

AD-A147 967

OPERATIONAL TACTICAL DECISION AID (OTDA) FOR INFRARED
(8-12 MICROMETERS). (U) SYSTEMS AND APPLIED SCIENCES
CORP VIENNA VA D B HODGES 30 SEP 83 SCIENTIFIC-8-VOL-2

1/1

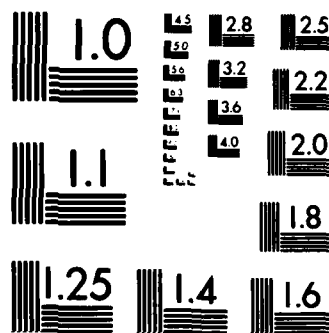
UNCLASSIFIED

AFGL-TR-83-0334-VOL-2 F19628-81-C-0042

F/G 12/1

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AFGL-TR-83-0334 (II)

12

OPERATIONAL TACTICAL DECISION AID (OTDA) FOR
INFRARED (8-12 μ m) SYSTEMS - MARK II
MANUAL VERSION

Appendix A - Atmospheric Transmission Tables

Donald B. Hodges

Systems and Applied Sciences Corporation (SASC)
1577 Springhill Road, Suite 600
Vienna, Virginia 22180

September 30, 1983

Scientific Report No. 8

Approved for public release; distribution unlimited

AIR FORCE GEOPHYSICS LABORATORY
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
HANSOM AFB, MASSACHUSETTS 01731

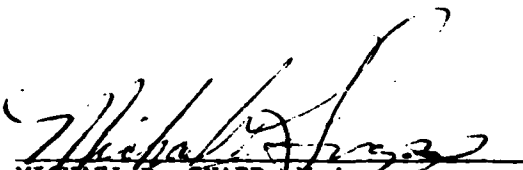
DTIC
ELECTE
NOV 26 1984
S
A

84 11 26 005

AD-A147 967

DTIC FILE COPY

This technical report has been reviewed and is approved for publication


MICHAEL R. SNAPP, Major
Contract Manager


KENNETH R. HARDY, Chief
Satellite Meteorology Branch

FOR THE COMMANDER


ROBERT A. McCLATCHEY, Director
Atmospheric Sciences Division

This report has been reviewed by the ESD Public Affairs Office (PA) and is releasable to the National Technical Information Service (NTIS).

Qualified requestors may obtain additional copies from the Defense Technical Information Center. All others should apply to the National Technical Information Service.

If your address has changed, or if you wish to be removed from the mailing list, or if the addressee is no longer employed by your organization, please notify AFGL/DAA, Hanscom AFB, MA 01731. This will assist us in maintaining a current mailing list.

Do not return copies of this report unless contractual obligations or notices on a specific document requires that it be returned.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFGL-TR-83-0334 (II)	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) OPERATIONAL TACTICAL DECISION AID (OTDA) FOR INFRARED (8-12 μ m) SYSTEMS - MARK II MANUAL VERSION Appendix A - Atmospheric Transmission Tables	5. TYPE OF REPORT & PERIOD COVERED Scientific Report No. 8	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) Donald B. Hodges	8. CONTRACT OR GRANT NUMBER(s) F19628-81-C-0042	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Systems and Applied Sciences Corporation (SASC) 1577 Springhill Road, Suite 600 Vienna, Virginia 22180	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 63707F 268802AB	
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Geophysics Laboratory Hanscom AFB, Massachusetts 01731 Michael Snapp, Maj., Contract Manager/LYS	12. REPORT DATE September 30, 1983	
	13. NUMBER OF PAGES 24	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS (of this report) UNCLASSIFIED	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Volume II of five volumes		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) TACTICAL DECISION AID AEROSOL EXTINCTION COEFFICIENT INFRARED PRECIPITATION EXTINCTION COEFFICIENT LOWTRAN RAIN EXTINCTION COEFFICIENT ATMOSPHERIC TRANSMISSION SNOW EXTINCTION COEFFICIENT MOLECULAR EXTINCTION COEFFICIENT		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The tables required to calculate 8-12 μ m atmospheric transmission at 4 km range for use in determining maximum lock-on range (MLOR) and maximum acquisition range (AR) from the Manual Version of the IR OTDA are presented. Tables adapted from AFGL models for calculating molecular, aerosol, and precipitation extinction coefficients as functions of various meteorological parameters are presented. An aerosol model selection procedure is provided as well as a table which converts total extinction coefficient to atmospheric transmission.		

PREFACE

This publication consists of a basic report and four appendixes, each issued as a separate document.

This format will facilitate operational use by accommodating the sizeable bulk of the materials presented and the CONFIDENTIAL security classification of Appendix D.

* * * *

The material contained herein is unchanged from Appendix A of SASC Report No. 3. The content of the appendix was the work of the co-authors of SASC Report No. 3, and the contributions of S. D. Hamilton, R. E. Hood, and R. F. Wachtmann are hereby acknowledged.

Another collaborator in this appendix was B. A. Mareiro, Jr.

Special thanks are due to Lt. Col. R. Wright, Lt. Col. K. Wantzloebe, Maj. W. Smith, Maj. J. Elrick and other representatives of Hq. Air Weather Service who continually enriched our understanding of the operator's problems.

Throughout the study we were supported and guided by the AFGL Contract Managers: Lt. Col. K. G. Cottrell to 2 May 1983, then Mr. R. V. Cormier.

The report was typed by D. M. Connor.



Accession For	
AFIS GRA&I	☒
AFIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Avail and/or	
Not	Special

AI

TABLE OF CONTENTS

A Brief Description of the Aerosol Selection Process.	7
Flowcharts — Figs. A-1A, A-1B	9
Approximate Values of Critical Boundary Layer Wind Speed — Fig. A-1C, A-1D	10
Table A-1	11
A. Precipitation Extinction Coefficient (B_p) for Snow Model as a Function of Visibility	11
B. Precipitation Extinction Coefficient (B_p) for Rain Model as a Function of Visibility	12
Table A-2. Relative Humidity (RH) as a Function of Temperature and Dewpoint	13
Table A-3	17
A. Aerosol Extinction Coefficient (B_{AER}) for Maritime Model as a Function of Visibility and Relative Humidity	17
B. Aerosol Extinction Coefficient (B_{AER}) for Urban Model as a Function of Visibility and Relative Humidity	19
C. Aerosol Extinction Coefficient (B_{AER}) for Rural Model as a Function of Visibility and Relative Humidity	20
D. Aerosol Extinction Coefficient (B_{AER}) for Fog Model as a Function of Visibility	21
Table A-4. Molecular Extinction Coefficient (B_{MOL}) as a Function of Temperature and Dewpoint	22
Table A-5. Atmospheric Transmission (τ_{ATM}) at Reference Range (4 km) as a Function of Total Extinction Coefficient (B_{TOT})	24

1. A Brief Description of the Aerosol Selection Process

The methodology is based on the properties of three non-fog aerosol models in LOWTRAN. The Rural Model describes the basic background aerosol contained in all airmasses. The Maritime Model describes the aerosol that exists in airmasses with a maritime history when the marine aerosol (mostly sea salt) is superimposed in significant concentrations on the background aerosol. The Urban Model describes aerosol properties when certain types of urban pollutants are superimposed on the background aerosol. Under certain conditions, a maritime aerosol may also contain the urban component. In this case, since the maritime aerosol produces the strongest 8-12 μm extinction of the above three aerosol conditions, the Maritime Model takes precedence over the Urban Model.

