NSWC TR 78-143

LEVEL II

12

ESTIMATES FOR THE PROBABILITIES OF SURFACE-TO-AIR CLOUD-FREE LINES-OF-SIGHT AND LOW CLOUD STATISTICS FROM SHIP OBSERVATIONS. PART 1. FIFTEEN MARINE LOCATIONS

BY B. S. KATZ F. C. DeBOLD J. J. PEREZ-ESANDI

RESEARCH AND TECHNOLOGY DEPARTMENT

24 NOVEMBER 1980

Approved for public release, distribution unlimited

NAVAL SURFACE WEAPONS CENTER

Dahlgren, Virginia 22448 • Silver Spring, Maryland 20910

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1 REPORT NUMBER: NSWC/TR-78-143	2 GOVT ACCESSION NO: AD-A104633	3 RECIPIENT'S CATALOG NUMBER
4 TITLE (and Subtitle): ESTIMATES FOR THE PROBABILITIES OF SURFACE-TO-AIR CLOUD-FREE LINES-OF-SIGHT AND LOW CLOUD STATISTICS FROM SHIP OBSERVATIONS. PART 1, FIFTEEN MARINE LOCATIONS	5 TYPE OF REPORT & PERIOD COVERED: 1964-71
	6 PERFORMING ORG. REPORT NUMBER
7 AUTHOR(s): B. S. Katz, F. C. DeBold, J. J. Perez-Esandi	8 CONTRACT OR GRANT NUMBER(s): 16F[illegible]
9 PERFORMING ORGANIZATION NAME AND ADDRESS: Naval Surface Weapons Center, White Oak, Silver Spring, MD 20910	10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 62759N; ZF59-551-002; 0[illegible]
11 CONTROLLING OFFICE NAME AND ADDRESS	12 REPORT DATE: 24 November 1980
	13 NUMBER OF PAGES: 169
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

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

Marine cloud-free lines of sight,
lines of sight, marine meteorology, low cloud statistics

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

Estimates of the probability of cloud-free lines of sight (PCFLOS) were calculated for a set of nine angles using a modification of Lund and Shanklin's universal method from lower cloud weather data taken at fifteen marine locations. The data compilation covers periods from five to seven years (1964-1971) and provides statistics for seasonal variations of lower cloud base heights and cover and low cloud type and cover.

(continued)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

4 1563

Both the seasonal weather data (winter, spring, and summer) and the PCFLOS are tabulated for each location for nine different elevation angles from 10 to 90 degrees above the horizontal and for the heights for which lower cloud base data were available.

The main assumption of the unmodified method, which is fully described in the text, is that the universal method can be applied successfully to the statistics for individual low cloud base height recording cells.

Intermediate computational results corresponding to base height cells and the values of PCFLOS through all clouds, calculated by the unmodified method, are also provided.

Data from four selected locations were plotted for illustration and comparison purposes. PCFLOS statistics for various angles and cloud base heights were related to ability to visually detect targets at various ranges, altitudes, and elevation angles, by means of graphs that precalculated the slant range. A summary of the weather statistics and PCFLOS for all stations is also included.

FOREWORD

This work presents cloud statistics derived from individual weather observations collected by meteorologists on board Ocean Station Weather ships from North Atlantic and Pacific locations and from passenger ships at various locations. The data was collected during the time period January 1965 to December 1971 and was broken down into four three-month seasons. The matrix methods developed by Ivar Lund, AFGL, were used to calculate Cloud-Free Line of Sight probabilities up to three kilometer altitudes (lower clouds). Included in this report are statistics on cloud base heights, cloud covers and cloud types. Mr. Tom Fredian of the Naval Oceanographic Command, NSTL Station, Mississippi supplied photographs of the low cloud types found in this publication.

This study was funded by the U.S. Navy's Electro-optical Meteorology Program at the Naval Ocean Systems Center (Code 532) under program element 62759N, Task Z759-551-002.

H. R. RIEDL
By direction

CONTENTS

ILLUSTRATIONS

TABLES

CHAPTER 1
INTRODUCTION

The operation of systems based on the propagation of visible and/or infrared electromagnetic signals through the atmosphere can be severely restricted by clouds interposed in the line of sight (LOS). Even for the preliminary designs of atmospheric optical systems it becomes necessary to obtain estimates of the probabilities of cloud-free lines of sight (PCFLOS) at the potential sites of operation in order to take account of the impact of this aspect of atmospheric phenomena in their performance.

It is the main objective of this report to supply such first rough estimates for a discrete set of surface-to-air LOS up to a height of the order of 2500 m at fifteen marine locations.

The identification code for these locations and their coordinates are given in Figure 1-1 and Table 1-1.

We proceed next to highlight the contents of this report.

Weather information on clouds needed for the calculations or relevant to the problem is discussed in Chapter 2 on "Statistics for Clouds Below 2500 Meters," which includes the data for station M as an example. Our statistical weather data for all locations is reproduced in Appendix A.

Chapter 3 deals with the "Method for the Determination of PCFLOS (A_i, H_j) and Slant Ranges," that is, the probability of cloud-free LOS at an elevation angle A_i ($A_i = 10^0, 20^0, \ldots 90^0$) up to a height H_j = 25, 75, 150, 250, 450, 800, 1250, 1750, 2250 meters) and the corresponding slant ranges for target sighting. Our procedure, which makes use of the universal method of Lund and Shanklin (see bibliography) is fully discussed in this chapter.

Appendices B and C supply, respectively, an intermediate step and the final results of the calculation of PCFLOS (A_i, H_j) for winter, spring, and fall for each location. They are explained in Chapter 4 where station M has been singled out again as an example by having its data and results listed and plotted in various ways.

In order to provide a quick visual comparison among various locations, we produced also plots for stations 1, 9, and J, although not as many as for M. These plots and a duplication of the corresponding ones of M constitute Appendix D.

Finally, we summarize the results on the statistics of clouds below 2500 meters, PCFLOS (A_i, H_j) and slant range and include some relevant comments about them in Chapter 5.

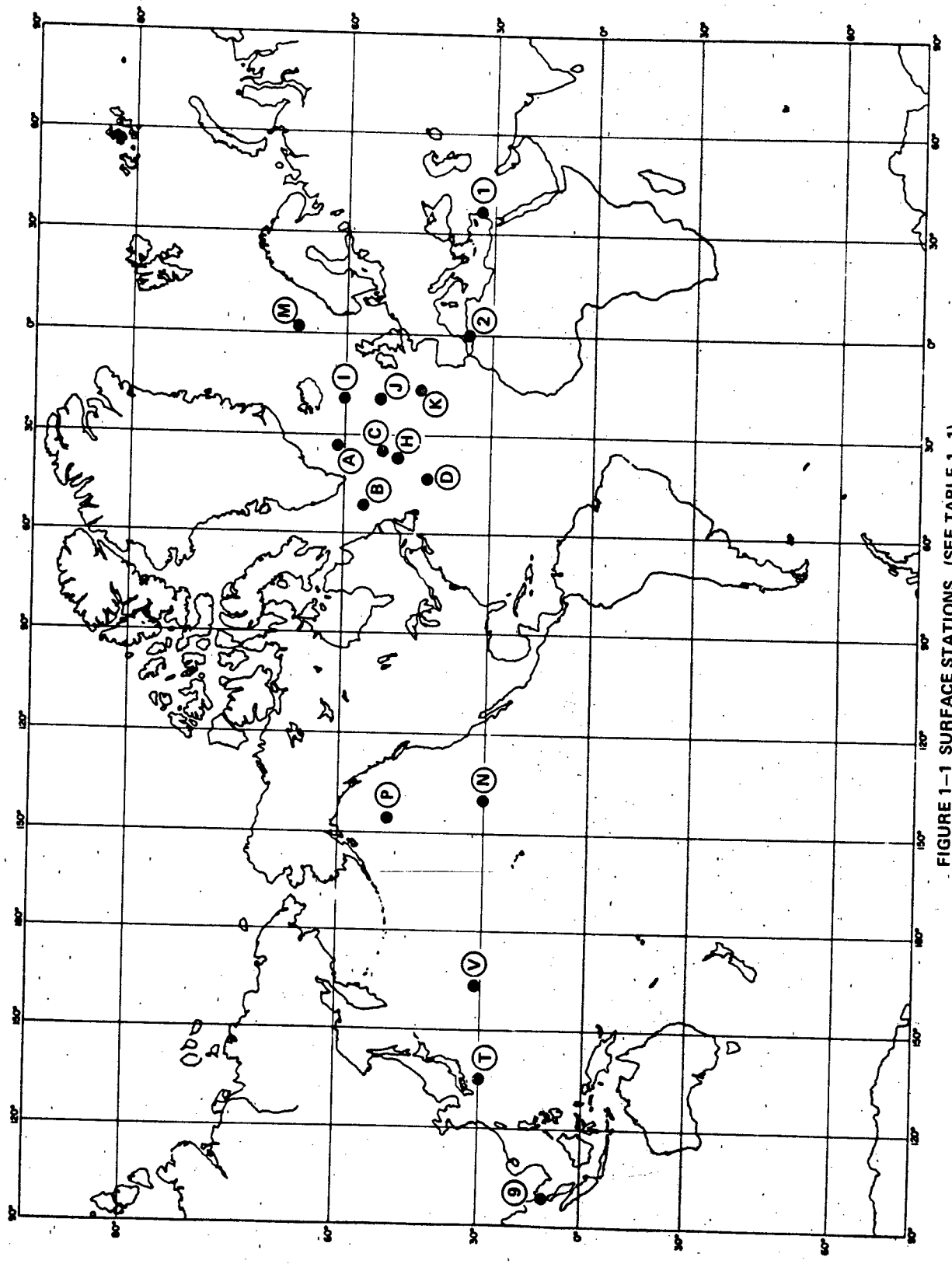


FIGURE 1–1 SURFACE STATIONS. (SEE TABLE 1–1)

TABLE 1-1 SURFACE STATIONS+

IDENTIFICATION	ALPHA-NUMERIC DESIGNATION	LOCATION LAT.	LONG.
1 }	2	33N	34E
2 }		36N	0E
9-10	9	17N	107E
A	A*	62N	33W
B	B	56N	51W
C	C	52N	35W
D	D	44N	41W
H	H	48N	36W
I	I*	60N	19W
J	J*	53N	19W
K	K	45N	16W
M	M	66N	2E
N	N	30N	140W
P	P	50N	145W
T	T	29N	135E
V	V	31N	164E

* HOURLY OBSERVATIONS

+(SEE FIGURE 1-1)

CHAPTER 2

STATISTICS FOR CLOUDS BELOW 2500 METERS

Records of weather observations for the marine locations studied in this report were supplied by the National Climatic Center, Asheville, North Carolina. They were performed every three (at some locations six) hours and cover the period from 1965 to 1971 or 1972 for all stations except station H which covers the period from 1970 to 1978.

The observations were separated in four seasons. Spring contains all of March, April, and May; summer--June, July, and August; fall--September, October, and November; winter--December, January, and February. Fall data, which was found to be similar to spring's, was not included in this study. The actual numbers of observations for each location and season appear in Table 2-1.

The data was accumulated at the fifteen northern hemisphere locations shown in Figure 1-1, with alphanumeric designations, latitude and longitude given in Table 1-1. Observations made in some areas were combined and are reported as belonging to single locations. Thus, data from stations 1 and 2, for example, both located in the Mediterranean Sea were combined and are presented here as of location 1. Likewise Southeast Asia data from 9 and 10 are given as of 9.

Specifically, the records supplied by the National Climatic Center include:

a. lowest cloud base height
b. low cloud amount
c. low cloud type, C_L
d. middle cloud type, C_M
e. high cloud type, C_H
f. total cloud cover

Lower cloud heights are given by indicating in which height cell the clouds were observed. Table 2-2 lists the ten WMO height cells with their code numbers, heights, and midrange points. For the last cell we have chosen 3000 meters as the midrange point for the LOS estimates.

In this report the midrange heights H are used to identify the base height cells.

Tables 2-3, 2-4A, and 2-4B give the WMO code and definitions and photographic illustrations for lower and total cloud cover (amount) and for low cloud types (C_L). Notice that the lowest cloud base in our observation is not always due to what is defined in Tables 2-4A and 2-4B as a low cloud type: if none of these is present

in a particular instance, the lowest cloud base would be that of a middle or high cloud type.

The coded records of the marine observations supplied by the National Climatic Center have been interpreted according to the 1960 WMO Code 1600 and used to obtain the lower cloud base height and low cloud statistics. Appendix A consists entirely of tables of lower cloud base and low cloud statistics for winter, spring, and summer for all fifteen locations. The top table of each page gives the elements of the transposed of the local lower cloud base matrix $L(C_i, H_j)$ multiplied by 100. The elements of $L(C_i, H_j)$ are the relative frequencies corresponding to the two dimensional cell denoted by (C_i, H_j) where C_i is the lower cloud cover and H_j the midrange height of the i^{th} cell. We take these frequencies as probabilities.

The right hand column of the top tables is the marginal frequency corresponding to base height. It is obtained by adding the elements on the same row and is denoted here by

$$P(H_j) = \sum_{i=1}^{9} L(C_i, H_j) \qquad (2\text{-}1)$$

Similarly the marginal frequencies for cloud cover appear on the line labeled "All lower clouds (percent)."

The tables on the lower half of each page deal with the statistics for low cloud type for the same height cells and should be interpreted according to Tables 2-4A and 2-4B. We have made a small modification to the low cloud classification such that all the frequency entries for the 0-50 meter base height have been transferred to a new category labeled "Fog."

The low cloud type tables were not used explicitly in the LOS calculations. For the purpose of illustration, we reproduce in this chapter the cloud tables for station M as Tables 2-5A and B through Tables 2-7A and B.

Four locations, 9, J, and M, have their lower cloud base frequencies plotted for three seasons in Figures D1, D6, D11, and D16 of Appendix D.

The reader should recall that the sharp increases in frequency often found for 3000 meters in the lower cloud base statistics includes observations of no clouds and of all clouds above 2500 meters and that, in general, it would not correspond to actual clouds being present at or near that height but to the integrated value over a very extensive cell.

TABLE 2-1

NUMBER OF OBSERVATIONS PER SEASON AND LOCATION

Location	Latitude	Longitude	Winter	Spring	Summer
9/10	17N	107E	4245	410	3673
T	29N	135E	1454	2033	4066
N	30N	140W	3348	3394	3392
V	31N	164E	2400	2722	2839
1/2	33N 36N	34E 0E	618	707	740
D	44N	41W	2299	2444	2607
K	45N	16W	1731	1777	1713
H	48N	38W	3521	1931	1979
P	50N	145W	2496	2163	2514
C	53N	35W	2414	2625	2739
J	53N	19W	2097	2191	2214
B	56N	51W	2652	2646	2790
I	60N	19W	1976	2194	2248
A	62N	33W	2032	2156	2091
M	66N	2E	2463	2495	2562

TABLE 2-2 CELLS FOR RECORDING LOWER CLOUD BASE HEIGHT AND THEIR CODE INDENTIFICATION*

WMO CODE 1300 FIGURE	HEIGHT IN METERS	MID-RANGE HEIGHT H METERS
0	0 - 49	25
1	50 - 99	75
2	100 - 199	150
3	200 - 299	250
4	300 - 599	450
5	600 - 999	800
6	1,000 - 1,499	1250
7	1,500 - 1,999	1750
8	2,000 - 2,499	2250
9	2,500 or higher or no clouds	3000 or higher

*FROM SURFACE MARINE OBSERVATIONS. TAPE DECK TDF-11

TABLE 2-3

CODE FOR CLOUD COVER*

TOTAL CLOUD AMOUNT (N)	Fraction of celestial dome covered by all clouds.
LOWER CLOUD AMOUNT (N_h)	Fraction of celestial dome covered by all the C_L clouds and, if no C_L cloud is present, that fraction covered by all the C_M clouds present.

0 = Clear
1 = 1 Okta or less, but not zero
2-8 = 2-8 Oktas
9 = Sky obscured or cloud amount cannot be estimated.

*from Surface Marine Observations Tape Deck TDF-11

TABLE 2-4A

CODE FOR LOW CLOUD TYPE (C_L)* +

0 = No stratocumulus, stratus, cumulus or cumulonimbus.

1 = Cumulus with little vertical extent and seemingly flattened, or ragged cumulus other than of bad weather, or both.

2 = Cumulus of moderate or strong vertical extent, generally with protuberances in the form of domes or towers, either accompanied or not by other cumulus or by stratocumulus, all having their base at the same level.

3 = Cumulonimbus the summits of which, at least partially, lack sharp outlines but are neither clearly fibrous (cirriform) nor in the form of an anvil; cumulus, stratocumulus or stratus may also be present.

4 = Stratocumulus formed by the spreading out of cumulus; cumlus may also be present.

5 = Stratocumulus not resulting from the spreading out of cumulus.

7 = Stratus fractus of bad weather (generally existing during precipitation and a short time before and after) or cumulus fractus of bad weather, or both (pannus), usually below altostratus or nimbostratus.

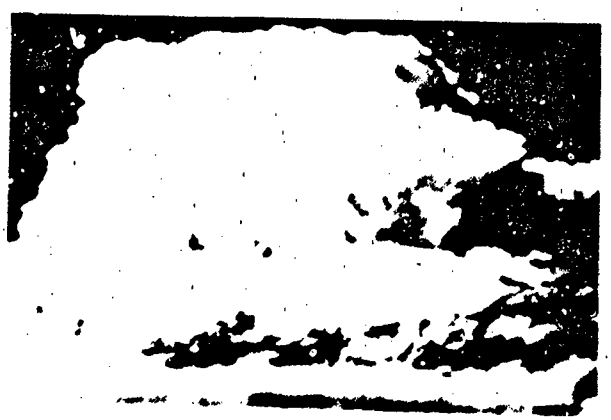
8 = Cumulus and stratocumulus other than that formed from the spreading out of cumulus; the base of the cumulus is at a different level from that of the stratocumulus.

9 = Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil; either accompanied or not by cumulonimbus without anvil or vibrous upper part by cumulus, stratocumulus, stratus or pannus.

\+ from Surface Marine Observations Tape Deck TDF-11
*Fog = All clouds in the 0-50 meter base height cell

C_L 1: Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus Fractus other than of bad weather, or both.

C_L 2: Cumulus of moderate or strong vertical extent or Towering Cumulus, generally with protuberances in the form of domes or towers, possibly accompanied by other Cumulus or by Stratocumulus, all having their bases at the same level. Cumulus of great vertical extent sometimes produce virga and showery precipitation.



C_L 3: Cumulonimbus the summits of which, at least partially, lack sharp outlines, but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present. These clouds are often accompanied by thunderstorms and showery precipitation.

TABLE 2-4B CODE SPECIFICATIONS FOR C_L CLOUDS. (FROM NAVAIR 50-1O (FM H-18))

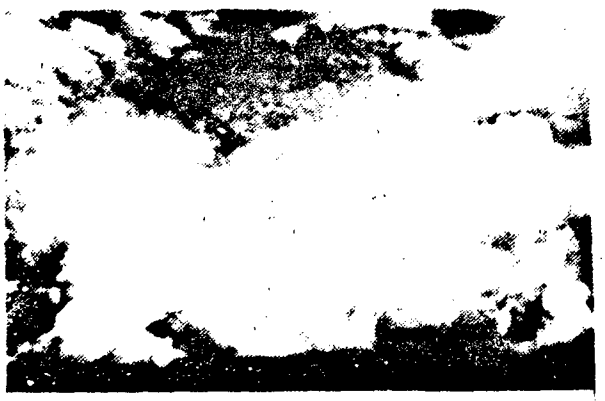
C_L 4: Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present.

C_L 5: Stratocumulus not resulting from the spreading out of Cumulus. This cloud is sometimes accompanied by precipitation of a light intensity and a continuous or intermittent character.

C_L 6: Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus Fractus of bad weather. Any precipitation from this cloud is in the form of drizzle or snow grains.

TABLE 2-4B (CONTINUED)

C_L 7: Stratus Fractus of bad weather or Cumulus Fractus of bad weather, or both (pannus), usually below Altostratus or Nimbostratus. The term "bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.



C_L 8: Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus.

C_L 9: Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil, or Cumulonimbus Mamma which has base with hanging pouches or protuberances; either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus. These clouds are often accompanied by thunderstorms and showery precipitation.

TABLE 2-4B (CONTINUED)

TABLE 2–5A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L(C,H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.24	.53
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	.04
150.	0.00	0.00	0.00	0.00	0.00	0.00	.24	.08	.41	.53
250.	0.00	0.00	.04	.04	.08	.16	.69	.57	1.10	2.68
450.	0.00	.32	1.26	2.68	3.82	3.98	9.95	8.93	10.87	41.81
800.	0.00	.53	2.68	4.34	4.55	5.36	10.48	9.62	8.57	46.12
1250.	0.00	.24	1.22	.73	.97	.93	1.22	1.58	.57	7.47
1750.	0.00	.04	.04	.04	.04	0.00	0.00	.04	0.00	.20
2250.	0.00	.04	0.00	.08	0.00	.00	0.00	.04	0.00	.24
3000.	.97	.04	0.00	0.00	.00	0.00	0.00	.04	.04	1.10
ALL LOW CLOUDS (PER CENT)	1.3	1.2	5.2	7.9	9.5	10.5	22.4	21.0	21.0	

TABLE 2–5B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.53
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.24	.24	0.00	.04	
250.	0.00	0.00	.04	0.00	0.00	.12	1.06	.77	.04	.65	
450.	0.00	.41	1.30	.93	.04	1.26	3.25	0.04	3.49	22.29	
800.	0.00	.32	2.44	.28	.16	10.92	.69	1.79	4.83	24.69	
1250.	0.00	.37	.85	.08	.04	3.33	.04	.08	1.14	1.54	
1750.	.12	.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	
2250.	.16	0.00	.04	0.00	0.00	0.00	0.00	0.00	0.00	.04	
3000.	1.10	0.00	0.00	0.00	0.00	.00	0.00	0.00	0.00	0.0	
ALL LOW CLOUDS (PER CENT)	1.4	1.1	4.7	1.3	.2	15.7	5.3	10.9	9.5	49.3	.5

TABLE 2–6A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.60
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	.04	.08
150.	0.00	0.00	0.00	0.00	.04	0.00	.16	.32	1.00	1.52
250.	0.00	.08	.04	0.00	.28	.28	.64	1.00	1.68	3.93
450.	0.00	.32	.80	1.08	2.97	2.97	7.29	5.69	6.25	27.37
800.	0.00	1.00	3.17	4.13	4.81	6.21	11.10	10.18	5.81	46.41
1250.	0.00	1.52	1.64	1.24	1.68	1.64	2.44	2.04	1.32	13.55
1750.	0.00	.20	.08	.12	.24	.08	.12	.08	.08	1.00
2250.	.04	.04	.08	.08	.08	.04	.12	.08	.08	.64
3000.	3.65	.04	0.00	.04	.08	0.00	0.00	.08	0.00	3.89
ALL LOW CLOUDS (PER CENT)	3.8	3.2	5.8	6.7	10.2	11.1	21.9	19.5	17.8	

TABLE 2–6B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.04	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	1.32	.16	0.00	.04	
250.	0.00	0.00	.04	0.00	0.00	0.00	2.28	1.16	0.00	.44	
450.	.04	.12	.64	.16	0.00	.76	5.25	6.33	1.08	12.99	
800.	.04	.44	2.44	.68	0.00	9.70	1.28	1.76	6.37	23.69	
1250.	.08	.92	1.48	.08	0.00	5.93	.08	.12	.96	3.89	
1750.	.76	0.00	0.00	0.00	0.00	.12	0.00	0.00	.08	.04	
2250.	.60	0.00	0.00	0.00	0.00	.04	0.00	0.00	0.00	0.00	
3000.	3.81	0.00	0.00	0.00	0.00	.08	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	5.3	1.5	4.6	.9	0.0	16.6	10.3	9.6	8.5	41.1	1.6

TABLE 2–7A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68	4.92
75.	0.00	0.00	0.00	0.00	0.00	.04	0.00	.20	.39	.62
150.	0.00	0.00	0.00	0.00	.04	0.00	.51	.78	3.28	4.45
250.	0.00	.08	.16	.08	.20	.66	1.29	1.44	6.65	9.39
450.	0.00	.74	1.17	1.72	2.93	4.33	8.82	9.64	11.83	41.22
800.	0.00	1.01	1.52	3.01	3.24	3.24	6.09	7.88	4.53	30.52
1250.	0.00	.62	.74	.51	.78	.78	.51	.86	.51	5.23
1750.	0.00	.12	.16	.20	.12	.04	.16	.12	.04	.96
2250.	0.00	.04	.04	.08	.04	.08	0.00	0.00	0.00	.27
3000.	2.58	.23	.27	.32	.12	.04	0.00	.08	0.00	3.43
ALL LOW CLOUDS (PER CENT)	2.8	2.8	4.1	5.7	7.5	9.1	17.4	21.8	29.7	

TABLE 2–7B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.92
75.	0.00	0.00	0.00	0.00	0.00	.04	.43	.12	.04	0.00	
150.	.04	0.00	0.00	0.00	0.00	0.00	3.04	1.21	.04	.12	
250.	.12	0.00	.04	0.00	0.00	.55	4.64	1.56	.31	1.17	
450.	.16	.08	.66	.82	.08	6.32	8.90	3.94	4.84	15.42	
800.	0.00	.27	1.72	.16	.23	9.52	.98	.74	6.25	10.66	
1250.	.39	.35	.51	.16	0.00	2.65	0.00	.12	.51	.55	
1750.	.35	.04	0.00	0.00	0.00	.47	0.00	0.00	.08	0.00	
2250.	.20	0.00	0.00	0.00	0.00	.08	0.00	0.00	0.00	0.00	
3000.	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	4.7	.7	2.9	1.1	.3	19.6	18.0	7.7	12.1	27.9	4.9

CHAPTER 3

METHOD FOR THE DETERMINATION OF ESTIMATES FOR PCFLOS (A_i, H_j) AND SLANT RANGES

The procedure used for the calculation of estimates of PCFLOS (A_i, H_j) in terms of the elevation angle and target height is based on the work of Lund and Shanklin who proposed a universal method for the determination of cloud-free lines of sight in their 1973 paper.[1]

In brief, Lund and Shanklin established statistically a relation between $P(C_j)$, the probability of a cloud cover C_j, as determined by the usual visual weather observations practice[2] and PCFLOS (A_i) found by careful examination of whole-sky photographs taken at weather observation time.

Before proceeding any further we must emphasize again the difference between PCFLOS (A_i) of Lund and Shanklin and PCFLOS (A_i, H_j) that we wish to evaluate: PCFLOS (A_i) is the probability of a cloud-free line of sight through all clouds present against a deep sky background while PCFLOS (A_i, H_j) is the probability up to a height H_j regardless of the background.

In our notation the Lund and Shanklin relation is expressed by

$$\text{PCFLOS}(A_i) = \sum_{j=1}^{9} U(A_i, C_j)\, P(C_j) \qquad (3\text{-}1)$$

where A_i and C_j are the values of the elevation angle A and cloud cover C, $P(C_j)$ the probability of C taking the value C_j and the matrix elements $U(A_i, C_j)$ the probability of a CFLOS at A_i and C_j.

Actually Lund and Shanklin determined a general matrix U for all clouds and several others specialized for various sets of cloud types. The general one, which is the one that we apply here, can be seen in Table 3-1 in this chapter. It has nine cloud cover columns (rather than eleven) to match the available marine low cloud data.

[1] Lund, I.A., and Shanklin, M.D., 1973: "Universal Methods for Estimating Probabilities of Cloud-Free Lines-of-Sight through the Atmosphere," J. Appl. Meteor. 12, 1222-1228.

[2] "Surface Observations," Fed. Meteor. Handbook No. 1, First and Second eds., Dept. of Commerce
"Surface Observations," NAVAIR 50-1D-1 (FMH-1B) 1 Jan 1980, Dept. of the Navy

We proposed the following expression for the estimation of PCFLOS (A_i, H_j),

$$\text{PCFLOS}\ (A_i, H_j) = 1 - \sum_{k=1}^{j} \left[1 - \sum_{\ell=1}^{9} U\ (A_i, C_\ell)\ x \right.$$

$$\left. L\ (C_\ell, H_k) / P\ (H_k) \right] P(H_k) : \quad 1 \leq i \leq 9,\ 1 \leq j \leq 10 \qquad (3\text{-}2)$$

where $L\ (C_\ell, H_k)$ are the matrix elements of the local lower cloud matrix of Chapter 2.

One can arrive at this expression by arguing that

$$\sum_{\ell=1}^{9} U\ (A_i, C_\ell)\ L\ (C_\ell, H_k) / P\ (H_k)$$

gives, for the base height cell at H_k, the probability of a CFLOS at A_i and H_k where the k^{th} column of L/P is regarded as a distribution for cloud cover. Here we have made the assumption that Lund and Shanklin's use of the universal matrix U is applicable to individual base height cells. The complement to 1 is then the probability for a LOS to be obstructed by clouds due to the structure of the lower clouds present at this height; and the product of this quantity with $P(H_k)$, defined in Chapter 2 as the frequency (probability) for the presence of lower clouds at H_k, gives the probability of sighting a cloud at H_k when the line of sight is clear up to H_k. The sum over all the intervening height cells can now be taken as the probability of having sighted a cloud before or at this height. In turn its complement to 1 is an estimate of the probability for a line of sight to reach H_k.

Equation (3-2) involves matrices but it does not lend itself to be written readily in matrix form. For those who prefer a matric expression, we include it in Table 3-2 at the end of this chapter.

As an alternate expression for PCFLOS (A_i, H_j) we can write

$$\text{PCFLOS}\ (A_i, H_j) = 1 - \sum_{k=1}^{j} \left[1 - \text{PINT}\ (A_i, H_k) \right] \qquad (3\text{-}3)$$

with

$$\text{PINT}\ (A_i, H_j) \equiv 1 - \left[1 - \sum_{\ell=1}^{9} U\ (A_i, C_\ell)\ x \right.$$

$$\left. L\ (C_\ell, H_k) / P\ (H_k) \right] P\ (H_k) \qquad (3\text{-}4)$$

This form shows explicitly the contribution of each base height cell as if it were isolated.

Inserting the values of the elevation angle A and the cloud base height H, for which we have the values of PCFLOS (A_i, H_j) in the following formula, we obtain the corresponding value of the slant range SR_j,

$$SR = -R \sin A + \sqrt{H_s\,(2R + H_s)}\cos A + \sqrt{\left[-R \sin A + \sqrt{H_s\,(2R + H_s)}\cos A\right]^2 + H^2 - H_s^2 + 2R\,(H - H_s)} \qquad (3\text{-}5)$$

where

H_s is the sensor's height and

$R = 6.36\ 10^6$ m is the earth's radius.

Figure 3-1 illustrates the geometry involved in the problem and Figure 3-2 provides a monograph for quick determination of slant ranges of less than 20 km neglecting the sensor's height.

TABLE 3–1 PROBABILITIES OF CLOUD-FREE LINES-OF-SIGHT AS A FUNCTION OF ELEVATION ANGLE AND TOTAL SKY COVER. U(A, C)

ELEVATION ANGLE (DEGREES)	SKY COVER (EIGHTHS)								
	0	1	2	3	4	5	6	7	8
10	.97	.84	.72	.58	.47	.38	.28	.17	.03
20	.98	.88	.78	.68	.59	.48	.37	.24	.05
30	.98	.92	.83	.73	.66	.55	.43	.28	.06
40	.99	.93	.86	.78	.71	.60	.48	.32	.07
50	.99	.94	.87	.81	.73	.63	.52	.33	.08
60	.99	.95	.88	.82	.75	.65	.53	.34	.08
70	.99	.96	.88	.82	.76	.66	.54	.35	.08
80	.99	.96	.89	.82	.77	.67	.55	.35	.08
90	1.00	.96	.89	.83	.77	.68	.55	.35	.08

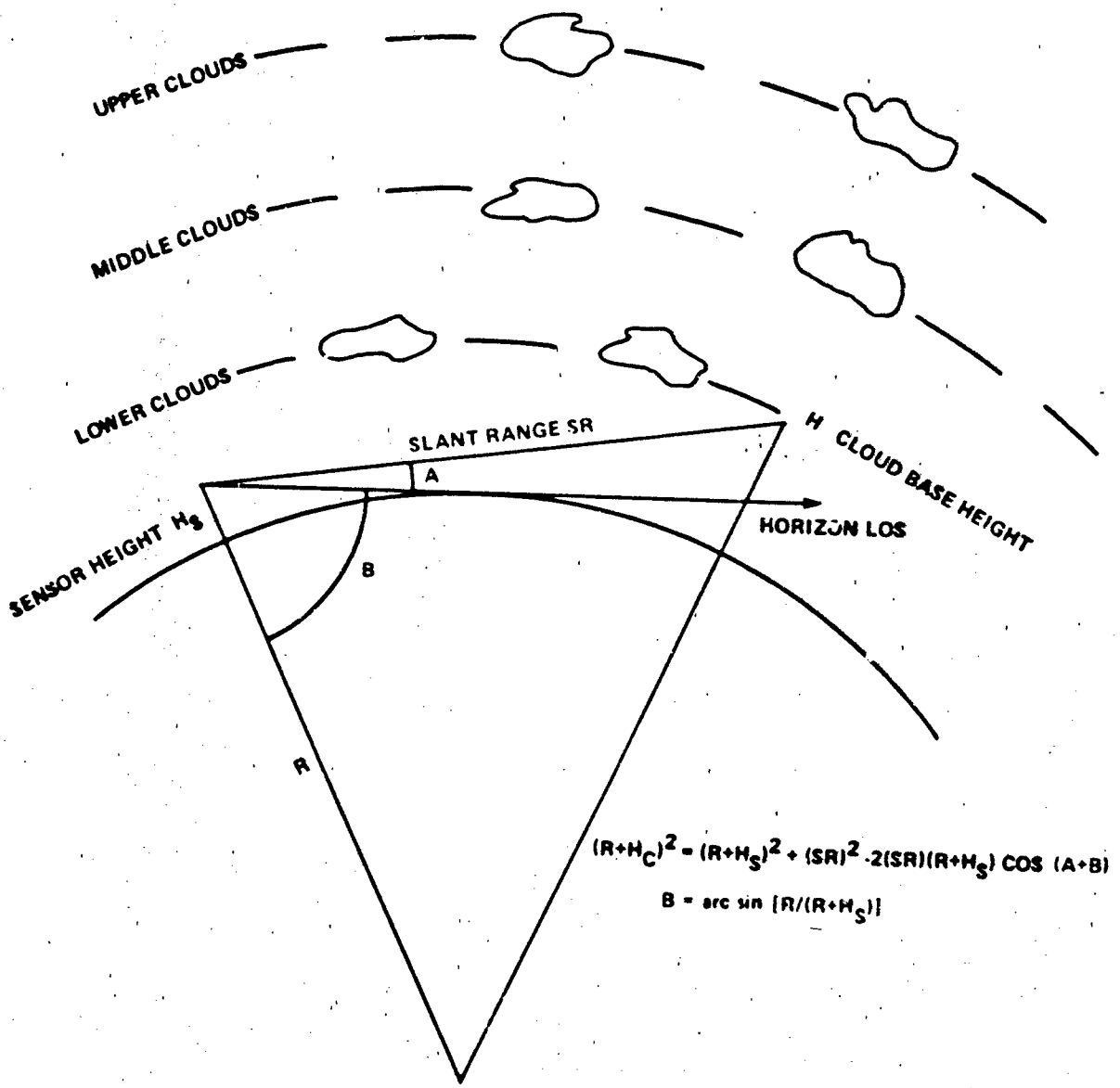


FIGURE 3-1 SLANT RANGE GEOMETRY.

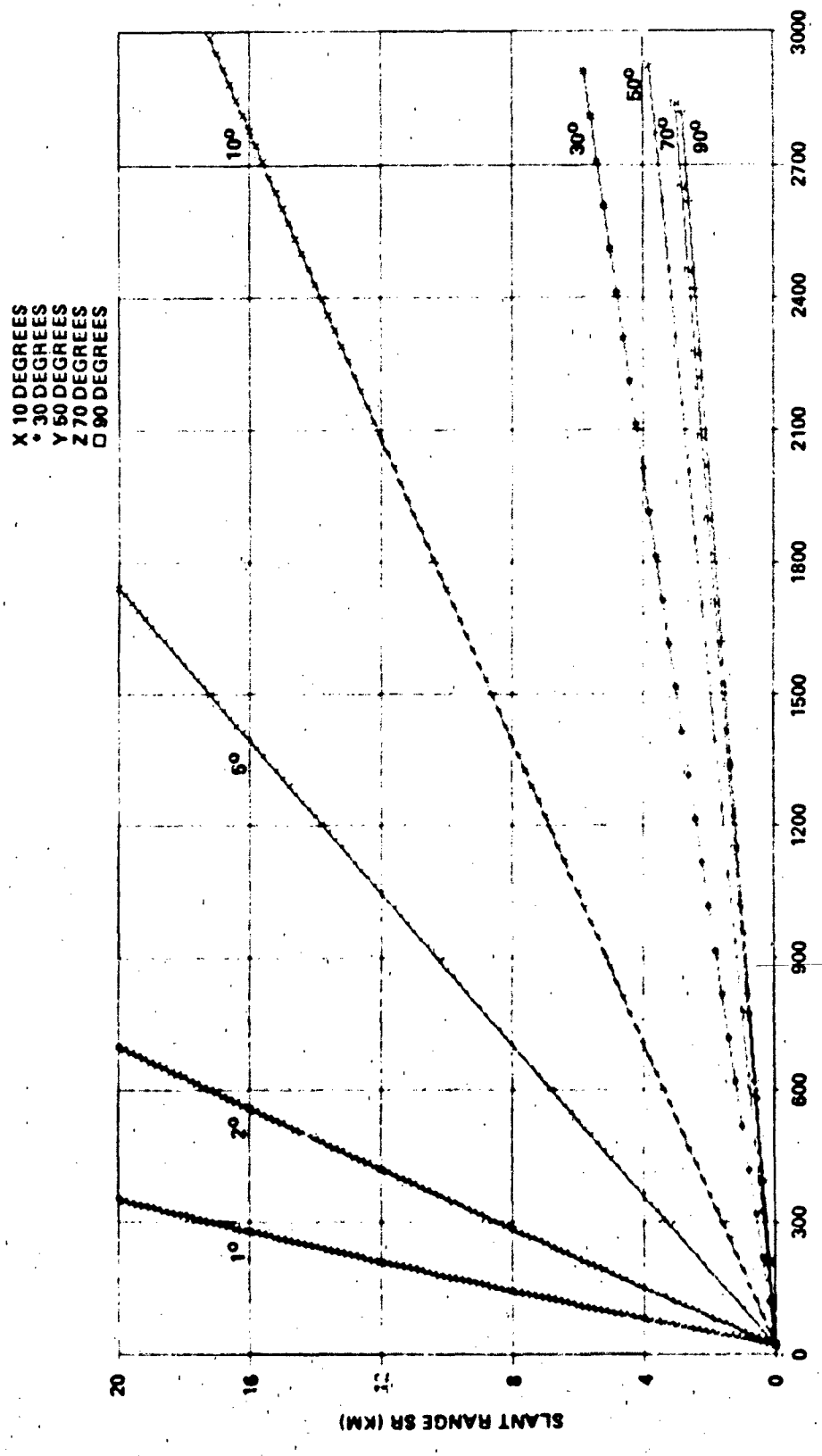


FIGURE 3-2 SLANT RANGE TO GIVEN HEIGHT.

TABLE 3-2

MATRIX FORM OF EXPRESSION (3-2) FOR PCFLOS

$$PCFLOS = Q - \left[Q - U\,L\,M^{-1} \right] M\,T^{u}$$

where

U is given in Table 3-1,

the transposed of L by Table 2-5A for the winter season at station M and the tables A of Appendix A for all locations,

$Q(i, j) = 1,\ 1 \leq i \leq 9,\ 1 \leq j \leq 10,$

$$T^{u}(i, j) = \begin{cases} 1 & i \leq j \\ 0 & \text{otherwise} \end{cases} \quad 1 \leq i \leq 10,\ 1 \leq j \leq 10$$

$$M(i, j) = P(H_i)\,\delta_{ij} \quad 1 \leq i \leq 10,\ 1 \leq j \leq 10$$

Notice that

$$(Q\,M\,T^{u})(i, j) = \sum_{k=1}^{\ell} P(H_k)$$

and that $Q - QMT^{u}$ in

$$PCFLOS = Q - QMT^{u} + ULT^{u}$$

is independent of the elevation angle A_i.

Similarly (3-3) and (3-4) become $PCFLOS = Q - [Q - PINT]\,T^{u}$ and $PINT = Q - [Q - U\,L\,M^{-1}]M$ respectively.

CHAPTER 4

PCFLOS (A_i, H_j) AND SLANT RANGE RESULTS

The lower cloud base data for the fifteen marine locations of Figure 1-1 (Table 1-1) that was discussed in Chapter 2 has been processed with the computer algorithms of formulae

(3-3) for PINT (A_i, H_j),

(3-4) for PCFLOS (A_i, H_j),

(3-1) for PCFLOS (A_i)

and collected in tables for winter, spring, and summer in

Appendix B, PINT (A_i, H_j),

Appendix C, PCFLOS (A_i, H_j) and PCFLOS (A_i)

These tables are arranged in the order given in Table 1-1: the PCLOS (A_i) table being the last one in Appendix C.

Four locations, namely, 1, 9, J, and M, have been selected for more detailed consideration, and graphs have been plotted with the values calculated for the lower cloud base statistics, and PCFLOS (A_i, H_j). These graphs are found in Appendix D. For each of the selected locations we include in consecutive order:

a. Lower cloud base height statistics for winter, spring, and summer
b. PCFLOS (A_i, H_j) for winter
c. PCFLOS (A_i, H_j) for spring
d. PCFLOS (A_i, H_j) for summer
e. Combined graphs for PCFLOS (A_i, H_j), lower cloud base heights (target height) and slant range.

With the intention of simplifying the reader's task and of illustrating more intuitively the results of our calculations, we reproduce in this chapter the tables and graphs corresponding to location M; and, in addition, we include, for the same location, tables and graphs for slant range and one graph for lines of constant PCLOS (A_i, $(SR)_j$) as described below.

In figure 4-1 we have plotted the values of the lower cloud base frequencies listed in Tables 2-5A to 2-7A of Chapter 2.

Tables 4-1 to 4-3 give PINT (A_i, H_j) for winter, spring, and summer respectively; and Tables 4-4 to 4-6 give PCFLOS (A_i, H_j) for the same sequence of seasons.

The latter values are plotted in Figures 4-2 to 4-4. They show clearly the influence of the region of higher cloud base frequencies on the probability of a

cloud-free line of sight. Figure 4-5 for the spring season is a nomogram relating slant range, target height, and PCFLOS (A_i, H_j).[1]

In Tables 4-7 to 4-9 we list for each season the values of the slant range (SR) (A_i, H_j) for which we have data points (A_i, H_j) and the corresponding probability PCFLOS (A_i, H_j) at the same point. The slant ranges were calculated with expression (3-5) neglecting the sensor's height. We include also three figures, 4-6, 4-7, and 4-8, where we plot the values in these tables for five elevation angles. The numbers in parenthesis are the values of PCFLOS (A_i) calculated with (3-1) and listed in Table C-46.

Finally, we give for the winter season only Figure 4-9 which shows very rough estimates, in polar coordinates, of lines of constant probability PCFLOS $(A_i, (SR)_j)$ or equivalently PCFLOS (A_i, H_j). This graph was obtained by rounding off subjectively the curves plotted for the winter results in Figure 4-7, interpolating and replotting in polar coordinates for slant ranges of less than 18,000 feet.

We wish to remind the reader that the heights listed in the tables constituting Appendices A and B and their reproductions in the text are the midrange values given in Table 2-2: that the low-cloud statistics cover in detail up to 2500 meters and that the entry for 3000 meters is only a representative value for heights over 2500 meters. In appendices C and D we use the values for the top of the height cells up to 2500 meters and 3500 for the top cell.

[1]Suggested by Captain W. L. Boyer, U. S. Navy. Former Deputy Commander, NSWC, presently at ONR.

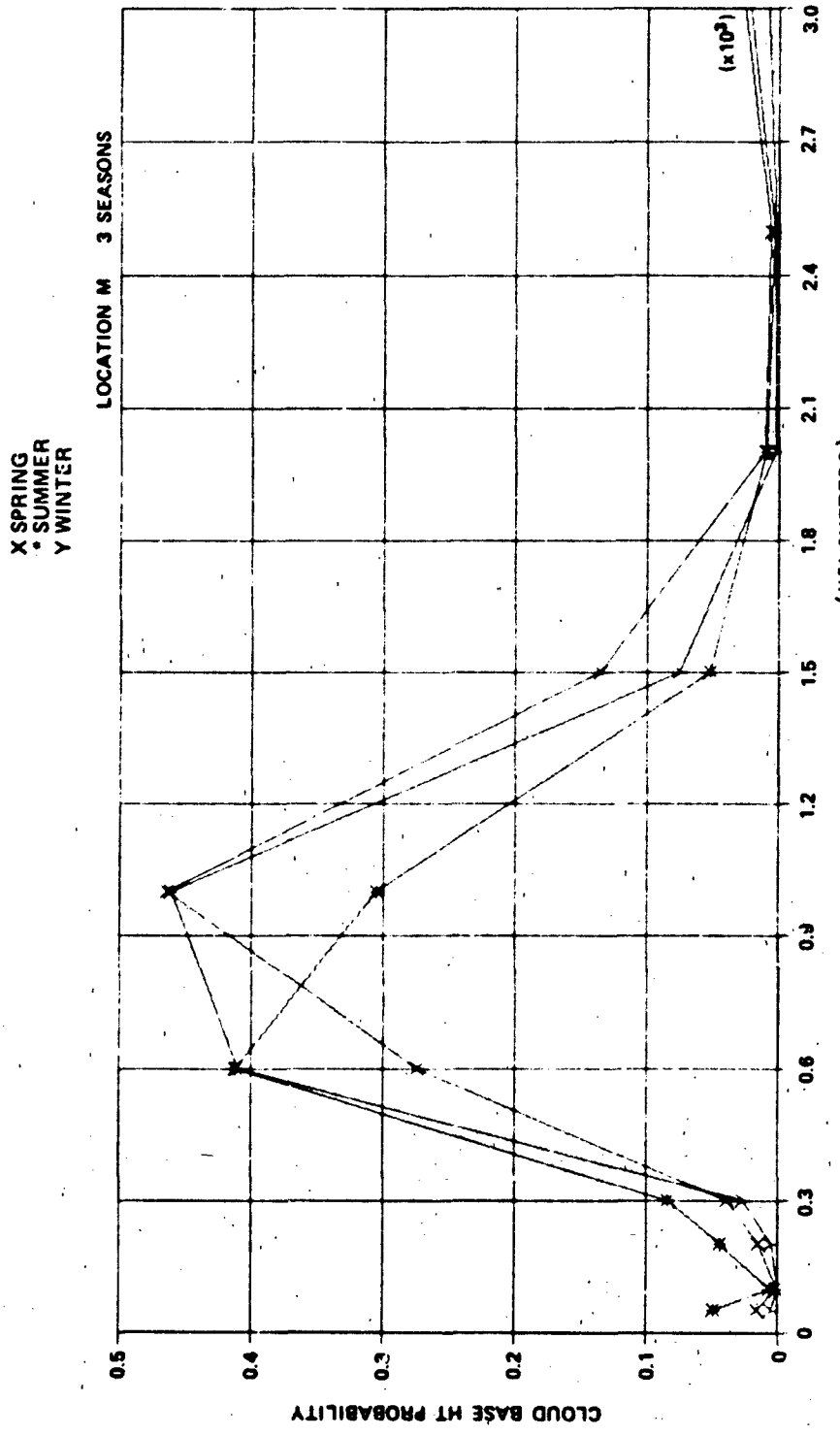


FIGURE 4-1 CLOUD BASE HEIGHT STATISTICS, LOCATION M. (SEE TABLES 2-5A, 2-6A, AND 2-7A).

PINT (A,H) TABLE 4–1 SPRING LOCATION M

CONTRIBUTION TO PCFLOS (A, H) DUE TO CLOUDS WITH BASE HEIGHT AT H.

