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## IONOSPHERIC DATA

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CENTRAL RADIO PROPAGATION LABORATORY  
WASHINGTON, D. C.



## IONOSPHERIC DATA

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## SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendices 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:

1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when  $f_{oF2}$  is less than or equal to  $f_{oF1}$ , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of  $f_{oE}$ . Blank spaces at the beginning and end of columns of  $h^{\prime}F1$ ,  $f_{oF1}$ ,  $h^{\prime}E$ , and  $f_{oE}$  are usually the result of diurnal variation in these characteristics. Complete absence of medians of  $h^{\prime}F1$  and  $f_{oF1}$  is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

<u>Month</u>	<u>Predicted Sunspot Number</u>				
	1950	1949	1948	1947	1946
December		108	114	126	85
November		112	115	124	83
October		114	116	119	81
September		115	117	121	79
August		111	123	122	77
July		108	125	116	73
June	103	108	129	112	67
May	102	108	130	109	67
April	101	109	133	107	62
March	103	111	133	105	51
February	103	113	133	90	46
January	105	112	130	88	42

## WORLD - WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 50 and figures 1 to 100 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:

Brisbane, Australia  
Canberra, Australia  
Hobart, Tasmania

Australian Department of Supply and Shipping, Bureau of Mineral Resources,  
Geology and Geophysics:  
Watheroo, West Australia

Institute for Ionospheric Research, Lindau Über Northeim, Hannover,  
Germany:  
Lindau/Harz, Germany

Indian Council of Scientific and Industrial Research, Radio Research  
Committee:  
Calcutta, India

Radio Regulatory Agency, Tokyo, Japan:  
Akita, Japan  
Tokyo, Japan  
Wakkanai, Japan  
Yamagawa, Japan

New Zealand Department of Scientific and Industrial Research:  
Christchurch, New Zealand  
Rarotonga I.

Norwegian Defense Research Establishment, Kjeller per Lillestrom, Norway:  
Oslo, Norway

South African Council for Scientific and Industrial Research:  
Capetown, Union of S. Africa  
Johannesburg, Union of S. Africa

Research Laboratory of Electronics, Chalmers University of Technology,  
Gothenburg, Sweden:  
Kiruna, Sweden

National Bureau of Standards (Central Radio Propagation Laboratory):  
Baton Rouge, Louisiana (Louisiana State University)  
Boston, Massachusetts (Harvard University)  
Huancayo, Peru (Instituto Geofisico de Huancayo)  
Maui, Hawaii  
San Francisco, California (Stanford University)  
San Juan, Puerto Rico (University of Puerto Rico)  
Trinidad, British West Indies  
Washington, D. C.  
White Sands, New Mexico

#### HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 51 to 62 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined

by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at a new location, Ft. Belvoir, Virginia.

## IONOSPHERIC STORMINESS AT WASHINGTON, D.C.

Table 63 presents ionosphere character figures for Washington, D. C., during June 1950, as determined by the criteria given in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

## SUDDEN IONOSPHERE DISTURBANCES

Tables 64 through 68 list the sudden ionosphere disturbances observed at Ft. Belvoir, Virginia, June 1950; Brentwood and Somerton, England, May and June 1950; Platanos, Argentina, May 1950; Barbados, British West Indies, May 1950; and Lindau/Harz, Germany, May 1950, respectively.

## RADIO PROPAGATION QUALITY FIGURES

Table 69 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, May 1950, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal

of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

### RELATIVE SUNSPOT NUMBERS

Table 70 presents the daily American relative sunspot number,  $R_A$ , computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated  $R_A$ . It is noted that a number of observatories abroad, including the Zürich observatory, are included in  $R_A$ . The scale of  $R_A$  was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time,  $R_A$  is influenced by the Zürich observations only in that Zurich proves to be a consistent observer and receives a high statistical weight. In addition this table lists the daily provisional Zurich sunspot numbers,  $R_Z$ .

## OBSERVATIONS OF THE SOLAR CORONA

Tables 71 through 73 give the observations of the solar corona during June 1950 obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. Tables 74 through 76 list the coronal observations obtained at Sacramento Peak, New Mexico, during May 1950, derived by the High Altitude Observatory from spectrograms taken by Harvard University as a part of its performance of an Air Materiel Command research and development contract administered by the Air Force Cambridge Research Laboratories. The data are listed separately for east and west limbs at 5-degree intervals of position angle north and south of the Solar Equator at the limb. The time of observation is given to the nearest tenth of a day, GCT.

Table 71 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 72 gives similarly the intensities of the first red (6374A) coronal line; and table 73, the intensities of the second red (6702A) coronal line; all observed at Climax in June 1950.

Table 74 gives the intensities of the green (5303A) coronal line; table 75, the intensities of the first red (6374A) coronal line; and table 76, the intensities of the second red (6702A) coronal line; all observed at Sacramento Peak in May 1950.

The following symbols are used in tables 71 through 76: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

Coronal tables in this series through F69, May 1950, designated the nominal wave length of the far red coronal line as 6704A; however, 6702A appears to be a more reliable value and is used in later issues. The two are found almost interchangeably in the literature.

Table 77 gives details of the Climax observations from January 1950 through June 1950. The first column lists the Greenwich date of observations; the next six columns give the threshold or lowest observable intensity of 5303A for each spectrum plate centered at astronomical position angles  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$ ,  $225^\circ$ ,  $270^\circ$ , and  $315^\circ$ , respectively; the last two columns indicate the observer and the person responsible for the intensity estimates of the observation. This table is a continuation of table 1 of CRPL-1-4, and appears in the F series regularly at intervals of six months.

## OBSERVATIONS OF SOLAR FLARES

Table 78 gives the preliminary record of solar flares reported to the CRPL. These reports are communicated on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete records are published later in the Quarterly Bulletin of Solar Activity, I.A.U., in various observatory publications, and elsewhere. The present listing serves to identify and roughly describe the phenomena observed. Details should be sought from the reporting observatory.

Reporting directly to the CRPL are the following observatories: Mt. Wilson, McMath-Hulbert, U.S. Naval, Wendelstein, Kanzel, and High Altitude at Boulder, Colorado. The remainder report to Meudon (Paris), and the data are taken from the Paris URSGram broadcast, monitored fairly regularly by the CRPL. The data on solar flares reported from Boulder, Colorado are provided by Harvard University as the result of work undertaken on an Air Materiel Command Research and Development Contract administered by the Air Force Cambridge Research Laboratories.

The table lists for each flare the reporting observatory, date, times of beginning and ending of observation, duration (when known), total projected area, and heliographic coordinates. For the maximum phase of the flare is given the time, intensity, area relative to the total area, and the importance. The column "SID observed" is to indicate when a sudden ionosphere disturbance, noted elsewhere in these reports, occurred at the time of a flare. Times are in Universal Time (GCT).

## INDICES OF GEOMAGNETIC ACTIVITY

Table 79 lists various indices of geomagnetic activity based on data from magnetic observatories widely distributed throughout the world. The indices are: (1) preliminary mean 3-hourly K-indices,  $K_w$ ; (2) preliminary international character-figures, C; (3) geomagnetic planetary three-hour-range indices,  $K_p$ ; (4) magnetically selected quiet and disturbed days.

$K_w$  is the arithmetic mean of the K-indices from all reporting observatories for each three hours of the Greenwich day, on a scale 0 (very quiet) to 9 (extremely disturbed). The C-figure is the arithmetic mean of the subjective classification by all observatories of

each day's magnetic activity on a scale of 0 (quiet) to 2 (storm). The magnetically quiet and disturbed days are selected by the international scheme outlined on pages 219-227 in the December 1943 issue of Terrestrial Magnetism and Atmospheric Electricity.

K<sub>p</sub> is the mean standardized K-index from 11 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 to 9, expressed in thirds of a unit, e.g., 5- is 4 2/3, 50 is 5 0/3, and 5+ is 5 1/3. This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A complete description of K<sub>p</sub> has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948," published in Washington, D. C., 1949, by the Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. Tables of K<sub>p</sub> for 1945-48 are in Bulletin 12b; for 1940-44 and 1949, in these CRPL-F reports, F65-67; for 1950, monthly in F68 and following issues. Current tables are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

The Committee on Characterization of Magnetic Disturbance, ATME, IUGG, has kindly supplied this table. The Meteorological Office, De Bilt, Holland, collects the data and compiles K<sub>w</sub>, C and selected days. The Chairman of the Committee computes the planetary index.

#### ERRATUM

CRPL-F70, p.31, table 47: First May 3 item, Solar flare at 0950 should have reference symbol \*\*; second May 3 item, Solar flare at 0956 should have reference symbol \*\*\*.

## TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W)								June 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	
00	(290)	5.9						2.8	
01	280	5.6						2.8	
02	270	5.2						2.8	
03	270	4.5						2.8	
04	270	4.0						2.8	
05	280	4.4	---	---	(110)	(1.7)	1.9	3.0	
06	300	5.2	240	3.7	110	2.3	3.4	3.0	
07	320	5.6	220	4.2	100	2.8	4.9	3.0	
08	340	6.2	210	4.5	100	3.1	4.0	2.9	
09	330	6.4	200	4.8	100	3.3	4.3	2.9	
10	370	(6.5)	200	4.9	100	3.5	4.8	(2.8)	
11	380	6.8	200	5.0	(100)	3.5	5.0	2.7	
12	380	6.8	200	5.0	(100)	3.6	4.5	2.7	
13	390	7.0	200	5.0	(100)	3.6	5.0	2.7	
14	380	7.0	200	5.0	(100)	3.6	3.5	2.8	
15	380	7.0	210	4.9	100	3.5	3.5	2.8	
16	340	7.1	220	4.7	100	3.3		2.8	
17	320	7.1	220	4.4	110	3.0	3.4	2.8	
18	300	7.3	230	---	110	2.5	4.0	2.9	
19	260	(7.4)			(110)	1.9	3.4	(3.0)	
20	250	(7.0)					2.5	(2.9)	
21	260	(7.0)						(2.8)	
22	270	(6.6)					3.0	(2.8)	
23	290	(6.0)						(2.8)	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30).

Table 2

Kiruna, Sweden (67.8°N, 20.5°E)								May 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2	
00	(310)	5.1						2.0	
01	(295)	5.2						2.4	
02	(320)	5.3						3.6	
03	320	5.3	---			3.0	1.0	2.0	
04	320	5.1	250			3.5	1.0	2.2	
05	325	5.4	250			3.8	1.05	2.6	
06	350	5.5	250			4.1	1.0	2.7	
07	400	5.8	240			4.3	1.0	2.8	
08	390	6.0	230			4.6	1.0	3.0	
09	390	6.4	225			4.7	1.0	3.1	
10	390	6.5	225			4.8	1.0	3.2	
11	425	6.6	225			5.0	1.0	3.2	
12	395	6.7	220			5.0	1.0	3.2	
13	380	6.4	220			4.9	1.0	3.2	
14	370	6.4	220			4.8	1.05	3.1	
15	340	6.2	225			4.7	1.0	3.0	
16	320	6.1	230			4.5	1.0	2.8	
17	270	6.0	240			4.3	1.05	2.8	
18	290	6.3	240			4.1	1.0	2.6	
19	280	5.8	---			---	1.0	2.4	
20	270	5.8					1.0	2.0	
21	290	5.4					---	3.5	
22	305	5.2						3.8	
23	325	5.0						4.0	

Time: Local.

Sweep: 1.0 Mc to 16.0 Mc in 30 seconds.

\*Combined Ee and Nl (auroral) reflections.

Oslo, Norway (60.0°N, 11.0°E)

Table 3

Oslo, Norway (60.0°N, 11.0°E)								May 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	
00	290	5.9						(2.6)	
01	295	5.3						(2.6)	
02	300	(5.1)						(2.6)	
03	300	4.7	---	---		1.5	(2.6)		
04	290	5.1	275	---	110	1.6	2.2	(2.7)	
05	270	5.3	255	(3.6)	110	2.1	2.2	(2.8)	
06	350	5.4	240	4.1	105	2.5	2.7	2.8	
07	350	6.0	235	4.3	105	2.8	3.1	2.8	
08	370	6.4	220	4.5	105	3.0	3.4	2.7	
09	350	6.8	220	4.8	100	3.2	3.6	2.8	
10	380	7.1	215	5.0	100	3.3	3.6	2.8	
11	380	7.0	210	5.0	100	3.4	3.5	2.8	
12	380	7.2	220	5.1	100	3.4	3.6	2.8	
13	370	7.0	220	5.1	100	3.5	3.6	2.8	
14	370	7.0	220	5.0	100	3.5	3.5	2.8	
15	360	6.8	220	5.0	105	3.4	3.2	2.8	
16	335	7.1	225	(4.8)	100	3.2		2.8	
17	325	7.2	230	4.8	105	3.0	2.8		
18	290	7.6	240	(4.2)	105	2.6	3.0		
19	250	7.4	250	---	110	2.3	2.7	3.0	
20	255	7.4			130	1.9	2.2	3.0	
21	260	7.2							
22	265	6.8					1.5	(2.8)	
23	280	6.4						(2.7)	

Time: 15.0°E.

Sweep: 1.3 Mc to 14.0 Mc in 8 minutes, automatic operation; supplementary recorder, 1.6 Mc to 10.0 Mc in 5 minutes.

Table 5

San Francisco, California (37.4°N, 122.2°W)								May 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	
00	320	5.4				2.3	2.6		
01	310	5.5				2.2	2.6		
02	310	5.2				2.8	2.6		
03	300	5.0				2.8	2.6		
04	300	4.8				2.8	2.8		
05	300	4.8	---	---	---	2.8	2.8		
06	260	6.0	260	3.8	120	2.3	3.2	2.9	
07	350	6.6	250	4.3	120	2.9	4.2	2.8	
08	420	7.2	240	4.7	120	3.4	5.0	2.6	
09	400	7.6	220	4.9	120	3.8	4.8	2.6	
10	410	7.4	220	5.2	120	3.9		2.6	
11	400	7.9	220	5.2	120	4.1		2.8	
12	390	8.5	220	5.2	120	3.9		2.6	
13	380	8.2	240	5.2	120	4.0		2.8	
14	360	8.0	240	5.2	120	4.2		2.8	
15	350	7.7	240	5.0	120	4.0		2.8	
16	340	7.8	240	4.8	120	3.9	4.8	2.8	
17	300	7.6	260	4.4	120	3.1	4.4	3.0	
18	280	7.6	270	---	120	2.4	3.9	3.0	
19	260	7.5				2.8	3.1		
20	240	7.0				2.5	3.0		
21	260	6.4				2.8	2.8		
22	290	6.0				2.9	2.8		
23	310	5.6				2.3	2.6		

Time: 120.0°W.

Sweep: 1.3 Mc to 18.0 Mc in 4 minutes.

Table 6

White Sands, New Mexico (32.3°N, 106.8°W)								May 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	
00	310	5.7						2.3	2.6
01	300	5.4						2.3	2.8
02	300	5.5						2.4	2.8
03	300	5.3						2.6	2.6
04	280	5.0						2.7	2.6
05	280	5.1	---	---				2.9	2.7
06	260	8.3	---	---	120	(2.3)	3.9	2.8	
07	290	7.0	230	4.4	110	(2.8)	4.1	2.9	
08	310	7.1	220	4.8	110	(3.2)	5.1	2.7	
09	360	7.8	220	5.0	110	(3.8)	5.0	2.8	
10	380	8.4	220	5.2	110	(3.8)	5.2	2.6	
11	390	9.3	220	5.3	110	(3.9)	4.9	2.6	
12	360	9.7	220	5.4	110	4.0	4.6	2.8	
13	360	10.3	220	5.3	110	3.9	4.3	2.6	
14	350	9.8	230	5.2	110	3.9	4.2	2.6	
15	340	9.9	230	5.1	110	3.6	4.1	2.7	
16	320	9.3	240	4.8	110	3.4	3.9	2.7	
17	300	9.1	230	---	110	2.9	4.1	2.8	
18	260	9.1	---	---	120	2.3	3.4	2.8	
19	250	8.3	---	---	---	---	2.3	2.9	
20	240	7.4	---	---	---	---	2.3	2.8	
21	280	6.7	---	---	---	---	2.4	2.7	
22	290	5.9	---	---	---	---	2.3	2.6	
23	310	5.9	---	---	---	---	2.8	2.6	

Time: 105.0°W.

Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 7

Baton Rouge, Louisiana (30.5°N, 91.2°W)								May 1950
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	340	6.0						2.6
01	320	6.0						2.7
02	320	5.6						2.7
03	310	5.3						2.7
04	320	5.2						2.7
05	290	5.3						2.9
06	280	6.5	270	---	---	---		3.0
07	290	6.8	250	---	120	2.8		2.9
08	310	7.5	240	---	120	3.2		2.8
09	350	8.0	240	5.2	120	(3.4)		2.7
10	400	8.4	230	5.2	120	3.6		2.6
11	400	8.8	230	5.3	120	3.5		2.6
12	400	9.4	240	5.4	120	(3.6)		2.6
13	400	9.7	250	5.4	120	3.6		2.6
14	380	10.0	260	5.3	120	(3.5)		2.6
15	380	9.7	260	6.0	120	3.5		2.7
16	350	9.4	260	4.6	120	3.3		2.7
17	320°	9.1	270	---	130	2.9		2.7
18	290	9.1	270	---	---	---		2.9
19	270	8.5						2.8
20	270	7.6						2.7
21	300	7.0						2.7
22	320°	6.4						2.7
23	330	6.2						2.6

Time: 90.0°W.

Sweep: 2.12 Mc to 14.1 Mc in 5 minutes, automatic operation.

Table 9

San Juan, Puerto Rico (18.4°N, 66.1°W)								May 1950
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	280	9.0						2.8
01	280	8.5						2.8
02	260	(8.3)						2.8
03	260	7.4						2.8
04	250	6.8						2.8
05	---	6.1						2.8
06	280	6.8						2.9
07	250	8.0	---					3.0
08	250	8.9	4.5		3.3			2.9
09	280	9.6	5.0		(3.6)			2.8
10	300	10.2	5.2		4.1			2.8
11	320	10.9	5.3		---			2.7
12	320	11.6	5.4		---			2.7
13	300	(12.1)	(5.3)		5.3	(2.7)		
14	310	12.4	5.4		---			2.8
15	310	12.5	5.1		---			2.7
16	290	12.1	4.8		3.5	4.7		2.7
17	280	11.5	---		---	4.0		2.8
18	250	11.0						2.8
19	250	9.6						2.8
20	270	(9.9)						(2.7)
21	290	(9.5)						(2.7)
22	280	(9.4)						(2.7)
23	280	9.0						2.8

Time: 60.0°W.

Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, automatic operation; supplemented by manual operation.

Table 11

Huancayo, Peru (12.0°S, 75.3°W)								May 1950
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	230	7.9						3.0
01	220	7.5						3.0
02	230	6.7						3.1
03	240	5.3						3.1
04	240	4.3						3.0
05	250	3.9						3.0
06	280	5.0			100	1.8	2.9	2.9
07	250	8.4			100	2.5	3.2	3.0
08	260	10.1	220	5.2	100	3.2	7.8	2.8
09	280	11.2	220	5.2	100	3.4	8.5	2.5
10	300	10.9	210	5.2	100	---	9.8	2.4
11	300	10.3	200	5.2	100	---	10.2	2.3
12	300	10.0	200	5.1	100	---	9.4	2.3
13	300	10.1	200	5.0	100	---	10.1	2.3
14	280	10.3	200	5.0	100	---	9.8	2.3
15	260	10.3	210	5.2	100	3.3	8.7	2.3
16	240	10.2			100	3.0	6.2	2.3
17	260	9.9			100	2.2	3.4	2.3
18	320	9.4			100	---		2.2
19	330	8.9						2.3
20	300	8.9						2.4
21	250	8.9						2.6
22	230	8.5						2.8
23	230	8.5						2.9

Time: 75.0°W.

Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 8

Maui, Hawaii (20.8°N, 166.6°W)								May 1950
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	290	8.6						2.8
01	280	8.5						2.9
02	250	7.8						3.0
03	260	6.8						2.9
04	270	6.3						2.8
05	300	6.2						2.7
06	260	6.2	---	---	130	---		2.8
07	240	7.0	---	---	120	2.6	4.7	2.9
08	250	8.4	220	5.0	110	3.1	5.4	2.6
09	340	9.5	220	5.3	110	3.5	6.2	2.5
10	340	10.4	210	5.3	110	3.7	5.1	2.6
11	340	11.1	210	5.5	110	3.8	4.8	2.6
12	360	12.0	210	5.4	110	3.9	5.1	2.7
13	340	12.5	220	5.4	110	(3.9)	4.6	2.7
14	330	12.9	220	5.3	110	3.8	4.4	2.8
15	320	13.1	220	5.0	110	3.6	4.8	2.8
16	300	13.4	230	4.8	110	3.4	4.6	2.9
17	280	12.8	240	---	110	3.0	4.5	2.9
18	280	12.4	240	---	120	2.3	4.5	2.9
19	240	11.2						3.6
20	250	9.5						3.1
21	280	9.4						2.6
22	280	9.0						2.2
23	280	8.6						2.2

Time: 150.0°W.

Sweep: 1.0 Mc to 26.0 Mc in 15 seconds.

Table 11

Trinidad, Brit. West Indies (10.6°N, 61.2°W)								May 1950
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	250	10.6						3.0
01	230	9.6						3.1
02	230	8.8						3.1
03	220	8.0						3.2
04	220	7.4						3.3
05	220	6.4						3.1
06	340	6.6	---	---	100	1.9	2.6	3.1
07	280	8.0	---	---	100	2.8	3.6	3.1
08	240	9.2	220	4.7	100	3.2	3.9	3.0
09	260	10.2	210	5.2	100	3.6	4.3	2.9
10	280	11.2	200	6.4	100	3.8	5.2	2.9
11	310	12.0	200	5.6	100	4.0	5.0	2.9
12	320	12.8	220	5.7	100	4.1	5.5	2.9
13	300	13.2	220	5.5	100	4.0	5.6	3.0
14	300	13.2	210	5.4	100	3.9	5.6	3.0
15	280	12.8	210	5.2	100	3.7	5.8	3.0
16	270	12.5	220	4.9	100	3.5	5.4	2.9
17	260	12.0	220	4.4	100	2.9	4.8	2.9
18	240	11.8	---	---	---			4.2
19	260	11.1						4.2
20	280	11.4						3.0
21	280	11.4						2.5
22	270	11.6						2.0
23	250	11.4						2.9

Time: Local.

Sweep: 1.0 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 13

Lindau/Harz, Germany (51.6°N, 10.1°E)							April 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	300	5.7						
01	300	5.6						
02	290	5.0						
03	290	4.7					2.0	
04	280	4.2						
05	280	4.2	---	---	---	E		
06	250	5.4	---	---	100	1.8	3.2	
07	250	6.1	230	3.9	100	2.5	3.4	
08	260	6.8	220	4.3	100	2.9		
09	280	7.8	210	4.5	100	3.2		
10	280	8.4	200	4.6	100	3.4		
11	290	8.8	200	4.8	100	3.4		
12	300	9.0	200	4.8	100	3.4		
13	300	9.2	200	5.0	100	3.5	4.0	
14	300	9.3	210	4.8	100	3.4	4.2	
15	280	9.2	220	4.6	100	3.3		
16	270	9.0	220	4.4	100	3.1		
17	250	9.2	230	---	100	2.8	3.4	
18	250	9.2	---	---	100	2.3	3.2	
19	250	8.9			E	2.8		
20	230	7.7				2.1		
21	250	6.9				3.0		
22	270	6.3						
23	290	5.9						

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 14

Wakkanai, Japan (45.4°N, 141.7°E)							April 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	310	6.7						2.6
01	300	6.5						2.6
02	300	6.6						2.6
03	300	6.2						2.6
04	300	5.8						2.6
05	290	6.3					110	2.7
06	260	7.6	---	---	100	2.5		3.0
07	270	8.2	260	---	100	2.9		2.9
08	280	8.8	250	5.0	100	3.3		3.0
09	280	9.4	240	---	100	3.4		2.9
10	290	9.6	230	5.1	100	3.5		2.9
11	280	10.2	240	5.3	100	3.6		2.8
12	290	10.6	230	---	100	3.6		2.8
13	290	10.6	230	---	100	3.5		2.8
14	290	10.8	240	---	100	3.4		2.8
15	290	10.2	230	---	100	3.2		2.9
16	260	10.0	240	---	100	3.0		2.9
17	270	9.5	240	---	100	2.6		2.9
18	270	9.0	---	---	100	1.9		2.9
19	260	8.1						2.6
20	250	7.5						2.8
21	270	7.2						2.7
22	280	6.7						2.7
23	300	6.8						2.6

Time: 135.0°E.

Sweep: 1.0 Mc to 14.0 Mc in 15 minutes, manual operation.

Table 15

Johannesburg, Union of S. Africa (26.2°S, 28.0°E)							April 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	260	3.8						2.8
01	280	4.0			1.7			
02	270	4.1						2.8
03	250	3.7						2.7
04	(250)	3.3						2.9
05	(260)	3.4						2.8
06	260	3.9						2.7
07	230	8.0	---	---	120	2.3	3.3	
08	230	10.4	230	---	110	2.8	3.3	
09	240	11.6	220	---	110	3.2	3.2	
10	250	12.2	220	---	110	3.6	3.1	
11	250	12.2	210	---	110	3.7	4.0	3.0
12	250	12.0	200	---	110	(3.8)	3.9	2.9
13	280	12.6	210	---	110	(3.7)	4.0	2.9
14	280	12.8	230	---	110	3.6	3.8	2.9
15	260	12.4	220	---	110	3.4	3.8	2.9
16	240	12.0	240	---	120	3.1	3.5	2.9
17	240	12.1			120	2.4	2.9	3.0
18	230	11.4	---	---	110	1.9	3.1	
19	220	9.6					3.1	
20	220	8.0				1.5	3.1	
21	230	6.2				1.6	3.2	
22	240	4.9				3.1		
23	(260)	4.0				1.9	2.9	

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 16

Capetown, Union of S. Africa (34.2°S, 18.3°E)							April 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	(270)	3.4						2.8
01	---	3.3						2.7
02	(280)	3.4						2.7
03	(260)	3.5						2.7
04	(260)	3.4						2.9
05	(250)	3.3						2.8
06	(250)	3.1						2.7
07	260	5.0	---	---	---	---	1.5	2.9
08	230	8.1	---	---	120	(2.4)		3.3
09	240	10.2	240	---	110	3.0		3.2
10	250	11.4	230	---	110	(3.3)		3.2
11	250	11.8	220	4.6	110	(3.5)		3.0
12	250	12.6	220	4.3	110	(3.6)	3.7	2.9
13	260	(12.8)	220	4.2	110	(3.8)		(2.9)
14	270	(13.1)	230	---	110	(3.6)	3.8	(2.9)
15	260	13.0	240	---	110	(3.5)		2.9
16	250	(12.8)	240	---	110	(3.2)		(2.9)
17	250	12.8	250	---	120	2.8		3.0
18	230	12.0	---	---	120	(2.1)	1.7	3.0
19	220	10.3					1.5	3.1
20	(220)	8.3					1.6	3.1
21	230	6.8						3.2
22	(230)	5.0					1.6	3.2
23	(250)	3.9						3.0

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 17

Kiruna, Sweden (67.8°N, 20.5°E)							March 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2
00	(330)	3.8						2.6
01	320	3.9						2.7
02	320	3.6						2.6
03	320	3.6						2.6
04	300	3.5						2.6
05	280	3.6					2.0	2.6
06	270	4.3	---	---	110	1.6		
07	250	5.0	---	---	120	1.9		
08	255	5.8	240	---	120	2.3		
09	250	6.6	240	---	120	2.4		
10	250	7.0	240	---	110	2.6		
11	250	7.6	240	---	110	2.6		
12	260	8.0	240	---	110	2.7		
13	260	7.9	240	---	115	2.7		
14	260	7.8	240	---	115	2.6		
15	245	7.3	---	---	120	2.5		
16	250	7.2	---	---	120	2.2		
17	245	6.6			140	2.0		
18	250	5.0	---	---		1.8		
19	250	4.8				2.2		
20	260	4.6						
21	270	4.3				3.0		
22	290	4.0				3.0		
23	320	3.7				3.2		

Time: Local.

Sweep: 1.0 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 18

Wakkanai, Japan (45.4°N, 141.7°E)							March 1950	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	300	5.7						2.1
01	300	5.7						2.7
02	290	5.4						2.6
03	300	5.5						2.6
04	290	5.2						2.6
05	300	5.2						2.6
06	270	6.9	---	---	100	1.8		
07	250	8.7	---	---	100	2.5		
08	250	10.0	240	---	100	3.0		
09	250	11.1	250	---	100	3.2		
10	260	11.5	230	---	100	3.4		
11	280	12.2	220	---	100	3.5		
12	280	12.1	240	---	100	3.5		
13	280	11.8	230	---	100	3.4		
14	260	11.5	240	---	100	3.3		
15	260</							

Table 19

Akita, Japan (39.7°N, 140.1°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	280	6.1					2.7	
01	270	6.0					2.8	
02	270	5.8					2.8	
03	260	5.4					2.8	
04	260	5.1					2.7	
05	280	5.0					2.8	
06	240	6.8	---	---	140	1.7	3.0	
07	230	8.9	---	---	120	2.6	3.2	
08	240	10.2	220	---	110	3.0	3.2	
09	250	11.5	230	---	110	3.3	3.1	
10	250	11.8	230	---	110	3.5	3.1	
11	260	12.2	230	---	110	3.6	3.0	
12	270	12.5	230	---	110	3.6	3.0	
13	270	12.3	230	---	110	3.6	3.0	
14	270	12.3	230	---	110	3.4	3.0	
15	260	11.8	230	---	110	3.2	3.0	
16	250	11.3	230	---	110	3.0	3.0	
17	240	10.8	240	---	110	2.3	3.1	
18	230	9.9	---	---	120	1.7	3.1	
19	220	7.8					3.0	
20	240	7.5					2.9	
21	260	6.6					2.8	
22	280	6.4					2.8	
23	280	6.3					2.8	

Time: 135.0°E.

Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 20

Tokyo, Japan (35.7°N, 139.5°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	260	6.1					3.0	2.8
01	260	5.8					2.8	2.9
02	250	5.8					2.0	3.0
03	250	5.4					3.0	3.0
04	240	4.8					1.6	2.9
05	260	4.7					2.0	2.8
06	240	5.6	---	---	140	1.8		3.2
07	220	8.7	---	---	110	2.5		2.3
08	220	10.2	---	---	100	3.0		3.2
09	220	11.0	220	---	100	3.3	3.4	3.2
10	250	12.0	230	---	100	3.4		3.1
11	260	12.6	210	---	100	3.6		3.1
12	260	12.8	230	---	100	3.6		3.0
13	270	12.8	220	---	100	3.6		3.0
14	250	12.7	220	---	100	3.5		3.0
15	240	12.3	220	---	100	3.4		3.1
16	240	12.0	230	---	100	2.9		3.2
17	230	11.2	---	---	100	3.4		3.2
18	220	10.0					1.6	3.2
19	220	7.6					2.4	3.2
20	240	7.0					2.0	3.0
21	250	5.6						3.0
22	250	5.4						2.9
23	270	6.6						2.6

Time: 135.0°E.

Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 21

Yamagawa, Japan (31.3°N, 130.6°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	290	6.8				2.0	2.8	
01	290	6.4				2.2	2.8	
02	290	6.2					2.8	
03	270	5.9				3.0		
04	260	5.1					3.0	
05	260	4.4					2.8	
06	300	4.4	---	---	130	2.1	3.2	
07	250	7.5	---	---	120	2.8	3.2	
08	250	9.5	240	---	110	3.2	3.1	
09	260	10.3	230	---	110	3.2		
10	270	11.4	230	---	110	3.5	4.4	2.9
11	300	12.2	230	---	110	3.6	4.4	2.9
12	300	13.2	240	---	110	3.8	4.6	2.9
13	300	13.4	240	---	110	3.7	4.8	2.8
14	300	14.0	240	---	110	3.7	4.5	2.8
15	290	13.6	240	---	110	3.6	4.4	2.9
16	280	13.3	240	---	110	3.2	4.2	2.9
17	250	12.6	250	---	120	2.8	3.8	2.9
18	260	12.2	240	---	110	2.0	3.0	3.0
19	240	10.8					2.6	3.1
20	240	9.0					3.0	2.9
21	260	8.1					3.4	2.9
22	270	7.6					2.2	2.8
23	280	7.4					2.0	3.8

Time: 135.0°E.

Sweep: 1.2 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 22

Brisbane, Australia (27.5°S, 153.0°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	270	7.1						3.0
01	250	7.0						2.8
02	250	6.6						2.6
03	250	6.0						2.8
04	260	5.8						2.8
05	260	5.5						2.8
06	240	6.5	---	---	140	1.8		3.1
07	240	8.5	---	---	110	2.7	3.2	3.2
08	250	9.3	220	4.5	110	2.2	3.6	3.1
09	260	10.0	220	5.0	100	3.2	3.9	3.0
10	270	10.4	210	5.0	100	3.6	4.0	3.0
11	280	10.9	200	5.2	100	3.8	3.8	2.9
12	280	11.2	200	5.4	100	3.8	3.2	2.9
13	280	11.1	210	5.0	100	3.8		2.9
14	290	11.0	220	5.1	110	3.7	3.3	2.8
15	270	11.0	220	5.0	110	3.5		2.9
16	250	10.6	230	4.4	110	3.2		3.0
17	240	10.0	---	---	110	2.7	3.0	3.0
18	240	9.3					3.5	3.0
19	240	8.1						2.8
20	270	7.8						2.7
21	280	7.7						2.7
22	280	7.6						2.8
23	280	7.3						2.7

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 23

Watheroo, W. Australia (30.3°S, 115.9°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	270	5.7				2.4	2.7	
01	280	5.4				2.5	2.8	
02	270	5.4				2.8		
03	260	5.2				2.8		
04	260	4.8				2.8		
05	260	4.7				2.8		
06	250	4.9	---	---	140	2.8		
07	230	6.8	---	---	120	2.8		
08	250	8.0	4.6	2.9	220	3.3		
09	260	8.8	4.8	2.3	210	3.2		
10	270	9.2	5.0	3.4	210	4.0	3.1	
11	300	9.6	5.1	3.5	4.0	3.1		
12	300	10.2	5.3	3.6	4.1	2.9		
13	300	10.5	5.2	2.5	3.9	3.9		
14	300	10.6	5.3	2.5	3.8	2.9		
15	300	10.6	5.1	3.3	2.7	2.9		
16	290	10.5	5.0	3.3	2.7	2.9		
17	260	10.2	4.0	2.7	3.4	2.9		
18	240	9.7	1.6	2.8	3.0			
19	230	8.9	---	2.4	3.0			
20	220	7.3	---	2.3	2.9			
21	240	6.4		2.4	2.9			
22	250	6.0		2.2	2.9			
23	260	6.0		2.3	2.8			

Time: 120.0°E.

Sweep: 1.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 24

Canberra, Australia (35.3°S, 149.0°E)

March 1950

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	260	6.9						3.3
01	260	6.5						2.9
02	250	6.0						3.1
03	250	5.7						2.9
04	250	5.4						2.8
05	250	5.1						2.9
06	240	5.6	---	---	150	1.4	3.0	3.0
07	240	7.0	---	---	110	2.4	3.0	3.8
08	250	8.0	220	4.6	100	3.0	3.5	3.2
09	250	8.5	210	4.6	100	3.4	3.8	3.1
10	260	9.2	200	4.8	100	3.5	4.0	3.0
11	280	9.6	200	5.0	100	3.6	4.3	3.0
12	280	10.0	200	5.0	100	3.8	3.8	3.0
13	280	10.2	210	5.0	100	2.7	3.8	3.0
14	280	10.0	210	5.0	100	3.6	3.9	3.0
15	260	10.0	210	4.5	100	3.5	3.5	3.0
16	250	9.8	220	4.5	100	3.2	3.5	3.0
17	240	9.8	23					

Table 25  
Christchurch, New Zealand (43.5°S, 172.7°E)

Time	March 1950					
	h'F2	foF2	h'Fl	foFl	h'E	foE
						fEs (M3000)F2
00	300	6.2			2.1	2.6
01	280	6.0			2.0	2.6
02	280	5.7			1.8	2.6
03	270	5.2			1.8	2.7
04	270	4.8			1.8	2.7
05	270	4.1			1.7	2.7
06	270	4.6			1.3	2.9
07	250	6.4	230	---	2.1	3.0
08	260	7.4	240	4.2	2.8	3.1
09	280	8.0	230	4.6	3.1	3.1
10	280	8.8	220	4.8	3.3	3.2
11	280	8.9	220	5.0	3.5	3.0
12	280	9.4	230	5.0	3.6	2.9
13	280	9.8	230	5.0	3.5	3.7
14	280	9.5	240	(4.9)	3.4	2.9
15	270	9.1	230	(4.7)	3.2	2.9
16	270	9.0	240	4.3	2.9	2.9
17	250	9.0	250	---	2.4	2.9
18	250	9.1			1.5	2.9
19	250	8.5			1.8	2.8
20	260	7.8			1.8	2.7
21	270	7.4			2.5	2.7
22	280	7.0			3.2	2.6
23	280	6.6			2.0	2.6

Time: 172.5°E.

Sweep: 1.0 Mc to 13.0 Mc.

Table 27

Time	February 1950					
	h'F2	foF2	h'Fl	foFl	h'E	foE
						fEs (M3000)F2
00	300	8.8			2.7	2.9
01	290	8.9			3.4	2.8
02	300	8.6			3.0	
03	310	8.2			2.9	
04	300	7.9			2.9	
05	310	7.6			3.7	3.0
06	300	8.6	280	4.2	3.5	3.0
07	250	9.9	240	4.9	2.5	3.7
08	260	11.5	240	6.4	110	3.0
09	300	11.2	240	6.5	110	3.4
10	310	11.2	240	6.7	110	3.9
11	330	11.6	240	6.5	110	3.8
12	340	12.5	260	6.7	110	3.9
13	340	12.9	280	6.4	110	3.9
14	320	12.5	270	6.0	110	3.8
15	320	12.4	250	6.0	110	3.8
16	310	12.2	250	5.5	110	3.5
17	300	12.1	250	5.4	110	3.2
18	280	11.0	270	7.2	---	2.5
19	280	9.2	---	---	4.0	2.9
20	290	10.4			4.0	2.8
21	300	9.3			3.2	(2.7)
22	300	9.1			3.2	2.9
23	300	8.1			2.9	2.9

Time: 157.5°W.

Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 29

Time	February 1950					
	h'F2	foF2	h'Fl	foFl	h'E	foE
						fEs (M3000)F2
00	280	7.5			4.2	2.8
01	260	7.0			3.4	2.8
02	260	6.5			3.4	2.8
03	250	6.1			3.1	2.8
04	240	5.6			3.0	2.9
05	250	5.1			2.6	2.9
06	240	5.8	---	---	100	2.0
07	240	6.8	220	6.0	100	2.6
08	250	7.7	220	4.5	100	3.1
09	260	8.0	200	4.8	100	3.4
10	280	8.6	200	5.1	100	3.5
11	300	9.0	200	5.2	100	3.8
12	300	9.1	200	5.4	100	3.8
13	300	9.5	200	5.3	100	3.6
14	300	9.5	200	5.2	100	3.6
15	300	9.5	210	5.0	100	3.5
16	290	9.2	220	4.8	100	3.4
17	260	9.1	230	4.4	100	3.0
18	240	9.0	240	---	100	2.4
19	240	8.9	---	---	1.5	3.1
20	240	8.0			2.8	2.8
21	250	7.6			3.0	2.8
22	260	7.5			3.5	2.7
23	280	7.3			4.0	2.7

Time: 150.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 26

Time	February 1950					
	h'F2	foF2	h'Fl	foFl	h'E	foE
						fEs* (M3000)F2
00	310				3.5	2.4
01	(310)				3.4	2.2
02	290				3.9	2.0
03	(280)				3.8	1.7
04	265				3.7	
05	260				3.5	
06	250				3.2	
07	250				3.8	
08	240				4.8	
09	230				5.8	
10	230				7.0	
11	225				7.6	
12	220				8.4	
13	225				8.2	
14	220				8.2	
15	220				8.0	
16	220				7.0	
17	230				5.5	
18	220				5.0	
19	225				4.2	
20	230				3.9	
21	(230)				3.5	
22	(270)				3.6	
23	(280)				4.0	

Time: Local.

Sweep: 1.0 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 28

Time	February 1950						
	h'F2	foF2	h'Fl	foFl	h'E	foE	
						fEs (M3000)F2	
00	280	8.0					3.4
01	260	7.9					3.7
02	250	7.1					3.2
03	250	6.6					3.0
04	250	6.5					2.8
05	250	6.0					2.5
06	240	6.7					2.9
07	240	7.8	230	4.3	110	2.8	3.3
08	250	8.2	220	4.6	110	3.3	3.1
09	280	8.6	210	5.2	---	4.3	3.0
10	300	9.5	200	5.5	110	3.9	4.3
11	300	10.0	200	5.5	100	3.9	4.4
12	310	10.8	200	5.6	110	4.0	4.8
13	310	11.0	220	5.5	110	4.0	4.0
14	300	11.0	230	5.4	110	3.9	2.8
15	300	10.6	220	5.0	110	3.6	2.8
16	280	10.2	220	5.0	110	3.3	2.8
17	270	10.0	240	4.4	120	2.9	2.9
18	250	9.6	220	5.0	130	2.2	3.2
19	240	8.8					3.2
20	260	8.0					2.2
21	280	7.9					2.4
22	300	7.8					2.6
23	300	7.6					2.7

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 30

Time	February 1950						
	h'F2	foF2	h'Fl	foFl	h'E	foE	
						fEs (M3000)F2	
00	260						2.7
01	260	6.0					2.1
02	260	5.5					2.1
03	260	5.3					2.1
04	250	4.8					2.1
05	250	4.3					2.0
06	250	5.3					2.1
07	240	6.0	240	4.0	100	2.7	3.1
08	300	6.6	220	4.5	100	3.0	3.0
09	300	7.0	220	4.7	100	3.3	3.1
10	300	7.4	200	4.9	---	3.3	3.0
11	320	7.4	200	5.3	---	3.9	(2.8)
12	340	7.6	200	5.2	---	3.8	2.8
13	330	(7.3)	---	5.3	---	3.9	(2.8)
14	320	(7.3)	200	5.3	---	3.5	4.0
15	300	(7.8)	220	5.0	100	3.3	(2.8)
16	290	(7.8)	220	4.6	100	3.3	2.9
17	280	(7.5)	230	4.3	100	3.0	2.0
18	250	(6.7)	250	---	100	2.5	1.9
19	250	(7.7)	---	---	---	3.6	(3.0)
20	240	(7.7)	---	---	---	3.8	(2.8)
21	240	7.4				3.8	2.8
22	250	7.0				3.3	2.8
23	260	6.8				3.5	2.7

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 31

Time	January 1950					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	(345)	(3.6)			3.4	
01	330	(2.6)			2.5	
02	300	(2.8)			3.4	
03	300	(3.8)			3.7	
04	280	(4.3)			2.5	
05	275	(4.2)			1.7	
06	275	4.1				
07	270	3.6				
08	250	3.8				
09	240	4.6				
10	235	6.0				
11	226	(7.2)				
12	230	7.5				
13	220	(>8.6)				
14	220	7.2				
15	225	(6.3)				
16	216	5.2				
17	(230)	3.9				
18	(240)	3.6			2.5	
19	(280)	3.2			2.8	
20	(290)	3.3			3.7	
21	---	(2.4)			4.2	
22	---	(3.7)			4.1	
23	(340)	(3.6)			2.3	

Time: Local.

Sweep: 1.0 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 32

Time	January 1950					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	260	6.7				2.8
01	260	6.0				2.1
02	260	5.3				2.0
03	260	4.9				3.0
04	270	4.7				2.7
05	260	4.3	---	---	---	2.3
06	250	5.5	250	4.5	100	2.5
07	300	6.0	240	4.6	100	3.0
08	340	6.6	230	4.8	100	3.2
09	330	7.1	210	5.1	100	3.5
10	370	7.2	200	5.4	100	3.8
11	350	(7.4)	(230)	5.4	100	3.8
12	380	7.4	(220)	5.5	100	4.0
13	350	(7.3)	---	5.4	100	3.9
14	360	(7.5)	200	5.4	100	(2.6)
15	350	7.2	220	5.3	100	3.5
16	340	7.4	220	5.0	100	3.2
17	310	7.7	230	4.7	100	3.0
18	260	7.6	240	4.2	100	2.8
19	250	7.5			120	3.9
20	250	7.4				4.0
21	250	(7.4)				4.4
22	270	(7.4)				2.6
23	270	7.2				(2.7)

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 33

Time	December 1949					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	310	3.4			2.8	
01	340	4.6			3.5	
02	305	4.6			4.0	
03	300	4.9			3.2	
04	280	5.0			3.0	
05	260	4.6			2.4	
06	250	4.8			2.4	
07	250	4.5				
08	260	4.0				
09	240	4.8				
10	230	6.5				
11	230	8.0				
12	220	9.0				
13	210	9.0				
14	210	8.0				
15	210	7.1				
16	220	6.8				
17	220	4.4				
18	240	4.0				
19	240	3.7			2.9	
20	270	3.8			3.1	
21	270	4.0			3.1	
22	300	3.9			3.1	
23	320	3.4			3.8	

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 34

Time	December 1949					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	340	3.4				2.3
01	330	3.6				2.5
02	320	3.5				2.6
03	300	3.5				2.7
04	300	2.4				1.8
05	290	2.4				2.8
06	290	3.0				2.0
07	270	6.0			---	2.7
08	220	9.9	220	---	100	2.2
09	250	12.0	340	---	100	2.6
10	260	(12.5)	---	---	100	3.0
11	260	12.1	240	---	100	3.3
12	260	11.1	240	---	100	2.1
13	260	11.4	255	---	100	2.8
14	260	11.0	245	---	100	2.5
15	250	9.8	---	---	100	2.2
16	240	8.2	250	---	100	1.8
17	230	6.9	260	---	---	2.2
18	260	6.4				3.1
19	260	2.9				2.1
20	290	3.4				2.0
21	300	3.2				1.9
22	230	2.4				2.3
23	320	3.4				2.0

Time: 135.0°E.

Sweep: 1.0 Mc to 14.0 Mc in 16 minutes, manual operation.

Table 35

Time	December 1949					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	300	2.4			2.2	2.7
01	300	3.6			2.1	2.7
02	290	3.6			2.0	2.8
03	270	2.8			1.6	3.9
04	280	3.5				3.9
05	280	3.2			1.4	2.9
06	250	3.6				2.0
07	220	6.4	---	---	(1.8)	2.7
08	210	9.6	---	---	110	3.3
09	220	11.7	220	---	110	3.3
10	230	13.3	220	---	110	2.2
11	230	12.4	230	---	110	3.2
12	220	11.6	210	---	100	3.7
13	230	11.3	220	---	110	3.4
14	240	11.0	220	---	110	3.0
15	220	10.4	---	---	110	2.6
16	220	9.2	---	---	120	2.1
17	230	7.7	---	---	---	2.4
18	210	6.2	---	---	---	2.2
19	220	4.6	---	---	---	2.6
20	270	3.8	---	---	---	2.4
21	290	2.6	---	---	---	2.8
22	290	3.7	---	---	---	2.8
23	280	3.6	---	---	---	2.8

Time: 125.0°E.

Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 36

Time	December 1949					
	h'F2	foF2	h'F1	foF1	h'E	foE
00	280	3.5				2.6
01	280	2.6				2.3
02	270	3.5				2.9
03	280	3.4				2.2
04	280	3.1				2.8
05	280	3.1				2.0
06	260	2.5				2.8
07	230	7.0	---	---	110	1.9
08	220	9.8	---	---	100	2.6
09	230	12.3	240	---	100	2.0
10	230	13.3	230	---	100	3.2
11	230	12.6	230	---	100	2.4
12	240	11.6	230	---	100	3.4
13	240	11.4	220	---	100	3.2
14	240	12.2	.230	---	110	2.2
15	230	10.8	230	---	100	2.8
16	220	9.0	---	---	100	2.1
17	230	7.8	---	---	100	1.3
18	230	7.0	---	---		2.2
19	220	5.5	---	---		2.8
20	230	4.3	---	---		2.8
21	250	2.8	---	---		2.6
22	280	3.7	---	---		3.4
23	270	3.7	---	---		2.8

Time: 135.0°E.

Sweep: 1.0 Mc to 17.0 Mc in 16 minutes, manual operation.

Table 37

Time	December 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	280	4.1					2.9
01	290	3.9					2.8
02	290	3.6					2.9
03	280	3.3					2.8
04	290	3.2					2.8
05	320	3.1					2.6
06	300	3.4					2.6
07	290	5.0					2.4
08	250	9.4	250	---	1.5	2.3	2.9
09	250	11.1	250	---	120	2.2	3.2
10	250	12.5	230	---	110	3.3	3.5
11	260	13.2	230	---	110	3.4	4.2
12	270	13.2	240	---	110	3.6	4.4
13	270	13.3	230	---	110	3.6	4.6
14	290	13.4	240	---	110	3.3	4.6
15	280	13.1	250	---	110	3.1	3.9
16	250	12.4	250	---	110	2.8	3.4
17	240	11.0	---	---	130	2.1	3.4
18	220	9.0					3.1
19	240	8.2					3.2
20	230	7.3					3.0
21	240	6.5					2.6
22	260	4.8					2.2
23	290	4.6					2.9

Time: 135.0°E.

Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 39

Time	December 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	250	7.4					3.5 (2.8)
01	250	6.6					2.7 2.8
02	280	6.3					3.9 2.6
03	280	5.8					3.2 2.7
04	280	5.7					3.2 2.8
05	250	5.8					2.9
06	250	6.5	250	4.0	100	2.6	3.0
07	300	6.8	240	4.6	100	3.0	2.9
08	340	(7.2)	240	5.0	100	3.3	(2.8)
09	330	(7.6)	---	5.4	100	(3.5)	3.3 (2.6)
10	350	(7.6)	---	5.5	100	(3.8)	3.6 (2.7)
11	350	---	---	5.6	100	(3.8)	3.9 ---
12	350	(7.5)	---	5.6	100	(3.8)	3.8 (2.7)
13	370	(7.8)	(240)	5.8	100	3.9	3.9 (2.7)
14	370	---	240	5.5	100	3.9	3.8 ---
15	350	---	220	5.5	100	(3.8)	---
16	330	---	220	5.1	100	3.5	---
17	300	(7.8)	220	4.9	100	3.2	(3.0)
18	300	7.7	240	4.3	100	2.8	2.9
19	260	(7.7)			110	2.0	(2.8)
20	280	(7.8)					4.0 (2.7)
21	280	---					3.8 ---
22	280	---					4.8 ---
23	260	(7.7)					3.9 (2.8)

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 41

Time	November 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	240	10.8					3.0
01	(10.2)						
02	(9.4)						
03	(210)	(8.0)					(3.3)
04	---						
05	(5.4)						
06	(210)	(7.0)			1.8		(3.5)
07	(9.2)				2.8		
08	(10.5)				2.8		
09	270	10.4			3.0		2.8
10	10.6				3.2		
11	(11.0)				3.2		
12	200	11.0			3.2		2.7
13	11.0				---		
14	11.0				---		
15	300	11.0			2.4		2.7
16	11.0				3.1		
17	11.0				2.8		
18	270	11.0			1.9		2.8
19	(11.0)				2.0		
20	(11.0)				1.6		
21	240	11.0			1.5		3.0
22	11.0				1.2		
23	10.8				---		

Time: Local.

Table 38

Time	December 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	210	10.0					3.1
01					9.2		
02					8.0		
03					---		
04					---		
05					---		
06					---		
07					(9.1)		
08					(10.0)		
09	270	10.4					2.5
10					10.6		3.2
11					11.0		3.3
12	300	11.0					3.5
13					11.0		3.6
14					11.0		2.7
15					10.8		
16	300	10.8					3.2
17					10.9		2.8
18	270	10.9					
19					10.8		
20					10.8		1.5
21	240	10.8					1.5
22					10.5		3.0
23					10.3		

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Ee and Nl (auroral) reflections.

Table 40

Time	November 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs* (M3000)F2
00	330	4.5					4.0
01	335	(5.0)					4.0
02	320	5.0					3.8
03	310	5.0					3.2
04	295	(4.8)					2.9
05	270	5.0					2.5
06	250	4.8					
07	260	4.4					
08	250	5.0					
09	240	6.0					
10	240	7.4					110 2.2
11	230	(8.1)					110 2.3
12	235	(8.0)					120 2.3
13	225	(>8.0)					125 2.3
14	220	(>8.0)					
15	225	(>7.0)					
16	225	(6.3)					
17	220	(>5.5)					2.8
18	220	(4.8)					2.8
19	260	4.5					2.5
20	275	4.7					2.6
21	310	4.4					4.1
22	320	4.5					4.3
23	340	4.5					3.9

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Ee and Nl (auroral) reflections.

Table 42

Time	October 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE*	fEs (M3000)F2
00	330	4.4					4.0
01	335	4.5					3.6
02	340	4.2					4.0
03	320	4.2					3.7
04	310	4.5					3.0
05	280	4.5					2.4
06	260	4.5					2.0
07	250	5.2					115 1.9
08	245	6.0					105 2.3
09	240	7.0					105 2.5
10	240	7.5					105 2.5
11	240	7.2					110 2.7
12	235	7.2					105 2.8
13	235	(>7.5)					110 2.6
14	235	(>7.5)					110 2.6
15	240	6.7					110 2.4
16	235	6.0					125 2.2
17	250	5.3					
18	240	4.6					2.6
19	250	4.5					3.8
20	290	4.5					3.8
21	270	4.5					3.7
22	310	4.4					4.0
23	(320)	4.6					3.8

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Ee and Nl (auroral) reflections.

Table 43

Calcutta, India (22.6°N, 88.4°E)							October 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	(240)	(8.5)				1.0	(3.0)	
01		(8.5)						
02		(8.2)						
03	---	---				---		
04		---						
05		---						
06	---	---				---		
07		---						
08		(9.0)				3.0		
09	(260)	(10.0)				3.1	(3.0)	
10		(10.6)				3.5		
11		(11.0)				3.8		
12	(300)	(11.0)				---	(2.7)	
13		(11.0)				---		
14		11.2				---		
16	(270)	11.0				2.7		
17		11.0				3.6		
18	270	10.8				3.2	(4.1)	
19		10.8				2.6	2.8	
20		(10.0)				---		
21	(240)	(9.0)				---	(2.8)	
22		9.5				1.2		
23		9.0				1.1		

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 44

Kiruna, Sweden (67.8°N, 20.6°E)									September 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2		
00		300				6.0			3.5	
01		310				6.2			3.4	
02		300				5.0			3.7	
03		290				4.8			2.5	
04		280				4.8			1.8	
05		265				4.7			1.6	
06		250				6.5				
07		240				5.9			115	1.9
08		240				6.0	230	---	110	2.4
09		230				6.2	230	---	105	2.7
10		230				6.0	226	4.6	105	3.0
11		250				(6.2)	220	5.0	100	3.2
12		230				6.5	220	---	105	3.2
13		235				(6.5)	220	6.0	100	3.3
14		230				(>8.8)	220	5.0	105	3.2
15		235				6.8	220	---	110	2.8
16		240				6.4	---	---	110	2.6
17		245				6.5	---	---	115	2.4
18		240				6.0	---	---	120	2.0
19		240				6.0				2.3
20		240				5.6				2.0
21		255				5.6				2.6
22		275				(>6.0)				3.1
23		305				5.0				3.4

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 45

Kiruna, Sweden (67.8°N, 20.5°E)							August 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2
00	270	6.4				3.6		
01	280	5.0				2.4		
02	275	5.0				2.3		
03	270	4.6	---	---	---	---	2.4	
04	265	4.9	---	---	---	---		
05	250	5.0	250	3.6	100	2.2		
06	265	5.4	230	4.0	100	2.6		
07	290	(6.0)	220	4.1	100	2.6		
08	320	(>6.0)	220	4.4	100	2.8		
09	305	6.2	220	4.7	100	3.0	3.2	
10	310	6.3	200	4.7	100	3.2	3.4	
11	(320)	(>6.0)	200	4.7	100	3.2		
12	(300)	(6.2)	206	4.9	100	3.2	3.5	
13	(270)	(>6.2)	200	4.8	100	3.3		
14	260	(8.3)	210	4.8	100	3.2		
15	(230)	(>6.3)	210	4.7	100	3.2		
16	225	(>6.3)	220	4.3	100	3.0		
17	230	6.2	---	4.0	100	2.7		
18	240	(>6.0)	---	---	110	2.4	3.2	
19	240	(>5.8)	---	---	115	2.1	2.8	
20	250	5.6	---	---	---	2.3		
21	260	5.0				2.6		
22	275	5.0				3.4		
23	310	5.0				3.2		

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 46

Kiruna, Sweden (67.8°N, 20.5°E)									July 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2		
00	270	(>6.0)							3.1	
01	270	(6.6)							3.6	
02	260	(6.5)							3.3	
03	250	5.8			240	3.2	116	1.8	2.7	
04	255	(>5.8)	230			3.8	100	3.2	2.6	
05	315	5.8			215	4.0	100	2.4		
06	(340)	6.0			210	4.3	100	2.7		
07	(325)	6.3			200	4.6	100	2.8		
08	(335)	6.4			200	4.7	100	3.1	3.4	
09	(360)	6.4			200	4.8	100	3.2	3.8	
10	(320)	6.6			200	4.8	100	3.3	3.8	
11	(340)	6.6			195	4.9	100	3.4	3.8	
12	(345)	(>6.5)			195	5.0	100	3.3	3.9	
13		6.6			200	4.9	100	3.4	3.5	
14		6.6			200	4.9	100	3.3		
15		6.6			200	4.8	100	3.3		
16	(310)	6.2			200	4.7	100	3.2		
17	(235)	6.0			200	4.7	100	3.0	3.6	
18	230	(>6.0)			216	4.3	100	2.8	3.7	
19	235	8.0			235	4.0	100	2.4	3.3	
20	240	6.0	---	---	---	---	110	2.0	2.6	
21	250	(5.8)	---	---	---	---	---	---	2.6	
22	260	5.9	---	---	---	---	---	---	2.8	
23	270	(>6.6)	---	---	---	---	---	---	2.1	

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 47

Kiruna, Sweden (67.8°N, 20.5°E)							June 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2
00	(270)	(>5.0)				3.5		
01	300	(>5.6)				3.7		
02	270	6.6	---	---	---	3.2		
03	320	(>6.5)	240	3.6	110	2.2		
04	345	5.8	220	3.9	100	2.4		
05	325	6.0	215	4.2	100	2.6		
06	340	(>6.0)	210	4.5	100	2.9		
07	(350)	6.2	200	4.6	100	3.0		
08	(350)	(>6.5)	200	4.8	100	3.2		
09	(346)	(>6.6)	200	4.9	100	3.3		
10	350	6.7	200	5.0	100	3.3		
11	(340)	(>6.6)	200	6.0	100	3.3		
12	(350)	6.8	200	6.1	100	3.3		
13	(355)	6.8	200	5.0	100	3.4		
14	(345)	6.7	200	5.0	100	3.3		
15	(350)	6.3	200	5.0	100	3.3		
16	(220)	6.3	200	4.8	100	3.2		
17	(210)	6.1	200	4.8	100	3.0		
18	220	6.0	220	4.6	100	2.8	3.2	
19	230	6.0	216	---	100	2.6	3.0	
20	240	6.0	---	---	100	2.4	3.6	
21	250	6.0	---	---	100	1.9	3.2	
22	270	6.0	---	---	---	3.1		
23	280	5.6	---	---	---	3.9		

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Kiruna, Sweden (67.8°N, 20.5°E)									May 1949	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs*	(M3000)F2		
00	280	(>5.8)							3.2	
01	(270)	6.8							2.0	
02	280	6.0							3.2	
03	290	5.8								
04	340	6.2			230	3.9	106	2.2		
05	306	8.3			230	4.2	10			

Table 49

Time	April 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs* (M3000)F2
00	290	6.1				2.2	
01	300	6.0				2.4	
02	300	5.8				2.1	
03	300	5.9				1.9	
04	270	6.1	---	---	---	1.6	
05	245	6.2	---	---	105	1.9	
06	235	6.8	---	---	105	2.3	
07	220	(>6.8)	225	4.6	100	2.6	
08	220	(7.2)	220	4.9	100	2.6	
09	215	(7.4)	220	5.0	100	3.1	
10	(220)	(>8.1)	210	5.2	100	3.2	
11	220	(7.8)	210	5.2	100	3.3	
12	(210)	(>8.0)	210	5.4	100	3.3	
13	(210)	8.4	205	5.4	100	3.2	
14	(215)	(>8.4)	205	---	100	3.2	
15	220	(>8.4)	210	---	100	3.2	
16	220	(>8.0)	220	---	100	2.9	
17	225	(>7.8)	---	---	100	2.6	
18	235	(>7.0)	---	---	110	2.3	
19	235	(>7.0)	---	---	120	2.0	
20	240	(>7.0)					
21	240	(7.0)				2.2	
22	270	(6.3)				2.4	
23	280	(6.4)				3.2	

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

Table 50

Time	March 1949						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs* (M3000)F2
00	350	5.4				2.6	
01	300	5.4				4.0	
02	320	5.1				3.8	
03	320	5.0				3.1	
04	300	5.0				2.0	
05	260	(>5.0)					
06	260	5.6					1.6
07	240	6.0			110	1.8	
08	230	(>6.4)	---	---	110	2.2	
09	230	(7.5)	---	---	105	2.6	
10	220	(>9.0)	230	---	100	2.7	
11	220	(8.6)	220	---	100	2.8	
12	220	(>9.0)	220	---	100	2.9	
13	220	(9.8)	220	---	100	2.9	
14	220	(>9.2)	---	---	100	2.8	
15	220	(>8.0)	---	---	105	2.6	
16	220	(8.0)	---	---	110	2.4	
17	230	(>8.0)			120	2.1	
18	240	(>7.0)					2.4
19	240	(5.5)					3.8
20	240	5.7					3.0
21	240	6.0					3.6
22	260	6.2					3.5
23	300	5.6					

Time: Local.

