and T = 30 sec				
L, sec	75-50	75-300	50-300	(ft)
-6	0.857	1.538	3.233	
-12	0.837	1.527	3.222	
-18	0.827	1.519	3.211	
-24	0.823	1.517	3.201	
-30	0.825	1.519	3.196	
-36	0.836	1.529	3.194	
-42	0.863	1.543	3.202	
-48	0.904	1.561	3.224	
-54	0.954	1.581	3.255	
-60	1.007	1.603	3.290	
-90	1.320	1.735	3.500	
-120	1.567	1.898	3.665	
-150	1.630	2.040	3.763	
150	1.551	2.003	3.859	
120	1.585	1.894	3.710	
90	1.525	1.766	3.602	
60	1.386	1.693	3.493	
54	1.348	1.683	3.460	
48	1.301	1.675	3.426	
42	1.249	1.666	3.400	
36	1.196	1.656	3.378	
30	1.145	1.643	3.360	
24	1.096	1.626	3.344	
18	1.043	1.607	3.324	
12	0.988	1.587	3.297	
6	0.935	1.568	3.270	

Figures in boldface represent least error for a given time lag.

Wind Speed, B ₁ Gustiness, Run No. 120									
				A=75	B=50	C=300 (ft)			
Mean (m/sec)				3.42	2.70	4.52			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.06758	0.04104	0.06498	0.03907	0.00320	0.04666	-0.00160	0.01700	-0.00480
5	0.02756	0.02052	0.02213	0.01700	0.00443	0.01458	-0.00378	0.00670	-0.00559
10	0.01774	0.02032	0.00945	0.01387	0.00248	0.00465	-0.00211	0.00134	-0.00330
15	0.01301	0.01602	0.00615	0.00893	0.00227	0.00236	-0.00050	0.00049	-0.00240
20	0.01370	0.01425	0.00522	0.00888	-0.00030	0.00174	0.00062	0.00175	0.00004
25	0.01249	0.01293	0.00349	0.00889	-0.00254	0.00183	-0.00040	0.00169	0.00096
30	0.00685	0.00869	0.00236	0.00433	-0.00181	0.00143	-0.00054	0.00054	0.00023
35	0.00543	0.00716	0.00228	0.00269	-0.00040	0.00085	-0.00019	0.00015	-0.00040
40	0.00399	0.00580	0.00215	0.00082	-0.00040	0.00017	-0.00034	0.00024	0.00004
45	0.00440	0.00605	0.00240	0.00018	-0.00092	0.00035	-0.00019	0.00096	-0.00003
50	0.00431	0.00661	0.00224	-0.00029	-0.00057	0.00003	0.00010	0.00110	-0.00016
55	0.00401	0.00792	0.00168	-0.00015	-0.00103	-0.00017	-0.00085	0.00022	-0.00018
60	0.00347	0.00345	0.00095	-0.00012	-0.00149	-0.00047	-0.00037	-0.00001	0.00013
80	0.00335	0.00245	0.00043	-0.00124	-0.00131	-0.00025	-0.00014	-0.00012	0.00019
100	0.00287	0.00244	0.00041	-0.00087	-0.00108	-0.00006	-0.00009	-0.00014	0.00003
120	0.00224	0.00230	0.00040	-0.00065	-0.00050	-0.00002	0.00006	-0.00010	-0.00015
140	0.00131	0.00173	0.00032	-0.00040	-0.00004	0.00002	0.00003	-0.00007	-0.00012
160	0.00121	0.00115	0.00026	-0.00024	0.00010	0.00009	0.00005	0.00005	0.00006
180	0.00138	0.00098	0.00028	-0.00038	0.00019	-0.00023	0.00005	0.00012	0.00003
200	0.00098	0.00082	0.00019	-0.00028	0.00032	-0.00014	0.00007	0.00008	0.00002
250	0.00072	0.00035	0.00015	0.00003	-0.00026	-0.00002	0.	0.00002	-0.00002
300	0.00052	0.00032	0.00012	-0.00004	-0.00001	0.00003	0.00010	0.00003	0.00001
350	0.00032	0.00023	0.00006	-0.00008	0.00002	-0.00003	0.00001	0.00004	0.
400	0.00032	0.00017	0.00005	-0.	0.	-0.00001	0.	0.00003	-0.00001
Coherence									
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.55407	0.49637	0.11701		60	0.18665	0.10854	0.00519	
5	0.54573	0.37197	0.16767		80	0.39643	0.05699	0.04794	
10	0.55074	0.15554	0.06606		100	0.27465	0.00994	0.02049	
15	0.40734	0.07273	0.06090		120	0.13053	0.00446	0.03533	
20	0.40438	0.04771	0.04119		140	0.07131	0.00310	0.03486	
25	0.52932	0.08050	0.08372		160	0.15638	0.03719	0.02040	
30	0.37000	0.13324	0.01549		180	0.28431	0.14337	0.05576	
35	0.19023	0.06127	0.01118		200	0.22499	0.13158	0.04365	
40	0.03597	0.01684	0.00475		250	0.27183	0.00370	0.01524	
45	0.03301	0.01502	0.06353		300	0.01022	0.17468	0.02604	
50	0.01436	0.00113	0.08345		350	0.09239	0.05208	0.11594	
55	0.03411	0.11154	0.00607		400	0.	0.00625	0.11765	