H METERS	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9852	.9855	.9857	.9858	.9860	.9860	.9860	.9860	.9860
75.0000	.9993	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9994
150.0000	.9863	.9869	.9872	.9876	.9878	.9878	.9879	.9879	.9879
250.0000	.9678	.9700	.9713	.9725	.9731	.9734	.9736	.9737	.9738
450.0000	.7982	.8182	.8309	.8410	.8471	.8498	.8517	.8531	.8535
800.0000	.6874	.7241	.7480	.7660	.7765	.7817	.7858	.7875	.7886
1250.0000	.9212	.9316	.9387	.9435	.9464	.9479	.9489	.9496	.9499
1750.0000	.9949	.9957	.9962	.9965	.9967	.9969	.9969	.9970	.9970
2250.0000	.9964	.9968	.9972	.9974	.9975	.9976	.9976	.9976	.9976
3000.0000	.9976	.9982	.9983	.9987	.9988	.9988	.9988	.9988	.9992

TABLE 4–2 SUMMER

CONTRIBUTION TO PCFLOS (A, H) DUE TO CLOUDS WITH BASE HEIGHT AT H.

H METERS	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9545	.9555	.9559	.9564	.9569	.9569	.9569	.9569	.9569
75.0000	.9944	.9946	.9948	.9949	.9950	.9950	.9950	.9950	.9950
150.0000	.9593	.9609	.9618	.9627	.9633	.9634	.9636	.9636	.9636
250.0000	.9292	.9333	.9359	.9381	.9395	.9399	.9403	.9405	.9406
450.0000	.6874	.7150	.7325	.7466	.7548	.7585	.7611	.7629	.7635
800.0000	.7918	.8144	.8295	.8408	.8473	.8505	.8527	.8541	.8547
1250.0000	.9786	.9746	.9773	.9791	.9801	.9808	.9811	.9814	.9815
1750.0000	.9952	.9960	.9965	.9968	.9970	.9971	.9972	.9972	.9972
2250.0000	.9988	.9991	.9992	.9993	.9994	.9994	.9994	.9995	.9995
3000.0000	.9961	.9970	.9974	.9979	.9980	.9981	.9982	.9982	.9985

TABLE 4–3 WINTER

CONTRIBUTION TO PCFLOS (A, H) DUE TO CLOUDS WITH BASE HEIGHT AT H.

H METERS	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9976	.9976	.9977	.9977	.9977	.9977	.9977	.9977	.9978
75.0000	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
150.0000	.9951	.9953	.9954	.9955	.9955	.9955	.9956	.9956	.9956
250.0000	.9780	.9795	.9805	.9813	.9818	.9820	.9822	.9823	.9823
450.0000	.6964	.7257	.7444	.7590	.7670	.7717	.7744	.7763	.7778
800.0000	.6777	.7125	.7351	.7521	.7623	.7678	.7721	.7724	.7733
1250.0000	.9548	.9607	.9647	.9676	.9691	.9700	.9705	.9709	.9711
1750.0000	.9991	.9993	.9994	.9994	.9995	.9995	.9995	.9995	.9995
2250.0000	.9988	.9990	.9991	.9992	.9992	.9993	.9993	.9993	.9993
3000.0000	.9985	.9987	.9988	.9990	.9990	.9990	.9991	.9991	.9992

PCFLOS (A,H) — LOCATION M

TABLE 4–4 SPRING

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT FROM THE SURFACE TO GIVEN HEIGHT, H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9852	.9855	.9857	.9858	.9860	.9860	.9860	.9860	.9860
100.0000	.9845	.9848	.9850	.9852	.9853	.9853	.9854	.9854	.9854
200.0000	.9707	.9717	.9722	.9727	.9731	.9732	.9732	.9732	.9732
300.0000	.9385	.9417	.9435	.9452	.9462	.9466	.9468	.9470	.9470
600.0000	.7367	.7599	.7745	.7862	.7933	.7963	.7985	.8001	.8005
1000.0000	.4241	.4839	.5224	.5522	.5698	.5780	.5835	.5876	.5890
1500.0000	.3453	.4156	.4611	.4957	.5161	.5259	.5324	.5372	.5389
2000.0000	.3402	.4112	.4573	.4923	.5129	.5228	.5293	.5342	.5359
2500.0000	.3365	.4081	.4545	.4897	.5104	.5203	.5269	.5318	.5336
3500.0000	.3341	.4062	.4528	.4884	.5092	.5192	.5257	.5306	.5328

TABLE 4–5 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT FROM THE SURFACE TO GIVEN HEIGHT, H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9545	.9555	.9559	.9564	.9569	.9569	.9569	.9569	.9569
100.0000	.9488	.9501	.9507	.9513	.9518	.9519	.9519	.9519	.9519
200.0000	.9081	.9110	.9125	.9140	.9151	.9153	.9155	.9155	.9155
300.0000	.8373	.8443	.8484	.8521	.8546	.8552	.8558	.8560	.8562
600.0000	.5240	.5593	.5809	.5986	.6094	.6137	.6169	.6169	.6190
1000.0000	.3157	.3737	.4104	.4394	.4567	.4643	.4696	.4730	.4743
1500.0000	.2863	.3483	.3877	.4186	.4368	.4450	.4507	.4544	.4558
2000.0000	.2815	.3443	.3842	.4154	.4338	.4421	.4478	.4516	.4530
2500.0000	.2803	.3433	.3834	.4147	.4332	.4415	.4473	.4510	.4525
3500.0000	.2764	.3403	.3800	.4126	.4313	.4397	.4455	.4493	.4510

TABLE 4–6 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT FROM THE SURFACE TO GIVEN HEIGHT, H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9976	.9976	.9977	.9977	.9977	.9977	.9977	.9977	.9978
100.0000	.9972	.9973	.9974	.9974	.9975	.9975	.9975	.9975	.9975
200.0000	.9923	.9926	.9927	.992	.9930	.9930	.9930	.9930	.9930
300.0000	.9703	.9721	.9732	.9742	.9748	.9750	.9752	.9753	.9753
600.0000	.6660	.6978	.7178	.7332	.7427	.7467	.7496	.7516	.7523
1000.0000	.3443	.4184	.4526	.4854	.5049	.5137	.5197	.5240	.5257
1500.0000	.2991	.3711	.4174	.4529	.4748	.4837	.4902	.4949	.4967
2000.0000	.2982	.3704	.4167	.4524	.4735	.4832	.4897	.4944	.4963
2500.0000	.2969	.3693	.4158	.4516	.4727	.4825	.4889	.4937	.4956
3500.0000	.2954	.3681	.4146	.4505	.4718	.4815	.4880	.4928	.4947

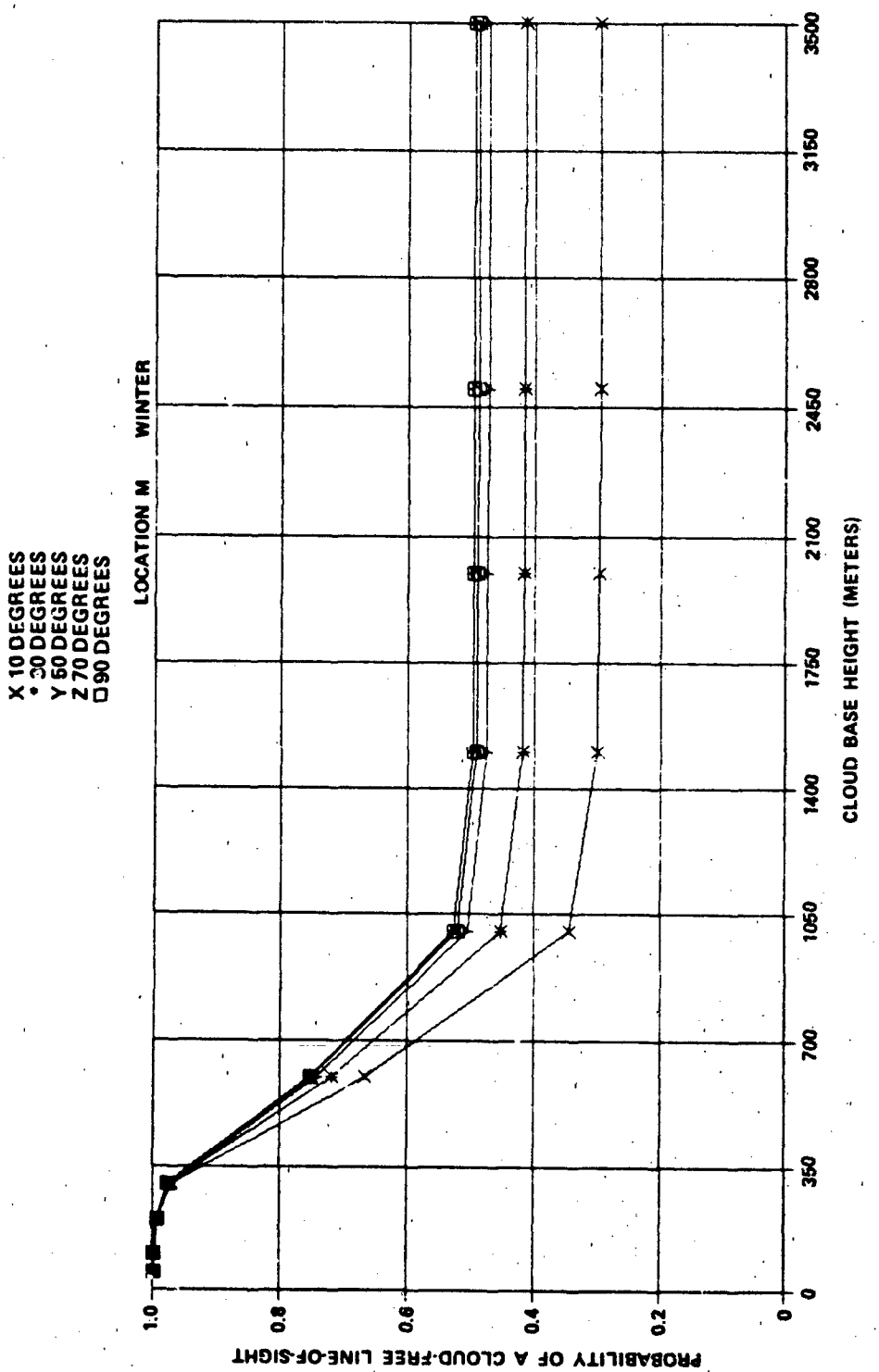


FIGURE 4-2 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, WINTER. (SEE TABLE 4-4)

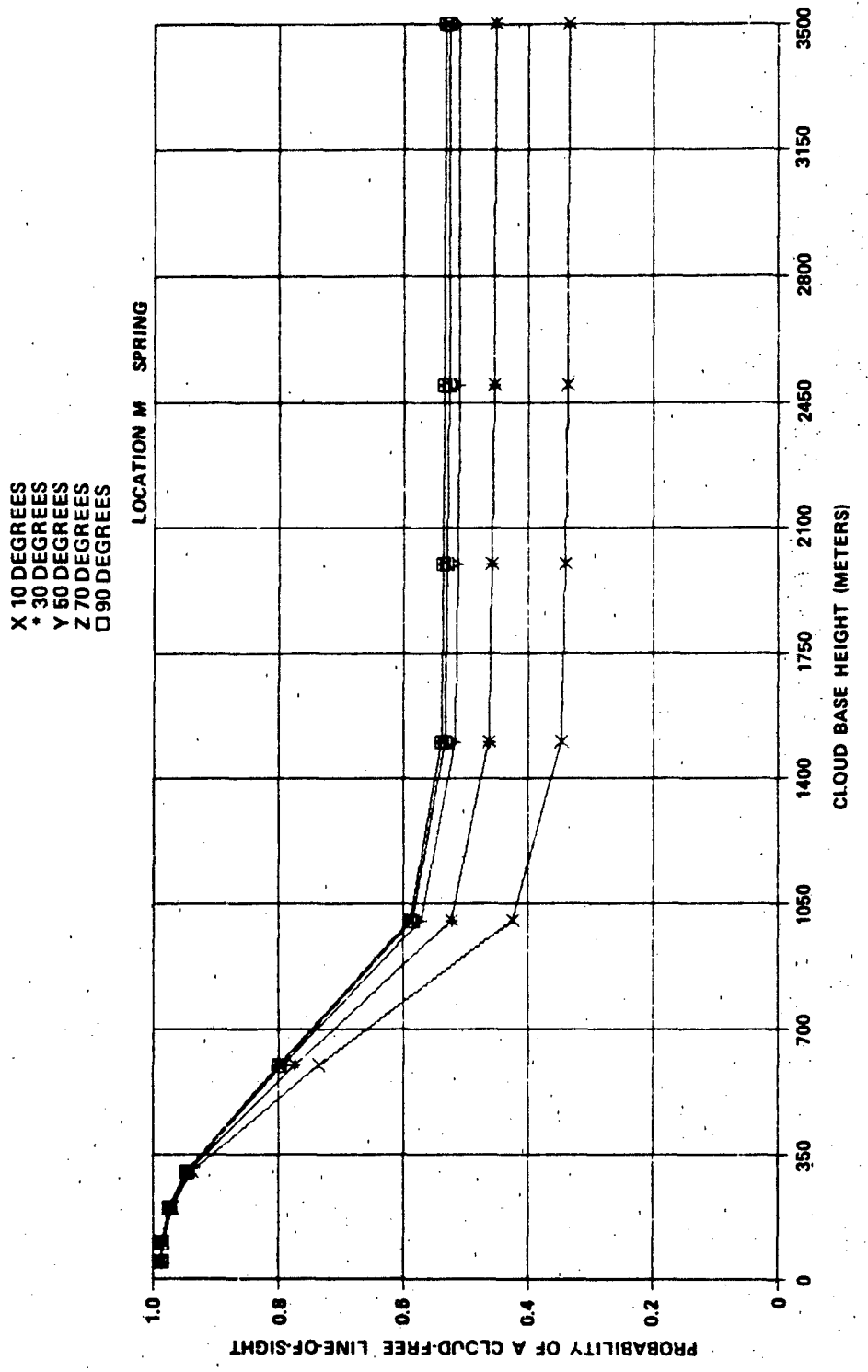


FIGURE 4-3 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, SPRING. (SEE TABLE 4-5)

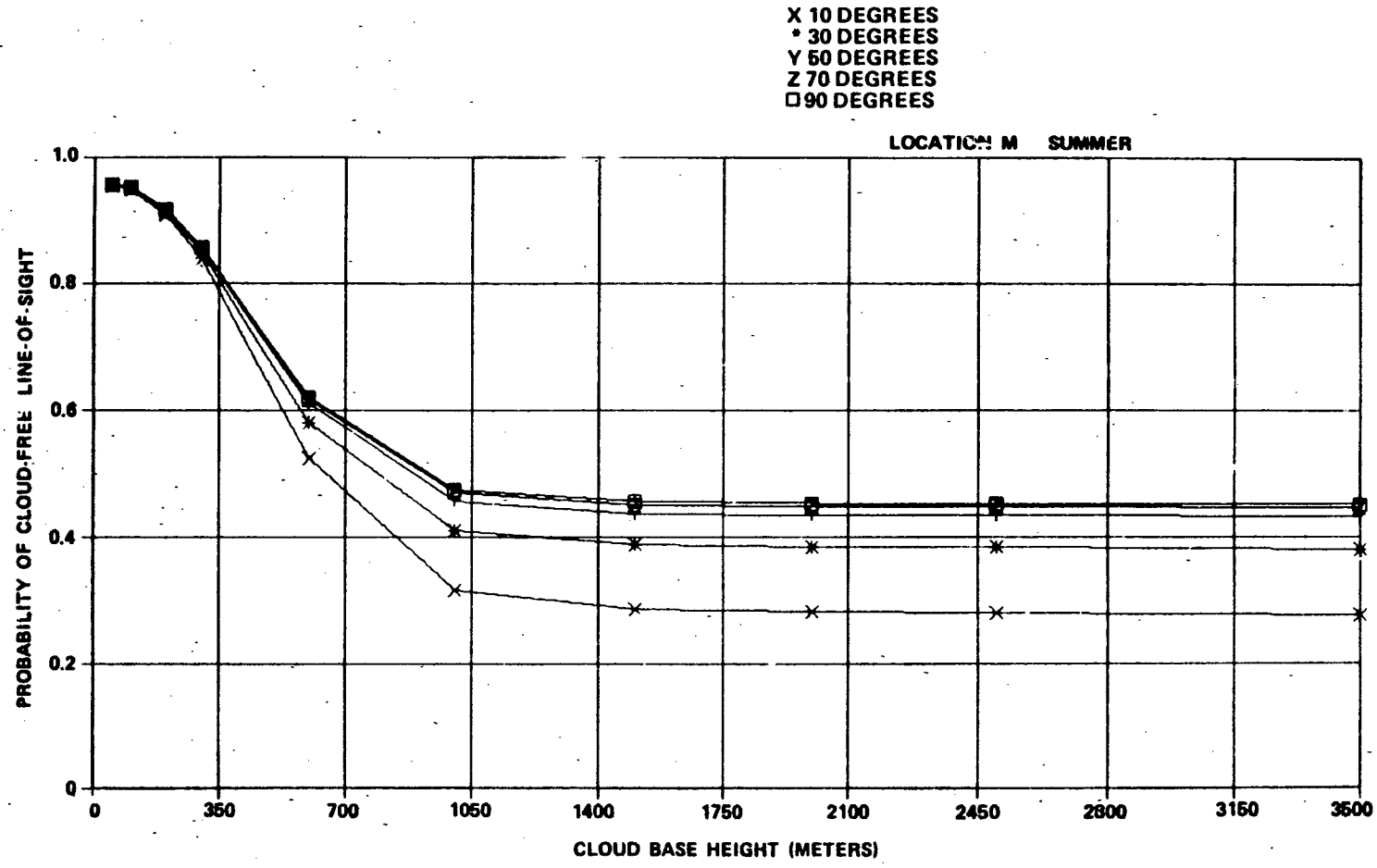


FIGURE 4-4 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, SUMMER. (SEE TABLE 4-6)

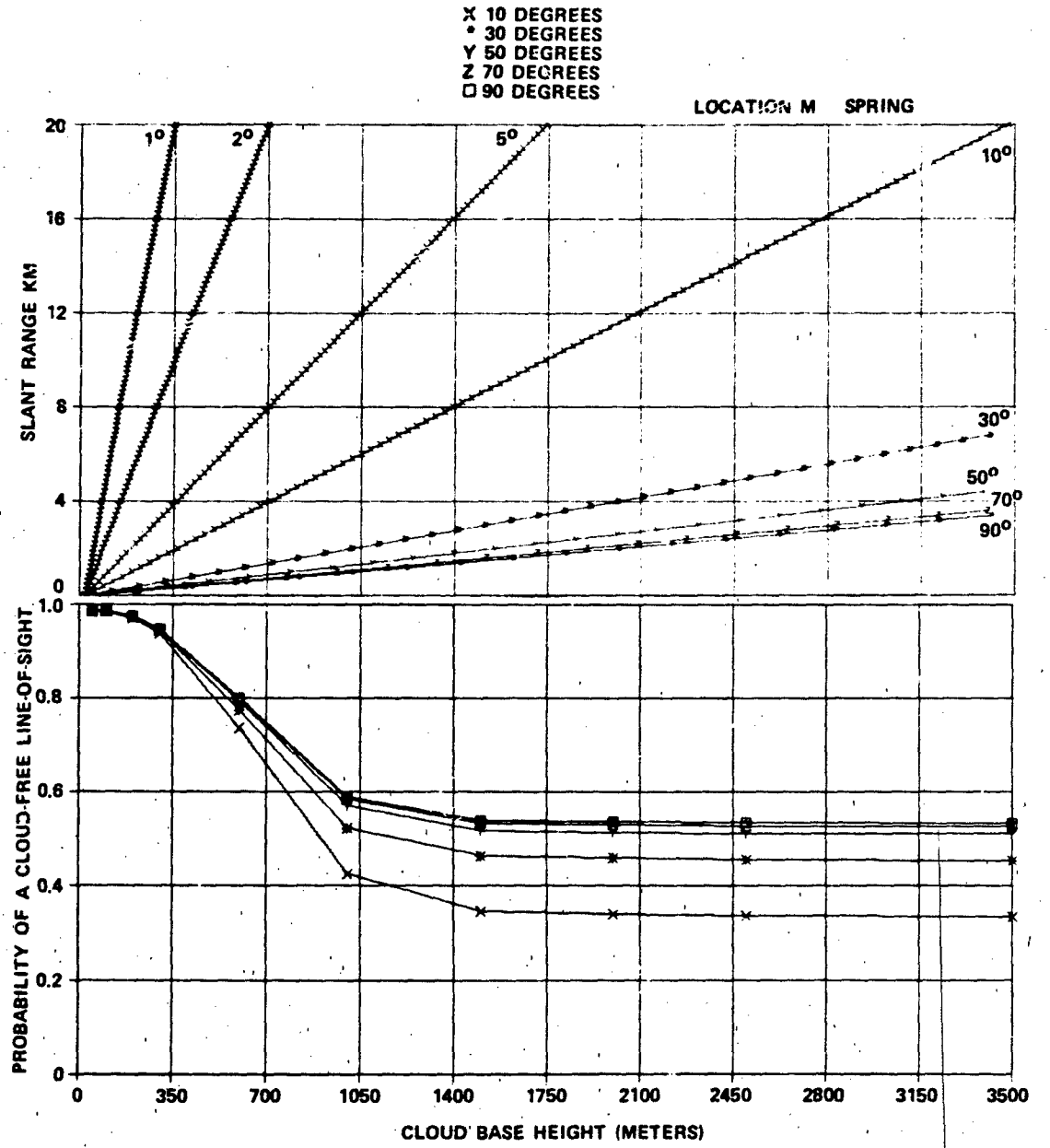


FIGURE 4-5 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, LOCATION M, SPRING. (SEE TABLE 4-4)

TABLE 4–7 WINTER

LOCATION M

PROBABILITY OF CLOUD–FREE LINE–OF–SIGHT (PCFLOS) VERSUS SLANT RANGE (SR) FOR NINE ELEVATION ANGLES.

ELEVATION ANGLE IN DEGREES																	
1°		2°		3°		4°		5°		6°		7°		8°		9°	
SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS
.345	.99[illegible]	.[illegible]	.996	.326	.996	.255	.998	.214	.998	.189	.998	.175	.998	.167	.998	.164	.998
1.491	.99[illegible]	.9[illegible]	.99[illegible]	.[illegible]56	.997	.511	.997	.428	.998	.379	.998	.349	.998	.333	.998	.328	.998
3.774	.982	1.919	.993	1.313	.993	1.021	.993	.857	.993	.758	.993	.699	.993	.667	.993	.656	.993
5.565	.97[illegible]	2.[illegible]76	.972	1.969	.973	1.532	.974	1.285	.975	1.137	.975	1.048	.975	1.000	.975	.984	.975
11.328	.[illegible]67	[illegible].738	.[illegible]9[illegible]	3.938	.718	3.063	.733	2.570	.743	2.274	.747	2.095	.75[illegible]	1.999	.752	1.969	.752
18.452	.3[illegible]	9.[illegible]3[illegible]	.[illegible]1[illegible]	6.562	.453	5.105	.485	4.284	.505	3.789	.514	3.492	.520	3.332	.524	3.282	.526
28.247	.29[illegible]	14.[illegible]5[illegible]	.371	9.842	.417	7.667	.453	6.426	.474	5.684	.484	5.239	.49[illegible]	4.999	.495	4.923	.497
37.611	.23[illegible]	19.[illegible]8[illegible]	.37[illegible]	13.121	.417	11.209	.452	8.567	.474	7.579	.483	6.985	.49[illegible]	6.665	.494	6.564	.496
46.[illegible]9[illegible]	.23[illegible]	27.[illegible]33	.369	16.[illegible]99	.416	12.[illegible]60	.452	10.[illegible]19	.473	9.[illegible]73	.483	8.731	.489	8.331	.494	8.204	.496

SR = SLANT RANGE IN KILOFEET

TABLE 4-8 SPRING

PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT (PCFLOS) VERSUS SLANT RANGE (SR) FOR NINE ELEVATION ANGLES.

LOCATION M

ELEVATION ANGLE IN DEGREES																	
10		20		30		40		50		60		70		80		90	
SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS
.945	.985	.648	.986	.328	.986	.255	.986	.214	.986	.189	.986	.175	.986	.167	.986	.164	.986
1.4[illegible]	.945	.9[illegible]	.985	.656	.985	.511	.985	.429	.985	.379	.985	.349	.985	.333	.985	.328	.985
3.[illegible]	.97[illegible]	1.919	.972	1.313	.972	1.021	.973	.857	.973	.758	.973	.699	.973	.667	.973	.656	.973
5.065	.939	2.474	.942	1.969	.944	1.532	.945	1.285	.946	1.137	.947	1.048	.947	1.000	.947	.984	.947
11.328	.737	5.755	.761	4.934	.775	3.363	.786	2.570	.793	2.274	.796	2.095	.799	1.999	.800	1.969	.801
18.452	.[illegible]	9.530	.[illegible]	6.562	.522	5.105	.552	4.284	.570	3.789	.578	3.492	.584	3.332	.588	3.282	.589
28.243	.3[illegible]	14.346	.[illegible]	9.842	.461	7.657	.496	6.426	.516	5.684	.526	5.239	.532	4.999	.537	4.923	.539
37.613	.3[illegible]	19.1[illegible]	.[illegible]	13.121	.457	11.209	.492	8.567	.513	7.579	.523	6.985	.529	6.665	.534	6.564	.536
46.[illegible]	.337	23.953	.[illegible]	16.399	.455	12.760	.490	10.709	.510	9.473	.520	8.731	.527	8.331	.532	8.204	.534

SR = SLANT RANGE IN KILOFEET

TABLE 4–9 SUMMER

LOCATION M

PROBABILITY OF CLOUD–FREE LINE–OF–SIGHT (PCFLOS) VERSUS SLANT RANGE (SR) FOR NINE ELEVATION ANGLES.

ELEVATION ANGLE IN DEGREES																	
10		20		30		40		50		60		70		80		90	
SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS	SR	PCFLOS
[illegible]	.955	[illegible]	.956	.328	.956	.255	.956	.214	.957	.189	.957	.175	.957	.167	.957	.164	.957
1.49?	[illegible]	.96?	.95?	.656	.951	.511	.951	.428	.952	.379	.952	.349	.952	.333	.952	.328	.952
3.77?	.93?	1.919	.911	1.313	.913	1.?21	.914	.857	.915	.758	.915	.699	.916	.667	.916	.656	.916
5.665	[illegible]	2.878	[illegible]	1.969	.848	1.532	.852	1.285	.855	1.137	.855	1.048	.856	1.000	.856	.984	.856
11.33?	[illegible]	5.755	.559	3.936	[illegible]	3.063	.599	2.570	.609	2.274	.614	2.095	.617	1.999	.619	1.969	.620
19.452	.31?	9.59?	.374	6.562	.41?	5.105	.439	4.284	.457	3.789	.464	3.492	.470	3.332	.473	3.282	.474
28.24?	.246	1?.???	.34?	9.062	.34?	7.657	.419	6.426	.437	5.684	.445	5.239	.451	4.999	.454	4.923	.456
37.61?	.242	[illegible]	.344	13.121	.364	10.209	.415	8.567	.434	7.579	.442	6.985	.448	6.665	.452	6.564	.453
46.954	.2??	23.953	.34?	16.399	.343	12.760	.415	10.709	.433	9.473	.442	8.731	.447	8.331	.451	8.204	.453

SR = SLANT RANGE IN KILOFEET

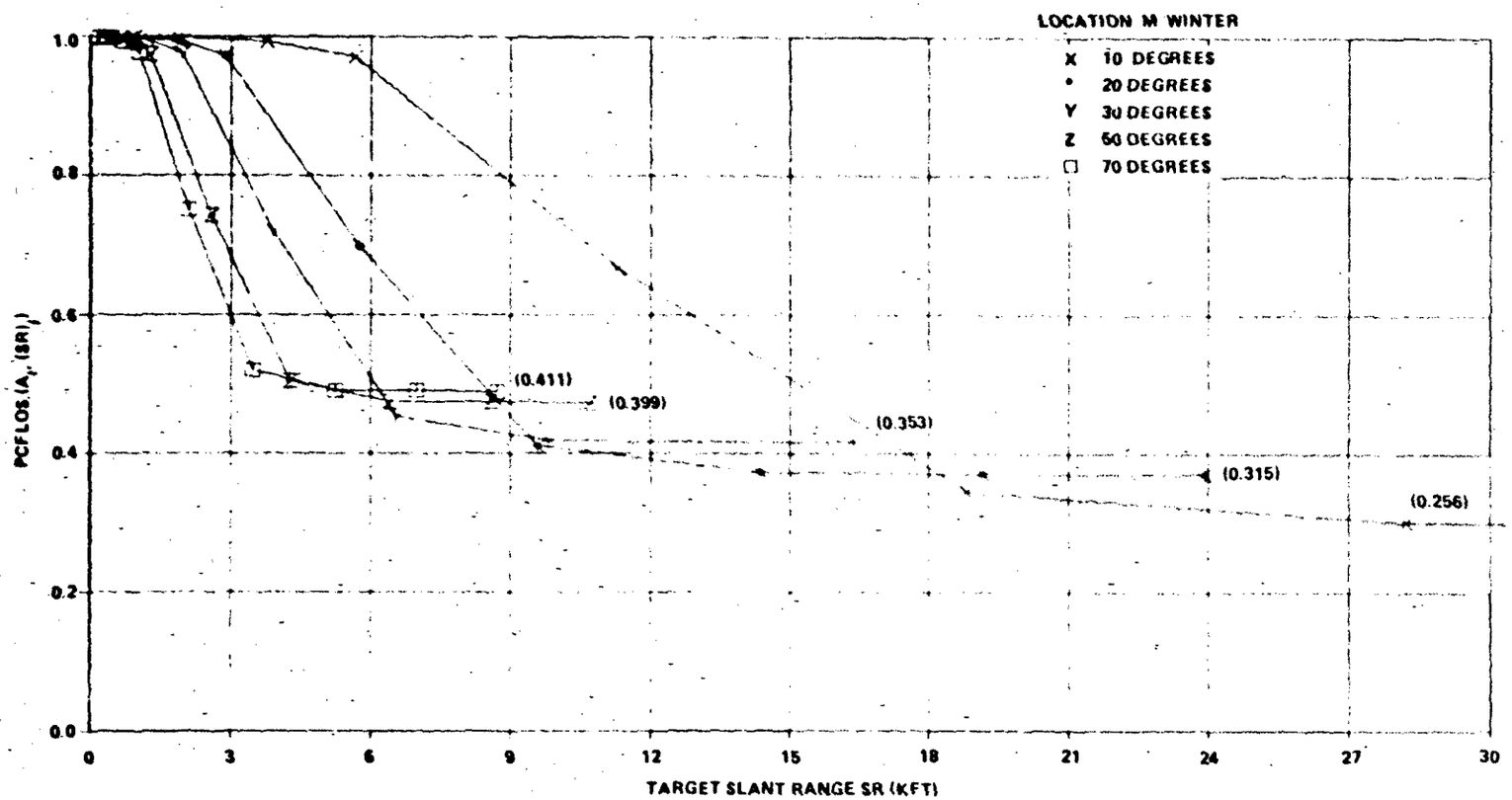


FIGURE 4-6 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT VS. TARGET SLANT RANGE (TABLE 4-7) VALUES OF PCFLOS (A) IN PARENTHESIS. (TABLE C-46)

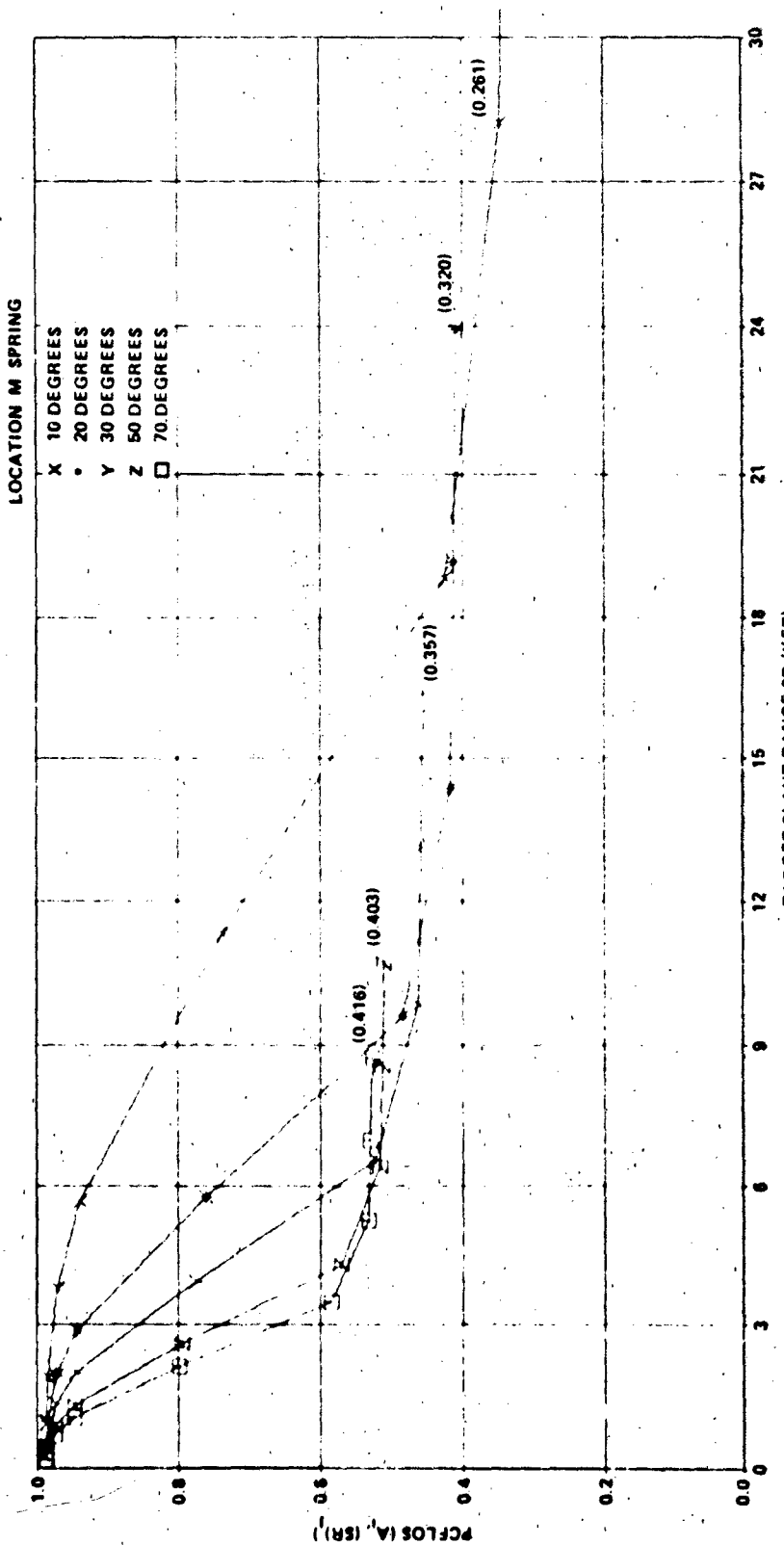


FIGURE 4.7 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT VS. TARGET SLANT RANGE (TABLE 4-8) VALUES OF PCFLOS (A) IN PARENTHESIS. (TABLE C-46).

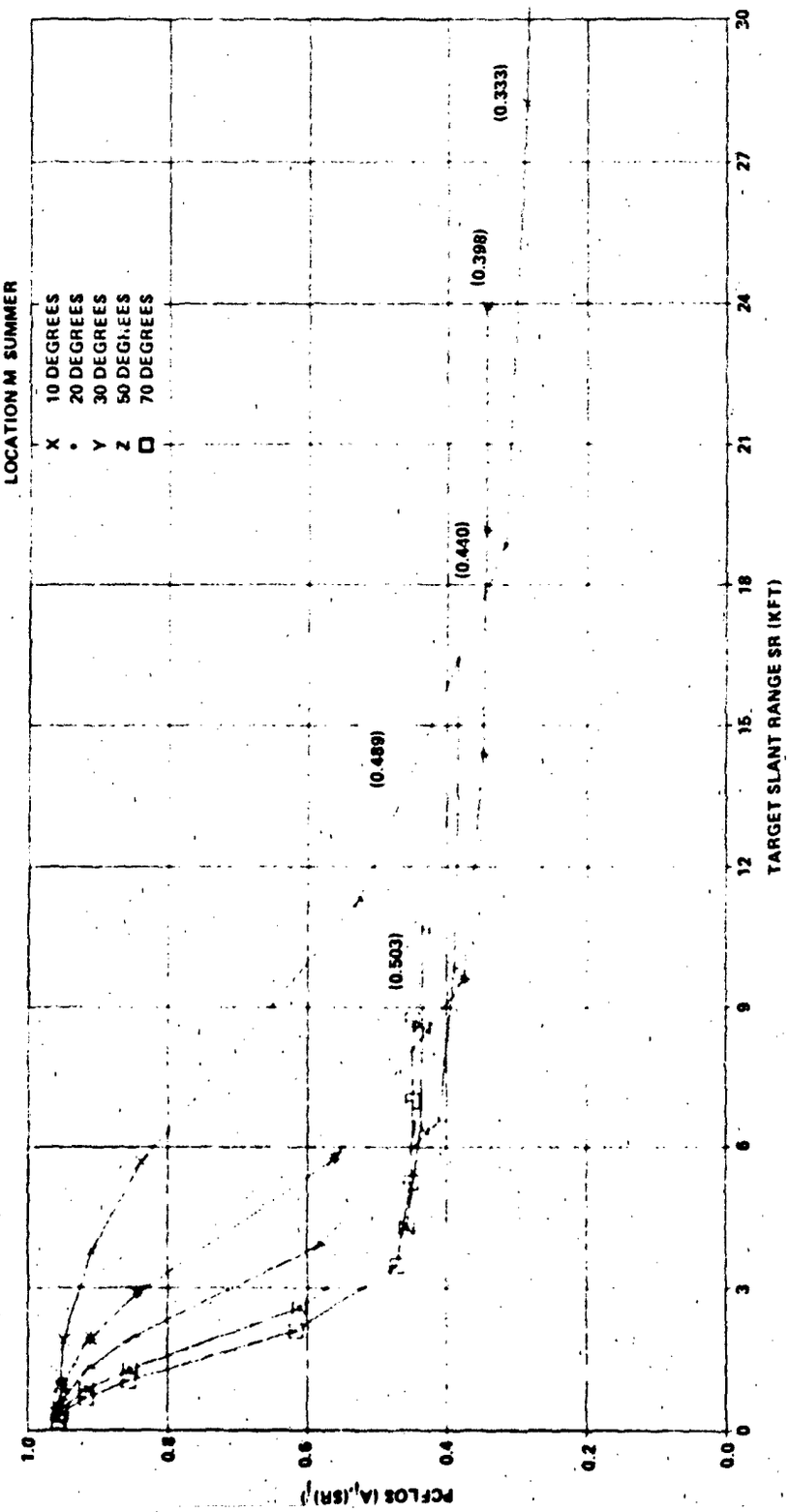


FIGURE 4-9 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT VS. TARGET SLANT RANGE (TABLE 4-9) VALUES OF PCFLOS (A) IN PARENTHESIS. (TABLE C-46).

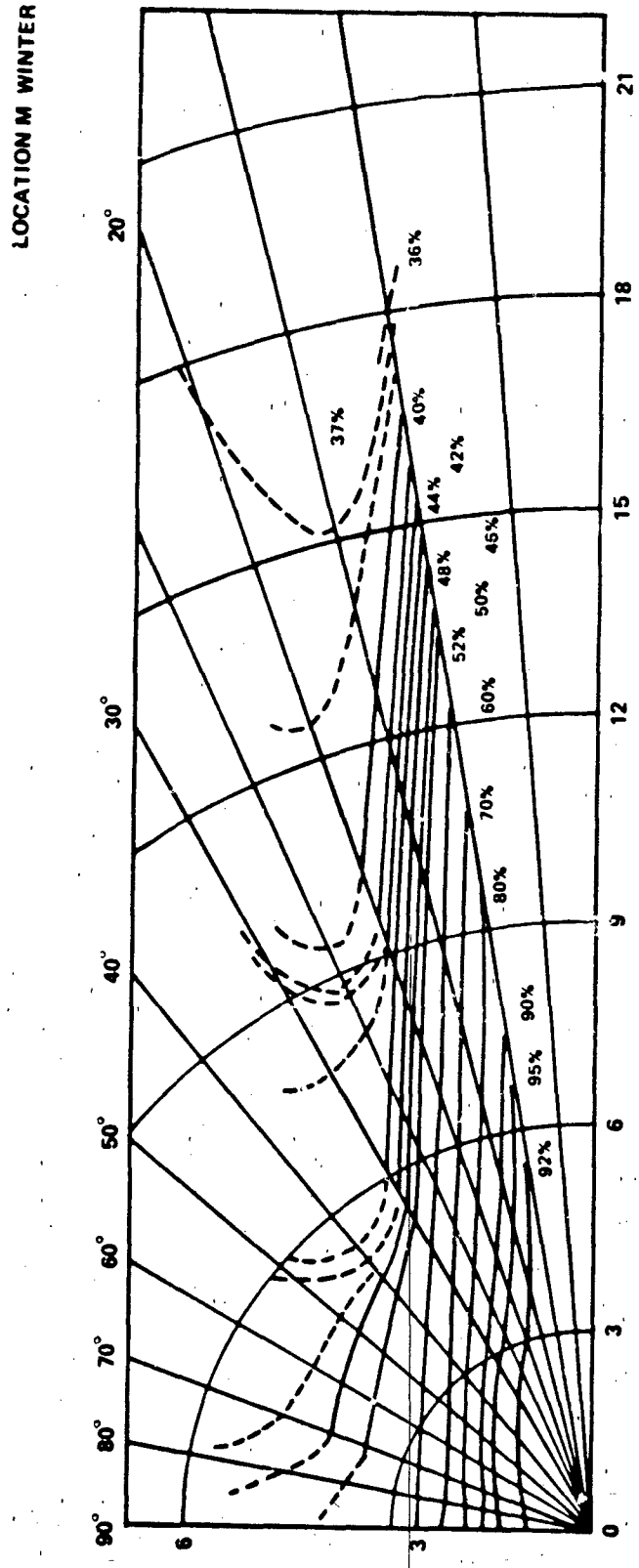


FIGURE 4.9 LINES OF CONSTANT PCFLOS (A,(SR)) IN POLAR COORDINATES.
A, ELEVATION ANGLE IN DEGREES.
SR, SLANT RANGE IN KILOFEET.

CHAPTER 5

SUMMARY AND COMMENTS

In order to supply a comprehensive view of the information contained in Appendices A, B, and C, we have produced a new set of seven tables that summarize our results and highlight the more essential points. The description of these tables and the relevant comments are as follows:

All the locations are arranged in order of increasing latitude and listed in each of the tables.

A. CLOUD STATISTICS

(i) Lower cloud base statistics - Tables 5-1, 5-2, and 5-3 give the frequencies (%) for winter, spring, and summer respectively, for lower cloud bases, between:

0 and 299m (base height cells 0, 1, 2, and 3)
300 and 999m (base height cells 4 and 5)
1000 and 2500m (base height cells 7, 8, and 9)
above 2500m (base height cell 10)

Height cell 10, includes observations of no clouds besides observations of clouds above 2500m. The five columns on the right hand side summarize the results even further by considering only two layers: one below 2500m and one above. The frequency for no clouds, which is listed separately in these tables, was obtained by taking, in obvious notation,

$$\text{Freq. (no clouds)} \equiv \text{Freq. (} > 2500\text{m or no clouds; cloud cover } C = 0)$$

where the right hand side is the element (H_i, C_j), $i = 10$, $j = 0$ of the transposed of the lower base matrix L of Appendix A. $(H_{10} > 2500\text{m})$.

Since

$$\text{Freq. } (\leq 2500) + \text{Freq. } (>2500 \text{ or no clouds}) = 100\%$$

and

Freq. (>2500 or no clouds) = Freq. (>2500) + Freq. (no clouds)

it follows that

Freq. ($\overset{>}{<}$ 2500) ≡ Freq. (all height) = 100% - Freq. (>2500 or no clouds; C = 0)

The values taken by this quantity can be found in the column headed "All Heights, Freq."

It is clear that most of the cloud bases are found in the 300-999m layer. In fact, if we disregard the small number of cloud observations above 2500m, we see that the frequencies for the three layers (0-299, 300-999 and 1000-1500m) are out of proportion to their thickness. In the example of location M, at

0-299m, which comprises 12% of the 2500m layer, the observed freq. is 3.8%

i.e., $1.3\ 10^{-2}$/m.

300-999m, which comprises 28% of the 2500m layer, the observed freq. is 87.1%,

i.e., $1.3\ 10^{-1}$/m,

1000-2500m, which comprises 60% of the 2500m layer, the observed freq. is 7.9%,

i.e., $5.0\ 10^{-3}$/m.

Figures D-1, D-6, D-11, and D-16 of Appendix D provide a graphic illustration of the typical distribution of cloud bases. With respect to the peaks at 3000m, the reader is referred to the comment in the last paragraph of Chapter 2.

The fact that most lower cloud bases lie in the 300-999m layer suggests the possibility that air-to-air lines of sight might be adequate for airborne surveillance within this layer.

Values for the lower cloud cover below and above 2500m were calculated from the data in Appendix A as the sum over all cloud covers of the products of the relative frequency for a cloud cover times the decimal expression of the cloud cover. For 2500 meters and less, all the values lie in the ranges (.4 to .8), (.3 to .7), and (.2 to .7) for winter, spring, and summer respectively.

(ii) Low cloud statistics. Tables 5-4, 5-5, and 5-6 summarize the data for low cloud type (C_L) statistics given in Appendix A.

The code for C_L type clouds is included in Chapter 2.

For each location we assign two lines. The one above gives the frequencies for the 300-999 meter layer (base height cells 4 and 5) and the lower one the frequencies for all heights (cells 0-10).

The most frequently reported types for the three seasons studied, for all heights and for the 300-999 meter layer, are 5.8 and 2. They correspond to stratocumulus not resulting from the spread of cumulus, cumulus of moderate or strong vertical extent or towering cumulus and the combination of both.

B. PCFLOS (A_i, H_i) AND SLANT RANGE (SR)

In Table 5-7 we have arranged systematically the part of the results listed in Appendix C that we consider summarizes more efficiently the main features of our results for the PCFLOS (A_i, H_i) and the slant range. For each marine location, in order of increasing latitude, we give PCFLOS (A_i, H_i) in winter, spring, and summer for all the combinations of two elevation angles and three heights.

The typical PCFLOS (A_i, H_i) curves illustrated in Figures D-2, D-3, D-4, etc. in Appendix D show that this quantity decreases rather rapidly from its value of unity at very close range to a point where it almost levels off and that, as expected, the curves for 10 and 90 degrees enclosed those calculated for other angles. For this reason we have chosen the points at 10 and 90 degrees for the elevation angle and 25, 450 (rather arbitrarily) and 2250 meters for the height to characterize the set of PCFLOS (A_i, H_i) curves for each location and season.

The values of PCFLOS (A_i) of TAble C-46 are listed also under the heading "All H." As expected, they are smaller than those of PCFLOS (A_i, H_i). While PCFLOS (A_i) is associated with the probability of detecting a target against a deep sky background, the difference between PCFLOS (A_i, H_i) and PCFLOS (A_i) (determined with lower and total cloud cover respectively) involves a warmer cloud background and consequently a weaker contrast. From the values on Table 5-7 we see that the later circumstance obtains, at low altitudes, a substantial part of the time.

Since the elevation angle A and the height H determine the slant range, the corresponding values of (SR) in kilofeet have been included in the headings of the various columns.

With respect to the accuracy of the results, it must be understood that we offer only rough estimates. The uncertainty in the data due to the measuring procedures used in the estimation of the cloud cover in eights, the size of the cloud base height cells, and our use of the diurnal universal matrix of Lund and Shanklin are among other factors detrimental to the accuracy.

Here we wish to point out that the values of PCFLOS (A_i, H_i) implicitly contain the definition of LOS of Lund and Shanklin and that their definition is dependent on their technique (instrumentation, photographic processing, etc.). In essence, it consists in the examination of high contrast photographs through holes in a template, corresponding to fixed elevation angles, for the presence of clouds. We refer the reader to their 1972 paper for a complete description.[1]

[1] Lund, I.A. and Shanklin, M.D. 1972: Photogrammetically Determined Cloud-Free Lines of Sight Through the Atmosphere. J. Appl. Meteor. 11, 773-782.

Furthermore, while it is very fortunate that the weather data was collected and made available to us, it must be realized that it was not taken with the intended purpose of this study.

Early operational versions of the optical system that this report tends to foster would supply a more accurate method to obtain and accumulate data for the determination of the probability of a cloud-free line of sight.