Sweep: 1.5 Mc to 16.0 Mc in 30 seconds.

\*Combined Es and Nl (auroral) reflections.

**TABLE 51**  
 Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.  
**IONOSPHERIC DATA**

**National Bureau of Standards**  
 (Institution)  
 Scaled by B.E.B., By H. Calculated by By H., B.E.B., M.C., D.S., A.H.M.

**h<sup>1</sup>F<sub>2</sub> — Km (Unit)**  
 Observed at **Washington, D.C.** **Lat 38°7'N., Long 77.1°W.**

Day	75°W												Mean Time												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	2.80	2.80	2.90	3.00	2.90	3.10	3.00	4.00	3.70 <sup>h</sup>	4.50 <sup>h</sup>	4.70 <sup>h</sup>	4.90	3.40	3.70	4.00	3.60	3.30	3.40	2.90	2.60	2.50	2.50	2.80	(2.40) <sup>s</sup>	3.00
2	(2.90) <sup>s</sup>	2.90	2.60	2.70	2.50	3.00	2.80	3.40	3.30	3.30	3.20	3.80	4.00	4.00	3.30	3.30	3.80	3.20	3.00	3.00	2.40	2.40	2.70	3.00	
3	2.80	2.70	2.70	2.80	2.70	2.60	3.00	3.00	3.30	3.20	4.10	4.00	4.10	3.50	3.50	3.10	3.20	3.20	2.80	2.50	2.30	2.30	2.50	2.80	
4	(2.90) <sup>s</sup>	2.80	2.60	2.50	2.70	2.90	3.00	(3.80) <sup>h</sup>	(3.70) <sup>h</sup>	3.90	4.30	4.00	4.00	3.80	3.30	3.60	3.10	3.00	2.80	2.50	2.20	2.20	2.70	2.70	
5	2.90	2.70	2.60	2.70	(3.00) <sup>h</sup>	2.70	2.50	2.70	2.90	3.10	3.20 <sup>h</sup>	3.90	3.70	3.50	3.40	3.60	3.70	3.00	2.90	(2.40) <sup>h</sup>	2.30	2.30	2.90	3.00	
6	3.00	3.00	2.80 <sup>h</sup>	2.70 <sup>h</sup>	3.00 <sup>h</sup>	2.80 <sup>h</sup>	2.60 <sup>h</sup>	2.50	3.20	3.20	2.70	2.70	2.70	3.50	3.50	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	2.80	
7	2.70	2.70	2.70	2.70	2.70	2.60	2.60	2.50	3.20	3.20	3.20	3.20	3.20	3.50	3.50	3.70	3.20	3.20	3.40	3.00	3.00	2.60	2.60	A	(3.00) <sup>h</sup>
B	(2.90) <sup>h</sup>	2.70	2.50	2.70	3.00	(2.80) <sup>h</sup>	3.20	2.90	3.10	3.00	3.20	3.50	3.60	3.90	3.40	3.50	3.20	3.20	2.90	2.70	2.40 <sup>h</sup>	2.40 <sup>h</sup>	2.60	2.80	
9	(3.00) <sup>s</sup>	3.00 <sup>h</sup>	2.80 <sup>h</sup>	2.70 <sup>h</sup>	2.70 <sup>h</sup>	2.90 <sup>h</sup>	3.30 <sup>h</sup>	500 <sup>r</sup>	G	510 <sup>h</sup>	450 <sup>h</sup>	390 <sup>h</sup>	430 <sup>h</sup>	510 <sup>h</sup>	(4.50) <sup>h</sup>	410 <sup>h</sup>	410 <sup>h</sup>	370 <sup>h</sup>	340	320	2.50	2.70	2.70	2.90	(3.00) <sup>s</sup>
10	(3.00) <sup>s</sup>	2.90	2.70	(2.90) <sup>h</sup>	2.70	2.90	3.20	3.10	4.10	4.00 <sup>h</sup>	4.00 <sup>h</sup>	3.80	4.00 <sup>h</sup>	4.30 <sup>h</sup>	4.50	4.00	3.70	M	M	A	(2.30) <sup>h</sup>	(2.60) <sup>h</sup>	2.60	2.80	(3.00) <sup>h</sup>
11	2.80	2.90	(2.90) <sup>h</sup>	2.80	2.90	2.90	2.90	3.00	3.90	4.60	4.70 <sup>h</sup>	5.40 <sup>h</sup>	5.30 <sup>h</sup>	4.60	4.60	4.10	3.80	A	A	A	2.70	2.70	2.90	(2.90) <sup>s</sup>	
12	2.80	2.80	2.60	2.70	2.70	(2.70) <sup>s</sup>	(2.70) <sup>h</sup>	2.80	3.60	2.80	3.30	3.40	4.10	3.70	3.90	3.40	3.30	2.90	2.70	2.70	(2.40) <sup>h</sup>	2.90	3.00	2.90	
13	2.90	(2.90) <sup>s</sup>	A	A	2.50	(2.40) <sup>h</sup>	(2.40) <sup>h</sup>	2.80	3.40	3.10 <sup>h</sup>	3.20	3.70	3.60	3.80	3.90	3.50	3.00	2.90	2.70	(2.60) <sup>h</sup>	2.80	2.90	3.10		
14	2.90	2.70	2.70	2.70	2.50	2.50	2.30	3.30	3.00	3.20	3.20	3.30 <sup>h</sup>	3.20	3.30	3.10	3.10	3.10	2.90	2.60	2.50	(2.60) <sup>h</sup>	2.20	2.60		
15	(3.00) <sup>h</sup>	(2.70) <sup>h</sup>	(2.80) <sup>h</sup>	(2.80) <sup>h</sup>	2.50	2.50	2.70	2.70	2.90	3.00	3.50	3.20	3.20	3.30	3.20	3.20	3.20	A	A	A	A	A	A	2.50	
16	(2.70) <sup>s</sup>	2.60	2.30	(2.70) <sup>s</sup>	2.30	2.30	2.30	2.30	2.30	3.20	3.20	3.10	3.70	3.40	3.40	3.00	3.10	2.70	2.70	2.50 <sup>h</sup>	2.50 <sup>h</sup>	2.80	2.80		
17	(2.70) <sup>s</sup>	(2.90) <sup>s</sup>	2.90 <sup>h</sup>	2.50 <sup>h</sup>	2.60 <sup>h</sup>	4.00 <sup>h</sup>	4.00 <sup>h</sup>	4.00 <sup>h</sup>	4.00 <sup>h</sup>	4.00 <sup>h</sup>	4.30 <sup>h</sup>	4.30 <sup>h</sup>	3.50 <sup>h</sup>	3.30 <sup>h</sup>	3.00 <sup>h</sup>	3.00 <sup>h</sup>	3.00 <sup>h</sup>	3.00 <sup>h</sup>							
18	(2.80) <sup>s</sup>	(2.50) <sup>s</sup>	2.60	(2.80) <sup>s</sup>	(2.80) <sup>h</sup>	2.60	2.60	2.60	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	
19	2.90	2.90	2.30	2.30	2.50	2.40	2.30	2.30	2.60	3.00	3.10	3.60 <sup>h</sup>	3.30	3.40	3.30	3.30	3.30	3.60	3.30	3.30	3.00	2.70	(2.50) <sup>h</sup>	(2.70) <sup>h</sup>	
20	(2.70) <sup>s</sup>	(2.80) <sup>h</sup>	2.50	2.50	2.30	(2.40) <sup>h</sup>	(2.40) <sup>h</sup>	2.60	3.00	3.00	3.00	3.60 <sup>h</sup>	3.20	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	
21	2.70	2.80	(2.70) <sup>h</sup>	(2.70) <sup>h</sup>	2.60	(2.40) <sup>h</sup>	(2.40) <sup>h</sup>	2.60	3.40	3.30	4.20	4.20	4.40	4.00	4.50	4.40	4.40	3.80	3.80	3.50	3.20	2.90	2.50	2.40	
22	(2.50) <sup>s</sup>	(2.20) <sup>s</sup>	2.20	[3.60] <sup>h</sup>	[3.60] <sup>h</sup>	[3.60] <sup>h</sup>	[3.60] <sup>h</sup>	4.50 <sup>h</sup>	[3.60] <sup>h</sup>	4.00	3.70	4.30	4.30	4.10	4.10	4.00	4.00	[3.40] <sup>h</sup>	[3.20] <sup>h</sup>	[2.80] <sup>h</sup>	[2.80] <sup>h</sup>	[2.80] <sup>h</sup>	[2.80] <sup>h</sup>		
23	(3.00) <sup>s</sup>	[3.00] <sup>h</sup>	(3.00) <sup>h</sup>	2.70	2.80 <sup>h</sup>	3.00	[3.10] <sup>h</sup>	[3.10] <sup>h</sup>	3.40	3.20	3.50 <sup>h</sup>	3.50 <sup>h</sup>	3.40	3.40	3.40	3.40	3.40	3.20	3.00	2.50 <sup>h</sup>	2.40 <sup>h</sup>	2.40 <sup>h</sup>	2.40 <sup>h</sup>		
24	(3.00) <sup>s</sup>	(3.50) <sup>s</sup>	(3.10) <sup>s</sup>	(3.10) <sup>s</sup>	2.90 <sup>h</sup>	[5.70] <sup>h</sup>	[5.70] <sup>h</sup>	G	760 <sup>h</sup>	760 <sup>h</sup>	670 <sup>h</sup>	350 <sup>h</sup>	510 <sup>h</sup>	430 <sup>h</sup>	400 <sup>h</sup>	400 <sup>h</sup>	400 <sup>h</sup>	400 <sup>h</sup>	400 <sup>h</sup>	370 <sup>h</sup>	370 <sup>h</sup>	370 <sup>h</sup>	370 <sup>h</sup>		
25	2.80 <sup>h</sup>	2.30 <sup>h</sup>	(2.50) <sup>h</sup>	300 <sup>h</sup>	(3.20) <sup>h</sup>	(2.70) <sup>h</sup>	G	520 <sup>h</sup>	750 <sup>h</sup>	400 <sup>h</sup>	(5.20) <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>		
26	(3.00) <sup>s</sup>	(4.80) <sup>s</sup>	(2.30) <sup>s</sup>	2.60	2.90	3.40 <sup>h</sup>	400 <sup>h</sup>	450 <sup>h</sup>	450 <sup>h</sup>	450 <sup>h</sup>	450 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>	470 <sup>h</sup>		
27	(4.80) <sup>s</sup>	2.60	(2.70) <sup>s</sup>	2.70	2.70	2.70	2.70	3.10	3.10	3.50	3.50	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	A	A	A	A	3.00	
28	3.00	3.00	(4.80) <sup>s</sup>	3.00	2.70	(2.80) <sup>h</sup>	3.00	3.20	3.20	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
29	(2.70) <sup>s</sup>	2.70	2.50	2.30	(2.70) <sup>h</sup>	(2.70) <sup>h</sup>	300	300	330	310 <sup>h</sup>	350 <sup>h</sup>	400 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>	350 <sup>h</sup>		
30	3.00 <sup>h</sup>	3.10 <sup>h</sup>	3.10 <sup>h</sup>	3.10 <sup>h</sup>	(3.00) <sup>s</sup>	(3.00) <sup>s</sup>	G	500 <sup>h</sup>	450 <sup>h</sup>	500 <sup>h</sup>	480 <sup>h</sup>	530 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>	490 <sup>h</sup>		
31																									
Median	(2.80) <sup>s</sup>	2.70	2.70	2.70	2.70	2.70	2.70	2.70	3.40	3.30	3.70	3.80	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90		
Count	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	28	27	26	25	30	

Sweep 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through June 30).

Manual □ Automatic □

Mean Time

11-3 GOVERNMENT PRINTING OFFICE 1946 O-12159

N

TABLE 52  
IONOSPHERIC DATA

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

National Bureau of Standards  
(Institution)  
Scaled by  $B_E B$ ,  $B_H$ ,  $B_E B$ ,  $M_C$ ,  $D_S$ ,  $A_H M$ .

(Characteristic)	Day	38°7'N, Long 77.1°W												75°W Neon Time											
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	00	5.6 F	(5.3) S	5.3	(4.9) S	(5.1) S	5.3	5.6	5.8	(5.5) A	(6.0) S	6.3	6.9	(7.1) T	(6.9) S	(7.1) S	(7.2) S	(7.0)	7.2	(7.4) S	7.6	7.6	7.4	6.6	6.5
Mc	00	5.6 F	(5.3) S	5.3	5.0	(5.4) H	4.9	4.3	5.0	(5.8) H	6.4	6.7	(6.9) W	(6.3) S	(6.7) S	(6.7) S	(6.7) S	7.2	7.6	7.7	(7.9) S	(8.2) S	7.6	7.1	7.0
June	00	5.7	4.9	4.0	4.7	4.5	4.8	5.2	(5.5) H	(5.3) H	5.8	(6.0) F	(6.8) S	(6.9) S	(6.8) S	(6.9) S	7.6	7.6	7.6	(7.2) S	(7.2) S	7.6	7.1	(6.4) S	
(Month)	00	5.7	4.9	4.7	4.5	4.8	5.2	5.4	(4.8) S	(4.8) H	6.1	6.1	6.4	6.8	7.2	7.0	7.0	7.5	7.5	(7.1) S	7.4	7.6	7.0	6.6	6.4
D.C.	00	5.7	5.3	(4.8) S	4.4	4.7	4.4	4.7	5.4	(5.6) H	(5.8) H	6.1	6.1	6.4	6.8	(6.6) H	7.1	7.5	7.5	7.6	7.8	7.8	7.8	7.8	7.4
1	00	5.8	5.2	5.2	4.7	4.7	4.5	5.5	(5.9) S	(5.9) S	6.8	(6.6) H	(6.6) H	(6.6) H	(6.6) H	(6.6) H	7.6	7.6	7.6	(7.2) S	(7.2) S	7.6	7.1	(6.1) S	
2	00	5.8	5.7	4.9	4.0	4.7	4.5	4.8	5.2	(5.5) H	(5.3) H	5.8	(6.0) F	(6.8) S	(6.9) S	(6.8) S	7.6	7.6	7.6	(7.2) S	(7.2) S	7.6	7.1	(6.1) S	
3	00	5.8	5.4	4.9	4.7	4.5	4.8	5.2	(5.6) H	(5.8) H	6.1	6.1	6.4	6.8	7.2	7.0	7.0	7.5	7.5	(7.1) S	7.4	7.6	7.0	6.6	6.4
4	00	5.9	5.8	5.3	(4.8) S	4.4	4.7	4.5	5.5	(5.9) S	(5.9) S	6.8	(6.6) H	(6.6) H	(6.6) H	(6.6) H	7.6	7.6	7.6	(7.2) S	(7.2) S	7.6	7.0	6.6	
5	00	5.9	5.2	5.2	4.7	4.7	4.5	5.5	(5.9) S	(5.9) S	6.8	(6.6) H	(6.6) H	(6.6) H	(6.6) H	7.6	7.6	7.6	(7.2) S	(7.2) S	7.6	7.0	6.6		
6	00	5.8	5.8 F	(5.5) S	K(4.2) F	K(3.8) F	3.4 F	3.4 F	<4.0 F	4.4 F	4.9 F	<4.6 F	5.8 F	K(5.8) F	K(5.8) F	K(5.8) F	5.6 K	5.6 K	5.7 K	K(6.2) S	K(6.4) S	6.3 K	6.3 K	(5.5) S	
7	00	5.8	(4.0) S	5.7	3.0 F	3.0 F	3.9 F	3.9 F	4.9 F	6.1	7.0	(6.8) S	(6.8) S	(6.8) S	(6.8) S	(6.8) S	7.1	7.1	7.1	(7.2) S	(7.2) S	7.1	7.5	7.0	
8	00	5.8	5.6 F	4.7 F	4.4 F	4.2 F	4.4 F	5.8 F	7.2	7.3	(7.4) H	(7.8) S	(7.4) H	(7.8) S	(7.4) H	7.6	7.5	7.6	7.7	7.7	7.8	8.4 K	7.6 K	7.0 K	
9	00	6.3 K	(5.5) S	(6.0) H	(5.0) F	(4.4) F	4.2 K	K(4.4) H	(4.8) H	(4.8) H	<4.5 G	5.2 K	5.6 K	5.9 K	K(6.0) S	6.0 K	6.4 K	(6.2) K	(6.2) K	(6.2) K	(6.2) K	6.8 F	6.4 F	5.8 F	
10	00	(5.1) S	5.0 F	4.7 F	(3.6) F	(3.3) S	3.8 F	3.8 F	4.9 F	5.4 F	(5.2) F	5.6 F	(6.0) H	C.1 F	(6.2) H	6.3	(6.1) S	(6.1) S							
11	00	(5.7) S	(4.9) S	(3.7) S	3.3 F	3.0 F	3.9 F	3.9 F	4.9 F	6.1	7.0	(6.8) S	(6.8) S	(6.8) S	(6.8) S	(6.8) S	7.1	7.1	7.1	(7.2) S	(7.2) S	7.1	7.5	7.0	
12	00	5.6 F	5.0 F	4.4 F	3.7 F	3.2 F	4.1 F	4.1 F	(4.1) S	(5.1) S	5.6 F	(6.7) F	(7.5) S	(7.5) S	(7.5) S	7.3	(7.0) H	(7.0) H							
13	00	5.7 F	(5.5) S	(5.0) S	(4.3) S	(3.6) S	(4.3) S	(4.3) S	5.4	(6.3) H	7.8	(7.4) H	(7.6) S	(7.6) S	(7.6) S	(7.6) S	(7.6) S	(7.2) S	(6.9) S	(6.9) S	(7.0) S	(7.0) S	(7.0) S	(7.0) S	
14	00	6.3	5.9 F	5.3 F	5.0 F	4.6 F	[5.1] S	5.6 F	6.6	7.7	(7.0) S	7.0	7.4	(7.9) S	(7.9) S	(7.9) S	(7.9) S	8.0	8.0	8.0	(7.3) S	(7.3) S	8.0	7.7	7.0
15	00	6.8	6.0	5.5	5.3	5.0	5.3	5.0	5.3	7.0	7.5 F	8.8	(8.8) S	9.1	9.2	(8.8) S	(8.8) S	8.4	8.4	8.4	(7.9) S	(7.9) S	8.4	7.9	7.8
16	00	6.6	6.5	5.7	4.9	4.4	4.9	4.6	4.9	(5.5) S	5.1 K	5.9 K	6.1 K	(5.4) T	(5.6) S	(5.5) S	(5.4) K	(6.0) S	(6.0) S						
17	00	(7.0) S	(6.1) S	(5.1) S	(4.0) F	(5.8) S	3.3	(3.8) S	3.4	(5.4) K	(4.7) S	5.9 K	6.1 K	(5.4) T	(5.6) S	(5.5) S	(5.4) K	(6.0) S	(6.0) S						
18	00	(6.0) S	(5.1) S	(4.5) S	(3.8) S	(3.8) S	3.3	(3.8) S	3.4	(5.4) K	(4.7) S	5.9 K	6.1 K	(5.4) T	(5.6) S	(5.5) S	(5.4) K	(6.0) S	(6.0) S						
19	00	(5.9) S	5.8	5.6	(4.5) S	(3.6) F	3.6 F	4.5 F	5.6	(6.4) F	(7.4) F	7.3 V	7.6	7.5	(7.8) S	(7.8) S	(7.8) S	(7.8) S	7.2	7.2	7.1	(7.2) S	(7.2) S	7.1	7.4
20	00	(6.4) S	(6.1) S	(5.1) S	(4.8) F	4.8 F	(4.4) S	(4.4) S	5.0 C	(6.2) S	7.4	(7.4) H	[7.5] C	7.7 N	(7.4) H	6.8	(6.4) S	(6.4) S							
21	00	6.1	(5.9) S	5.6 F	(5.3) S	4.7 F	4.6	5.7	(6.0) S	6.6	(6.1) S	6.2	(6.0) S	6.1	(6.0) S	6.1	(6.2) S	(6.2) S							
22	00	(5.3) S	5.4 F	5.2 F	4.2 F	(4.0) S	4.2 F	4.2 F	4.2 F	(4.1) S	5.6	(5.9) S	(5.8) S	(5.8) S	(5.8) S	(5.8) S	6.1	(5.9) S	(5.9) S						
23	00	5.5 F	(5.2) S	(4.6) S	4.6 F	4.0 F	(4.5) S	(4.5) S	(4.5) S	(4.7) S	7.4	(7.9) S	(7.5) S	(7.5) S	(7.5) S	(7.5) S	(7.5) S	(7.0) S							
24	00	K(6.8) S	K(3.4) S	K(3.1) F	K(3.1) F	K(2.9) S	K(2.9) S	K(2.9) S	K(2.9) S	K(3.8) S	(4.0) F	4.7 K	(5.7) H	(5.5) S	(5.5) S	(5.5) S	(5.5) S	(6.1) S							
25	00	4.9 F	K(4.2) S	K(3.4) F	K(3.8) F	K(4.0) F	4.8 K	(5.1) F	(5.0) F	(5.0) F	(5.0) F	(5.0) F	(5.7) H	(5.7) H	(5.7) H	(5.9) S	(5.9) S	(5.9) S	(5.9) S						
26	00	(6.0) S	(5.8) F	(5.3) S	(4.7) S	3.9 F	3.4 F	3.4 F	3.4 F	(4.1) S	(4.1) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(5.6) S								
27	00	5.6	5.4	4.9	4.9	(4.5) S	(4.5) S	(4.5) S	(4.5) S	(4.8) S	7.0	7.7	(7.9) S	(7.9) S	(7.9) S	(7.9) S	(7.9) S	(8.2) F	(8.2) F						
28	00	(6.3) S	(5.7) S	(5.2) S	5.4 F	4.8	(4.8) S	(4.8) S	(4.8) S	(4.8) S	6.5	7.1	7.0 F	7.7	7.4	7.4	7.4	7.8	7.8	7.8	(7.7) S	(7.7) S	(7.7) S	(7.7) S	
29	00	(6.0) S	5.4 F	4.9 F	(4.4) S	3.8 F	(4.3) S	(4.3) S	(4.3) S	(4.7) H															
30	00	K(2.5) F	K(2.8) F	K(2.1) F	K(2.1) F	K(1.7) F	K(1.7) F	K(1.7) F	K(1.7) F	K(3.0) F	K(3.0) F	K(3.8) F	K(4.4) F	K(4.7) F	K(4.7) F	K(4.7) F	K(5.0) F								
31	00	5.9	5.6	5.2	4.5	4.0	4.4	5.2	5.6	6.2	6.4	(6.5) S	6.8	6.8	6.8	6.8	7.0	7.0	7.0	7.1	7.3	(7.4) S	(7.0) S	(6.6) S	
Median	Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30)

Manual □ Automatic

**TABLE 53**  
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.  
(Universal)  
**IONOSPHERIC DATA**

**foF2**, **Mc**, **June**, **1950**  
(Characteristic) **Washington, D. C.**

Observed at **Lat. 38°7'N**, **Long. 71°W**

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

**National Bureau of Standards**

Scaled by **B.E.B.**, **By H.**, **MCC**, **DS**, **AHM**

Day	75°W												Mean Time											
	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	5.9 F	5.4 F	(5.0) S	(5.2) S	4.7	5.4	5.2	(5.4) S	(5.8) S	5.4	(6.2) A	(6.8) S	(7.1) S	(7.2) S	(6.9) S	(7.2) S	(7.1) S	(7.1) S	(7.2) S	(7.9) S	(7.4) S	(6.4)	(6.0) S	
2	6.4	(5.7) S	(5.3) S	4.4	4.0	4.9	[5.7] N	5.7	(5.9) H	6.5	(6.7) H	(6.9) S	(6.3) S	7.0	7.4	7.7	7.8	8.1	8.1	(7.1) S	(7.0) S	(6.5) S	(6.3) S	(6.0) S
3	(5.8) S	5.1	4.7	4.5	(4.4) S	5.1	5.6	(5.6) J	5.6	6.0 H	6.6	(7.0) S	(7.0) S	7.6	7.6	7.6	(7.0) S	7.6	(7.5) S	6.9	(6.8) S	(5.9) F	(5.9) S	(6.0) S
4	(5.8) S	(5.5) S	5.4 Z	4.6	4.3	5.1	V	(6.2) S	6.0	6.7	6.6	6.9	7.2	7.0	7.1	7.2	7.2	7.5	7.7	6.9	6.7	6.7	6.5	6.1
5	(5.9) S	(5.6) S	5.2	4.9	4.5	5.0	5.7	(6.7) S	(6.8) S	7.2	6.8	7.1	7.4	7.8	7.4	7.4	7.7	7.7	7.9	7.5	7.0	(7.1) S	(6.7) S	6.1
6	(5.8) F	5.7 F	5.0 F	[4.0] F	3.0 F	(3.9) F	4.4 F	4.6 F	5.0 F	5.1 F	(5.8) S	(5.8) F	(5.8) F	(5.8) F	(5.8) F	(5.8) F	(5.8) F	(5.8) F	(5.8) F	(5.8) S	(5.8) S	(5.8) S	(5.8) S	(5.8) F
7	[4.5] S	4.0 F	(3.5) F	3.2 F	3.2 F	4.4 F	(4.1) S	4.4 V	(6.5) H	(6.5) S	(6.5) S	(6.4) S	(6.4) S	(6.4) S	(6.4) S	(6.4) S	(6.4) S	(6.4) S	(6.4) S	(6.7) J	(6.7) J	7.1	7.5	6.5 F
8	5.7 F	5.2 F	4.6 F	4.4 F	4.0 F	5.0 F	6.4 F	7.1	7.7	7.5	(7.5) H	(7.6) S	(7.6) H	(7.6) H	(7.6) H	(7.6) H	(7.6) H	(7.6) H	(7.6) H	(6.9) S	(6.6) H	(6.7) S	(6.7) K	
9	(6.0) S	5.5 V	5.3 F	4.6 F	4.1 F	4.0 X	4.7 X	(5.9) S	5.1 X	5.4 F	5.8 F	[5.8] K	[5.8] K	[5.8] K	[5.8] K	[5.8] K	[5.8] K	[5.8] K	[5.8] K	(6.0) S	(6.0) X	(6.4) F	(5.9) F	(5.0) S
10	(5.2) F	5.0 F	(3.9) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F	(3.3) F									
11	(5.3) S	(4.5) F	3.7 F	3.3 F	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S	(4.7) S								
12	5.2 F	4.8 F	4.0 F	3.4 F	3.3 F	4.4 F	5.0 F	6.1 F	7.1	7.7	7.5	(7.5) H	(7.5) H	(7.5) H	(7.5) H	(7.5) H	(7.5) H	(7.5) H	(7.5) H	(7.3) S	(7.1) S	6.2 F	6.0 F	5.8 F
13	(5.4) S	5.3 F	4.8 F	(4.1) S	(3.8) A	(3.8) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F	(4.1) F						
14	6.4 F	5.8 F	(5.2) F	5.0 F	4.3 F	5.0 F	5.1 F	5.1 F	5.8 F	5.7 F	6.4 F	6.2	6.4	(6.0) S										
15	6.6	6.5	5.8 F	(5.2) S	5.1 F	5.0 F	(6.2) S	7.3 F	8.0	9.0	[9.0] A	9.0	(9.0) H	(9.2) S										
16	6.6	6.6	5.3 S	5.3 F	4.5 F	4.4 F	5.4 F	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S	(6.6) S						
17	(6.5) S	5.9 F	(5.9) F	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K	(5.7) K										
18	(5.4) F	(5.4) S	(3.9) S	3.6 F	3.4 F	(4.5) S	(4.5) S	(6.0) S	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H	(6.4) H					
19	(5.4) F	(5.4) S	(5.2) S	(3.9) F	(3.7) S	5.0 F	6.2	7.4	8.0	8.7	9.4	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S	(9.4) S
20	(6.1) F	(6.1) S	(5.2) S	(5.2) S	(4.3) S	4.4 F	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S	(5.9) S						
21	(5.9) S	5.8 F	(5.5) F	(4.9) F	(4.3) F	5.2 F	6.0	6.3	6.6	6.0	(6.3) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	(6.2) S	
22	(5.2) F	(5.4) F	4.9 F	(4.5) F	(4.0) F	4.7	C	C	C	C	6.6	7.6	7.6	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
23	[5.4] S	4.9 F	4.5 F	4.2 F	(4.0) S	4.7	C	C	C	C	6.6	7.6	7.6	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
24	(3.9) F	3.2 F	(3.6) F	(3.4) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F									
25	S	F	F	F	F	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
26	5.9 F	(6.0) F	(4.6) S	(4.6) S	(3.6) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F	(3.2) F								
27	5.4	(5.2) S	4.9	(4.3) S	(4.0) S	(5.1) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S	(4.0) S							
28	(6.0) S	5.6 F	(5.4) S	(5.1) S	4.4 F	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S	(5.0) S								
29	5.7 F	5.2 F	4.7 F	4.7 F	(4.1) S	(3.9) S	(5.2) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S	(5.6) S						
30	2.3 F	[2.2] F	[2.1] F	[2.1] F	[2.1] F	2.3 F	3.4 F	4.1 F	4.7 F	5.0 F	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	5.0 X	
31																								
Median	(5.8)	5.4	(4.9)	(4.2)	4.0	4.8	5.6	6.1	6.4	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	
Count	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Swept IOMC to 250MC in 30 seconds (June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30).  
Manual □ Automatic □

**TABLE 54**  
**IONOSPHERIC DATA**

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

$h'F_1$ , Km (Characteristic)      June, 1950

Washington, D. C. (Unit)

Observed at Lat 38°7'N, Long 77°1'W

National Bureau of Standards  
 Scaled by: B.E.B., By H. Calculated by: By H., B.E.B., M.C.C., D.S., A.H.M.