Prediction Errors, B, Gustiness, Run No. 120, Mast Displacement = 68 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	3.44	2.07	4.52
Variance	1.12	0.94	0.32
<i>S</i> and <i>T</i> = 30 sec			
<i>L</i> , sec	75-50	75-300	50-300 (ft)
-6	0.472	0.971	1.814
-12	0.464	0.963	1.812
-18	0.461	0.957	1.812
-24	0.464	0.955	1.813
-30	0.476	0.956	1.815
-36	0.497	0.960	1.818
-42	0.525	0.967	1.822
-48	0.557	0.976	1.828
-54	0.592	0.987	1.831
-60	0.630	1.001	1.840
-90	0.819	1.081	1.861
-120	0.941	1.131	1.853
-150	1.018	1.146	1.838
150	0.903	1.254	2.103
120	0.851	1.215	2.069
90	0.754	1.150	2.035
60	0.634	1.077	1.967
54	0.613	1.065	1.948
48	0.595	1.054	1.928
42	0.580	1.045	1.909
36	0.566	1.035	1.891
30	0.551	1.024	1.874
24	0.536	1.014	1.859
18	0.520	1.004	1.846
12	0.506	0.995	1.835
6	0.493	0.987	1.825

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 121									

Prediction Errors, B, Gustiness, Run No. 121, Mast Displacement = 68 m				
	75-ft level	50-ft level	300-ft level	
Mean wind speed, m/sec	3.90	3.17	5.46	
Variance	1.54	1.93	0.49	
S and $T = 30$ sec				
L , sec	75-50	75-300	50-300	(ft)
-6	0.600	1.356	2.431	
-12	0.541	1.371	2.451	
-18	0.494	1.364	2.474	
-24	0.465	1.395	2.500	
-30	0.458	1.403	2.527	
-36	0.472	1.410	2.554	
-42	0.508	1.419	2.580	
-48	0.564	1.433	2.604	
-54	0.636	1.450	2.627	
-60	0.720	1.471	2.649	
-90	1.111	1.631	2.764	
-120	1.215	1.812	2.951	
-150	1.314	2.049	3.179	
150	1.441	1.913	2.878	
120	1.445	1.865	2.803	
90	1.493	1.688	2.669	
60	1.284	1.523	2.506	
54	1.225	1.490	2.479	
48	1.165	1.456	2.454	
42	1.105	1.423	2.432	
36	1.045	1.392	2.413	
30	0.986	1.366	2.400	
24	0.928	1.348	2.393	
18	0.868	1.336	2.391	
12	0.804	1.331	2.395	
6	0.736	1.333	2.403	

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 122									

Prediction Errors, B, Gustiness, Run No. 122, Mast Displacement = 68 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed,			
m/sec	3.50	2.78	5.50
Variance	1.14	1.30	0.37
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	0.998	1.478	3.887
-12	0.974	1.453	3.846
-18	0.958	1.431	3.804
-24	0.952	1.410	3.761
-30	0.956	1.392	3.720
-36	0.969	1.378	3.684
-42	0.991	1.368	3.654
-48	1.020	1.364	3.631
-54	1.054	1.366	3.618
-60	1.090	1.371	3.613
-90	1.254	1.481	3.709
-120	1.325	1.648	3.913
-150	1.377	1.810	4.103
150	1.507	2.304	4.006
120	1.491	2.109	3.864
90	1.478	1.905	3.838
60	1.401	1.751	3.933
54	1.374	1.726	3.956
48	1.343	1.701	3.975
42	1.308	1.677	3.992
36	1.270	1.653	4.004
30	1.229	1.630	4.010
24	1.187	1.606	4.008
18	1.145	1.582	3.999
12	1.104	1.557	3.982
6	1.065	1.530	3.956