This algorithm quantifies the aerosol model selection on the basis of the history of the air mass expected over the target. The algorithm is based on a large body of published scientific literature on atmospheric aerosols; however, certain selection criteria (e.g., the overwater distance for transformation of the continental aerosol into maritime characteristics) are based on very limited quantities of observational data. Experience by users and publication of additional scientific data will undoubtedly lead to modification of at least some of these criteria.

In using the flow charts in Fig. A-1, the basic rule is to always move downward in each figure. The following are key symbols to aid in interpretation of the charts:

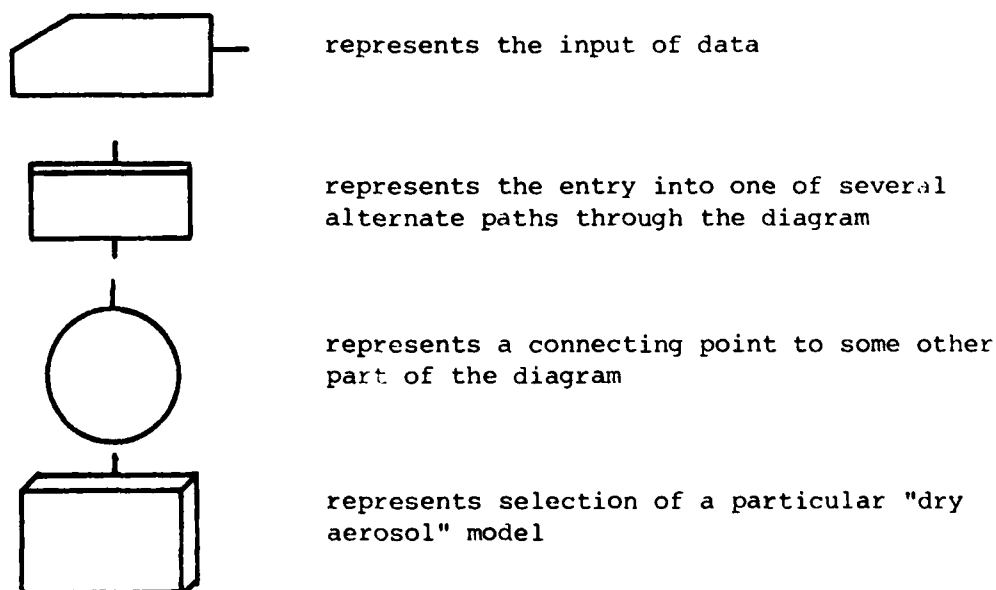


Figure A-1A

- a. Separates airmass by origin.
- b. Treats the possible transformation of airmasses with a continental origin so that their aerosol assumes the extinction properties of a maritime aerosol.

Figure A-1B treats mechanisms for removal of the sea-salt aerosol from maritime airmasses, namely, sedimentation and washout. When these processes are effective, the aerosol tends to return to rural-like properties.

Figures A-1C and A-1D treat the problem of determining when the urban model should be used to describe a polluted rural aerosol.