Day	75°W Mean Time											
	00	01	02	03	04	05	06	07	08	09	10	11
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Median	—	240	220	210	200	200	200	200	200	200	200	200
Count	—	2	4	2	6	5	7	6	5	4	3	3

Sweep: 10 Mc to 25.0 Mc in 30 seconds (June 1 through June 7), in 15 seconds (June 8 through June 30).  
 Manual □ Automatic ☒

**TABLE 55**  
**IONOSPHERIC DATA**  
 Central Radio Propagation Laboratory, National Bureau of Standards

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30).

TABLE 56  
COSMIC DATA

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

**TABLE 57**  
**IONOSPHERIC DATA**  
 Central Radio Propagation Laboratory, National Bureau of Standards

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

foE      Mc      June      1950  
 (Characteristic)    (Unit)    (Month)    (Year)  
 Observed at Washington, D. C.

Sweep: 1.0 MC to 25.0 MC in 30 seconds June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30).

**TABLE 58**  
 Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.  
**IONOSPHERIC DATA**

Characteristic	McKm (Unit)	June (Month)	1950	Observed at Washington, D.C.	Lat 38°N, Long 77°W	75°W Mean Time																						
						00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
1	G	G	G	G	G	G	G	G	G	G	G	G	4 6 1/20	4 7 1/10	4 9 1/10	5 4 1/10	5 7 1/10	5 9 1/10	5 6 1/10	5 1 1/10	5 6 1/10	G	G	G	G	G	G	G
2	G	G	2 0 1/20	G	G	3 0 1/100	3 5 1/100	3 9 1/100	G	G	G	G	6 4 1/100	5 0 1/100	5 5 1/100	3 4 1/100	3 5 1/100	3 8 1/100	3 7 1/100	3 5 1/100	G	G	G	G	G	G	G	G
3	G	G	G	G	G	6 2 1/100	G	G	G	G	G	G	3 7 1/100	3 9 1/100	3 8 1/100	3 7 1/100	3 8 1/100	3 5 1/100	G	G	3 7 1/20	2 8 1/20	G	G	1 7 1/40	3 6 1/10	G	
4	3 8 1/10	G	G	G	G	1 6 1/100	G	G	G	G	G	G	3 9 1/100	3 4 1/100	G	G	G	5 2 1/10	4 5 1/20	G	G	G	G	G	G	G	G	
5	2 4 1/20	G	G	2 6 1/100	4 8 1/100	2 8 1/100	G	G	G	G	G	G	5 8 1/100	7 8 1/100	G	G	G	6 0 1/10	4 0 1/10	G	G	G	G	G	G	G	G	
6	G	G	G	G	G	6 0 1/100	6 6 1/100	G	G	G	G	G	4 3 1/20	6 1 1/100	4 0 1/100	G	G	3 4 1/100	3 4 1/100	G	G	G	G	3 6 1/20	3 2 1/10	G	G	2 9 1/10
7	2 5 1/100	3 1 1/100	2 3 1/100	2 4 1/100	G	1 9 1/100	G	G	G	G	G	G	8 1 1/100	5 8 1/100	4 0 1/100	G	G	6 2 1/20	6 6 1/100	5 8 1/100	6 6 1/100	8 8 1/100	7 2 1/100	4 0 1/100	7 0 1/100	G	G	
8	7 3 1/100	4 3 1/100	3 0 1/100	6 8 1/100	3 5 1/100	4 8 1/100	6 0 1/100	6 1 1/100	4 3 1/100	5 6 1/100	5 2 1/100	5 6 1/100	G	G	G	G	G	3 4 1/20	2 9 1/30	G	G	G	G	G	G	G	G	
9	G	G	G	G	G	G	G	G	G	G	G	G	10 8 1/100	G	G	G	G	3 7 1/100	G	G	G	1 9 1/100	G	G	G	G	G	
10	G	G	G	G	G	G	G	G	G	G	G	G	5 1 1/100	4 5 1/100	4 5 1/100	6 5 1/100	5 6 1/100	G	M	5 5 1/100	5 4 1/100	8 6 1/100	G	3 5 1/10	5 8 1/100	G	G	
11	7 0 1/100	6 9 1/100	3 8 1/100	2 3 1/100	3 5 1/100	3 0 1/100	3 5 1/100	3 0 1/100	4 4 1/100	5 4 1/100	G	G	4 4 1/100	5 3 1/100	5 1 1/100	3 9 1/100	3 3 1/100	5 6 1/100	G	M	7 0 1/100	9 1 1/100	7 8 1/100	3 5 1/100	3 4 1/100	G	G	
12	G	G	1 1 1/20	G	3 8 1/20	4 6 1/20	4 6 1/20	4 6 1/20	4 6 1/20	4 6 1/20	G	G	3 7 1/100	3 9 1/100	G	G	G	5 2 1/20	5 4 1/20	7 2 1/100	6 6 1/100	6 7 1/100	3 3 1/100	4 2 1/100	4 8 1/100	G	G	
13	G	3 9 1/20	3 8 1/20	(5 0 1/5 1/10)	6 0 1/10	10 4 1/10	6 2 1/10	5 1 1/10	5 0 1/10	4 6 1/10	3 6 1/10	G	G	5 0 1/100	5 0 1/100	5 0 1/100	5 0 1/100	7 0 1/100	6 8 1/100	3 4 1/100	4 1 1/10	4 9 1/100	4 1 1/10	3 4 1/100	3 4 1/100	4 3 1/100	G	
14	(2 5) 5 1/20	G	G	G	G	1 8 1/40	G	G	G	G	G	G	6 3 1/100	7 4 1/100	5 7 1/100	3 8 1/100	5 3 1/100	8 8 1/100	5 9 1/100	4 5 1/100	7 0 1/100	G	G	7 1 1/10	(5 8) 1/50	G	G	
15	5 8 1/100	7 5 1/100	6 0 1/10	4 4 1/10	3 3 1/100	1 9 1/100	1 9 1/100	1 9 1/100	2 7 1/30	5 0 1/20	6 0 1/10	7 0 1/10	1 3 8 1/0	9 1 1/100	8 6 1/100	5 0 1/100	3 3 1/100	7 0 1/10	9 1 1/100	7 8 1/100	7 6 1/100	3 6 1/100	2 5 1/100	3 6 1/100	3 6 1/100	G		
16	G	G	G	G	G	C	G	C	G	4 0 1/20	4 4 1/10	3 7 1/10	1 0 1 1/10	8 6 1/10	3 4 1/100	G	G	6 8 1/100	G	M	G	6 5 1/100	4 9 1/120	G	G	G		
17	G	G	G	G	G	3 3 1/20	3 8 1/10	3 3 1/10	G	G	G	G	3 8 1/0	3 9 1/100	3 9 1/100	G	G	5 2 1/10	4 4 1/20	6 4 1/20	8 0 1/10	8 2 1/10	G	5 0 1/10	2 5 1/20	G		
18	(3 3) 5 1/20	G	G	G	G	3 3 1/30	3 9 1/30	6 0 1/30	6 0 1/20	6 6 1/20	6 6 1/20	G	G	3 9 1/10	4 5 1/0	4 4 1/30	5 4 1/30	5 7 1/30	7 4 1/20	5 3 1/30	6 4 1/20	4 0 1/20	4 0 1/20	1 9 1/30	(3 6) 1/10	2 6 1/10	2 6 1/10	G
19	2 8 1/100	1 9 1/100	G	G	G	3 6 1/20	7 8 1/100	4 0 1/100	3 8 1/100	3 8 1/100	G	G	G	G	6 0 1/100	6 0 1/100	6 0 1/100	6 0 1/100	6 0 1/100	7 6 1/10	8 0 1/10	5 8 1/10	9 4 1/10	4 0 1/10	4 7 1/10	G	G	
20	G	(4 0) 5 1/10	2 4 1/10	G	G	G	G	G	G	4 5 1/10	C	5 6 1/100	4 7 1/100	3 6 1/100	3 8 1/100	G	G	G	4 4 1/30	6 0 1/20	7 0 1/20	4 0 1/10	3 6 1/10	(3 4) 5 1/10	3 3 1/10	G		
21	G	5 2 1/10	5 0 1/10	3 9 1/10	G	G	G	G	G	G	G	G	3 8 1/10	5 0 1/10	5 0 1/10	5 8 1/100	3 8 1/10	G	G	4 7 1/100	G	G	G	G	G	G	G	
22	G	G	G	G	G	2 4 1/20	3 9 1/10	1 5 4 1/5 1/10	8 0 1/100	M	6 2 1/10	5 4 1/10	5 8 1/10	5 8 1/10	5 8 1/10	6 0 1/100	5 8 1/10	3 7 1/30	5 4 1/30	7 2 1/20	4 0 1/20	4 0 1/10	5 6 1/10	4 4 1/10	(4 0) 5 1/10	G		
23	7 8 1/100	6 5 1/100	4 6 1/100	5 0 1/100	2 9 1/10	C	6 2 1/20	C	5 6 1/10	5 8 1/10	4 8 1/10	8 2 1/100	8 2 1/100	6 0 1/100	7 4 1/100	7 8 1/100	G	G	G	G	G	G	G	G	G	G	G	
24	G	G	G	G	G	4 1 1/20	1 1 2/10	G	G	G	G	G	3 8 1/100	6 3 1/100	5 0 1/100	5 0 1/100	10 2 1/100	8 3 1/100	8 3 1/100	3 8 1/100	5 2 1/100	4 0 1/10	2 2 1/10	G	G	G	G	
25	3 6 1/100	G	3 1 1/100	3 0 1/100	G	G	G	G	G	G	G	G	3 6 1/10	10 2 1/100	5 4 1/20	7 6 1/10	5 2 1/10	G	7 0 1/20	4 0 1/10	G	G	G	G	G	G	G	
26	G	G	G	G	G	2 4 1/20	3 9 1/10	1 5 4 1/5 1/10	8 0 1/100	G	G	G	G	6 2 1/10	8 0 1/10	5 3 1/100	5 0 1/100	3 4 1/100	3 7 1/30	5 4 1/30	7 2 1/20	4 0 1/20	4 0 1/10	5 6 1/10	4 4 1/10	G		
27	2 5 1/100	G	G	G	G	G	9 7 1/100	9 7 1/100	9 8 1/100	6 8 1/10	4 9 1/10	5 6 1/10	5 6 1/10	12 6 1/100	9 7 1/100	G	G	G	G	6 8 1/10	10 1/10	2 1 1/10	19 0 1/100	8 8 1/100	6 6 1/100	G	G	
28	4 2 1/100	4 1 1/100	4 4 1/100	5 5 1/100	4 4 1/100	4 2 1/20	5 8 1/100	12 5 1/100	8 6 1/100	8 6 1/100	15 0 1/100	5 5 1/100	5 0 1/100	4 6 1/100	8 6 1/100	10 4 1/100	7 3 1/100	7 0 1/10	4 5 1/10	4 8 1/10	3 1 1/10	7 5 1/100	G	G				
29	4 3 1/100	G	G	G	G	1 6 1/10	3 4 1/20	3 6 1/20	5 8 1/100	5 8 1/100	5 8 1/100	17 8 1/100	17 8 1/100	15 8 1/100	15 8 1/100	15 8 1/100	3 0 1/100	2 5 1/100	G	G	M	G	G	G	G	G		
30	G	G	G	G	G	7 0 1/100	5 4 1/20	5 9 1/100	1 8 1/100	1 8 1/100	1 8 1/100	G	G	3 2 1/100	G	3 4 1/100	G	G	5 2 1/20	G	7 6 1/10	6 7 1/10	3 4 1/100	3 5 1/10	G	G		
31																												
Median	**	**	**	**	**	**	**	**	**	**	**	**	1.9	3.4	4.9	4.0	4.3	4.8	5.0	4.5	5.0	3.5	3.5	3.4	4.0	2.5	**	3.0
Count	.30	.30	.30	.30	.30	.30	.27	.30	.29	.30	.29	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	**	**

\*\* MEDIAN FEES LESS THAN MEDIAN FOR OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

Manual □ Automatic □

Sweep 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through June 7, in 15 seconds (June 15, June 7 through June 30).

U. S. GOVERNMENT PRINTING OFFICE 164-0-70215-1

Scaled by: B.E.B., Mcc. By H.

National Bureau of Standards

Calculated by: By H., Mcc. B.E.B., D.S., A.H.M.

Form adopted June 1946  
 Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.  
 Scaled by B.E.B., By H., B.E.B., McC., D.S., A.H.M.  
 Calculated by B.E.B., By H., B.E.B., McC., D.S., A.H.M.  
 (Institution)

TABLE 59  
 IONOSPHERIC DATA  
 Lat. 38.7°N, Long 77.1°W

(M1500)F2, (Unit)  
 Observed at Washington, D.C.  
 (Month) June 1950

(Characteristics) (Institution)

National Bureau of Standards, Washington 25, D.C.

Calculated by B.E.B., By H., B.E.B., McC., D.S., A.H.M.

Day	75°W Mean Time											
	00	01	02	03	04	05	06	07	08	09	10	11
1	1.7 F	1.8 F	(1.9) S	1.8	1.9	1.9	(1.6) A	(1.7) S	1.6	1.9	(1.9) S	(1.9) S
2	(1.7) S	(1.8) S	1.8	1.8	1.9	2.1	(1.9) H	2.0	2.1	(2.1) H	(1.9) S	1.9
3	(1.8) S	1.8 F	1.9	1.9	2.0	2.0	(2.0) H	(2.0) F	(1.9) S	(1.7) S	1.9	1.9
4	1.8 F	1.8 F	(1.9) S	1.9	2.1	2.0	N H	(1.9) H	1.9	1.8	1.9	1.9
5	1.8 F	1.9 F	1.9	1.8	1.9	2.0	(2.0) S	2.1	2.0	(1.7) H	1.9	1.9
6	1.7 F	1.7 F	K(1.7) F	K(1.8) F	1.9 F	1.9 F	G K	1.6 K	1.7 K	1.6 K	1.7 K	1.7
7	(1.9) F	(1.9) F	(1.9) S	1.9 F	2.0 F	2.1 F	2.0 F	2.0	(2.0) S	A	2.0	1.9
8	1.9 F	2.0 F	1.9 F	1.8 F	2.0 F	1.9 F	1.9 F	1.9 F	2.0 F	1.9	1.9	1.9
9	1.7 K	(1.6) S	(1.7) K	H	1.8 F	1.7 F	1.7 F	1.9 F	1.7 F	G K	1.6 K	1.7 K
10	(1.6) S	1.8 F	1.8 F	1.8 F	1.7 F	1.7 F	1.7 F					
11	(1.9) S	(1.9) S	(1.9) F	(1.9) F	1.9 F	2.0 F	2.1 F	2.1 F	2.1 F	(1.7) S	(1.7) S	(1.7) S
12	1.9 F	1.8 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F
13	1.9 F	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S	(1.9) S
14	1.8 F	1.8 F	1.9 F	1.9 F	1.9 F	2.0 F	2.0 F	2.0 F	2.1 F	1.9 F	1.9 F	1.9 F
15	1.9 F	1.9 F	1.9 F	1.9 F	1.9 F	2.1 F	2.1 F	2.1 F	2.1 F	1.9 F	1.9 F	1.9 F
16	1.9 F	2.0 F	1.9 F	1.9 F	2.1 F	(2.2) S	2.1 F	1.9 F	1.9 F	M	1.9 F	1.9 F
17	(1.9) S	(1.9) F	(1.9) F	(1.9) F	(1.9) S	(1.9) F	(1.9) S	(1.9) F	(1.9) S	(1.9) S	(1.9) S	(1.9) S
18	(1.9) S	(2.0) F	(1.9) S	(1.9) S	(1.9) S	(1.9) S						
19	(1.9) S	1.8 F	2.0 F	(2.0) S	2.0 F	1.9 F	1.9 F	1.9 F				
20	(1.9) S	(1.9) S	(2.0) S	(2.0) S	(2.0) S	(2.0) S	(2.0) S	(2.0) S	(2.0) S	C.	1.9 H	1.9 H
21	1.9 F	(1.8) S	1.9 F	(2.1) F	1.9 F	1.9 F	(1.9) S	2.0	(2.1) S	1.8 F	(1.7) S	(1.7) S
22	(1.9) S	1.9 F	1.9 F	1.9 F	(1.9) S	2.0 M	(1.7) S	A S				
23	1.7 F	(1.9) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	C	(1.9) S	(1.9) S
24	K(1.7) S	K(1.6) S	K(1.5) F	F K	(2.1) S	(2.1) S						
25	1.8 F	S K(1.9) S	F K	F K	(1.3) F	1.6 K	(1.7) K	(1.7) K	(1.7) K	(1.7) K	(1.9) S	(1.9) S
26	(1.8) S	1.9 F	C F	C F	(1.9) F	(1.9) F	(1.9) F	(1.9) F	(1.9) F	(1.9) F	(1.8) S	(1.8) S
27	1.8 F	1.9 F	(2.0) S	C	(2.1) S	(2.1) S						
28	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	(1.8) S	2.0 F	(1.9) S	(1.9) S
29	(2.0) S	2.0 F	1.9 F	(2.0) S	(2.1) S	(1.9) S	(1.9) S					
30	K(2.0) S	(1.7) F	K(1.9) S	S F	S F	2.0 F	G F	1.6 K	1.7 F	G K	1.6 K	1.5 K
31												
Median	1.8	1.8	1.9	1.8	1.9	2.0	2.0	1.9	1.9	1.8	1.8	1.8
Count	30	29	30	27	30	27	27	29	30	29	30	30

Swept 10 Mc to 250 Mc in 30 seconds (June 1 through 1215, June 7 through June 30)  
 Manual □ Automatic □

TABLE 60  
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.  
IONOSPHERIC DATA

(M 3000)F2, June 1950  
(Characteristic) (Unit)

Observed at Washington, D.C.

Lat 38°7'N, Long 77°10'W

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	2.7	2.7	F	(2.7)	S	2.7	(2.9)	S	(2.9)	2.7	(2.5)	A	(2.6)	S	2.4	2.9	(2.7)	S	(2.8)	S	2.9	(2.8)	S	2.7	2.6				
2	(2.6)	S	(2.8)	S	2.7	2.8	2.8	2.9	3.1	(2.8)	H	3.0	(3.1)	H	(2.7)	S	(2.7)	S	2.6	2.9	2.8	2.8	(2.7)	S					
3	(2.7)	S	2.8	2.7	2.8	2.9	3.0	2.9	(3.1)	H	(3.0)	H	3.2	(2.8)	F	(2.8)	S	(2.7)	S	2.9	(2.8)	S	3.0	(2.6)	S				
4	2.7	2.8	2.8	(2.9)	S	2.8	3.1	3.1	N	H	(2.8)	H	2.9	2.6	2.7	2.7	2.7	2.8	2.9	(2.9)	S	3.0	(3.0)	S	2.8				
5	2.7	2.8	2.8	2.7	2.8	2.9	3.0	(2.9)	S	3.1	2.9	(2.5)	H	2.7	2.7	2.7	2.8	2.8	2.8	2.9	3.0	2.9	2.8	(2.6)	S				
6	2.6	2.7	F	(2.6)	E	(2.8)	F	(2.7)	S	2.9	G	K	2.5	F	2.4	K	2.5	K	2.5	K	2.5	K	2.5	K	(2.6)	S			
7	(2.8)	S	(2.8)	S	3.0	F	3.0	F	3.2	F	3.0	F	3.1	2.9	(2.9)	S	3.2	(2.8)	S	2.8	2.8	2.9	2.8	2.7	(2.9)	S			
8	2.9	F	3.0	F	3.0	F	2.7	F	2.7	F	3.0	F	2.9	2.7	F	3.0	F	2.9	2.9	2.9	2.9	2.9	K	2.8	K				
9	2.6	K	(2.5)	S	(2.7)	H	2.8	F	2.6	K	(2.5)	H	G	K	2.5	K	2.7	K	2.5	K	2.5	K	2.5	K	2.6	F			
10	(2.5)	S	2.8	F	2.9	F	(2.7)	S	(2.7)	F	2.9	F	3.1	F	(2.8)	F	2.9	F	2.7	H	2.5	(2.6)	S	(2.7)	S	M			
11	(2.9)	S	(2.9)	S	(2.8)	F	2.9	F	2.8	F	(3.0)	S	3.1	F	(2.7)	S	2.7	F	2.6	(2.7)	S	2.7	2.8	(2.8)	A	(3.1)	S		
12	2.9	F	2.8	F	2.9	F	2.9	F	2.8	F	(3.0)	S	3.1	(2.8)	S	2.7	F	2.8	(2.6)	J	2.8	2.9	2.8	(2.7)	S	2.7	K		
13	2.8	F	(2.9)	S	(2.9)	S	(2.9)	S	(2.8)	S	(2.9)	S	3.0	(2.9)	H	3.1	(2.7)	H	(2.9)	S	(2.8)	S	2.7	F	2.7	F	2.6	F	
14	2.7	2.7	F	2.8	F	2.8	F	2.9	F	2.7	F	2.9	F	3.1	F	(2.8)	F	2.9	F	2.8	(2.9)	S	2.9	2.9	(2.9)	S	2.8		
15	2.8	2.9	2.7	2.7	2.8	3.0	3.2	3.0	F	2.8	(2.8)	S	3.1	F	2.7	F	2.8	F	2.7	F	2.9	F	2.9	F	2.9	F	2.8		
16	2.8	2.9	3.0	2.9	2.8	3.1	3.1	3.1	3.2	2.7	(2.8)	S	3.1	3.2	2.7	F	2.8	F	2.7	F	2.7	F	2.7	F	2.7	F	2.6	F	
17	K	(2.8)	S	(2.7)	E	(2.7)	H	(2.7)	S	2.7	K	(2.8)	S	3.0	3.2	2.9	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	
18	(2.9)	S	(2.9)	S	(2.9)	S	(2.7)	S	2.7	(2.9)	S	3.0	N	(2.7)	H	(2.8)	S	2.7	F	2.7	(2.7)	S	2.6	K	2.6	K	2.6	K	
19	(2.7)	S	2.8	3.0	(3.1)	S	3.0	F	3.1	(3.0)	S	(2.9)	S	3.0	V	3.0	F	2.8	K	2.9	(2.9)	S	2.8	(2.8)	S	2.7	F	2.8	
20	(2.8)	S	(2.8)	S	(3.0)	S	(2.9)	S	(2.9)	S	3.0	(2.9)	S	3.3	N	C	2.9	H	(2.7)	H	2.9	(3.0)	S	2.7	(2.8)	S	2.7	F	2.8
21	2.8	(2.8)	S	2.9	F	2.9	F	2.9	F	2.9	(3.0)	S	2.9	(3.1)	S	2.8	(2.7)	H	2.8	(2.5)	S	2.8	2.7	2.8	2.9	3.1	(2.9)	S	
22	(2.9)	S	2.9	F	2.9	F	(2.7)	S	(2.7)	S	(2.5)	S	3.0	M	(2.8)	S	(2.8)	S	2.2	(2.8)	J	2.7	2.7	(2.9)	S	(2.7)	S	(2.7)	S
23	2.7	F	(2.8)	S	(2.7)	S	2.7	F	C	(3.1)	S	C	(2.7)	S	3.0	S	(3.0)	S	2.7	K	2.8	K	2.8	K	2.8	K	(2.9)	S	
24	K	(2.6)	S	(2.5)	E	(2.3)	F	F	K	(2.6)	F	(2.4)	S	G	K	2.0	K	(2.1)	H	(3.2)	K	(2.5)	H	(2.8)	S	2.7	K	(2.7)	S
25	2.8	F	5	K	(2.9)	S	F	K	(2.6)	F	(2.0)	F	2.5	K	(2.6)	K	(2.6)	K	(2.6)	K	(2.9)	K	(2.9)	K	(2.8)	F	2.7	F	
26	(2.9)	S	2.9	F	2.9	F	(2.7)	S	(2.7)	S	(2.5)	S	3.0	M	(2.8)	S	(2.8)	S	2.2	(2.8)	J	2.4	2.8	(2.9)	S	2.7	V	(2.9)	S
27	2.8	2.8	2.9	(2.9)	S	(3.1)	S	(3.4)	S	3.2	3.2	(2.9)	S	3.0	(2.7)	S	2.8	(2.7)	F	A	2.8	2.8	(2.8)	S	(3.0)	S	(2.8)	S	
28	(2.7)	S	(2.8)	S	(2.8)	S	(2.8)	S	2.8	F	3.0	(3.1)	S	3.1	3.0	F	3.0	2.9	3.0	3.0	2.7	2.9	(2.9)	S	(3.0)	S	(2.8)	S	
29	(3.0)	S	3.0	F	3.0	F	(3.0)	S	(3.1)	S	(3.0)	S	(3.1)	S	(3.0)	S	(3.1)	S	(2.9)	K	2.8	K	2.8	K	2.8	K	2.8	K	
30	K	(2.9)	S	(2.5)	E	(2.7)	F	S	K	3.0	F	G	K	2.5	F	2.4	K	2.5	K	2.6	K	2.6	K	2.7	F	2.8	F	(2.9)	S
31																													
Median	2.8	2.8	2.8	2.8	2.8	3.0	3.0	3.0	2.9	2.9	(2.8)	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.9	2.9	(2.9)	(2.8)	(2.8)	(2.8)	(2.8)	(2.8)			
Count	30	29	30	27	29	27	30	27	27	29	30	29	29	29	29	30	29	29	29	29	30	30	30	30	30	30	30		

Sweep 10 MC to 25.0 MC in 30 seconds (June 1 through 1200, June 7), in 15 seconds (1215, June 7 through June 30).

Manual  Automatic

Form 1935-103516

b

U.S. GOVERNMENT PRINTING OFFICE: 1946 O-103516

**TABLE 61**  
 Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.  
**IONOSPHERIC DATA**

(M3000) F1, June 1950  
 (Characteristic) Washington, D.C.  
 Observed at Lot 38.7°N, Long 77.1°W

Day	00	75°W Mean Time																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
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27																								
28																								
29																								
30																								
31																								

Sweep: 10 Mc to 250 Mc in 30 seconds (June 1 through June 30, in 15 seconds (June 1 through June 30)  
 Manual □ Automatic □

(M1500)E, June, 1950

(Characteristic), (Month)

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Observed at Washington, D.C.

National Bureau of Standards  
(Institution)

Scaled by: By H., B.E.B., MCC, D.S., A.H.M.

Lat 38.7°N, Long 77.1°W

Calculated by: By H., B.E.B., MCC.

**TABLE 62**  
**IONOSPHERIC DATA**

Day	75°W Mean Time										
	00	01	02	03	04	05	06	07	08	09	10
1	S	3.8	F	4.1	4.2	4.3	4.4	A	A	A	A
2	A	4.3	4.1	4.2	4.3	4.4	4.5	A	A	A	A
3	4.1	4.3	4.1	4.2	4.3	4.4	(4.4)	B	4.2	4.3	4.4
4	A	4.2	4.0	4.1	4.2	4.3	4.4	A	A	A	A
5	A	3.9	3.9	4.1	4.1	4.2	4.2	A	A	A	A
6	F	3.9	K	4.1	K	4.1	K	4.0	K	4.1	K
7	A	3.8	~0	4.2	4.1	4.1	4.1	A	A	(4.1)A	(4.0)A
8	A	(4.1)A	4.0	4.0	4.1	4.1	4.1	A	A	4.1	4.1
9	S	4.1	K	3.9	K	3.9	K	4.0	K	4.1	K
10	S	3.6	F	(4.1)A	4.1	4.1	4.1	A	(4.0)A	4.1	A
11	A	(4.0)A	(3.9)A	4.3	4.2	4.1	(4.1)F	4.2	4.2	M	M
12	A	4.1	4.0	(4.2)A	4.2	4.2	4.3	(4.0)P	B	4.0	4.1
13	A	(4.0)A	A	4.1	(4.3)A	A	A	A	A	(3.9)A	A
14	A	3.6	3.7	4.1	4.1	4.1	4.0	(4.1)A	(4.2)A	A	A
15	(3.6)A	4.0	4.1	(4.2)A	4.1	4.1	4.1	A	(4.2)A	(3.9)A	(3.9)A
16	C	3.8	~0	(4.1)A	(4.2)A	A	(4.1)A	4.1	4.2	M	(4.2)A
17	S	K	(3.8)K	(3.9)A	A	K	A	K	4.3	K	4.1
18	A	4.0	4.2	*4.1	A	A	4.0	3.9	3.8	4.1	4.0
19	S	4.0	4.3	A	A	A	4.2	4.1	4.0	4.1	4.1
20	S	F	4.1	C	A	A	A	A	4.2	4.3	(3.9)S
21	S	3.8	4.0	4.3	4.4	4.3	4.3	4.3	4.3	4.1	4.0
22	A	(4.1)A	4.1	M	4.2	4.2	4.3	(4.1)A	A	(4.1)A	(4.2)A
23	C	4.6	C	4.1	4.1	4.1	4.3	(4.2)A	A	K	F
24	F	K	A	(4.4)A	4.4	4.4	4.4	A	K	K	F
25	A	(4.2)A	A	4.1	K	(4.1)A	4.1	(3.2)A	(4.0)A	A	K
26	C	4.5	X	4.1	K	4.0	K	(4.2)A	A	K	K
27	S	3.8	(3.8)F	(4.1)A	(4.1)A	(4.1)A	(4.1)A	(4.0)A	(4.1)A	3.9	4.1
28	A	4.0	4.0	4.2	A	A	(4.2)A	A	A	4.0	4.0
29	A	3.9	4.1	4.2	(4.1)A	4.2	K	A	(4.1)A	4.1	K
30	(4.1)A	4.0	K	4.2	3.9	K	4.2	(4.1)P	(4.1)A	(3.8)P	4.0
31											
Median	-	-	-	-	-	-	-	-	-	-	-
Count	4	26	28	26	24	21	18	15	17	22	27

Sweep 1.0 Mc to 25.0 Mc in 30 seconds (June 1 through 1215, June 7, in 15 seconds (June 7 through June 30).

Manual □ Automatic ☐

Table 63Ionospheric Storminess at Washington, D. C.June 1950

Day	Ionospheric character*		Principal storms		Geomagnetic character**	
	00-12 GCT	12-24 GCT	Beginning GCT	End GCT	00-12 GCT	12-24 GCT
1	2	2			3	3
2	2	2			3	2
3	2	1			2	3
4	1	2			3	2
5	1	1			3	2
6	3	4	0700	2400	5	4
7	2	2	2200	---	1	2
8	1	1	---	2300	1	3
9	4	4			4	3
10	2	3			3	3
11	2	3			2	2
12	1	0			2	2
13	2	1			2	2
14	2	3			2	2
15	1	3			2	1
16	0	3			3	3
17	4	5	0000	---	3	3
18	2	3	---	0200	1	2
19	1	2			3	3
20	1	1			1	2
21	1	3			2	2
22	1	3			3	4
23	3	4	1600	---	3	3
24	4	4	---	---	5	3
25	4	4	---	2200	3	2
26	4	4	0700	2300	3	2
27	2	3			1	2
28	2	2			2	1
29	1	4	1500	---	2	4
30	5	4	---	---	5	3

\*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

\*\*Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

----Dashes indicate continuing storm.