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 125									
				A=75	B=50	C=300 (ft)			
Mean (m/sec)				5.18	4.20	7.81			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.12840	0.06850	0.16077	0.07953	-0.00040	0.12150	-0.00280	0.07184	-0.00520
5	0.05571	0.03681	0.06557	0.03500	-0.00047	0.04626	-0.00364	0.02756	-0.00543
10	0.03827	0.03724	0.03724	0.02824	-0.00418	0.02394	-0.00179	0.01625	-0.00346
15	0.03200	0.03684	0.02631	0.02716	-0.00257	0.01859	-0.00623	0.01640	-0.00678
20	0.02078	0.02674	0.01762	0.01747	-0.00052	0.00964	-0.00386	0.00920	-0.00473
25	0.01300	0.02539	0.01281	0.01223	-0.00390	0.00092	-0.00107	0.00254	-0.00321
30	0.01625	0.02832	0.01413	0.01115	-0.00820	-0.00133	0.00013	-0.00060	-0.00293
35	0.01692	0.02527	0.01253	0.00700	-0.00596	0.00138	0.00082	-0.00004	-0.00333
40	0.01358	0.01812	0.00784	0.00644	-0.00157	0.00256	-0.00392	0.00219	-0.00309
45	0.01033	0.01415	0.00421	0.00693	-0.00223	0.00246	-0.00152	0.00163	-0.00210
50	0.00950	0.01320	0.00358	0.00427	-0.00745	0.00224	-0.00085	0.00109	-0.00110
55	0.00845	0.01230	0.00340	0.00398	-0.00598	0.00117	-0.00085	0.00054	-0.00010
60	0.00760	0.01140	0.00263	0.00370	-0.00451	-0.00055	-0.00060	0.	0.00089
80	0.00540	0.00890	0.00119	0.00228	-0.00298	-0.00039	0.00020	-0.00019	0.00053
100	0.00369	0.00725	0.00128	0.00174	-0.00188	-0.00039	0.00028	-0.00029	-0.00008
120	0.00312	0.00670	0.00122	0.00062	-0.00150	0.00011	0.00005	-0.00051	-0.00010
140	0.00381	0.00110	0.00092	0.00060	0.00030	0.00015	0.00011	0.00005	0.00019
160	0.00373	0.00339	0.00060	-0.00016	0.00037	-0.00036	-0.00006	0.00037	-0.00009
180	0.00302	0.00349	0.00043	0.00040	0.00009	-0.00013	-0.00011	0.00021	-0.00004
200	0.00228	0.00278	0.00045	0.00020	-0.00047	-0.00012	-0.00005	0.00004	-0.00025
250	0.00189	0.00166	0.00041	0.00022	0.00014	-0.00015	-0.00004	0.00014	0.00002
300	0.00199	0.00130	0.00021	0.00008	-0.00036	-0.00004	0.00001	0.00019	0.00012
350	0.00102	0.00115	0.00016	-0.00012	-0.00002	-0.00003	0.00004	0.00001	0.00014
400	0.00131	0.00099	0.00018	-0.00007	0.00002	-0.00005	0.	0.	0.00001
Coherence									
Freq.	75-50	75-300	50-300	(ft)	Freq.	75-50	75-300	50-300	(ft)
0	0.71915	0.71551	0.47109		60	0.39278	0.33314	0.02642	
5	0.59747	0.58946	0.32691		80	0.29294	0.02989	0.02993	
10	0.57184	0.40439	0.19904		100	0.24529	0.04880	0.00975	
15	0.63134	0.45658	0.32492		120	0.12602	0.00581	0.03304	
20	0.54975	0.29450	0.22713		140	0.02663	0.06287	0.00954	
25	0.49924	0.01196	0.05152		160	0.01285	0.05952	0.07129	
30	0.41626	0.00778	0.02235		180	0.01595	0.02233	0.03045	
35	0.19768	0.01215	0.03503		200	0.04116	0.01647	0.05124	
40	0.17856	0.06950	0.10097		250	0.02167	0.03110	0.02939	
45	0.34680	0.18391	0.11863		300	0.05257	0.00407	0.18498	
50	0.58800	0.16878	0.05075		350	0.01262	0.01532	0.10707	
55	0.49647	0.07279	0.00721		400	0.00409	0.01060	0.00056	

Prediction Errors, B ₁ Gustiness, Run No. 125, Mast Displacement = 68 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	5.18	4.20	7.81
Variance	2.79	2.59	1.80
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	0.787	2.050	3.998
12	0.761	2.035	3.960
-18	0.760	2.029	3.930
-24	0.783	2.033	3.908
-30	0.830	2.047	3.895
-36	0.898	2.070	3.890
-42	0.982	2.101	3.895
-48	1.076	2.139	3.912
-54	1.176	2.183	3.942
-60	1.276	2.233	3.981
-90	1.676	2.500	4.279
-120	1.869	2.702	4.643
-150	1.969	2.899	4.944
150	2.000	3.245	5.202
120	1.877	3.018	5.060
90	1.753	2.805	4.971
60	1.609	2.551	4.755
54	1.565	2.496	4.687
48	1.509	2.440	4.614
42	1.442	2.383	4.537
36	1.364	2.325	4.459
30	1.277	2.270	4.381
24	1.183	2.219	4.306
18	1.087	2.173	4.236
12	0.995	2.134	4.168
6	0.910	2.100	4.103

Figures in boldface represent least error for a given time lag.

Wind Speed, B, Gustiness, Run No. 126									

Prediction Errors, B ₁ Gustiness, Run No. 126, Mast Displacement = 68 m			
	75-ft level	50-ft level	300-ft level
Mean wind speed, m/sec	3.56	3.09	4.54
Variance	1.32	1.12	1.04
S and T = 30 sec			
L, sec	75-50	75-300	50-300 (ft)
-6	1.301	1.167	2.514
-12	1.347	1.170	2.491
-18	1.397	1.178	2.481
-24	1.449	1.192	2.482
-30	1.502	1.209	2.494
-36	1.551	1.228	2.518
-42	1.596	1.248	2.551
-48	1.635	1.270	2.591
-54	1.667	1.293	2.636
-60	1.693	1.318	2.684
-90	1.737	1.473	2.906
-120	1.710	1.674	3.033
-150	1.705	1.870	3.097
150	2.043	1.917	3.134
120	2.029	1.801	3.181
90	1.903	1.654	3.205
60	1.580	1.471	3.086
54	1.505	1.432	3.042
48	1.433	1.394	2.991
42	1.367	1.354	2.934
36	1.310	1.315	2.875
30	1.264	1.278	2.815
24	1.233	1.245	2.755
18	1.218	1.218	2.696
12	1.219	1.196	2.640
6	1.235	1.180	2.590

Figures in boldface represent least error for a given time lag.