Fig. A-1A

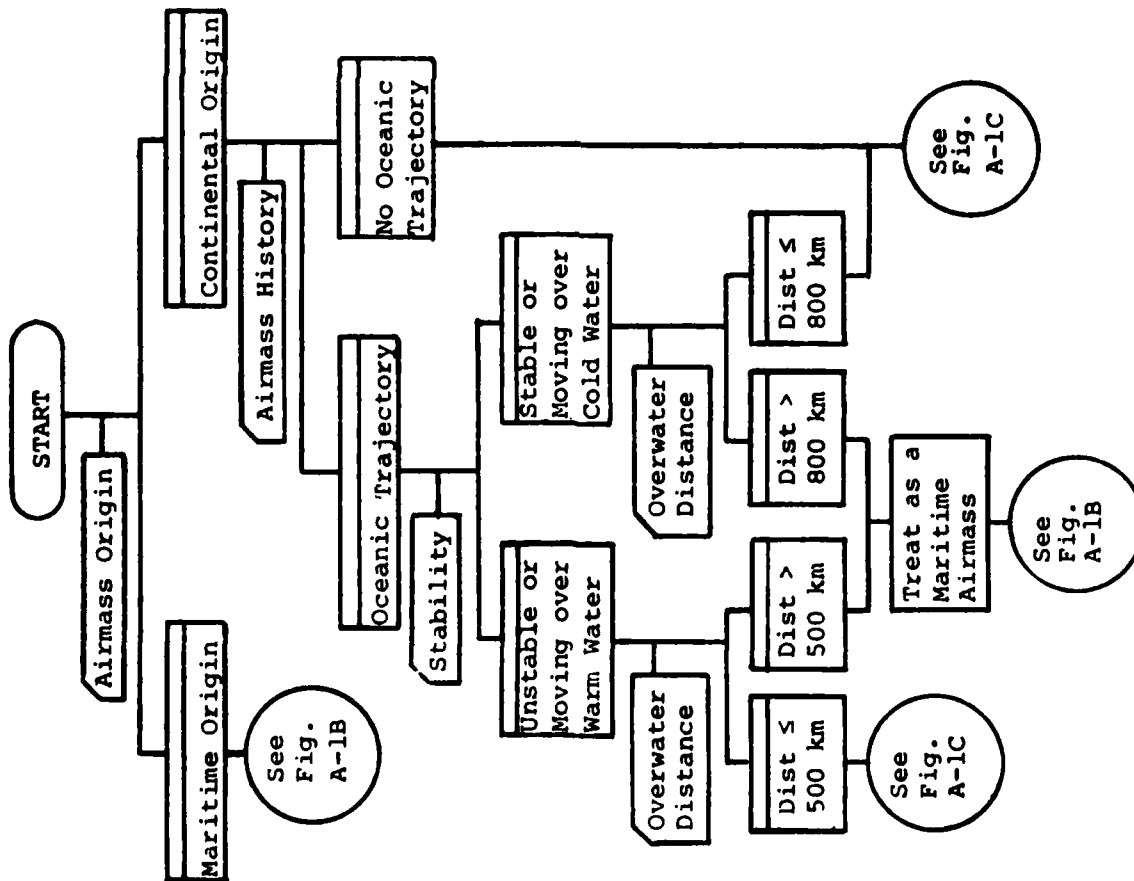


Fig. A-1. The Aerosol Model Selection Process

Fig. A-1B

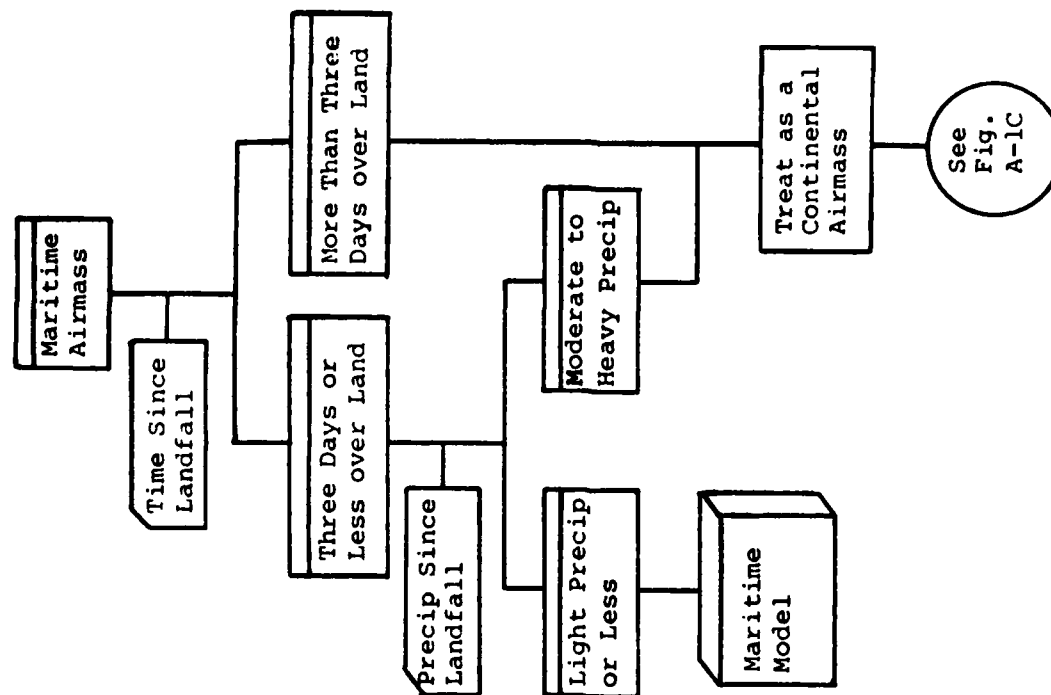


Fig. A-1C

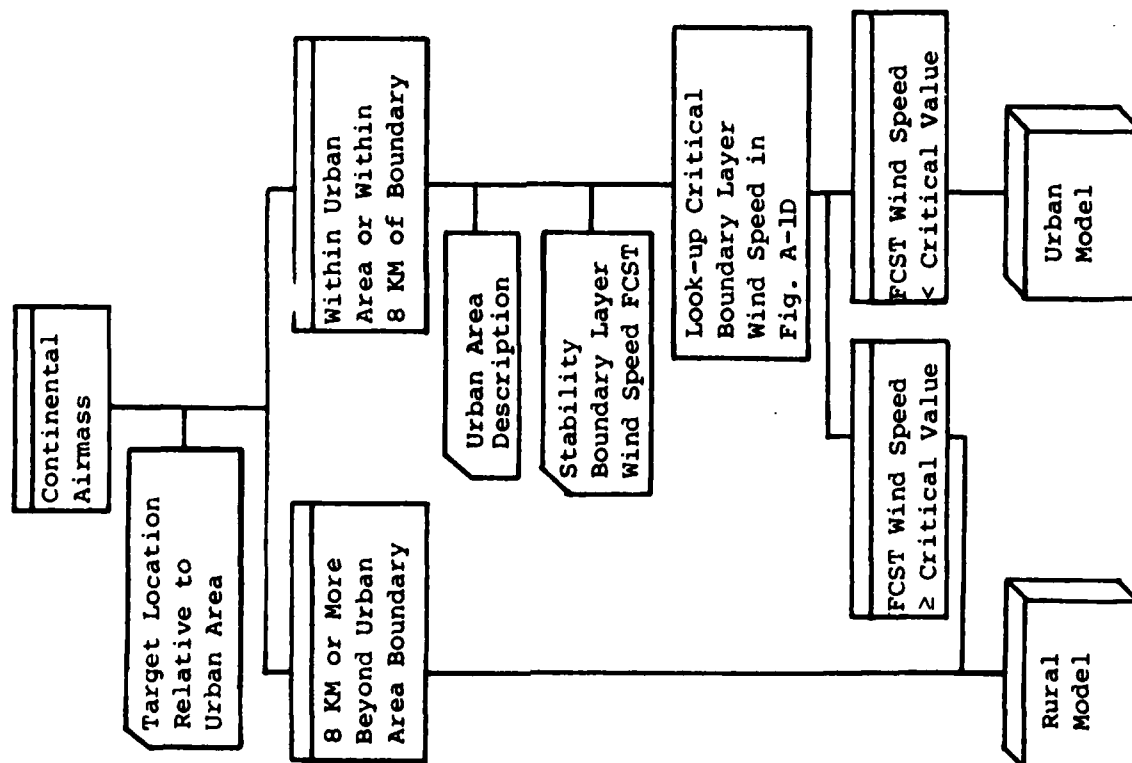


Fig. A-1 (Continued)

Fig. A-1D

Stability Condition	Critical Wind Speed (Knots)	
	Large and Heavily Industrialized Urban Areas (Area > 2000 KM ²)	Small - Medium Urban Areas or Large Areas Without Heavy Industrialization
Unstable	4	3
Neutral	8	5
Stable	25	15

Definitions of Stability:

- 1) Unstable: Lapse rate near dry adiabatic in lowest 1.5-2.0 KM enhances vertical diffusion.
- 2) Neutral: Lapse rate near the pseudo-adiabatic lapse rate or slightly more stable in the lowest 1.5-2.0 KM, with perhaps a weak inversion in the lowest 2 KM.
- 3) Stable: A strong inversion below 2 KM inhibits turbulent vertical diffusion.

Fig. A-1D. Approximate values of critical boundary layer wind speed (knots) for use of the urban aerosol model. Wind speed is tabulated against the size of the urban area and the stability condition. Definitions of stability categories are given above.

SNOW INTENSITY	VISIBILITY (KM)	EXTINCTION COEFFICIENT
HEAVY	.2	24.450
	.4	12.225
MODERATE	.6	8.150
	.8	6.113
	1.0	4.890
	1.5	3.260
	2.0	2.445
	2.5	1.956
	3.0	1.630
	4.0	1.223
LIGHT	5.0	.978
	6.0	.815
	7.0	.699
	8.0	.611
	9.0	.543
	10.0	.489
	15.0	.326
	20.0	.245

TABLE A-1A. PRECIPITATION EXTINCTION COEFFICIENT (B_p)

SNOW MODEL

RAIN INTENSITY	RAINFALL RATE (IN/HR)	EXTINCTION COEFFICIENT
LIGHT	.01	.154
	.05	.424
	.10	.657
	.15	.848
	.20	1.016
MODERATE	.25	1.170
	.30	1.312
	.35	1.446
	.40	1.573
	.45	1.694
HEAVY	.50	1.810
	.55	1.922
	.60	2.030
	.65	2.135
	.70	2.237
	.75	2.337
	.80	2.434
	.85	2.529
	.90	2.621
	.95	2.712
	1.00	2.801

TABLE A-1B. PRECIPITATION EXTINCTION COEFFICIENT (B_p)