With due regard for the previous comments we consider that, at this stage, our results provide an adequate CFLOS basis for the preliminary planning of atmospheric optical systems.

TABLE 5-1

SUMMARY OF STATISTICS FOR LOWER CLOUD BASES BELOW 2500 METERS

WINTER

Loc.	Lower Cloud Base Lat.	Long.	≤ 2500 Meters 0-299M 0-1-2-3 Freq.	300-999M 4-5 Freq.	1000-2500M 6-7-8 Freq.	>2500 M or No Clouds Freq.	≤2500 Meters Freq.	≤2500 Meters Cover	All Heights Freq.	All Heights Cover	No Clouds Freq.
9/10	17N	107E	22.6	66.5	4.6	6.4	93.6	0.72	94.4	0.72	5.6
T	29N	135E	0.2	68.2	24.5	7.2	92.8	0.42	92.7	0.42	7.3
N	30N	140W	2.5	91.2	3.7	2.7	97.3	0.65	98.1	0.65	1.9
V	31N	164E	5.3	89.7	2.6	2.3	97.7	0.59	98.8	0.60	1.2
1/2	33N 36N	34E 0E	15.7	52.4	7.6	24.1	75.8	0.36	79.6	0.38	20.4
D	44N	41W	6.6	88.6	2.2	2.6	97.4	0.67	98.5	0.67	1.5
K	45N	16W	10.6	69.8	14.7	4.9	95.1	0.67	97.1	0.68	2.9
H	48N	36W	4.0	82.7	4.2	9.1	90.0	0.61	92.3	0.62	6.7
P	50N	145W	23.8	72.3	1.2	2.8	97.3	0.74	98.6	0.75	1.4
C	52N	35W	15.2	77.7	3.3	3.7	96.2	0.68	98.7	0.70	1.3
J	53N	19W	10.6	75.2	13.1	1.7	98.3	0.68	98.6	0.68	1.4
B	56N	51W	17.3	80.1	1.5	1.2	98.8	0.81	99.2	0.81	0.8
I	60N	19W	16.8	70.8	11.0	1.3	98.6	0.68	99.4	0.68	0.6
A	62N	33W	15.1	72.3	11.0	1.6	98.4	0.73	98.9	0.74	1.1
M	66N	2E	3.8	87.1	7.9	1.2	98.8	0.72	99.0	0.72	1.0

TABLE 5-2

SUMMARY CF STATISTICS FOR LOWER CLOUD BASES BELOW 2500 METERS

SPRING

	Lower Cloud Base		≤ 2500 Meters			>2500 M or No Clouds	≤ 2500 Meters		All Heights		No Clouds
			0-299M 0-1-2-3	300-999M 4-5	1000-2500M 6-7-8						
Loc.	Lat.	Long.	Freq.	Freq.	Freq.	Freq.	Freq.	Cover	Freq.	Cover	Freq.
9/10	17N	107E	16.8	51.1	8.1	24.1	75.9	0.46	82.6	0.49	17.4
T	29N	135E	2.1	70.8	16.8	10.3	89.7	0.36	89.9	0.36	10.1
N	30N	140W	1.3	90.1	5.2	2.9	97.2	0.64	97.9	0.64	2.1
V	31N	164E	11.8	78.1	5.2	5.0	95.0	0.63	97.2	0.65	2.8
1/2	33N	34E	13.7	37.1	8.1	37.6	58.9	0.28	62.4	0.30	37.6
	36N	0E									
D	44N	41W	8.4	80.0	4.4	7.3	92.7	0.61	96.8	0.64	3.2
K	45N	16W	12.4	72.1	10.4	5.2	94.8	0.62	96.0	0.62	4.0
H	48N	36W	3.2	79.7	7.0	10.2	89.8	0.57	91.7	0.58	8.3
P	50N	145W	22.6	70.7	2.3	4.5	95.7	0.72	96.3	0.72	3.7
C	52N	35W	21.2	65.4	5.9	7.5	92.5	0.69	97.0	0.71	3.0
J	53N	19W	14.5	68.8	14.2	2.6	97.4	0.63	98.1	0.63	1.9
B	56N	51W	21.5	72.1	2.4	4.0	96.0	0.78	98.0	0.79	2.0
I	60N	19W	12.7	76.2	9.6	1.5	98.5	0.69	99.2	0.69	0.8
A	62N	33W	20.8	66.3	8.9	4.0	96.0	0.72	97.5	0.73	2.5
M	66N	2E	7.1	73.8	15.2	3.9	96.1	0.68	96.2	0.68	3.8

TABLE 5-3

SUMMARY OF STATISTICS FOR LOWER CLOUD BASES BELOW 2500 METERS

SUMMER

	Lower Cloud Base		≤ 2500 Meters								
			0-299M 0-1-2-3	300-999M 4-5	1000-2500M 6-7-8	>2500 M or No Clouds	>2500 Meters		All Heights		No Clouds
Loc.	Lat.	Long.	Freq.	Freq.	Freq.	Freq.	Freq.	Cover	Freq.	Cover	Freq.
9/10	17N	107E	3.7	61.5	[illegible]	26.7	73.6	0.31	87.3	0.36	12.7
T	29N	135E	13.8	45.8	33	6.8	93.2	0.31	93.3	0.32	6.7
N	30N	140W	0.7	96.3	2.2	0.8	99.2	0.63	99.5	0.63	0.5
V	31N	164E	6.4	83.8	3.2	6.5	93.5	0.49	96.0	0.50	4.0
1/2	33N / 36N	34E / 0E	11.7	28.2	4.7	55.4	44.6	0.16	47.5	0.19	52.5
D	44N	41W	15.3	72.3	2.9	9.6	90.4	0.59	95.1	0.62	4.9
K	45N	16W	10.7	73.1	11.7	4.6	95.5	0.63	97.4	0.64	2.6
H	48N	36W	1.0	76.3	4.4	18.3	81.7	0.34	85.2	0.35	14.8
P	50N	145W	35.8	60.0	2.6	1.6	98.4	0.84	0.99	0.85	1.0
C	52N	35W	34.0	57.4	2.3	6.4	93.7	0.77	97.8	0.80	2.2
J	53N	19W	22.1	65.7	10.2	2.1	97.9	0.73	98.2	0.74	1.2
B	56N	51W	33.1	50.2	4.0	12.0	88.0	0.71	94.8	0.75	5.2
I	60N	19W	22.9	74.0	4.3	0.9	99.2	0.72	99.6	0.72	0.4
A	62N	33W	23.0	66.2	8.1	2.6	97.4	0.77	98.5	0.77	1.5
M	66N	2E	18.4	71.7	6.4	3.4	96.6	0.74	97.2	0.74	2.8

TABLE 5-4

SUMMARY OF LOW CLOUD (C_L) STATISTICS

WINTER

Loc.	LOW CLOUD TYPE (Base height cells 4 and 5/all base height cells)										
	0	1	2	3	4	5	6	7	8	9	Fog
9/10	0.2	12.1	8.1	0.9	3.6	16.6	5.0	4.6	15.3	0.1	-
	8.0	13.2	10.0	1.1	4.1	22.9	12.1	8.7	19.2	0.1	0.6
T	0.2	20.3	17.2	3.1	7.0	5.3	1.1	8.0	4.5	1.6	-
	7.5	28.5	18.6	3.1	12.2	13.3	1.1	8.3	5.9	1.6	0.0
N	0.4	7.3	14.4	1.0	2.3	22.8	1.3	3.1	36.1	0.59	-
	3.6	7.4	16.6	1.0	2.6	25.5	1.7	4.1	36.5	0.6	0.3
V	0.5	10.9	28.0	5.0	2.8	9.6	0.7	8.0	23.2	1.0	-
	3.4	11.2	28.5	5.0	3.2	11.3	1.1	11.6	23.5	1.3	0.0
1/2	0.8	9.5	14.6	6.0	4.5	8.7	1.3	3.4	2.4	1.1	-
	27.5	12.5	21.0	8.3	6.6	11.7	2.1	4.9	3.4	2.1	0.2
D	0.3	7.1	29.4	4.2	3.4	18.1	0.7	10.7	13.2	0.6	-
	3.4	7.2	29.9	4.7	3.4	19.7	0.8	15.0	14.9	0.6	0.4
K	0.0	1.8	5.9	1.6	0.4	18.8	2.5	4.7	26.6	7.5	-
	5.1	2.0	6.2	1.8	0.6	33.8	6.4	8.5	27.4	7.9	0.3
H	0.3	13.4	13.6	2.4	3.9	22.9	1.0	7.6	16.6	0.9	-
	10.7	13.7	14.3	2.6	4.3	25.0	1.2	9.9	16.9	0.9	0.5
P	1.1	1.6	10.8	3.7	11.2	23.5	4.3	4.0	8.5	3.6	-
	4.9	1.6	11.1	3.8	11.3	25.6	12.8	11.3	8.9	3.6	5.0
C	0.5	4.4	23.9	2.0	1.4	20.8	2.0	9.4	12.7	0.6	-
	4.8	4.7	24.1	2.2	1.7	23.2	5.4	16.0	12.9	0.6	4.2
J	0.0	1.1	7.1	4.4	0.5	15.9	1.5	4.2	22.1	18.5	-
	1.9	1.2	7.9	4.5	0.6	28.7	3.2	9.1	23.1	19.3	0.5
B	0.5	2.9	27.0	1.3	1.8	20.1	0.5	8.3	16.9	0.2	-
	2.1	3.0	28.2	1.4	2.0	21.6	1.3	17.3	18.0	0.2	4.8
I	0.1	2.2	7.4	5.0	0.3	14.8	1.0	2.1	23.5	10.4	-
	1.3	2.2	7.7	5.0	0.4	29.4	2.2	8.7	28.9	13.3	0.2
A	0.2	1.4	4.5	4.1	0.6	16.3	1.5	5.4	21.9	16.4	-
	2.0	1.4	4.8	4.6	0.6	29.1	3.7	12.6	23.1	17.7	0.3
M	0.0	0.7	3.7	1.2	0.2	12.2	3.9	9.8	8.3	47.0	-
	1.4	1.1	4.7	1.3	0.2	15.7	5.3	10.9	9.5	49.3	0.5

TABLE 5-5

SUMMARY OF LOW CLOUD (C_L) STATISTICS

SPRING

	LOW CLOUD TYPE (Base Height Cells 4 and 5/all base height cells)										
	0	1	2	3	4	5	6	7	8	9	Fog
9/10	0.1	9.7	8.8	2.2	3.5	12.7	4.5	1.6	6.2	1.9	-
	26.9	11.9	10.3	2.5	4.3	19.1	9.5	3.5	9.6	2.2	1.1
T	0.1	23.7	14.7	3.7	1.6	5.5	2.6	13.8	4.4	0.7	-
	10.7	30.1	15.1	3.7	3.7	12.3	3.6	14.5	5.1	0.7	0.9
N	0.4	9.0	13.0	1.4	2.3	18.3	0.2	2.7	42.2	0.2	-
	3.6	9.0	13.0	1.4	2.4	24.1	0.4	3.7	42.3	0.2	0.0
V	0.6	10.2	15.8	0.7	4.2	16.1	2.2	8.1	20.1	0.2	-
	6.1	10.3	16.0	0.7	4.5	20.1	5.8	13.8	20.5	0.2	1.9
1/2	0.9	7.4	11.3	2.4	2.8	4.4	2.3	2.4	2.0	0.3	-
	46.1	11.2	13.9	4.0	4.0	7.4	3.8	5.4	3.3	1.1	0.1
D	0.6	11.6	16.1	1.5	2.6	18.5	1.1	11.1	16.0	0.8	-
	9.1	11.8	16.2	1.6	2.8	21.3	2.5	16.2	16.5	0.9	1.2
K	0.2	4.9	7.2	0.9	0.4	17.4	2.5	4.8	25.7	8.3	-
	6.5	5.0	7.4	0.8	0.4	26.8	7.0	7.3	27.0	8.6	3.2
H	0.5	10.9	22.1	2.9	6.1	19.8	1.1	4.6	10.4	1.3	-
	12.2	11.9	23.4	3.1	6.7	22.0	1.4	6.5	11.0	1.3	0.5
P	0.6	5.0	8.6	1.5	8.6	28.5	3.5	3.4	9.4	1.8	-
	6.3	5.1	8.6	1.6	8.8	30.9	10.2	10.9	9.7	1.8	6.1
C	0.6	5.8	12.8	1.7	1.1	17.6	2.3	9.0	14.4	0.2	-
	10.6	6.2	13.0	1.7	1.3	20.8	7.7	14.7	14.7	0.2	9.2
J	0.0	2.3	5.6	3.1	0.9	11.9	0.9	3.2	28.9	11.2	-
	2.7	2.6	7.0	3.2	1.2	25.4	4.7	8.7	31.2	11.9	1.4
B	0.5	4.6	16.3	0.2	2.0	26.0	1.9	7.5	12.5	0.1	-
	5.5	4.7	17.3	0.2	2.2	28.3	5.8	16.5	13.8	0.1	5.6
I	0.0	2.6	5.7	4.3	1.1	14.5	0.8	4.1	27.9	14.2	-
	1.7	2.6	5.9	4.4	1.4	26.4	2.2	10.5	28.9	15.7	0.3
A	0.1	2.2	4.2	3.2	0.8	17.6	1.4	3.4	24.2	9.2	-
	5.6	2.8	4.5	3.5	0.9	28.3	6.0	13.1	25.0	10.2	1.4
M	0.1	0.6	3.3	0.8	0.0	10.5	6.5	8.1	7.5	36.7	-
	5.3	1.5	4.6	0.9	0.0	16.6	10.3	9.6	8.5	41.1	1.6

TABLE 5-6

SUMMARY OF LOW CLOUD (C_L) STATISTICS

SUMMER

Loc.	LOW CLOUD TYPE (Base Height Cells 4 and 5/all base height cells)										
	0	1	2	3	4	5	6	7	8	9	Fog
9/10	0.1	12.1	20.8	5.6	2.4	2.8	1.9	1.9	3.8	10.2	-
	29.6	13.0	22.7	6.3	3.2	4.6	2.3	2.6	5.0	10.6	0.1
T	0.0	12.8	33.5	12.8	0.8	1.1	3.0	4.5	1.0	8.7	-
	6.8	13.0	33.7	12.9	1.0	1.7	3.6	4.7	1.1	8.7	12.8
N	0.0	10.8	17.8	1.9	3.2	12.5	0.4	0.7	48.8	0.3	-
	0.9	10.8	17.9	1.9	3.2	14.5	0.6	0.9	48.9	0.3	0.0
V	0.4	14.3	23.8	2.6	1.8	12.4	3.5	3.9	20.0	1.2	-
	5.0	14.3	24.0	2.6	2.0	14.4	6.2	5.6	20.2	1.2	1.5
1/2	1.0	10.3	6.6	1.3	2.1	2.9	1.8	0.6	1.1	0.5	-
	57.8	17.2	9.7	1.6	2.4	4.7	3.2	1.1	1.6	0.6	0.2
D	0.2	13.9	9.2	1.6	3.0	24.4	3.0	4.8	11.7	0.3	-
	10.9	14.2	9.5	1.7	3.3	26.6	7.7	8.1	12.3	0.3	5.3
K	0.1	4.1	8.4	0.4	0.9	23.2	2.2	3.2	26.7	3.9	-
	5.2	4.3	9.2	0.5	1.2	33.2	7.5	6.4	28.1	4.0	0.2
H	0.1	18.4	28.6	7.0	3.1	8.2	1.4	1.8	4.3	3.4	-
	20.2	18.7	28.8	7.0	3.4	10.2	1.6	2.1	4.4	3.5	0.2
P	0.5	2.0	3.1	0.2	4.5	31.1	3.7	1.6	12.9	0.4	-
	3.4	2.0	3.3	0.4	4.8	34.8	19.1	9.6	14.0	0.4	8.3
C	0.2	2.1	5.5	0.6	0.9	26.1	3.3	4.3	13.2	0.0	-
	7.4	3.4	5.7	0.6	0.9	28.4	11.2	11.0	13.9	0.0	17.4
J	0.0	2.0	4.3	1.5	0.7	15.6	1.4	2.8	33.0	4.3	-
	2.4	2.2	4.7	1.6	0.9	27.2	8.3	11.1	34.7	4.5	2.5
B	0.7	2.9	2.7	0.2	0.8	27.3	3.9	5.0	7.5	0.0	-
	14.3	3.0	2.7	0.2	0.8	31.1	14.4	12.5	8.7	0.0	12.3
I	0.0	3.2	3.2	1.6	2.0	15.7	1.0	3.2	33.4	8.8	-
	0.9	3.3	3.3	1.9	2.0	26.2	4.9	13.0	34.8	9.0	0.5
A	0.0	1.9	1.8	0.6	0.4	23.6	2.0	3.3	27.0	5.7	-
	3.3	2.0	1.9	0.6	0.6	34.9	10.1	12.0	28.0	5.8	0.9
M	0.2	0.4	2.4	1.0	0.3	15.8	9.9	4.7	11.1	26.1	-
	4.7	0.7	2.9	1.1	0.3	19.6	18.0	7.7	12.1	27.9	4.9

TABLE 5-7

SUMMARY FOR PCFLOS (A_i, H_j). LOCAL SEASONAL VARIATION

Loc.	Lat Long.	Season	10 Degrees H (meters) 25 Slant Range 0.9	450 Slant Range 11.3	2250 (KF) 47.0	All Heights*	90 Degrees H (meters) 25 Slant Range 0.16	450 Slant Range 2.0	2250 (KF) 8.2	All Heights*
9/10	17N 107E	WI	0.99	0.46	0.30	0.24	0.99	0.54	0.43	0.37
		SP	0.99	0.67	0.54	0.36	0.99	0.74	0.66	0.52
		SU	1.00	0.85	0.69	0.28	1.00	0.92	0.82	0.45
-	29N 135E	WI	1.00	0.96	0.57	0.36	1.00	0.98	0.76	0.52
		SP	0.99	0.89	0.63	0.30	0.99	0.93	0.79	0.45
		SU	0.96	0.81	0.67	0.37	0.98	0.89	0.83	0.54
N	30N 140W	WI	1.00	0.84	0.36	0.26	1.00	0.88	0.54	0.42
		SP	1.00	0.88	0.37	0.26	1.00	0.91	0.54	0.42
		SU	1.00	0.91	0.37	0.33	1.00	0.93	0.55	0.51
V	31N 164E	WI	1.00	0.73	0.41	0.28	1.00	0.81	0.60	0.44
		SP	0.98	0.69	0.37	0.21	0.98	0.76	0.54	0.35
		SU	0.99	0.77	0.50	0.21	0.99	0.83	0.67	0.44
1/2	33N 34E 30N 0E	WI	1.00	0.75	0.63	0.51	1.00	0.84	0.77	0.68
		SP	1.00	0.80	0.72	0.60	1.00	0.87	0.83	0.74
		SU	1.00	0.87	0.81	0.74	1.00	0.93	0.90	0.85
D	44N 41W	WI	1.00	0.63	0.34	0.22	1.00	0.73	0.53	0.37
		SP	0.99	0.66	0.39	0.21	0.99	0.75	0.56	0.35
		SU	0.95	0.61	0.41	0.26	0.95	0.68	0.56	0.41
K	45N 16W	WI	1.00	0.69	0.34	0.26	1.00	0.76	0.51	0.42
		SP	0.98	0.67	0.39	0.29	0.98	0.74	0.55	0.46
		SU	1.00	0.69	0.37	0.29	1.00	0.75	0.54	0.45
H	48N 36W	WI	1.00	0.72	0.40	0.24	1.00	0.78	0.57	0.38
		SP	1.00	0.77	0.43	0.27	1.00	0.83	0.59	0.41
		SU	1.00	0.85	0.65	0.40	1.00	0.91	0.80	0.58
?	50N 145W	WI	0.95	0.39	0.28	0.21	0.95	0.51	0.43	0.35
		SP	0.94	0.44	0.29	0.21	0.94	0.55	0.44	0.34
		SU	0.92	0.31	0.18	0.11	0.92	0.40	0.29	0.21
C	52N 35W	WI	0.96	0.55	0.33	0.21	0.96	0.65	0.49	0.35
		SP	0.91	0.57	0.33	0.17	0.92	0.65	0.47	0.30
		SU	0.83	0.41	0.24	0.13	0.84	0.49	0.36	0.23

(continued next page)

*"All Heights" relates to calculations done with the total cloud cover (unmodified Lund and Shanklin's method)

TABLE 5-7 (continued)

SUMMARY FOR PCFLOS (A_i, H_j). LOCAL SEASONAL VARIATION

Loc.	Lat Long.	Season	10 Degrees H (meters) 25 Slant Range (KF) 0.9	450 Slant Range (KF) 11.3	2250 Slant Range (KF) 47.0	All Heights*	90 Degrees H (meters) 25 Slant Range (KF) 0.16	450 Slant Range (KF) 2.0	2250 Slant Range (KF) 8.2	All Heights*
J	53N 19W	WI	1.00	0.64	0.33	0.25	1.00	0.73	0.51	0.42
		SP	0.99	0.66	0.38	0.27	0.99	0.74	0.56	0.44
		SU	0.98	0.53	0.28	0.20	0.98	0.62	0.43	0.33
B	56N 51W	WI	0.95	0.43	0.21	0.14	0.46	0.53	0.36	0.26
		SP	0.95	0.47	0.24	0.14	0.95	0.56	0.38	0.26
		SU	0.88	0.43	0.30	0.16	0.89	0.51	0.41	0.27
I	60N 19W	WI	1.00	0.54	0.33	0.24	1.00	0.66	0.52	0.41
		SP	1.00	0.55	0.32	0.22	1.00	0.66	0.50	0.37
		SU	1.00	0.47	0.29	0.19	1.00	0.59	0.46	0.33
A	62N 33W	WI	1.00	0.51	0.28	0.21	1.00	0.62	0.45	0.35
		SP	0.99	0.47	0.25	0.19	0.99	0.59	0.45	0.33
		SU	0.99	0.47	0.25	0.17	0.99	0.56	0.40	0.30
M	66N 2E	WI	1.00	0.67	0.30	0.23	1.00	0.75	0.50	0.39
		SP	0.99	0.74	0.34	0.24	0.99	0.80	0.53	0.40
		SU	0.95	0.52	0.28	0.19	0.96	0.62	0.45	0.34

*"All Heights" relates to calculations done with the total cloud cover (unmodified Lund and Shanklin's method)

BIBLIOGRAPHY

Katz, B., Hepfer, K., and McMeekin, N.E., "Electro-optical Meteorological Sensitivity Study," NSWC TR 79-67, Apr 1979

Lund, I.A., and Shanklin, M.D., 1972: "Photogrammetrically Determined Cloud-Free Lines of Sight through the Atmosphere," J. Appl. Meteor. 11, 773-782.

Lund, I.A., and Shanklin, M.D., 1973: "Universal Methods for Estimating Probabilities of Cloud-free Lines of Sight through the Atmosphere," J. Appl. Meteor. 12, 1222-1228.

"Marine Surface Observations," Tape Deck TDF-11, WMO

Rapp, R.R., and Schutz, C., "Cloud-free Line of Sight Calculations," Rand Corpo., Sep 1972.

"Surface Observations," Federal Meteorological Handbook No. 1, First and Second Editions, Dept. of Commerce.

"Surface Observations," NAVAIR 50-1D-1 (FMH-1B) 1 Jan 1980, Dept. of the Navy

GLOSSARY AND NOTATION

LOS	Line of sight
PCFLOS	Probability of a cloud-free line of sight
A_i	i^{th} value of the elevation angle A
C_i	i^{th} value of the cloud cover C
H_j	Midrange of the low cloud base-height recording cell
H_s	Sensor height
$(SR)_j$	Slant range to midrange of the jth height cell
$L(A_i, H_j)$	(A_i, H_j) matrix element of the real weather matrix
$U(A_i, H_j)$	(A_i, H_j) matrix element of Lund and Shanklin's universal matrix
$P(C_j)$	Probability of the cloud cover taking the value C_j
PINT (A_i, H_j)	Contribution to PCFLOS (A_i, H_j) due to the base height cell with midrange at H_j
PCFLOS (A_i, H_j)	PCFLOS at angle A_i and height H_j
PCFLOS $(A_i, (SR)_j)$	PCFLOS at angle A_i and slant range to height H_j
PCFLOS (A_i)	PCFLOS at angle A_i through all clouds

APPENDIX A

STATISTICS OF CLOUDS BELOW 2500 METERS

TABLE A–1A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION 1

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.16
75.	0.00	.16	0.00	0.00	0.00	.16	0.00	0.00	.16	.49
150.	0.00	.49	.49	.49	.49	.16	.16	.49	.81	3.56
250.	0.00	1.94	1.94	1.13	2.10	1.29	1.13	.49	1.46	11.49
450.	0.00	6.31	5.50	3.88	3.40	2.59	3.56	2.91	4.21	32.36
800.	0.00	5.34	3.88	2.27	2.75	1.94	1.29	1.13	1.46	28.06
1250.	0.00	1.29	.81	.65	.65	.16	.49	0.00	.65	4.69
1750.	0.00	.65	.49	.16	.32	0.00	0.00	.32	0.00	1.94
2250.	0.00	0.00	.32	0.00	.32	0.00	.16	.16	.16	1.13
3000.	20.39	.65	.97	1.13	.32	0.00	.16	.16	.32	24.11
ALL LOW CLOUDS (PER CENT)	20.4	17.0	14.4	9.7	10.4	6.3	7.0	5.7	9.2	

TABLE A–1B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.16
75.	0.00	.16	.16	.16	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	.16	1.46	.49	.49	.49	.16	.32	0.00	0.00	
250.	.16	1.46	3.24	1.13	.81	1.46	.65	1.13	.65	.81	
450.	.32	5.66	7.61	4.85	2.91	5.99	1.13	2.43	1.29	.97	
800.	.49	3.88	6.96	1.94	1.62	2.75	.16	.97	1.13	.16	
1250.	1.29	.81	.81	.49	.49	.32	0.00	0.00	.32	.16	
1750.	.81	.32	.32	0.00	.16	.32	0.00	0.00	0.00	0.00	
2250.	.32	0.00	.49	0.00	0.00	.32	0.00	0.00	0.00	0.00	
3000.	24.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	27.5	12.5	21.0	8.3	6.5	11.7	2.1	4.9	3.4	2.1	.2

TABLE A–2A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION 1

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.14	0.00	.14
75.	0.00	.28	.14	.14	0.00	0.00	0.00	.14	0.00	.71
150.	0.00	.28	.14	.85	0.00	0.00	.28	0.00	.99	2.55
250.	0.00	1.41	1.56	1.70	.85	.99	.99	.71	2.12	10.33
450.	0.00	4.38	3.82	3.54	2.97	2.69	1.70	1.41	3.11	23.62
800.	0.00	2.97	2.69	3.54	.71	.99	.71	1.27	.57	13.44
1250.	.14	1.27	1.27	.57	.14	.28	.42	.28	.28	4.67
1750.	.14	.71	.42	.14	.28	.28	.14	.14	0.00	2.26
2250.	.42	0.00	.57	0.00	0.00	0.00	.14	0.00	0.00	1.13
3000.	36.92	1.27	1.13	.14	0.00	0.00	.28	.28	1.13	41.16
ALL LOW CLOUDS (PER CENT)	37.6	12.6	11.7	10.6	5.0	5.2	4.7	4.4	8.2	

TABLE A–2B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.14
75.	0.00	.14	.14	.14	0.00	.28	0.00	0.00	0.00	0.00	
150.	0.00	.57	0.00	.28	.28	.14	.28	.85	.14	0.00	
250.	.28	1.98	1.27	.85	.42	1.41	.71	1.98	.85	.57	
450.	.14	4.24	6.36	1.70	1.98	3.96	1.56	1.84	1.56	.28	
800.	.71	3.11	4.95	.71	.85	1.41	.71	.57	.42	0.00	
1250.	1.78	.57	1.13	.14	.28	0.00	.42	.14	0.00	.28	
1750.	1.13	.57	0.00	.14	0.00	.14	.14	0.00	.14	0.00	
2250.	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	41.02	0.00	0.00	0.00	.14	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	46.1	11.2	13.9	4.8	4.0	7.4	3.8	5.4	3.1	1.1	.1

TABLE A–3A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION 1

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	.16	0.00	0.00	0.00	0.00	0.00	0.00	.16
75.	0.00	0.00	0.00	0.00	0.00	.16	0.00	.32	0.00	.48
150.	0.00	.64	.64	.48	.32	0.00	0.00	0.00	0.00	2.09
250.	0.00	1.93	1.93	1.77	.81	.32	.64	.64	.97	9.82
450.	0.00	4.83	5.80	1.61	1.61	1.13	1.13	1.29	.97	17.55
800.	0.00	1.93	3.38	1.61	1.77	.64	.32	.32	.64	10.63
1250.	0.00	1.29	.32	.32	.16	.16	0.00	.32	.16	2.74
1750.	0.00	.32	0.00	.64	.16	.16	0.00	0.00	0.00	1.29
2250.	0.00	.16	0.00	0.00	.16	.16	0.00	0.00	.16	.64
3000.	52.50	.97	.32	.48	.16	.32	.16	.16	.32	55.39
ALL LOW CLOUDS (PER CENT)	52.5	11.3	12.6	6.9	5.2	3.1	2.3	3.1	3.2	

TABLE A–3B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.16
75.	0.00	0.00	.16	0.00	0.00	0.00	.16	0.00	0.00	.16	
150.	0.00	.81	.64	.16	.16	0.00	.16	.16	0.00	0.00	
250.	0.00	4.19	1.93	.16	.16	.97	.97	.32	.32	0.00	
450.	.16	6.76	3.86	.97	1.29	1.61	1.61	.48	.64	.16	
800.	.81	3.54	2.74	.32	.81	1.29	.16	.16	.48	.32	
1250.	.81	.97	.16	0.00	0.00	.64	0.00	0.00	.16	0.00	
1750.	.32	.81	0.00	0.00	0.00	.16	0.00	0.00	0.00	0.00	
2250.	.32	0.00	.16	0.00	0.00	0.00	.16	0.00	0.00	0.00	
3000.	55.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	57.8	17.1	9.7	1.6	2.4	4.7	3.2	1.1	1.6	.6	.2

TABLE A–4A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX (C,H)
(CLOUD COVER IN EIGHTS)

LOCATION 10

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.61	.61
75.	0.00	0.00	0.00	.05	0.00	.02	0.00	0.00	.24	.31
150.	0.00	0.00	.12	.12	.02	.24	.21	.21	4.57	5.49
250.	0.00	.14	.49	.33	.24	.38	.85	.92	12.82	16.16
450.	0.00	1.93	4.52	2.47	1.91	1.98	5.16	3.86	22.29	44.12
800.	0.00	1.34	4.38	2.73	1.39	1.77	3.27	1.84	5.61	22.33
1250.	0.00	.33	.40	.26	.24	.19	.40	.35	.52	2.69
1750.	0.00	.05	.19	.05	.02	.07	.09	.14	.14	.75
2250.	0.00	.02	.19	.02	.07	.19	.33	.12	.21	1.15
3000.	5.58	.07	.24	.07	.02	.05	.12	.07	.16	6.38
ALL LOW CLOUDS (PER CENT)	5.6	3.9	10.5	6.1	3.9	4.9	10.4	7.5	47.2	

TABLE A–4B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.61
75.	0.00	.07	0.00	0.00	.02	0.00	.09	.12	0.00	0.00	
150.	0.00	.07	.21	.02	0.00	1.01	2.05	1.38	.02	0.00	
250.	.05	.42	1.39	.09	.33	3.46	4.00	2.66	2.07	0.00	
450.	.16	5.51	4.59	.57	2.43	11.24	4.17	3.89	11.52	.05	
800.	.07	6.55	3.53	.35	1.15	5.32	.85	.71	3.77	.02	
1250.	.12	.52	.21	0.00	.12	1.46	.02	.02	.21	0.00	
1750.	.07	.09	.02	.02	.05	.40	.05	0.00	.05	0.00	
2250.	1.11	0.00	0.00	0.00	.02	0.00	.02	0.00	0.00	0.00	
3000.	6.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	8.0	13.2	10.0	1.1	4.1	22.9	12.1	8.7	19.2	.1	.6

TABLE A–5A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION 10

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	.02	.02	0.00	0.00	.02	0.00	1.05	1.12
75.	0.00	0.00	0.00	0.00	0.00	0.00	.05	0.00	.05	.10
150.	0.00	.10	.15	.05	.10	.37	.39	.29	1.61	3.05
250.	0.00	.71	1.17	.49	.37	.88	1.58	.85	6.53	12.51
450.	0.00	3.83	6.49	2.61	1.90	1.61	3.29	1.76	10.61	32.09
800.	0.00	3.27	5.07	1.88	1.37	1.41	2.05	.78	3.19	19.02
1250.	0.00	.49	.98	.34	.12	.29	.49	.24	.32	3.27
1750.	0.00	.32	.73	.22	.12	.27	.37	.17	.32	2.51
2250.	0.00	.15	.85	.24	.17	.22	.32	.10	.22	2.27
3000.	17.36	1.00	2.02	.54	.29	1.07	.95	.32	.51	24.07
ALL LOW CLOUDS (PER CENT)	17.4	9.9	17.5	6.4	4.4	6.0	9.5	4.5	24.4	

TABLE A–5B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12
75.	0.00	.02	0.00	0.00	0.00	0.00	.07	0.00	0.00	0.00	
150.	0.00	.15	.05	.10	0.00	.68	1.12	.46	.46	.02	
250.	0.00	1.27	.80	.22	.34	2.90	2.51	1.58	2.71	.17	
450.	0.00	5.68	4.51	1.15	2.07	6.63	3.12	1.10	5.05	.78	
800.	.05	4.05	4.32	1.00	1.44	4.05	1.37	.46	1.19	1.10	
1250.	.32	.44	.44	.05	.29	1.39	.15	.02	.10	.07	
1750.	.51	.17	.10	0.00	.20	1.34	.15	0.00	.05	0.00	
2250.	2.05	.05	.02	0.00	0.00	.07	0.00	0.00	.05	.02	
3000.	24.02	0.00	.02	0.00	0.00	.02	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	26.9	11.8	10.3	2.5	4.3	19.1	8.5	3.6	9.6	2.2	1.1

TABLE A–6A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION 10

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05	.05
75.	0.00	.03	0.00	0.00	0.00	0.00	0.00	.03	0.00	.05
150.	0.00	0.00	.05	0.00	.03	.08	.05	.03	.27	.52
250.	0.00	.11	.49	.25	.38	.38	.30	.27	.93	3.18
450.	.03	11.13	10.40	3.13	1.44	1.96	2.01	1.09	2.21	33.46
800.	0.00	8.49	7.32	2.61	1.80	1.91	2.06	1.01	2.07	28.07
1250.	0.00	.33	.76	.46	.27	.25	.30	.27	.36	3.02
1750.	0.00	.35	.74	.30	.16	.16	.25	.22	.19	2.37
2250.	0.00	.16	.52		.27	.30	.74	.19	.38	2.64
3000.	12.71	2.31	4.14	2..	.4	1.77	2.07	.49	.63	26.71
ALL LOW CLOUDS (PER CENT)	12.7	23.0	24.4	9.0	4.9	6.8	8.6	3.6	7.8	

TABLE A–6B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05
75.	0.00	0.00	.03	.03	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	.08	0.00	.03	0.00	.05	.11	.22	.03	
250.	0.00	.25	.46	.33	.06	.30	.14	.54	.74	.27	
450.	.03	6.21	11.22	3.27	.63	.98	.82	1.28	2.42	6.62	
800.	.05	5.94	9.61	2.37	1.74	1.77	1.03	.60	1.33	3.62	
1250.	.38	.44	.71	.14	.46	.52	.19	0.00	.11	.08	
1750.	.65	.08	.33	.05	.22	.90	.03	.03	.08	0.00	
2250.	1.99	.11	.22	.08	.03	.06	.35	0.00	.05	.03	
3000.	26.55	0.00	.05	.03	.05	.03	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	29.6	13.0	22.7	6.3	3.2	4.6	2.3	2.6	5.0	10.6	.1

TABLE A–7A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION A

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.30	.30
75.	0.00	0.00	.05	.05	0.00	0.00	0.00	0.00	.15	.25
150.	0.00	0.00	.05	0.00	.15	.05	.30	.20	2.46	3.20
250.	0.00	.05	.20	.20	.25	.59	.94	1.87	7.28	11.37
450.	0.00	.59	2.41	3.74	4.13	5.31	6.69	11.22	14.03	48.13
800.	0.00	2.07	1.73	2.36	2.12	2.81	3.35	5.12	5.02	24.16
1250.	0.00	.94	.64	.69	.54	1.08	1.18	2.76	2.12	10.14
1750.	0.00	.20	.10	.05	.05	0.00	.05	.20	.20	.84
2250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3000.	1.08	.30	.05	0.00	0.00	0.00	.05	.05	.10	1.62
ALL LOW CLOUDS (PER CENT)	1.1	4.1	5.0	7.1	7.2	9.8	12.5	21.4	31.6	

TABLE A–7B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.30
75.	0.00	0.00	0.00	0.00	0.00	.05	.10	.10	0.00	0.00	
150.	.10	0.00	0.00	0.00	0.00	.05	.59	2.21	.05	.20	
250.	.15	0.00	.05	.44	0.00	2.71	1.53	4.92	.54	1.03	
450.	.15	.64	2.95	3.94	.30	7.63	1.48	5.12	13.53	12.48	
800.	0.00	.79	1.53	.20	.25	8.71	.05	.25	8.37	4.04	
1250.	0.00	0.00	.25	.05	.10	9.10	0.00	0.00	.59	.05	
1750.	0.00	0.00	0.00	0.00	0.00	.04	0.00	0.00	0.00	0.00	
2250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	2.0	1.4	4.8	4.6	.6	29.1	3.7	12.6	23.1	17.7	.3

TABLE A-8A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION A

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	.05	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1.39
75.	0.00	0.00	0.00	0.00	.05	.14	0.00	.09	1.53	1.81
150.	0.00	0.00	0.00	.19	.23	.51	.93	.42	4.41	6.59
250.	0.00	.05	0.00	.19	.46	.79	1.39	1.16	7.00	11.84
450.	0.00	1.02	2.04	2.69	3.06	5.01	7.24	9.37	13.78	44.20
800.	0.00	1.48	2.18	2.37	1.95	2.83	2.41	4.96	3.94	22.12
1250.	0.00	.93	.93	.79	.37	.88	.60	1.44	1.48	7.42
1750.	0.00	.42	.09	0.00	.09	.09	.05	.19	.19	1.11
2250.	0.00	.05	.05	.05	0.00	0.00	0.00	.09	.09	.32
3800.	2.50	.42	.14	.14	.23	.09	0.00	.42	.05	3.99
ALL LOW CLOUDS (PERCENT)	2.5	4.4	5.4	6.3	6.4	10.3	12.6	18.1	33.8	

TABLE A-8B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2-A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39
75.	0.00	0.00	0.00	0.00	0.00	.09	.79	.93	0.00	0.00	
150.	0.00	0.00	0.00	.09	0.00	.56	1.62	3.90	.05	.37	
250.	0.00	.05	.14	.19	0.00	2.69	2.18	4.82	.46	.51	
450.	.09	.56	1.86	2.78	.32	8.91	1.39	3.34	16.74	8.21	
800.	0.00	1.62	2.32	.42	.51	8.72	0.00	.09	7.42	1.02	
1250.	0.00	.56	.19	0.00	.09	6.22	0.00	0.00	.32	.05	
1750.	.05	0.00	0.00	0.00	0.00	1.02	.05	0.00	0.00	0.00	
2250.	.23	0.00	0.00	0.00	0.00	.09	0.00	0.00	0.00	0.00	
3800.	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS PERCENT	4.4	2.8	4.5	3.5	.9	28.3	6.8	13.1	25.0	10.2	1.4

TABLE A-9A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION A

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.03	0.00	.05	0.00	0.00	0.00	0.00	.01	.06
75.	0.00	0.00	0.00	0.00	0.00	0.00	.05	.14	1.28	1.39
150.	0.00	0.03	.05	.14	.14	.33	.77	.67	7.56	9.66
250.	0.00	0.03	.05	.14	.74	.24	1.39	1.91	7.22	11.10
450.	0.00	.91	1.34	1.67	2.30	3.35	4.03	11.29	15.02	40.78
800.	0.00	2.23	1.53	2.44	2.30	2.30	2.39	7.17	5.21	25.54
1250.	0.00	1.23	.38	.72	.33	.62	.67	1.43	1.58	7.03
1750.	0.00	.23	0.00	.05	.05	0.00	.24	.05	0.00	.67
2250.	0.00	.14	.05	.05	.05	.05	.35	0.00	.05	.43
3000.	1.53	.57	.10	.05	0.00	0.00	.14	.14	.10	2.63
ALL LOW CLOUDS (PER CENT)	1.5	5.4	3.5	5.3	5.3	6.9	10.5	22.8	38.7	

TABLE A-9B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2-A, 8)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.06
75.	0.00	0.00	0.00	0.00	0.00	.05	1.10	.19	.05	0.00	
150.	0.00	0.03	0.00	0.00	0.00	1.34	3.78	4.30	.19	.05	
250.	0.00	0.03	.10	0.00	0.00	2.77	3.25	4.21	.67	.10	
450.	0.00	.57	1.00	.43	.14	12.53	1.96	3.25	15.59	5.21	
800.	0.00	1.29	.77	.19	.29	11.05	.05	0.00	11.43	.48	
1250.	.05	.13	.05	0.00	.14	6.68	0.00	0.00	.10	0.00	
1750.	.14	0.00	0.00	0.00	0.00	.53	0.00	0.00	0.00	0.00	
2250.	.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.3	2.0	1.9	.6	.6	34.9	10.1	12.0	28.0	5.8	.9

TABLE A–10A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION B

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.82	6.82
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.00	.00
150.	0.00	0.00	0.00	0.00	0.00	.04	.15	.00	1.29	1.56
250.	0.00	0.00	.11	.23	.30	.60	2.20	.76	6.49	10.79
450.	0.00	.38	1.56	2.62	2.16	4.41	8.74	10.79	21.76	52.34
800.	0.00	1.06	1.79	1.90	1.10	2.01	4.29	5.20	9.61	27.76
1250.	0.00	.11	.15	0.00	.00	.00	.15	.19	.34	1.10
1750.	0.00	0.00	.04	0.00	0.00	0.00	.04	0.00	0.00	.00
2250.	0.00	0.00	.04	0.00	0.00	0.00	.04	0.00	.19	.27
3000.	.76	.00	.04	.00	.04	.04	.00	0.00	.11	1.22
ALL LOW CLOUDS (PER CENT)	.8	1.6	3.7	4.8	3.7	8.1	15.7	17.8	44.7	

TABLE A–10B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.82
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.04	0.00	0.00	
150.	0.00	0.00	.04	.04	0.00	.04	.15	1.14	.15	0.00	
250.	.11	.04	.91	.04	.08	.46	.61	7.71	.04	0.00	
450.	.27	1.29	19.33	.72	.34	8.13	.49	7.06	13.67	.23	
800.	.23	1.63	7.06	.61	1.44	12.15	.04	.49	3.30	0.00	
1250.	.08	0.00	.04	0.00	.15	.00	0.00	0.00	.04	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	.00	0.00	0.00	0.00	0.00	
2250.	.23	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	0.00	
3000.	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	2.1	3.0	28.2	1.4	2.0	21.6	1.3	17.3	18.0	.2	6.8

TABLE A–11A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION B

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.45	5.57
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	.04	.00	.00	.00	.04	.19	.23	2.06	2.78
250.	0.00	.15	.15	.27	.27	.99	2.59	1.60	7.09	13.11
450.	0.00	.76	1.72	2.25	1.91	2.52	7.09	7.74	10.95	42.93
800.	0.00	1.26	2.21	1.60	1.33	2.21	5.15	5.76	9.68	29.20
1250.	0.00	.04	.11	.00	.00	.04	.23	.15	.65	1.37
1750.	0.00	0.00	.04	0.00	0.00	.04	.04	.00	.15	.34
2250.	0.00	.04	.04	0.00	.04	.04	.11	.19	.27	.72
3000.	1.91	.34	.50	.11	.11	.15	.15	.38	.38	3.96
ALL LOW CLOUDS (PER CENT)	2.0	2.6	4.8	4.4	3.8	6.8	15.6	16.1	44.6	

TABLE A–11B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.57
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	.00	0.00	0.00	0.00	0.00	.11	1.49	1.03	.00	0.00	
250.	.19	.04	.00	0.00	.04	.53	2.44	7.97	1.03	0.00	
450.	.46	1.91	9.57	.11	.04	12.24	1.03	7.20	0.62	.00	
800.	.00	2.71	6.82	.00	1.14	14.03	.00	.27	4.00	0.00	
1250.	.04	0.00	.04	0.00	.19	1.07	0.00	0.00	.04	0.00	
1750.	.04	0.00	0.00	0.00	.04	.27	0.00	0.00	0.00	0.00	
2250.	.69	0.00	0.00	0.00	0.00	.04	0.00	0.00	0.00	0.00	
3000.	3.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	5.5	4.7	17.3	.2	2.2	28.3	5.0	16.5	13.0	.1	5.6

TABLE A–12A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION B

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.92	12.31
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.29	.29
150.	0.00	0.00	.04	.07	.07	.14	.57	.11	5.06	6.07
250.	0.00	.32	.47	.29	.29	.65	2.23	.86	9.37	14.47
450.	0.00	1.79	2.12	1.33	1.18	2.85	4.06	5.56	16.76	34.85
800.	0.00	2.38	1.54	.65	.65	1.29	1.47	2.91	5.28	16.01
1250.	0.00	.54	.36	.22	.18	.11	.11	.18	.32	2.01
1750.	0.00	.04	.04	.07	0.00	.07	.07	0.00	.36	.65
2250.	0.00	.23	.29	.04	.25	.07	.07	.04	.29	1.33
3800.	4.85	1.79	1.47	.75	.32	.47	.75	.86	.75	12.82
ALL LOW CLOUDS (PER CENT)	5.2	7.1	6.3	3.4	2.9	4.8	9.3	18.5	50.3	

TABLE A–12B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.31
75.	.04	0.00	0.00	0.00	0.00	0.00	.22	.04	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.11	4.16	1.79	0.00	0.00	
250.	0.00	0.00	.04	.04	0.00	1.69	6.03	5.53	1.15	0.00	
450.	.18	1.62	1.87	.14	.32	16.69	3.19	4.92	5.89	.04	
800.	.50	1.33	.72	.04	.43	10.62	.68	.11	1.58	0.00	
1250.	.04	0.00	.04	0.00	.04	1.76	.04	0.00	.11	0.00	
1750.	.36	0.00	.04	0.00	0.00	.22	0.00	.04	0.00	0.00	
2250.	1.18	.04	0.00	0.00	.04	.04	.04	0.00	0.00	0.00	
3800.	11.99	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	14.3	3.8	2.7	.2	.8	31.1	14.4	12.5	8.7	.8	12.3

TABLE A–13A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION C

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	4.23
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	.04	.04	0.00	0.00	0.00	.29	.21	1.95	2.53
250.	0.00	.00	.21	.17	.29	.62	1.70	.79	4.61	8.46
450.	0.00	1.49	4.15	3.49	3.24	4.52	7.47	6.76	13.73	44.85
800.	0.00	1.99	6.16	3.57	2.74	3.36	4.07	3.53	7.51	32.86
1250.	0.00	.12	.62	.21	.21	.17	.33	.25	.62	2.53
1750.	0.00	.04	0.00	.00	0.00	.04	.00	.00	.00	.41
2250.	0.00	.00	.00	.04	.04	0.00	.04	.04	.04	.37
3000.	1.24	.37	.46	.04	.00	.29	.17	0.00	1.00	3.73
ALL LOW CLOUDS (PER CENT)	1.3	4.2	11.7	7.6	6.6	9.0	14.1	11.7	33.0	

TABLE A–13B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.23
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	.04	0.00	0.00	0.00	.04	1.00	1.41	.04	0.00	
250.	.04	.17	.17	.21	0.00	.17	2.41	5.10	.21	0.00	
450.	.17	1.99	13.94	1.00	.46	6.64	1.70	0.92	9.67	.29	
800.	.33	2.41	9.00	.95	.95	14.19	.33	.50	3.03	.29	
1250.	.04	.00	.00	0.00	.33	1.95	0.00	.04	0.00	0.00	
1750.	.12	0.00	0.00	0.00	0.00	.25	0.00	.04	0.00	0.00	
2250.	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	3.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	4.0	4.7	24.1	2.2	1.7	23.2	5.4	16.0	12.9	.6	4.2