APPENDIX II

Wind Speed Components, B ₁ Gustiness, Run No. 913									
Freq.				A=75u	B=75v	C=300 (ft)			
	Mean (m/sec)			6.32	0.03	9.28			
	St. dev.			1.73	1.57	1.72			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.17954	0.05085	0.37591	-0.03003	0.00800	0.20801	-0.00560	-0.00587	-0.00640
5	0.08367	0.02635	0.14301	-0.01207	0.01179	0.07704	-0.00889	-0.00318	-0.00917
10	0.05668	0.03008	0.07612	-0.00610	0.00133	0.03765	-0.01404	-0.00244	0.00110
15	0.03642	0.02652	0.04378	-0.00328	-0.00130	0.02294	-0.00794	-0.00180	-0.00028
20	0.03331	0.01784	0.03397	-0.00018	0.00717	0.01755	-0.01186	-0.00355	-0.00732
25	0.02747	0.01669	0.02631	0.00436	0.00383	0.00794	-0.01200	-0.00508	-0.00158
30	0.02635	0.01463	0.02132	0.00389	0.00438	0.00330	-0.00881	-0.00497	-0.00076
35	0.02001	0.01160	0.01828	-0.00081	0.00708	0.00184	-0.00516	-0.00208	-0.00118
40	0.01949	0.01084	0.01515	-0.00206	0.00422	0.00107	0.00029	0.00010	-0.00199
45	0.02525	0.01447	0.01479	-0.00105	0.00163	0.00395	0.00020	0.00215	-0.00105
50	0.02761	0.01921	0.01633	0.00072	0.00166	0.00855	-0.00162	0.00146	-0.00130
55	0.02090	0.01462	0.01527	0.00204	0.00083	0.00654	-0.00345	0.00156	-0.00113
60	0.01390	0.00900	0.01095	0.00080	0.00064	0.00166	-0.00263	0.00132	-0.00088
80	0.01220	0.00940	0.00500	0.00138	0.00080	-0.00146	-0.00143	0.00086	0.00010
100	0.00910	0.00615	0.00374	0.00006	0.00022	0.00261	0.00027	0.00012	-0.00006
120	0.00655	0.00362	0.00226	0.00055	0.00019	0.00136	0.00022	0.00016	0.00016
140	0.00505	0.00493	0.00183	-0.00111	0.00037	-0.00050	-0.00013	-0.00060	-0.00031
160	0.00384	0.00530	0.00156	-0.00158	0.00098	-0.00009	-0.00025	-0.00026	-0.00058
180	0.00271	0.00376	0.00126	-0.00130	0.00020	-0.00009	0.00016	0.00003	-0.00082
200	0.00196	0.00305	0.00106	-0.00033	0.00020	-0.00024	0.00013	-0.00019	-0.00034
250	0.00112	0.00218	0.00053	0.00028	-0.00036	-0.00005	-0.00006	-0.00014	-0.00014
300	0.00092	0.00299	0.00050	0.00022	-0.00008	-0.00015	-0.00016	-0.00033	0.00025
350	0.00071	0.00223	0.00021	0.00033	0.00003	-0.00008	0.00002	0.00004	0.
400	0.00093	0.00224	0.00017	-0.00014	-0.00019	-0.00004	0.00001	0.00001	0.00005
Coherence									
Freq.	75u-75v			75v-300 (ft)	Freq.	75u-75v			75v-300 (ft)
	75u-75v	75u-300	75v-300			75u-75v	75u-300	75v-300	
0	0.10579	0.64156	0.00395		60	0.00839	0.06355	0.02554	
5	0.12913	0.50262	0.02500		80	0.02219	0.06847	0.01595	
10	0.02286	0.37424	0.00313		100	0.00093	0.20693	0.04774	
15	0.01289	0.36958	0.00286		120	0.00612	0.14321	0.02709	
20	0.08657	0.39651	0.10921		140	0.05499	0.02888	0.05055	
25	0.07346	0.28647	0.06445		160	0.16985	0.01179	0.04886	
30	0.08902	0.15755	0.08104		180	0.16978	0.00987	0.14212	
35	0.21878	0.08205	0.02697		200	0.02491	0.03586	0.04692	
40	0.10438	0.00416	0.02417		250	0.08519	0.01028	0.03393	
45	0.01029	0.04189	0.02675		300	0.01992	0.10457	0.11465	
50	0.00617	0.16796	0.01218		350	0.06935	0.04561	0.00342	
55	0.01587	0.17132	0.01400		400	0.02674	0.01075	0.00683	