RAIN MODEL

DEW POINT	-40	-39	-38	-37	-36	-35	-34	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21
-65	5	5	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1
-64	6	5	5	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1
-63	7	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	1
-62	8	7	7	6	6	5	5	4	4	4	4	3	3	3	3	3	3	3	3	1
-61	9	8	8	7	7	6	6	5	5	5	4	4	4	4	4	4	4	4	4	2
-60	10	9	9	8	8	7	7	6	6	6	5	5	5	5	5	5	5	5	5	2
-59	11	10	10	9	9	8	8	7	7	7	6	6	6	6	6	6	6	6	6	2
-58	12	11	11	10	10	9	9	8	8	8	7	7	7	7	7	7	7	7	7	2
-57	13	12	12	11	11	10	10	9	9	9	8	8	8	8	8	8	8	8	8	2
-56	14	13	13	12	12	11	11	10	10	10	9	9	9	9	9	9	9	9	9	2
-55	15	14	14	13	13	12	12	11	11	11	10	10	10	10	10	10	10	10	10	2
-54	16	15	15	14	14	13	13	12	12	12	11	11	11	11	11	11	11	11	11	2
-53	17	16	16	15	15	14	14	13	13	13	12	12	12	12	12	12	12	12	12	2
-52	18	17	17	16	16	15	15	14	14	14	13	13	13	13	13	13	13	13	13	2
-51	19	18	18	17	17	16	16	15	15	15	14	14	14	14	14	14	14	14	14	2
-50	20	19	19	18	18	17	17	16	16	16	15	15	15	15	15	15	15	15	15	2
-49	21	20	20	19	19	18	18	17	17	17	16	16	16	16	16	16	16	16	16	2
-48	22	21	21	20	20	19	19	18	18	18	17	17	17	17	17	17	17	17	17	2
-47	23	22	22	21	21	20	20	19	19	19	18	18	18	18	18	18	18	18	18	2
-46	24	23	23	22	22	21	21	20	20	20	19	19	19	19	19	19	19	19	19	2
-45	25	24	24	23	23	22	22	21	21	21	20	20	20	20	20	20	20	20	20	2
-44	26	25	25	24	24	23	23	22	22	22	21	21	21	21	21	21	21	21	21	2
-43	27	26	26	25	25	24	24	23	23	23	22	22	22	22	22	22	22	22	22	2
-42	28	27	27	26	26	25	25	24	24	24	23	23	23	23	23	23	23	23	23	2
-41	29	28	28	27	27	26	26	25	25	25	24	24	24	24	24	24	24	24	24	2
-40	30	29	29	28	28	27	27	26	26	26	25	25	25	25	25	25	25	25	25	2
-39	31	30	30	29	29	28	28	27	27	27	26	26	26	26	26	26	26	26	26	2
-38	32	31	31	30	30	29	29	28	28	28	27	27	27	27	27	27	27	27	27	2
-37	33	32	32	31	31	30	30	29	29	29	28	28	28	28	28	28	28	28	28	2
-36	34	33	33	32	32	31	31	30	30	30	29	29	29	29	29	29	29	29	29	2
-35	35	34	34	33	33	32	32	31	31	31	30	30	30	30	30	30	30	30	30	2
-34	36	35	35	34	34	33	33	32	32	32	31	31	31	31	31	31	31	31	31	2
-33	37	36	36	35	35	34	34	33	33	33	32	32	32	32	32	32	32	32	32	2
-32	38	37	37	36	36	35	35	34	34	34	33	33	33	33	33	33	33	33	33	2
-31	39	38	38	37	37	36	36	35	35	35	34	34	34	34	34	34	34	34	34	2
-30	40	39	39	38	38	37	37	36	36	36	35	35	35	35	35	35	35	35	35	2
-29	41	40	40	39	39	38	38	37	37	37	36	36	36	36	36	36	36	36	36	2
-28	42	41	41	40	40	39	39	38	38	38	37	37	37	37	37	37	37	37	37	2
-27	43	42	42	41	41	40	40	39	39	39	38	38	38	38	38	38	38	38	38	2
-26	44	43	43	42	42	41	41	40	40	40	39	39	39	39	39	39	39	39	39	2
-25	45	44	44	43	43	42	42	41	41	41	40	40	40	40	40	40	40	40	40	2
-24	46	45	45	44	44	43	43	42	42	42	41	41	41	41	41	41	41	41	41	2
-23	47	46	46	45	45	44	44	43	43	43	42	42	42	42	42	42	42	42	42	2
-22	48	47	47	46	46	45	45	44	44	44	43	43	43	43	43	43	43	43	43	2
-21	49	48	48	47	47	46	46	45	45	45	44	44	44	44	44	44	44	44	44	2

TABLE A-2. RELATIVE HUMIDITY (RH)

TEMPERATURE (°C)

DEW
POINT

-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1
-45	9	8	7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	2
-44	10	9	8	7	7	6	6	6	5	5	5	4	4	4	3	3	3	3	2
-43	11	10	9	8	7	7	7	7	6	6	6	5	5	5	4	4	4	4	3
-42	12	11	10	9	8	8	8	8	7	7	7	6	6	6	5	5	5	5	4
-41	14	12	11	10	9	8	8	8	7	7	7	6	6	6	5	5	5	5	4
-40	15	14	13	12	11	10	9	9	8	8	8	7	7	7	6	6	6	6	5
-39	17	15	14	13	12	11	10	10	9	9	9	8	8	8	7	7	7	7	6
-38	18	17	16	15	14	13	12	12	11	11	11	10	10	10	9	9	9	9	8
-37	20	19	18	17	16	15	14	14	13	13	13	12	12	12	11	11	11	11	10
-36	23	21	19	18	17	16	15	15	14	14	14	13	13	13	12	12	12	12	11
-35	25	23	21	20	19	18	17	17	16	16	16	15	15	15	14	14	14	14	13
-34	28	25	23	22	21	20	19	19	18	18	18	17	17	17	16	16	16	16	15
-33	30	28	26	24	23	22	21	21	20	20	20	19	19	19	18	18	18	18	17
-32	34	31	28	26	24	23	22	22	21	21	21	20	20	20	19	19	19	19	18
-31	37	34	31	29	27	26	25	25	24	24	24	23	23	23	22	22	22	22	21
-30	41	37	34	32	30	29	28	28	27	27	27	26	26	26	25	25	25	25	24
-29	45	41	38	35	33	32	31	31	30	30	30	29	29	29	28	28	28	28	27
-28	49	45	41	38	36	35	34	34	33	33	33	32	32	32	31	31	31	31	30
-27	54	49	45	42	40	39	38	38	37	37	37	36	36	36	35	35	35	35	34
-26	59	54	50	46	44	43	42	42	41	41	41	40	40	40	39	39	39	39	38
-25	64	59	54	50	47	46	45	45	44	44	44	43	43	43	42	42	42	42	41
-24	70	65	59	55	51	50	49	49	48	48	48	47	47	47	46	46	46	46	45
-23	77	71	65	60	55	51	51	51	50	50	50	49	49	49	48	48	48	48	47
-22	84	77	71	65	60	55	51	51	50	50	50	49	49	49	48	48	48	48	47
-21	92	84	77	71	65	60	55	51	50	50	50	49	49	49	48	48	48	48	47
-20	100	92	84	77	71	65	60	55	50	50	50	49	49	49	48	48	48	48	47
-19	***	100	92	84	77	71	65	60	55	50	50	49	49	49	48	48	48	48	47
-18	***	***	100	92	84	77	71	65	60	55	50	49	49	49	48	48	48	48	47
-17	***	***	***	100	92	84	77	71	65	60	55	50	49	49	48	48	48	48	47
-16	***	***	***	***	100	92	84	77	71	65	60	55	50	49	49	48	48	48	47
-15	***	***	***	***	***	100	92	84	77	71	65	60	55	50	49	49	48	48	47
-14	***	***	***	***	***	***	100	92	84	77	71	65	60	55	50	49	49	48	47
-13	***	***	***	***	***	***	***	100	92	84	77	71	65	60	55	50	49	49	48
-12	***	***	***	***	***	***	***	***	100	92	84	77	71	65	60	55	50	49	48
-11	***	***	***	***	***	***	***	***	***	100	92	84	77	71	65	60	55	50	49
-10	***	***	***	***	***	***	***	***	***	***	100	92	84	77	71	65	60	55	50
-9	***	***	***	***	***	***	***	***	***	***	***	100	92	84	77	71	65	60	55
-8	***	***	***	***	***	***	***	***	***	***	***	***	100	92	84	77	71	65	60
-7	***	***	***	***	***	***	***	***	***	***	***	***	***	100	92	84	77	71	65
-6	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	92	84	77	65
-5	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	92	84	74
-4	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	93	86
-3	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	93
-2	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100
-1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100