TABLE A–14A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION C

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.11	9.18
75.	0.00	0.00	0.00	0.00	0.00	.04	0.00	0.00	.08	.11
150.	0.00	0.00	0.00	.04	0.00	.04	.38	.11	2.13	2.71
250.	0.00	.04	.08	.34	.46	.42	1.91	.65	5.30	9.18
450.	0.00	.91	2.52	2.29	2.74	2.93	6.48	5.83	18.56	33.46
800.	0.00	3.13	4.54	3.13	2.02	3.47	4.61	3.35	7.74	31.97
1250.	0.00	.23	.42	.38	.23	.23	.23	.57	1.03	3.32
1750.	0.00	.04	.11	.08	.04	.08	.04	.15	.42	.95
2250.	0.00	.04	.08	.23	.11	.11	.11	.34	.57	1.68
3000.	2.97	.68	.72	.38	.23	.23	.42	.69	1.14	7.51
ALL LOW CLOUDS (PER CENT)	3.0	5.2	8.5	6.8	5.8	7.5	14.2	10.9	38.1	

TABLE A–14B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.18
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.08	0.00	0.00	
150.	0.00	0.00	0.00	0.00	.04	0.00	1.71	.95	0.00	0.00	
250.	.08	.08	.15	0.00	0.00	.30	3.62	4.65	.30	0.00	
450.	.23	1.49	5.03	.69	.53	5.91	2.18	8.23	9.15	.11	
800.	.38	4.34	7.77	.99	.57	11.74	.15	.76	5.22	.04	
1250.	.27	.27	.04	.04	.11	2.44	.08	.04	.04	0.00	
1750.	.50	0.00	0.00	0.00	0.00	.46	0.00	0.00	0.00	0.00	
2250.	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	7.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	10.6	6.2	13.0	1.7	1.3	20.0	7.7	14.7	14.7	.2	9.2

TABLE A–15A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION C

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.35	17.43
75.	0.00	0.00	0.00	0.00	0.00	0.00	.07	0.00	.04	.11
150.	0.00	0.00	0.00	.07	0.00	.04	.40	.29	3.43	4.24
250.	0.00	.26	.29	.22	.18	.55	1.90	.73	8.04	12.17
450.	0.00	1.39	2.34	1.94	.91	2.01	4.02	4.60	17.25	35.33
800.	0.00	1.90	2.27	1.50	.77	2.19	2.30	3.10	7.96	22.07
1250.	0.00	.18	.18	.07	.11	.11	.11	.11	.33	1.21
1750.	0.00	0.00	.04	.04	0.00	.07	.04	0.00	.07	.26
2250.	0.00	.07	.07	.07	.15	.04	.07	.11	.26	.84
3000.	2.00	.73	.84	.47	.22	.26	.51	.44	.00	6.36
ALL LOW CLOUDS (PER CENT)	2.2	4.5	6.0	4.4	2.3	5.3	10.2	9.5	55.5	

TABLE A–15B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.43
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.07	0.00	0.00	
150.	.04	0.00	0.00	0.00	0.00	.11	2.37	1.72	0.00	0.00	
250.	0.00	.07	.22	.04	0.00	.73	5.44	4.93	.73	0.00	
450.	.15	1.24	2.09	.40	.47	12.31	3.10	4.09	10.60	0.00	
800.	.04	2.00	2.63	.10	.40	13.01	.15	.22	2.56	0.00	
1250.	.04	0.00	0.00	0.00	.07	1.10	0.00	0.00	0.00	0.00	
1750.	.07	0.00	0.00	0.00	0.00	.10	0.00	0.00	0.00	0.00	
2250.	.73	0.00	0.00	0.00	0.00	.11	0.00	0.00	0.00	0.00	
3000.	6.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	7.4	3.4	5.7	.5	.9	28.4	11.2	11.0	13.9	0.0	17.4

TABLE A–16A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION D

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.44	.44
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	0.00	0.00	0.00	.04	0.00	.09	.17	.09	.39
250.	0.00	.09	.13	.17	.13	.74	1.91	.78	1.78	5.74
450.	0.00	1.89	3.61	4.48	2.87	5.05	11.01	5.96	11.48	45.47
800.	0.00	2.89	6.35	4.40	3.13	5.57	7.27	6.61	7.75	43.17
1250.	0.00	.13	.17	.13	.22	.04	.17	.30	.44	1.61
1750.	0.00	0.00	.04	.04	0.00	.04	0.00	.84	.04	.22
2250.	0.00	0.00	0.00	0.00	0.00	.04	.09	0.00	.22	.35
3000.	1.48	.13	.22	.13	0.00	.04	.22	.17	.22	2.61
ALL LOW CLOUDS (PER CENT)	1.5	3.5	10.5	9.4	6.4	11.5	20.8	14.1	22.4	

TABLE A–16B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.44
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	.09	0.00	0.00	0.00	.22	.09	0.00	
250.	.09	.04	.44	.39	0.00	.09	.09	3.96	.61	.04	
450.	.17	2.92	13.93	2.48	1.52	4.79	.65	9.97	8.57	.48	
800.	.09	4.22	15.49	1.70	1.83	13.32	.04	.78	5.61	.09	
1250.	.09	.04	0.00	0.00	.04	1.39	0.00	0.00	.04	[illegible]	
1750.	.09	0.00	0.00	0.00	0.00	.13	0.00	0.00	0.00	[illegible]	
2250.	.30	0.00	.04	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	
3000.	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.4	7.2	29.9	4.7	3.4	19.7	.8	14.9	14.9	.6	.4

TABLE A–17A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION D

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	1.19
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	.04	.08
150.	0.00	.04	.04	.04	0.00	.04	0.00	.16	.53	.86
250.	0.00	.25	.37	.33	.29	.57	1.80	.61	2.01	6.22
450.	0.00	1.72	3.72	3.07	2.62	4.50	7.49	6.84	10.27	40.24
800.	0.00	4.42	5.08	4.99	3.03	4.42	5.24	5.28	7.37	39.75
1250.	0.00	.12	.45	.45	.08	.28	.45	.53	.61	2.91
1750.	0.00	.08	.08	0.00	.04	.04	.16	.04	.12	.57
2250.	0.00	.12	.12	.04	0.00	.04	.29	.12	.16	.90
3000.	3.15	.49	.82	.37	.16	.37	.61	.25	1.06	7.29
ALL LOW CLOUDS (PER CENT)	3.2	7.2	10.7	9.3	6.2	10.2	16.1	13.8	23.3	

TABLE A–17B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.08	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.08	.41	.37	0.00	0.00	
250.	0.00	.04	.04	.08	0.00	.04	.94	4.58	.41	.08	
450.	.29	3.81	8.31	1.02	.74	4.38	.70	10.19	10.23	.57	
800.	.33	7.82	7.78	.49	1.84	14.12	.41	.94	5.77	.25	
1250.	.08	.12	.04	0.00	.16	2.42	.04	0.00	.04	0.00	
1750.	.20	.04	0.00	0.00	.04	.29	0.00	0.00	0.00	0.00	
2250.	.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	7.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	9.1	11.8	16.2	1.6	2.8	21.3	2.5	16.2	16.5	.9	1.2

TABLE A–18A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION D

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.08	0.00	0.00	0.00	0.00	0.00	.04	0.00	5.15	5.26
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	.04	0.00	0.00	.08	0.00	.04	.12	1.61	1.88
250.	0.00	.31	.27	.23	.23	.42	.88	.54	5.22	8.11
450.	0.00	3.23	4.15	2.88	2.31	2.61	4.73	4.65	12.99	37.53
800.	0.00	6.34	6.26	4.80	2.27	3.42	3.73	3.15	4.76	34.73
1250.	0.00	.12	.23	.27	.04	.23	.38	.15	.15	1.58
1750.	0.00	.04	.04	.15	0.00	0.00	.04	.04	.04	.35
2250.	0.00	.15	.04	.04	.04	.04	.15	.12	.38	.96
3000.	4.80	.92	1.15	.81	.23	.35	.38	.31	.65	9.60
ALL LOW CLOUDS (PER CENT)	4.9	11.1	12.1	9.2	5.2	7.1	10.4	9.1	31.0	

TABLE A–18B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	.04	.04	.04	.04	1.19	.46	.08	0.00	
250.	0.00	0.00	.19	.12	.04	.88	3.46	2.92	.46	.84	
450.	.15	4.61	4.26	1.00	.92	10.68	2.96	4.34	8.41	.19	
800.	.04	9.34	4.92	.58	2.19	13.79	.08	.42	3.27	.12	
1250.	.04	.27	.12	0.00	.12	1.04	0.00	0.00	0.00	0.00	
1750.	.12	0.00	0.00	0.00	0.00	.19	0.00	0.00	.04	0.00	
2250.	.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	10.9	14.2	9.5	1.7	3.3	26.6	7.7	8.1	12.3	.3	5.3

TABLE A–19A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION H

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.51	.51
75.	0.00	0.00	0.00	0.00	0.00	.03	0.00	0.00	0.00	.03
150.	0.00	0.00	0.00	0.00	.03	0.00	.06	.09	.09	.26
250.	0.00	.03	0.00	.09	.06	.31	1.00	.71	1.05	3.24
450.	0.00	1.17	1.82	2.10	2.13	3.16	6.54	5.80	11.12	33.85
800.	0.00	6.34	5.43	5.06	3.81	5.63	7.20	6.51	8.82	48.81
1250.	0.00	.26	.40	.48	.37	.23	.40	.40	.23	2.76
1750.	0.00	.06	.03	0.00	.06	.09	0.00	0.00	.14	.37
2250.	0.00	.06	.17	.20	.11	.14	.06	.03	.34	1.11
3000.	6.68	.63	.46	.34	.17	.06	.14	.89	.51	9.87
ALL LOW CLOUDS (PER CENT)	6.7	8.5	8.3	8.3	6.7	9.6	15.4	13.6	22.8	

TABLE A–19B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.51
75.	0.00	0.00	0.00	0.00	0.00	0.00	.03	0.00	0.00	0.00	
150.	0.00	0.00	.09	0.00	0.00	0.00	.03	.14	0.00	0.00	
250.	0.00	0.00	.51	.17	0.00	.06	.14	2.16	.20	0.00	
450.	.11	1.96	6.63	1.79	.65	4.92	.94	6.94	9.44	.46	
800.	.20	11.41	7.00	.65	3.24	17.97	.03	.68	7.20	.43	
1250.	.06	.28	.06	0.00	.37	1.93	.03	0.00	.03	0.00	
1750.	.17	0.00	0.00	0.00	0.00	.14	0.00	0.00	.06	0.00	
2250.	1.05	0.00	.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	9.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	18.7	13.7	14.3	2.6	4.3	25.8	1.2	9.9	16.9	.9	.5

TABLE A–20A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION H

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.44	.49
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05	.16	.22
250.	0.00	.05	.05	.11	0.00	0.00	.55	.82	.87	2.46
450.	0.00	1.47	3.17	2.84	2.08	3.00	4.53	3.33	9.12	29.55
800.	0.00	6.94	7.26	5.90	2.40	4.26	7.92	4.97	10.49	50.14
1250.	.05	.33	1.37	.44	.27	.44	.82	.33	1.09	5.13
1750.	0.00	0.00	.11	0.00	0.00	.11	.11	.16	.38	.87
2250.	0.00	.22	.05	0.00	0.00	0.00	.11	.11	.49	.98
3000.	0.19	.49	.38	.16	.22	.11	.16	.05	.38	10.16
ALL LOW CLOUDS (PER CENT)	8.3	9.5	12.4	9.4	5.0	7.9	14.2	9.8	23.4	

TABLE A–20B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.49
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	.05	0.00	0.00	0.00	.05	.11	0.00	0.00	
250.	0.00	0.00	.27	.05	0.00	.05	.22	1.80	.05	0.00	
450.	.49	1.80	8.90	1.75	1.69	3.77	.71	3.66	5.90	.87	
800.	.05	9.07	13.16	1.15	4.42	16.00	.38	.93	4.53	.44	
1250.	.27	.98	.98	.11	.55	1.75	0.00	0.00	.09	0.00	
1750.	.33	0.00	.05	.05	0.00	.44	0.00	0.00	0.00	0.00	
2250.	.93	0.00	0.00	0.00	.05	0.00	0.00	0.00	0.00	0.00	
3000.	10.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	12.2	11.9	23.4	3.1	6.7	22.0	1.4	6.5	11.0	1.3	.5

TABLE A–21A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION H

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	.05	0.00	0.00	0.00	0.00	0.00	.15	.20
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05	.05
250.	0.00	0.00	.05	.10	.05	.05	.10	0.00	.40	.76
450.	0.00	5.97	7.08	3.54	3.34	2.73	2.63	1.16	3.09	29.54
800.	0.00	9.96	16.39	6.78	4.05	3.59	2.43	1.21	2.33	46.74
1250.	0.00	.61	.71	.20	.05	.35	.35	0.00	.15	2.12
1750.	0.00	.05	.05	.10	.10	.15	0.00	.15	.46	1.06
2250.	.05	0.00	.10	.20	.15	.10	.10	.15	.35	1.21
3000.	14.77	1.61	.61	.66	.15	.35	.30	.15	.30	18.31
ALL LOW CLOUDS (PER CENT)	14.8	17.6	25.0	11.6	7.9	7.3	5.6	2.8	7.3	

TABLE A–21B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.20
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.05	0.00	0.00	0.00	
250.	0.00	0.00	.05	0.00	0.00	.15	.15	.30	0.00	.10	
450.	.05	5.11	11.99	3.84	.51	1.57	.66	1.72	1.72	2.38	
800.	.05	13.30	16.59	3.14	2.58	6.63	.76	.10	2.58	1.01	
1250.	0.00	.30	.05	0.00	.15	1.57	0.00	0.00	.05	0.00	
1750.	.61	0.00	.05	0.00	.10	.25	0.00	0.00	.05	0.00	
2250.	1.16	0.00	0.00	0.00	.05	0.00	0.00	0.00	0.00	0.00	
3000.	18.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	20.2	18.7	28.7	7.0	3.4	10.2	1.6	2.1	4.4	3.5	.2

TABLE A-22A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION I

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.03	0.00	0.00	.10	0.00	0.00	.05	0.00	.15
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.20	.30	.51
150.	0.00	0.00	0.00	0.00	.05	.10	.35	.61	2.63	3.95
250.	0.30	.10	.20	.35	.71	1.27	1.62	2.68	5.62	12.35
450.	0.00	1.77	3.69	6.17	5.26	7.14	7.09	9.72	8.00	48.84
800.	0.00	1.62	1.77	3.30	2.00	2.73	1.77	4.25	3.54	21.96
1250.	0.00	1.67	.06	1.06	.51	.06	.91	1.92	2.63	10.43
1750.	0.00	0.00	.10	.15	.05	0.00	0.00	.10	.15	.56
2250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3000.	.61	0.00	.05	.10	.05	.05	.20	.10	.10	1.27
ALL LOW CLOUDS (PER CENT)	.6	5.2	6.7	11.2	9.6	12.1	11.9	19.4	23.2	

TABLE A-22B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2-A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.15
75.	0.00	0.00	0.00	.10	0.00	0.00	0.00	.30	0.00	.10	
150.	0.00	0.00	.05	.10	0.00	.40	.35	2.73	0.00	.30	
250.	0.00	0.00	.25	.56	0.00	3.49	.91	3.54	1.11	2.48	
450.	0.00	.91	4.61	4.66	.05	7.19	.96	2.07	13.52	9.87	
800.	.05	1.32	2.78	.35	.25	7.64	0.00	0.00	9.01	.56	
1250.	0.00	0.00	0.00	0.00	.05	10.12	0.00	0.00	.25	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	.51	0.00	0.00	.05	0.00	
2250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	1.3	2.2	7.7	5.8	.4	29.4	2.2	8.7	28.9	13.3	.2

LOCATION I

TABLE A-23A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C; H)
(CLOUD COVER IN EIGHTS)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	.05	0.00	0.00	0.00	.05	.18	.27
75.	0.00	0.00	0.00	.05	0.00	0.00	0.00	0.00	.14	.18
150.	0.00	0.00	.05	.05	0.00	0.00	.23	.32	1.73	2.37
250.	0.00	.09	.09	.09	.18	.64	1.19	1.64	5.97	9.89
450.	0.00	.50	2.32	3.74	4.69	6.61	7.84	10.44	10.89	47.04
800.	0.00	3.42	3.01	4.42	3.46	2.78	2.51	5.88	3.63	29.17
1250.	0.00	1.37	.68	.59	1.05	.41	.73	1.50	1.96	8.30
1750.	0.00	.18	.05	.14	.09	.05	.05	.41	.09	1.05
2250.	0.00	.05	.09	0.00	0.00	0.00	0.00	.09	.05	.27
3000.	.02	.09	.18	.05	.05	.05	0.00	0.00	.23	1.46
ALL LOW CLOUDS (PER CENT)	.8	5.7	6.5	9.2	9.5	10.5	12.5	20.3	24.9	

TABLE A-23B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2-A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.27
75.	0.00	0.00	0.00	0.00	0.00	0.00	.09	.09	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.36	.27	1.64	.05	.05	
250.	0.00	0.00	0.00	.05	0.00	3.05	1.00	4.69	.68	.41	
450.	0.00	.55	1.73	3.42	.36	8.30	.82	4.01	14.90	12.94	
800.	0.00	2.05	3.97	.87	.77	6.20	0.00	.05	13.04	2.23	
1250.	0.00	.05	.18	.05	.23	7.43	0.00	0.00	.27	.09	
1750.	.05	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
2250.	.23	0.00	0.00	0.00	0.00	.05	0.00	0.00	0.00	0.00	
3800.	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	1.7	2.6	5.9	4.4	1.4	26.4	2.2	10.5	28.9	15.7	.3

LOCATION I

TABLE A–24A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	.04	0.00	.04	.44	.53
75.	0.00	0.00	0.00	0.00	0.00	.04	0.00	0.00	.85	.89
150.	0.00	0.00	.04	.04	.27	.22	.49	.2	5.87	7.56
250.	0.00	.09	.18	.09	.49	.98	1.78	.2	7.65	13.88
450.	0.00	1.69	2.31	3.91	3.96	4.23	7.83	16.90	10.99	45.82
800.	0.00	3.82	2.98	3.38	2.14	2.71	2.49	5.78	3.69	26.20
1250.	0.00	.40	.53	.31	.27	.18	.18	.80	.76	3.43
1750.	0.00	.40	.09	.04	.09	.04	0.00	.04	0.00	.71
2250.	0.00	.04	0.00	0.00	0.00	0.00	0.00	.04	.04	.13
3000.	.44	.18	0.00	.04	.04	.13	0.00	0.00	0.00	.83
ALL LOW CLOUDS (PER CENT)	.4	5.8	6.1	7.8	7.3	8.6	12.8	20.9	30.3	

TABLE A–24B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.53
75.	0.00	0.00	0.00	0.00	0.00	.04	.44	.40	0.00	0.00	
150.	0.00	0.00	.04	0.00	0.00	1.11	2.39	4.31	0.00	0.00	
250.	0.00	0.00	.04	.22	0.00	5.47	1.38	5.16	1.38	.22	
450.	0.00	1.07	1.20	1.42	.89	9.56	1.32	3.07	19.75	7.83	
800.	0.00	2.03	2.00	.22	1.11	6.09	0.00	.09	13.66	.93	
1250.	0.00	.13	0.00	0.00	.04	3.16	0.00	0.00	.04	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	.71	0.00	0.00	0.00	0.00	
2250.	.04	0.00	0.00	0.00	0.00	.09	0.00	0.00	0.00	0.00	
3000.	.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	.9	3.3	3.3	1.9	2.0	26.2	4.9	13.0	34.8	9.0	.5

TABLE A–25A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION J

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	.05	0.00	0.00	0.00	.05	0.00	.43	.52
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05	.10	.14
150.	0.00	0.00	0.00	0.00	.19	.19	.33	.29	1.62	2.62
250.	0.00	0.00	.05	.14	.10	.86	.91	1.10	3.62	6.77
450.	0.00	.81	2.81	3.39	5.39	5.34	6.01	6.53	9.25	39.53
800.	0.00	2.77	3.24	3.86	3.85	5.85	4.63	6.39	6.63	35.62
1250.	0.00	1.43	1.10	1.14	.67	.91	.76	2.81	2.81	11.64
1750.	0.00	.19	.10	.10	.10	0.00	.05	.33	.24	1.18
2250.	0.00	.05	.05	.10	0.00	0.00	.05	.05	.05	.33
3000.	1.43	.05	0.00	.05	.05	0.00	.05	.05	.05	1.72
ALL LOW CLOUDS (PER CENT)	1.4	5.3	7.4	6.8	9.5	12.4	12.8	17.6	24.8	

TABLE A–25B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.52
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.14	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.62	.24	1.62	.05	.10	
250.	0.00	0.00	.05	.10	0.00	1.19	1.48	3.15	.33	.48	
450.	0.00	.14	2.72	2.67	0.00	6.28	1.43	4.10	7.92	14.35	
800.	0.00	.91	4.39	1.72	.48	9.60	.05	.10	14.21	4.10	
1250.	0.00	.14	.72	.05	.10	9.82	0.00	0.00	.57	.24	
1750.	0.00	0.00	0.00	0.00	.05	1.05	0.00	0.00	0.00	0.00	
2250.	.19	0.00	.10	0.00	0.00	.14	0.00	0.00	0.00	0.00	
3000.	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	1.9	1.2	7.9	4.5	.6	28.7	3.2	9.1	23.1	19.3	.5

TABLE A–26A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION J

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.87	1.41
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
150.	0.00	0.00	.05	.09	.09	.09	.41	.59	3.33	4.66
250.	0.00	.05	.23	.37	.27	.50	.96	.96	4.86	7.39
450.	0.00	1.05	2.42	4.34	3.10	4.97	4.70	5.98	6.30	32.86
800.	0.00	4.70	4.93	4.88	4.61	3.93	3.47	6.16	3.29	35.97
1250.	0.00	1.69	.96	1.41	1.00	.91	1.14	3.81	1.78	11.91
1750.	0.00	.41	.18	.14	.23	.18	.14	.59	.23	2.18
2250.	0.00	0.00	0.00	0.00	0.00	.05	0.00	0.08	.09	.14
3000.	1.37	.32	.23	.23	.05	.23	0.00	.85	.89	2.56
ALL LOW CLOUDS (PER CENT)	1.9	8.2	9.0	11.5	9.4	10.9	10.8	17.3	21.0	

TABLE A–26B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
75.	0.00	0.00	0.00	0.00	0.00	0.00	.68	.32	0.00	0.00	
150.	0.00	0.00	.05	.05	0.00	.59	1.51	2.33	.89	.85	
250.	0.00	0.03	.09	.89	0.00	1.41	1.69	2.88	.59	.64	
450.	0.00	.37	1.78	1.92	.27	4.70	.82	3.10	10.95	8.95	
800.	0.00	1.92	4.66	1.14	.59	7.17	.05	.85	17.94	2.24	
1250.	0.00	.27	.23	0.00	.37	9.45	0.00	0.00	1.68	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	2.85	0.00	0.00	.05	0.00	
2250.	.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	2.7	2.6	7.0	3.2	1.2	25.4	4.7	8.7	31.2	11.9	1.4

TABLE A–27A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION J

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.05	2.44	2.49
75.	0.00	.05	0.00	0.00	0.00	.05	0.00	0.00	1.81	1.98
150.	0.00	.05	.05	.18	0.00	.09	.14	.45	6.86	7.80
250.	0.00	.09	.05	.23	.14	.54	.77	1.45	7.46	10.71
450.	0.00	.72	2.30	2.49	3.34	3.21	4.74	7.95	11.21	35.97
800.	0.00	2.80	2.89	4.34	2.38	2.76	2.35	6.37	5.87	29.69
1250.	0.00	.59	.90	.72	.36	.72	.90	2.26	2.49	8.95
1750.	0.00	.27	.09	.14	.05	0.00	.18	.18	.05	.95
2250.	0.00	.23	0.00	.05	0.00	0.00	0.00	0.00	0.00	.27
3000.	1.17	.18	.14	.05	0.00	.36	.05	.09	.05	2.08
ALL LOW CLOUDS (PER CENT)	1.2	5.0	6.4	8.2	6.2	7.7	9.1	18.8	37.4	

TABLE A–27B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49
75.	0.00	0.00	0.00	0.00	0.00	.05	1.27	.59	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.54	2.26	4.20	0.00	0.00	
250.	0.00	.05	.05	.05	0.00	2.89	3.34	3.48	.72	.14	
450.	0.00	.41	1.22	1.27	.27	8.40	1.27	2.80	16.54	2.88	
800.	0.00	1.63	3.03	.27	.41	7.18	.14	0.00	16.49	.54	
1250.	0.00	.09	.45	0.00	.18	7.18	0.00	.85	.99	0.00	
1750.	.05	0.00	0.00	0.00	0.00	.90	0.00	0.00	0.00	0.00	
2250.	.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	2.4	2.2	4.7	1.6	.9	27.2	8.3	11.1	34.7	4.5	2.5

TABLE A–28A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWLR CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION K

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	.06	.06	.06	0.00	.12	.29
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.06	.17	.23
150.	0.00	0.00	.06	0.00	.06	.12	.17	.46	2.08	2.95
250.	0.00	.06	.06	.29	.23	.46	.81	1.56	3.78	7.16
450.	0.00	1.56	1.91	3.41	3.06	3.52	4.45	5.95	7.91	31.77
800.	0.00	2.95	2.54	4.04	3.12	4.27	4.33	8.55	8.28	38.81
1250.	0.00	1.21	.92	1.27	.69	1.18	.52	2.60	3.47	11.79
1750.	0.00	.48	.12	.12	.23	.58	.17	.64	.46	2.72
2250.	0.00	0.00	0.00	.06	0.00	.06	0.00	.06	0.00	.17
3000.	2.95	.52	.29	.35	.12	.17	0.00	.17	.35	4.91
ALL LOW CLOUDS (PER CENT)	2.9	6.7	5.9	9.5	7.6	10.3	10.5	20.0	26.5	

TABLE A–28B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.29
75.	0.00	0.00	0.00	0.00	0.00	0.00	.06	.17	0.00	0.00	
150.	0.00	.06	0.00	.06	0.00	.17	1.33	1.16	.12	.06	
250.	0.00	0.00	.06	.23	0.00	1.44	2.37	2.43	.35	.29	
450.	0.00	.98	2.89	1.27	.17	4.97	2.31	4.51	0.32	6.35	
800.	0.00	.81	3.00	.29	.23	13.81	.17	.23	10.31	1.16	
1250.	0.00	.17	.23	0.00	.23	10.69	.17	0.00	.29	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	2.72	0.00	0.00	0.00	0.00	
2250.	.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	4.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	5.1	2.8	6.2	1.8	.6	33.8	6.4	8.5	27.4	7.9	.3

TABLE A–29A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION K

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.34	.17	.06	.17	.23	.28	.06	.56	1.29	3.15
75.	0.00	.06	0.00	0.00	0.00	0.00	.06	0.00	.11	.23
150.	0.00	0.00	.06	.06	0.00	0.00	.11	.23	2.42	2.87
250.	0.00	0.00	.06	.11	.34	.23	.39	.56	4.45	6.13
450.	0.00	2.31	3.32	3.43	2.53	3.32	3.04	6.13	9.85	33.93
800.	0.00	4.73	5.18	5.29	4.73	3.38	3.71	6.42	4.73	38.15
1250.	0.00	.34	.84	.84	.34	.68	.39	1.69	1.52	6.64
1750.	0.00	.28	.45	.51	.45	.45	.11	.17	.34	2.76
2250.	0.00	.23	.23	.06	.11	0.00	.23	0.00	.11	.96
3000.	3.66	.39	.28	.28	.06	.11	.06	.28	.06	5.18
ALL LOW CLOUDS (PER CENT)	4.0	8.5	10.5	10.7	8.8	8.4	8.2	16.8	24.9	

TABLE A–29B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15
75.	0.00	0.00	0.00	0.00	0.00	.06	.11	0.00	.06	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.34	1.80	.51	.17	.06	
250.	0.00	0.00	.11	0.00	0.00	.68	2.53	2.83	.62	.17	
450.	.06	2.03	2.42	.23	.17	6.36	2.31	4.56	10.00	5.81	
800.	.11	2.81	4.73	.62	.23	11.03	.23	.23	14.91	3.26	
1250.	0.00	.17	.11	0.00	0.00	5.91	0.00	0.00	.39	.06	
1750.	.34	0.00	0.00	0.00	0.00	2.36	.06	0.00	0.00	0.00	
2250.	.90	0.00	0.00	0.00	0.00	.06	0.00	0.00	0.00	0.00	
3000.	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.06	0.00	
ALL LOW CLOUDS (PER CENT)	6.5	5.0	7.4	.8	.4	26.8	7.0	7.3	27.0	8.6	3.2

TABLE A–30A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION K

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.18	.18
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.18	.35	.53
150.	0.00	.12	.06	.06	0.00	.06	.12	.23	2.93	3.57
250.	0.00	.06	0.00	.06	0.00	.23	.47	1.23	4.33	6.38
450.	0.00	1.05	1.93	2.46	2.11	2.34	2.93	7.02	9.60	29.43
800.	0.00	6.73	5.50	4.80	4.56	4.04	3.22	8.43	6.44	43.71
1250.	0.00	1.40	1.40	.88	.82	.59	.35	1.35	1.46	8.25
1750.	0.00	.53	.35	.41	.23	.41	.06	.53	.29	2.81
2250.	0.00	.12	0.00	.06	0.00	.06	.06	.23	.06	.59
3000.	2.63	.59	.06	.35	.06	.18	.12	.35	.23	4.56
ALL LOW CLOUDS (PER CENT)	2.6	10.6	9.3	9.1	7.8	7.9	7.3	19.5	25.9	

TABLE A–30B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.18
75.	0.00	0.00	0.00	0.00	0.00	.06	.41	.86	0.00	0.00	
150.	0.00	0.00	.06	.18	0.00	.29	1.93	.99	.06	.06	
250.	0.00	.06	0.00	0.00	0.00	1.05	2.93	2.11	.23	0.00	
450.	0.00	.47	1.93	0.00	.12	8.72	1.99	3.16	9.77	3.28	
800.	.06	3.63	6.44	.35	.82	14.51	.18	.06	17.03	.64	
1250.	0.00	.12	.76	0.00	.23	6.09	.12	0.00	.94	0.00	
1750.	.23	0.00	0.00	0.00	.06	2.46	0.00	.86	0.00	0.00	
2250.	.35	0.00	.06	0.00	0.00	.06	0.00	0.00	.12	0.00	
3000.	4.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	5.2	4.3	9.2	.5	1.2	33.2	7.5	6.4	28.1	4.0	.2

TABLE A–31A WINTER
FREQUENCIES FC · LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.24	.53
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	.04
150.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.08	.41	.53
250.	0.00	0.00	.04	.04	.08	.16	.69	.57	1.10	2.68
450.	0.00	.32	1.26	2.68	3.82	3.98	9.95	8.93	10.07	41.81
800.	0.00	.53	2.68	4.34	4.55	5.36	10.48	9.62	8.57	46.12
1250.	0.00	.24	1.22	.73	.97	.93	1.22	1.58	.57	7.47
1750.	0.00	.04	.04	.04	.04	0.00	0.00	.04	0.00	.20
2250.	0.00	.04	0.00	.08	0.00	.08	0.00	.04	0.00	.24
3000.	.97	.04	0.00	0.00	.08	0.00	0.00	.04	.04	1.18
ALL LOW CLOUDS (PER CENT)	1.3	1.2	5.2	7.9	9.5	10.5	22.4	21.8	21.0	

TABLE A–31B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.53
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.24	.24	0.00	.04	
250.	0.00	0.00	.04	0.00	0.00	.12	1.06	.77	.04	.65	
450.	0.00	.41	1.30	.93	.04	1.26	3.25	0.04	3.49	22.29	
800.	0.00	.32	2.44	.28	.16	10.92	.69	1.79	4.83	24.69	
1250.	0.00	.37	.85	.08	.04	3.33	.04	.08	1.14	1.54	
1750.	.12	.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	
2250.	.16	0.00	.04	0.00	0.00	0.00	0.00	0.00	0.00	.04	
3000.	1.10	0.00	0.00	0.00	0.00	.08	0.00	0.08	0.08	0.08	
ALL LOW CLOUDS (PER CENT)	1.4	1.1	4.7	1.3	.2	15.7	5.3	10.9	9.5	49.3	.5

TABLE A–32A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX (C,H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.60
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	.04	.08
150.	0.00	0.00	0.00	0.00	.04	0.00	.16	.32	1.00	1.52
250.	0.00	.08	.04	0.00	.28	.20	.64	1.00	1.68	3.93
450.	0.00	.32	.80	1.08	2.97	2.97	7.29	5.69	6.25	27.37
800.	0.00	1.00	3.17	4.13	4.81	6.21	11.10	10.18	5.81	46.41
1250.	0.00	1.52	1.64	1.24	1.68	1.64	2.44	2.04	1.32	13.55
1750.	0.00	.20	.08	.12	.24	.08	.12	.08	.08	1.08
2250.	.04	.04	.08	.08	.08	.04	.12	.08	.08	.64
3000.	3.65	.04	0.00	.04	.08	0.00	0.00	.08	0.00	3.89
ALL LOW CLOUDS (PER CENT)	3.8	3.2	5.8	6.7	10.2	11.1	21.9	19.5	17.8	

TABLE A–32B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	1.60
75.	0.00	0.00	0.00	0.00	0.00	0.00	.04	.04	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	1.32	.16	0.00	.04	
250.	0.00	0.00	.04	0.00	0.00	0.08	2.28	1.16	0.00	.44	
450.	.04	.12	.64	.16	0.00	.76	5.25	6.33	1.08	12.99	
800.	.04	.44	2.44	.68	0.00	9.78	1.28	1.76	6.37	23.69	
1250.	.08	.92	1.48	.08	0.00	5.93	.08	.12	.96	3.89	
1750.	.76	0.00	0.00	0.00	0.00	.12	0.00	0.00	.08	.04	
2250.	.60	0.00	0.00	0.00	0.00	.04	0.00	0.00	0.00	0.00	
3000.	3.81	0.00	0.00	0.00	0.00	.08	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	5.3	1.5	4.6	.9	0.0	16.6	10.3	9.6	8.5	41.1	1.6

TABLE A–33A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION M

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68	4.92
75.	0.00	0.00	0.00	0.00	0.00	.04	0.00	.20	.39	.62
150.	0.00	0.00	0.00	0.00	.04	0.00	.51	.70	3.20	4.45
250.	0.00	.08	.16	.08	.20	.66	1.29	1.44	4.49	8.39
450.	0.00	.74	1.17	1.72	2.93	4.33	8.82	9.68	11.83	41.22
800.	0.00	1.01	1.52	3.01	3.24	3.24	6.09	7.88	4.53	30.52
1250.	0.00	.62	.74	.51	.78	.70	.51	.86	.51	5.23
1750.	0.00	.12	.16	.20	.12	.04	.16	.12	.84	.94
2250.	0.00	.04	.04	.08	.04	.08	0.00	0.00	0.00	.27
3000.	2.58	.23	.27	.12	.12	.84	0.00	.08	0.00	3.43
ALL LOW CLOUDS (PER CENT)	2.8	2.8	4.1	5.7	7.5	9.1	17.4	21.0	29.7	

TABLE A–33B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.92
75.	0.00	0.00	0.00	0.00	0.00	.04	.43	.12	.04	0.00	
150.	.04	0.00	0.00	0.00	0.00	0.00	3.04	1.21	.84	.12	
250.	.12	0.00	.04	0.00	0.00	.55	4.64	1.56	.31	1.17	
450.	.16	.08	.66	.82	.08	6.32	8.90	3.94	4.84	15.42	
800.	0.00	.27	1.72	.16	.23	9.52	.98	.74	6.25	10.66	
1250.	.39	.35	.51	.16	0.00	2.65	0.00	.12	.51	.55	
1750.	.35	.04	0.00	0.00	0.00	.47	0.00	0.00	.08	0.00	
2250.	.20	0.00	0.30	0.00	0.00	.08	0.00	0.00	0.00	0.00	
3000.	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	4.7	.7	2.9	1.1	.3	19.6	18.0	7.7	12.1	27.9	4.9

TABLE A–34A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION N

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	.03	0.00	.27	.30
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.06	.06
150.	0.00	0.00	0.00	0.00	0.00	0.00	.03	.03	.15	.21
250.	0.00	0.00	.09	.12	.09	.12	.30	.15	1.05	1.91
450.	0.00	.60	1.82	1.46	1.70	1.46	3.38	2.24	6.55	19.22
800.	0.00	5.56	10.10	7.02	5.11	6.40	10.85	11.39	15.51	71.94
1250.	0.00	.33	.42	.21	.03	.24	.33	.69	1.11	3.35
1750.	0.00	0.00	0.00	0.00	.03	0.00	.06	.06	.03	.18
2250.	0.00	.03	0.00	.03	0.00	.06	0.00	0.00	0.00	.12
3000.	1.94	.18	.21	.06	.09	.09	.09	.06	0.00	2.72
ALL LOW CLOUDS (PER CENT)	1.9	6.7	12.6	8.9	7.1	8.4	15.1	14.6	24.7	

TABLE A–34B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.30
75.	0.00	0.00	0.00	0.00	0.00	0.00	.03	.03	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.06	.06	.06	.03	
250.	0.00	.03	.18	.03	.12	0.00	.39	.93	.18	.06	
450.	.27	1.32	3.53	.36	.51	1.11	.75	2.84	3.16	.39	
800.	.15	6.01	12.91	.60	1.76	21.70	.51	.24	27.91	.15	
1250.	.24	.09	0.00	0.00	.12	2.69	0.00	0.00	.21	0.00	
1750.	.06	0.00	0.00	0.00	.06	.03	0.00	.03	0.00	0.00	
2250.	.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.6	7.4	16.6	1.0	2.6	25.5	1.7	4.1	36.5	.6	.3

TABLE A–35A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION N

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.03	.03
75.	0.00	0.00	0.00	0.00	0.00	.06	0.00	0.00	0.00	.06
150.	0.00	.03	0.00	0.00	0.00	0.00	0.00	.03	.15	.21
250.	0.00	.03	.03	.15	.15	.12	.21	0.00	.29	.97
450.	0.00	.82	1.65	1.62	.94	1.03	2.39	3.06	4.45	15.97
800.	0.00	6.89	11.70	6.1[illegible]	4.01	5.01	9.46	13.85	17.59	74.69
1250.	0.00	.44	.41	.2[illegible]	.06	.29	.38	1.47	1.47	4.80
1750.	0.00	.03	0.00	0.00	0.00	.03	.03	.06	.06	.21
2250.	0.00	.03	.03	0.00	0.00	0.00	0.00	.06	.03	.21
3000.	2.12	.18	.15	.03	0.00	0.00	.12	.09	.18	2.86
ALL LOW CLOUDS (PER CENT)	2.1	8.5	14.0	8.2	5.2	6.5	12.6	18.6	24.2	

TABLE A-35B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.03
75.	0.00	0.00	.03	0.00	0.00	0.00	.03	0.00	0.00	0.00	
150.	.03	0.00	0.00	0.00	0.00	0.00	.09	.09	0.00	0.00	
250.	.06	0.00	0.00	0.00	0.00	0.00	.06	.85	0.00	0.00	
450.	.24	1.12	2.18	.59	.24	1.18	.15	2.47	7.66	.15	
800.	.15	7.90	10.81	.77	2.06	18.12	.33	.24	34.56	.06	
1250.	.03	0.00	0.00	0.00	.06	4.68	0.00	0.00	.03	0.00	
1750.	.06	0.00	0.00	0.00	0.00	.15	0.00	0.00	0.00	0.00	
2250.	.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.6	9.0	13.0	1.4	2.4	24.1	.4	3.7	42.3	.2	.0

TABLE A–36A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION N

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.03	.03
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	0.00	0.00	0.00	0.00	0.00	.03	0.00	.06	.09
250.	0.00	0.06	0.00	0.00	0.00	.03	.09	.09	.32	.53
450.	0.00	1.24	1.27	.80	.94	.80	2.12	2.77	2.86	12.79
800.	6.00	8.23	12.88	8.25	4.83	6.16	10.91	14.18	18.10	83.55
1250.	0.00	.18	.24	.09	.09	.18	.09	.47	.65	1.98
1750.	0.00	.03	0.00	0.00	0.00	0.00	.03	0.00	.12	.18
2250.	0.00	0.00	0.00	0.00	.03	0.00	0.00	0.00	0.00	.03
3000.	.53	.09	.12	0.00	.03	.06	0.00	0.00	0.00	.83
ALL LOW CLOUDS (PER CENT)	.5	9.8	14.5	9.1	5.9	7.2	13.3	17.5	22.1	

TABLE A–36B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.03
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.03	0.00	.06	0.00	0.00	
250.	0.00	0.00	.12	.03	0.00	.03	.18	.15	.03	0.00	
450.	0.00	.80	2.45	.59	.41	.65	.12	.62	6.99	.18	
800.	.03	9.96	15.33	1.33	2.74	11.85	.27	.12	41.83	.12	
1250.	0.00	.03	0.00	0.00	.03	1.80	.03	0.00	.09	0.00	
1750.	.03	0.00	0.00	0.00	0.00	.15	0.00	0.00	0.00	0.00	
2250.	0.00	0.03	.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	.9	10.8	17.9	1.9	3.2	14.5	.6	.9	48.9	.3	.0

TABLE A–37A WINTER

LOCATION P

FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.01	5.01
75.	0.00	.04	0.00	.04	.04	0.00	0.00	0.00	.44	.56
150.	0.00	0.00	.04	.20	.28	.36	.60	.40	5.09	7.96
250.	0.00	.04	.16	.24	.28	.68	1.04	.92	6.89	10.16
450.	0.00	1.68	3.25	4.21	4.61	7.54	7.66	8.90	17.39	55.23
800.	0.00	1.28	2.44	2.65	1.36	1.72	1.92	2.20	3.49	17.07
1250.	0.00	.08	.04	.20	0.00	0.00	0.00	.12	.24	.68
1750.	0.00	.04	0.00	0.00	0.00	0.00	0.00	.04	.04	.12
2250.	0.00	.08	0.00	0.00	0.00	0.00	0.00	.04	.24	.36
3000.	1.44	.32	.08	.12	0.00	.84	.12	0.00	.68	2.81
ALL LOW CLOUDS (PER CENT)	1.4	3.6	6.0	7.7	6.6	10.3	11.3	12.6	40.5	

TABLE A–37B WINTER

LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.01
75.	0.00	0.00	0.00	0.00	0.00	0.00	.48	.08	0.00	0.00	
150.	.24	0.00	.08	0.00	0.00	.20	4.69	2.77	0.00	0.00	
250.	.32	0.00	.24	.88	.12	1.12	3.37	4.49	.48	.04	
450.	1.04	.88	8.50	3.13	8.38	14.91	4.01	3.89	7.98	2.53	
800.	.04	.76	2.32	.56	2.85	8.62	.28	.08	.52	1.04	
1250.	.08	0.00	0.00	0.00	0.00	.60	0.00	0.00	0.00	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	.12	0.00	0.00	0.00	0.00	
2250.	.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	4.9	1.6	11.1	3.8	11.3	25.6	12.8	11.3	8.9	3.6	5.0

TABLE A–38A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION P

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	6.00
75.	0.00	0.00	0.00	.03	.03	0.00	.07	0.00	.28	.42
150.	0.00	.03	.07	.07	.28	.21	.31	.28	5.52	6.78
250.	0.00	.03	.28	.28	.14	.77	.73	.77	6.15	9.15
450.	0.00	2.20	4.40	4.65	3.46	5.41	6.67	6.85	16.80	50.44
800.	0.00	1.99	1.89	2.24	1.08	1.89	2.72	2.79	5.69	20.29
1250.	0.00	.07	.35	.14	.14	.10	.28	.21	.31	1.61
1750.	0.00	0.00	.03	0.00	.07	0.00	.03	.03	.10	.28
2250.	0.00	0.00	.07	.03	.03	0.00	.03	.18	.14	.42
3800.	3.67	.35	.21	.10	.07	.07	0.00	0.00	.07	4.54
ALL LOW CLOUDS (PER CENT)	3.7	4.7	7.3	7.5	5.3	8.5	10.9	11.8	41.1	

TABLE A–38B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00
75.	0.00	0.00	0.00	0.00	0.00	0.00	.24	.17	0.00	0.00	
150.	.49	0.00	0.00	0.00	.07	.21	3.14	2.66	0.00	0.00	
250.	.28	.07	.03	.03	.07	.59	3.32	4.44	.31	0.00	
450.	.45	2.41	6.81	1.22	6.43	15.82	3.42	3.25	0.98	1.64	
800.	.10	2.55	1.75	.31	2.17	12.64	.03	.17	.42	.14	
1250.	0.00	.03	.03	0.00	.03	1.47	.03	0.00	0.00	0.00	
1750.	.03	0.00	0.00	0.00	.03	.21	0.00	0.00	0.00	0.00	
2250.	.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3800.	4.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	6.3	5.1	8.6	1.6	8.8	30.9	10.2	10.9	9.7	1.8	6.1

TABLE A–39A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION F

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.27	8.27
75.	0.00	0.00	0.00	.04	0.00	0.00	0.00	.04	.95	1.03
150.	0.00	.08	.04	.36	.32	.24	.64	.40	10.54	12.61
250.	0.00	.20	.12	.16	.36	.36	1.47	1.19	18.06	13.92
450.	0.00	1.03	1.99	2.19	1.95	2.67	4.85	6.96	23.07	44.71
800.	0.00	.68	1.19	.99	.69	.95	1.31	2.19	7.36	15.27
1250.	0.00	.40	.12	.12	0.00	.08	.08	.32	.40	1.91
1750.	0.00	.08	.08	.04	0.00	0.00	.04	.08	0.00	.32
2250.	0.00	.04	.08	0.00	0.00	.12	.04	0.00	.08	.36
3300.	.95	.24	.20	.04	.04	.04	.04	0.00	.04	1.59
ALL LOW CLOUDS (PER CENT)	1.0	2.7	3.8	3.9	3.3	4.5	8.5	11.2	51.2	

TABLE A–39B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.27
75.	.04	0.00	0.00	0.00	0.00	.04	.40	.16	0.00	0.00	
150.	.48	0.00	0.00	.08	.08	.40	7.20	4.86	.32	0.00	
250.	.48	.04	.12	.04	.12	1.19	7.36	3.78	.76	.04	
450.	.48	1.07	2.15	.16	3.66	18.97	3.62	1.59	12.69	.32	
800.	0.00	.04	.95	.04	.04	12.17	.12	.04	.24	.04	
1250.	0.00	.00	.04	.04	.08	1.67	0.00	0.00	0.00	0.00	
1750.	0.00	0.00	0.00	0.00	0.00	.32	0.00	0.00	0.00	0.00	
2250.	.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.04	0.00	
3800.	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.4	2.8	3.3	.4	4.8	34.8	19.1	9.6	14.0	.4	8.3

TABLE A–40A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION T

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	.16	0.00	0.00	0.00	0.00	0.00	0.00	.16
250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450.	0.00	1.25	2.03	.94	.16	.78	1.25	.94	.47	7.88
800.	.16	14.35	15.42	6.55	3.90	5.62	9.36	5.77	1.25	60.37
1250.	0.00	4.52	4.99	2.65	.94	2.34	2.18	2.96	.47	21.06
1750.	0.00	.62	.31	.31	.47	0.00	.62	.47	.16	2.96
2250.	0.00	0.00	0.00	0.00	0.00	0.00	.16	.16	.16	.47
3000.	7.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.18
ALL LOW CLOUDS (PER CENT)	7.3	20.7	20.9	10.5	5.5	8.7	13.6	10.3	2.5	

TABLE A–40B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.16	0.00	
250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
450.	0.00	.62	1.56	.62	.16	.47	.31	3.28	.31	.47	
800.	.16	19.66	15.60	2.50	6.86	4.84	.78	4.68	4.21	1.09	
1250.	0.00	8.11	1.40	0.00	4.21	6.08	0.00	.31	.94	0.00	
1750.	0.00	.16	0.00	0.00	.94	1.72	0.00	0.00	.16	0.00	
2250.	.16	0.00	0.00	0.00	0.00	.16	0.00	0.00	.16	0.00	
3000.	7.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	7.5	28.5	18.6	3.1	12.2	13.3	1.1	8.3	5.9	1.6	0.8