Wind Speed Components, B_1 Gustiness, Run No. 913 (Cont'd)

Ht.	$g(T)$							
	3	6	12	30	60	120	180	300 (sec)
75 μ	3.478	3.375	3.297	3.067	2.926	2.168	1.585	1.151
75 v	2.368	2.188	2.060	1.746	1.610	1.057	0.687	0.435
300	3.590	3.545	3.511	3.407	3.336	2.912	2.449	1.986
A-B	-0.173	-0.173	-0.172	-0.162	-0.151	-0.147	-0.159	-0.157
A-C	1.342	1.349	1.355	1.375	1.383	1.384	1.253	1.064
B-C	-0.101	-0.095	-0.091	-0.081	-0.078	-0.094	-0.085	-0.044

ONE-LAYER MODEL

	$C(T)$							
	3	6	12	30	60	120	180	300 (sec)
A-B	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001
A-C	1.382	1.385	1.388	1.396	1.400	1.426	1.442	1.453
B-C	0.075	0.084	0.091	0.113	0.124	0.175	0.280	0.537

Error (T)

A-B	1.539	1.480	1.435	1.322	1.269	1.028	0.830	0.660
A-C	2.612	2.562	2.522	2.399	2.320	1.856	1.469	1.155
B-C	9.471	9.468	9.466	9.461	9.457	9.434	9.408	9.380

TWO-LAYER MODEL

	$C(T)$							
	3	6	12	30	60	120	180	300 (sec)
75 v	0.065	0.073	0.079	0.091	0.090	0.118	0.215	0.429
300	1.382	1.385	1.388	1.396	1.400	1.426	1.442	1.453

Error (T)

300	2.610	2.559	2.519	2.396	2.318	1.852	1.458	1.120
-----	-------	-------	-------	-------	-------	-------	-------	-------

IDEAL MODEL

	Error (T)							
	3	6	12	30	60	120	180	300
A-B	1.494	1.435	1.392	1.282	1.232	0.993	0.798	0.633
A-C	1.484	1.470	1.460	1.426	1.404	1.265	1.106	0.955
B-C	1.871	1.860	1.851	1.824	1.805	1.688	1.550	1.400

Wind Speed, C Gustiness, Run No. 023									
		A=75		B=150		C=300		(ft)	
Mean (m/sec)		9.41		11.80		14.20			
St. dev.		2.11		2.45		2.42			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.07801	0.09142	0.06664	0.07966	-0.00160	0.05806	0.00240	0.06663	0.00080
5	0.06376	0.08448	0.06296	0.06557	-0.00205	0.04686	0.00449	0.05612	0.00147
10	0.03622	0.06385	0.06364	0.03827	-0.00651	0.03315	-0.00735	0.04625	-0.00532
15	0.03200	0.05199	0.06168	0.03073	-0.00370	0.02147	-0.00680	0.03915	-0.00381
20	0.04471	0.05435	0.05140	0.03726	-0.00614	0.01663	-0.00850	0.03748	-0.00100
25	0.05448	0.05817	0.06463	0.04201	-0.00999	0.02793	-0.02142	0.04547	-0.01399
30	0.04555	0.04555	0.05984	0.03743	-0.00520	0.02081	-0.01876	0.03004	-0.02103
35	0.03751	0.04602	0.05401	0.02873	-0.00772	0.00524	-0.01506	0.02107	-0.02299
40	0.03730	0.05157	0.04458	0.02943	-0.01716	0.00615	-0.01611	0.02462	-0.01739
45	0.02674	0.04046	0.05082	0.02159	-0.00589	0.00667	-0.00968	0.02344	-0.00473
50	0.02250	0.03010	0.04857	0.01916	-0.00164	0.00430	-0.00500	0.01205	-0.00744
55	0.02150	0.02850	0.02727	0.01787	-0.00131	0.00345	-0.00380	0.00695	-0.00691
60	0.02035	0.02705	0.02055	0.01675	-0.00100	0.00298	-0.00294	0.00530	-0.00655
80	0.01340	0.01850	0.01890	0.00989	-0.00008	0.00014	-0.00268	0.00021	-0.00670
100	0.00860	0.01555	0.01160	0.00635	-0.00006	-0.00258	-0.00120	-0.00002	-0.00173
120	0.00940	0.01375	0.00850	0.00695	-0.00138	-0.00222	-0.00174	-0.00050	-0.00078
140	0.01100	0.01115	0.00965	0.00695	-0.00347	-0.00124	-0.00028	-0.00162	-0.00136
160	0.00950	0.00940	0.00895	0.00416	-0.00254	-0.00014	0.00107	-0.00092	-0.00212
180	0.00640	0.00695	0.00595	0.00142	-0.00113	-0.00034	0.00097	0.00046	-0.00167
200	0.00655	0.00600	0.00459	0.00187	-0.00144	-0.00062	0.00114	0.00091	-0.00056
250	0.00515	0.00437	0.00428	-0.00034	-0.00102	0.00082	0.00061	0.00067	-0.00132
300	0.00284	0.00305	0.00196	0.00038	-0.00066	0.00024	-0.00007	0.00026	0.00027
350	0.00237	0.00233	0.00159	0.00032	-0.00043	-0.00007	0.00030	-0.00013	-0.00008
400	0.00163	0.00180	0.00146	-0.00008	-0.00058	-0.00025	0.00016	-0.00009	-0.00062
Coherence									
Coherence					Coherence				
Freq.	75-150	75-300	150-300	(ft)	Freq.	75-150	75-300	150-300	(ft)
0	0.89015	0.64955	0.72883		60	0.51150	0.04190	0.12771	
5	0.79897	0.55203	0.59254		80	0.39459	0.02844	0.12851	
10	0.65162	0.50018	0.53339		100	0.30155	0.08116	0.01659	
15	0.57585	0.25697	0.48250		120	0.38845	0.09957	0.00734	
20	0.58684	0.15178	0.50321		140	0.49200	0.01522	0.04158	
25	0.58838	0.35186	0.60200		160	0.26604	0.01370	0.06348	
30	0.68828	0.28800	0.49333		180	0.07404	0.02774	0.07256	
35	0.51269	0.12550	0.39126		200	0.14174	0.05601	0.04146	
40	0.60336	0.17882	0.39520		250	0.05137	0.04739	0.11716	
45	0.46291	0.10169	0.27809		300	0.06696	0.01123	0.02350	
50	0.54602	0.03980	0.13718		350	0.05203	0.02518	0.00629	
55	0.52395	0.04493	0.12359		400	0.11684	0.03702	0.14935	