TABLE A-2. RELATIVE HUMIDITY (RH)

DEW POINT	TEMPERATURE (C)																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15	17	18
-25	13	12	11	11	10	9	9	8	7	7	7	6	6	5	5	5	4	4	4
-24	14	13	12	12	11	10	10	9	8	8	8	7	6	6	5	5	5	4	4
-23	16	15	14	13	12	11	11	10	9	9	9	8	7	7	6	6	6	5	5
-22	17	16	15	14	13	12	12	11	10	10	9	9	8	8	7	7	6	5	5
-21	19	17	16	15	14	13	13	12	11	11	10	9	9	8	8	7	7	6	6
-20	20	19	18	17	16	15	15	14	13	12	11	10	10	9	8	8	7	7	6
-19	22	21	19	18	17	16	16	15	14	13	12	11	10	10	9	9	8	8	7
-18	24	23	21	20	18	17	17	16	15	14	13	12	11	11	10	9	9	8	7
-17	26	25	23	21	20	19	19	17	16	15	14	13	12	12	11	10	10	9	8
-16	29	27	25	23	22	20	20	19	18	17	16	15	14	13	12	11	10	10	9
-15	31	29	27	25	23	22	22	20	19	18	17	16	15	14	13	12	11	11	10
-14	34	31	29	27	25	24	24	22	21	19	18	17	16	15	14	13	12	11	10
-13	37	34	32	30	28	26	26	24	23	21	20	18	17	16	15	14	13	12	11
-12	40	37	34	32	30	28	28	26	24	23	21	20	19	17	16	15	14	13	12
-11	43	40	37	35	32	30	30	28	26	24	23	22	20	19	18	17	16	15	14
-10	47	43	40	38	35	33	33	31	29	27	25	23	22	20	19	18	17	16	15
-9	51	47	44	41	38	35	36	33	31	29	27	25	24	22	21	19	18	17	16
-8	55	51	47	44	41	38	39	36	34	31	29	27	26	24	22	21	19	18	17
-7	59	55	51	48	44	41	42	39	36	34	32	30	28	26	24	23	21	20	19
-6	64	59	55	51	48	45	45	42	39	36	34	32	30	28	26	24	23	21	20
-5	69	64	60	55	52	48	48	45	42	39	37	34	32	30	28	26	25	23	22
-4	74	69	64	60	56	52	48	45	42	39	37	34	32	30	28	26	27	25	23
-3	80	74	69	65	60	56	52	49	45	42	40	37	35	32	30	28	29	27	25
-2	86	80	75	69	65	60	56	52	49	46	43	40	37	35	33	31	31	29	27
-1	93	86	80	75	70	65	61	56	53	49	46	43	40	38	35	33	33	31	29
0	100	93	87	81	75	70	65	61	57	53	49	46	43	40	38	35	35	33	31
1	100	100	93	87	81	75	70	65	61	57	53	50	47	44	41	38	38	36	34
2	100	100	100	93	87	81	75	70	66	61	57	53	50	47	44	41	41	39	37
3	100	100	100	100	93	87	81	75	70	66	61	57	53	50	47	44	41	42	39
4	100	100	100	100	100	93	87	81	76	71	66	62	58	54	50	47	44	45	42
5	100	100	100	100	100	100	93	87	81	76	71	66	62	58	54	51	51	48	45
6	100	100	100	100	100	100	100	93	87	81	76	71	66	62	58	54	54	51	48
7	100	100	100	100	100	100	100	100	93	87	81	76	71	67	62	58	58	55	51
8	100	100	100	100	100	100	100	100	100	93	87	82	76	71	67	63	63	59	55
9	100	100	100	100	100	100	100	100	100	100	93	87	82	76	71	67	67	63	59
10	100	100	100	100	100	100	100	100	100	100	100	94	87	82	77	72	72	67	63
11	100	100	100	100	100	100	100	100	100	100	100	100	94	87	82	77	72	67	63
12	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94	88	82	77	72
13	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94	88	82	77
14	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94	88	82
15	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94	88
16	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94
17	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94
18	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94
19	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94

TABLE A-2. RELATIVE HUMIDITY (RH)

TEMPERATURE (°C)