TABLE A–41A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION T

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	.19	0.00	0.00	0.00	0.00	.19	.10	.39	.87
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	0.00	0.00	0.00	0.00	.10	.10	0.00	.29	.48
250.	0.00	0.00	.10	0.00	0.00	.19	0.00	.19	.29	.77
450.	0.00	1.93	3.18	1.25	1.16	2.41	2.41	2.12	1.93	16.38
800.	0.00	19.85	14.74	5.11	1.73	2.70	6.26	3.56	.48	54.43
1250.	0.00	5.68	3.56	1.64	.39	.87	.87	.96	.48	14.45
1750.	0.00	.58	.39	0.00	.10	0.00	.48	.39	0.00	1.93
2250.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.19	.19	.39
3000.	10.12	.10	0.00	.10	0.00	0.00	0.00	0.00	0.00	10.31
ALL LOW CLOUDS (PER CENT)	10.1	28.3	22.0	8.1	3.4	6.3	10.3	7.5	4.0	

TABLE A–41B SPRING
OW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.87
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.39	.10	0.00	0.00	
250.	0.00	0.00	0.00	0.00	0.00	0.00	.58	.19	0.00	0.00	
450.	0.00	.67	2.31	1.54	.10	.57	2.12	0.29	.39	.29	
800.	.10	23.03	12.43	2.12	1.54	4.82	.48	5.49	4.05	.39	
1250.	.10	5.97	.39	0.00	1.64	5.49	0.00	.29	.58	0.00	
1750.	.10	.29	0.00	0.00	.39	1.06	0.00	0.00	.10	0.00	
2250.	.19	0.00	0.00	0.00	0.00	.19	0.00	0.00	0.00	0.00	
3000.	10.21	0.00	0.00	0.00	0.00	.10	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	10.7	30.0	15.1	3.7	3.7	12.3	3.6	14.4	5.1	.7	.9

TABLE A–42A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION T

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	2.19	3.20	3.13	1.32	.65	.84	.45	.23	.71	12.78
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	.03	.03	0.00	0.00	0.00	0.00	0.00	.06	.13
250.	0.00	.13	.13	.06	.03	.19	.06	.16	.13	.87
450.	0.00	7.68	7.84	2.61	2.49	3.10	4.10	2.65	1.94	32.41
800.	0.00	22.01	14.01	3.62	1.65	1.48	1.87	.87	.29	45.80
1250.	0.00	.52	.19	.10	0.00	.06	.10	0.00	.03	1.00
1750.	0.00	.03	0.00	0.00	0.00	.03	.03	.03	0.00	.13
2250.	0.00	.03	0.00	0.00	0.00	0.00	0.00	.03	0.00	.06
3000.	4.55	.45	.29	.10	.06	.16	.39	.55	.26	6.81
ALL LOW CLOUDS (PER CENT)	6.7	34.1	25.6	7.8	4.9	5.9	7.8	4.5	3.4	

TABLE A–42B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.78
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	0.00	.13	0.00	0.00	0.00	
250.	0.00	0.00	.10	.10	0.00	0.00	.42	.19	.06	0.00	
450.	.03	2.68	11.56	5.07	.23	.19	2.87	3.91	.65	5.23	
800.	0.00	10.17	21.95	7.68	.58	.87	.16	.58	.39	3.42	
1250.	0.00	.19	.06	.06	.10	.45	0.00	.03	.03	.06	
1750.	0.00	0.00	0.00	0.00	0.00	.13	0.00	0.00	0.00	0.00	
2250.	0.00	0.00	0.00	0.00	.03	.03	0.00	0.00	0.00	0.00	
3000.	6.78	0.00	0.00	0.00	.03	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	6.8	13.0	33.7	12.9	1.0	1.7	3.6	4.7	1.1	8.7	12.8

TABLE A–43A WINTER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION V

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.08	.08
150.	0.00	.04	0.00	.04	.08	.04	0.00	0.00	.25	.46
250.	0.00	.04	.13	.46	.50	.25	.92	.29	2.21	4.79
450.	0.00	1.25	3.21	4.58	3.21	3.67	6.67	3.08	8.79	34.46
800.	0.00	4.42	11.63	7.92	4.25	5.63	8.33	5.58	7.38	55.25
1250.	0.00	.21	.46	.21	.13	.13	.29	.25	.21	1.87
1750.	0.00	.13	.04	.04	0.00	.08	0.00	.13	.08	.50
2250.	0.00	0.00	.04	0.00	0.00	0.00	.04	.04	.13	.25
3000.	1.17	.04	.33	.08	.04	.04	.17	.08	.38	2.33
ALL LOW CLOUDS (PER CENT)	1.2	6.1	15.8	13.3	8.2	10.0	16.4	9.4	19.5	

TABLE A–43B WINTER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.08	0.00	0.00	
150.	.04	0.00	.04	.04	.04	0.00	.04	.25	0.00	0.00	
250.	.08	0.00	.25	0.00	.25	.04	.38	3.33	.21	.25	
450.	.08	3.63	18.79	2.79	.75	1.29	.63	6.75	0.25	.50	
800.	.42	0.29	17.25	2.21	2.04	0.33	.04	1.21	14.92	.54	
1250.	.04	.25	.13	0.00	.13	1.29	0.00	0.00	.04	0.38	
1750.	.17	0.00	0.00	0.00	0.00	.29	0.00	0.00	.04	0.00	
2250.	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	3.4	11.2	28.5	5.0	3.2	11.3	1.1	11.6	23.5	1.3	0.0

TABLE A–44A SPRING
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION V

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.87	1.91
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.	0.00	.07	.04	.07	0.00	.07	.15	.18	1.47	2.06
250.	0.00	.11	.26	.51	.26	.59	1.18	.37	4.52	7.79
450.	0.00	1.03	2.76	2.87	1.58	2.46	4.56	2.90	18.73	28.88
800.	0.00	5.56	8.56	5.29	3.49	4.52	6.80	5.55	9.40	49.19
1250.	0.00	.33	.77	.15	.37	.22	.84	.59	1.87	4.34
1750.	0.00	.15	.11	0.00	.04	0.00	0.00	0.00	.11	.40
2250.	0.00	0.00	0.00	.04	0.00	0.00	.18	.07	.15	.44
3000.	2.72	.29	.33	.29	.15	.11	.51	.15	.44	5.00
ALL LOW CLOUDS (PER CENT)	2.8	7.6	12.8	9.2	5.9	8.8	14.2	9.8	29.8	

TABLE A–44B SPRING
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.91
75.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.	0.00	0.00	0.00	0.00	0.00	.04	.81	1.21	0.00	0.00	
250.	0.00	.07	.18	.04	.04	.07	2.76	4.52	.11	0.00	
450.	.48	2.20	6.10	.22	.62	2.02	2.06	7.57	7.49	.11	
800.	.07	0.01	9.66	.48	3.56	14.11	.11	.51	12.64	.04	
1250.	.15	0.00	.04	0.00	.26	3.60	.04	0.00	.26	0.00	
1750.	.11	0.00	0.00	0.00	.04	.22	0.00	0.00	.04	0.00	
2250.	.33	0.00	.04	0.00	0.00	.04	0.00	0.00	.04	0.00	
3000.	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	6.1	10.3	16.0	.7	4.5	20.1	6.8	13.8	28.6	.1	1.9

TABLE A–45A SUMMER
FREQUENCIES FOR LOWER CLOUD BASE HEIGHT
TRANSPOSED OF THE LOWER CLOUD COVER MATRIX L (C, H)
(CLOUD COVER IN EIGHTS)

LOCATION V

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	BASE HEIGHT DISTRIBUTION
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55	1.55
75.	0.00	0.00	0.00	.04	0.00	0.00	0.00	0.00	.21	.25
150.	0.00	.04	.04	.11	.04	.11	.11	.11	.63	1.16
250.	0.00	.11	.21	.11	.14	.25	.42	.18	2.04	3.45
450.	0.00	3.31	5.11	3.45	2.29	2.01	3.10	1.90	8.14	29.31
800.	0.00	12.93	14.12	5.39	3.95	3.78	5.53	3.38	5.53	54.53
1250.	0.00	.49	.35	.32	.18	.21	.25	.25	.04	2.08
1750.	0.00	.14	.04	.04	0.00	0.00	0.00	.28	.14	.63
2250.	0.00	.11	.07	0.00	0.00	.04	.04	.11	.18	.53
3000.	3.98	.46	.25	.18	.11	.11	.35	.21	.88	6.52
ALL LOW CLOUDS (PER CENT)	4.8	17.0	20.2	9.6	6.7	6.4	9.8	6.4	19.3	

TABLE A–45B SUMMER
LOW CLOUD TYPE STATISTICS (%)
(SEE LOW CLOUD TYPE CODE TABLE 2–A, B)

BASE HEIGHT METERS	0	1	2	3	4	5	6	7	8	9	FOG
25.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55
75.	0.00	0.00	0.00	0.00	0.00	0.00	.14	.07	.04	0.00	
150.	0.00	.04	0.00	0.00	0.00	0.00	.70	.39	.04	0.00	
250.	.04	0.00	.14	.04	0.00	.07	1.83	1.27	.07	0.00	
450.	.21	3.17	6.34	1.44	.49	1.87	3.21	3.73	8.10	.74	
800.	.18	11.10	17.47	1.16	1.34	10.53	.25	.14	11.91	.46	
1250.	.14	0.00	0.00	0.00	.18	1.73	0.00	0.00	.04	0.00	
1750.	.39	.04	0.00	0.00	0.00	.21	0.00	0.00	0.00	0.00	
2250.	.49	0.00	0.00	0.00	0.00	0.00	.34	0.00	0.00	0.00	
3000.	6.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ALL LOW CLOUDS (PER CENT)	8.6	14.3	24.0	2.6	2.0	14.4	6.2	5.6	20.2	1.2	1.5

APPENDIX B

PINT (A,H) CONTRIBUTIONS TO PCFLOS (A_i, H_j) DUE TO LOWER CLOUDS WITH BASE AT H.

PINT (A,H) — LOCATION 2

TABLE B1 SPRING

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9988	.9989	.9990	.9990	.9991	.9991	.9991	.9991	.9991
75.0000	.9974	.9978	.9982	.9983	.9984	.9985	.9985	.9986	.9986
150.0000	.9839	.9854	.9865	.9871	.9876	.9877	.9878	.9878	.9879
250.0000	.9420	.9491	.9540	.9570	.9589	.9599	.9604	.9609	.9611
450.0000	.8809	.8979	.9099	.9171	.9215	.9241	.9254	.9265	.9271
800.0000	.9418	.9517	.9588	.9628	.9653	.9668	.9674	.9679	.9684
1250.0000	.9813	.9843	.9865	.9878	.9885	.9890	.9892	.9894	.9895
1750.0000	.9916	.9931	.9943	.9949	.9953	.9956	.9957	.9958	.9959
2250.0000	.9973	.9978	.9981	.9984	.9985	.9986	.9986	.9987	.9987
3000.0000	.9878	.9735	.9750	.9796	.9801	.9805	.9806	.9808	.9809

TABLE B2 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9995	.9996	.9997	.9998	.9998	.9998	.9998	.9998	.9998
75.0000	.9963	.9967	.9970	.9972	.9972	.9973	.9974	.9974	.9974
150.0000	.9934	.9949	.9961	.9967	.9970	.9972	.9973	.9974	.9975
250.0000	.9584	.9647	.9692	.9717	.9733	.9742	.9747	.9750	.9752
450.0000	.9269	.9387	.9478	.9527	.9555	.9575	.9584	.9594	.9596
800.0000	.9561	.9639	.9695	.9728	.9748	.9754	.9763	.9769	.9772
1250.0000	.9896	.9912	.9925	.9931	.9935	.9938	.9940	.9941	.9941
1750.0000	.9949	.9961	.9969	.9972	.9976	.9977	.9978	.9978	.9979
2250.0000	.9963	.9968	.9971	.9973	.9974	.9975	.9975	.9976	.9976
3000.0000	.9713	.9785	.9799	.9859	.9864	.9867	.9869	.9870	.9923

TABLE B3 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9997	.9998	.9999	.9999	.9999	.9999	.9999	.9999	.9999
75.0000	.9972	.9974	.9976	.9977	.9978	.9979	.9979	.9979	.9979
150.0000	.9792	.9816	.9832	.9842	.9848	.9851	.9853	.9854	.9855
250.0000	.9412	.9498	.9557	.9594	.9618	.9629	.9636	.9643	.9645
450.0000	.8335	.8560	.8719	.8817	.8876	.8910	.8929	.8944	.8951
800.0000	.9116	.9258	.9361	.9421	.9456	.9480	.9492	.9502	.9506
1250.0000	.9787	.9819	.9842	.9855	.9863	.9868	.9871	.9873	.9873
1750.0000	.9925	.9939	.9948	.9954	.9956	.9959	.9960	.9961	.9961
2250.0000	.9933	.9942	.9947	.9952	.9954	.9955	.9956	.9956	.9956
3000.0000	.9780	.9827	.9847	.9878	.9884	.9888	.9889	.9891	.9912

PINT (A,H) **TABLE B4 SPRING** LOCATION 9

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9895	.9898	.9899	.9900	.9902	.9902	.9902	.9902	.9902
75.0000	.9992	.9992	.9993	.9993	.9993	.9993	.9993	.9993	.9993
150.0000	.9756	.9771	.9781	.9789	.9794	.9796	.9797	.9798	.9799
250.0000	.9047	.9108	.9148	.9177	.9197	.9204	.9209	.9213	.9214
450.0000	.8035	.8218	.8346	.8428	.8481	.8506	.8518	.8531	.8536
800.0000	.9045	.9168	.9257	.9312	.9345	.9364	.9373	.9382	.9386
1250.0000	.9840	.9862	.9879	.9889	.9895	.9898	.9900	.9902	.9902
1750.0000	.9871	.9888	.9900	.9908	.9913	.9916	.9917	.9918	.9919
2250.0000	.9889	.9905	.9917	.9924	.9929	.9931	.9932	.9934	.9934
3000.0000	.9626	.9691	.9726	.9765	.9779	.9786	.9790	.9794	.9813

TABLE B5 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995
75.0000	.9997	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998
150.0000	.9959	.9962	.9964	.9965	.9966	.9966	.9967	.9967	.9967
250.0000	.9796	.9817	.9831	.9841	.9846	.9849	.9851	.9852	.9853
450.0000	.8751	.8956	.9118	.9243	.9254	.9289	.9306	.9322	.9327
800.0000	.8846	.9027	.9165	.9243	.9290	.9320	.9336	.9350	.9354
1250.0000	.9843	.9865	.9880	.9890	.9895	.9898	.9900	.9901	.9902
1750.0000	.9888	.9905	.9917	.9924	.9928	.9931	.9932	.9933	.9934
2250.0000	.9845	.9865	.9879	.9889	.9895	.9898	.9900	.9902	.9902
3000.0000	.9334	.9449	.9524	.9582	.9611	.9627	.9634	.9642	.9659

TABLE B6 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9941	.9942	.9942	.9943	.9944	9944	.9944	.9944	.9944
75.0000	.9974	.9975	.9976	.9976	.9977	.9977	.9977	.9977	.9977
150.0000	.9500	.9517	.9527	.9535	.9542	.9543	.9544	.9544	9545
250.0000	.8554	.8607	.8638	.8665	.8685	.8689	.8691	.8693	.8694
450.0000	.6661	.6881	.7025	.7131	.7201	.7227	.7242	.7255	.7260
800.0000	.8626	.8773	.8874	.8942	.8984	.9004	.9014	.9024	.9029
1250.0000	.9840	.9858	.9871	.9879	.9884	.9887	.9888	.9889	.9890
1750.0000	.9954	.9959	.9962	.9965	.9966	.9967	.9967	.9968	.9968
2250.0000	.9924	.9932	.9938	.9942	.9945	.9946	.9947	.9948	.9948
3000.0000	.9938	.9949	.9952	.9960	.9962	.9962	.9963	.9963	.9969

PINT (A,H) **TABLE B7 SPRING** **LOCATION A**

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9869	.9872	.9873	.9875	.9876	.9876	.9876	.9876	.9876
75.0000	.9833	.9838	.9842	.9844	.9847	.9847	.9847	.9847	.9848
150.0000	.9423	.9452	.9470	.9484	.9495	.9498	.9500	.9502	.9503
250.0000	.9042	.9092	.9123	.9148	.9156	.9171	.9175	.9177	.9178
450.0000	.6706	.6994	.7178	.7321	.7406	.7444	.7470	.7487	.7495
800.0000	.8569	.8728	.8833	.8908	.8950	.8972	.8986	.8995	.9001
1250.0000	.9545	.9594	.9627	.9650	.9663	.9670	.9674	.9677	.9679
1750.0000	.9943	.9950	.9954	.9957	.9959	.9960	.9961	.9961	.9961
2250.0000	.9979	.9981	.9982	.9983	.9983	.9984	.9984	.9984	.9984
3000.0000	.9919	.9932	.9939	.9946	.9949	.9950	.9952	.9952	.9955

TABLE B8 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9919	.9921	.9922	.9923	.9924	.9924	.9924	.9924	.9924
75.0000	.9869	.9873	.9875	.9877	.9878	.9878	.9878	.9879	.9879
150.0000	.9121	.9154	.9174	.9191	.9204	.9206	.9208	.9209	.9210
250.0000	.9011	.9057	.9084	.9109	.9125	.9129	.9133	.9135	.9135
450.0000	.6807	.7049	.7200	.7322	.7390	.7421	.7444	.7456	.7461
800.0000	.8282	.8457	.8571	.8654	.8699	.8724	.8740	.8748	.8753
1250.0000	.9562	.9606	.9636	.9656	.9668	.9675	.9679	.9681	.9682
1750.0000	.9970	.9974	.9978	.9980	.9981	.9982	.9983	.9983	.9983
2250.0000	.9981	.9984	.9986	.9987	.9988	.9988	.9989	.9989	.9989
3000.0000	.9950	.9957	.9962	.9966	.9968	.9969	.9969	.9970	.9971

TABLE B9 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9971	.9972	.9972	.9973	.9973	.9973	.9973	.9973	.9973
75.0000	.9982	.9983	.9984	.9984	.9985	.9985	.9985	.9985	.9985
150.0000	.9711	.9723	.9730	.9735	.9740	.9741	.9741	.9742	.9742
250.0000	.9007	.9055	.9084	.9109	.9125	.9130	.9133	.9135	.9136
450.0000	.6444	.6767	.6973	.7132	.7222	.7266	.7294	.7312	.7322
800.0000	.8392	.8561	.8673	.8753	.8799	.8823	.8839	.8848	.8853
1250.0000	.9318	.9385	.9429	.9462	.9480	.9489	.9496	.9500	.9501
1750.0000	.9950	.9955	.9958	.9960	.9962	.9962	.9963	.9963	.9963
2250.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3000.0000	.9973	.9977	.9979	.9981	.9982	.9982	.9983	.9983	.9984

PINT (A,H) **TABLE B10 SPRING** **LOCATION B**

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9471	.9482	.9487	.9493	.9498	.9498	.9498	.9498	.9498
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9755	.9765	.9771	.9776	.9780	.9781	.9781	.9782	.9782
250.0000	.8899	.8965	.9006	.9040	.9064	.9071	.9077	.9081	.9082
450.0000	.6597	.6837	.6988	.7108	.7184	.7212	.7232	.7245	.7250
800.0000	.7855	.8034	.8149	.8238	.8292	.8315	.8331	.8341	.8345
1250.0000	.9845	.9902	.9907	.9910	.9913	.9913	.9914	.9914	.9914
1750.0000	.9973	.9974	.9976	.9977	.9977	.9977	.9978	.9978	.9978
2250.0000	.9944	.9948	.9951	.9953	.9954	.9955	.9955	.9955	.9955
3000.0000	.9882	.9897	.9907	.9915	.9918	.9920	.9921	.9922	.9924

TABLE B11 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.8843	.8867	.8879	.8891	.8903	.8903	.8903	.8903	.8904
75.0000	.9972	.9973	.9973	.9973	.9974	.9974	.9974	.9974	.9974
150.0000	.9442	.9461	.9472	.9482	.9491	.9492	.9493	.9493	.9494
250.0000	.8774	.8836	.8874	.8905	.8928	.8934	.8939	.8942	.8943
450.0000	.7287	.7464	.7577	.7664	.7719	.7741	.7755	.7765	.7768
800.0000	.8926	.9016	.9077	.9119	.9144	.9157	.9166	.9171	.9173
1250.0000	.9902	.9915	.9924	.9929	.9932	.9934	.9935	.9936	.9936
1750.0000	.9951	.9954	.9956	.9958	.9959	.9959	.9959	.9960	.9960
2250.0000	.9932	.9941	.9946	.9950	.9952	.9954	.9954	.9955	.9955
3000.0000	.9639	.9690	.9724	.9749	.9767	.9769	.9773	.9775	.9782

TABLE B12 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9532	.9542	.9547	.9551	.9556	.9556	.9556	.9556	.9556
75.0000	.9993	.9993	.9993	.9993	.9993	.9993	.9993	.9993	.9993
150.0000	.9855	.9860	.9863	.9865	.9867	.9868	.9868	.9868	.9868
250.0000	.9077	.9129	.9161	.9187	.9207	.9212	.9216	.9219	.9220
450.0000	.5818	.6123	.6314	.6468	.6563	.6600	.6626	.6643	.6650
800.0000	.7946	.8117	.8227	.8311	.8362	.8384	.8399	.8409	.8413
1250.0000	.9925	.9932	.9936	.9939	.9941	.9942	.9943	.9943	.9943
1750.0000	.9996	.9997	.9997	.9997	.9998	.9998	.9998	.9998	.9998
2250.0000	.9978	.9979	.9979	.9980	.9980	.9980	.9980	.9980	.9980
3000.0000	.9971	.9975	.9977	.9979	.9980	.9981	.9981	.9981	.9982

PINT (A,H) — LOCATION C

TABLE B13 SPRING

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9116	.9135	.9144	.9153	.9162	.9162	.9162	.9162	.9162
75.0000	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9992
150.0000	.9752	.9761	.9767	.9772	.9776	.9778	.9777	.9777	.9777
250.0000	.9228	.9274	.9302	.9325	.9342	.9347	.9350	.9353	.9354
450.0000	.7584	.7802	.7944	.8050	.8117	.8145	.8163	.8178	.8183
800.0000	.8009	.8219	.8344	.8401	.8422	.8452	.8469	.8483	.8490
1250.0000	.9779	.9799	.9813	.9822	.9827	.9830	.9832	.9833	.9833
1750.0000	.9930	.9935	.9939	.9941	.9942	.9943	.9943	.9944	.9944
2250.0000	.9882	.9892	.9899	.9903	.9905	.9907	.9908	.9909	.9909
3000.0000	.9721	.9750	.9769	.9780	.9787	.9791	.9793	.9794	.9795

TABLE B14 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.8316	.8451	.8529	.8580	.8603	.8603	.8603	.8603	.8603
75.0000	.9991	.9992	.9992	.9993	.9993	.9993	.9993	.9993	.9993
150.0000	.9608	.9622	.9630	.9637	.9642	.9644	.9644	.9644	.9645
250.0000	.8958	.9009	.9040	.9060	.9075	.9081	.9084	.9087	.9088
450.0000	.7250	.7430	.7547	.7630	.7694	.7715	.7729	.7734	.7743
800.0000	.8465	.8591	.8670	.8725	.8773	.8790	.8800	.8808	.8811
1250.0000	.9927	.9935	.9940	.9943	.9945	.9946	.9947	.9947	.9948
1750.0000	.9983	.9985	.9986	.9987	.9988	.9988	.9989	.9989	.9989
2250.0000	.9945	.9950	.9953	.9955	.9956	.9956	.9957	.9957	.9957
3000.0000	.9760	.9789	.9809	.9823	.9830	.9834	.9836	.9838	.9841

TABLE B15 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9597	.9606	.9610	.9614	.9616	.9618	.9618	.9618	.9618
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9771	.9779	.9784	.9789	.9792	.9793	.9793	.9793	.9793
250.0000	.9297	.9340	.9367	.9387	.9402	.9409	.9413	.9416	.9418
450.0000	.6830	.7122	.7313	.7454	.7541	.7580	.7603	.7623	.7631
800.0000	.7940	.8203	.8365	.8459	.8520	.8552	.8567	.8584	.8591
1250.0000	.9845	.9862	.9873	.9881	.9886	.9888	.9889	.9890	.9891
1750.0000	.9972	.9975	.9977	.9979	.9979	.9980	.9980	.9980	.9980
2250.0000	.9942	.9964	.9966	.9967	.9968	.9968	.9969	.9969	.9969
3000.0000	.9837	.9850	.9859	.9865	.9870	.9871	.9872	.9873	.9873

PINT (A,H) — TABLE B16 SPRING — LOCATION D

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9889	.9891	.9892	.9893	.9895	.9895	.9895	.9895	.9895
75.0000	.9993	.9994	.9994	.9994	.9994	.9994	.9994	.9994	.9994
150.0000	.9929	.9932	.9934	.9936	.9937	.9937	.9938	.9938	.9938
250.0000	.9546	.9586	.9613	.9633	.9646	.9652	.9655	.9656	.9656
450.0000	.7218	.7490	.7670	.7802	.7883	.7920	.7943	.7961	.7969
800.0000	.7619	.7896	.8086	.8212	.8290	.8324	.8352	.8370	.8379
1250.0000	.9813	.9833	.9846	.9856	.9861	.9864	.9865	.9866	.9867
1750.0000	.9965	.9968	.9971	.9973	.9974	.9974	.9975	.9975	.9975
2250.0000	.9944	.9949	.9953	.9956	.9958	.9959	.9960	.9960	.9960
3000.0000	.9745	.9774	.9792	.9807	.9816	.9818	.9820	.9822	.9826

TABLE B17 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9498	.9508	.9514	.9519	.9524	.9525	.9525	.9525	.9525
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9826	.9832	.9835	.9838	.9840	.9840	.9840	.9840	.9840
250.0000	.9324	.9359	.9380	.9397	.9409	.9413	.9415	.9417	.9418
450.0000	.7441	.7663	.7811	.7915	.7980	.8010	.8027	.8041	.8048
800.0000	.5198	.8435	.8605	.8709	.8773	.8804	.8820	.8844	.8852
1250.0000	.9909	.9921	.9929	.9935	.9939	.9940	.9941	.9942	.9943
1750.0000	.9982	.9985	.9987	.9988	.9988	.9989	.9989	.9989	.9989
2250.0000	.9933	.9938	.9941	.9943	.9945	.9945	.9946	.9946	.9946
3000.0000	.9755	.9791	.9814	.9833	.9841	.9846	.9848	.9850	.9850

TABLE B18 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960	.9960
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9969	.9971	.9973	.9974	.9975	.9975	.9976	.9976	.9976
250.0000	.9559	.9597	.9622	.9642	.9655	.9660	.9664	.9666	.9667
450.0000	.6835	.7154	.7365	.7520	.7620	.7667	.7688	.7711	.7720
800.0000	.7269	.7580	.7790	.7938	.8026	.8070	.8095	.8117	.8127
1250.0000	.9893	.9904	.9911	.9915	.9918	.9920	.9920	.9921	.9921
1750.0000	.9986	.9988	.9989	.9990	.9990	.9990	.9990	.9990	.9991
2250.0000	.9970	.9972	.9973	.9973	.9974	.9974	.9974	.9975	.9975
3000.0000	.9928	.9937	.9942	.9947	.9949	.9950	.9950	.9951	.9952

PINT (A,H) — LOCATION H

TABLE B19 SPRING

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9957	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9980	.9980	.9981	.9981	.9981	.9981	.9981	.9981	.9981
250.0000	.9801	.9815	.9824	.9831	.9835	.9837	.9838	.9839	.9839
450.0000	.7985	.8175	.8302	.8392	.8449	.8474	.8489	.8502	.8507
800.0000	.7047	.7375	.7605	.7755	.7852	.7898	.7924	.7946	.7956
1250.0000	.9704	.9738	.9761	.9777	.9787	.9791	.9794	.9796	.9797
1750.0000	.9932	.9936	.9939	.9942	.9943	.9944	.9944	.9944	.9945
2250.0000	.9930	.9934	.9937	.9939	.9940	.9941	.9941	.9941	.9941
3000.0000	.9878	.9899	.9908	.9921	.9924	.9926	.9927	.9928	.9930

TABLE B20 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9984	.9984	.9985	.9985	.9985	.9985	.9985	.9985	.9985
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995
250.0000	.9942	.9946	.9949	.9951	.9952	.9953	.9953	.9953	.9953
450.0000	.8626	.8833	.8983	.9072	.9126	.9158	.9174	.9190	.9196
800.0000	.8159	.8484	.8729	.8866	.8944	.8996	.9018	.9044	.9054
1250.0000	.9919	.9933	.9943	.9949	.9952	.9955	.9956	.9957	.9958
1750.0000	.9922	.9928	.9932	.9935	.9937	.9938	.9938	.9938	.9939
2250.0000	.9920	.9928	.9933	.9937	.9939	.9940	.9941	.9941	.9942
3000.0000	.9801	.9840	.9858	.9882	.9889	.9893	.9895	.9896	.9912

TABLE B 21 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9950	.9951	.9952	.9952	.9953	.9953	.9953	.9953	.9953
75.0000	.9998	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
150.0000	.9979	.9981	.9982	.9982	.9983	.9983	.9983	.9983	.9983
250.0000	.9741	.9762	.9775	.9786	.9793	.9795	.9798	.9799	.9799
450.0000	.7502	.7717	.7857	.7963	.8029	.8057	.8076	.8090	.8095
800.0000	.7069	.7407	.7639	.7795	.7891	.7940	.7970	.7992	.8003
1250.0000	.9847	.9869	.9884	.9893	.9899	.9902	.9904	.9905	.9906
1750.0000	.9976	.9978	.9980	.9981	.9982	.9982	.9982	.9982	.9982
2250.0000	.9932	.9939	.9944	.9947	.9949	.9950	.9951	.9951	.9952
3000.0000	.9863	.9884	.9895	.9907	.9911	.9913	.9914	.9915	.9922

PINT (A,H) — TABLE B 22 SPRING — LOCATION I

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9977	.9978	.9978	.9979	.9979	.9979	.9979	.9979	.9979
75.0000	.9985	.9986	.9986	.9986	.9987	.9987	.9987	.9987	.9987
150.0000	.9786	.9794	.9799	.9804	.9807	.9808	.9808	.9808	.9808
250.0000	.9142	.9187	.9214	.9237	.9252	.9257	.9260	.9262	.9263
450.0000	.6624	.6965	.7184	.7351	.7447	.7494	.7524	.7546	.7556
800.0000	.8293	.8509	.8655	.8752	.8806	.8834	.8856	.8868	.8875
1250.0000	.9486	.9539	.9574	.9599	.9612	.9620	.9625	.9628	.9629
1750.0000	.9936	.9944	.9946	.9952	.9954	.9955	.9955	.9956	.9956
2250.0000	.9985	.9986	.9987	.9988	.9988	.9988	.9989	.9989	.9989
3000.0000	.9962	.9966	.9968	.9971	.9972	.9972	.9972	.9972	.9973

TABLE B23 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9950	.9952	.9953	.9954	.9954	.9955	.9955	.9955	.9955
75.0000	.9915	.9917	.9919	.9920	.9921	.9921	.9921	.9921	.9921
150.0000	.9312	.9339	.9354	.9368	.9378	.9380	.9381	.9383	.9383
250.0000	.8815	.8883	.8924	.8959	.8981	.8989	.8995	.8998	.8999
450.0000	.6738	.7056	.7261	.7416	.7505	.7548	.7577	.7595	.7603
800.0000	.8427	.8614	.8740	.8826	.8874	.8901	.8918	.8928	.8934
1250.0000	.9786	.9809	.9824	.9834	.9839	.9842	.9844	.9845	.9846
1750.0000	.9978	.9982	.9986	.9988	.9989	.9989	.9990	.9990	.9990
2250.0000	.9991	.9992	.9992	.9993	.9993	.9993	.9993	.9993	.9993
3000.0000	.9983	.9987	.9989	.9991	.9992	.9992	.9992	.9993	.9993

TABLE B24 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9990	.9992	.9993	.9994	.9994	.9994	.9994	.9994	.9994
75.0000	.9954	.9956	.9957	.9958	.9959	.9959	.9959	.9959	.9959
150.0000	.9660	.9655	.9663	.9671	.9676	.9679	.9679	.9679	.9679
250.0000	.8995	.9064	.9107	.9142	.9163	.9172	.9178	.9182	.9184
450.0000	.6795	.7169	.7414	.7589	.7691	.7744	.7775	.7799	.7812
800.0000	.8636	.8802	.8911	.8986	.9028	.9052	.9065	.9075	.9081
1250.0000	.9364	.9408	.9452	.9481	.9498	.9508	.9513	.9517	.9519
1750.0000	.9965	.9969	.9971	.9973	.9974	.9974	.9974	.9974	.9975
2250.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3000.0000	.9954	.9960	.9963	.9966	.9968	.9968	.9969	.9969	.9970

PINT (A,H) — LOCATION J

TABLE B25 SPRING

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9914	.9917	.9917	.9919	.9920	.9920	.9920	.9920	.9920
75.0000	.9903	.9905	.9906	.9907	.9908	.9908	.9908	.9908	.9908
150.0000	.9582	.9600	.9610	.9619	.9626	.9627	.9629	.9629	.9629
250.0000	.9389	.9426	.9449	.9468	.9480	.9484	.9487	.9489	.9490
450.0000	.7815	.8061	.8222	.8338	.8406	.8441	.8461	.8476	.8485
800.0000	.8014	.8287	.8473	.8595	.8664	.8705	.8728	.8745	.8753
1250.0000	.9272	.9355	.9410	.9448	.9469	.9481	.9489	.9493	.9495
1750.0000	.9878	.9892	.9902	.9909	.9912	.9915	.9916	.9917	.9917
2250.0000	.9988	.9989	.9989	.9990	.9990	.9990	.9990	.9990	.9990
3000.0000	.9966	.9955	.9961	.9966	.9968	.9970	.9970	.9971	.9973

TABLE B26 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9760	.9765	.9767	.9770	.9772	.9773	.9773	.9773	.9773
75.0000	.9821	.9825	.9828	.9830	.9832	.9833	.9833	.9833	.9833
150.0000	.9350	.9370	.9381	.9391	.9399	.9400	.9400	.9401	.9401
250.0000	.9048	.9089	.9115	.9136	.9151	.9155	.9158	.9160	.9160
450.0000	.7355	.7589	.7738	.7853	.7918	.7949	.7964	.7983	.7988
800.0000	.8131	.8336	.8473	.8580	.8619	.8664	.8664	.8675	.8686
1250.0000	.9377	.9433	.9469	.9496	.9511	.9519	.9523	.9526	.9528
1750.0000	.9953	.9959	.9964	.9967	.9968	.9969	.9970	.9970	.9971
2250.0000	.9994	.9996	.9997	.9997	.9998	.9998	.9998	.9998	.9998
3000.0000	.9950	.9958	.9963	.9966	.9969	.9971	.9971	.9972	.9973

TABLE B27 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9956	.9955	.9956	.9957	.9958	.9958	.9958	.9958	.9958
75.0000	.9987	.9987	.9988	.9988	.9988	.9988	.9988	.9988	.9988
150.0000	.9773	.9785	.9793	.9799	.9803	.9805	.9806	.9807	.9807
250.0000	.9427	.9461	.9482	.9500	.9512	.9518	.9519	.9521	.9522
450.0000	.7277	.7567	.7755	.7893	.7974	.8015	.8039	.8059	.8067
800.0000	.7721	.7977	.8148	.8288	.8338	.8375	.8397	.8413	.8422
1250.0000	.9245	.9318	.9367	.9401	.9420	.9430	.9437	.9440	.9442
1750.0000	.9931	.9938	.9942	.9945	.9947	.9948	.9948	.9948	.9949
2250.0000	.9982	.9984	.9985	.9987	.9987	.9988	.9988	.9988	.9988
3000.0000	.9978	.9982	.9983	.9986	.9986	.9987	.9987	.9987	.9988

PINT (A,H) **TABLE B28 SPRING** **LOCATION K**

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9782	.9798	.9807	.9813	.9819	.9821	.9822	.9823	.9823
75.0000	.9944	.9945	.9946	.9946	.9947	.9947	.9947	.9947	.9947
150.0000	.9735	.9743	.9748	.9752	.9755	.9756	.9756	.9756	.9756
250.0000	.9456	.9480	.9494	.9506	.9514	.9518	.9518	.9519	.9519
450.0000	.7703	.7920	.8063	.8165	.8224	.8254	.8271	.8283	.8290
800.0000	.7839	.8120	.8311	.8437	.8508	.8550	.8573	.8590	.8598
1250.0000	.9560	.9604	.9633	.9654	.9665	.9671	.9675	.9677	.9678
1750.0000	.9855	.9877	.9892	.9901	.9906	.9910	.9911	.9912	.9913
2250.0000	.9955	.9961	.9966	.9969	.9970	.9971	.9972	.9973	.9973
3000.0000	.9920	.9934	.9942	.9950	.9953	.9954	.9955	.9956	.9960

TABLE B29 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9983	.9983	.9983	.9984	.9984	.9984	.9984	.9984	.9984
75.0000	.9951	.9953	.9954	.9955	.9956	.9956	.9956	.9956	.9956
150.0000	.9674	.9689	.9695	.9701	.9705	.9708	.9706	.9706	.9706
250.0000	.9426	.9451	.9465	.9478	.9487	.9489	.9491	.9492	.9492
450.0000	.7845	.8029	.8140	.8235	.8285	.8309	.8324	.8334	.8339
800.0000	.7489	.7793	.8001	.8130	.8213	.8259	.8288	.8303	.8312
1250.0000	.9543	.9597	.9634	.9658	.9671	.9679	.9684	.9687	.9689
1750.0000	.9850	.9870	.9884	.9893	.9898	.9901	.9903	.9904	.9905
2250.0000	.9963	.9967	.9969	.9971	.9972	.9973	.9973	.9973	.9973
3000.0000	.9892	.9907	.9916	.9924	.9928	.9930	.9931	.9931	.9934

TABLE B30 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9978	.9980	.9981	.9982	.9983	.9983	.9983	.9984	.9984
75.0000	.9978	.9979	.9980	.9980	.9980	.9980	.9980	.9980	.9980
150.0000	.9736	.9747	.9753	.9759	.9763	.9764	.9765	.9765	.9765
250.0000	.9398	.9435	.9457	.9475	.9487	.9491	.9494	.9495	.9496
450.0000	.7816	.8037	.8181	.8286	.8348	.8378	.8397	.8410	.8417
800.0000	.7444	.7727	.7900	.8029	.8093	.8132	.8155	.8169	.8178
1250.0000	.9201	.9279	.9327	.9360	.9379	.9389	.9395	.9399	.9401
1750.0000	.9827	.9860	.9859	.9868	.9873	.9876	.9878	.9879	.9880
2250.0000	.9949	.9961	.9962	.9962	.9963	.9963	.9963	.9963	.9963
3000.0000	.9895	.9911	.9920	.9927	.9931	.9932	.9933	.9934	.9937

PINT (A,H) TABLE B31 SPRING LOCATION M

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9852	.9855	.9857	.9858	.9860	.9860	.9860	.9860	.9860
75.0000	.9993	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9994
150.0000	.9863	.9869	.9872	.9876	.9878	.9878	.9879	.9879	.9879
250.0000	.9678	.9700	.9713	.9725	.9731	.9734	.9736	.9737	.9738
450.0000	.7982	.8182	.8309	.8410	.8471	.8498	.8517	.8531	.8535
800.0000	.6874	.7241	.7480	.7660	.7765	.7817	.7858	.7875	.7886
1250.0000	.9212	.9316	.9387	.9435	.9464	.9479	.9489	.9496	.9499
1750.0000	.9949	.9957	.9962	.9965	.9967	.9969	.9969	.9970	.9970
2250.0000	.9964	.9968	.9972	.9974	.9975	.9976	.9976	.9976	.9976
3000.0000	.9976	.9982	.9983	.9987	.9988	.9988	.9988	.9988	.9992

TABLE B32 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9545	.9555	.9559	.9564	.9569	.9569	.9569	.9569	.9569
75.0000	.9944	.9946	.9948	.9949	.9950	.9950	.9950	.9950	.9950
150.0000	.9593	.9609	.9618	.9627	.9633	.9634	.9636	.9636	.9636
250.0000	.9292	.9333	.9359	.9381	.9395	.9399	.9403	.9405	.9406
450.0000	.6874	7150	.7325	.7466	.7548	.7585	.7611	.7629	.7635
800.0000	.7910	.8144	.8295	.8408	.8473	.8505	.8527	.8541	.8547
1250.0000	.9706	.9746	.9773	.9791	.9801	.9808	.9811	.9814	.9815
1750.0000	.9952	.9960	.9965	.9968	.9970	.9971	.9972	.9972	.9972
2250.0000	.9988	.9991	.9992	.9993	.9994	.9994	.9994	.9995	.9995
3000.0000	.9961	.9970	.9971	.9979	.9980	.9981	.9982	.9982	.9985

TABLE B33 WINTER

CONTRIBUTION TO PCLFOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9976	.9976	.9977	.9977	.9977	.9977	.9977	.9977	.9978
75.0000	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
150.0000	.9951	.9953	.9954	.9955	.9955	.9955	.9956	.9956	.9956
250.0000	.9780	.9795	.9805	.9813	.9818	.9820	.9822	.9823	.9823
450.0000	.6964	.7257	.7444	.7590	.7678	.7717	.7744	.7763	.7770
800.0000	.6777	.7125	.7351	.7521	.7623	.7670	.7701	.7724	.7733
1250.0000	.9548	.9607	.9647	.9676	.9691	.9700	.9705	.9709	.9711
1750.0000	.9991	.9993	.9994	.9994	.9995	.9995	.9995	.9995	.9995
2250.0000	.9988	.9990	.9991	.9992	.9992	.9993	.9993	.9993	.9993
3000.0000	.9985	.9987	.9988	.9990	.9990	.9990	.9991	.9991	.9992

PINT (A,H) TABLE B34 SPRING LOCATION N

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

BASE HT	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
75.0000	.9996	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998
150.0000	.9983	.9983	.9984	.9984	.9984	.9984	.9984	.9984	.9984
250.0000	.9934	.9941	.9946	.9949	.9951	.9952	.9953	.9953	.9954
450.0000	.8901	.9004	.9072	.9121	.9150	.9164	.9172	.9178	.9180
800.0000	.5243	.5716	.6040	.6266	.6395	.6462	.6501	.6531	.6542
1250.0000	.9656	.9683	.9701	.9715	.9722	.9726	.9728	.9729	.9730
1750.0000	.9945	.9966	.9977	.9986	.9988	.9988	.9988	.9988	.9988
2250.0000	.9990	.9991	.9992	.9992	.9992	.9993	.9993	.9993	.9993
3000.0000	.9952	.9959	.9961	.9965	.9966	.9967	.9967	.9968	.9970

TABLE B35 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

BASE HT	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9992	.9993	.9993	.9993	.9993	.9993	.9993	.9993	.9993
250.0000	.9953	.9955	.9957	.9958	.9959	.9959	.9959	.9959	.9959
450.0000	.9152	.9236	.9291	.9332	.9355	.9367	.9375	.9380	.9382
800.0000	.4805	.5351	.5723	.5979	.6124	.6205	.6250	.6284	.6299
1250.0000	.9863	.9876	.9881	.9887	.9890	.9891	.9892	.9893	.9893
1750.0000	.9986	.9987	.9987	.9987	.9988	.9988	.9988	.9988	.9988
2250.0000	.9996	.9994	.9994	.9994	.9994	.9994	.9995	.9994	.9995
3000.0000	.9988	.9991	.9993	.9994	.9994	.9995	.9995	.9995	.9996

TABLE B36 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

BASE HT	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9972	.9973	.9973	.9973	.9974	.9974	.9974	.9974	.9974
75.0000	.9994	.9994	.9994	.9994	.9995	.9995	.9995	.9995	.9995
150.0000	.9981	.9982	.9982	.9983	.9983	.9983	.9983	.9983	.9983
250.0000	.9845	.9855	.9861	.9866	.9869	.9870	.9871	.9871	.9872
450.0000	.8633	.8755	.8835	.8893	.8930	.8946	.8955	.8964	.8967
800.0000	.5415	.5922	.6259	.6490	.6617	.6695	.6724	.6756	.6770
1250.0000	.9770	.9788	.9801	.9810	.9815	.9818	.9820	.9821	.9821
1750.0000	.9985	.9988	.9988	.9989	.9990	.9990	.9990	.9990	.9990
2250.0000	.9995	.9996	.9996	.9997	.9997	.9997	.9997	.9997	.9997
3000.0000	.9941	.9959	.9973	.9978	.9979	.9980	.9981	.9981	.9983

PINT (A,H) **TABLE B37 SPRING** **LOCATION P**

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9410	.9423	.9429	.9435	.9441	.9441	.9441	.9441	.9441
75.0000	.9965	.9967	.9968	.9969	.9969	.9970	.9970	.9970	.9970
150.0000	.9946	.9948	.9951	.9952	.9953	.9953	.9954	.9954	.9954
250.0000	.9212	.9250	.9274	.9293	.9306	.9310	.9313	.9315	.9316
450.0000	.6449	.6760	.6975	.7129	.7223	.7264	.7290	.7310	.7320
800.0000	.8667	.8796	.8883	.8942	.8980	.8998	.9008	.9016	.9020
1250.0000	.9901	.9912	.9920	.9925	.9928	.9931	.9931	.9932	.9932
1750.0000	.9960	.9962	.9963	.9964	.9964	.9964	.9964	.9965	.9965
2250.0000	.9970	.9972	.9974	.9975	.9976	.9976	.9976	.9977	.9977
3000.0000	.9958	.9967	.9972	.9977	.9979	.9980	.9980	.9980	.9980

TABLE B38 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9197	.9214	.9222	.9231	.9239	.9239	.9239	.9239	.9239
75.0000	.9902	.9905	.9906	.9907	.9907	.9907	.9907	.9907	.9907
150.0000	.8850	.8890	.8912	.8932	.8948	.8950	.8952	.8953	.8954
250.0000	.8764	.8817	.8848	.8867	.8880	.8884	.8903	.8905	.8906
450.0000	.6402	.6629	.6771	.6862	.6923	.6960	.6981	.7008	.7013
800.0000	.8833	.8912	.8962	.8992	.9010	.9024	.9034	.9043	.9045
1250.0000	.9871	.9886	.9896	.9902	.9907	.9910	.9912	.9913	.9914
1750.0000	.9965	.9967	.9969	.9970	.9970	.9971	.9971	.9971	.9971
2250.0000	.9975	.9977	.9978	.9979	.9980	.9980	.9980	.9980	.9980
3000.0000	.9975	.9980	.9983	.9985	.9986	.9987	.9987	.9988	.9989

TABLE B39 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9514	.9529	.9529	.9534	.9539	.9539	.9539	.9539	.9539
75.0000	.9953	.9955	.9956	.9957	.9957	.9958	.9958	.9958	.9958
150.0000	.9246	.9315	.9373	.9387	.9359	.9361	.9363	.9364	.9365
250.0000	.9112	.9155	.9181	.9202	.9217	.9221	.9224	.9226	.9227
450.0000	.6017	.6382	.6618	.6774	.6871	.6951	.6981	.7004	.7016
800.0000	.8961	.9061	.9126	.9169	.9194	.9206	.9214	.9221	.9226
1250.0000	.9856	.9880	.9896	.9906	.9912	.9915	.9916	.9916	.9916
1750.0000	.9952	.9953	.9953	.9953	.9953	.9954	.9954	.9954	.9954
2250.0000	.9972	.9973	.9974	.9974	.9975	.9975	.9975	.9975	.9975
3000.0000	.9909	.9913	.9917	.9921	.9923	.9924	.9925	.9925	.9926

PINT (A,H) **TABLE B40 SPRING** **LOCATION T**

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9938	.9962	.9944	.9946	.9948	.9948	.9949	.9949	.9949
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9959	.9961	.9963	.9964	.9965	.9966	.9966	.9966	.9966
250.0000	.9941	.9946	.9949	.9951	.9952	.9953	.9953	.9953	.9954
450.0000	.9041	.9198	.9241	.9336	.9364	.9386	.9396	.9405	.9409
800.0000	.8003	.8352	.8624	.8771	.8862	.8920	.8954	.8980	.8988
1250.0000	.9477	.9565	.9637	.9673	.9695	.9711	.9719	.9725	.9728
1750.0000	.9908	.9921	.9930	.9937	.9940	.9942	.9944	.9945	.9945
2250.0000	.9965	.9967	.9968	.9969	.9969	.9970	.9970	.9970	.9970
3000.0000	.9964	.9970	.9971	.9981	.9981	.9988	.9988	.9988	.9988

TABLE B41 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9592	.9862	.9715	.9745	.9762	.9773	.9779	.9784	.9788
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9992	.9993	.9993	.9993	.9993	.9994	.9994	.9994	.9994
250.0000	.9948	.9959	.9958	.9961	.9963	.9964	.9964	.9965	.9965
450.0000	.8521	.9145	.8910	.9010	.9060	.9104	.9124	.9142	.9148
800.0000	.8849	.9455	.9178	.9279	.9343	.9391	.9419	.9439	.9443
1250.0000	.9968	.9974	.9979	.9981	.9983	.9984	.9984	.9985	.9985
1750	.9992	.9993	.9994	.9995	.9995	.9995	.9995	.9995	.9995
2250.0000	.9997	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998
3000.0000	.9855	.9874	.9885	.9896	.9900	.9904	.9904	.9905	.9910

TABLE B42 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9996	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998
250.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
450.0000	.9614	.9869	.9789	.9834	.9850	.9858	.9862	.9864	.9868
800.0000	.7290	.8724	.8041	.8234	.8351	.8414	.8438	.8471	.8503
1250.0000	.9033	.9184	.9294	.9361	.9399	.9424	.9438	.9446	.9451
1750.0000	.9844	.9867	.9882	.9892	.9898	.9901	.9903	.9903	.9905
2250.0000	.9961	.9963	.9965	.9967	.9968	.9968	.9968	.9968	.9968
3000.0000	.9978	.9980	.9980	.9983	.9983	.9983	.9983	.9983	1.0000

PINT (A,H)

TABLE B43 SPRING

LOCATION V

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9818	.9826	.9824	.9820	.9820	.9820	.9820	.9818	.9820
75.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
150.0000	.9822	.9829	.9834	.9838	.9840	.9841	.9842	.9842	.9842
250.0000	.9360	.9404	.9428	.9447	.9461	.9465	.9467	.9470	.9471
450.0000	.7940	.8116	.8232	.8315	.8370	.8392	.8403	.8416	.8421
800.0000	.7122	.7454	.7645	.7831	.7930	.7970	.8004	.8041	.8037
1250.0000	.9721	.9749	.9758	.9781	.9789	.9793	.9795	.9794	.9795
1750.0000	.9982	.9984	.9985	.9986	.9987	.9987	.9987	.9987	.9987
2250.0000	.9965	.9968	.9970	.9971	.9972	.9972	.9973	.9973	.9973
3000.0000	.9854	.9877	.9888	.9895	.9900	.9903	.9906	.9907	.9910

TABLE B44 SUMMER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	.9850	.9853	.9854	.9856	.9857	.9857	.9857	.9857	.9857
75.0000	.9978	.9979	.9979	.9980	.9980	.9980	.9980	.9980	.9980
150.0000	.9909	.9914	.9917	.9920	.9922	.9923	.9923	.9923	.9924
250.0000	.9722	.9738	.9748	.9756	.9762	.9765	.9765	.9766	.9766
450.0000	.8243	.8426	.8534	.8615	.8667	.8713	.8743	.8736	.8743
800.0000	.7518	.7877	.8103	.8292	.8392	.8444	.8478	.8506	.8515
1250.0000	.9905	.9920	.9932	.9938	.9942	.9945	.9946	.9947	.9948
1750.0000	.9958	.9962	.9964	.9965	.9966	.9967	.9967	.9967	.9967
2250.0000	.9966	.9968	.9970	.9971	.9972	.9973	.9973	.9973	.9973
3000.0000	.9876	.9884	.9889	.9894	.9898	.9901	.9903	.9904	.9906

TABLE B45 WINTER

CONTRIBUTION TO PCFLOS (A,H) DUE TO LOWER CLOUDS WITH BASE HEIGHT AT H.