Table 64

Sudden Ionosphere Disturbances Observed at Washington, D. C.

June 1950

1950 Day	GCT		Location of transmitters	Relative intensity at minimum *	Other phenomena
	Beginning	End			
June 1	1636	1700	Ohio, D.C., England	0.1	Solar flare** 1615
1	1737	1755	Ohio, D.C., England	0.2	Solar flare** 1720
1	1803	1830	Ohio, D.C.	0.3	Solar flare*** 1818
8	1155	1210	England	0.03	
8	1415	1430	Ohio, D.C., England	0.1	Solar flare*** 1413
8	1542	1605	Ohio, D.C., England	0.05	Solar flare*** 1545
9	2003	2030	Ohio, D.C., New Brunswick	0.2	Solar flare** 2000
9	2201	2225	Ohio, D.C., New Brunswick	0.1	Solar flare** 2150
13	1913	1930	Ohio, D.C.	0.2	Solar flare** 1910
15	1403	1425	Ohio, D.C.	0.1	
15	1733	1815	Ohio, D.C., England, New Brunswick	0.0	
20	1225	1315	Ohio, D.C., England	0.1	Solar flare*** 1255

\*Ratio of received field intensity during SID to average field intensity before and after, for station KQ2XAU (formerly WSKAL), 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GLH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on June 8 at 1155.

\*\*Time of observation at the High Altitude Observatory, Boulder, Colorado.

\*\*\*Time of observation at McMath-Hulbert Observatory, Pontiac, Michigan.

Table 65

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,  
Cable and Wireless, Ltd., as Observed in England

1950 Day	GCT		Receiving station	Location of transmitters	Other phenomena
	Beginning	End			
May 22	1610	1620	Brentwood	Bahrein I., Barbados, Chile, Colombia, New York, Portugal, Spain, Uruguay, U.S.S.R., Venezuela	Solar flare* 1600
22	1603	1615	Somerton	Argentina, Brazil, Canada, New York	Solar flare* 1600
June 15	1745	1815	Brentwood	Chile, Colombia, France, Portugal, Spain, Uruguay, Venezuela	
15	1740	1750	Somerton	Argentina, Brazil, Canada, New York	

\*Time of observation at the High Altitude Observatory, Boulder, Colorado.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 66

Sudden Ionosphere Disturbances Reported by International Telephone and Telegraph Corporation, as Observed at Platanos, Argentina

1950 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
May 6	1339	1345	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, Italy, New York, Peru, Switzerland, Venezuela	Solar flare* 1330 Solar flare** 1340
19	1140	1230	Belgium, Germany, Italy, Netherlands	Solar flare* 1210
22	1400	1415	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, New York, Peru, Switzerland, Venezuela	Solar flare*** 1350 Solar flare* 1357

Time of observation:

\*McMath-Hulbert Observatory, Pontiac, Michigan.

\*\*Wendelstein Observatory, Germany.

\*\*\*High Altitude Observatory, Boulder, Colorado.

Table 67

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in Barbados, B.W.I.

1950 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
May 6	1341	1355	Dominica, England, Florida, Jamaica, Trinidad	Solar flare* 1330 Solar flare** 1340
22	1400	1415	England, Florida, Jamaica, Trinidad	Solar flare*** 1350 Solar flare* 1357

Time of observation:

\*McMath-Hulbert Observatory, Pontiac, Michigan.

\*\*Wendelstein Observatory, Germany.

\*\*\*High Altitude Observatory, Boulder, Colorado.

Table 68

Sudden Ionosphere Disturbances Reported by Institut für Ionosphärenforschung,  
as Observed at Lindau, Harz, Germany

Day	GCT		Location of transmitters	Relative intensity at minimum*	Other phenomena
	Beginning	End			
<b>May 1950</b>					
3	0940	1045	Lindau#, Munchen**, Berlin***	0.0	
5	0952	1012	Lindau#, Munchen**, Berlin***	0.1	
6	1335	1420	Lindau#, Munchen**, Berlin***	0.0	
10	1035	1105	Lindau#, Munchen**, Berlin***	0.2	
18	0710	0715	Lindau#, Munchen**	0.5	
19	0935	0945	Lindau#, Munchen**	0.6	
	1120	1215	Lindau#, Munchen**, Berlin***	0.1	
20	0940	1005	Munchen**	0.1	
	1205	1210	Munchen**	0.4	
	1345	1420	Munchen**	0.3	
21	0915	0930	Lindau#, Munchen**	0.3	
22	0720	0730	Lindau#, Munchen**	0.4	
	0935	0950	Lindau#, Munchen**	0.1	
	1130	1145	Lindau#, Munchen**, Berlin***	0.3	
	1400	1410	Lindau#, Munchen**, Berlin***	0.2	
	1605	1612	Lindau#, Munchen**, Berlin***	0.3	
23	1050	1100	Lindau#, Munchen**	0.6	
	1112	1128	Lindau#, Munchen**	0.3	
	1150	1210	Lindau#, Munchen**	0.1	
	1428	1435	Munchen**	0.6	
	1538	1543	Munchen**	0.6	

\*Ratio of received field intensity during SID to average field intensity before and after, for station Voice of America, 6078.9 kilocycles, 400 kilometers distant.

\*\*Station Voice of America, 6078.9 kilocycles.

\*\*\*Station DAB, 3840 kilocycles, 200 kilometers distant.

#Lindau station, 1870 kilocycles, pulse, transmitter and receiver at Lindau.

Table 69

Provisional Radio Propagation Quality Figures  
 (Including Comparisons with CRPL Warnings and Forecasts)  
May 1950

Day	North Atlantic quality figure		CRPL*	CRPL** Forecasts (J-reports)	North Pacific quality figure	Geo- mag- netic $K_{Ch}$	Scales: Quality Figures (1)- Useless (2)- Very poor (3)- Poor (4)- Poor to fair 5 - Fair 6 - Fair to good 7 - Good 8 - Very good 9 - Excellent
	Half day GCT (1)	Half day GCT (2)	Half day GCT (1)	Half day GCT (2)	Half day GCT (1)	Half day GCT (2)	
1	6	6	W		8	6	1 2
2	7	6			8	6	2 3
3	5	5	W W		6	5	(4) (4)
4	5	6	W W		7	6	3 3
5	5	5	W W		6	5	3 2
6	6	5	U U		6	6	3 2
7	6	6	U U		6	7	3 2
8	7	6			7	7	2 2
9	7	7			8	7	1 1
10	6	6			8	7	2 2
11	6	6	W U		7	6	3 3
12	7	6	U		7	6	2 1
13	6	6			7	6	3 3
14	5	6	W U		7	5	3 3
15	5	6	U		7	6	(4) 3
16	6	5	U		7	6	3 2
17	7	6			7	6	2 1
18	6	6			7	7	1 1
19	7	6			7	5	1 1
20	7	6			7	7	2 2
21	6	6			7	7	2 2
22	6	5			7	6	2 (4)
23	5	5	W W	X	5	5	(4) (4)
24	5	5	W	X	6	7	3 2
25	6	5			7	7	2 3
26	6	6			6	5	(4) 3
27	5	(4)			6	5	3 (5)
28	(2)	(4)	W W	X	5	5	(6) 3
29	5	(4)	U U	X	6	6	(4) 3
30	5	5	U		7	6	(4) 3
31	5	(4)			6	6	2 2
Score:			Warning N.A. N.P.	Forecast N.A. N.P.			
H			8 1	3 0			
(M)			0 0	0 0			
M			1 0	2 0			
G			34 35	52 54			
O			19 26	5 8			

Geomagnetic  $K_{Ch}$  - 0 to 9,  
 9 representing the greatest  
 disturbance;  $K_{Ch} > 4$  indicates  
 significant disturbance,  
 enclosed in ( ) for emphasis.

Symbols:  
 W Disturbed conditions  
 expected  
 U Unstable conditions  
 expected  
 N No disturbance expected  
 X Probable disturbed date

Scoring:  
 H Storm (Q < 4) hit  
 (M) Storm severer than  
 predicted

M Storm missed  
 G Good day forecast  
 O Overwarning

Scoring by half day according  
 to following table:  

Quality Figure			
≤ 3	4	5	≥ 6
W	H	H	O O
U	(M)	H	H O
N	M	M	G G
X	H	H	O O

\*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.  
 ( ) broadcast for one-quarter day. Blanks signify N.

\*\*In addition to dates marked X, the following were designated as probable disturbed days on  
 forecast more than eight days in advance of said dates: May 20, 21, 26, 30, and 31.

Table 70

American and Zürich Provisional Relative Sunspot NumbersJune 1950

Date	R <sub>A</sub> *	R <sub>Z</sub> **	Date	R <sub>A</sub> *	R <sub>Z</sub> **
1	112	72	17	98	83
2	113	84	18	92	80
3	104	84	19	79	80
4	84	66	20	71	66
5	67	58	21	86	55
6	62	54	22	106	86
7	63	50	23	114	107
8	77	70	24	140	108
9	101	65	25	153	128
10	107	108	26	141	113
11	97	102	27	100	97
12	91	72	28	75	74
13	121	95	29	86	82
14	129	101	30	88	78
15	116	94	Mean:		99.3      83.2
16	106	84			

\*Combination of reports from 45 observers; see page 8.

\*\*Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 71a

Coronal observations at Climax, Colorado (5303A), east limb

Date GCT	Degrees north of the solar equator															0°	Degrees south of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90			
1950																																					
Jun. 1.6	-	-	1	-	-	1	2	7	10	4	4	5	10	12	14	17	22	18	15	8	3	2	2	3	2	2	-	-	-	-	-	-	-				
2.6	-	-	-	-	-	-	4	4	5	5	5	7	10	11	14	14	17	14	11	5	2	-	-	-	-	-	-	-	-	-	-	-	-				
4.7	-	-	-	-	1	2	3	4	7	10	9	10	12	15	22	23	15	12	9	8	4	2	1	1	1	-	-	-	-	-	-	-	-				
5.6	-	1	1	1	1	2	3	4	7	9	10	13	13	17	20	23	25	16	12	11	12	10	6	6	4	4	5	5	4	4	4	2	1	1			
6.6	-	-	-	-	-	1	2	4	5	6	11	13	13	14	16	15	11	7	8	7	5	4	9	6	4	3	3	3	3	2	2	-	-	-			
7.6	-	-	-	-	-	2	3	4	4	7	12	13	13	13	12	10	8	5	4	6	10	10	10	9	5	4	3	3	3	3	2	2	-	-	-		
8.7a	-	-	-	-	-	-	2	3	4	4	5	9	11	11	9	8	4	4	4	3	2	2	4	10	11	10	9	6	2	2	-	-	-	-			
9.6	-	-	-	-	-	-	2	4	3	4	4	4	5	4	4	4	3	2	2	4	10	11	10	9	6	2	2	-	-	-	-	-	-	-			
10.7	-	-	-	-	-	-	3	4	4	4	6	6	8	10	8	6	6	4	3	5	8	11	12	11	10	6	4	3	1	1	1	-	-	-			
11.7	-	-	-	-	-	-	4	5	4	4	9	10	16	18	13	11	9	7	12	16	17	11	10	9	6	2	2	1	2	3	1	-	-	-			
12.7	-	-	-	-	-	2	4	4	3	4	5	9	13	21	17	11	10	7	6	7	11	26	19	13	12	9	6	3	3	3	3	2	1	-	-	-	
13.8	-	-	-	2	2	4	5	5	5	6	9	13	17	20	15	15	14	11	10	12	18	17	12	12	9	9	4	2	2	3	4	3	-	-	-		
14.7	-	-	-	2	3	3	4	3	2	2	8	14	13	13	13	11	9	9	10	14	13	10	7	8	5	3	2	-	-	-	-	-	-	-			
15.7	-	-	-	2	3	4	3	3	4	6	11	11	13	13	11	11	10	9	6	3	5	6	4	6	3	2	2	-	-	-	-	-	-	-			
16.7a	-	-	-	2	3	2	2	3	2	3	4	5	6	10	9	6	8	7	4	3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-		
17.6	-	-	-	2	3	4	5	5	6	9	10	11	12	12	11	8	8	8	9	10	9	6	2	-	-	-	-	-	-	-	-	-	-	-			
18.6	-	-	-	2	2	3	4	4	7	10	9	10	12	11	11	12	10	10	8	10	10	10	8	6	-	-	-	-	-	-	-	-	-	-			
19.7	-	-	-	-	-	2	2	4	4	6	7	9	11	10	10	9	7	7	4	5	8	6	2	2	-	-	-	-	-	-	-	-	-	-	-		
20.9	-	-	-	-	-	2	3	4	5	7	10	12	14	16	16	13	13	10	9	9	9	9	4	3	2	2	-	-	-	-	-	-	-	-			
21.6	-	-	-	-	-	2	3	4	5	9	10	12	12	14	14	14	12	9	7	7	4	4	3	2	1	1	-	-	-	-	-	-	-	-	-		
23.6	-	-	-	-	-	2	2	4	8	9	8	7	4	5	9	9	5	5	4	3	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-		
24.6	-	-	-	-	-	2	3	4	11	12	10	9	9	9	11	10	10	10	11	10	9	9	4	4	3	2	1	1	-	-	-	-	-	-			
25.7	-	-	-	-	-	-	4	7	9	8	9	6	6	6	8	10	8	8	11	14	8	8	3	3	2	1	-	-	-	-	-	-	-	-	-	-	
26.6	-	-	-	-	-	1	3	4	7	11	10	10	12	11	12	13	13	12	10	12	11	8	6	3	2	-	-	-	-	-	-	-	-	-	-		
27.6	-	-	-	-	-	2	2	3	7	7	8	9	12	13	12	13	12	11	8	6	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-		
28.7a	-	-	-	-	-	3	6	5	5	7	8	8	9	10	10	10	9	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29.7a	-	-	-	-	-	-	3	2	3	2	5	8	8	7	7	4	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	3	2	2	4	2	3	4	9	11	16	15	11	10	4	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 72a

Coronal observations at Climax, Colorado (6374A), east limb

Date GCT	Degrees north of the solar equator															0°	Degrees south of the solar equator																					
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90				
1950																																						
Jun. 1.6	-	-	2	2	3	3	-	-	-	1	2	4	5	9	7	12	16	9	5	2	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-		
2.6	-	-	-	-	-	-	-	-	-	-	2	4	8	10	10	4	10	11	6	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.7	-	-	-	-	-	-	-	-	-	-	2	4	5	6	9	7	7	11	13	6	7	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-		
5.6	2	2	1	2	2	2	1	2	1	-	2	2	4	11	6	10	3	2	4	10	3	2	3	2	2	-	1	-	2	1	2	-	-	-	-			
6.6	1	-	2	1	1	-	-	-	-	2	2	2	4	7	10	2	2	2	4	4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7.6	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	2	1	2	4	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	1	1	2	2	-	-	-	-	-	3	9	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	3	2	4	6	11	5	2	1	1	5	9	9	5	4	3	-	-	-	-	-	-	-	-	-	-	-		
11.7	2	2	1	2	2	1	-	-	-	-	3	6	19	7	10	-	3	3	8	14	4	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-		
12.7	-	-	-	-	-	-	-	-	-	-	10	15	17	9	11	4	1	1	9	14	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
13.8	1	2	2	2	2	2	-	-	-	-	2	12	12	13	15	13	9	4	13	10	8	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-		
14.7	-	-	-	-	-	-	-	-	-	-	3	3	3	3	7	10	13	9	9	9	10	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.7	-	-	-	-	-	-	-	-	-	-	1	2	2	4	15	13	5	5	-	5	-	4	4	-	2	2	3	3	3	-	-	-	-	-	-	-		
16.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	-	4	12	4	3	3	2	2	3	3	3	2	2	2	3	4	2	-	-	
17.6	-	1	2	2	2	3	2	1	1	1	1	1	3	3	2	5	-	4	4	2	2	1	2	3	3	1	3	1	-	-	-	-	-	-	-	-		
18.6	-	1	2	1	1	2	1	1	1	2	2	2	3	3	2	10	4	3	-</td																			

Table 7b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator										0°	Degrees north of the solar equator																													
	90	85	80	75	70	65	60	55	50	45		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90												
1950																																									
Jun. 1.6	-	-	1	3	5	5	3	2	4	4	6	9	10	10	13	14	14	14	14	17	18	16	18	14	12	9	4	5	5	6	5	4	1	-	-	-					
2.6	-	-	-	-	-	-	-	-	-	-	-	-	5	7	10	11	12	13	13	14	15	14	13	10	8	4	4	5	5	4	2	-	-	-							
4.7	-	-	-	-	-	-	-	-	-	-	-	-	4	8	12	15	15	12	11	13	13	13	13	12	10	10	10	10	7	5	2	2	2	-							
5.6a	-	-	-	-	-	-	-	-	-	-	-	-	3	9	11	13	13	17	14	13	14	14	18	24	20	14	14	13	12	10	8	3	1	-							
6.6	-	-	-	-	-	-	-	1	1	1	1	4	9	11	12	14	13	12	14	16	17	26	19	13	15	13	13	12	10	8	2	-	-								
7.6	-	-	-	-	-	-	-	-	-	-	-	4	4	6	9	9	9	9	12	14	15	16	15	13	14	14	13	12	10	8	2	1	-	-							
8.7a	-	-	-	-	-	-	-	-	-	-	-	3	4	5	5	4	5	7	9	9	12	12	13	11	11	12	11	7	4	3	-	-	-								
9.6	-	-	-	-	-	-	-	-	-	-	-	2	4	6	6	7	9	9	9	9	13	12	13	11	12	10	11	12	10	4	3	-	-	-							
10.7a	-	-	-	-	-	-	-	-	-	-	-	2	4	4	6	9	12	11	11	9	9	14	15	12	13	11	12	12	11	10	3	3	-	-							
11.7	-	-	-	-	-	-	-	-	-	-	-	-	4	6	13	13	14	15	13	11	12	14	13	12	12	10	10	9	4	3	2	-	-								
12.7	-	-	-	-	-	-	-	-	-	-	-	-	2	5	8	10	9	14	14	13	12	13	15	14	14	13	8	8	11	12	6	4	2	1	-						
13.8	-	-	-	-	-	-	-	-	-	-	-	-	3	5	4	10	11	14	17	19	20	24	22	20	17	10	6	9	13	10	4	2	-	-							
14.7	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	3	3	3	7	15	18	24	24	18	18	14	12	8	8	10	11	5	-	-							
15.7	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	3	2	2	3	4	5	5	5	12	20	30	25	23	24	15	13	10	7	9	12						
16.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
18.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	3	5	4	3	4	5	4	5	6	7	10	12	17	19	16	14	12	9	7	5	4	2	-			
19.7	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	4	4	5	4	5	5	10	12	13	11	11	9	7	5	4	4	2	-	-	-						
20.9	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	4	7	8	8	9	9	4	2	2	4	3	-	X	X	X	X	X	X	X	X	X	X	
21.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	4	8	8	8	12	16	13	10	3	1	6	7	6	8	8	8	7	6	4	4	3	1	1	2	
23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
24.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	3	5	4	5	11	13	16	26	25	14	8	9	10	10	16	17	11	10	10	8	9	7	6	4	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	5	4	5	12	18	16	11	3	3	4	5	10	16	15	10	7	4	2	2	1	-	-		
26.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	3	5	4	5	12	14	22	17	13	13	4	3	5	10	14	15	18	13	10	5	3	4	4	3	-	-
27.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	2	4	5	7	7	8	6	5	9	12	10	13	13	13	12	7	8	5	3	2	-	-			
28.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
29.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

Table 7b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator										0°	Degrees north of the solar equator																										
	90	85	80	75	70	65	60	55	50	45		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90									
1950																																						
Jun. 1.6	-	-	-	-	-	-	-	-	-	-	-	2	2	1	-	1	2	4	4	7	10	10	11	11	8	6	-	1	2	-	-	-						
2.6	-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	3	1	2	4	6	5	10	-	-	-	-	-	-	-	-	-	-	-					
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5.6a	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	1	1	2	4	7	7	7	3	3	7	9	9	11	-	-	-	-	-	-			
6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	3	3	2	2	2	-	-	-	-	4	3	6	2	2	-	-	-	-	3	3	3	3	2	3	2	-	-									

Table 73a

Coronal observations at Climax, Colorado (6702A), east limb

Date GCT	Degrees north of the solar equator															0°	Degrees south of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1950	-	-	1	1	1	1	-	1	-	1	2	2	2	3	3	3	3	4	4	2	1	1	-	-	-	-	-	-	-	-	-	-			
Jun. 1.6	-	-	-	-	-	-	-	-	-	-	2	2	3	2	3	3	3	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-			
2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	4	4	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-			
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	4	4	4	4	1	1	1	-	-	-	-	-	-	-	-	-	-			
5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	2	2	1	1	2	-	-	-	-	-	-	-	-	-	-			
6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	2	2	1	1	2	-	-	-	-	-	-	-	-	-	-			
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	2	1	1	1	-	2	2	3	2	2	1	1	-	-	-	-			
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	2	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-		
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	2	1	1	-	-	-	-					
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	2	1	1	-	-	-	-					
11.7	-	-	-	-	-	-	-	-	-	-	2	1	-	3	4	2	2	1	2	-	2	4	2	2	1	-	-	-	-	-	-				
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	5	5	3	2	1	1	-	2	5	6	3	2	1	1	-	-	-			
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	5	5	4	3	-	-	1	3	4	3	2	-	-	-	-	-	-			
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	4	3	2	2	2	3	2	-	-	-	-	-	-	-	-	-	-		
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-		
16.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	2	2	1	1	2	1	-	-	-	-	-	-	-	-	-		
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	3	2	2	1	1	-	2	2	2	1	1	-	-	-	-	-		
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	4	3	2	4	1	1	1	1	1	-	-	-	-	-	-	-	-	-	
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	2	1	-	2	3	2	2	2	-	-	-	-	-	-	-	-	
20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	2	3	2	3	3	2	2	1	-	-	-	-	-	-	-	-	-	-	
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	4	3	4	3	3	2	1	-	-	-	-	-	-	-	-	-	
23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	2	2	3	3	3	3	2	-	-	-	-	-	-	-	-	-	-	
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	4	4	3	2	2	1	1	1	-	2	2	2	1	1	-	-	-	
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	2	2	2	1	2	2	-	-	-	-	-	-	-	-	-	-	
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	3	4	4	4	3	4	2	3	3	2	-	-	-	-	-	-	-	
28.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	3	2	2	2	3	3	3	2	-	-	-	-	-	-	-	
29.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	4	2	2	-	-	-	-	-	-	-	-	-	-	-	-

Table 74a

Coronal observations at Sacramento Peak, New Mexico (5303A), east limb

Date GCT	Degrees north of the solar equator															0°	Degrees south of the solar equator																							
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90						
1950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	9	10	17	17	17	18	15	8	6	-	-	-	-	-	-	-	-	-						
May 1.9	-	-	-	-	-	-	-	-	-	-	4	9	20	21	18	15	16	19	22	21	18	20	22	23	23	21	19	12	10	5	4	-								
2.7	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
3.7	-	-	-	-	-	-	-	-	-	-	8	12	16	15	11	15	17	25	33	33	33	20	12	12	8	7	7	7	6	6	6	6	-							
5.7	-	-	-	-	-	-	-	-	-	-	4	12	16	15	11	15	17	25	33	33	33	20	12	12	8	7	7	7	6	6	6	6	-							
6.7	-	-	-	-	-	-	-	-	-	-	4	6	15	20	19	18	23	28	30	40	40	25	25	18	11	8	5	4	4	9	12	11	10	8	8	6	6	5	-	
7.6	-	-	-	-	-	-	-	-	-	-	3	6	14	16	15	18	30	33	31	39	36	30	30	16	11	8	6	6	7	9	8	7	6	4	3	3	3	3	-	
9.7	-	-	-	-	-	-	-	-	-	-	3	5	12	14	12	15	25	38	38	41	43	40	38	16	15	17	6	5	5	5	7	9	8	8	7	7	6	5	4	4
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	7	8	14	28	17	28	15	12	10	9	7	6	-	-	6	7	6	-					
13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	6	8	10	16	18	15	15	13	10	9	6	8	5	5	5	5	5	5	-					
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	10	11	12	12	10	9	7	6	8	10	11	8	7	-	-	-	-	-					
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	12	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	9	8	7	7	10	14	20	32	31	13	8	7	-	-	-	-					
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	7	7	9	7	7	16	28	33	38	38	15	11	12	9	6	5	-						
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6	10	12	24	33	20	22	22	16	12	13	7	9	10	12	9	6	5						
27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	12	14	15	17	21	14	12	10	8	7	-	-	-	-	-	-	-						
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	7	12	13	15	15	14	13	10	12	10	9	8	7	-	-	-	-	-	-					
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	7	12	16	21	20	19	20	19	14	17	16	17	13	9	5	-	-	-	-					
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	7	17	25	23	18	15	26	38	38	35	33	30	28	24	18	16	17	12	7	4	3		

Table 73b

Coronal observations at Climax, Colorado (6702A), west limb

Table 74b

Coronal observations at Sacramento Peak, New Mexico (5303A), west limb

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																																			
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90														
1950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	10	10	12	13	14	15	14	14	12	10	7	6	-	-	-	-	-															
May	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	10	12	11	10	9	10	11	12	13	8	5	5	3	-	-	-	-	-														
	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	15	15	15	16	15	12	12	12	10	8	7	6	-	-	-	-	-														
	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	23	23	24	22	15	11	9	8	7	7	5	5	-	-	-	-	-	-														
	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	25	23	24	22	15	11	9	8	7	7	5	5	-	-	-	-	-	-														
	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	37	36	38	38	38	35	32	27	20	18	15	10	6	5	5	-	-	-														
	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	24	26	26	26	28	31	31	22	20	16	12	5	3	-	-	-	-	-														
	9.7	3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
	11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	10	17	20	23	23	18	20	23	20	13	10	-	-	-	-	-	-	-														
	13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	12	13	19	23	25	14	16	20	12	6	4	-	-	-	-	-	-	-														
	15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	13	13	15	15	13	12	13	11	9	7	6	-	-	-	-	-	-	-														
	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	10	12	15	18	20	21	20	18	16	13	15	16	14	12	-	-	-	-	-													
	17.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	8	8	8	9	11	15	18	18	17	16	15	12	10	11	12	8	-	-	-													
	18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	5	5	5	5	6	14	40	31	33	37	38	37	25	20	15	16	19	14	4	-	-	-	-									
	25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	4	4	4	4	5	7	12	12	14	16	21	20	25	14	9	8	5	-	-	-	-	-	-									
	27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	8	11	22	24	9	7	7	8	9	12	12	11	10	8	7	6	-	-	-	-	-	-										
	28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	5	7	12	15	25	26	16	11	10	11	12	10	8	6	5	-	-	-	-	-	-											
	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	4	5	7	14	20	25	28	21	14	11	13	15	17	21	32	20	16	13	7	5	5	-	-	-								
	30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	4	4	4	4	6	7	9	11	13	20	23	37	31	20	16	13	15	17	27	29	29	29	18	15	13	7	5	3	3	-	-	-

Table 75a

Coronal observations at Sacramento Peak, New Mexico (6374A), east limb

Date GCT	Degrees north of the solar equator														0°	Degrees south of the solar equator																												
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90								
1950																																												
May 1.9	4	4	4	-	-	-	-	-	4	4	4	4	4	-	-	-	-	4	11	5	9	4	5	6	10	7	4	-	4	4	4	-	-	-	-	-	-							
2.7	3	4	4	3	2	2	2	2	3	3	2	2	2	1	2	4	12	10	11	3	3	4	10	8	3	2	2	2	5	5	3	2	2	2	2	2								
3.7	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3	4	4	3								
5.7	3	3	-	-	-	3	4	4	3	2	-	-	2	8	11	16	13	7	6	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-								
6.7	6	6	5	4	3	3	3	6	8	6	4	3	2	2	3	4	8	16	12	10	10	9	10	9	7	5	4	3	2	2	2	2	2	3	2	2								
7.6	5	4	3	3	3	3	4	6	4	5	3	2	-	-	3	13	10	15	12	8	6	6	8	7	6	4	3	2	2	2	-	-	-	-	-	-								
9.7	5	4	4	4	4	3	6	8	6	3	4	3	3	3	4	3	13	15	14	10	7	6	5	5	4	4	4	4	3	3	2	2	-	-	-									
11.7	4	3	3	3	3	3	3	4	4	2	-	2	3	2	3	3	6	10	9	6	4	3	3	3	3	3	4	3	-	-	-	-	-	-	-	-	-							
13.7	3	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	7	4	3	2	3	2	-	-	-	-	-	-	-	-	-	-					
15.7	-	-	-	-	-	-	2	3	2	-	-	-	-	-	-	-	-	2	3	2	3	8	10	12	2	1	1	2	1	-	-	-	-	-	-	-	-	-						
16.8	-	-	-	-	-	-	-	5	5	-	-	5	-	5	6	7	7	5	-	4	12	8	12	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3	7	10	11	8	3	-	-	-	-	-	-	-	-	-	-					
18.7	2	1	3	3	3	2	2	3	3	2	2	2	3	2	2	3	3	3	5	11	11	13	13	7	8	3	2	2	8	3	2	2	-	-	-	-	-	-	-	-	-			
25.6	-	-	-	-	-	1	2	1	-	1	5	1	-	2	12	6	5	2	5	2	3	2	2	1	2	2	2	2	1	1	1	2	1	-	-	-	-	-	-	-	-	-		
27.8	-	-	-	-	-	-	-	2	2	3	2	-	1	2	5	12	2	1	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
28.8	-	-	-	-	-	-	-	1	1	1	1	1	-	-	1	5	2	2	1	1	1	1	10	2	1	1	1	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-		
29.7	1	2	2	1	1	1	1	1	1	1	1	1	-	-	-	-	1	2	6	3	2	1	2	4	1	1	1	2	1	-	1	1	1	1	-	-	-	-	-	-	-	-		
30.6	3	3	2	2	2	2	2	2	2	1	-	-	1	7	6	10	12	17	19	15	8	3	4	3	3	3	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 76a

Coronal observations at Sacramento Peak, New Mexico (6702A), east limb

Date GCT	Degrees north of the solar equator														0°	Degrees south of the solar equator																																						
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90																		
1950																																																						
May 1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	3	4	4	4	4	3	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-												
3.7	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																
5.7	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	4	4	5	5	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-														
6.7	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	4	4	5	5	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
7.6	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	3	4	4	5	5	4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
9.7	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	4	5	5	4	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	3	3	2	2	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Notes: May 6.7 -- intensity of yellow line (5694A) is 3 at N05 and 00 (associated with usual prominence); May 11.7 Mg I triplet emission at sharp minimum in 5303A at N20; May 18.7 -- suggestion of yellow line at S51 (2° north of moderate prominence apparently showing continuum, and coincident with relatively sharp maximum in 6374A).