Wind Speed, C Gustiness, Run No. 023 (Cont'd)

Ht.	$g(T)$							(sec)
	3	6	12	30	60	120	180	300
75	4.375	4.127	3.940	3.416	3.151	2.113	1.319	0.749
150	5.448	5.188	4.991	4.429	4.125	2.758	1.743	1.031
300	5.116	4.905	4.743	4.273	4.009	2.752	1.661	0.892
A-B	3.007	2.949	2.900	2.727	2.599	1.865	1.230	0.751
A-C	1.036	1.036	1.037	1.043	1.046	1.015	0.801	0.538
B-C	1.959	1.945	1.934	1.900	1.877	1.658	1.186	0.714

ONE-LAYER MODEL

Ht.	$C(T)$							(sec)
	3	6	12	30	60	120	180	300
A-B	1.227	1.230	1.232	1.237	1.239	1.245	1.249	1.252
A-C	1.449	1.453	1.456	1.464	1.469	1.485	1.496	1.502
B-C	1.172	1.174	1.175	1.180	1.182	1.192	1.197	1.200

Error (T)

A-B	2.173	2.056	1.967	1.713	1.594	1.182	0.855	0.571
A-C	3.409	3.299	3.213	2.953	2.807	2.109	1.493	0.985
B-C	2.854	2.758	2.684	2.456	2.324	1.654	1.152	0.815

TWO-LAYER MODEL

Ht.	$C(T)$							(sec)
	3	6	12	30	60	120	180	300
150	0.901	0.918	0.932	0.978	1.004	1.110	1.115	0.991
300	0.343	0.324	0.308	0.254	0.225	0.103	0.103	0.261
Error (T)								
300	2.791	2.706	2.639	2.431	2.306	1.651	1.149	0.807

IDEAL MODEL

Error (T)								
A-B	1.676	1.612	1.561	1.416	1.341	1.008	0.742	0.515
A-C	2.039	1.989	1.950	1.831	1.762	1.397	1.015	0.685
B-C	1.886	1.834	1.793	1.668	1.596	1.225	0.880	0.620

