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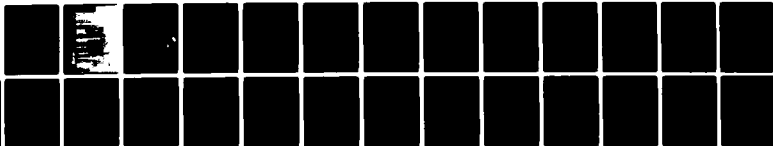
FINAL TACTICAL DECISION AID (FTDA) FOR INFRARED (8-12
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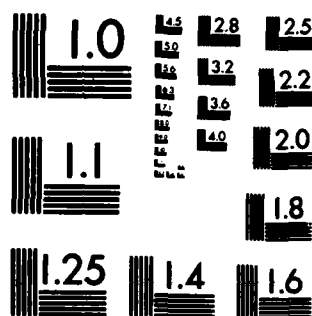
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) → The tables required to calculate 8-12 μ m atmospheric transmission at 4 km range for use in determining maximum lock-on range (MLOR) and maximum acquisition range (AR) from the Manual Version of the FTDA 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 atmos- pheric transmission.		

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1. A Brief Description of the Aerosol Selection Process

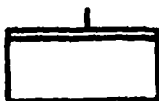
The methodology is based on the properties of three non-fog aerosol models in LOWTRAN. The Rural Model describes the basic background aerosol contained in all airmasses. The Maritime Model describes the aerosol that exists in airmasses with a maritime history when the marine aerosol (mostly sea salt) 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.

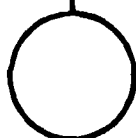
In using the flow charts in Fig. A-1, the basic rule is to always move downward in each figure. The following are key symbols to aid in interpretation of the charts:



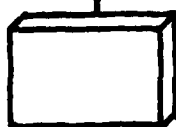
represents the input of data



represents the entry into one of several alternate paths through the diagram



represents a connecting point to some other part of the diagram



represents selection of a particular "dry aerosol" model

Figure A-1A

- a. Separates air mass by origin.
- b. Treats the possible transformation of air masses 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 air masses, 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