Table 75b

Coronal observations at Sacramento Peak, New Mexico (6374A), west limb

Date GCT	Degrees south of the solar equator															0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																		
May	1.9	-	-	-	-	-	-	-	4	4	5	4	5	4	-	-	5	9	7	5	-	-	-	-	-	-	-	-	4	4	4	4	4	4
	2.7	2	2	2	3	2	2	2	3	5	4	3	2	1	1	3	17	12	6	5	3	4	4	4	2	2	2	2	2	2	2	2	2	
	3.7	3	1	2	2	2	3	5	6	8	5	2	2	6	6	12	16	13	10	4	2	4	7	8	2	3	2	3	2	3	3	3		
	5.7	-	-	-	-	-	-	2	2	3	5	3	2	2	4	9	15	13	15	12	6	5	9	6	2	2	2	2	2	2	2	2		
	6.7	2	2	3	2	2	2	2	3	3	3	3	4	4	4	6	8	20	26	25	23	14	7	12	14	5	3	2	4	3	2	5	6	
	7.6	-	2	2	2	2	2	2	3	3	3	3	3	2	7	12	18	24	10	4	6	15	10	5	2	4	5	4	3	2	5	6		
	9.7	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	11.7	-	-	-	2	2	2	2	3	3	3	3	4	3	2	2	4	8	7	6	6	8	10	8	12	6	3	4	9	6	4	3		
	13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	1	5	8	4	3	2	4	9	12	8	1	1	1	1	1		
	15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	4	7	12	8	6	2	-	-	-	-	-	-	-	-	-	
	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	6	5	5	6	8	9	9	3	2	-	-	-	-	-	-	
	17.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	18.7	-	-	-	-	-	-	-	-	2	2	1	2	2	3	4	5	7	8	5	15	9	12	3	11	10	1	-	-	-	2	1	1	
	25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	5	7	7	4	4	5	3	2	-	-	-	-	-	-	-	
	27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	4	20	8	3	1	2	2	1	-	-	-	-	-	-	-	
	28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	9	13	4	1	-	1	2	7	8	3	2	1	-	-	-	
	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	11	6	11	8	1	4	6	3	9	10	10	2	1	1	2	2	
	30.6	-	-	1	1	1	1	2	2	2	2	1	-	2	1	13	10	12	20	2	12	10	12	8	10	6	12	2	-	1	2	3		

Table 76b

Coronal observations at Sacramento Peak, New Mexico (6702A), west limb

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
1950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
May 1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
9.7	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
17.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	4	6	7	4	4	3	2	2	1	-	-	-	-	-	
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
27.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	2	1	1	2	3	3	2	1	-	-	-	-	-	

Table 77

Particulars of Observations, Climax, Colorado  
January-June 1950

Date GCT	Greenline threshold intensity at							Obs.	Meas	Date GCT	Green line threshold intensity at							Obs.	Meas.	
	$45^{\circ} 90^{\circ} 135^{\circ} 225^{\circ} 270^{\circ} 315^{\circ}$										$45^{\circ} 90^{\circ} 135^{\circ} 225^{\circ} 270^{\circ} 315^{\circ}$									
	12	5	-	-	-	-	D	S	S	S	S	S	S	S	S	S	S	A	S	
1950																				
Jan. 4.7	12	5	-	-	-	-	D	S	S	S	S	S	S	S	S	S	S	A	S	
6.7	3	3	3	3	3	4	D	S	S	S	S	S	S	S	S	S	S	D	S	
7.7	3	4	3	3	3	3	D	S	S	S	S	S	S	S	S	S	F			
8.7	-	11	9	-	-	-	A	S	S	S	S	S	S	S	S	S	A			
10.7	5	4	5	4	2	3	A	S	S	S	S	S	S	S	S	S	D			
11.7	7	8	6	9	9	-	A	S	S	S	S	S	S	S	S	S	A			
16.8	13	11	9	-	13	7	F/A	S	S	S	S	S	S	S	S	S	D			
20.7	5	5	-	-	-	-	A	S	S	S	S	S	S	S	S	S	A			
26.8	7	5	5	7	7	8	F	S	S	S	S	S	S	S	S	S	D			
Feb. 1.7	6	6	4	5	6	6	D	S	S	S	S	S	S	S	S	S	F			
2.7	4	5	4	4	4	4	F/A	S	S	S	S	S	S	S	S	S	A			
3.8	6	5	4	6	5	4	F	S	S	S	S	S	S	S	S	S	F			
8.8	7	6	7	7	7	7	D	S	S	S	S	S	S	S	S	S	D			
9.8	7	7	6	6	6	7	A	S	S	S	S	S	S	S	S	S	AF			
10.7	5	5	5	5	5	5	D	S	S	S	S	S	S	S	S	S	F			
13.7	11	10	15	15	15	15	A	S	S	S	S	S	S	S	S	S	F/D			
15.9	14	15	15	15	15	-	F	S	S	S	S	S	S	S	S	S	A			
16.8	13	12	14	13	13	13	A	S	S	S	S	S	S	S	S	S	F			
17.9	>15	6	-	-	-	-	F	S	S	S	S	S	S	S	S	S	D			
18.8	5	5	5	6	6	4	F/D	S	S	S	S	S	S	S	S	S	A			
19.7	5	6	6	6	6	7	D	S	S	S	S	S	S	S	S	S	A			
25.7	6	7	8	9	9	8	F/D	S	S	S	S	S	S	S	S	S	A			
26.8	8	7	9	7	7	9	F	S	S	S	S	S	S	S	S	S	D			
Mar. 1.7	7	5	4	5	4	7	A	S	S	S	S	S	S	S	S	S	A			
4.9	8	8	9	4	4	4	A	S	S	S	S	S	S	S	S	S	D			
5.6	3	4	4	4	4	5	F	S	S	S	S	S	S	S	S	S	A			
11.0	-	35	-	-	-	-	A	S	S	S	S	S	S	S	S	S	F			
13.7	15	14	15	11	11	10	A	S	S	S	S	S	S	S	S	S	D			
16.7	9	10	9	10	6	8	D	S	S	S	S	S	S	S	S	S	D			
17.9	8	6	6	6	4	5	F	S	S	S	S	S	S	S	S	S	D			
23.7	9	11	10	9	10	9	F	S	S	S	S	S	S	S	S	S	F			
29.7	15	15	9	8	9	9	A	S	S	S	S	S	S	S	S	S	D			
Apr. 2.7	11	9	12	8	11	8	D	S	S	S	S	S	S	S	S	S	F			
4.9	8	8	13	9	12	10	F	S	S	S	S	S	S	S	S	S	A			
5.8	3	3	3	3	3	4	F	S	S	S	S	S	S	S	S	S	F			
7.6	6	5	6	5	5	5	D	S	S	S	S	S	S	S	S	S	A			
8.7	15	14	-	-	-	-	F	S	S	S	S	S	S	S	S	S	F			
10.9	>15	14	-	-	-	-	F	S	S	S	S	S	S	S	S	S	D			
13.0	11	10	11	12	10	9	A	S	S	S	S	S	S	S	S	S	A			
13.9	8	7	9	10	12	15	D	S	S	S	S	S	S	S	S	S	A			
14.6	6	6	6	6	6	4	F	S	S	S	S	S	S	S	S	S	D			
17.9	5	5	4	5	9	8	D	S	S	S	S	S	S	S	S	S	A			
19.7	7	7	8	7	8	8	D	S	S	S	S	S	S	S	S	S	A			
20.6	11	10	9	11	13	10	F	S	S	S	S	S	S	S	S	S	A			
21.6	8	8	7	7	9	7	A	S	S	S	S	S	S	S	S	S	D			
22.7	-	14	-	-	>15	-	F	S	S	S	S	S	S	S	S	S	D			
24.0	14	15	15	13	13	14	F	S	S	S	S	S	S	S	S	S	A			
25.7	8	6	9	7	9	8	D/F	S	S	S	S	S	S	S	S	S	A			
26.6	-	-	-	>15	-	-	A	S	S	S	S	S	S	S	S	S	A			
27.9	-	>15	-	-	-	-	F	S	S	S	S	S	S	S	S	S	D			
28.7	14	10	12	9	15	9	D	S	S	S	S	S	S	S	S	S	A			
29.7	5	4	4	4	4	6	F	S	S	S	S	S	S	S	S	S	D			
30.6	6	8	5	8	7	6	D	S	S	S	S	S	S	S	S	S	A			

A = Allen  
 D = Dolder  
 F = Fleming  
 S = Schnable

## Outstanding Solar Flares, January - March 1950

Observatory	Date 1950	Time Observed Beginning (GCT)		Dura- tion (Min)	Area (Mill) (of) (Sun's) (Disk)	Position Long- itude (Deg)	Lat- tude (Deg)	Time of Maxi- mum (GCT)	Int. cf Maxi- mum (GCT)	Rela- tive Area of Maxi- mum	Import- ance	SID Obser- ved	Remarks
		Begin- ning (GCT)	End- ing (GCT)										
Wendelstein	Jan 1	1017	1031		194	E22	N05	1021			1		
"	" 1	1434	1450		97	W12	N21	1437			1		
McMath	" 9		1915			W15°	N12°				1		
Meudon	" 24		1025			W45	S15				1		
Wendelstein	" 24	1150	1232		194	W44	N17	1207			1		
"	" 25		0836		242	E27	N21				1		
"	" 30	1124	1150		291	W10	N04	1129			1		
Boulder	Feb 13		1730			E16	S28			Moderate			
"	" 13	1910	1950	40		E85	N34					Yes	
"	" 14	2210	2240	30	130	W40	S29			Moderate			
Meudon	" 16		1050			E05	N15				1		
Boulder	" 16	1634	2327	413	60	E46	N10					Many Maxima	
"	" 16	1714	2009	175	123	E42	N15						
"	" 16	1739	1759	20	15	E46	N08						
"	" 16	1804	1959	115	100	W34	S12						
"	" 16	1809	1844	35	70	W37	N16						
"	" 16	1824	1854	30	40	W38	S18						
"	" 17	2004	2109	65	180	E34	N12						
McMath	" 17		2028			E35	N11				2		
Boulder	" 17	2304	2329	25	100	E29	N09						
Wendelstein	" 18	1344	1410	26	582	E27	N07	1348			2		
"	" 18	1412	1429	17	242	E24	N10	1417			1		
McMath	" 18		1515			E20*	N11*						
Wendelstein	" 18	1522	1536		145	E08	N12	1527			1		
Boulder	" 18	1851	1900	9	30	W60	S15						
"	" 18	1916	1931	15	50	W19	N19						
"	" 18	2211	2250	39	200	E05	N13						
"	" 18	2236	2311	35	120	E21	N12						
"	" 19	1736	1745	9	30	E10	N11					Yes	
"	" 19	1815	1905	50	150	W03	N11					Yes	
"	" 19	2045	2133	48	80	W39	N13						
"	" 19	2125	2326	121	80	E07	N07						
"	" 19	2325	2328	3	120	E11	N07						
"	" 19	2336	2340	4	90	E09	N12						
Wendelstein	" 20		0739			W04	N11				1		
"	" 20		0739			W14	N15				1		
Boulder	" 22		2258	2328		W49	N14			5			
"	" 22		2308	2328		W42	N14			5			
Wendelstein	" 23	0714	0751		291	W53	N14	0721			2		
"	" 23	0805	0815		48	W47	N08	0808			1		
Boulder	Mar 3	1753	1802	9	30	E29	N12			10			
"	" 5	1608	1635	27	70	E09	S03			20			
"	" 5	1608	1628	20	60	E05	N02			18			
Wendelstein	" 6	0712	0721	9	145	E59	N15	0714			1		
"	" 7	0904	0931	27	388	E07	N29	0915			1		
"	" 7	1336	1409	33	582	W74	S09	1348			1		
Meudon	" 7		1429			W65	N05				1		
"	" 7		1440			E05	N25				1		
Wendelstein	" 8	0906	0931	25	436	W06	N28	0915			1		
Boulder	" 8	1814	1834	20	370	W50	S03			7			
"	" 8	1829	1831	2	190	E27	N13			5			
Wendelstein	" 9	0902	0930	28	388	E34	N22	0917			1		
"	" 9	0931	0955	24	436	E34	N22	0934			1		
Boulder	" 9	1856			105	E55	S18			7			
"	" 9	2001	2011	10	126	E29	N23			5			
"	" 9	2036	2111	35	475	W28	N29			8			
"	" 9	2306	2336	30	32	E29	N23			7			
"	" 10	1549	1604	15	100	E90	N11			7			
Meudon	" 14		1005			W25	N15				1		
Boulder	" 15		2112			W38	S06			7			Intermittent
"	" 16	1840	2029	109	1650	E03	N11			20			Yes
"	" 19	2109	2130	21	323	W48	S05			10			.
"	" 20	1632	1657	25	214	W33	N17			4			
Wendelstein	" 24	0813	0835		145	E54	S13	0819			1		
Boulder	" 28	1525	1558	33	214	W40	S18	1535			10		
Wendelstein	" 29	0628	0658		873	E76	N09	0631			1 - 2		
"	" 29	0935	0954	19	776	E75	N09	0941			1		
Boulder	" 29	2140	2209	29	143	E19	S12	2145			8		
Meudon	" 31		0830			E45	S05				1		

\*Longitude and latitude of calcium area in which solar flare was observed.

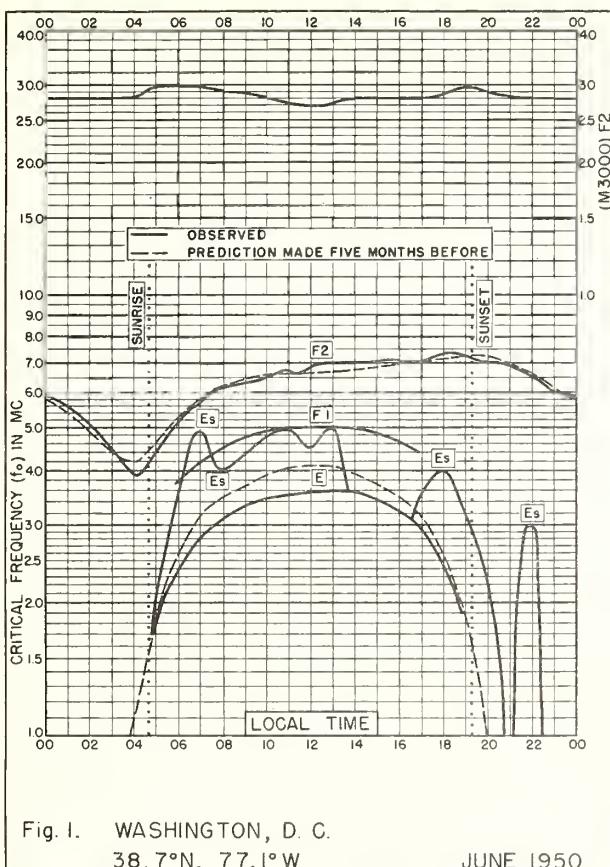
Table 79

Indices of Geomagnetic Activity for May 1950

Preliminary values of mean K-indices, Kw, from 33 observatories;  
 Preliminary values of international character-figures, C;  
 Geomagnetic planetary three-hour-range indices, Kp;  
 Magnetically selected quiet and disturbed days

Gr. Day 1950	Values Kw	Sum	C	Values Kp	Sum	Final Sel. Days
1	1.6 0.8 1.2 1.5 1.2 2.0 2.7 2.4	13.4	0.4	20101+2- 1+2-3-20	14-	Five
2	1.9 1.7 1.5 2.1 2.6 3.6 3.8 4.7	21.9	1.0	2+2-1+20 3-4-5-6-	240	Quiet
3	5.0 4.7 3.6 3.5 2.7 3.2 4.8 4.2	31.7	1.4	605+4+40 3+3+6-50	370	
4	3.2 2.5 2.2 2.3 1.9 3.5 3.7 4.2	23.5	1.0	4-303-3- 2-404+5+	27+	8
5	4.2 2.7 2.5 3.4 2.8 2.9 3.0 3.3	24.8	0.9	5+303040 3030304-	280	9
6	2.1 1.9 1.9 2.2 2.3 2.7 2.2 3.1	18.4	0.6	20202020 3-3-3-3+	19+	12
7	3.8 1.2 2.5 1.5 2.0 2.5 1.2 2.4	17.1	0.6	4+1c301+ 2+2+1o2+	18-	18
8	2.1 1.7 1.9 1.2 1.4 1.1 0.9 2.1	12.4	0.2	202-2010 1+1-1-2-	110	19
9	0.8 0.8 0.3 0.5 0.8 0.6 1.1 1.2	6.1	0.0	1-1-0o0+ 0+1-1-1o	4+	
10	1.3 1.1 1.5 1.7 1.8 1.5 1.4 3.6	13.9	0.5	1+1+2-20 2-1o1o40	140	
11	3.2 1.8 2.2 2.3 3.2 3.5 2.4 2.2	20.8	0.9	3+20303- 4-3+3-2+	230	Five
12	2.1 1.2 1.3 1.2 0.8 2.0 2.0 1.6	12.2	0.3	201+1+1o 0+2-2o2-	11+	Dist.
13	2.2 3.3 3.0 2.8 2.6 2.8 3.0 2.8	22.5	0.8	3-4o3+30 3-3-3+3+	250	
14	3.1 2.7 2.0 2.8 3.5 2.8 2.8 3.4	23.1	0.8	3+3-2+30 403-3o40	250	3
15	3.4 3.2 3.2 2.6 2.1 3.0 4.4 3.7	25.6	1.0	4o3+4-3- 2+3+5+4-	28+	15
16	2.4 2.7 2.9 2.2 2.2 2.5 2.4 2.7	20.0	0.6	3-3o3+2+ 2o3-2+2+	21-	23
17	2.3 1.0 1.5 1.6 2.3 1.9 1.8 1.5	13.9	0.4	2+1-2-1+ 2+2-1+2-	130	27
18	2.7 1.4 0.5 1.3 1.0 1.3 1.4 0.6	10.2	0.2	3-1+0o1o 1-1o1+1-	9-	28
19	0.4 0.5 0.5 0.9 1.1 2.7 2.0 0.8	8.9	0.2	0o0+0+0+ 1-3o2+1-	8-	
20	1.6 0.9 1.6 1.5 2.1 2.5 2.4 3.2	15.8	0.5	2-1o2-1o 2o2+3-3+	16-	
21	3.3 2.3 0.9 0.9 1.3 2.0 1.5 1.0	13.2	0.5	3+3-1-0+ 1+3-1+1o	13+	Ten
22	0.3 0.6 2.2 3.3 4.6 3.6 3.2 3.3	21.1	1.1	0o0+2o4- 5o4o4-4o	23-	Quiet
23	3.8 3.1 3.6 4.5 4.1 4.6 3.5 3.9	31.1	1.5	4+3+4o4+ 4+5+4+4+	34+	1
24	3.6 3.1 2.7 1.6 1.4 1.5 2.5 2.5	18.9	0.7	4-3+3o2- 1o1+3-3-	19+	8
25	2.5 0.8 1.8 2.3 2.5 3.6 2.4 2.8	18.7	0.7	3-1o1+2+ 2+4-2+3-	18+	9
26	2.7 2.5 2.7 3.4 2.6 3.1 2.9 1.8	21.7	0.8	3-3-3+4- 3-3+3+2-	23+	12
27	2.5 2.4 2.4 2.0 4.6 4.5 4.3 5.5	28.2	1.5	2+3-3-2o 5o5+5o7o	320	17
28	6.2 5.5 4.8 4.5 3.5 3.5 3.8 3.4	35.2	1.7	7o7-6o6o 4-4o4o4-	410	18
29	3.8 3.8 2.0 3.5 4.0 2.9 2.8 2.8	25.6	1.1	4o4o2+4o 5-3+3+3o	29-	19
30	3.5 3.8 2.3 2.2 2.6 3.8 2.0 1.8	22.0	0.8	4o4+3-2+ 3-4o2o2-	24-	20
31	1.8 1.5 0.7 0.6 1.5 1.0 0.8 2.9	10.8	0.3	2o2-1-o+ 2-1-1-3+	110	21
Mean	2.69 2.06 2.36 2.55 2.17 2.19 2.67 2.75	2.43	0.74			31

## GRAPHS OF IONOSPHERIC DATA

Fig. I. WASHINGTON, D. C.  
38.7°N, 77.1°W

JUNE 1950

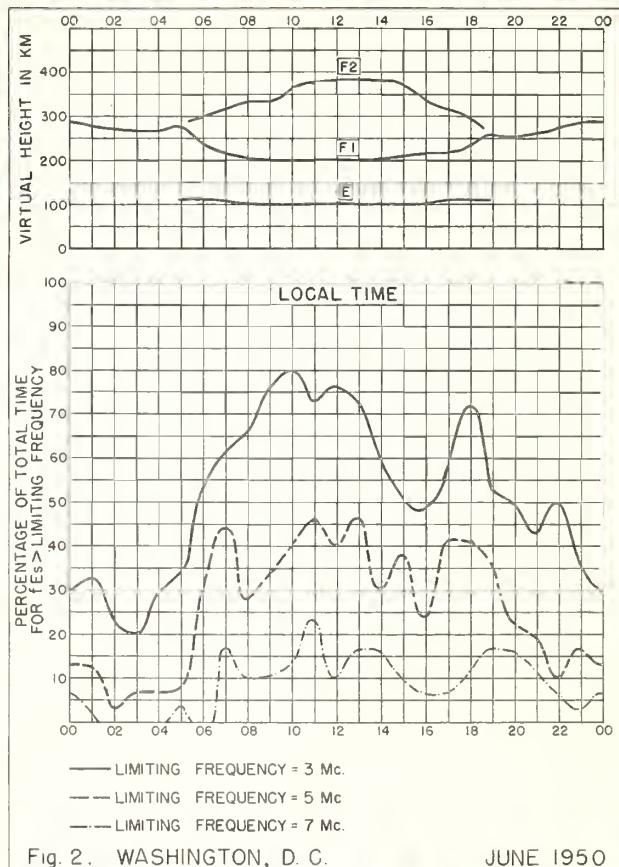
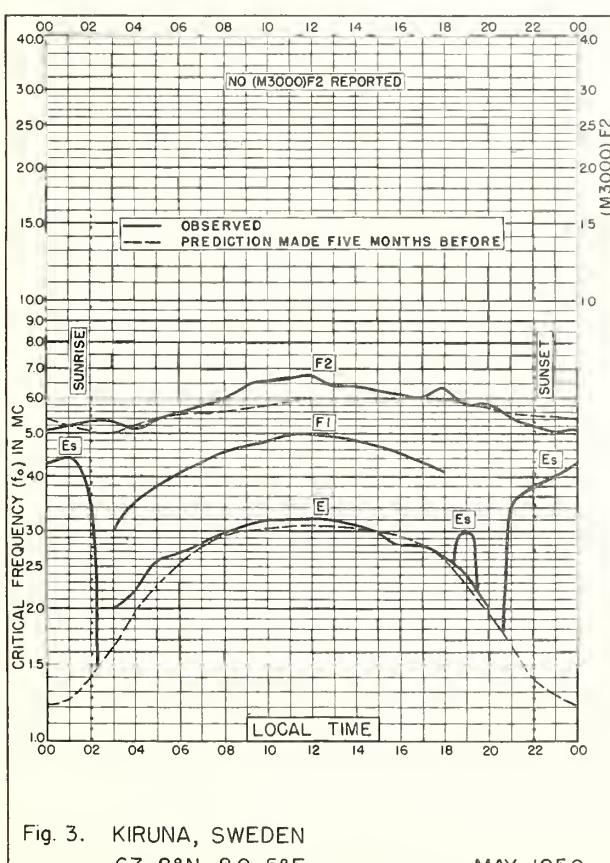


Fig. 2. WASHINGTON, D. C.

JUNE 1950

Fig. 3. KIRUNA, SWEDEN  
67.8°N, 20.5°E

MAY 1950

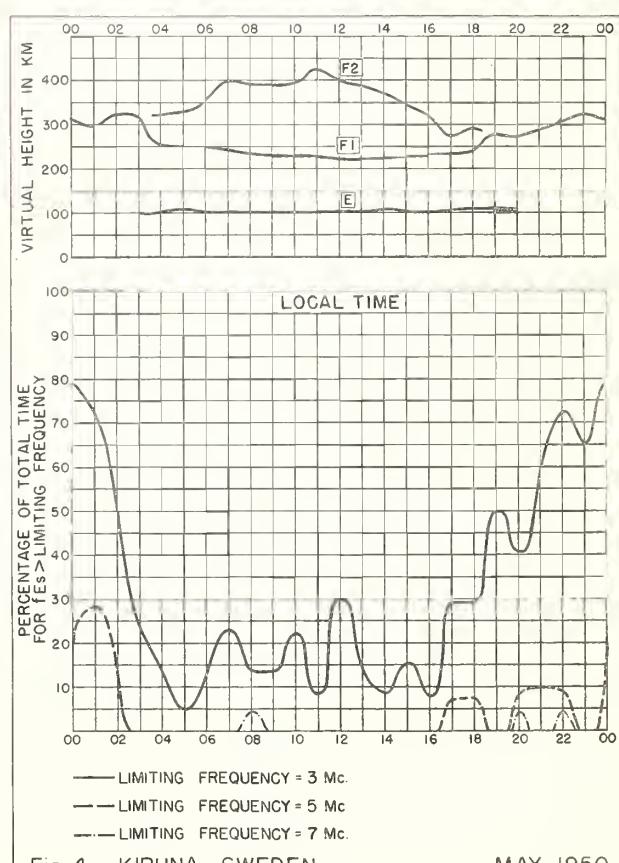
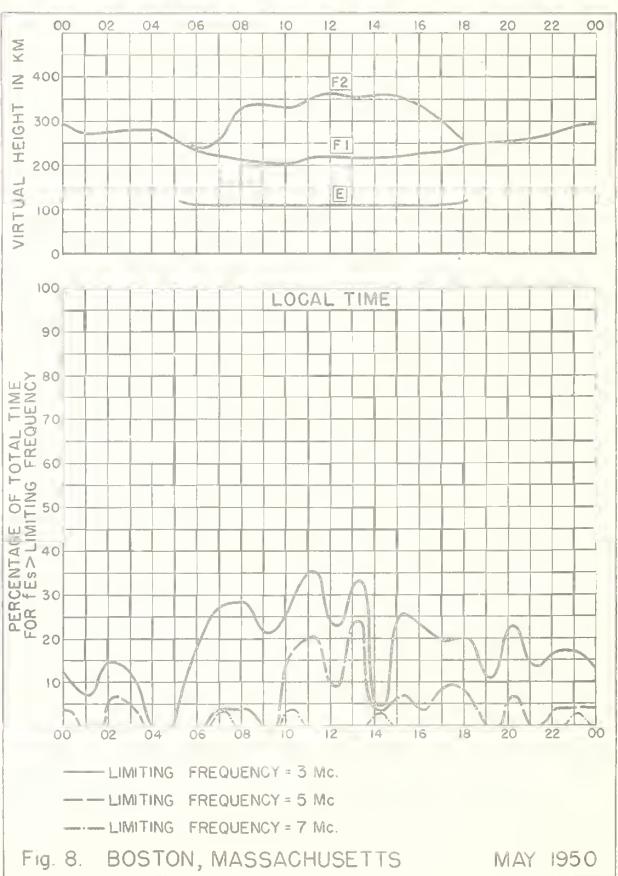
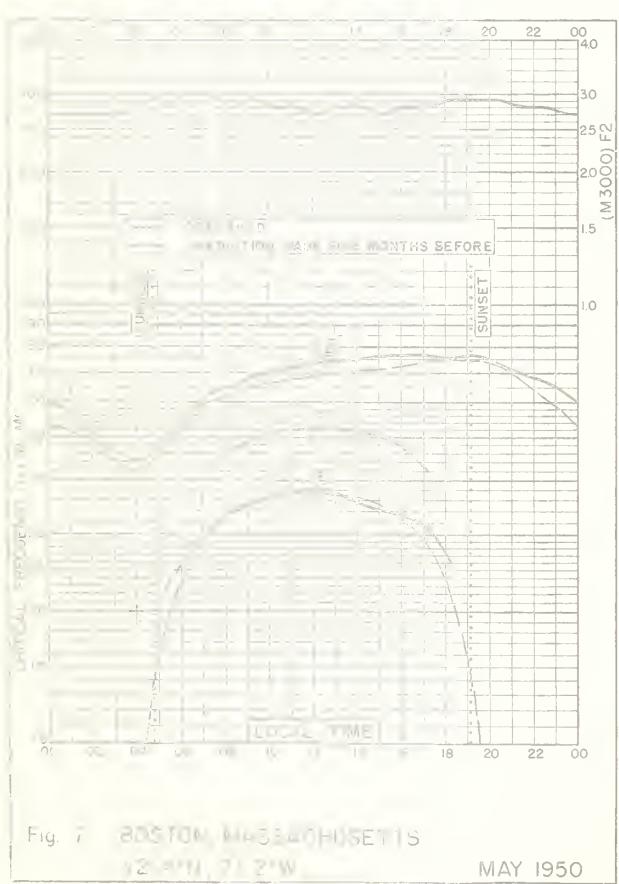
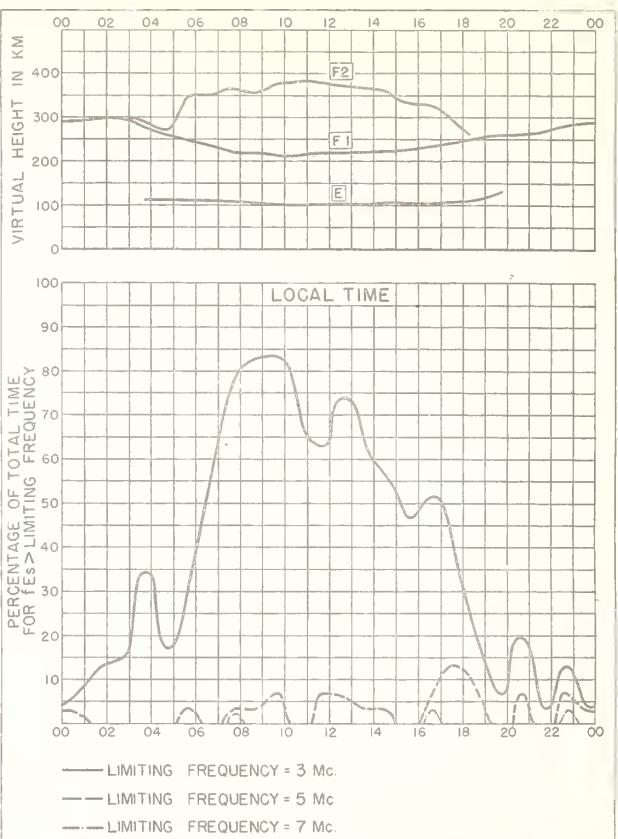
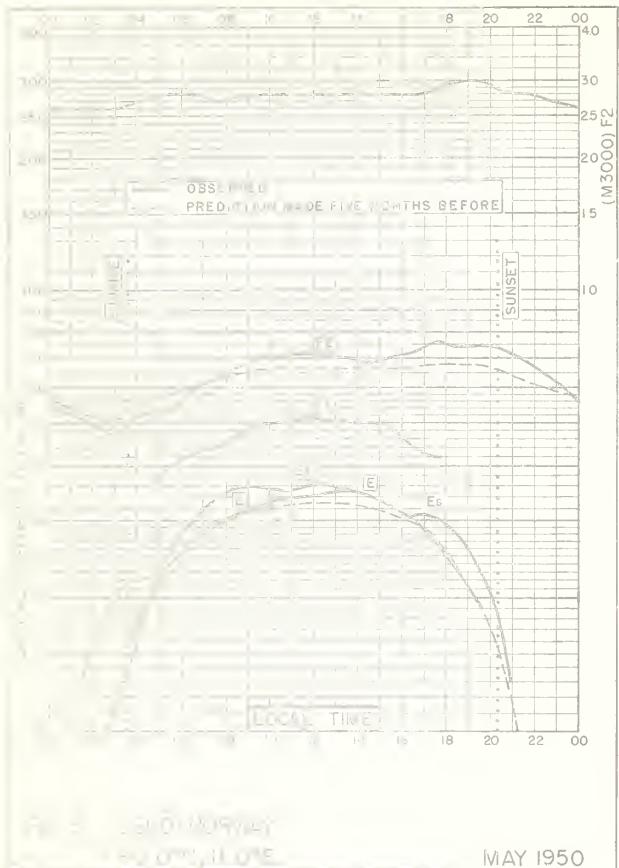