H(METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
25.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75.0000	.9992	.9992	.9992	.9992	.9992	.9992	.9992	.9992	.9992
150.0000	.9968	.9969	.9970	.9971	.9972	.9973	.9973	.9973	.9973
250.0000	.9630	.9654	.9677	.9691	.9700	.9704	.9705	.9707	.9708
450.0000	.7712	.7956	.8118	.8232	.8306	.8354	.8356	.8373	.8381
800.0000	.6913	.7317	.7568	.7782	.7894	.7952	.7981	.8011	.8024
1250.0000	.9966	.9972	.9976	.9977	.9979	.9980	.9980	.9980	.9980
1750.0000	.9971	.9975	.9977	.9978	.9979	.9979	.9980	.9980	.9980
2250.0000	.9980	.9981	.9982	.9983	.9983	.9983	.9983	.9983	.9983
3000.0000	.9923	.9933	.9939	.9940	.9942	.9943	.9943	.9944	.9945

APPENDIX C

PCFLOS (A_i, H_j) AND PCFLOS (A_i)

PCFLOS (A,H) | TABLE C1 SPRING | LOCATION 2

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9988	.9989	.9990	.9990	.9991	.9991	.9991	.9991	.9991
100.0000	.9962	.9967	.9971	.9974	.9975	.9976	.9976	.9976	.9977
200.0000	.9602	.9822	.9836	.9844	.9850	.9853	.9854	.9855	.9856
300.0000	.9222	.9312	.9376	.9414	.9440	.9452	.9458	.9463	.9467
600.0000	.8031	.8291	.8475	.8585	.8655	.8693	.8712	.8729	.8738
1000.0000	.7449	.7808	.8061	.8212	.8308	.8361	.8387	.8408	.8422
1500.0000	.7261	.7630	.7926	.8090	.8193	.8251	.8279	.8302	.8318
2000.0000	.7179	.7582	.7871	.8039	.8146	.8207	.8236	.8261	.8277
2500.0000	.7151	.7560	.7852	.8024	.8131	.8193	.8223	.8248	.8264
3500.0000	.6829	.7244	.7601	.7820	.7933	.7997	.8029	.8056	.8109

TABLE C2 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9995	.9996	.9997	.9998	.9998	.9998	.9998	.9998	.9998
100.0000	.9959	.9964	.9967	.9969	.9970	.9971	.9972	.9972	.9972
200.0000	.9883	.9913	.9928	.9936	.9940	.9943	.9945	.9946	.9947
300.0000	.9477	.9560	.9619	.9653	.9673	.9686	.9691	.9696	.9699
600.0000	.8746	.8947	.9091	.9180	.9229	.9260	.9275	.9290	.9295
1000.0000	.8307	.8586	.8790	.8908	.8975	.9014	.9039	.9059	.9067
1500.0000	.8203	.8498	.8716	.8840	.8910	.8957	.8979	.9000	.9008
2009.0000	.8152	.8459	.8684	.8812	.8885	.8934	.8957	.8978	.8987
2500.0000	.8115	.8426	.8655	.8785	.8859	.8909	.8932	.8954	.8963
3500.0000	.7828	.8211	.8454	.8644	.8723	.8776	.8800	.8824	.8886

TABLE C3 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9997	.9998	.9999	.9999	.9999	.9999	.9999	.9999	.9999
100.0000	.9969	.9972	.9975	.9976	.9977	.9978	.9978	.9978	.9979
200.0000	.9761	.9788	.9807	.9818	.9825	.9829	.9831	.9833	.9833
300.0000	.9173	.9286	.9364	.9412	.9441	.9456	.9468	.9476	.9479
600.0000	.7508	.7845	.8082	.8229	.8317	.8369	.8397	.8420	.8429
1000.0000	.6629	.7104	.7444	.7650	.7773	.7848	.7889	.7922	.7936
1500.0000	.6412	.6922	.7286	.7505	.7637	.7718	.7759	.7796	.7809
2000.0000	.6337	.6853	.7234	.7459	.7593	.7675	.7719	.7755	.7770
2500.0000	.6270	.6803	.7181	.7410	.7546	.7630	.7675	.7711	.7726
3500.0000	.6056	.6640	.7028	.7288	.7431	.7518	.7564	.7602	.7639

PCFLOS (A,H) **TABLE C4 SPRING** LOCATION 9

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9845	.9898	.9899	.9900	.9902	.9902	.9902	.9902	.9902
100.0000	.9847	.9890	.9892	.9893	.9895	.9895	.9895	.9895	.9895
200.0000	.9643	.9681	.9673	.9682	.9689	.9691	.9692	.9693	.9694
300.0000	.8640	.8769	.8820	.8859	.8886	.8895	.8901	.8906	.8907
600.0000	.6725	.6987	.7166	.7268	.7367	.7401	.7419	.7437	.7443
1000.0000	.5770	.6154	.6423	.6600	.6712	.6765	.6791	.6820	.6829
1500.0000	.5610	.6017	.6302	.6488	.6607	.6663	.6691	.6721	.6731
2000.0000	.5481	.5905	.6202	.6397	.6520	.6578	.6608	.6640	.6650
2500.0000	.5369	.5810	.6119	.6321	.6448	.6510	.6540	.6573	.6584
3500.0000	.4996	.5501	.5845	.6086	.6227	.6296	.6330	.6368	.6397

TABLE C5 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995	.9995
100.0000	.9992	.9992	.9993	.9993	.9993	.9993	.9993	.9993	.9993
200.0000	.9951	.9955	.9957	.9958	.9959	.9959	.9960	.9960	.9960
300.0000	.9748	.9772	.9787	.9799	.9805	.9809	.9810	.9812	.9813
600.0000	.8499	.8728	.8905	.9002	.9059	.9097	.9117	.9134	.9140
1000.0000	.7344	.7755	.8070	.8244	.8349	.8417	.8452	.8484	.8494
1500.0000	.7148	.7620	.7950	.8134	.8245	.8315	.8352	.8385	.8396
2000.0000	.7078	.7525	.7867	.8058	.8173	.8246	.8284	.8319	.8330
2500.0000	.6921	.7340	.7746	.7947	.8068	.8144	.8184	.8220	.8232
3500.0000	.6255	.6639	.7271	.7529	.7679	.7771	.7818	.7862	.7891

TABLE C6 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9941	.9942	.9942	.9943	.9944	.9944	.9944	.9944	.9944
100.0000	.9914	.9917	.9918	.9919	.9920	.9920	.9920	.9920	.9920
200.0000	.9414	.9433	.9445	.9454	.9462	.9464	.9464	.9465	.9465
300.0000	.7988	.8040	.8083	.8119	.8147	.8152	.8156	.8158	.8159
600.0000	.4629	.4922	.5108	.5250	.5348	.5379	.5397	.5413	.5419
1000.0000	.3255	.3494	.3642	.4141	.4332	.4383	.4411	.4438	.4448
1500.0000	.3005	.3253	.3402	.4070	.4216	.4270	.4299	.4327	.4338
2000.0000	.3049	.3312	.3415	.4045	.4183	.4237	.4266	.4295	.4305
2500.0000	.2973	.3244	.3352	.3977	.4121	.4183	.4213	.4242	.4253
3500.0000	.2911	.3192	.3305	.3937	.4089	.4155	.4176	.4205	.4222

PCFLOS (A,H) **TABLE C7 SPRING** **LOCATION A**

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9869	.9872	.9873	.9875	.9876	.9876	.9876	.9876	.9876
100.0000	.9702	.9710	.9715	.9719	.9723	.9723	.9723	.9724	.9724
200.0000	.9125	.9162	.9185	.9203	.9218	.9221	.9224	.9225	.9226
300.0000	.8107	.8255	.8307	.8351	.8383	.8392	.8398	.8403	.8405
600.0000	.4873	.5249	.5486	.5673	.5789	.5837	.5868	.5890	.5900
1000.0000	.3442	.3977	.4319	.4581	.4739	.4809	.4855	.4886	.4900
1500.0000	.2987	.3571	.3946	.4231	.4402	.4479	.4529	.4563	.4579
2000.0000	.2931	.3520	.3900	.4188	.4360	.4439	.4490	.4524	.4540
2500.0000	.2910	.3501	.3883	.4171	.4344	.4423	.4473	.4508	.4524
3500.0000	.2829	.3433	.3822	.4117	.4292	.4373	.4425	.4460	.4479

TABLE C8 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9919	.9921	.9922	.9923	.9924	.9924	.9924	.9924	.9924
100.0000	.9788	.9794	.9797	.9800	.9802	.9803	.9803	.9803	.9803
200.0000	.8908	.8948	.8970	.8990	.9006	.9009	.9011	.9012	.9013
300.0000	.7920	.8005	.8055	.8099	.8131	.8138	.8144	.8147	.8148
600.0000	.4727	.5054	.5255	.5422	.5521	.5559	.5588	.5603	.5609
1000.0000	.3009	.3512	.3826	.4076	.4219	.4283	.4328	.4351	.4362
1500.0000	.2571	.3118	.3462	.3732	.3888	.3957	.4006	.4032	.4044
2000.0000	.2541	.3092	.3440	.3712	.3869	.3939	.3989	.4015	.4027
2500.0000	.2521	.3076	.3426	.3699	.3857	.3928	.3978	.4004	.4016
3500.0000	.2471	.3033	.3388	.3665	.3824	.3896	.3947	.3973	.3987

TABLE C9 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9971	.9972	.9972	.9973	.9973	.9973	.9973	.9973	.9973
100.0000	.9954	.9955	.9956	.9957	.9958	.9958	.9958	.9958	.9958
200.0000	.9665	.9678	.9686	.9693	.9697	.9699	.9699	.9700	.9700
300.0000	.8672	.8733	.8770	.8801	.8822	.8828	.8832	.8835	.8836
600.0000	.5115	.5501	.5743	.5933	.6045	.6094	.6126	.6147	.6157
1000.0000	.3507	.4062	.4416	.4686	.4844	.4917	.4965	.4996	.5011
1500.0000	.2825	.3447	.3845	.4148	.4323	.4407	.4461	.4495	.4512
2000.0000	.2775	.3402	.3803	.4108	.4285	.4369	.4424	.4458	.4475
2500.0000	.2775	.3402	.3803	.4108	.4285	.4369	.4424	.4458	.4475
3500.0000	.2749	.3379	.3782	.4089	.4267	.4351	.4406	.4441	.4459

PCFLOS (A,H) **TABLE C10 SPRING** **LOCATION B**

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9471	.9482	.9487	.9493	.9498	.9498	.9498	.9498	.9498
100.0000	.9471	.9482	.9487	.9493	.9498	.9498	.9498	.9498	.9498
200.0000	.9226	.9247	.9259	.9269	.9278	.9279	.9280	.9280	.9280
300.0000	.8125	.8212	.8265	.8310	.8342	.8350	.8357	.8361	.8363
600.0000	.4723	.5049	.5253	.5418	.5526	.5563	.5589	.5606	.5613
1000.0000	.2578	.3083	.3402	.3654	.3818	.3877	.3919	.3948	.3958
1500.0000	.2472	.2985	.3309	.3566	.3730	.3791	.3833	.3862	.3872
2000.0000	.2445	.2960	.3284	.3543	.3708	.3768	.3811	.3840	.3850
2500.0000	.2389	.2908	.3235	.3495	.3662	.3723	.3766	.3795	.3805
3500.0000	.2271	.2805	.3142	.3410	.3579	.3643	.3687	.3717	.3729

TABLE C11 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.8863	.8867	.8879	.8891	.8903	.8903	.8903	.8903	.8904
100.0000	.8815	.8840	.8852	.8865	.8877	.8877	.8877	.8877	.8877
200.0000	.8257	.8301	.8325	.8347	.8367	.8369	.8369	.8370	.8371
300.0000	.7031	.7137	.7198	.7252	.7296	.7303	.7308	.7313	.7314
600.0000	.4318	.4600	.4775	.4916	.5015	.5044	.5063	.5077	.5082
1000.0000	.3244	.3616	.3852	.4036	.4159	.4201	.4229	.4248	.4255
1500.0000	.3146	.3531	.3776	.3965	.4092	.4135	.4165	.4184	.4191
2000.0000	.3097	.3485	.3732	.3923	.4051	.4096	.4126	.4144	.4151
2500.0000	.3030	.3426	.3678	.3873	.4003	.4048	.4078	.4099	.4106
3500.0000	.2868	.3116	.3403	.3622	.3764	.3817	.3851	.3875	.3888

TABLE C12 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9532	.9542	.9547	.9551	.9556	.9556	.9556	.9556	.9556
100.0000	.9525	.9535	.9539	.9544	.9549	.9549	.9549	.9549	.9549
200.0000	.9380	.9395	.9402	.9410	.9417	.9417	.9417	.9417	.9417
300.0000	.8547	.8523	.8563	.8597	.8623	.8629	.8633	.8637	.8637
600.0000	.4276	.4646	.4876	.5065	.5186	.5229	.5259	.5280	.5288
1000.0000	.2223	.2763	.3104	.3375	.3548	.3613	.3658	.3688	.3701
1500.0000	.2149	.2695	.3040	.3315	.3489	.3555	.3600	.3631	.3644
2000.0000	.2145	.2692	.3037	.3312	.3487	.3552	.3597	.3628	.3642
2500.0000	.2123	.2671	.3016	.3292	.3467	.3533	.3578	.3609	.3622
3500.0000	.2096	.2646	.2993	.3271	.3447	.3513	.3559	.3590	.3604

PCFLOS (A,H) TABLE C13 SPRING LOCATION C

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9116	.9135	.9144	.9153	.9162	.9162	.9162	.9162	.9162
100.0000	.9107	.9125	.9135	.9144	.9154	.9154	.9154	.9154	.9154
200.0000	.8859	.8847	.8902	.8916	.8929	.8930	.8930	.8931	.8931
300.0000	.8086	.8161	.8204	.8241	.8271	.8277	.8281	.8284	.8285
600.0000	.5870	.5963	.6147	.6292	.6388	.6422	.6444	.6462	.6468
1000.0000	.3679	.4182	.4511	.4753	.4910	.4974	.5013	.5045	.5058
1500.0000	.3458	.3981	.4323	.4575	.4737	.4804	.4844	.4878	.4891
2000.0000	.3388	.3916	.4262	.4516	.4680	.4747	.4788	.4822	.4835
2500.0000	.3270	.3808	.4161	.4419	.4586	.4654	.4696	.4730	.4744
3500.0000	.2991	.3559	.3930	.4203	.4377	.4449	.4493	.4529	.4546

TABLE C16 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.8316	.8351	.8369	.8386	.8403	.8403	.8403	.8403	.8403
100.0000	.8308	.8343	.8361	.8379	.8396	.8396	.8397	.8397	.8397
200.0000	.7916	.7965	.7991	.8015	.8039	.8040	.8041	.8041	.8041
300.0000	.6874	.6974	.7031	.7082	.7124	.7130	.7135	.7138	.7139
600.0000	.4123	.4404	.4577	.4717	.4819	.4845	.4864	.4877	.4882
1000.0000	.2588	.2995	.3253	.3453	.3591	.3635	.3664	.3685	.3693
1500.0000	.2515	.2930	.3193	.3396	.3536	.3581	.3611	.3632	.3641
2000.0000	.2494	.2915	.3179	.3383	.3524	.3569	.3599	.3620	.3629
2500.0000	.2443	.2865	.3132	.3339	.3482	.3528	.3557	.3579	.3588
3500.0000	.2203	.2654	.2941	.3162	.3312	.3362	.3394	.3418	.3429

TABLE C15 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9597	.9606	.9610	.9614	.9618	.9618	.9618	.9618	.9618
100.0000	.9597	.9606	.9610	.9614	.9618	.9618	.9618	.9618	.9618
200.0000	.9368	.9385	.9394	.9403	.9410	.9411	.9411	.9412	.9412
300.0000	.8665	.8725	.8761	.8792	.8815	.8820	.8824	.8827	.8828
600.0000	.5496	.5867	.6074	.6246	.6356	.6400	.6427	.6450	.6459
1000.0000	.3475	.4050	.4429	.4705	.4876	.4951	.4995	.5033	.5049
1500.0000	.3321	.3912	.4303	.4586	.4761	.4839	.4884	.4924	.4940
2000.0000	.3293	.3887	.4280	.4564	.4741	.4819	.4864	.4904	.4920
2500.0000	.3275	.3872	.4266	.4552	.4729	.4808	.4852	.4893	.4909
3500.0000	.3112	.3722	.4125	.4417	.4598	.4679	.4725	.4766	.4784

PCFLOS (A,H) **TABLE C16 SPRING** LOCATION D

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9889	.9891	.9892	.9893	.9895	.9895	.9895	.9895	.9895
100.0000	.9882	.9885	.9886	.9887	.9889	.9889	.9889	.9889	.9889
200.0000	.9811	.9817	.9820	.9823	.9826	.9826	.9826	.9827	.9827
300.0000	.9357	.9403	.9433	.9456	.9472	.9478	.9482	.9485	.9486
600.0000	.6575	.6893	.7102	.7258	.7355	.7398	.7425	.7446	.7455
1000.0000	.4196	.4789	.5189	.5471	.5645	.5727	.5776	.5816	.5834
1500.0000	.4307	.4622	.5035	.5326	.5506	.5591	.5642	.5682	.5701
2000.0000	.3972	.4541	.5006	.5299	.5480	.5565	.5616	.5657	.5676
2500.0000	.3915	.4540	.4959	.5256	.5438	.5525	.5576	.5617	.5636
3500.0000	.3660	.4314	.4751	.5062	.5253	.5342	.5396	.5439	.5462

TABLE C17 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9498	.9508	.9514	.9519	.9524	.9525	.9525	.9525	.9525
100.0000	.9498	.9508	.9514	.9519	.9524	.9525	.9525	.9525	.9525
200.0000	.9324	.9340	.9349	.9357	.9364	.9365	.9365	.9365	.9365
300.0000	.8649	.8699	.8729	.8754	.8773	.8777	.8780	.8782	.8783
600.0000	.6090	.6362	.6540	.6669	.6754	.6787	.6807	.6823	.6829
1000.0000	.4288	.4797	.5145	.5378	.5527	.5590	.5635	.5667	.5681
1500.0000	.4196	.4718	.5074	.5313	.5466	.5537	.5577	.5609	.5624
2000.0000	.4178	.4703	.5061	.5300	.5454	.5525	.5565	.5598	.5613
2500.0000	.4111	.4660	.5002	.5244	.5399	.5471	.5511	.5544	.5559
3500.0000	.3866	.4431	.4816	.5076	.5240	.5317	.5360	.5394	.5410

TABLE C18 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960	.9960
100.0000	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960	.9960
200.0000	.9926	.9930	.9932	.9934	.9935	.9935	.9936	.9936	.9936
300.0000	.9485	.9527	.9554	.9575	.9590	.9595	.9599	.9602	.9603
600.0000	.6320	.6681	.6918	.7095	.7210	.7257	.7287	.7313	.7323
1000.0000	.3589	.4261	.4708	.5033	.5238	.5328	.5382	.5430	.5451
1500.0000	.3682	.4165	.4618	.4949	.5154	.5247	.5303	.5351	.5372
2000.0000	.3649	.4153	.4607	.4938	.5145	.5234	.5293	.5342	.5362
2500.0000	.3639	.4124	.4580	.4912	.5119	.5212	.5268	.5318	.5337
3500.0000	.3367	.4041	.4522	.4858	.5067	.5162	.5218	.5267	.5285

PCFLOS (A,H) TABLE C19 SPRING LOCATION H

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9957	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960
100.0000	.9957	.9958	.9959	.9959	.9960	.9960	.9960	.9960	.9960
200.0000	.9937	.9939	.9939	.9940	.9941	.9941	.9941	.9941	.9941
300.0000	.9738	.9754	.9763	.9771	.9776	.9778	.9780	.9780	.9780
600.0000	.7723	.7929	.8065	.8163	.8225	.8252	.8268	.8282	.8288
1000.0000	.4769	.5304	.5670	.5918	.6077	.6150	.6193	.6228	.6244
1500.0000	.4473	.5042	.5432	.5695	.5864	.5942	.5986	.6024	.6041
2000.0000	.4405	.4978	.5371	.5637	.5807	.5885	.5930	.5969	.5986
2500.0000	.4335	.4913	.5308	.5576	.5747	.5826	.5871	.5910	.5927
3500.0000	.4214	.4811	.5215	.5497	.5671	.5752	.5799	.5838	.5864

TABLE C20 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9984	.9984	.9985	.9985	.9985	.9985	.9985	.9985	.9985
100.0000	.9984	.9984	.9985	.9985	.9985	.9985	.9985	.9985	.9985
200.0000	.9979	.9980	.9980	.9980	.9981	.9981	.9981	.9981	.9981
300.0000	.9921	.9926	.9929	.9931	.9933	.9933	.9934	.9934	.9934
600.0000	.8547	.8759	.8912	.9003	.9058	.9091	.9107	.9124	.9130
1000.0000	.6706	.7243	.7641	.7869	.8063	.8088	.8125	.8168	.8184
1500.0000	.6625	.7176	.7584	.7818	.7955	.8043	.8081	.8125	.8142
2000.0000	.6547	.7104	.7516	.7753	.7892	.7980	.8019	.8063	.8081
2500.0000	.6467	.7032	.7450	.7690	.7831	.7921	.7960	.8004	.8022
3500.0000	.6268	.6872	.7307	.7572	.7720	.7813	.7855	.7900	.7934

TABLE C21 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9950	.9951	.9952	.9952	.9953	.9953	.9953	.9953	.9953
100.0000	.9949	.9951	.9951	.9951	.9952	.9952	.9952	.9952	.9952
200.0000	.9928	.9931	.9932	.9934	.9935	.9935	.9935	.9935	.9935
300.0000	.9668	.9692	.9707	.9720	.972	.9730	.9733	.9734	.9735
600.0000	.7170	.7410	.7564	.7683	.7757	.7788	.7809	.7826	.7830
1000.0000	.6239	.6817	.5203	.5478	.5648	.5728	.5779	.5816	.5832
1500.0000	.4086	.4686	.5087	.5371	.5547	.5630	.5682	.5721	.5738
2000.0000	.4062	.4664	.5066	.5352	.5528	.5612	.5664	.5703	.5720
2500.0000	.3994	.4603	.5011	.5299	.5478	.5562	.5615	.5654	.5672
3500.0000	.3857	.4487	.4905	.5206	.5388	.5475	.5529	.5569	.5594

PCFLOS (A,H) **TABLE C22 SPRING** **LOCATION I**

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9977	.9978	.9978	.9979	.9979	.9979	.9979	.9979	.9979
100.0000	.9961	.9963	.9964	.9965	.9966	.9966	.9966	.9966	.9966
200.0000	.9747	.9758	.9764	.9769	.9773	.9774	.9774	.9774	.9775
300.0000	.8890	.8944	.8977	.9006	.9025	.9030	.9034	.9037	.9038
600.0000	.5514	.5910	.6161	.6356	.6471	.6524	.6559	.6582	.6594
1000.0000	.3806	.4419	.4816	.5108	.5277	.5362	.5414	.5450	.5469
1500.0000	.3292	.3958	.4340	.4707	.4889	.4982	.5039	.5078	.5097
2000.0000	.3228	.3901	.4339	.4658	.4843	.4937	.4995	.5034	.5053
2500.0000	.3213	.3887	.4326	.4646	.4831	.4925	.4983	.5022	.5042
3500.0000	.3175	.3853	.4294	.4617	.4803	.4897	.4956	.4995	.5015

TABLE C23 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9950	.9952	.9953	.9954	.9954	.9955	.9955	.9955	.9955
100.0000	.9866	.9869	.9872	.9873	.9875	.9875	.9875	.9875	.9876
200.0000	.9178	.9209	.9226	.9241	.9253	.9255	.9257	.9258	.9258
300.0000	.7993	.8091	.8150	.8200	.8234	.8244	.8251	.8256	.8257
600.0000	.4731	.5147	.5410	.5616	.5739	.5792	.5828	.5851	.5861
1000.0000	.3158	.3762	.4151	.4442	.4613	.4694	.4746	.4779	.4795
1500.0000	.2946	.3571	.3975	.4276	.4452	.4536	.4590	.4624	.4641
2000.0000	.2924	.3553	.3961	.4264	.4441	.4525	.4580	.4615	.4631
2500.0000	.2915	.3545	.3953	.4256	.4433	.4518	.4573	.4607	.4624
3500.0000	.2899	.3532	.3942	.4247	.4425	.4510	.4565	.4600	.4617

TABLE C24 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9990	.9992	.9993	.9994	.9994	.9994	.9994	.9994	.9994
100.0000	.9944	.9948	.9950	.9952	.9952	.9953	.9953	.9953	.9953
200.0000	.9584	.9603	.9613	.9623	.9629	.9631	.9632	.9633	.9633
300.0000	.8579	.8667	.8720	.8765	.8792	.8803	.8810	.8815	.8818
600.0000	.5374	.5835	.6134	.6354	.6483	.6537	.6586	.6613	.6628
1000.0000	.4010	.4637	.5045	.5340	.5512	.5594	.5651	.5688	.5709
1500.0000	.3554	.4045	.4397	.4821	.5010	.5107	.5165	.5204	.5228
2000.0000	.3319	.4014	.4468	.4794	.4984	.5081	.5139	.5179	.5202
2500.0000	.3319	.4014	.4468	.4794	.4984	.5081	.5139	.5179	.5202
3500.0000	.3273	.3973	.4431	.4760	.4951	.5049	.5108	.5148	.5172

PCFLOS (A,H) **TABLE C25 SPRING** **LOCATION J**

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9914	.9917	.9917	.9919	.9920	.9920	.9920	.9920	.9920
100.0000	.9817	.9821	.9823	.9825	.9827	.9827	.9827	.9827	.9828
200.0000	.9309	.9421	.9433	.9445	.9453	.9455	.9456	.9456	.9457
300.0000	.8789	.8848	.8883	.8913	.8933	.8939	.8943	.8945	.8947
600.0000	.6603	.6906	.7105	.7230	.7339	.7380	.7403	.7421	.7432
1000.0000	.4617	.5145	.5578	.5845	.6003	.6084	.6131	.6166	.6185
1500.0000	.3889	.4550	.4988	.5293	.5472	.5566	.5620	.5659	.5681
2000.0000	.3767	.4462	.4890	.5202	.5385	.5480	.5538	.5576	.5598
2500.0000	.3756	.4431	.4880	.5192	.5374	.5470	.5526	.5566	.5588
3500.0000	.3701	.4386	.4861	.5158	.5343	.5440	.5497	.5537	.5561

TABLE C26 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9750	.9765	.9767	.9770	.9772	.9773	.9773	.9773	.9773
100.0000	.9581	.9590	.9595	.9600	.9604	.9604	.9605	.9605	.9605
200.0000	.8931	.8960	.8976	.8990	.9003	.9004	.9005	.9005	.9005
300.0000	.7979	.8050	.8091	.8127	.8154	.8159	.8163	.8165	.8166
600.0000	.5334	.5660	.5829	.5980	.6072	.6108	.6132	.6147	.6154
1000.0000	.3465	.3975	.4302	.4545	.4691	.4756	.4796	.4822	.4836
1500.0000	.2842	.3408	.3771	.4042	.4202	.4275	.4320	.4348	.4364
2000.0000	.2795	.3367	.3735	.4008	.4170	.4244	.4290	.4319	.4334
2500.0000	.2790	.3363	.3732	.4006	.4168	.4242	.4288	.4317	.4333
3500.0000	.2760	.3321	.3695	.3973	.4137	.4213	.4259	.4289	.4306

TABLE C27 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9954	.9955	.9956	.9957	.9958	.9958	.9958	.9958	.9958
100.0000	.9940	.9942	.9944	.9945	.9946	.9946	.9946	.9946	.9946
200.0000	.9713	.9728	.9737	.9744	.9749	.9751	.9752	.9751	.9753
300.0000	.9140	.9189	.9219	.9244	.9261	.9267	.9271	.9273	.9275
600.0000	.5417	.6756	.6976	[illegible]	.7235	.7281	.7316	.7332	.7342
1000.0000	.4138	.4716	.5122	[illegible]	.5573	[illegible]	.5707	.5745	.5766
1500.0000	.3389	.4052	[illegible]	[illegible]	[illegible]	[illegible]	.5144	.5186	.5206
2000.0000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.5092	.5136	.5155
2500.0000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.5060	.5122	.5143
3500.0000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.5007	[illegible]	.5131

PCFLOS (A,H) — TABLE C28 SPRING — LOCATION K

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9782	.9798	.9807	.9815	.9819	.9821	.9822	.9823	.9823
100.0000	.9766	.9783	.9793	.9801	.9805	.9807	.9809	.9810	.9810
200.0000	.9501	.9525	.9540	.9553	.9560	.9563	.9565	.9566	.9566
300.0000	.8956	.9005	.9034	.9058	.9075	.9079	.9083	.9084	.9086
600.0000	.6659	.6925	.7097	.7223	.729_	.7333	.7354	.7368	.7376
1000.0000	.4498	.5045	.5409	.5660	.5806	.5883	.5926	.5957	.5974
1500.0000	.4058	.4649	.5042	.5314	.5472	.5554	.5601	.5634	.5652
2000.0000	.3913	.4526	.4933	.5215	.5378	.5464	.5512	.5547	.5566
2500.0000	.3867	.4487	.4899	.5183	.5348	.5435	.5484	.5519	.5538
3500.0000	.3788	.4421	.4841	.5133	.5301	.5389	.5439	.5475	.5498

TABLE C29 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9983	.9983	.9983	.9984	.9984	.9984	.9984	.9984	.9984
100.0000	.9934	.9937	.9938	.9939	.9940	.9940	.9940	.9940	.9940
200.0000	.9613	.9626	.9633	.9640	.9645	.9645	.9646	.9646	.9647
300.0000	.9039	.9077	.9099	.9118	.9131	.9134	.9137	.9138	.9139
600.0000	.6884	.7106	.7245	.7353	.7416	.7443	.7462	.7472	.7477
1000.0000	.4373	.4899	.5245	.5490	.5629	.5702	.5748	.5775	.5789
1500.0000	.3916	.4495	.4880	.5149	.5300	.5382	.5432	.5462	.5478
2000.0000	.3767	.4366	.4764	.5042	.5198	.5283	.5334	.5366	.5383
2500.0000	.3729	.4332	.4733	.5013	.5171	.5256	.5308	.5340	.5356
3500.0000	.3622	.4240	.4650	.4937	.5098	.5185	.5239	.5271	.5290

TABLE C30 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9978	.9980	.9981	.9982	.9983	.9983	.9983	.9984	.9984
100.0000	.9958	.9959	.9961	.9962	.9963	.9963	.9964	.9964	.9964
200.0000	.9692	.9706	.9716	.9721	.9726	.9727	.9728	.9729	.9729
300.0000	.9040	.9140	.9171	.9197	.9212	.9218	.9222	.9224	.9225
600.0000	.6906	.7178	.7352	.7482	.7560	.7596	.7619	.7634	.7642
1000.0000	.4370	.4905	.5252	.5508	.5655	.5728	.5776	.5803	.5819
1500.0000	.3577	.4184	.4579	.4868	.5034	.5117	.5169	.5202	.5220
2000.0000	.3405	.4030	.4438	.4734	.4907	.4993	.5047	.5081	.5100
2500.0000	.3344	.4021	.4440	.4747	.4928	.4986	.5040	.5074	.5094
3500.0000	.3249	.3942	.4350	.4659	.4830	.4916	.4970	.5008	.5031

PCFLOS (A,H) **TABLE C31 SPRING** **LOCATION M**

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9852	.9855	.9857	.9858	.9860	.9860	.9860	.9860	.9860
100.0000	.9845	.9848	.9850	.9852	.9853	.9853	.9854	.9854	.9854
200.0000	.9707	.9717	.9722	.9727	.9731	.9732	.9732	.9732	.9732
300.0000	.9385	.9417	.9435	.9452	.9462	.9466	.9468	.9470	.9470
600.0000	.7367	.7599	.7745	.7862	.7933	.7963	.7985	.8001	.8005
1000.0000	.4241	.4839	.5224	.5522	.5698	.5780	.5835	.5876	.5890
1500.0000	.3453	.4156	.4611	.4957	.5161	.5259	.5329	.5372	.5389
2000.0000	.3402	.4112	.4573	.4923	.5129	.5228	.5293	.5342	.5359
2500.0000	.3365	.4081	.4545	.4897	.5104	.5203	.5269	.5318	.5336
3500.0000	.3341	.4062	.4528	.4884	.5092	.5192	.5257	.5306	.5328

TABLE C32 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9565	.9565	.9569	.9569	.9569	.9569	.9569	.9569	.9569
100.0000	.9488	.9501	.9507	.9513	.9518	.9519	.9519	.9519	.9519
200.0000	.9081	.9110	.9125	.9140	.9151	.9153	.9155	.9155	.9155
300.0000	.8373	.8443	.8484	.8521	.8546	.8552	.8558	.8560	.8562
600.0000	.5240	.5593	.5809	.5986	.6094	.6137	.6169	.6189	.6196
1000.0000	.3157	.3737	.4104	.4394	.4567	.4644	.4698	.4730	.4743
1500.0000	.2863	.3483	.3877	.4186	.4368	.4450	.4507	.4544	.4558
2000.0000	.2815	.3443	.3842	.4154	.4338	.4421	.4478	.4515	.4530
2500.0000	.2803	.3433	.3834	.4147	.4332	.4415	.4473	.4510	.4525
3500.0000	.2784	.3403	.3808	.4126	.4313	.4397	.4455	.4494	.4510

TABLE C33 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9976	.9976	.9977	.9977	.9977	.9977	.9977	.9977	.9978
100.0000	.9972	.9973	.9974	.9974	.9975	.9975	.9975	.9975	.9975
200.0000	.9923	.9926	.9927	.9929	.9930	.9930	.9930	.9930	.9930
300.0000	.9703	.9721	.9732	.9742	.9748	.9750	.9752	.9753	.9753
600.0000	.6660	.6978	.7178	.7332	.7427	.7467	.7498	.7518	.7523
1000.0000	.3443	.4104	.4528	.4856	.5049	.5137	.5197	.5240	.5257
1500.0000	.2991	.3711	.4174	.4529	.4740	.4837	.4902	.4949	.4967
2000.0000	.2982	.3704	.4167	.4524	.4735	.4832	.4897	.4944	.4963
2500.0000	.2969	.3693	.4158	.4516	.4727	.4825	.4889	.4937	.4956
3500.0000	.2954	.3681	.4148	.4505	.4718	.4815	.4880	.4928	.4947

PCFLOS (A,H) TABLE C34 SPRING LOCATION N

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
100.0000	.9993	.9994	.9995	.9995	.9995	.9995	.9995	.9995	.9995
200.0000	.9976	.9978	.9978	.9979	.9979	.9980	.9980	.9980	.9980
300.0000	.9910	.9919	.9924	.9928	.9931	.9932	.9932	.9933	.9933
600.0000	.8811	.8922	.8996	.9049	.9081	.9095	.9104	.9111	.9114
1000.0000	.4054	.4640	.5036	.5315	.5476	.5557	.5605	.5642	.5656
1500.0000	.3710	.4324	.4737	.5029	.5198	.5282	.5333	.5371	.5386
2000.0000	.3695	.4310	.4724	.5017	.5186	.5271	.5321	.5359	.5374
2500.0000	.3685	.4301	.4716	.5009	.5178	.5263	.5314	.5352	.5367
3500.0000	.3638	.4259	.4677	4975	.5145	.5230	.5282	.5320	.5337

TABLE C35 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9545	.9555	.9559	.9564	.9569	.9569	.9569	.9569	.9569
100.0000	.9488	.9501	.9507	.9513	.9518	.9519	.9519	.9519	.9519
200.0000	.9081	.9110	.9125	.9140	.9151	.9153	.9155	.9155	.9155
300.0000	.8373	.8443	.8484	.8521	.8546	.8552	.8558	.8560	.8562
600.0000	.5246	.5593	.5809	.5986	.6094	.6137	.6169	.6189	.6196
1000.0000	.3157	.3737	.4104	.4394	.4567	.4643	.4696	.4730	.4743
1500.0000	.2863	.3483	.3877	.4188	.4368	.4450	.4507	.4544	.4558
2000.0000	.2815	.3443	.3842	.4154	.4338	.4421	.4478	.4516	.4530
2500.0000	.2803	.3433	.3834	.4147	.4332	.4415	.4473	.4510	.4525
3500.0000	.2764	.3403	.3808	.4126	.4313	.4397	.4455	.4493	.4510

TABLE C36 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9972	.9973	.9973	.9973	.9974	.9974	.9974	.9974	.9974
100.0000	.9966	.9967	.9967	.9968	.9968	.9968	.9968	.9968	.9968
200.0000	.9947	.9949	.9949	.9950	.9951	.9951	.9951	.9951	.9951
300.0000	.9792	.9803	.9810	.9816	.9820	.9821	.9822	.9823	.9823
600.0000	.8424	.8558	.8645	.8710	.8751	.8768	.8778	.8787	.8790
1000.0000	.3860	.4488	.4895	.5198	.5367	.5452	.5501	.5543	.5560
1500.0000	.3629	.4269	.4697	.5008	.5183	.5270	.5321	.5364	.5381
2000.0000	.3616	.4256	.4685	.4989	.5172	.5260	.5311	.5353	.5371
2500.0000	.3610	.4252	.4681	.4986	.5169	.5257	.5308	.5351	.5368
3500.0000	.3571	.4221	.4654	.4963	.5148	.5237	.5288	.5332	.5351

PCFLCS (A,H) TABLE C37 SPRING LOCATION P

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9410	.9423	.9429	.9435	.9441	.9441	.9441	.9441	.9441
100.0000	.9375	.9389	.9396	.9403	.9410	.9410	.9410	.9411	.9411
200.0000	.8761	.8797	.8817	.8836	.8851	.8853	.8854	.8855	.8855
300.0000	.7973	.8047	.8091	.8128	.8157	.8163	.8167	.8170	.8171
600.0000	.4422	.4816	.5069	.5257	.5380	.5429	.5457	.5480	.5491
1000.0000	.3089	.3611	.3952	.4200	.4361	.4427	.4465	.4496	.4511
1500.0000	.2990	.3524	.3872	.4125	.4289	.4356	.4396	.4427	.4443
2000.0000	.2970	.3505	.3854	.4109	.4273	.4341	.4380	.4412	.4428
2500.0000	.2940	.3478	.3828	.4084	.4249	.4317	.4357	.4388	.4404
3500.0000	.2898	.3445	.3800	.4061	.4228	.4297	.4337	.4369	.4388

TABLE C38 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9197	.9214	.9222	.9231	.9239	.9239	.9239	.9239	.9239
100.0000	.9100	.9119	.9129	.9138	.9148	.9148	.9148	.9148	.9148
200.0000	.7949	.8009	.8041	.8070	.8095	.8098	.8100	.8101	.8102
300.0000	.6714	.6826	.6889	.6945	.6990	.6998	.7003	.7006	.7008
600.0000	.3116	.3455	.3660	.3827	.3944	.3977	.4000	.4015	.4021
1000.0000	.1950	.2366	.2622	.2827	.2967	.3010	.3039	.3058	.3066
1500.0000	.1821	.2246	.2508	.2717	.2860	.2904	.2933	.2952	.2961
2000.0000	.1806	.2234	.2497	.2707	.2850	.2895	.2924	.2944	.2952
2500.0000	.1785	.2215	.2480	.2692	.2835	.2880	.2910	.2930	.2938
3500.0000	.1760	.2195	.2463	.2677	.2821	.2867	.2897	.2917	.2926

TABLE C39 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9514	.9524	.9529	.9534	.9539	.9539	.9539	.9539	.9539
100.0000	.9467	.9479	.9485	.9491	.9496	.9497	.9497	.9497	.9497
200.0000	.8753	.8794	.8818	.8838	.8855	.8858	.8859	.8861	.8861
300.0000	.7865	.7949	.7998	.8040	.8072	.8079	.8084	.8087	.8089
600.0000	.3882	.4331	.4616	.4834	.4973	.5030	.5065	.5091	.5104
1000.0000	.2843	.3412	.3778	.4050	.4222	.4295	.4339	.4373	.4390
1500.0000	.2799	.3371	.3741	.4014	.4187	.4261	.4304	.4338	.4356
2000.0000	.2791	.3364	.3734	.4007	.4180	.4254	.4298	.4332	.4350
2500.0000	.2763	.3337	.3708	.3982	.4155	.4229	.4273	.4307	.4325
3500.0000	.2669	.3250	.3625	.3903	.4078	.4153	.4197	.4232	.4251

PCFLOS (A,H) — TABLE C40 SPRING — LOCATION T

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9938	.9942	.9944	.9946	.9948	.9948	.9949	.9949	.9949
100.0000	.9938	.9942	.9944	.9946	.9948	.9948	.9949	.9949	.9949
200.0000	.9897	.9903	.9907	.9911	.9913	.9914	.9914	.9915	.9915
300.0000	.9838	.9849	.9856	.9861	.9865	.9866	.9868	.9868	.9868
600.0000	.8919	.9047	.9137	.9197	.9233	.9253	.9264	.9274	.9277
1000.0000	.6921	.7399	.7760	.7969	.8095	.8173	.8218	.8253	.8265
1500.0000	.6399	.6965	.7397	.7642	.7791	.7884	.7938	.7979	.7993
2000.0000	.6307	.6886	.7327	.7578	.7731	.7826	.7881	.7923	.7937
2500.0000	.6272	.6853	.7295	.7547	.7700	.7795	.7851	.7893	.7907
3500.0000	.6236	.6829	.7272	.7534	.7687	.7783	.7839	.7881	.7905

TABLE C41 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9592	.9662	.9715	.9745	.9762	.9773	.9779	.9784	.9788
100.0000	.9592	.9662	.9715	.9745	.9762	.9773	.9779	.9784	.9788
200.0000	.9584	.9655	.9708	.9738	.9755	.9767	.9772	.9777	.9782
300.0000	.9532	.9609	.9666	.9699	.9718	.9730	.9736	.9742	.9746
600.0000	.8053	.8354	.8576	.8709	.8786	.8835	.8861	.8884	.8894
1000.0000	.6742	.7309	.7751	.7988	.8129	.8226	.8280	.8322	.8337
1500.0000	.6710	.7283	.7730	.7969	.8111	.8209	.8264	.8306	.8322
2000.0000	.6702	.7277	.7724	.7964	.8106	.8205	.8259	.8302	.8317
2500.0000	.6699	.7274	.7722	.7961	.8104	.8202	.8257	.8300	.8315
3500.0000	.6554	.7148	.7606	.7858	.8004	.8105	.8161	.8205	.8225

TABLE C42 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
200.0000	.9996	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998
300.0000	.9996	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998
600.0000	.9610	.9666	.9707	.9732	.9748	.9758	.9760	.9765	.9766
1000.0000	.6900	.7390	.7748	.7967	.8098	.8175	.8219	.8255	.8269
1500.0000	.5933	.6573	.7041	.7327	.7498	.7598	.7655	.7702	.7721
2000.0000	.5778	.6440	.6923	.7219	.7396	.7500	.7558	.7607	.7626
2500.0000	.5738	.6403	.6889	.7186	.7363	.7468	.7527	.7575	.7595
3500.0000	.5717	.6389	.6874	.7179	.7356	.7461	.7519	.7568	.7595

PCFLOS (A,H) TABLE C43 SPRING LOCATION V

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9818	.9822	.9824	.9826	.9828	.9828	.9828	.9828	.9828
100.0000	.9818	.9822	.9824	.9826	.9828	.9828	.9828	.9828	.9828
200.0000	.9640	.9651	.9658	.9663	.9668	.9669	.9669	.9669	.9670
300.0000	.9006	.9055	.9086	.9110	.9129	.9134	.9137	.9139	.9140
600.0000	.6946	.7171	.7318	.7425	.7499	.7526	.7541	.7555	.7562
1000.0000	.4068	.4625	.5003	.5263	.5429	.5503	.5545	.5582	.5599
1500.0000	.3789	.4374	.4770	.5044	.5218	.5296	.5340	.5380	.5397
2000.0000	.3770	.4358	.4756	.5030	.5204	.5283	.5327	.5367	.5384
2500.0000	.3735	.4326	.4725	.5001	.5176	.5256	.5300	.5340	.5357
3500.0000	.3594	.4203	.4613	.4899	.5079	.5160	.5206	.5247	.5267

TABLE C44 SUMMER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	.9850	.9853	.9854	.9856	.9857	.9857	.9857	.9857	.9857
100.0000	.9828	.9832	.9834	.9835	.9837	.9837	.9837	.9837	.9837
200.0000	.9735	.9745	.9751	.9755	.9759	.9760	.9760	.9761	.9761
300.0000	.9457	.9483	.9499	.9512	.9521	.9523	.9525	.9526	.9527
600.0000	.7700	.7909	.8053	.8147	.8208	.8236	.8250	.8264	.8270
1000.0000	.5218	.5786	.6195	.6446	.6600	.6685	.6729	.6770	.6785
1500.0000	.5123	.5707	.6127	.6384	.6543	.6630	.6675	.6717	.6732
2000.0000	.5081	.5668	.6091	.6350	.6509	.6596	.6642	.6684	.6700
2500.0000	.5047	.5637	.6061	.6321	.6481	.6569	.6615	.6657	.6673
3500.0000	.4873	.5480	.5914	.6185	.6349	.6439	.6486	.6529	.6549

TABLE C45 WINTER

PROBABILITY OF CLOUD-FREE LINES-OF-SIGHT, FROM THE SURFACE TO GIVEN HEIGHT H.