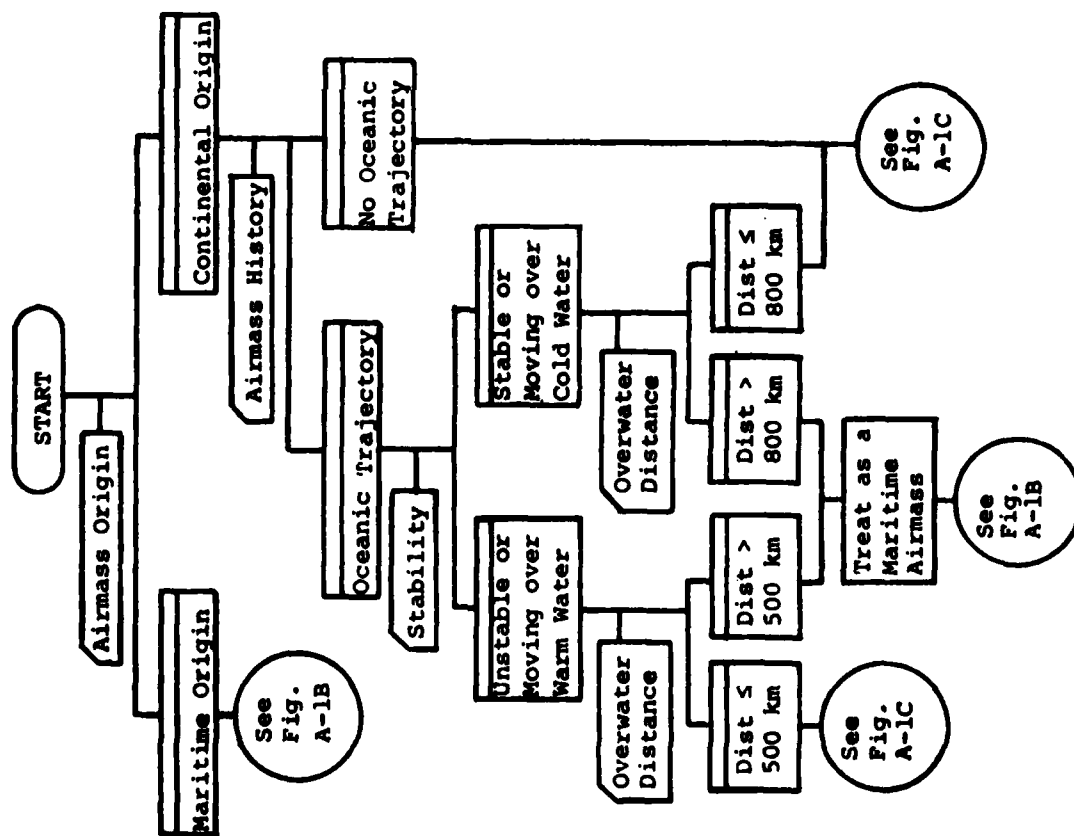


Fig. A-1B

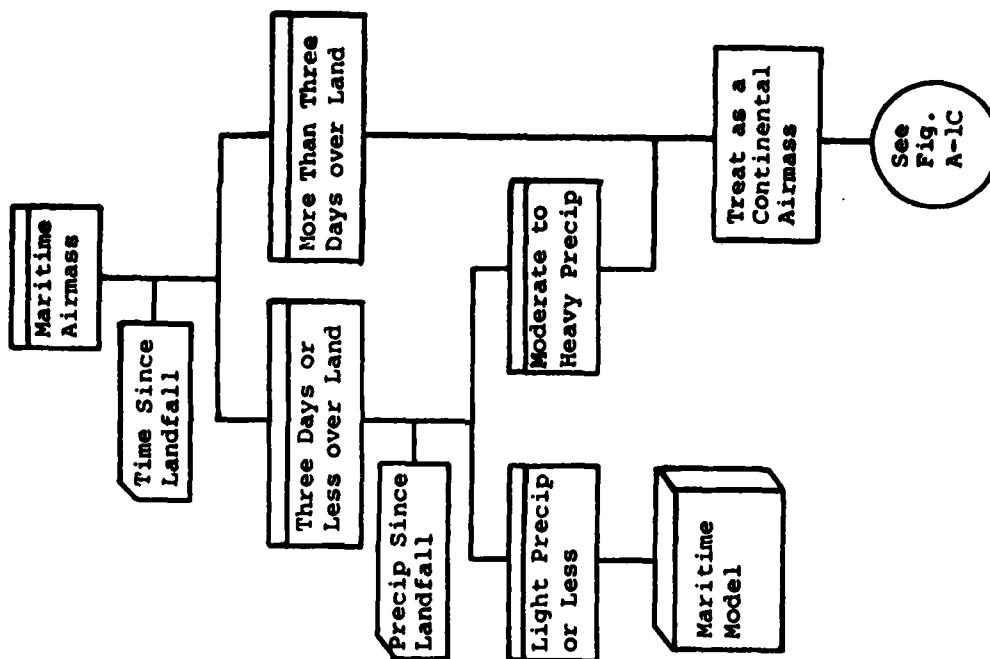


Fig. A-1. The Aerosol Model Selection Process

Fig. A-1C

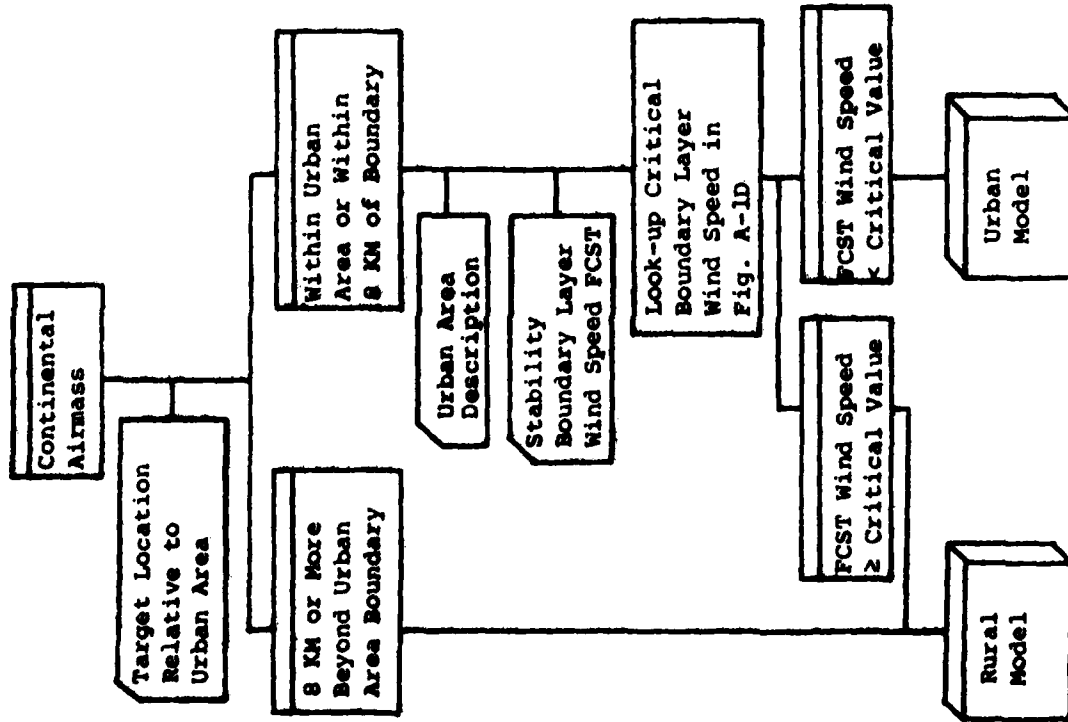


Fig. A-1 (Continued)