Fig. 4. KIRUNA, SWEDEN

MAY 1950



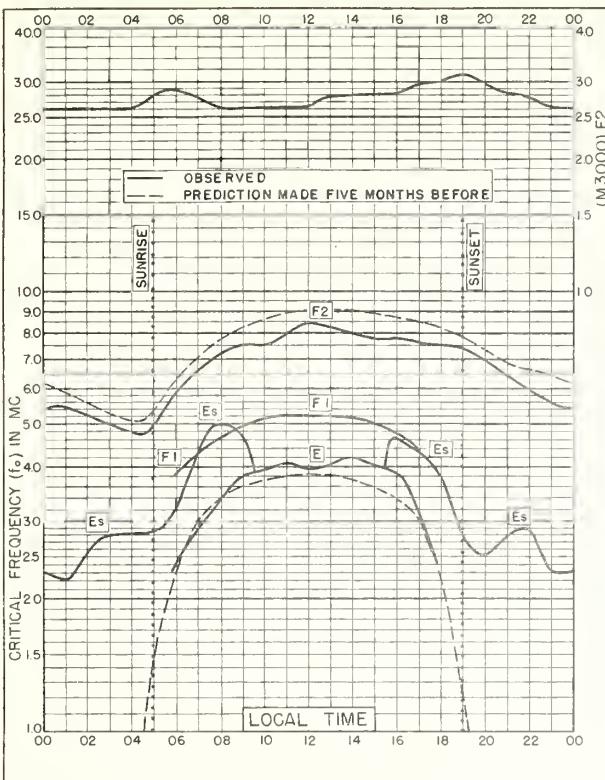


Fig. 9. SAN FRANCISCO, CALIFORNIA  
37.4°N, 122.2°W

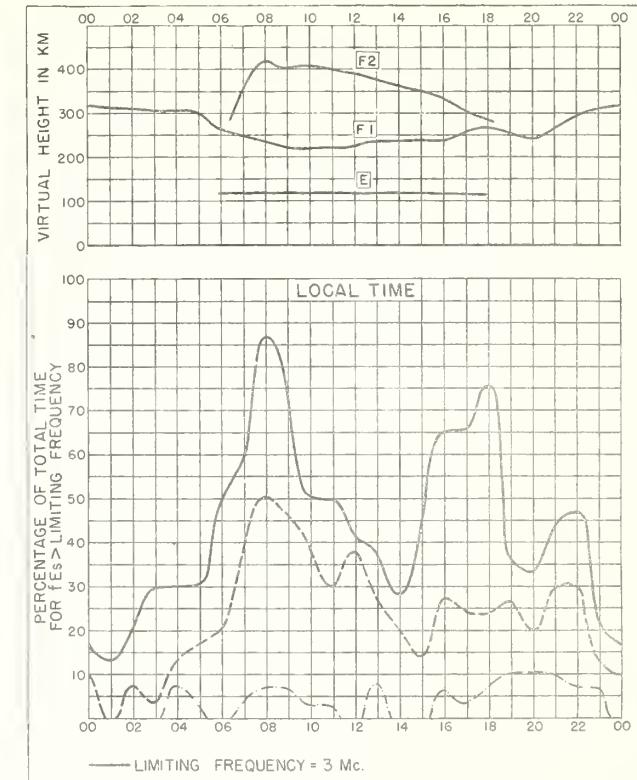


Fig. 10. SAN FRANCISCO, CALIFORNIA MAY 1950

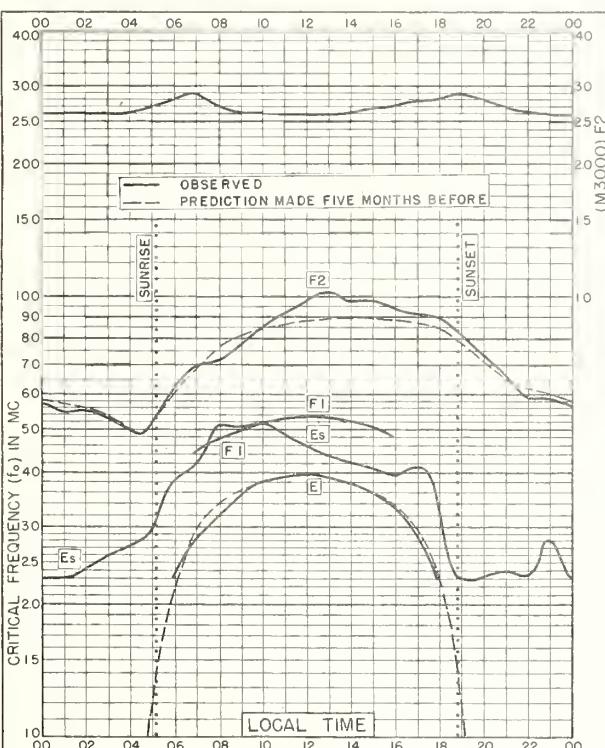


Fig. 11. WHITE SANDS, NEW MEXICO  
32.3°N, 106.5°W

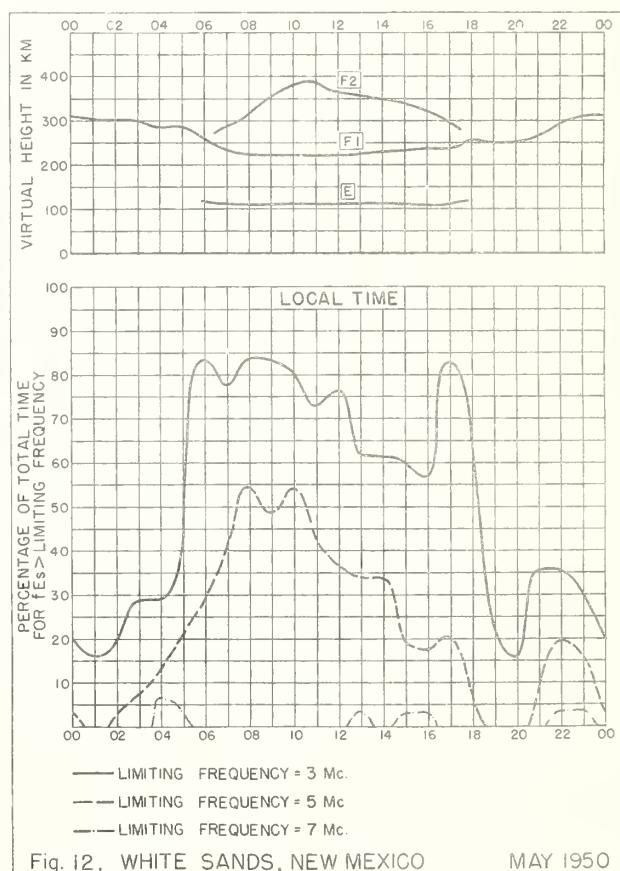


Fig. 12. WHITE SANDS, NEW MEXICO MAY 1950

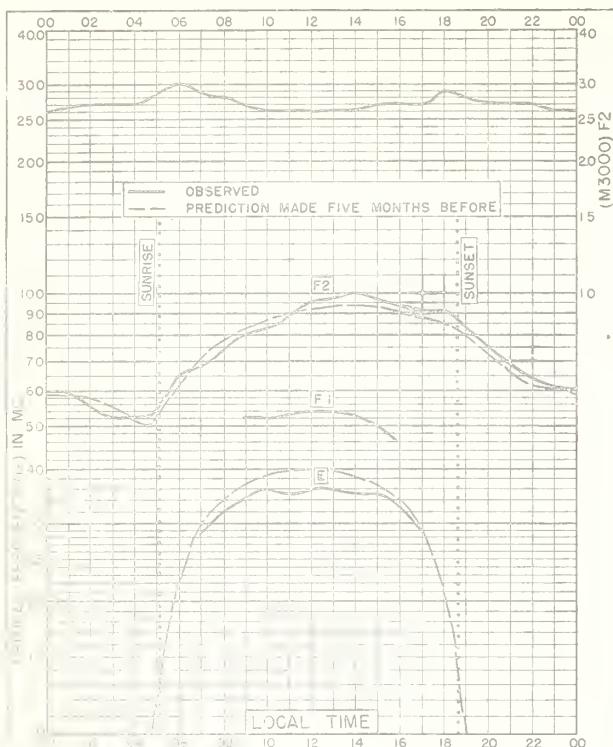


Fig. 13. BATON ROUGE, LOUISIANA

20. 5°N, 91. 2°W

MAY 1950

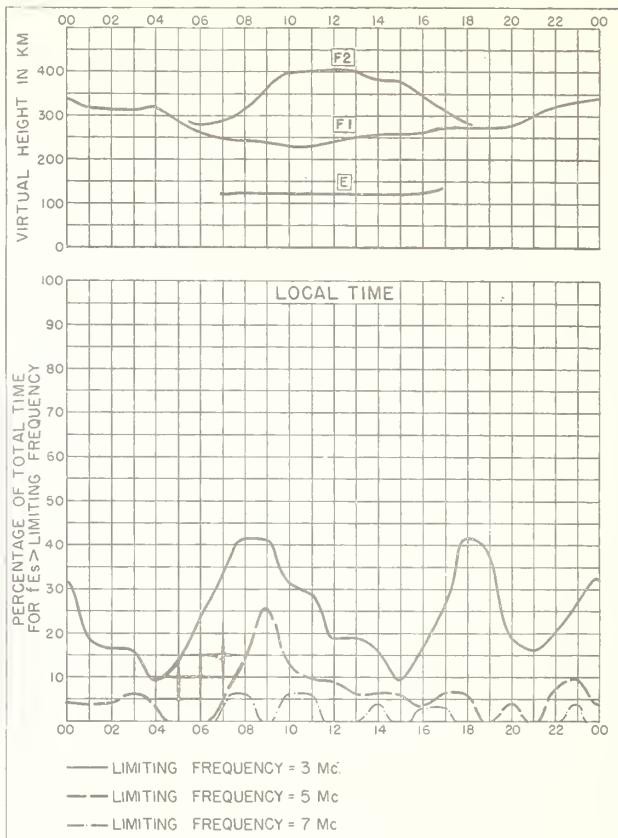


Fig. 14. BATON ROUGE, LOUISIANA

MAY 1950

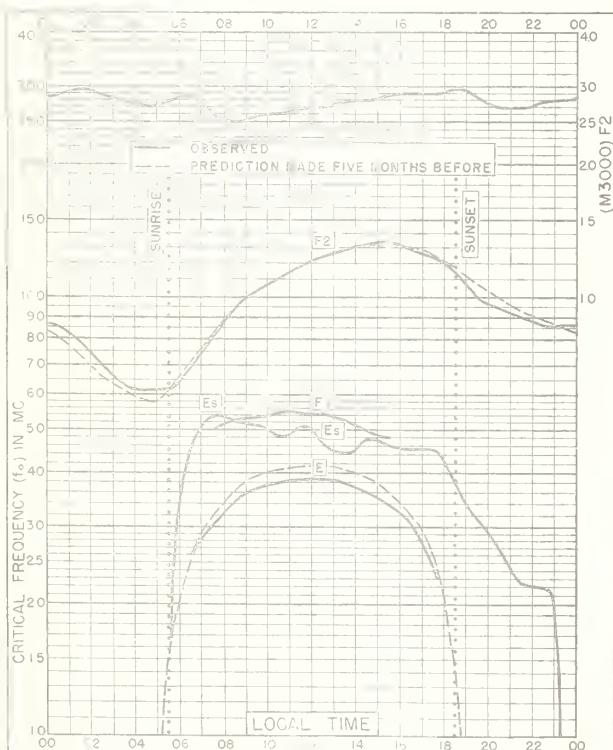


Fig. 15. MAUI, HAWAII

20. 8°N, 156. 5°W

MAY 1950

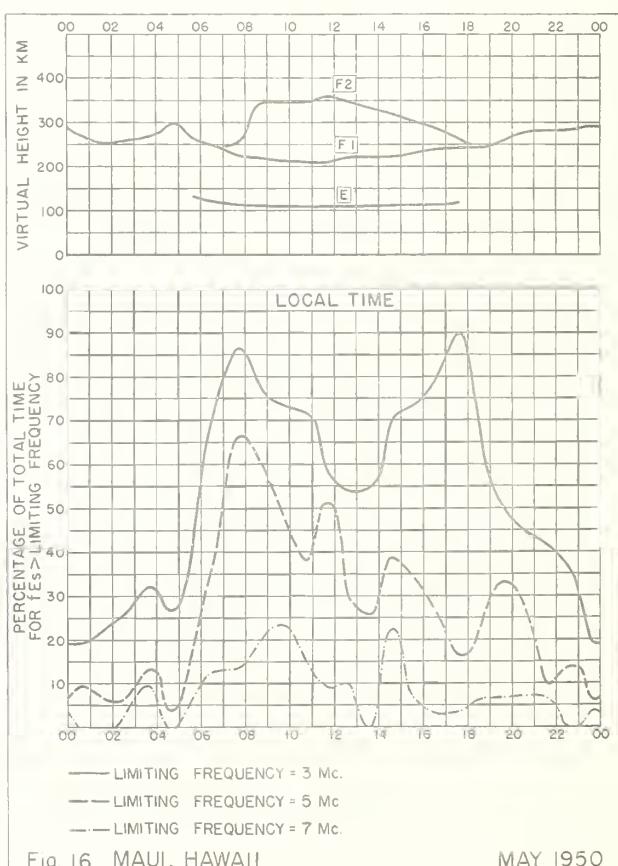
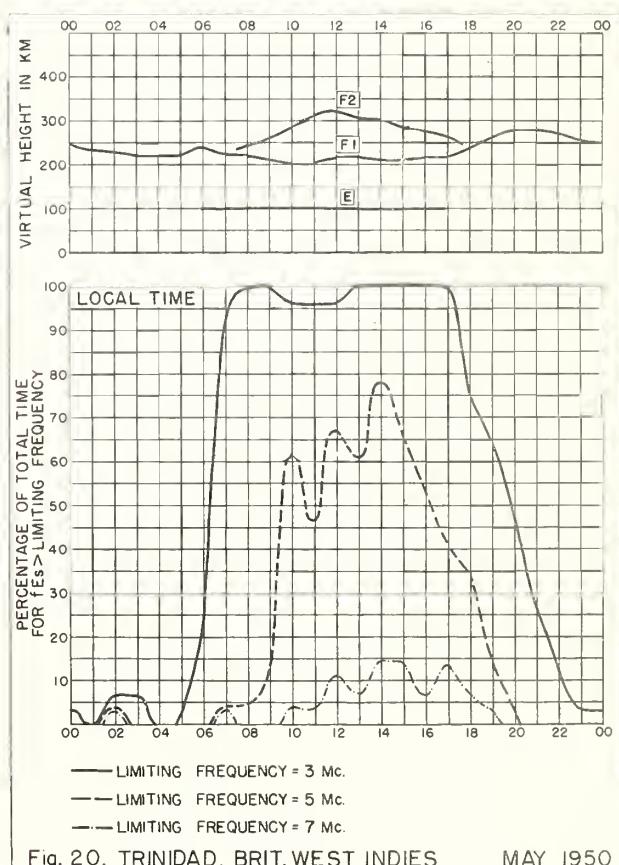
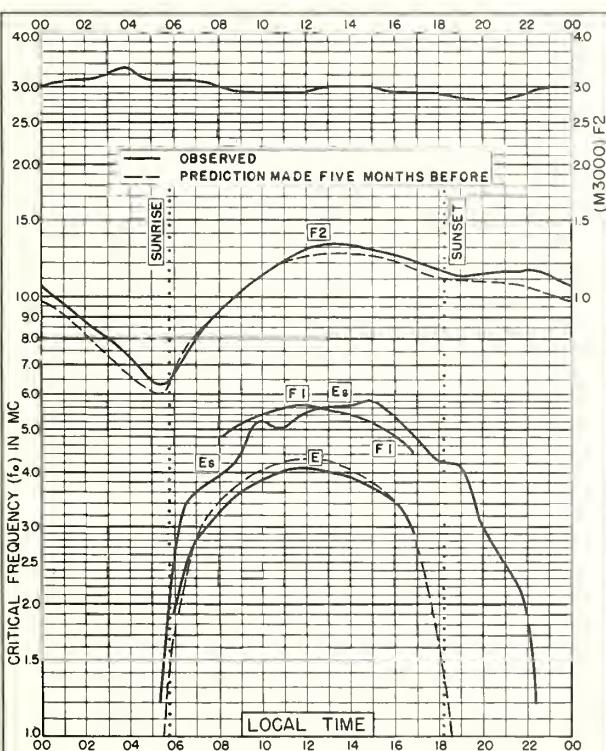
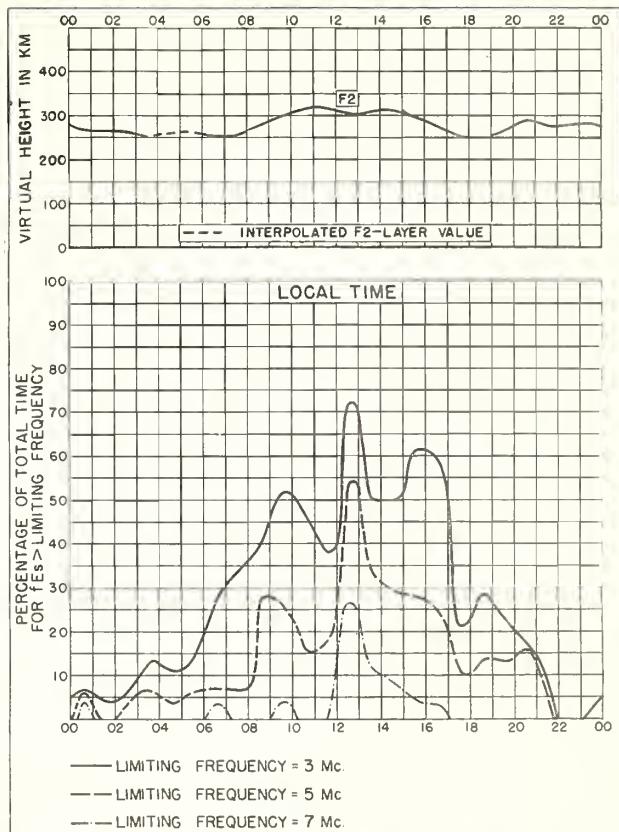
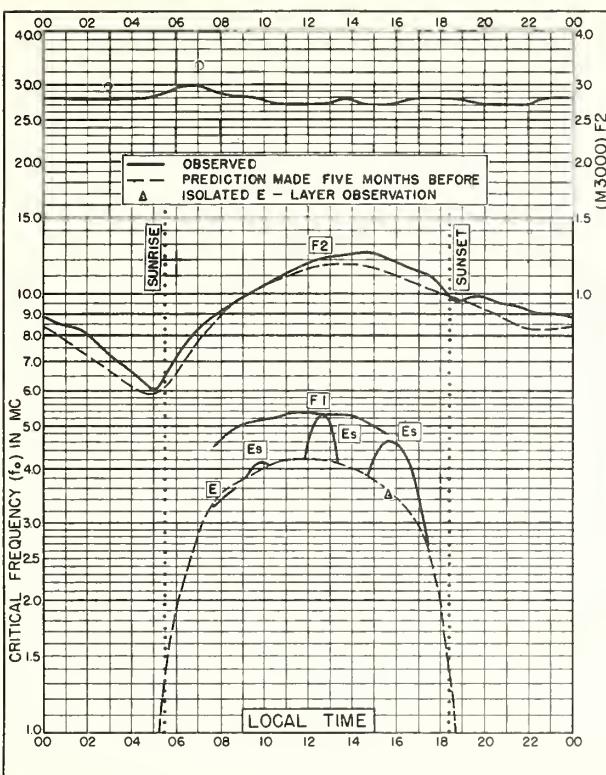