DEW POINT	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
-5	18	17	16	15	14	13	12	11	11	10	10	9	8	8	8	7	7	6	6	6
-4	19	18	17	16	15	14	13	12	12	11	10	10	9	9	8	8	7	7	6	6
-3	21	19	18	17	16	15	14	13	14	13	12	11	10	9	9	8	7	7	7	7
-2	22	21	20	19	18	17	16	15	16	15	14	13	12	11	10	9	8	8	8	8
-1	24	22	21	20	19	18	17	16	17	16	15	14	13	12	11	10	9	9	9	9
0	26	24	23	22	21	20	19	18	19	18	17	16	15	14	13	12	11	10	9	9
1	28	26	25	24	23	22	21	20	21	20	19	18	17	16	15	14	13	12	11	10
2	30	28	27	26	25	24	23	22	23	22	21	20	19	18	17	16	15	14	13	12
3	32	30	29	28	27	26	25	24	25	24	23	22	21	20	19	18	17	16	15	14
4	34	32	31	30	29	28	27	26	27	26	25	24	23	22	21	20	19	18	17	16
5	37	35	34	33	32	31	30	29	30	29	28	27	26	25	24	23	22	21	20	19
6	39	37	36	35	34	33	32	31	32	31	30	29	28	27	26	25	24	23	22	21
7	42	40	39	38	37	36	35	34	35	34	33	32	31	30	29	28	27	26	25	24
8	45	43	42	41	40	39	38	37	38	37	36	35	34	33	32	31	30	29	28	27
9	49	46	45	44	43	42	41	40	41	40	39	38	37	36	35	34	33	32	31	30
10	52	49	48	47	46	45	44	43	44	43	42	41	40	39	38	37	36	35	34	33
11	56	52	51	50	49	48	47	46	47	46	45	44	43	42	41	40	39	38	37	36
12	59	56	55	54	53	52	51	50	51	50	49	48	47	46	45	44	43	42	41	40
13	63	60	59	58	57	56	55	54	55	54	53	52	51	50	49	48	47	46	45	44
14	68	64	63	62	61	60	59	58	59	58	57	56	55	54	53	52	51	50	49	48
15	72	68	67	66	65	64	63	62	63	62	61	60	59	58	57	56	55	54	53	52
16	77	73	72	71	70	69	68	67	68	67	66	65	64	63	62	61	60	59	58	57
17	83	77	76	75	74	73	72	71	72	71	70	69	68	67	66	65	64	63	62	61
18	88	83	82	81	80	79	78	77	78	77	76	75	74	73	72	71	70	69	68	67
19	94	88	87	86	85	84	83	82	83	82	81	80	79	78	77	76	75	74	73	72
20	100	94	93	92	91	90	89	88	89	88	87	86	85	84	83	82	81	80	79	78
21	***	100	94	93	92	91	90	89	90	89	88	87	86	85	84	83	82	81	80	79
22	***	***	100	94	93	92	91	90	91	90	89	88	87	86	85	84	83	82	81	80
23	***	***	***	100	94	93	92	91	92	91	90	89	88	87	86	85	84	83	82	81
24	***	***	***	***	100	94	93	92	93	92	91	90	89	88	87	86	85	84	83	82
25	***	***	***	***	***	100	94	93	94	93	92	91	90	89	88	87	86	85	84	83
26	***	***	***	***	***	***	100	94	95	94	93	92	91	90	89	88	87	86	85	84
27	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89	88	87	86	85	84
28	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89	88	87	86	85
29	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89	88	87	86
30	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89	88	87
31	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89	88
32	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90	89
33	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91	90
34	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92	91
35	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93	92
36	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94	93
37	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94	94
38	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100	94
39	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	100

TABLE A-2. RELATIVE HUMIDITY (RH)

RELATIVE HUMIDITY

VSBY (KM)	85	86	87	88	89	90	91	92	93	94	95	96	97	98	>99
1.5	.556	.566	.578	.591	.605	.621	.639	.660	.685	.714	.751	.797	.862	.961	1.159
2.0	.420	.428	.437	.447	.458	.470	.484	.500	.519	.541	.569	.605	.655	.731	.883
2.5	.338	.345	.352	.360	.368	.378	.390	.403	.418	.436	.458	.488	.527	.590	.713
3.0	.282	.288	.294	.301	.308	.316	.326	.336	.349	.364	.383	.408	.442	.494	.598
4.0	.212	.216	.221	.226	.232	.238	.245	.253	.263	.274	.289	.307	.333	.372	.451
5.0	.170	.173	.177	.181	.185	.191	.196	.203	.211	.220	.231	.246	.267	.299	.362
6.0	.141	.144	.147	.151	.154	.159	.163	.169	.175	.183	.193	.205	.222	.249	.302
7.0	.121	.123	.126	.129	.132	.136	.140	.145	.150	.157	.165	.176	.190	.213	.259
8.0	.106	.108	.110	.113	.115	.119	.122	.126	.131	.137	.144	.153	.166	.186	.226
9.0	.094	.096	.098	.100	.102	.105	.108	.112	.116	.121	.128	.136	.148	.165	.201
10.0	.084	.086	.088	.090	.092	.094	.097	.101	.104	.109	.115	.122	.133	.148	.180
15.0	.046	.049	.050	.051	.052	.053	.055	.057	.059	.062	.065	.069	.075	.084	.102
20.0	.029	.030	.031	.031	.032	.033	.034	.035	.036	.038	.040	.043	.046	.052	.063
30.0	.017	.017	.017	.018	.018	.019	.019	.020	.021	.021	.023	.024	.026	.029	.036
40.0	.012	.012	.012	.013	.013	.013	.014	.014	.015	.016	.016	.017	.019	.021	.026
50.0	.009	.009	.010	.010	.010	.010	.011	.011	.011	.012	.013	.013	.015	.016	.020

TABLE A-3A. AEROSOL EXTINCTION COEFFICIENT (B_{AER})
MARITIME MODEL

RELATIVE HUMIDITY

VSBY (KM)	<=10	30	50	55	60	65	70	72	74	76	78	80	81	82	83	84
1.5	.286	.296	.310	.314	.320	.326	.333	.359	.388	.423	.464	.513	.520	.528	.537	.546
2.0	.216	.223	.234	.238	.242	.246	.252	.271	.293	.319	.351	.388	.394	.399	.406	.413
2.5	.173	.179	.188	.191	.194	.198	.202	.217	.235	.257	.282	.312	.316	.321	.326	.332
3.0	.145	.150	.157	.159	.162	.165	.169	.182	.197	.214	.235	.260	.264	.268	.273	.277
4.0	.109	.113	.118	.120	.122	.124	.127	.136	.148	.161	.177	.196	.199	.202	.205	.209
5.0	.087	.090	.094	.096	.097	.099	.101	.109	.118	.129	.141	.157	.159	.161	.164	.167
6.0	.073	.075	.079	.080	.081	.083	.084	.091	.098	.107	.118	.130	.132	.134	.137	.139
7.0	.062	.064	.067	.068	.069	.071	.072	.078	.084	.092	.101	.112	.113	.115	.117	.119
8.0	.054	.056	.059	.059	.060	.062	.063	.068	.073	.080	.088	.097	.099	.100	.102	.104
9.0	.048	.050	.052	.053	.054	.055	.056	.060	.065	.071	.078	.086	.088	.089	.091	.092
10.0	.043	.045	.047	.047	.048	.049	.050	.054	.058	.064	.070	.078	.079	.080	.081	.083
15.0	.024	.025	.026	.027	.027	.028	.028	.031	.033	.036	.040	.044	.045	.045	.046	.047
20.0	.015	.016	.016	.016	.017	.017	.017	.019	.020	.022	.024	.027	.027	.028	.028	.029
30.0	.008	.009	.009	.009	.009	.010	.010	.011	.011	.013	.014	.015	.015	.016	.016	.016
40.0	.006	.006	.007	.007	.007	.007	.007	.008	.008	.009	.010	.011	.011	.011	.012	.012
50.0	.005	.005	.005	.005	.005	.005	.005	.006	.006	.007	.008	.009	.009	.009	.009	.009