Wind Speed Components, C Gustiness, Run No. 023									
				A=75u	B=75v	C=300 (ft)			
Mean (m/sec)				9.38	0.07	14.20			
St. dev.				2.16	2.06	2.42			
Spectra									
Freq.	A	B	C	CAB	QAB	CAC	QAC	CBC	QBC
0	0.15409	0.13137	0.12922	0.01090	0.00400	0.11486	-0.00040	0.02766	-0.00080
5	0.06255	0.04626	0.06115	-0.00396	0.00583	0.04646	-0.00044	0.00231	-0.00199
10	0.03540	0.02496	0.06159	-0.00376	-0.00315	0.03233	-0.00688	0.00166	0.00227
15	0.03221	0.01722	0.05936	0.00330	0.00193	0.02059	-0.00554	0.00598	0.00377
20	0.04646	0.01637	0.05457	0.00890	0.00813	0.01587	-0.00708	0.00695	0.00180
25	0.05678	0.01704	0.06463	0.01016	0.00995	0.02816	-0.02135	0.01096	-0.00589
30	0.04777	0.01367	0.06057	0.00409	0.00714	0.02120	-0.01960	0.00428	-0.00682
35	0.03884	0.01192	0.05347	0.00287	0.00346	0.00474	-0.01570	-0.00444	-0.00721
40	0.03700	0.01302	0.04312	0.00149	0.00112	0.00492	-0.01594	-0.00329	-0.00161
45	0.02511	0.01479	0.03742	0.00065	0.00184	0.00432	-0.00978	-0.00330	-0.00172
50	0.02860	0.01246	0.03173	-0.00018	0.00257	0.00412	-0.00901	-0.00329	-0.00183
55	0.02440	0.01218	0.02604	-0.00106	0.00329	0.00372	-0.00554	-0.00329	-0.00193
60	0.02020	0.01190	0.02035	-0.00195	0.00402	0.00332	-0.00208	-0.00329	-0.00204
80	0.01385	0.00855	0.01790	-0.00100	0.00134	0.00038	-0.00223	-0.00062	-0.00110
100	0.00925	0.01000	0.01100	-0.00228	0.00207	-0.00250	-0.00142	0.00277	0.00028
120	0.00975	0.01110	0.00810	-0.00156	0.00310	-0.00248	-0.00178	0.00139	-0.00048
140	0.01110	0.01020	0.00925	0.00050	0.00140	-0.00168	0.00035	-0.00057	-0.00286
160	0.00985	0.00800	0.00870	-0.00015	-0.00006	-0.00043	0.00179	-0.00083	-0.00268
180	0.00700	0.00655	0.00605	-0.00068	-0.00084	-0.00027	0.00148	-0.00059	-0.00214
200	0.00695	0.00640	0.00479	-0.00067	-0.00061	-0.00046	0.00266	-0.00040	-0.00102
250	0.00574	0.00499	0.00428	-0.00046	0.00093	0.00076	0.00087	0.00011	-0.00014
300	0.00342	0.00497	0.00214	-0.00010	-0.00006	0.00024	0.00003	-0.00080	-0.00010
350	0.00284	0.00528	0.00156	-0.00016	0.00130	-0.00043	0.00044	0.00032	0.00038
400	0.00210	0.00505	0.00165	-0.00092	0.00024	-0.00073	0.00006	0.00092	-0.00038
Coherence									
Freq.	75u-75v	75u-300	75v-300 (ft)	Freq.	75u-75v	75u-300	75v-300 (ft)		
0	0.00666	0.66258	0.04511	60	0.08305	0.03734	0.06188		
5	0.01717	0.56438	0.00329	80	0.02361	0.02064	0.01042		
10	0.02723	0.50111	0.00514	100	0.10252	0.08124	0.07047		
15	0.02635	0.23778	0.04889	120	0.11128	0.11800	0.02405		
20	0.19105	0.11911	0.05770	140	0.01952	0.02868	0.09014		
25	0.20901	0.34030	0.14057	160	0.00033	0.03955	0.11309		
30	0.10368	0.28810	0.07830	180	0.02547	0.05344	0.12435		
35	0.04365	0.12951	0.11249	200	0.01846	0.21890	0.03916		
40	0.00721	0.17443	0.02390	250	0.03758	0.05432	0.00148		
45	0.00999	0.12037	0.02502	300	0.00080	0.00799	0.06111		
50	0.01863	0.10816	0.03585	350	0.11441	0.08543	0.02996		
55	0.04020	0.07008	0.04587	400	0.08524	0.15483	0.11891		

Wind Speed Components, C Gustiness, Run No. 023 (Cont'd)

Ht.	$g(T)$							
	3	6	12	30	60	120	180	300 (sec)
75u	4.775	4.494	4.285	3.713	3.433	2.349	1.520	0.934
75v	3.521	3.159	2.904	2.307	2.073	1.294	0.925	0.690
300	5.062	4.848	4.686	4.221	3.966	2.794	1.790	1.025
A-B	-0.068	-0.038	-0.017	0.027	0.044	0.103	0.074	0.013
A-C	1.113	1.127	1.137	1.154	1.159	1.136	0.930	0.672
B-C	0.136	0.127	0.124	0.132	0.139	0.141	0.164	0.103

ONE-LAYER MODEL

Ht.	$C(T)$							
	3	6	12	30	60	120	180	300 (sec)
A-B	0.006	0.007	0.007	0.007	0.008	0.008	0.008	0.008
A-C	1.448	1.452	1.456	1.465	1.470	1.487	1.499	1.506
B-C	0.320	0.354	0.384	0.487	0.545	0.874	1.246	1.578

Error (T)

A-B	1.877	1.777	1.704	1.519	1.440	1.137	0.961	0.831
A-C	3.498	3.374	3.279	3.003	2.855	2.162	1.561	1.061
B-C	14.365	14.356	14.349	14.329	14.317	14.263	14.212	14.175

TWO-LAYER MODEL

Ht.	$C(T)$							
	3	6	12	30	60	120	180	300 (sec)
75v	0.079	0.070	0.065	0.054	0.050	0.003	0.069	0.130
300	1.447	1.452	1.455	1.465	1.469	1.487	1.498	1.505

Error (T)

300	3.494	3.372	3.278	3.002	2.854	2.162	1.559	1.055
-----	-------	-------	-------	-------	-------	-------	-------	-------