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

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
9	8	7	7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	2
10	9	8	8	7	7	6	6	6	5	5	5	4	4	4	4	3	3	3	3
11	10	9	9	8	8	7	7	7	6	6	6	5	5	5	5	4	4	4	4
12	11	10	11	10	9	8	8	8	7	7	7	6	6	6	6	5	5	5	5
13	12	11	12	11	10	9	9	9	8	8	8	7	7	7	7	6	6	6	6
14	13	12	13	12	11	10	10	10	9	9	9	8	8	8	8	7	7	7	7
15	14	13	14	13	12	11	11	11	10	10	10	9	9	9	9	8	8	8	8
16	15	14	15	14	13	12	12	12	11	11	11	10	10	10	10	9	9	9	9
17	16	15	16	15	14	13	13	13	12	12	12	11	11	11	11	10	10	10	10
18	17	16	17	16	15	14	14	14	13	13	13	12	12	12	12	11	11	11	11
19	18	17	18	17	16	15	15	15	14	14	14	13	13	13	13	12	12	12	12
20	19	18	19	18	17	16	16	16	15	15	15	14	14	14	14	13	13	13	13
21	20	19	20	19	18	17	17	17	16	16	16	15	15	15	15	14	14	14	14
22	21	20	21	20	19	18	18	18	17	17	17	16	16	16	16	15	15	15	15
23	22	21	22	21	20	19	19	19	18	18	18	17	17	17	17	16	16	16	16
24	23	22	23	22	21	20	20	20	19	19	19	18	18	18	18	17	17	17	17
25	24	23	24	23	22	21	21	21	20	20	20	19	19	19	19	18	18	18	18
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44	43	42	43	42	41	40	40	40	39	39	39	38	38	38	38	37	37	37	37
45	44	43	44	43	42	41	41	41	40	40	40	39	39	39	39	38	38	38	38

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

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

VSBY (KM)	RELATIVE HUMIDITY														
	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	.983
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	.048	.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

VSØY (KM)	RELATIVE HUMIDITY															
	<=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	.348	.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	.318	.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	.138	.148	.161	.177	.196	.199	.202	.205	.208
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														>99
	<50	55	60	65	70	75	80	85	90	92	94	96	98		
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	.026	.026	.025	.025	.025	.025	.025	.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	.030	.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	.033	.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	.035	.035	.035	.035	.035	.035	.035	.035	.035	.035	.035	.035
-15.		.043	.039	.038	.038	.037	.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	.039	.039	.039	.038	.038	.038	.038	.038	.038	.038	.038	.038
-12.			.044	.043	.042	.040	.040	.040	.040	.040	.039	.039	.039	.039	.039	.039	.039
-11.			.047	.045	.044	.042	.042	.042	.041	.041	.041	.041	.040	.040	.040	.040	.040
-10.			.049	.047	.046	.044	.043	.043	.043	.043	.042	.042	.042	.042	.041	.041	.041
-9.			.051	.050	.048	.045	.045	.045	.045	.044	.044	.044	.043	.043	.043	.043	.043
-8.			.054	.052	.050	.048	.047	.047	.047	.046	.046	.045	.045	.045	.044	.044	.044
-7.			.057	.055	.053	.050	.049	.049	.049	.048	.048	.047	.047	.047	.046	.046	.046
-6.			.060	.058	.056	.052	.052	.052	.051	.050	.050	.049	.049	.049	.048	.048	.048
-5.			.064	.061	.059	.055	.054	.054	.054	.053	.052	.052	.051	.051	.050	.050	.050
-4.			.069	.065	.062	.058	.057	.056	.056	.056	.055	.054	.054	.053	.053	.052	.052
-3.			.072	.069	.066	.061	.060	.059	.059	.059	.058	.057	.057	.056	.055	.055	.054
-2.			.077	.073	.070	.065	.064	.063	.063	.062	.061	.060	.060	.059	.058	.058	.057
-1.			.082	.078	.075	.069	.067	.066	.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.				.090	.086	.082	.079	.077	.076	.075	.074	.073	.071	.070	.069	.068	.067
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	.180	.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	.405	.396	.384	.373	.362	.351	.341	.331
24.									.461	.446	.431	.418	.405	.392	.380	.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	.576	.555	.535
30.												.722	.689	.659	.632	.608	.583
31.													.767	.729	.696	.665	.636
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	1.26	.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	.18	.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

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