HEIGHT H (METERS)	10 DEG	20 DEG	30 DEG	40 DEG	50 DEG	60 DEG	70 DEG	80 DEG	90 DEG
50.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100.0000	.9992	.9992	.9992	.9992	.9992	.9992	.9992	.9992	.9992
200.0000	.9958	.9961	.9963	.9964	.9964	.9965	.9965	.9965	.9965
300.0000	.9588	.9620	.9640	.9654	.9664	.9668	.9670	.9672	.9673
600.0000	.7300	.7576	.7758	.7886	.7970	.8007	.8027	.8045	.8054
1000.0000	.4213	.4892	.5356	.5668	.5865	.5959	.6007	.6056	.6079
1500.0000	.4111	.4804	.5277	.5596	.5796	.5892	.5941	.5991	.6014
2000.0000	.4083	.4779	.5254	.5574	.5775	.5871	.5921	.5971	.5994
2500.0000	.4063	.4760	.5236	.5557	.5758	.5854	.5904	.5954	.5977
3500.0000	.3986	.4691	.5171	.5497	.5700	.5797	.5847	.5898	.5922

TABLE C46 PCFLOS (A)
PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT THROUGH ALL CLOUDS, FOR NINE ELEVATION ANGLES AND THREE SEASONS, AT EACH LOCATION.

ELEVATION ANGLE DEGREES	LOCATION 1			LOCATION 9			LOCATION A		
	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER
10	.6024	.7359	.5087	.3609	.2790	.2415	.1912	.1693	.2061
20	.6541	.7788	.5703	.4175	.3423	.2889	.2429	.2179	.2612
30	.6881	.8064	.6114	.4547	.3833	.3189	.2747	.2473	.2952
40	.7123	.8272	.6399	.4825	.4149	.3424	.3010	.2724	.3231
50	.7253	.8367	.6560	.4998	.4347	.3577	.3163	.2861	.3386
60	.7323	.8426	.6648	.5069	.4426	.3629	.3225	.2917	.3455
70	.7361	.8454	.6697	.5109	.4478	.3662	.3271	.2962	.3505
80	.7389	.8480	.6736	.5150	.4522	.3689	.3293	.2978	.3529
90	.7435	.8537	.6769	.5170	.4536	.3701	.3304	.2984	.3540

ELEVATION ANGLE DEGREES	LOCATION B			LOCATION C			LOCATION D		
	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER
10	.1448	.1645	.1382	.1736	.1309	.2104	.2137	.2636	.2191
20	.1869	.2039	.1827	.2190	.1700	.2611	.2661	.3170	.2757
30	.2121	.2279	.2095	.2469	.1933	.2929	.2989	.3513	.3114
40	.2336	.2478	.2326	.2698	.2131	.3180	.3251	.3773	.3398
50	.2475	.2608	.2472	.2846	.2266	.3336	.3407	.3936	.3572
60	.2517	.2647	.2518	.2894	.2302	.3395	.3469	.4001	.3641
70	.2549	.2676	.2554	.2929	.2329	.3434	.3511	.4043	.3688
80	.2565	.2691	.2572	.2949	.2343	.3460	.3537	.4072	.3719
90	.2571	.2697	.2578	.2958	.2349	.3471	.3549	.4086	.3732

TABLE C46 PCFLOS (A) (CONT.)
PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT THROUGH ALL CLOUDS, FOR NINE ELEVATION ANGLES AND THREE SEASONS, AT EACH LOCATION.

ELEVATION ANGLE DEGREES	LOCATION H			LOCATION I			LOCATION J		
	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER
10	.2663	.4034	.2373	.2201	.1903	.2403	.2722	.1956	.2532
20	.3181	.4691	.2887	.2773	.2437	.3020	.3352	.2477	.3135
30	.3513	.5131	.3209	.3129	.2766	.3408	.3754	.2798	.3518
40	.3769	.5443	.3467	.3415	.3038	.3717	.4061	.3061	.3816
50	.3928	.5627	.3623	.3574	.3188	.3887	.4234	.3209	.3989
60	.3990	.5716	.3684	.3647	.3253	.3967	.4319	.3272	.4067
70	.4031	.5765	.3726	.3698	.3302	.4024	.4374	.3317	.4120
80	.4060	.5811	.3752	.3724	.3322	.4054	.4407	.3337	.4152
90	.4074	.5834	.3765	.3737	.3332	.4069	.4424	.3349	.4169

ELEVATION ANGLE DEGREES	LOCATION K			LOCATION M			LOCATION N		
	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER
10	.2919	.2874	.2578	.2424	.1939	.2261	.2613	.3333	.2563
20	.3535	.3479	.3170	.3015	.2467	.2868	.3199	.3976	.3150
30	.3929	.3867	.3543	.3383	.2788	.3245	.3574	.4403	.3526
40	.4224	.4160	.3834	.3681	.3060	.3548	.3867	.4713	.3818
50	.4393	.4321	.3997	.3843	.3209	.3717	.4034	.4891	.3991
60	.4475	.4402	.4073	.3920	.3272	.3795	.4108	.4978	.4065
70	.4526	.4456	.4125	.3975	.3321	.3848	.4160	.5033	.4114
80	.4558	.4485	.4152	.4003	.3342	.3878	.4190	.5071	.4148
90	.4577	.4500	.4169	.4018	.3353	.3892	.4202	.5086	.4161

TABLE C46 PCFLOS (A) (CONT.)
PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT THROUGH ALL CLOUDS, FOR NINE ELEVATION ANGLES AND THREE SEASONS, AT EACH LOCATION.

ELEVATION ANGLE DEGREES	LOCATION P			LOCATION T			LOCATION V		
	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER	SPRING	SUMMER	WINTER
10	.2092	.1126	.2084	.2992	.3680	.3580	.2145	.2856	.2827
20	.2567	.1486	.2601	.3534	.4316	.4188	.2650	.3431	.3420
30	.2863	.1695	.2924	.3886	.4743	.4592	.2969	.3806	.3806
40	.3098	.1878	.3179	.4158	.5054	.4891	.3218	.4085	.4090
50	.3245	.2001	.3334	.4297	.5212	.5049	.3378	.4257	.4265
60	.3299	.2032	.3396	.4369	.5303	.5133	.3436	.4329	.4340
70	.3334	.2055	.3435	.4424	.5364	.5194	.3474	.4373	.4383
80	.3356	.2065	.3461	.4447	.5399	.5224	.3501	.4407	.4419
90	.3368	.2070	.3474	.4455	.5411	.5237	.3513	.4421	.4435

APPENDIX D

GRAPHS FOR LOCATIONS 1, 9, J AND M INCLUDING,

CLOUD BASE HEIGHT STATISTICS, WINTER, SPRING AND SUMMER.

PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE. WINTER, SPRING AND SUMMER.

PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, SPRING.

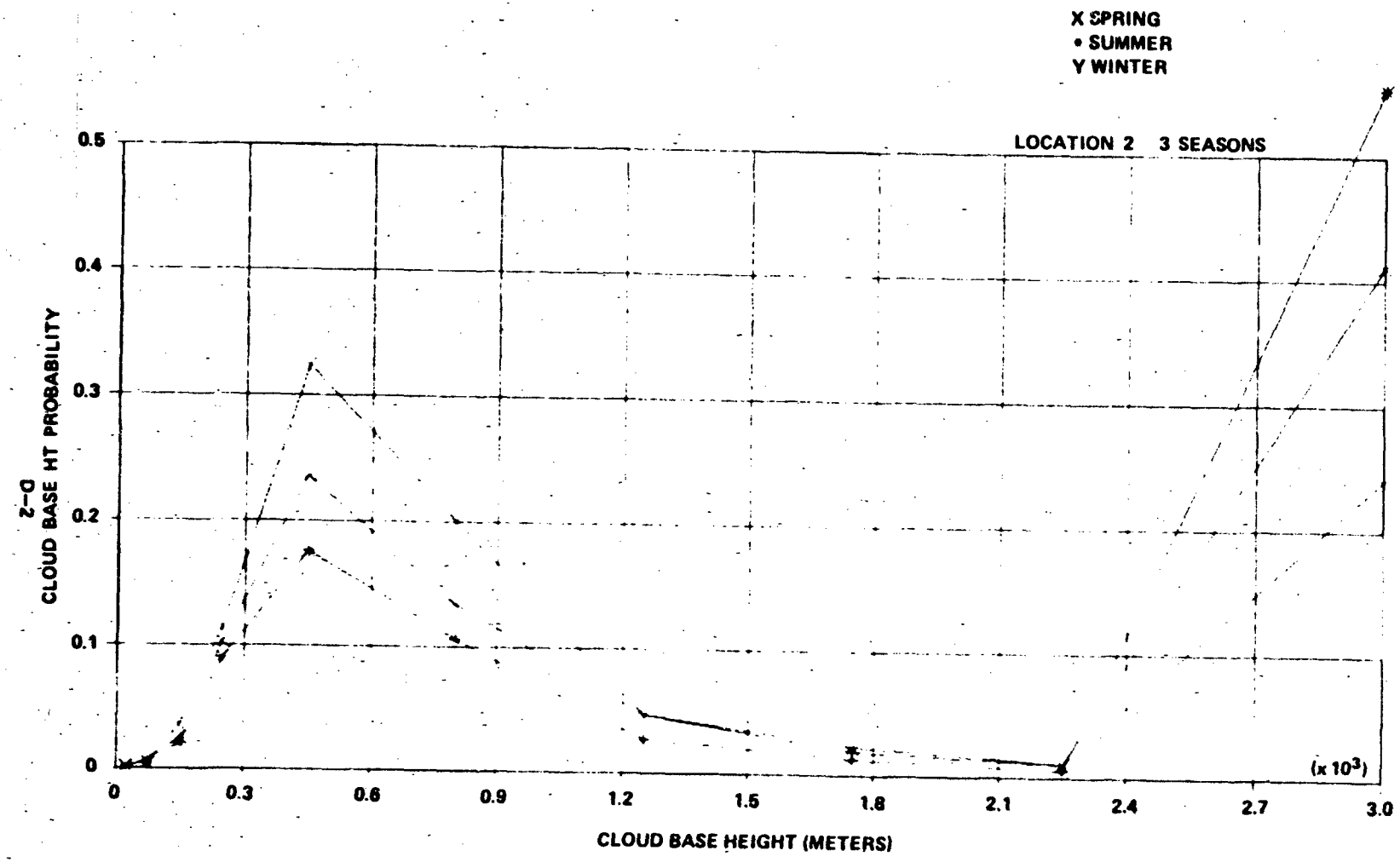


FIGURE D-1 LOWER CLOUD BASE HEIGHT STATISTICS, LOCATION 2 (SEE TABLES A–1A, A–2A, AND A–3A).

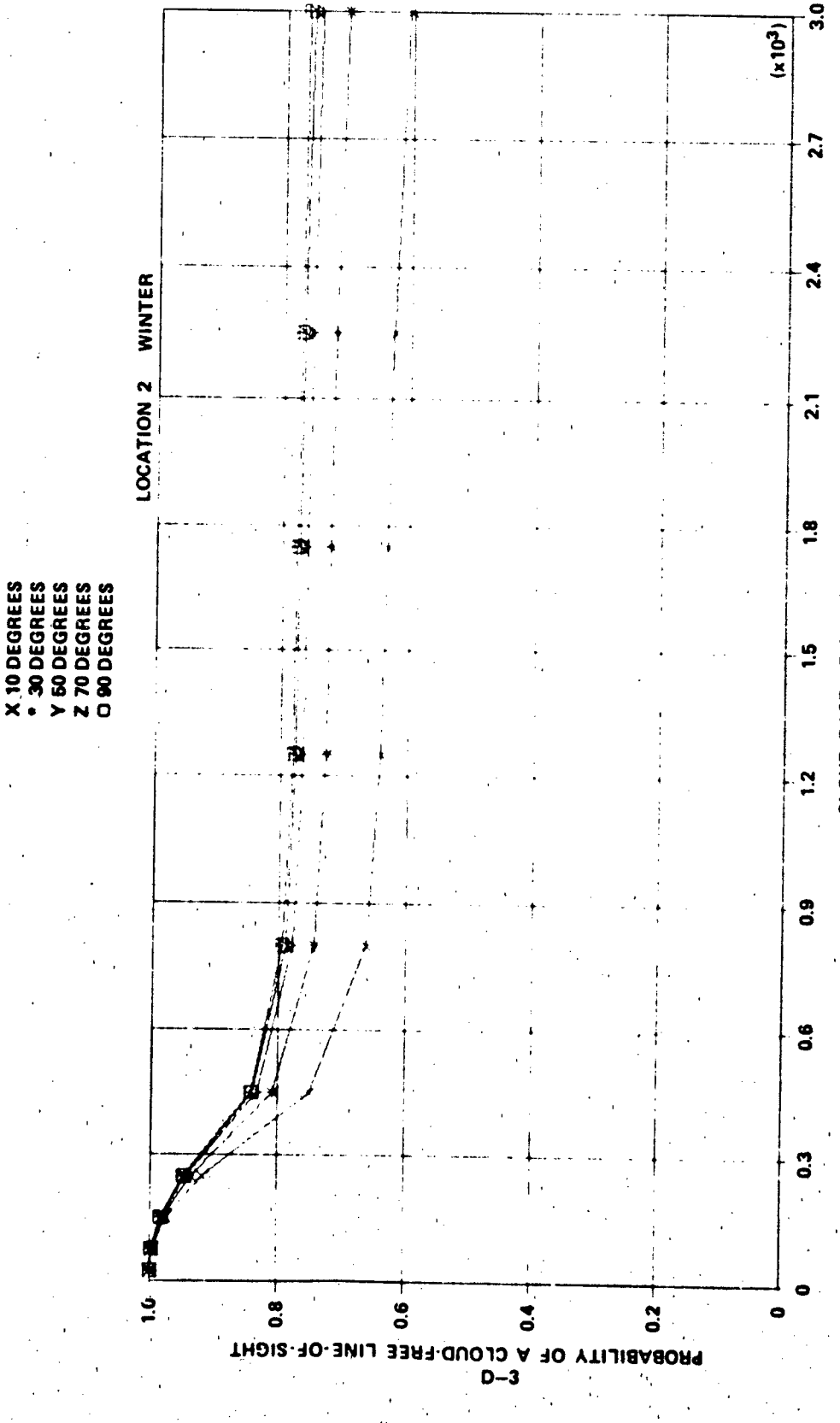
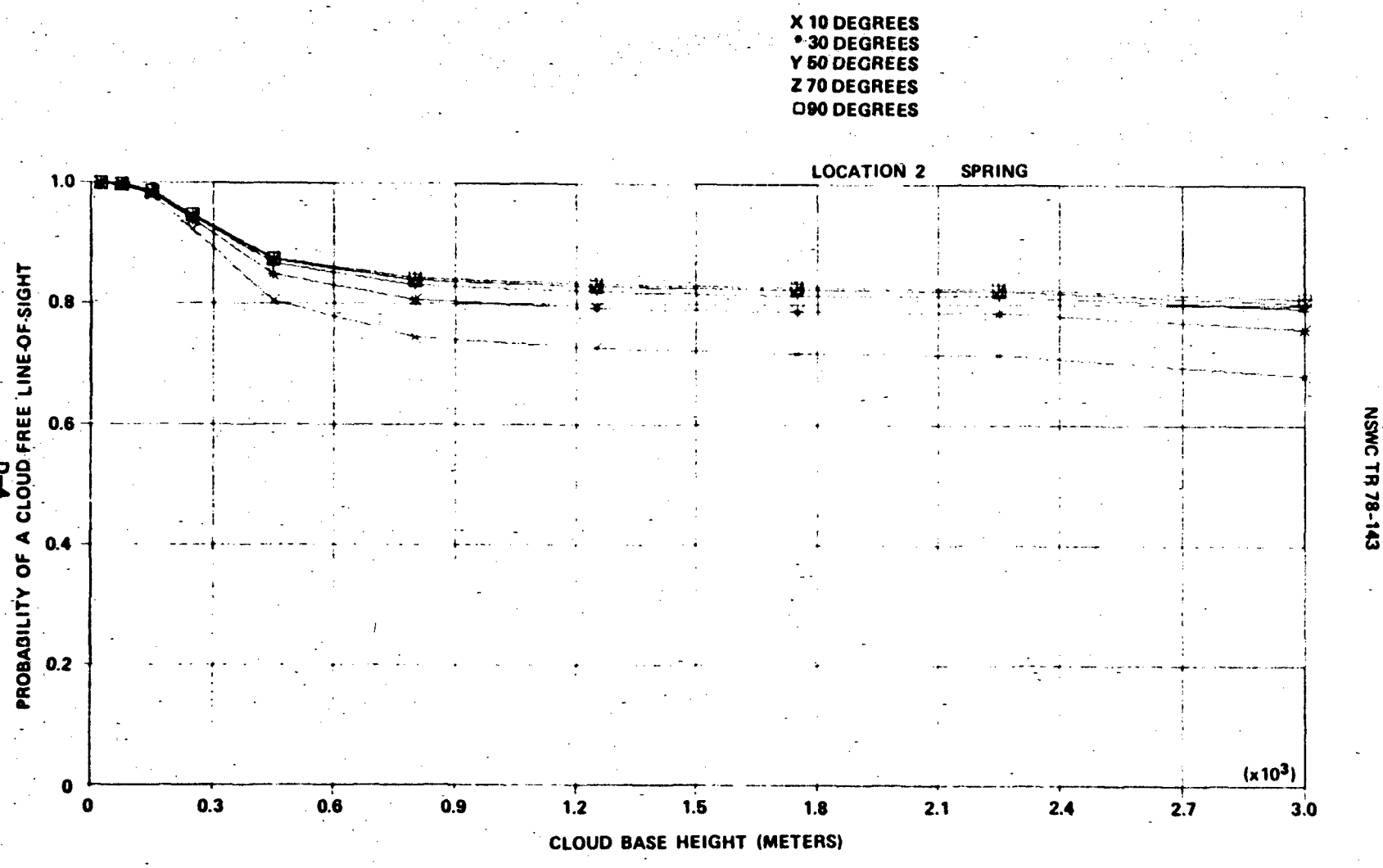
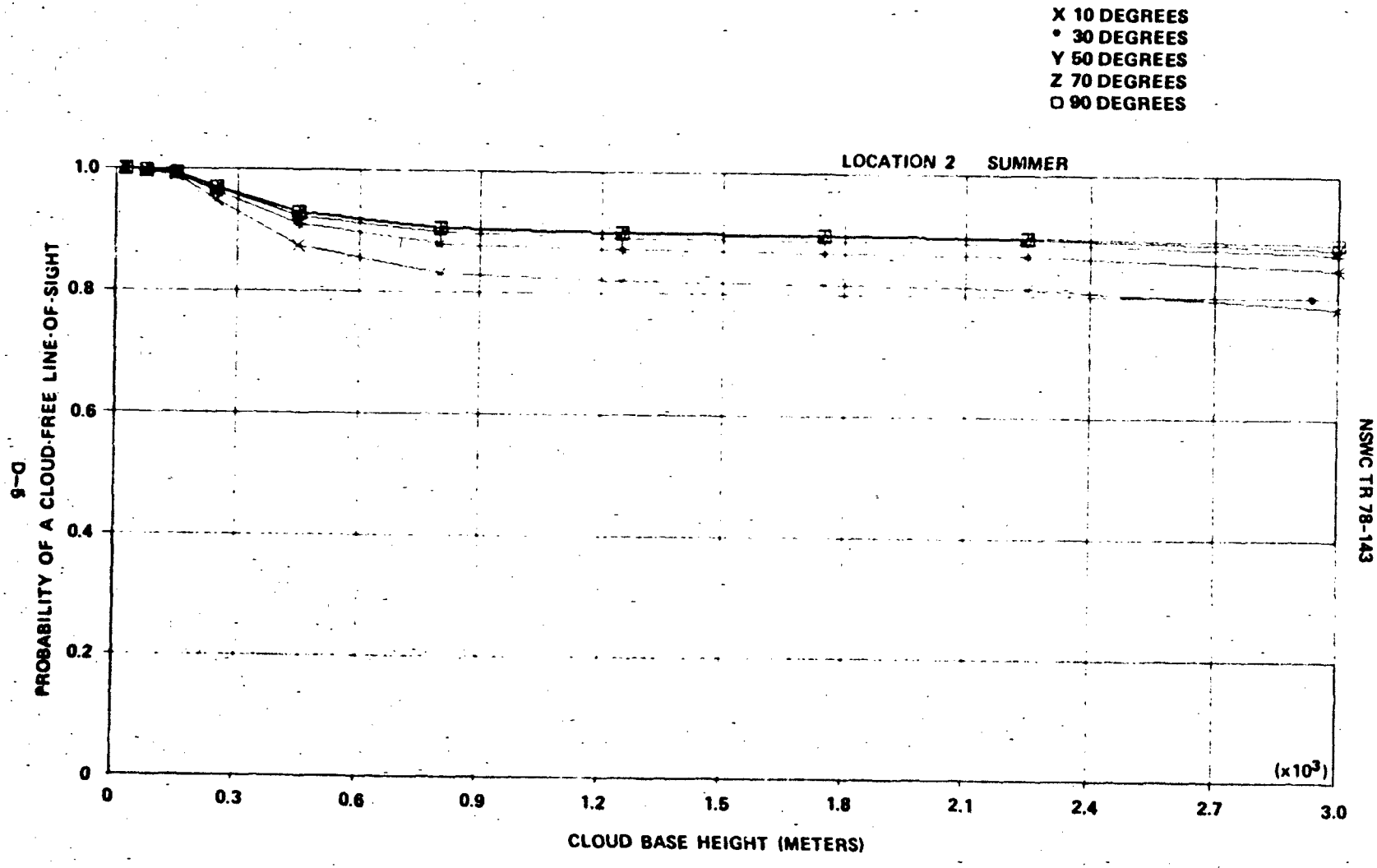


FIGURE D-2 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 2, WINTER. (SEE TABLE C-3).



NSWC TR 78-143

FIGURE D-3 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 2, SPRING. (SEE TABLE C-1).



NSWC TR 78-143

FIGURE D-4 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 2, SUMMER. (SEE TABLE C-2).

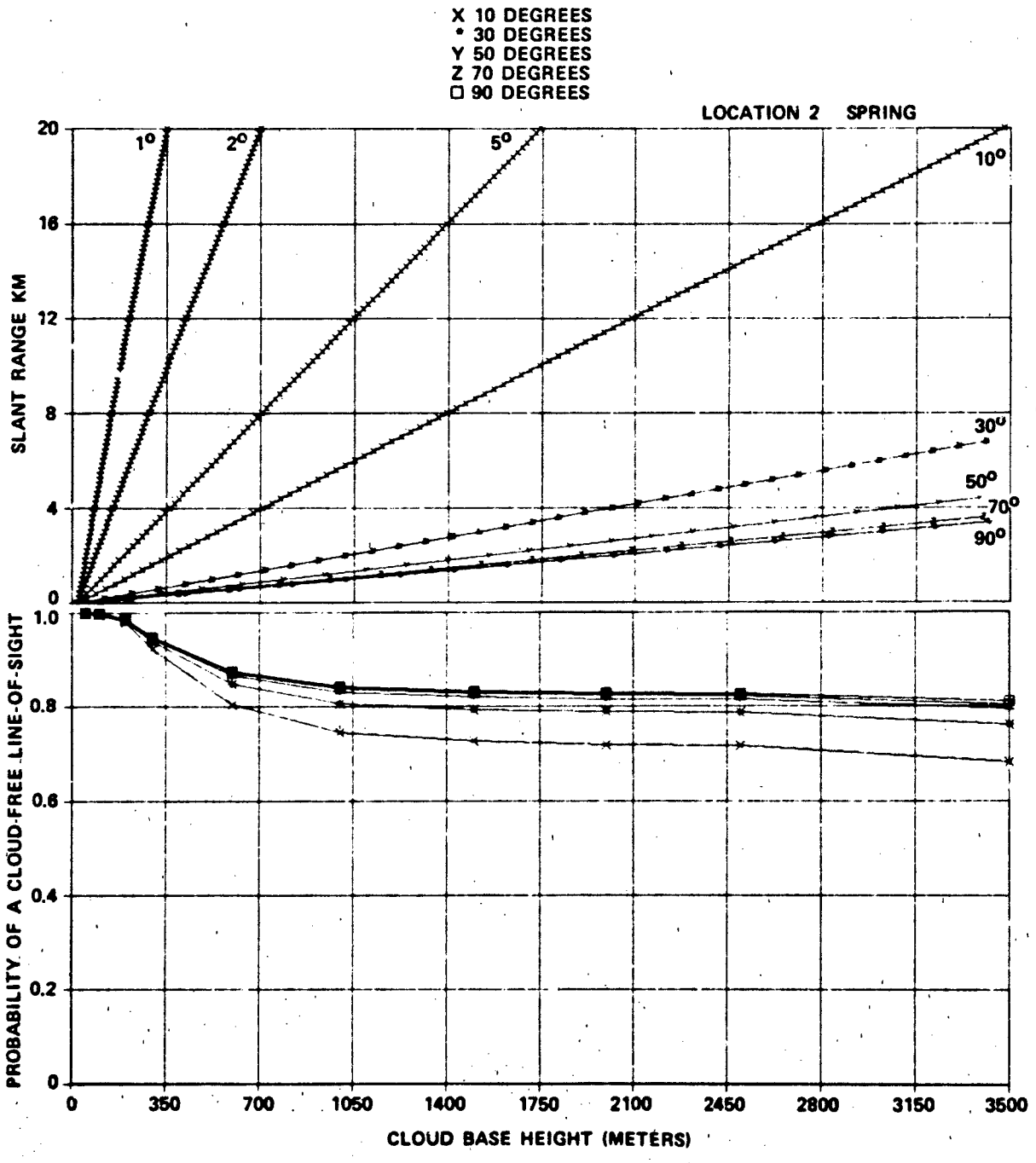


FIGURE D-5 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, LOCATION 2, SPRING. (SEE TABLE C-1).

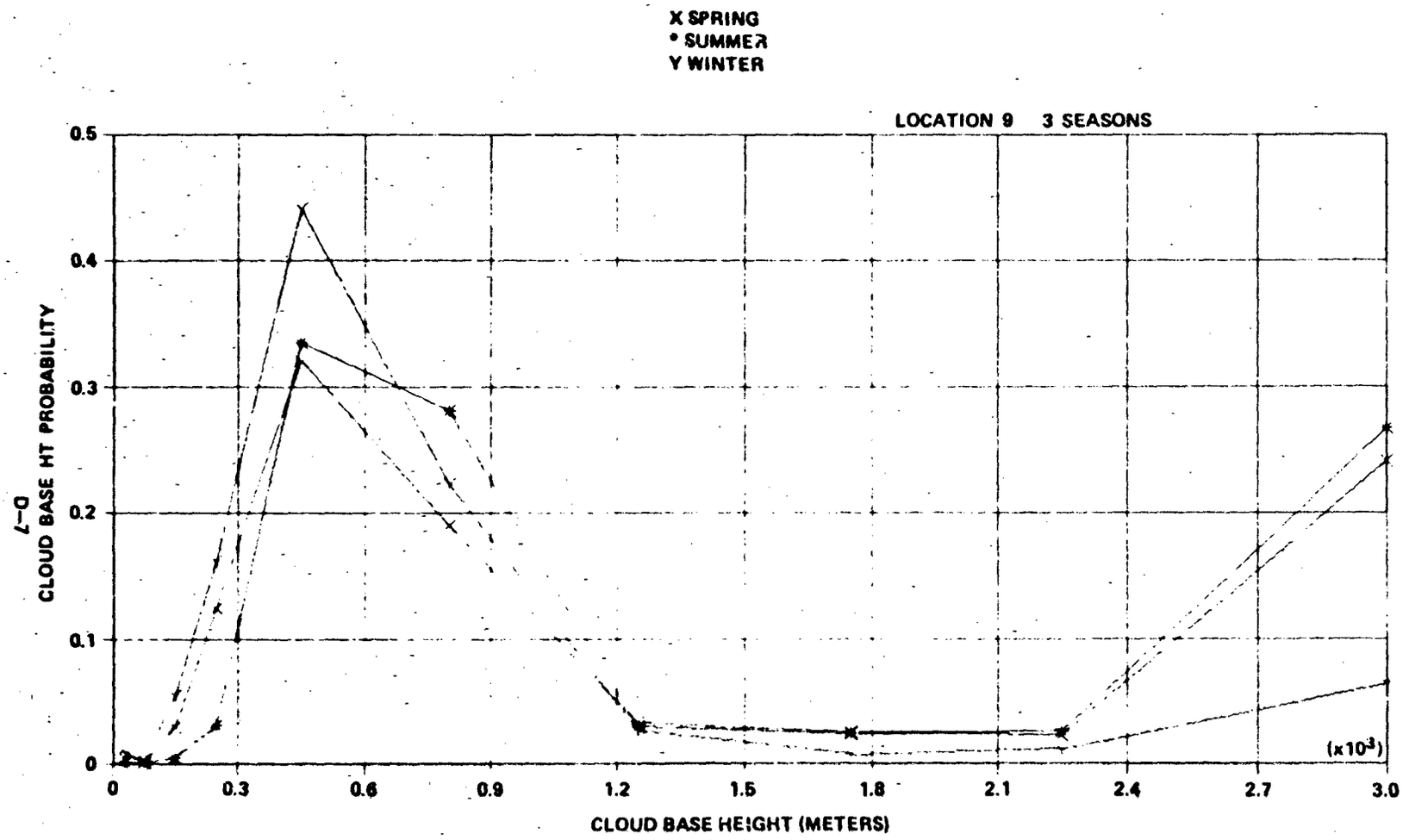


FIGURE D-6 LOWER CLOUD BASE HEIGHT STATISTICS, LOCATION 9. (SEE TABLE A–4A, A–5A, AND A–6A).

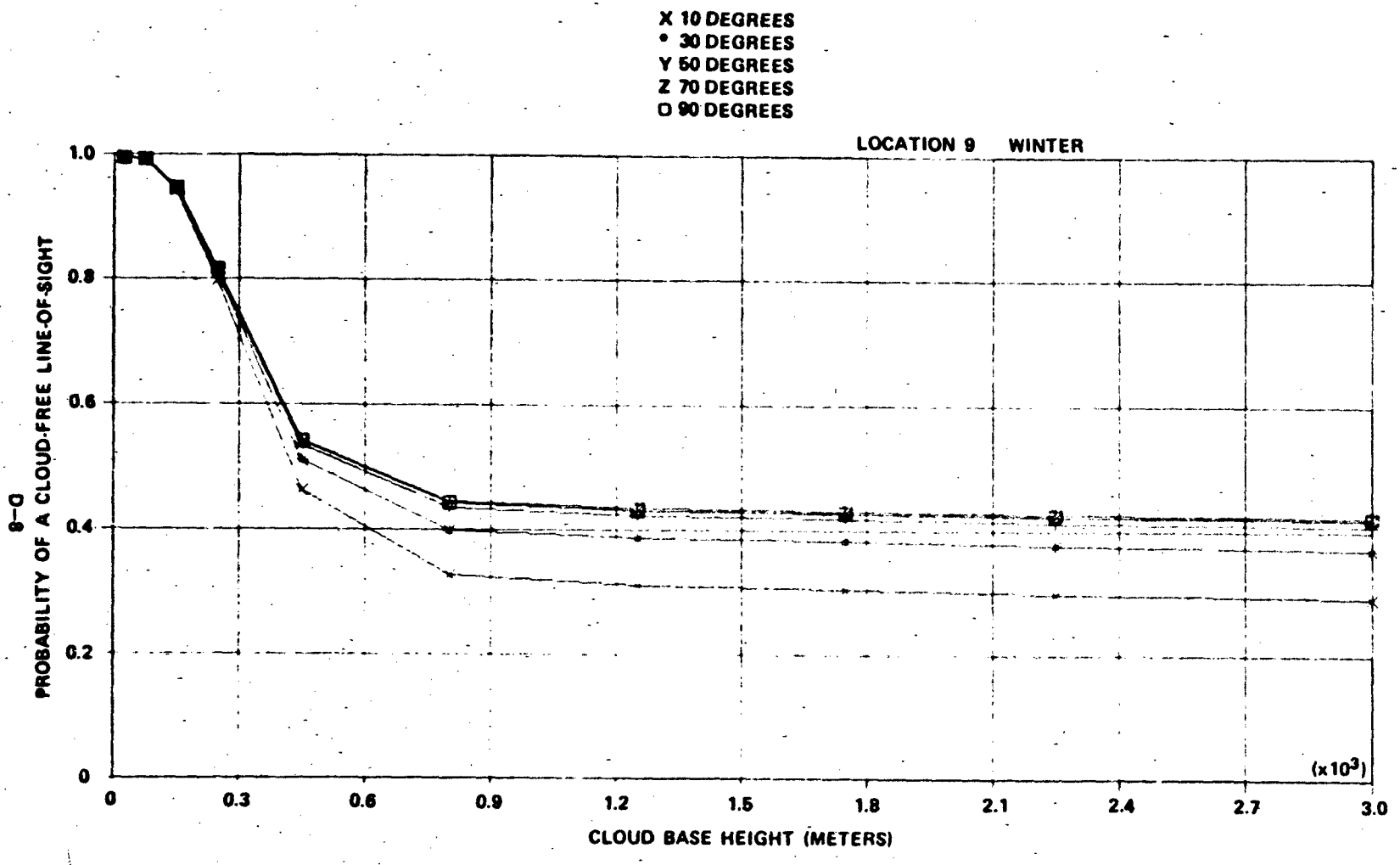


FIGURE D-7. PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 9, WINTER. (SEE TABLE C-6).

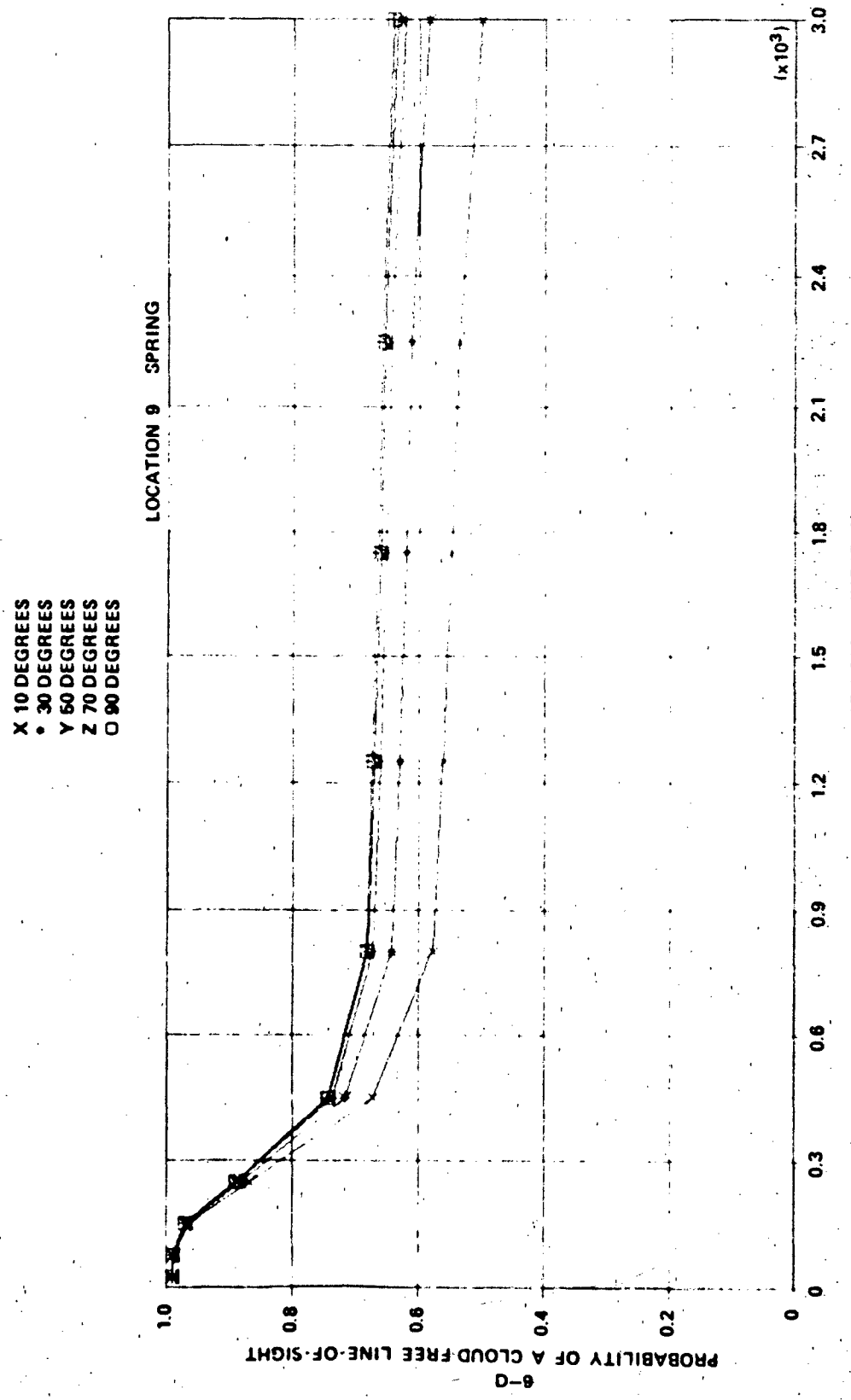


FIGURE D-8 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 9, SPRING. (SEE TABLE C-4).

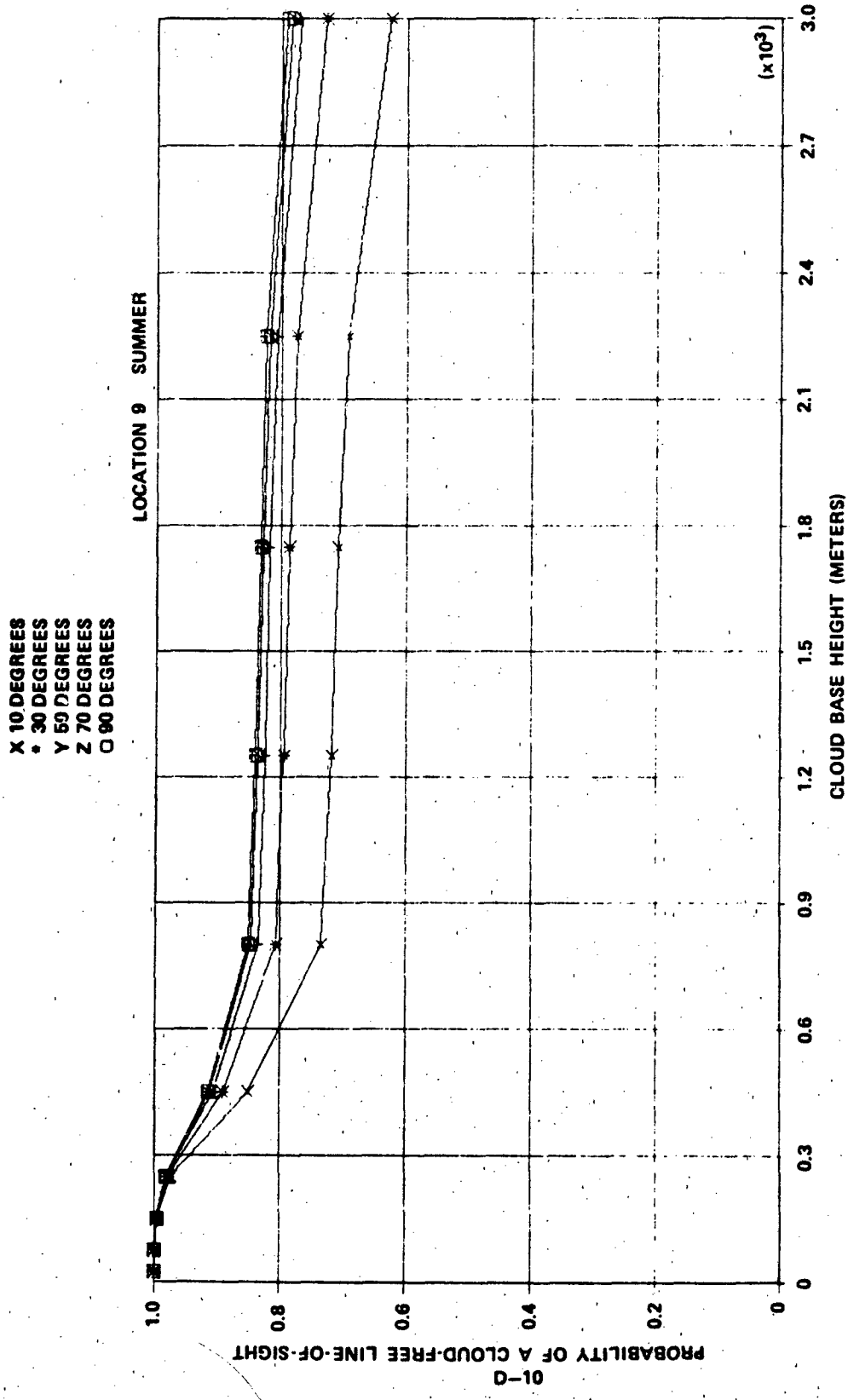


FIGURE D-9 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION 9, SUMMER. (SEE TABLE C-5).

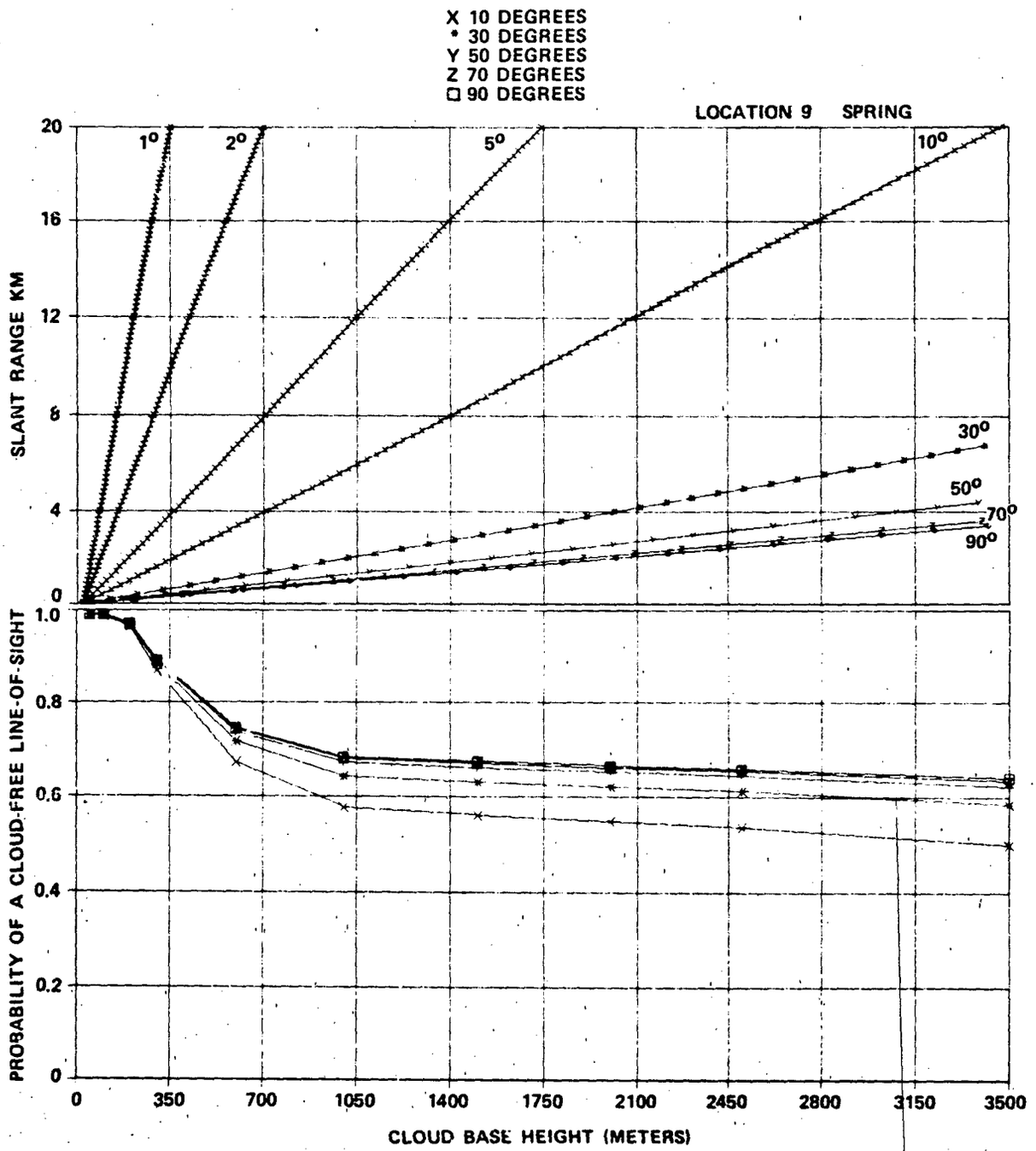


FIGURE D-10 PROBABILITY OF CLOUD-FREE LINE-OF-SIGHT TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, LOCATION 9, SPRING. (SEE TABLE C-4).

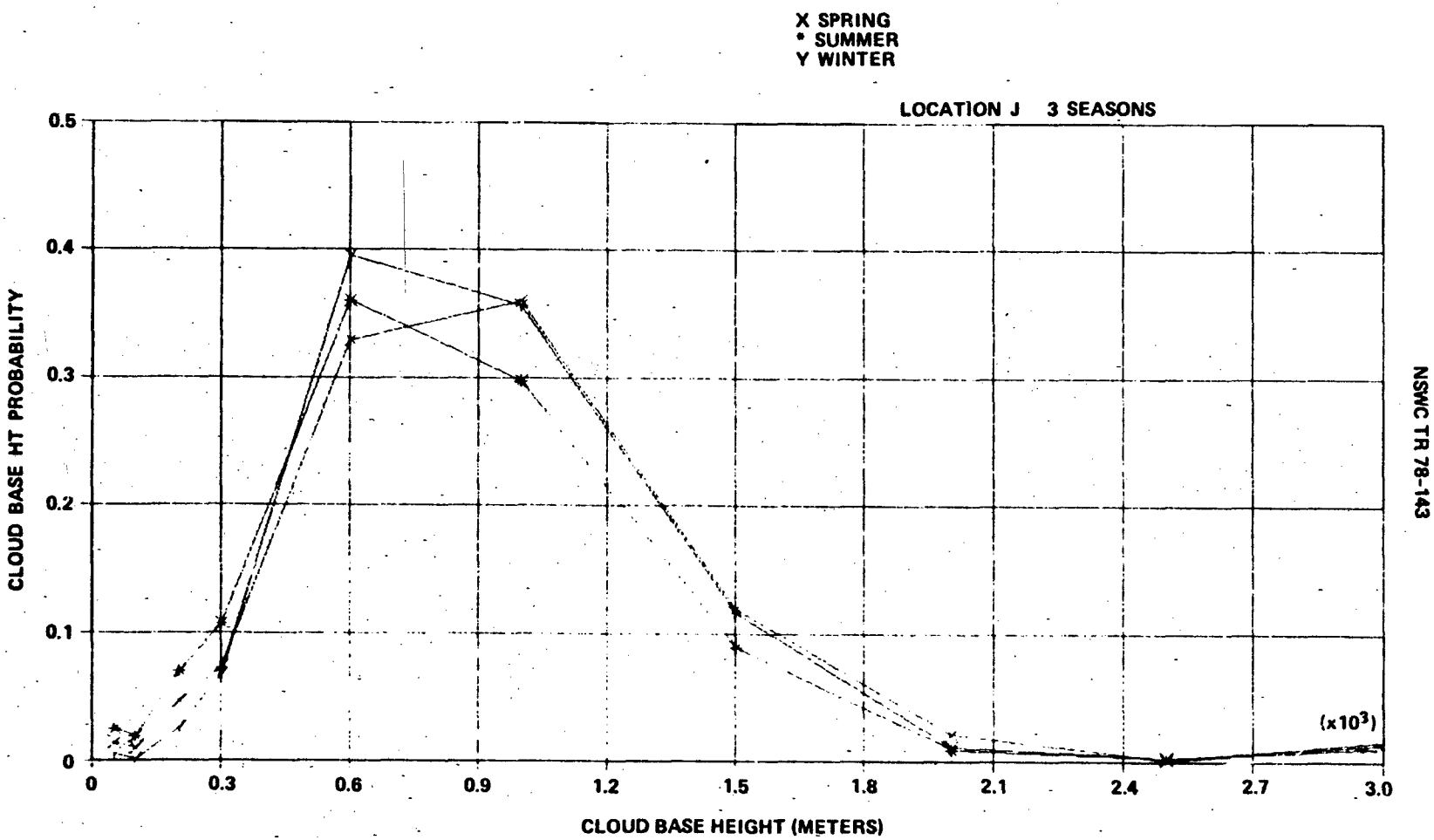


FIGURE D-11 LOWER CLOUD BASE HEIGHT STATISTICS, LOCATION J. (SEE TABLES A–25A, A–26A, AND A–27A).