TABLE A-3A. AEROSOL EXTINCTION COEFFICIENT (B_{AER})
MARITIME MODEL

VSBY (KM)	RELATIVE HUMIDITY													
	<=50	55	60	65	70	75	80	85	90	92	94	96	98	>99
1.5	.260	.260	.260	.260	.260	.251	.240	.243	.247	.249	.253	.257	.264	.272
2.0	.195	.195	.195	.195	.195	.188	.180	.182	.185	.187	.189	.193	.195	.204
2.5	.156	.156	.156	.156	.156	.151	.144	.146	.148	.150	.151	.154	.159	.163
3.0	.130	.130	.130	.130	.130	.125	.120	.121	.123	.125	.126	.128	.132	.136
4.0	.097	.098	.098	.098	.098	.094	.090	.091	.092	.093	.094	.096	.099	.102
5.0	.078	.078	.078	.078	.078	.075	.072	.073	.074	.074	.075	.077	.079	.081
6.0	.065	.065	.065	.065	.065	.062	.060	.060	.061	.062	.063	.064	.066	.067
7.0	.055	.055	.055	.055	.055	.053	.051	.052	.052	.053	.054	.054	.056	.058
8.0	.048	.048	.048	.048	.048	.047	.044	.045	.046	.046	.047	.047	.049	.050
9.0	.043	.043	.043	.043	.043	.041	.039	.040	.041	.041	.041	.042	.043	.045
10.0	.038	.038	.038	.038	.038	.037	.035	.036	.036	.037	.037	.038	.039	.040
15.0	.022	.022	.022	.022	.022	.021	.020	.020	.021	.021	.021	.021	.022	.023
20.0	.013	.013	.013	.013	.013	.013	.012	.012	.013	.013	.013	.013	.013	.014
30.0	.008	.008	.008	.008	.008	.007	.007	.007	.007	.007	.007	.007	.008	.008
40.0	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005	.006	.006
50.0	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004

TABLE A-3B. AEROSOL EXTINCTION COEFFICIENT (B_{AER})
URBAN MODEL

VSBY (KM)	RELATIVE HUMIDITY													
	<=50	55	60	65	70	75	80	85	90	92	94	96	98	>99
1.5	.232	.232	.232	.233	.233	.234	.234	.240	.249	.254	.261	.271	.288	.307
2.0	.175	.175	.176	.176	.176	.176	.177	.181	.188	.191	.196	.203	.216	.230
2.5	.141	.141	.141	.141	.141	.142	.142	.145	.150	.153	.157	.163	.173	.184
3.0	.117	.118	.118	.118	.118	.118	.118	.121	.125	.128	.131	.136	.144	.153
4.0	.088	.088	.088	.089	.089	.089	.089	.091	.094	.096	.098	.102	.108	.115
5.0	.071	.071	.071	.071	.071	.071	.071	.073	.075	.077	.078	.081	.086	.092
6.0	.059	.059	.059	.059	.059	.059	.059	.060	.063	.064	.065	.067	.072	.076
7.0	.050	.050	.050	.050	.051	.051	.051	.052	.053	.054	.056	.058	.061	.065
8.0	.044	.044	.044	.044	.044	.044	.044	.045	.047	.048	.049	.050	.053	.057
9.0	.039	.039	.039	.039	.039	.039	.039	.040	.041	.042	.043	.045	.047	.050
10.0	.035	.035	.035	.035	.035	.035	.035	.036	.037	.038	.039	.040	.042	.045
15.0	.020	.020	.020	.020	.020	.020	.020	.020	.021	.021	.022	.023	.024	.026
20.0	.012	.012	.012	.012	.012	.012	.012	.012	.013	.013	.013	.014	.015	.016
30.0	.007	.007	.007	.007	.007	.007	.007	.007	.007	.007	.008	.008	.008	.009
40.0	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005	.006	.006	.006
50.0	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004	.005	.005

TABLE A-3C. AEROSOL EXTINCTION COEFFICIENT (B_{AER})
RURAL MODEL

<u>VISIBILITY</u> <u>(KM)</u>	<u>EXTINCTION</u> <u>COEFFICIENT</u>
.1	9.999
.2	5.319
.5	2.264
1.0	1.164

TABLE A-3D. AEROSOL EXTINCTION COEFFICIENT (B_{AER})
FOG MODEL

TEMPERATURE (C)

DEW POINT	-30.	-15.	0.	5.	10.	15.	20.	22.	24.	26.	28.	30.	32.	34.	36.	38.	40.
-30.	.029	.027	.026	.025	.025	.024	.024	.024	.024	.023	.023	.023	.023	.022	.022	.022	.022
-29.	*****	.028	.026	.026	.026	.025	.025	.025	.024	.024	.024	.024	.024	.023	.023	.023	.023
-28.	*****	.028	.027	.027	.026	.026	.025	.025	.025	.025	.025	.025	.024	.024	.024	.024	.024
-27.	*****	.029	.028	.027	.027	.026	.026	.026	.026	.026	.026	.025	.025	.025	.025	.025	.025
-26.	*****	.029	.028	.028	.027	.027	.027	.027	.027	.027	.026	.026	.026	.026	.026	.026	.026
-25.	*****	.030	.029	.028	.028	.028	.028	.028	.027	.027	.027	.027	.027	.027	.027	.027	.027
-24.	*****	.031	.030	.029	.029	.028	.028	.028	.028	.028	.028	.028	.028	.028	.028	.028	.028
-23.	*****	.032	.030	.030	.029	.029	.029	.029	.029	.029	.029	.029	.029	.029	.029	.029	.029
-22.	*****	.033	.031	.031	.030	.030	.030	.030	.030	.030	.030	.030	.030	.029	.029	.029	.029
-21.	*****	.034	.032	.032	.031	.031	.031	.031	.031	.030	.030	.030	.030	.030	.030	.030	.030
-20.	*****	.035	.033	.032	.032	.032	.032	.031	.031	.031	.031	.031	.031	.031	.031	.031	.031
-19.	*****	.036	.034	.033	.033	.033	.032	.032	.032	.032	.032	.032	.032	.032	.032	.032	.032
-18.	*****	.038	.035	.035	.034	.034	.033	.033	.033	.033	.033	.033	.033	.033	.033	.033	.033
-17.	*****	.039	.036	.036	.035	.034	.034	.034	.034	.034	.034	.034	.034	.034	.034	.034	.034
-16.	*****	.041	.038	.037	.036	.036	.035	.035	.035	.035	.035	.035	.035	.035	.035	.035	.035
-15.	*****	.043	.039	.038	.037	.036	.036	.036	.036	.036	.036	.036	.036	.036	.036	.036	.036
-14.	*****	*****	.041	.040	.039	.038	.038	.037	.037	.037	.037	.037	.037	.037	.037	.037	.037
-13.	*****	*****	.042	.041	.040	.040	.039	.039	.038	.038	.038	.038	.038	.038	.038	.038	.038
-12.	*****	*****	.043	.042	.042	.041	.040	.040	.040	.040	.039	.039	.039	.039	.039	.039	.039
-11.	*****	*****	.047	.045	.044	.043	.042	.042	.041	.041	.041	.041	.040	.040	.040	.040	.040
-10.	*****	*****	.049	.047	.046	.045	.044	.043	.043	.043	.042	.042	.042	.042	.041	.041	.041
-9.	*****	*****	.051	.050	.048	.047	.045	.045	.045	.044	.044	.044	.043	.043	.043	.043	.043
-8.	*****	*****	.054	.052	.050	.049	.048	.047	.047	.046	.046	.045	.045	.045	.044	.044	.044
-7.	*****	*****	.057	.055	.053	.051	.050	.049	.049	.048	.048	.047	.047	.047	.046	.046	.046
-6.	*****	*****	.060	.058	.056	.054	.052	.052	.051	.050	.050	.049	.049	.049	.048	.048	.048
-5.	*****	*****	.064	.061	.059	.057	.055	.054	.054	.053	.052	.052	.051	.051	.050	.050	.050
-4.	*****	*****	.068	.065	.062	.060	.058	.057	.056	.056	.055	.054	.054	.053	.053	.052	.052
-3.	*****	*****	.072	.069	.066	.063	.061	.060	.059	.059	.058	.057	.057	.056	.055	.055	.054
-2.	*****	*****	.077	.073	.070	.067	.065	.064	.063	.062	.061	.060	.060	.059	.058	.058	.057
-1.	*****	*****	.082	.078	.075	.071	.069	.067	.066	.065	.065	.064	.063	.062	.061	.061	.060