IDEAL MODEL

	Error (T)							
	3	6	12	30	60	120	180	300
A-B	1.829	1.733	1.662	1.481	1.403	1.111	0.943	0.823
A-C	1.993	1.943	1.905	1.789	1.723	1.381	1.036	0.712
B-C	2.188	2.141	2.105	1.998	1.937	1.626	1.306	0.998

AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. MAGUI Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03, Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91
AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. MAGUI Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03, Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91
AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. MAGUI Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03, Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91

AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. NAGLE Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03. Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91
AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. NAGLE Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03. Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91
AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. NAGLE Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03. Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91
AD Accession No. Brookhaven National Laboratory, Upton, Long Island, New York A STUDY OF THE WIND PROFILE IN THE LOWEST 400 FEET OF THE ATMOSPHERE IRVING A. SINGER AND CONSTANCE M. NAGLE Progress Report No. 9, May 16, 1961, through September 15, 1961, 44 pp., 2 figures. Signal Corps Contract No. R-65-8-99812 SC-04-91, DA Project No. 3A99-07-001-03. Unclassified Report. This report continues the analysis of errors in predicting upper level wind speeds from speeds at a lower reference level by utilizing an unweighted predictor of varying averaging length and relative displacement in time. Data were obtained by displacing a 50-ft mast 68, 152, and 225 meters from the Ace tower. These data were then analyzed to determine the location producing the least prediction error. A study of the prediction of wind speed was made by using horizontal components at the reference level; however, no improvement occurred in the prediction errors.	Unclassified 1. Micrometeorology 2. Turbulence 3. Signal Corps Contract No. R-65-8-99812 SC-04-91

DISTRIBUTION LIST

ADDRESSEE	COPIES
ARDC Liaison Office, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-LNA	1
USCONARC Liaison Office, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-LNP	3
Commanding Officer, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-DR	1
Commanding Officer, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-ADT	1
Commanding Officer, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGR/SL-ADJ (Responsible File & Record Unit)	1
Commanding Officer, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-TNR	8
Commanding Officer, U.S. Army Signal Research & Development Laboratory, Fort Monmouth, N.J. ATTN: SIGRA/SL-SMA	8
OASD (R&E), Rm 3E1065, The Pentagon, Washington 25, D.C. ATTN: Technical Library	1
Chief of Research and Development, OCS, Department of the Army, Washington 25, D.C.	1
Chief Signal Officer, Department of the Army, Washington 25, D.C. ATTN: SIGRD	1
Director, U.S. Naval Research Laboratory, Washington 25, D.C. ATTN: Code 2027	1
Commander, WADD (WCOSI-3), Wright-Patterson Air Force Base, Ohio	1
Commander, Air Force Command & Control Development Division, Air Research & Development Command, USAF, Laurence Hanscom Field, Bedford, Mass. ATTN: CROTL	1
Commanding General, U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz.	1
Commander, Armed Services Technical Information Agency, Arlington Hall Station, Arlington 12, Va. ATTN: TIPDR	10
Chairman, U.S. Army Chemical Corps Meteorological Committee, Ft. Detrick, Frederick, Md.	1

DISTRIBUTION LIST

Address	Copies
Chief, Meteorology Division, U.S. Army Chemical Corps Proving Ground, Dugway Proving Ground, Utah	1
Director, Atmospheric Sciences Programs, National Science Foundation, Washington 25, D.C.	1
Director, Bureau of Research & Development, Federal Aviation Agency, Washington 25, D.C.	1
Officer in Charge, Meteorological Curriculum, U.S. Naval Postgraduate School, Monterey, Calif.	1
Officer in Charge, U.S. Naval Weather Research Facility, U.S. Naval Air Station, Bldg. R-III, Norfolk, Va.	1
Office of the Chief of Ordnance, Department of the Army, Washington 25, D.C.	1
Chief, Research Laboratory, R&D Operations, Army Ballistic Missile Agency, Redstone Arsenal, Huntsville, Ala. Attn: Mr. Reising	1
Commanding Officer, U.S. Army Signal Missile Support Agency, White Sands Missile Range, N.M. Attn: Missile Geophysics Division	1
Commanding Officer, Redstone Arsenal, Huntsville, Ala. Attn: Mr. J. Robins, ORDNANCE MKP	1
University of Illinois, General Engineering Department, 116 Transportation Bldg., Urbana, Ill. Attn: Dr. J.E. Pearson	1
Director, Federal Aviation Agency, Pomona, N.J. Attn: Mr. Hilbert	1
Signal Corps Liaison Office, MIT, 77 Massachusetts Ave., Bldg. 200-116, Cambridge 39, Mass. Attn: Mr. A. Bedrosian	1
Library, U.S. Weather Bureau, Washington 25, D.C.	1
Department of Meteorology and Oceanography, New York University, College of Engineering, University Heights, New York 53, N.Y.	1
Meteorology Department, Pennsylvania State University, University Park, Pa.	1
Commanding Officer, TRECOM, Ft. Eustis, Va. Attn: Lt. Col. Walter F. Molesky	1
Central Intelligence Agency, Washington 25, D.C. OCR/Standard Distribution	1
Douglas Aircraft Company, 1820 Statesville, Charlotte 6, N.C. Attn: E-250, Mr. D. Black	1