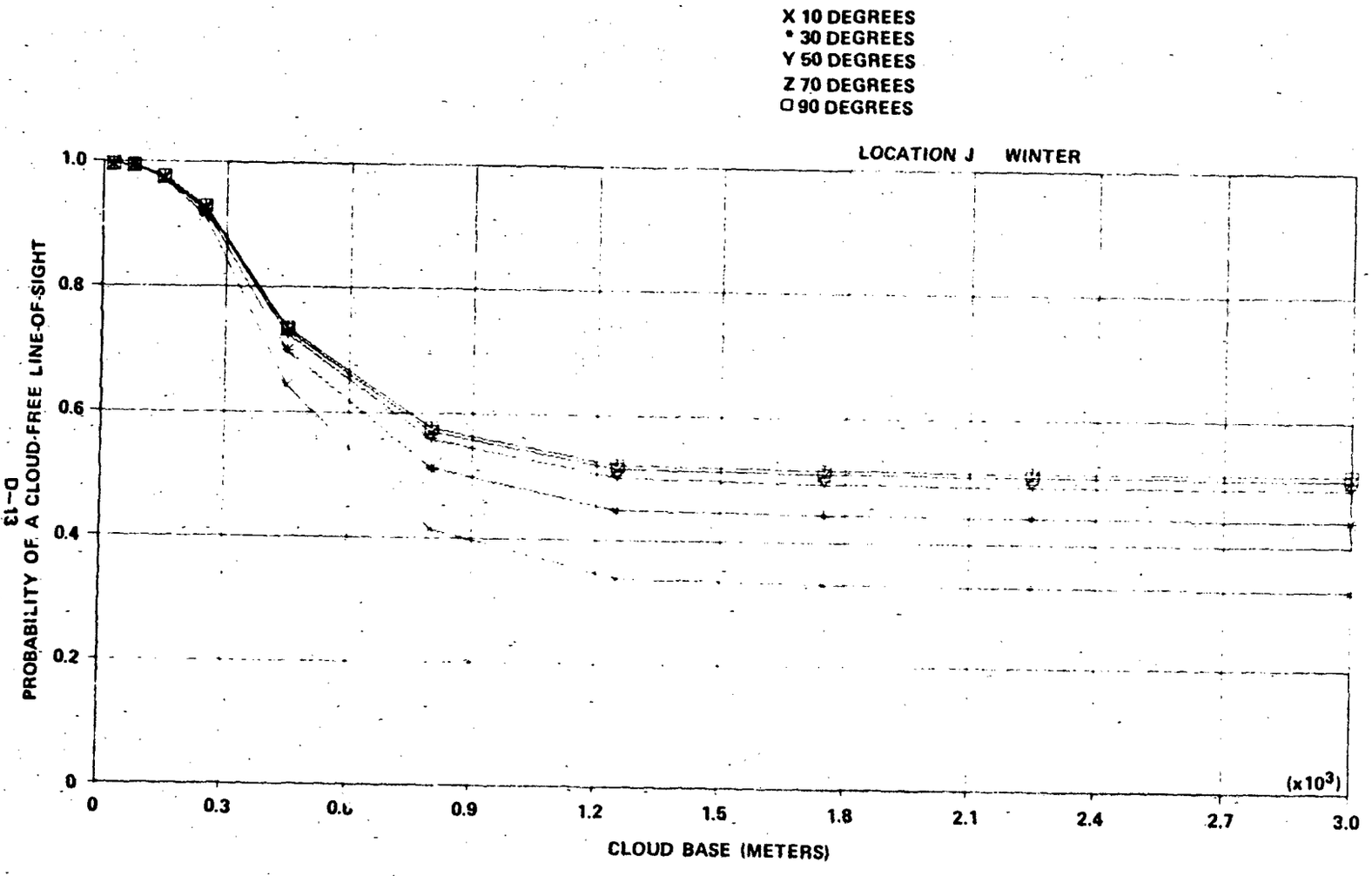


FIGURE D-12 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION J, WINTER. (SEE TABLE C-27).

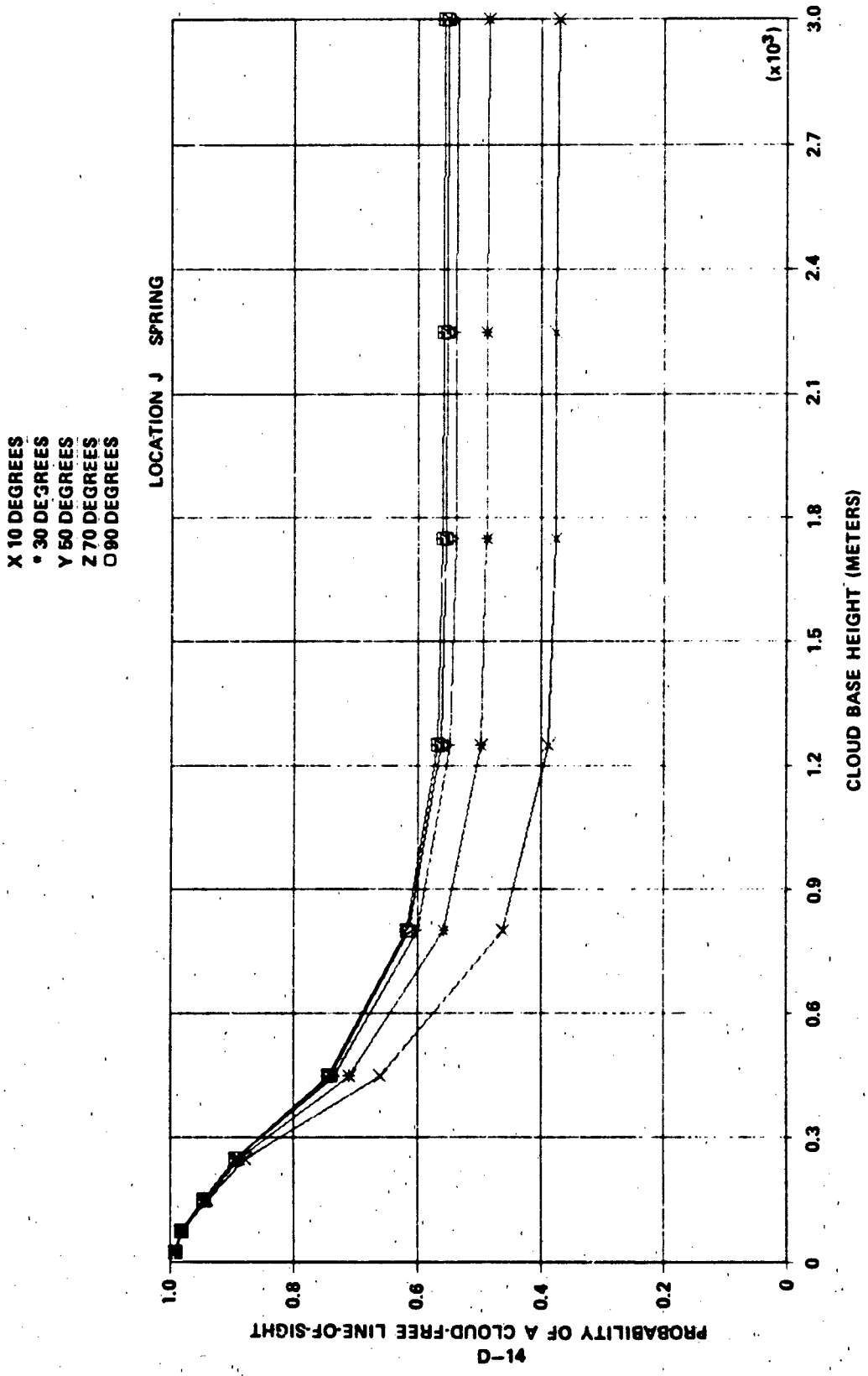


FIGURE D-13 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION J, SPRING. (SEE TABLE C-25).

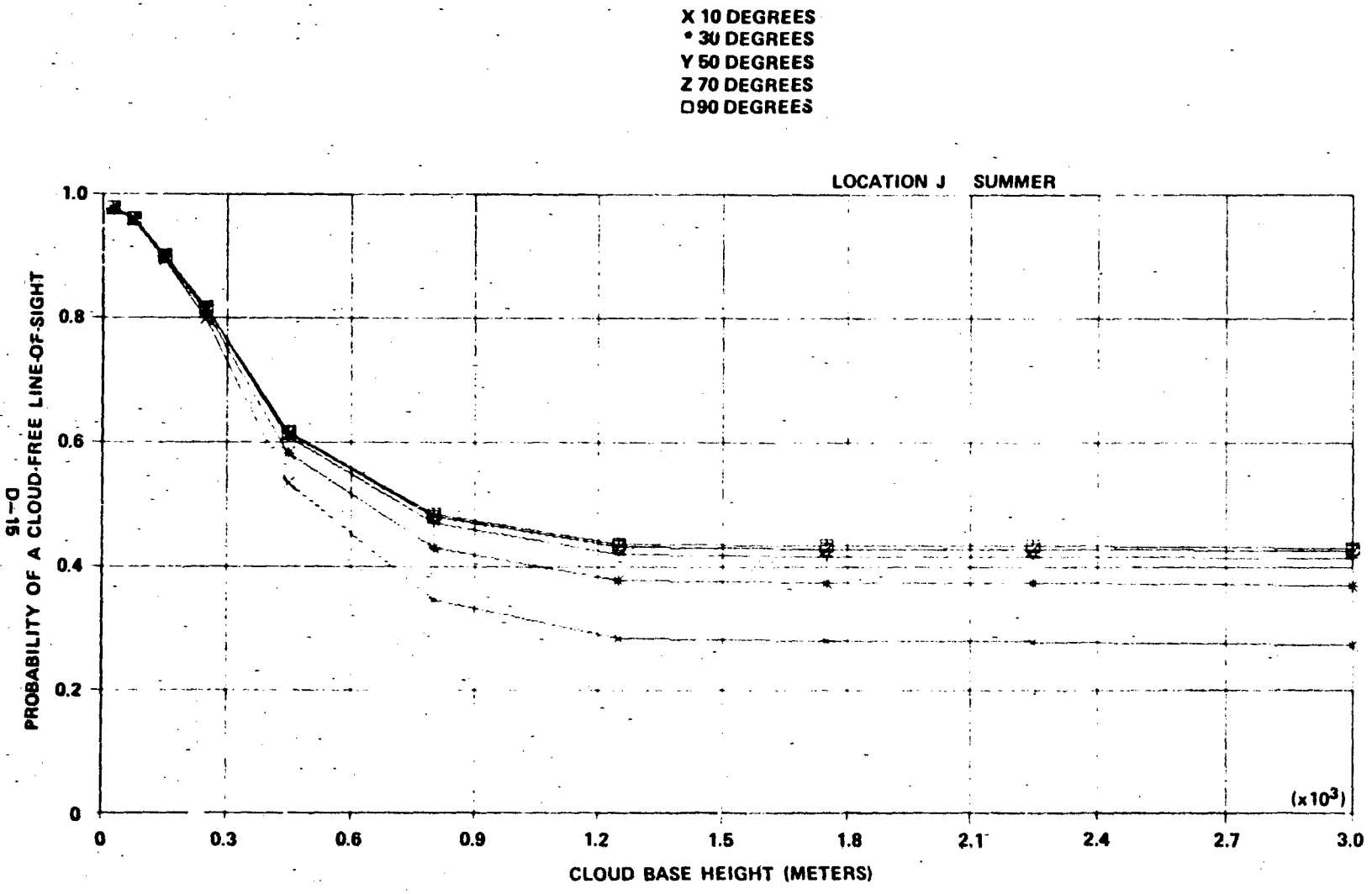


FIGURE D-14 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION J, SUMMER. (SEE TABLE C-26).

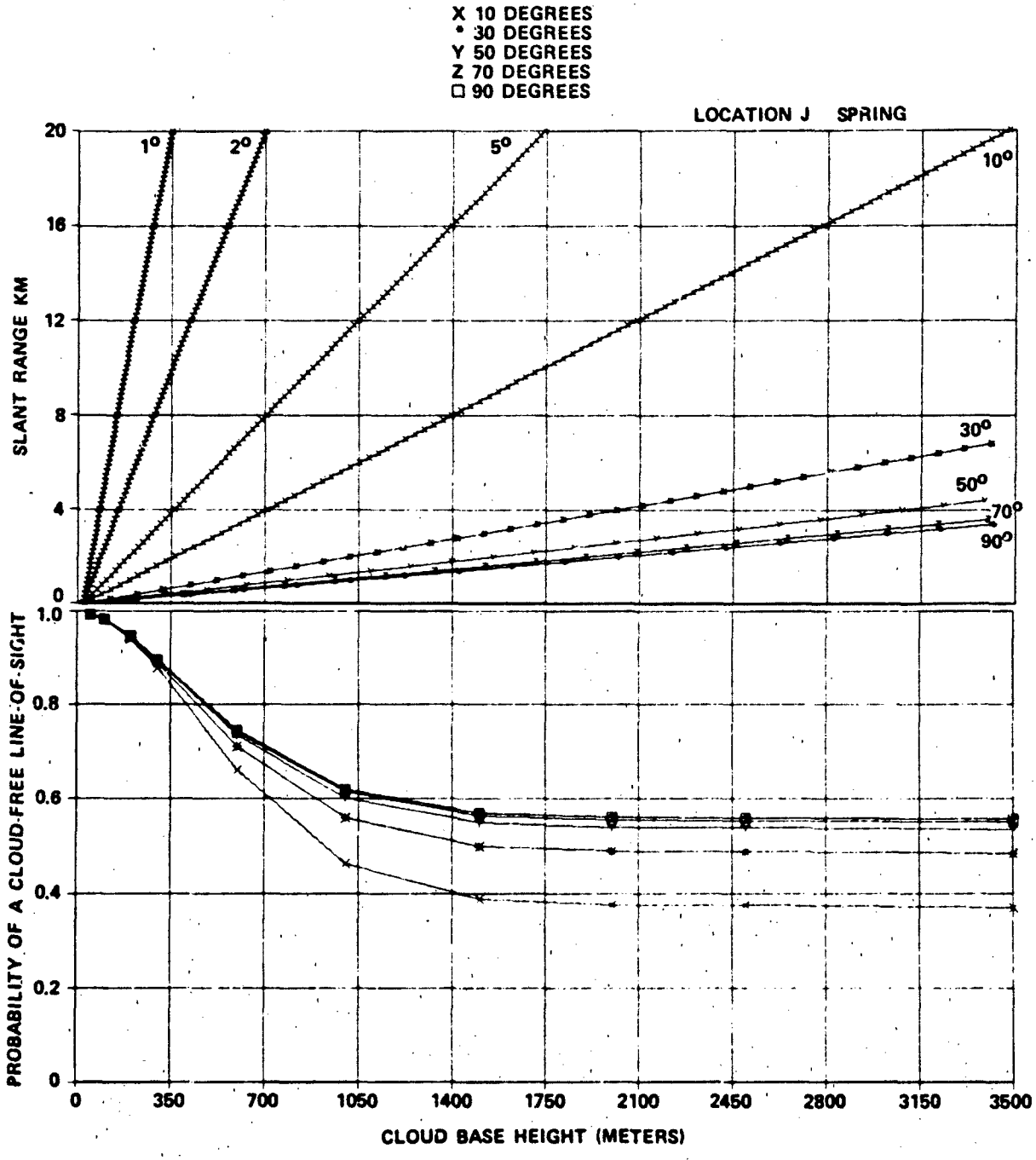


FIGURE D-15 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, LOCATION J SPRING. (SEE TABLE C-25).

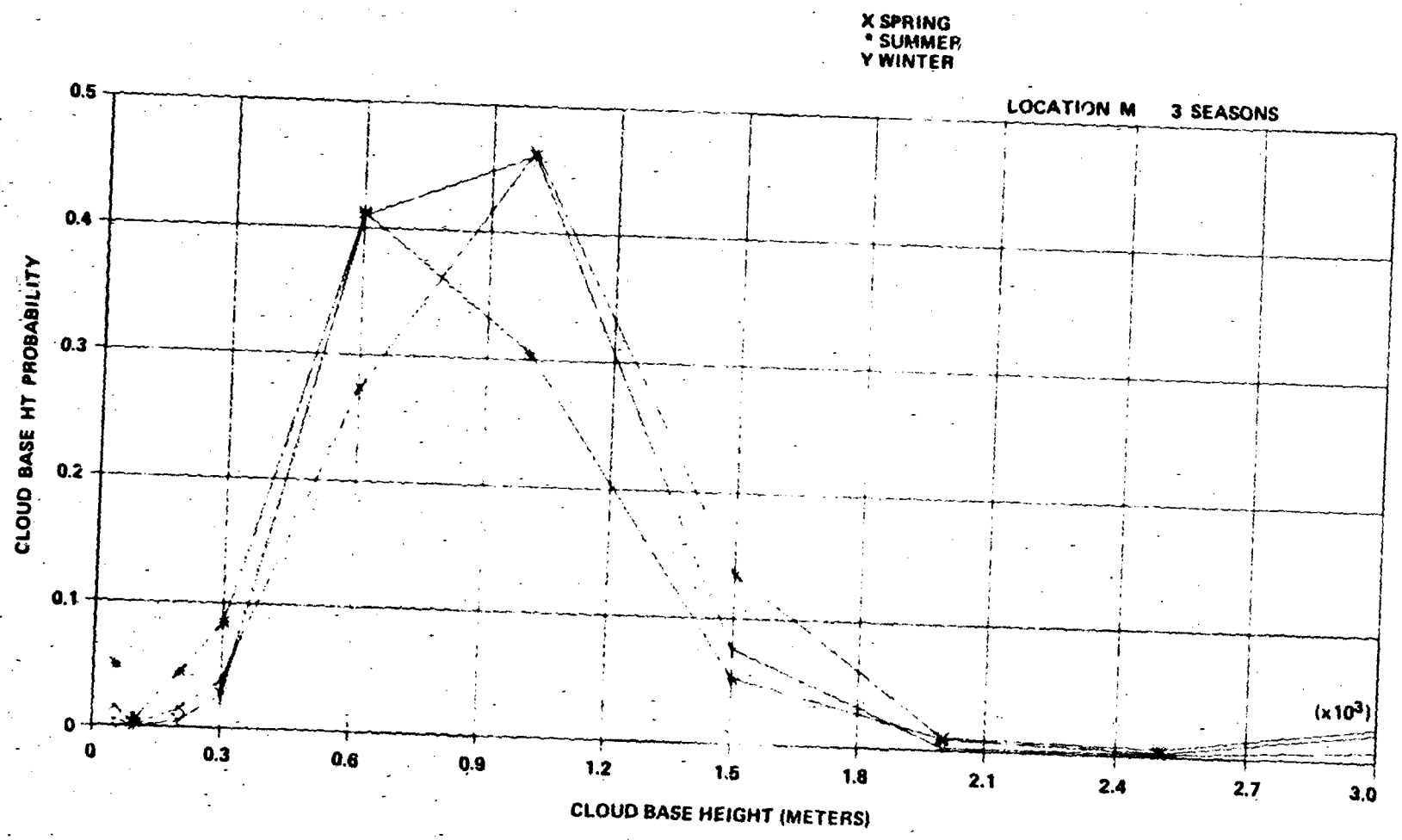


FIGURE D-16 LOWER CLOUD BASE HEIGHT STATISTICS, LOCATION M. (SEE TABLES A-31A, A-32A AND A-33A).

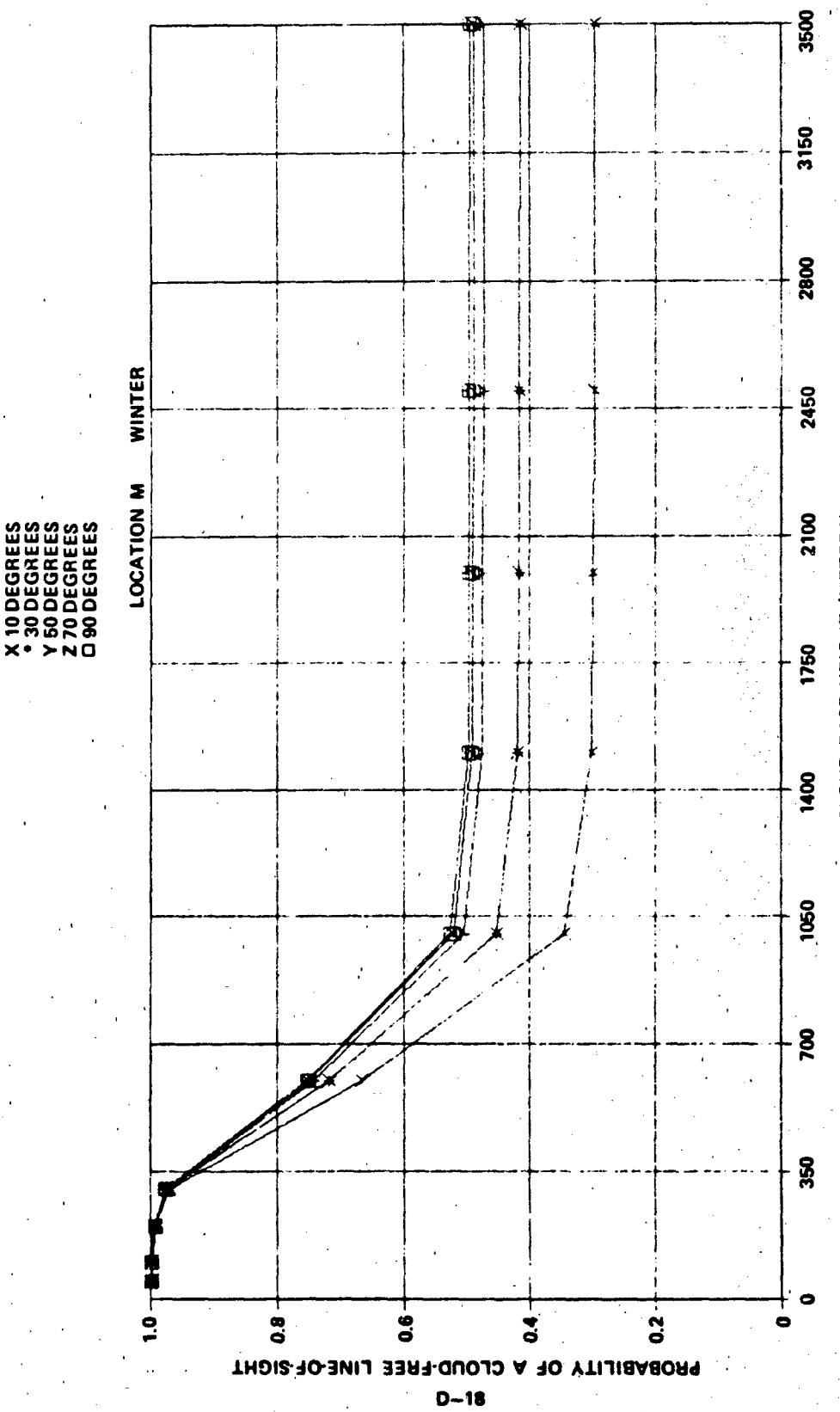


FIGURE D-17 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, WINTER. (SEE TABLE C-33).

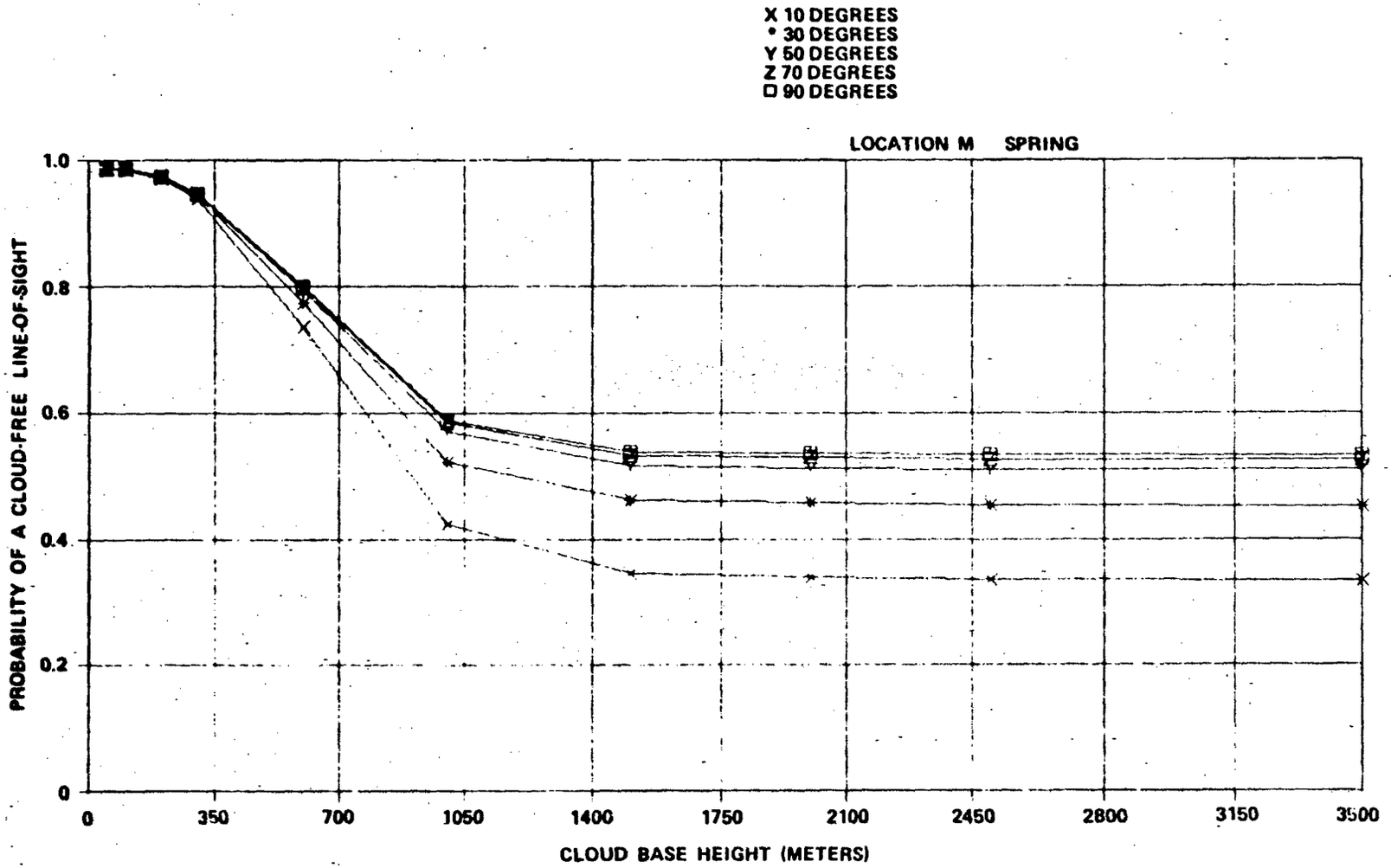


FIGURE D-18 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, SUMMER. (SEE TABLE C-31).

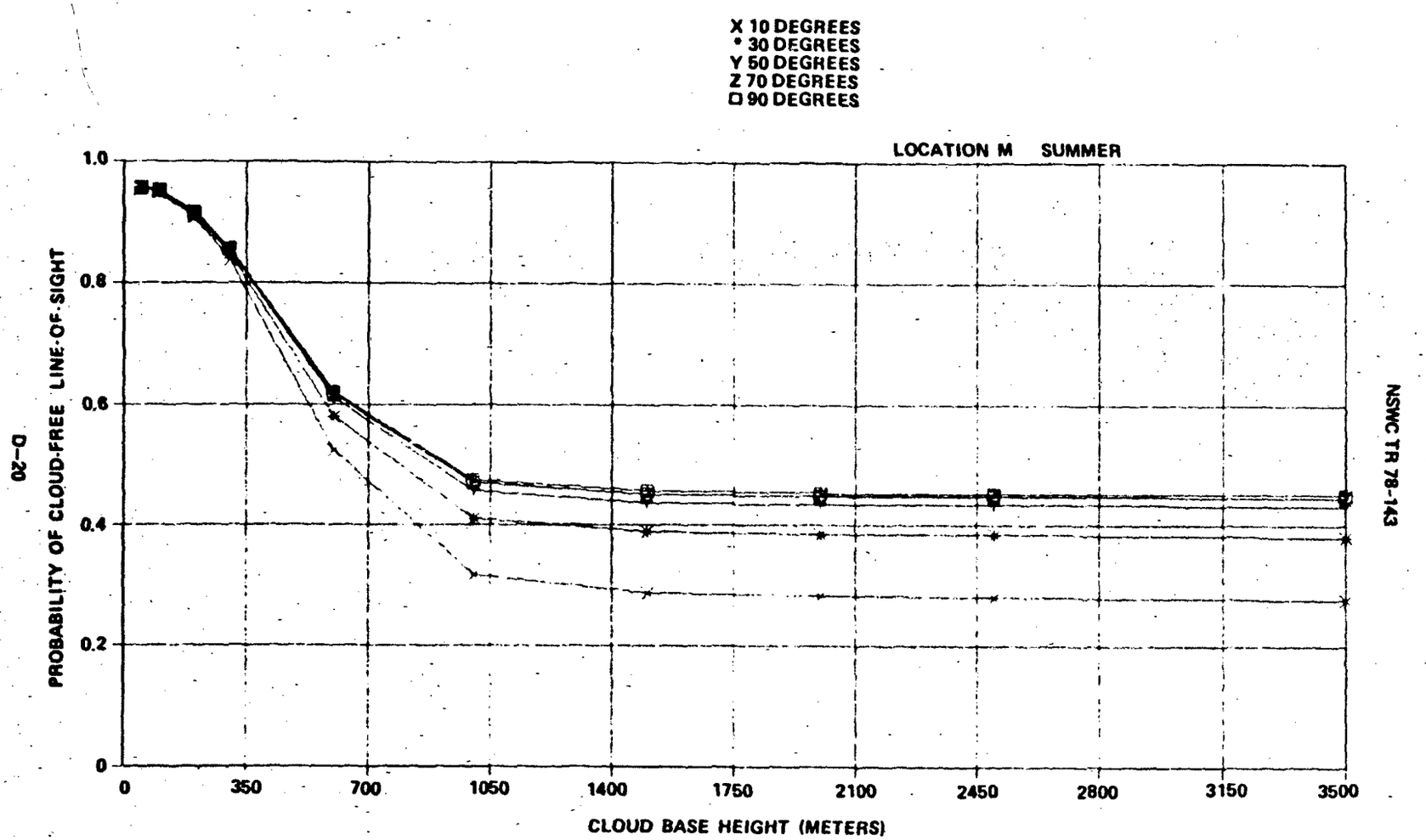


FIGURE D-19 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, AS A FUNCTION OF ELEVATION ANGLE, LOCATION M, SUMMER. (SEE TABLE C-32).

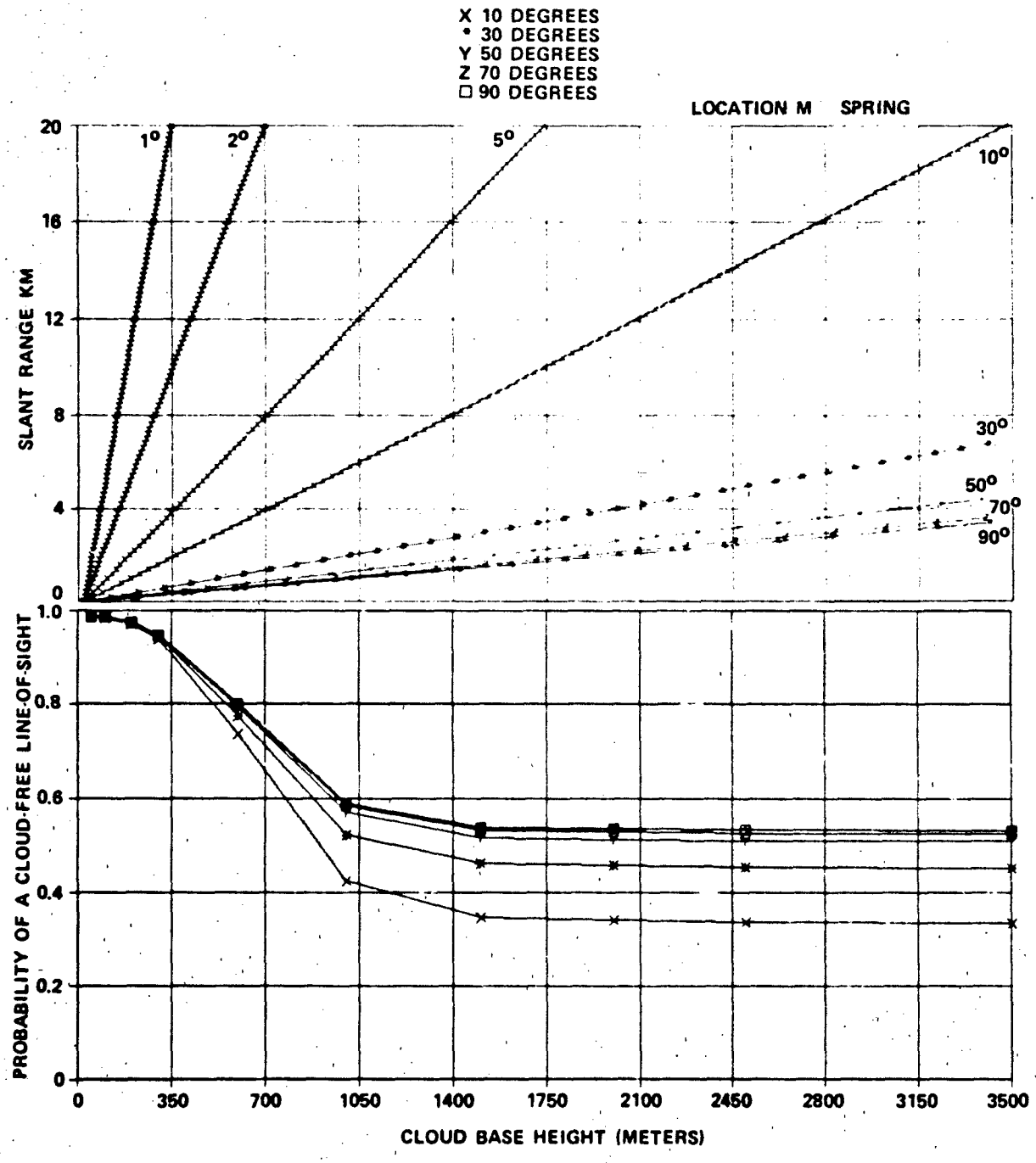


FIGURE D-20 PROBABILITY OF A CLOUD-FREE LINE-OF-SIGHT, TO VARIOUS ALTITUDES, COMBINED WITH A SLANT RANGE CURVED EARTH GEOMETRY, LOCATION M, SPRING. (SEE TABLE C-31).

DISTRIBUTION

	Copies
Under Secretary of Defense Research & Engineering Attn: COL Paul Try, (E&LS) Rm 3D129, Pentagon	1
Mr. J. Feinstein, (Assistant Director, Electronics & Physical Sciences) Rm 3D1079, Pentagon	1
Dr. J. MacCallum, Jr. (Electronics & Physical Sciences) Rm 3D1079, Pentagon	1
Mr. Lawrence M. Lumney (Electronics & Physical Sciences) Rm 3D1079, Pentagon	1
COL E. W. Friday (Dir. R&TI) Rm 3D1067, Pentagon Washington, DC 20301	1
Assistant Secretary of the Navy Research, Engineering & Systems Pentagon, Room 5E787 Washington, DC 20350	1
Chief of Naval Operations Attn: NOP-35E (L. E. Triggs) Department of the Navy Washington, DC 20350	1
Commander Naval Intelligence Command Attn: NIC-00T 2461 Eisenhower Avenue Alexandria, VA 22331	1
Commander Naval Air Development Center Attn: Code 3010 (P. Moser) Code 3011 (M. Hess) Code 3011 (N. McMeekin) Code 3011 (S. Campana) Warminster, PA 18974	1 1 1 1
Commander David W. Taylor Naval Research and Development Center Attn: Code 2833 (R. Burns) Bethesda, MD 20034	1
Commander Naval Ocean Systems Center Attn: Code 532 (Dr. J. Richter) Code 5322 (H. Hughes) Code 5325 (H. Hitney) Code 5322 (R. Noonkester) Technical Library San Diego, CA 92152	3 1 1 1 1
Commander Naval Air Systems Command Headquarters Attn: AIR-370C AIR-954 AIR-06 Washington, DC 20361	1 1 1
Commander Naval Materiel Command Attn: Code 08T245 (G. Spaulding) Washington, DC 20360	1
Commander Naval Electronic Systems Command Attn: PME-107-52 (A. Ritter) Washington, DC 20360	1

DISTRIBUTION (Cont.)

	Copies
Commander Naval Sea Systems Cogmand Attn: PMS-40535 (CDR S. Grigsby) SEA Code 03511 (C. Pohler) SEA Code 03B SEA Code 09G32 Washington, DC 20362	 1 1 1 2
Commander Naval Oceanography Command Attn: T. Freidian Code N542 (J. Ownby) NSTL Station Bay St. Louis, MS 39529	 1 1
Commander Naval Weapons Center Attn: Code 3151 (E. Teppo) Code 3918 (Dr. A. Shlanta) Code 3194 (R. Erickson) Code 39042 (Dr. L. Wilkins) Code 39403 (Dr. J. Wunderlich) Code 753 Technical Library China Lake, CA 93555	 1 1 1 1 1 1
Commander Naval Postgraduate School Attn: Dr. K. Davidson SMC #2756 Monterey, CA 93940	 1
Commanding Officer Naval Environmental Prediction Research Facility Attn: NEPRF (A. Weinstein) NEPRF (A. Gorozh) Monterey, CA 93940	 1 1
Commanding Officer Naval Intelligence Support Center Attn: Mr. C. Kaessinger 4301 Suitland Road Washington, DC 20390	 1
Commanding Officer Pacific Missile Test Center Attn: Code 1232 (G. Matthews) Code 3253 (J. Rosenthal) Code 1230 (R. Mark) Code 32532 (R. de Violini) Point Mugu, CA 93042	 1 1 1 1
Director Naval Research Laboratory Attn: Code 6509 (R. Steinberg) Code 6500 (P. Ulrich) Code 6550 (R. F. Milton) Code 5750 (J. Friedman) Code 4320 (L. Ruhnke) Code 4327 (S. Gathman) Washington, DC 20375	 1 1 1 1 1 1
Director Office of Naval Research Attn: Code 465 (J. Hughes) 800 N. Quincy Street Arlington, VA 22217	 1
Naval Air Test Center Attn: SA83B (D. McCoy) SATD-EWNR Patuxent River, MD 20670	 1
Department of the Navy NAVAIRSYSCOM Attn: PMTC L/O, F. S. Cavanaugh Washington, DC 20361	 1
Commanding Officer Fleet Numerical Oceanography Center Monterey, CA 93940	 1
Commander in Chief U.S. Atlantic Fleet Attn: Geophysics Officer Norfolk, VA 23511	 1

DISTRIBUTION (Cont.)

	Copies
Commander in Chief U.S. Pacific Fleet Attn: Geophysics Officer Box 28 Camp H. M. Smith, HI 96861	1
Commander Third Fleet Attn: Staff Geophysics Officer Pearl Harbor, HI 96860	1
Commander Seventh Fleet Attn: Staff Geophysics Officer FPO San Francisco 96601	1
Commanding Officer Third Fleet (Code 009) Attn: Science Advisor: C. Sturtevant U.S. Pacific Fleet Pearl Harbor, HI 96860	1
Naval Oceanography Command Detachment National Climatic Center Attn: CDR T. Fitzpatrick Federal Building Asheville, NC 28801	1
Commanding Officer Naval Oceanography Command Center Box 12 COMNAVMARIANAS FPO San Francisco 96630	1
Commander Naval Air Force U.S. Pacific Fleet Attn: Science Advisor: J. Leavens Naval Air Station, North Island San Diego, CA 92135	1
COMSEVENTHFLT Attn: Science Advisor: D. Marsh Box 167 FPO San Francisco 96601	1
COMFAIRMED Science Advisor's Office (Code 03A) Attn: E. Whitman FPO New York 09521	1
ACOS Tactical Dev. & Evaluation CINCLANTFLT Compound Attn: Science Advisor: M. McCloud Second Fleet, Box 100 Norfolk, VA 23511	1
Commander Naval Air Force U.S. Atlantic Fleet (30F) Attn: Science Advisor: J. Martin Naval Air Station Norfolk, VA 23511	1
Commanding General Development Center, MCDEC Attn: Science Advisor: M. Rindt Quantico, VA 22134	1
Commanding Officer Naval Western Oceanography Center Box 113 Pearl Harbor, HI 96860	1
Commanding Officer USS MIDWAY (CV-41) Attn: Meteorological Officer FPO San Francisco 96631	1
Commanding Officer USS CORAL SEA (CV-43) Attn: Meteorological Officer FPO San Francisco 96632	1
Commanding Officer USS RANGER (CV-61) Attn: Meteorological Officer FPO San Francisco 96633	1
Commanding Officer USS KITTY HAWK (CV-63) Attn: Meteorological Officer FPO San Francisco 96634	1

DISTRIBUTION (Cont.)

	Copies
Commanding Officer USS CONSTELLATION (CV-64) Attn: Meteorological Officer FPO San Francisco 96634	1
Commanding Officer USS ENTERPRISE (CV-65) Attn: Meteorological Officer FPO San Francisco 96636	1
Commanding Officer USS BLUE RIDGE (LCC-19) Attn: Meteorological Officer FPO San Francisco 96628	1
Director Night Vision and Electro-optics Laboratory (NVEOL) Attn: DELNV-D (Dr. L. Cameron) DELNV-L (Dr. R. Buser) DELNV-DI (R. Moulton) DELNV-L (Dr. R. Rohde) DELNV-L (J. Gibson) DELNV-L (C. Fox) Fort Belvoir, VA 22060	1 1 1 1 1
U.S. Army Electronics Research & Development Command, Atmospheric Sciences Laboratory Attn: DELAS-EO-MO (Dr. R. Gomez) DELAS-EO-ME (D. Snider) DELAS-AS-T (R. Bonner) DELAS-DD (Dr. H. Rachele) White Sands Missile Range NM 88002	1 1 1 1
Commander Air Force Wright Aeronautical Laboratories Attn: AFWAL/WEA (F. Jenks) Wright-Patterson AFB, OH 45433	1
Commander USAF Environmental Technical Application Center Attn: USAFETAC/TS USAFETAC/ENS (C. Elam) Scott AFB, IL 62225	1 1
Commander USAF Air Development Test Center Attn: ADTC/WE (E. Keppel) Eglin AFB, FL 32542	1
Commander U.S. Air Force Geophysics Laboratory Attn: OPI (Dr. R. McClatchey) OPM (Dr. R. Fenn) LYD (Dr. D. Grantham) Hanscom AFB Bedford, MA 01730	1 1 1
Commander Aeronautical Systems Division Attn: ASD/WE (MAJ Blish) Wright-Patterson AFB, OH 45433	1
Commader USAF Air Weather Service Attn: AWS/DNDP (MAJ J. Cottrell) Scott AFB, IL 62225	1
RADC/WE Attn: CAPT P. Mader Griffiss AFB, NY 13441	1
Director NASA Attn: 474 (R. Davis) Langley Research Center Hampton, VA 23665	1
Institute for Defense Analysis Attn: Dr. E. Bauer Dr. H. Holfhard Mr. L. Biberman 400 Army-Navy Drive Arlington, VA 22202	1 1 1
Science Applications, Inc. Attn: Dr. R. E. Walker 5055 E. Broadway, Suite A214 Tucson, AZ 85711	1

DISTRIBUTION (Cont.)

	Copies
Riverside Research Institute Attn: Mr. J. Siderowitz 80 West End Avenue New York, NY 10023	1
Johns Hopkins University Applied Physics Laboratory Attn: Dr. H. I. Heaton Building 7, Room 304 Johns Hopkins Road Laurel, MD 20810	1
Meteorological Satellite Laboratory National Environmental Satellite Service Attn: Dr. L. L. Stowe, Research Meteorologist Washington, DC 20233	1
Science Applications, Inc. Attn: R. J. Nelson, Staff Meteorologist 505 Marquette NW, Suite 1100 Albuquerque, NM 87102	1
SRI International Attn: Dr. J. Malik 333 Ravenwood Avenue Menlo Park, CA 94025	1
Sylvania Systems Group GTE Sylvania Inc. Attn: R. Lintrell (Electro-Optics Org.) P.O. Box 188 Mountain View, CA 94042	1
Rand Corporation Attn: R. Huschke 1700 Main Street Santa Monica, CA 90406	1
Hughes Aircraft Company Attn: J. Fisk, Bldg. 6, MS E132	1
D. Holscher, Bldg. 5, MS B105	1
P. Beckett, Bldg. 6, MS E182	1
K. Powers, Bldg. 5, MS B169	1
Technical Document Center, Bldg. 6 MS E110 Culver City, CA 90230	1
Hughes Aircraft Co. Missile Systems Group Attn: Dr. R. Sendall Fallbrook Avenue Mail Station C48, Bldg. 262 Canoco Park, CA 91304	1
Grumman Aerospace Corporation Attn: Dr. J. Selvy Mail Stop A08-35 Bethpage, NY 11714	1
General Dynamics Convair Division Attn: F. W. Anding, Mail Zone 33-6050 MRASM Operations Research P.O. Box 80847 San Diego, CA 92138	1
OptiMetrics, Inc. Attn: R. Meredith P.O. Box 7766 Ann Arbor, MI 48107	1
Aerodyne Research, Inc. Attn: M. Camac Bedford, MA 01730	1
Aerospace Corporation Attn: Technical Information Services P.O. Box 92957 Los Angeles, CA 90009	1
Boeing Company Attn: Aerospace Library P.O. Box 3707 Seattle, WA 98124	1

DISTRIBUTION (Cont.)

	Copies
General Dynamics Attn: N. Barton Pomona Division P.O. Box 2507 Pomona, CA 91766	1
Honeywell, Inc. Attn: R. Zimmerman 7900 Westpark Drive McLean, VA 22101	1
Environmental Research Institute of Michigan Attn: Dr. G. Zissis Dr. A. LaRocca P.O. Box 8618 Ann Arbor, MI 48106	1 1
Defense Technical Information Center Cameron Station Alexandria, VA 22314	12
Headquarters Air Force Special Communications Center USAFSS San Antonio, TX 78243	1

NDW-NSWC(W)-5605/1 (Rev. 5-78)

TO AID IN UPDATING THE DISTRIBUTION LIST FOR NAVAL SURFACE WEAPONS CENTER, WHITE OAK TECHNICAL REPORTS PLEASE COMPLETE THE FORM BELOW:

TO ALL HOLDERS OF NSWC TR 78-143
by B. Katz, F. DeBold, J. Perez-Esandi, Code R42
DO NOT RETURN THIS FORM IF ALL INFORMATION IS CURRENT

A. FACILITY NAME AND ADDRESS *(OLD) (Show Zip Code)*

NEW ADDRESS *(Show Zip Code)*

B. ATTENTION LINE ADDRESSES:

C.

☐ REMOVE THIS FACILITY FROM THE DISTRIBUTION LIST FOR TECHNICAL REPORTS ON THIS SUBJECT.

D.
NUMBER OF COPIES DESIRED _____

GPO 930-704