TABLE A-4. MOLECULAR EXTINCTION COEFFICIENT (B_{MOL})

TEMPERATURE (C)

DEW POINT	-30.	-15.	0.	5.	10.	15.	20.	22.	24.	26.	28.	30.	32.	34.	36.	38.	40.
0.	*****	*****	.088	.084	.080	.076	.073	.072	.071	.069	.068	.067	.066	.066	.065	.064	.063
1.	*****	*****	*****	.089	.085	.081	.078	.076	.075	.074	.073	.072	.070	.069	.068	.068	.067
2.	*****	*****	*****	.096	.091	.087	.083	.081	.080	.079	.077	.076	.075	.074	.073	.072	.071
3.	*****	*****	*****	.103	.098	.093	.088	.087	.085	.084	.082	.081	.080	.078	.077	.076	.075
4.	*****	*****	*****	.110	.105	.099	.095	.093	.091	.089	.088	.086	.085	.083	.082	.081	.080
5.	*****	*****	*****	.119	.112	.107	.101	.099	.097	.096	.094	.092	.091	.089	.088	.086	.085
6.	*****	*****	*****	*****	.121	.115	.109	.107	.104	.102	.101	.099	.097	.095	.094	.092	.090
7.	*****	*****	*****	*****	.130	.123	.117	.114	.112	.110	.108	.106	.104	.102	.100	.098	.096
8.	*****	*****	*****	*****	.140	.133	.125	.123	.120	.118	.115	.113	.111	.109	.107	.105	.103
9.	*****	*****	*****	*****	.151	.143	.135	.132	.129	.126	.124	.121	.119	.116	.114	.112	.110
10.	*****	*****	*****	*****	.163	.154	.145	.142	.138	.135	.133	.130	.127	.125	.122	.120	.117
11.	*****	*****	*****	*****	*****	.170	.159	.155	.151	.148	.144	.141	.137	.134	.131	.128	.126
12.	*****	*****	*****	*****	*****	.186	.174	.169	.165	.161	.157	.153	.149	.146	.142	.139	.136
13.	*****	*****	*****	*****	*****	.203	.190	.185	.181	.175	.171	.166	.162	.158	.155	.151	.147
14.	*****	*****	*****	*****	*****	.222	.207	.201	.196	.191	.186	.181	.177	.172	.168	.164	.160
15.	*****	*****	*****	*****	*****	.242	.226	.220	.214	.208	.203	.197	.192	.187	.183	.178	.174
16.	*****	*****	*****	*****	*****	*****	.246	.240	.233	.227	.221	.215	.209	.204	.199	.193	.189
17.	*****	*****	*****	*****	*****	*****	.269	.261	.254	.247	.240	.234	.228	.222	.216	.210	.205
18.	*****	*****	*****	*****	*****	*****	.293	.284	.276	.269	.261	.254	.247	.241	.234	.228	.222
19.	*****	*****	*****	*****	*****	*****	.319	.310	.301	.292	.284	.276	.269	.261	.254	.247	.241
20.	*****	*****	*****	*****	*****	*****	.348	.337	.327	.318	.309	.300	.292	.284	.276	.268	.261
21.	*****	*****	*****	*****	*****	*****	*****	.367	.356	.346	.336	.326	.317	.308	.299	.291	.283
22.	*****	*****	*****	*****	*****	*****	*****	.400	.388	.376	.365	.354	.343	.334	.324	.315	.306
23.	*****	*****	*****	*****	*****	*****	*****	*****	.423	.409	.395	.384	.373	.362	.351	.341	.331
24.	*****	*****	*****	*****	*****	*****	*****	*****	.461	.445	.431	.418	.406	.392	.379	.369	.358
25.	*****	*****	*****	*****	*****	*****	*****	*****	*****	.486	.470	.454	.439	.425	.412	.399	.387
26.	*****	*****	*****	*****	*****	*****	*****	*****	*****	.531	.512	.495	.478	.462	.447	.433	.419
27.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.561	.540	.521	.503	.486	.469	.454
28.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.616	.592	.569	.548	.528	.510	.492
29.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.651	.624	.599	.575	.555	.535
30.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.722	.689	.659	.632	.606	.583
31.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.767	.729	.696	.665	.638
32.	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	.867	.816	.773	.735	.701

TABLE A-4. MOLECULAR EXTINCTION COEFFICIENT (B_{MOL})

EXT COEF	TRANS	EXT COEF	TRANS	EXT COEF	TRANS	EXT COEF	TRANS	EXT COEF	TRANS	EXT COEF	TRANS
.01	.96	.23	.40	.45	.17	.67	.07	.89	.03	1.11	.01
.02	.92	.24	.38	.46	.16	.68	.07	.90	.03	1.12	.01
.03	.89	.25	.37	.47	.15	.69	.06	.91	.03	1.13	.01
.04	.85	.26	.35	.48	.15	.70	.06	.92	.03	1.14	.01
.05	.82	.27	.34	.49	.14	.71	.06	.93	.02	1.15	.01
.06	.79	.28	.33	.50	.14	.72	.06	.94	.02	1.16	.01
.07	.76	.29	.31	.51	.13	.73	.05	.95	.02	1.17	.01
.08	.73	.30	.30	.52	.12	.74	.05	.96	.02	1.18	.01
.09	.70	.31	.29	.53	.12	.75	.05	.97	.02	1.19	.01
.10	.67	.32	.28	.54	.12	.76	.05	.98	.02	1.20	.01
.11	.64	.33	.27	.55	.11	.77	.05	.99	.02	1.21	.01
.12	.62	.34	.26	.56	.11	.78	.04	1.00	.02	1.22	.01
.13	.59	.35	.25	.57	.10	.79	.04	1.01	.02	1.23	.01
.14	.57	.36	.24	.58	.10	.80	.04	1.02	.02	1.24	.01
.15	.55	.37	.23	.59	.09	.81	.04	1.03	.02	1.25	.01
.16	.53	.38	.22	.60	.09	.82	.04	1.04	.02	1.25	.01
.17	.51	.39	.21	.61	.09	.83	.04	1.05	.01	1.27	.01
.18	.49	.40	.20	.62	.08	.84	.03	1.06	.01	1.28	.01
.19	.47	.41	.19	.63	.08	.85	.03	1.07	.01	1.29	.01
.20	.45	.42	.19	.64	.08	.86	.03	1.08	.01	1.30	.01
.21	.43	.43	.18	.65	.07	.87	.03	1.09	.01	1.31	.01
.22	.41	.44	.17	.66	.07	.88	.03	1.10	.01	1.32	.01
										>1.33	.00

TABLE A-5. ATMOSPHERIC TRANSMISSION (τ_{ATM}) AT REFERENCE RANGE (4 km)

END

FILMED

12-84

DTIC