Fig. 16. MAUI, HAWAII

MAY 1950



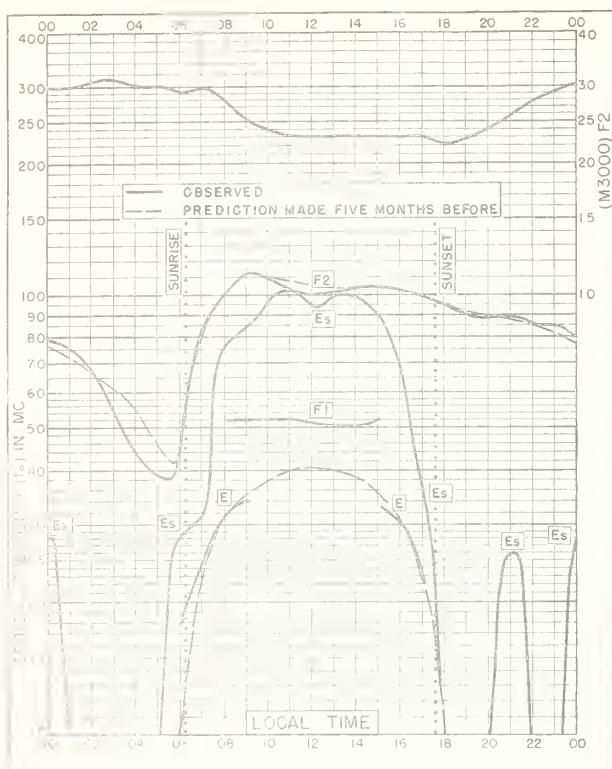


Fig. 21. HUANCAYO, PERU  
21°S, 75.3°W

MAY 1950

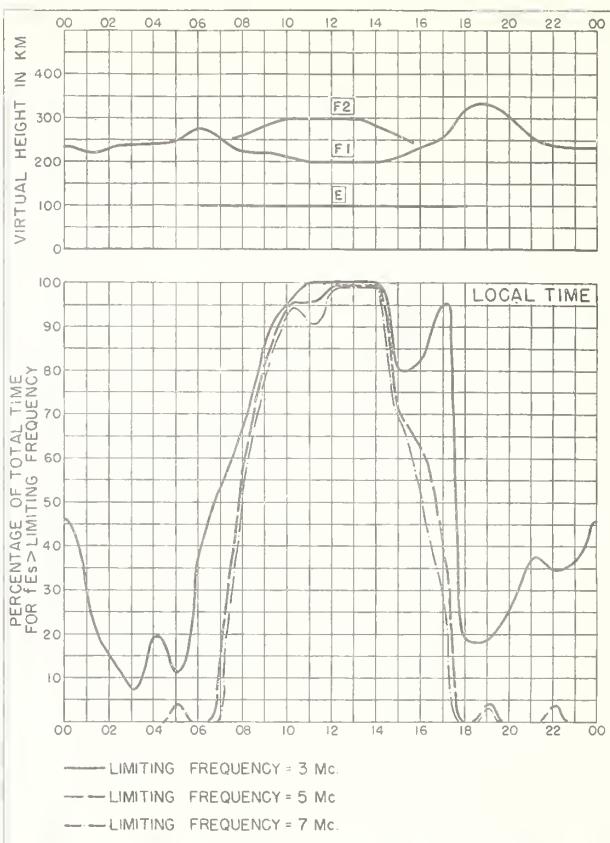


Fig. 22. HUANCAYO, PERU

MAY 1950

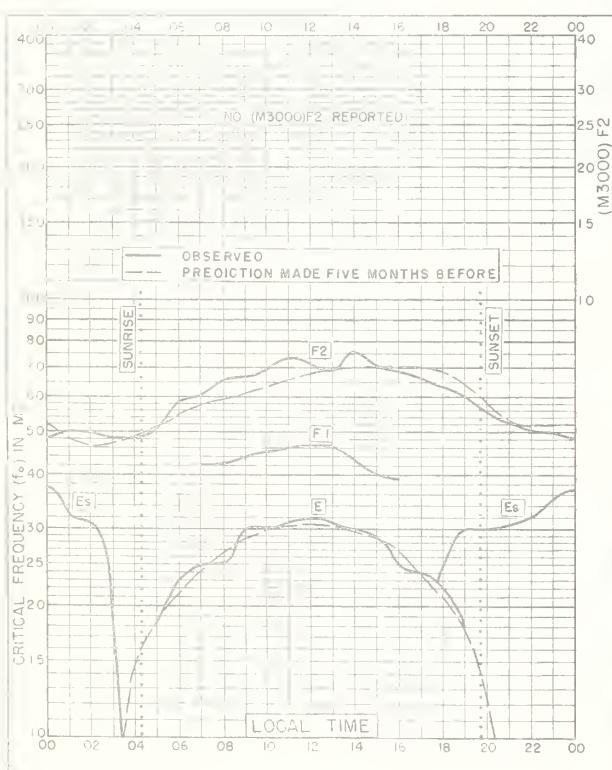


Fig. 23. KIRUNA, SWEDEN  
67.8°N, 20.5°E

APRIL 1950

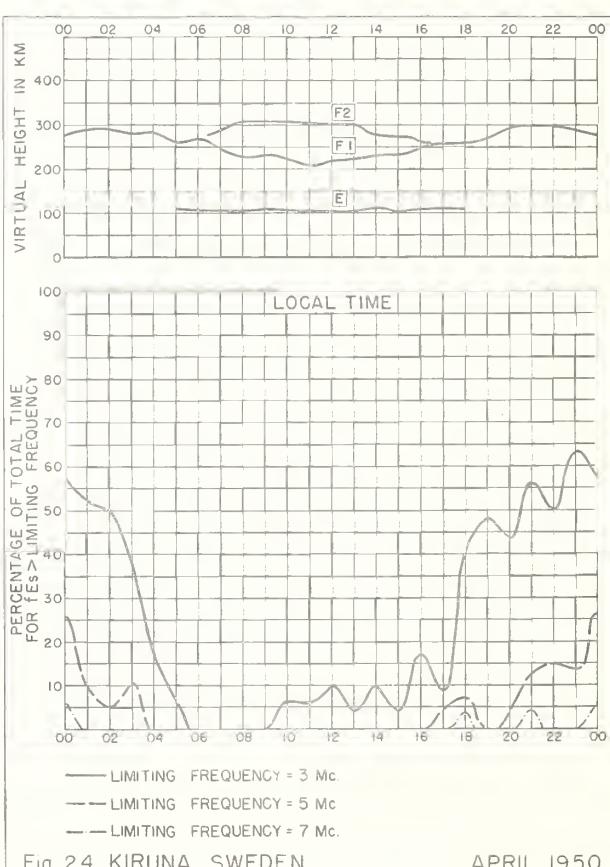


Fig. 24. KIRUNA, SWEDEN

APRIL 1950

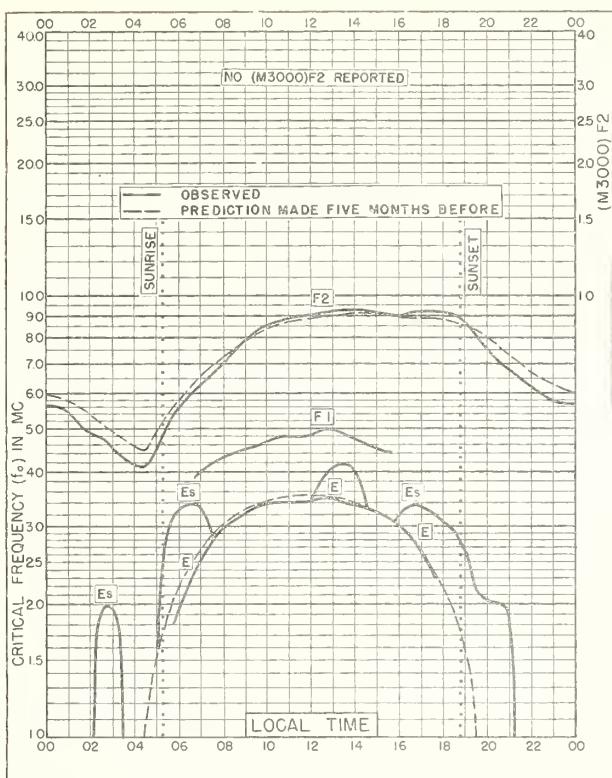


Fig. 25. LINDAU/HARZ, GERMANY  
51.6°N, 10.1°E APRIL 1950

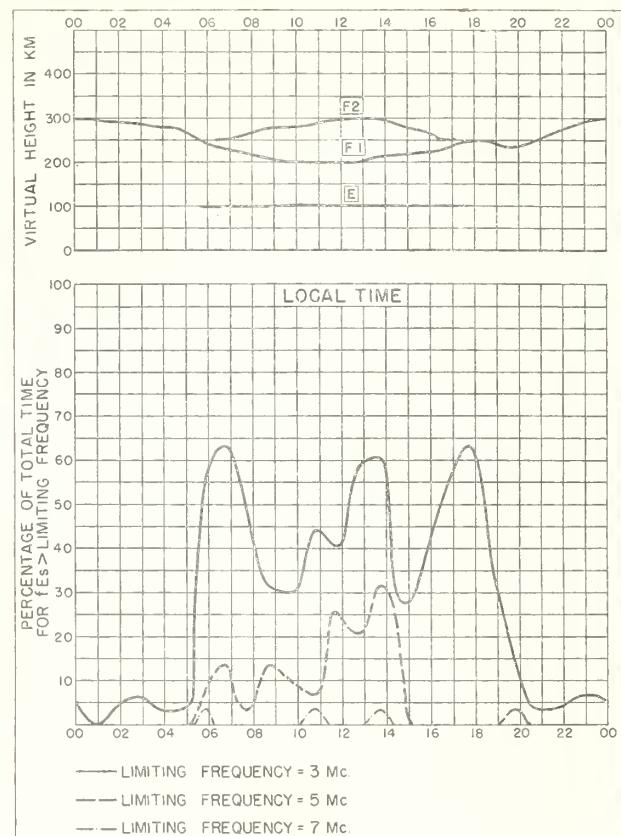


Fig. 26. LINDAU/HARZ, GERMANY APRIL 1950

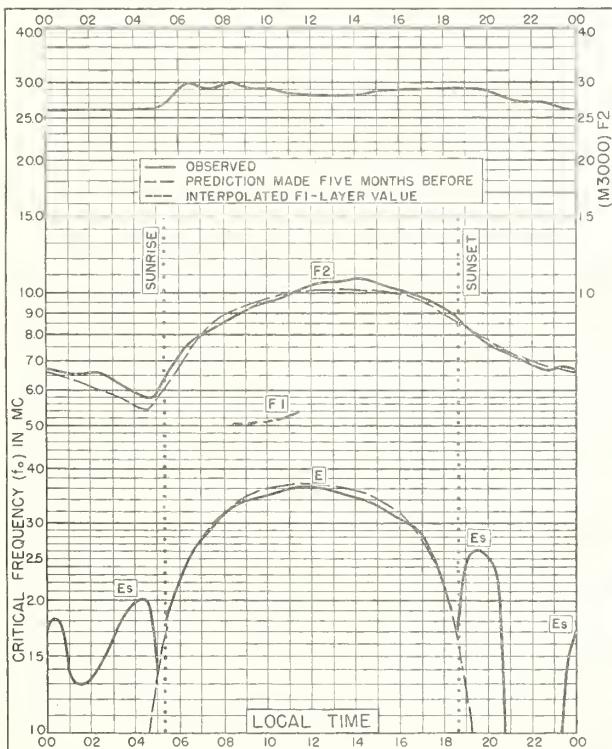


Fig. 27. WAKKANAI, JAPAN  
45.4°N, 141.7°E APRIL 1950

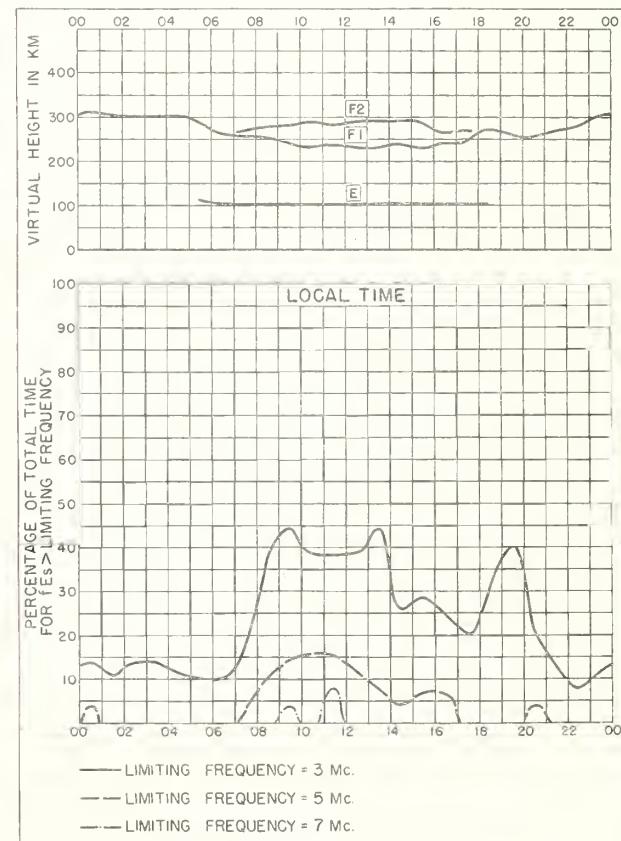


Fig. 28. WAKKANAI, JAPAN APRIL 1950

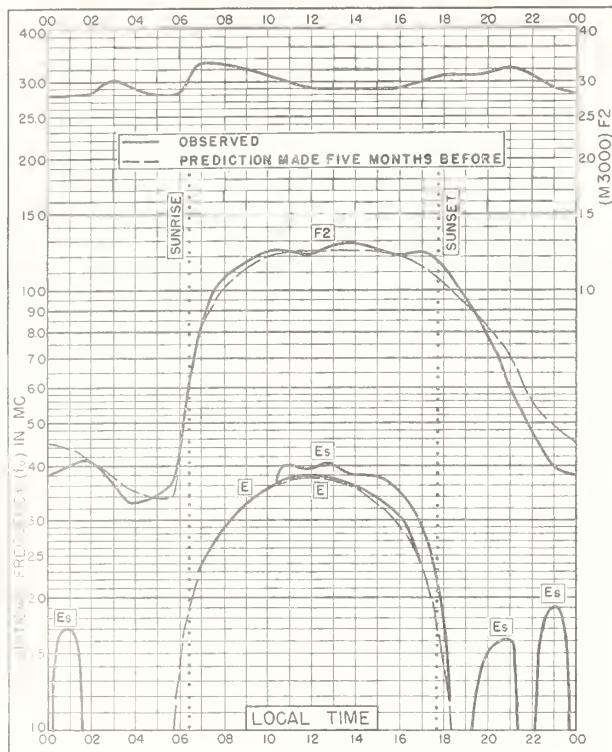


Fig. 29. JOHANNESBURG, U. OF S. AFRICA  
26. 2°S, 28.0°E      APRIL 1950

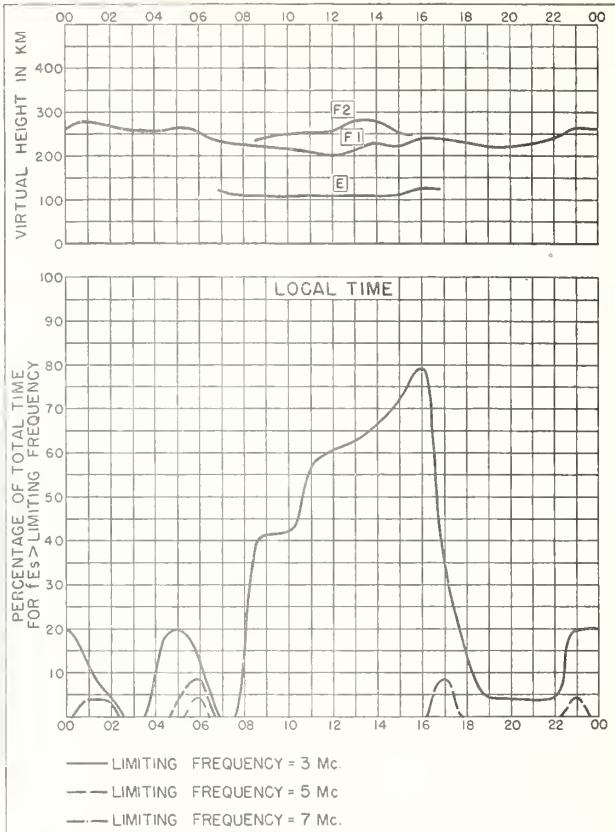


Fig. 30. JOHANNESBURG, U. OF S. AFRICA      APRIL 1950

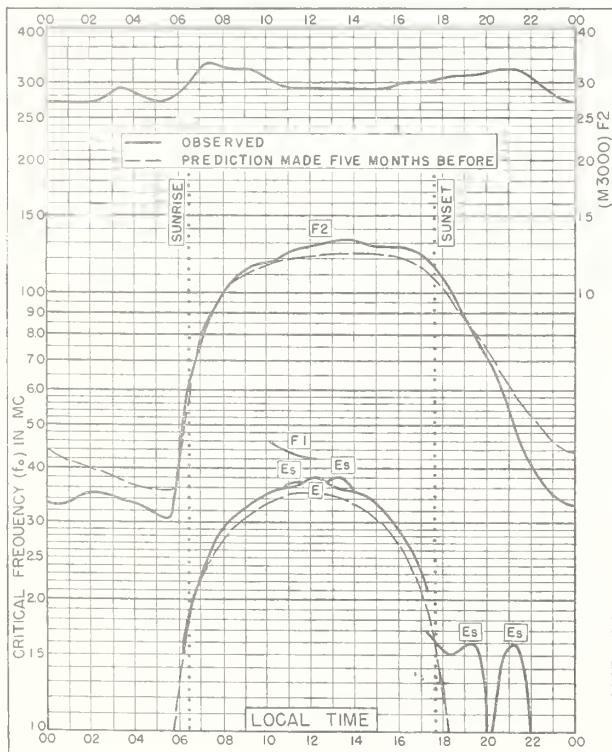


Fig. 31. CAPETOWN, U. OF S. AFRICA  
34. 2°S, 18. 3°E      APRIL 1950

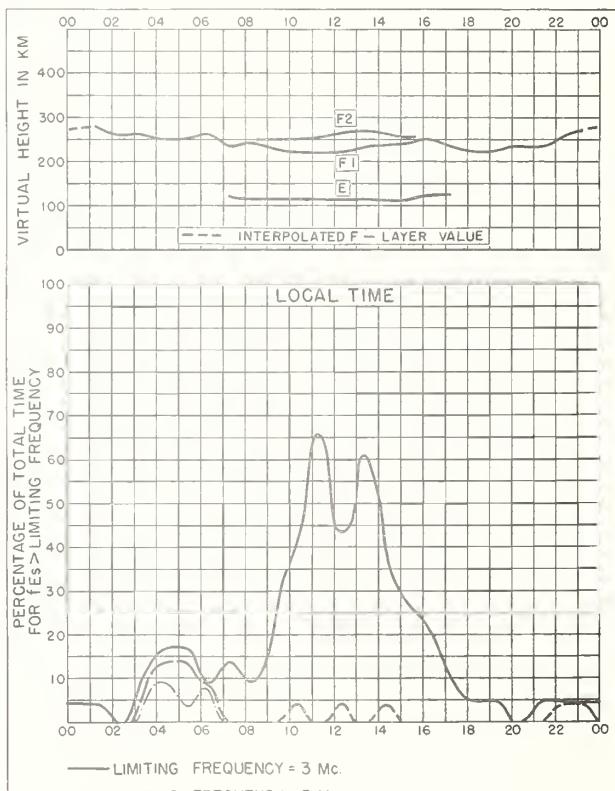


Fig. 32. CAPETOWN, U. OF S. AFRICA      APRIL 1950

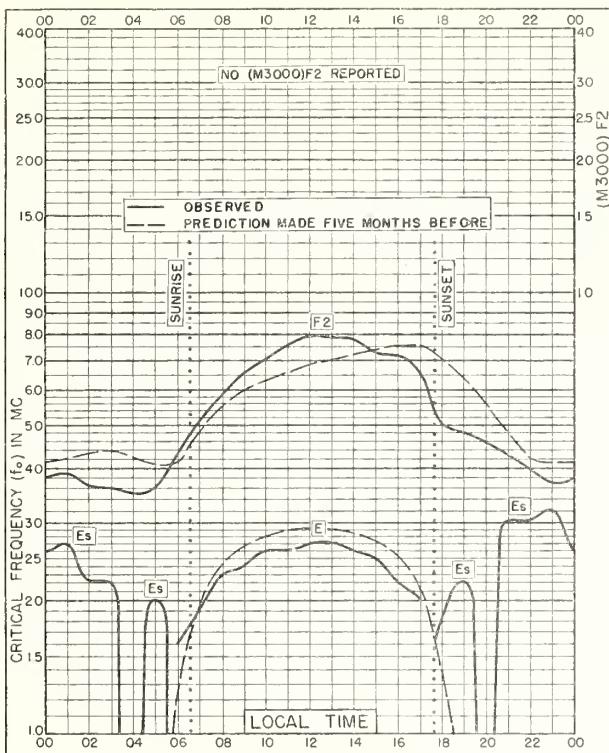


Fig. 33. KIRUNA, SWEDEN  
67.8°N, 20.5°E MARCH 1950

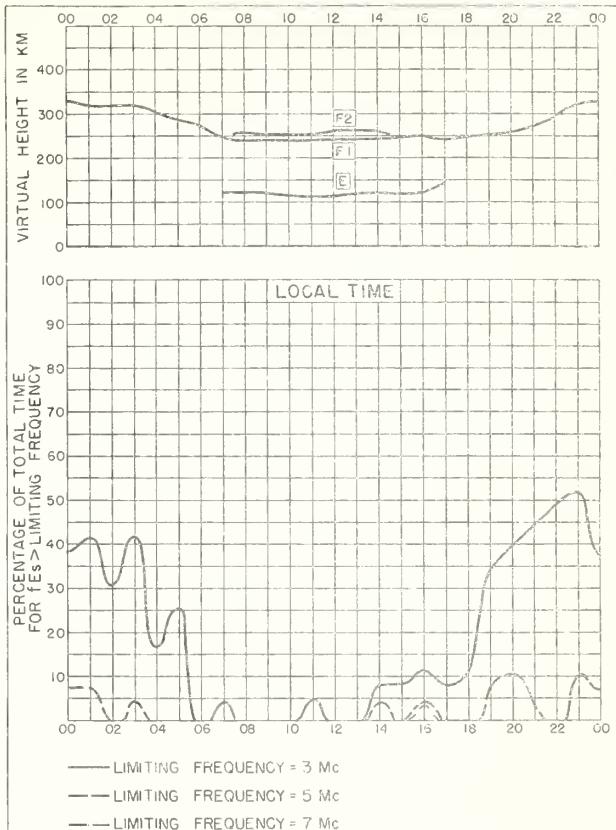


Fig. 34. KIRUNA, SWEDEN MARCH 1950

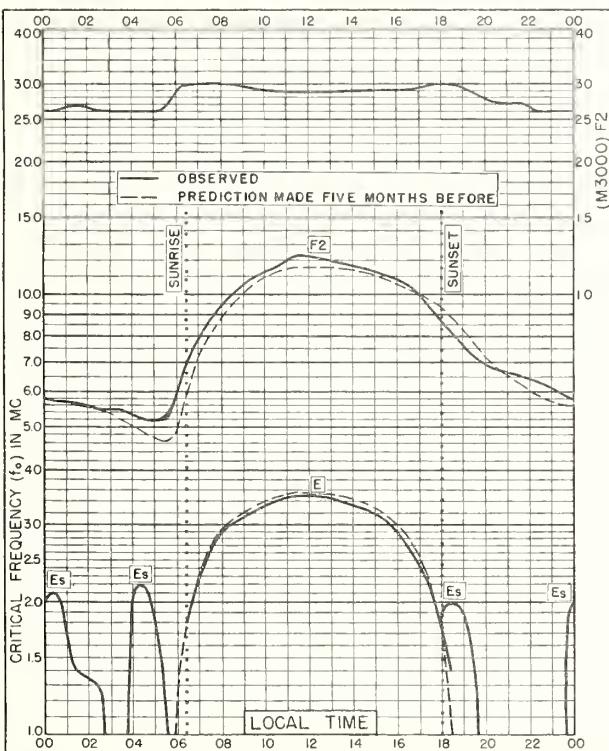


Fig. 35. WAKKANAI, JAPAN  
45.4°N, 141.7°E MARCH 1950

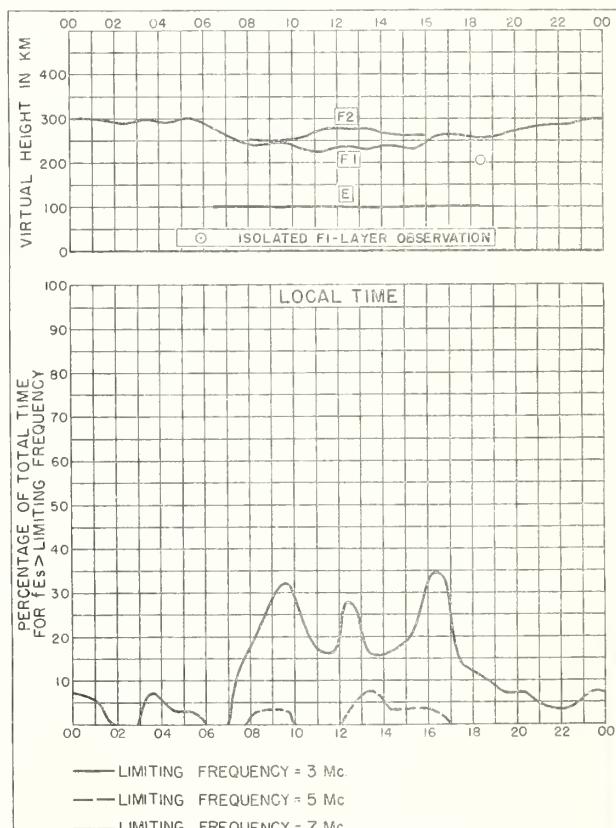


Fig. 36. WAKKANAI, JAPAN MARCH 1950

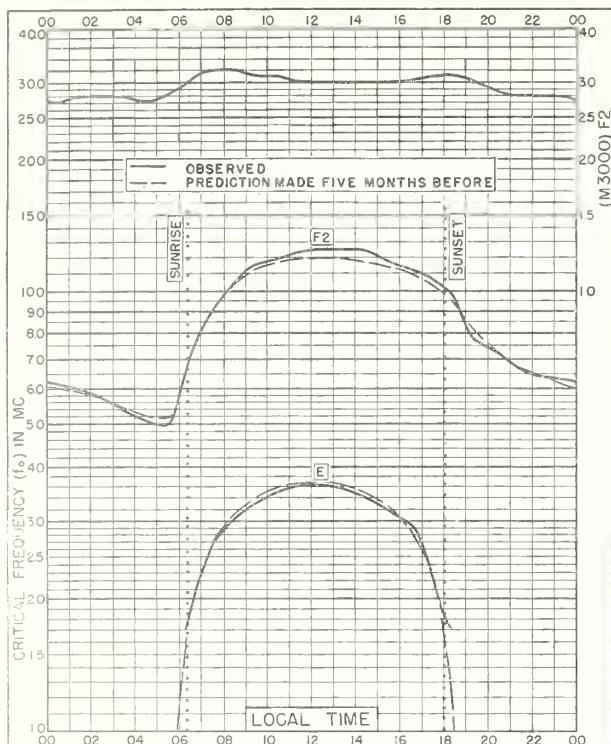


Fig. 37. AKITA, JAPAN

39.7°N, 140.1°E

MARCH 1950

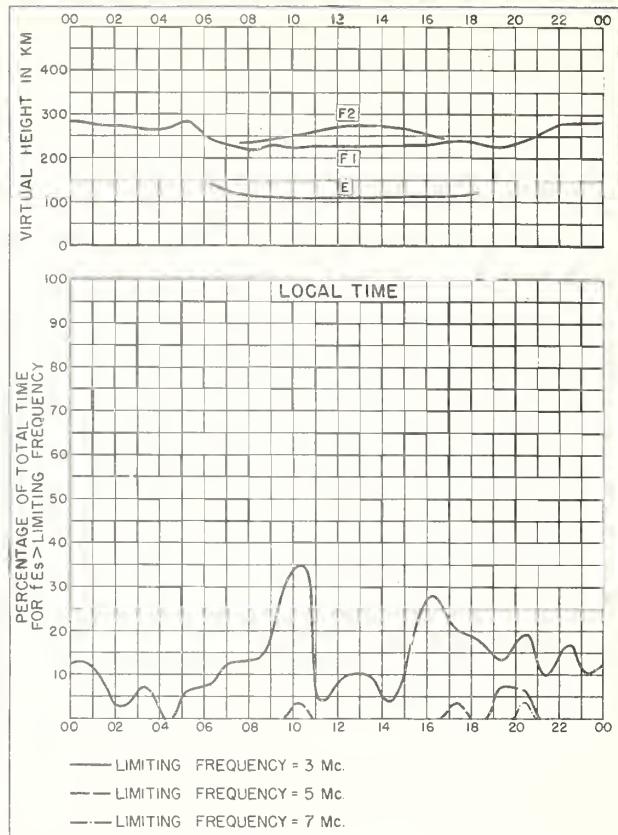


Fig. 38. AKITA, JAPAN

MARCH 1950

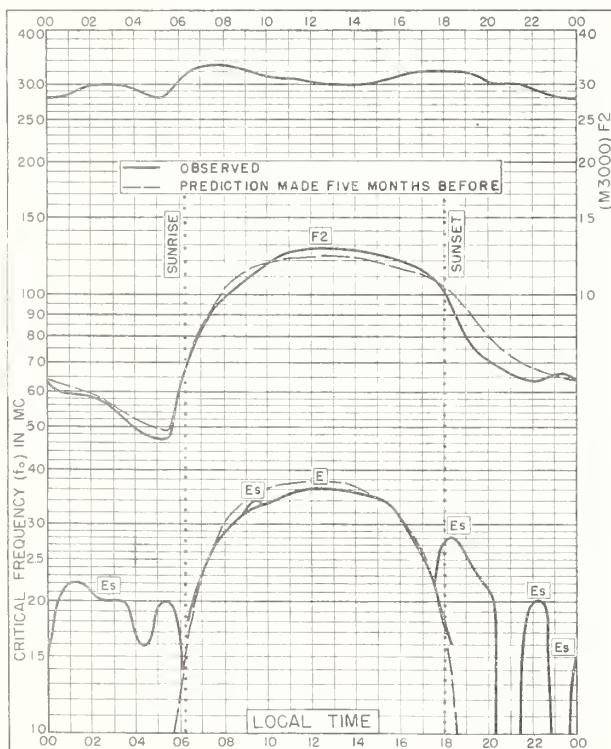


Fig. 39. TOKYO, JAPAN

35.7°N, 139.5°E

MARCH 1950

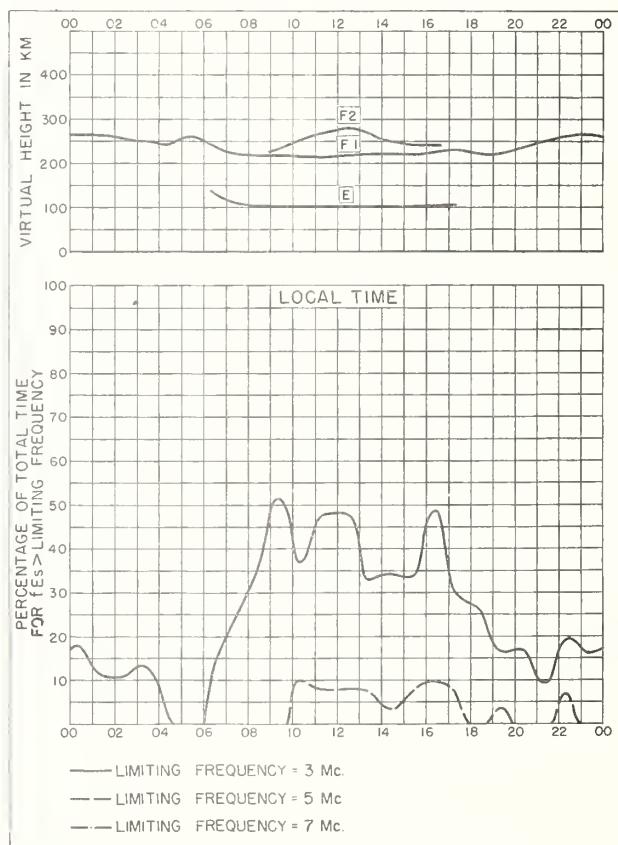
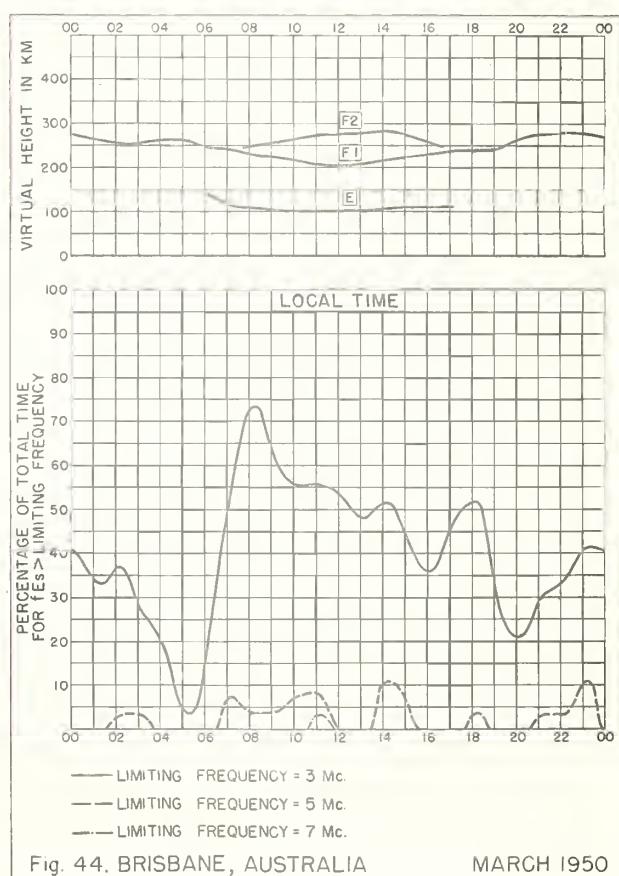
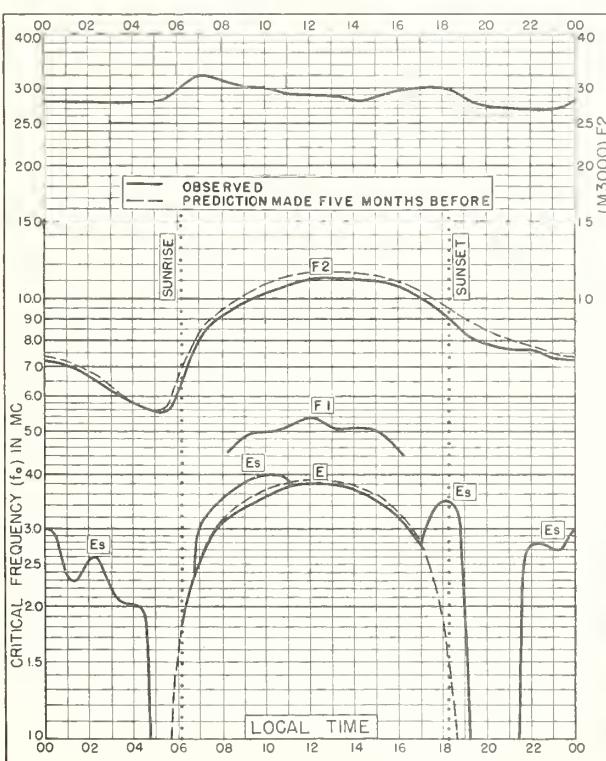
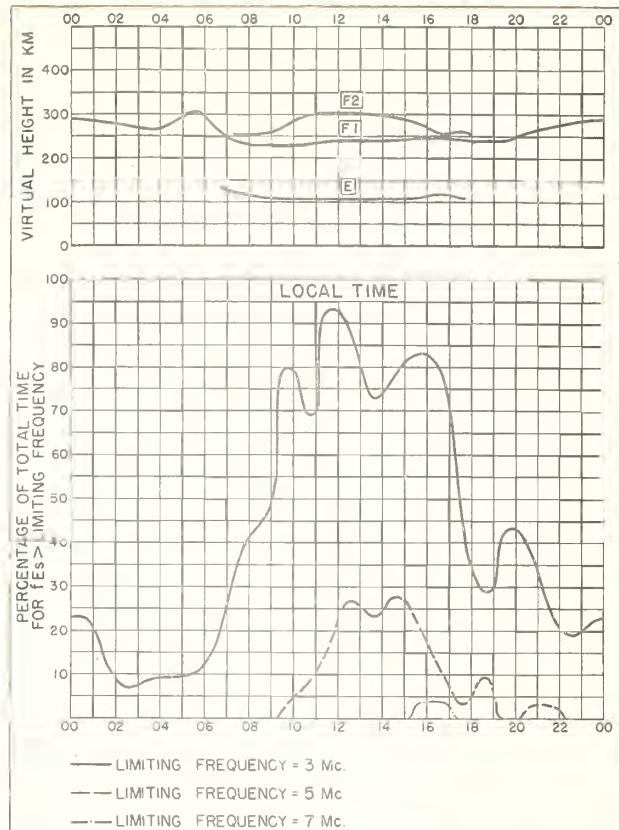
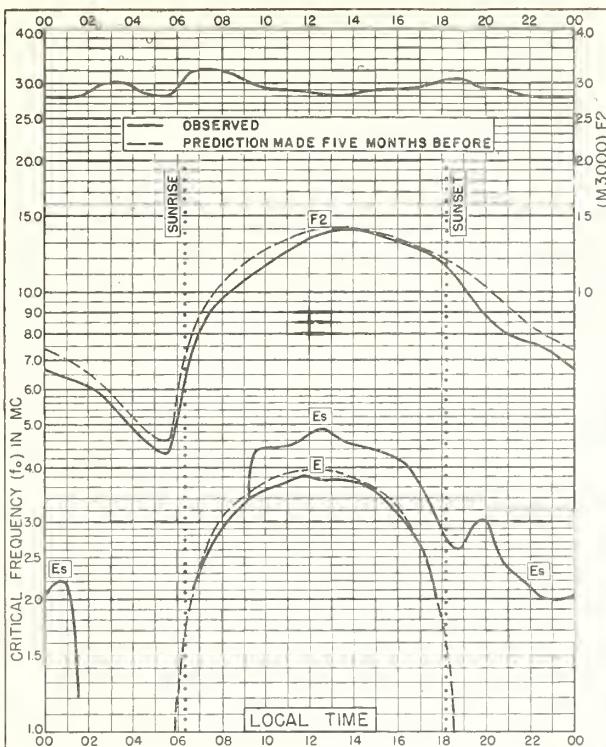


Fig. 40. TOKYO, JAPAN

MARCH 1950



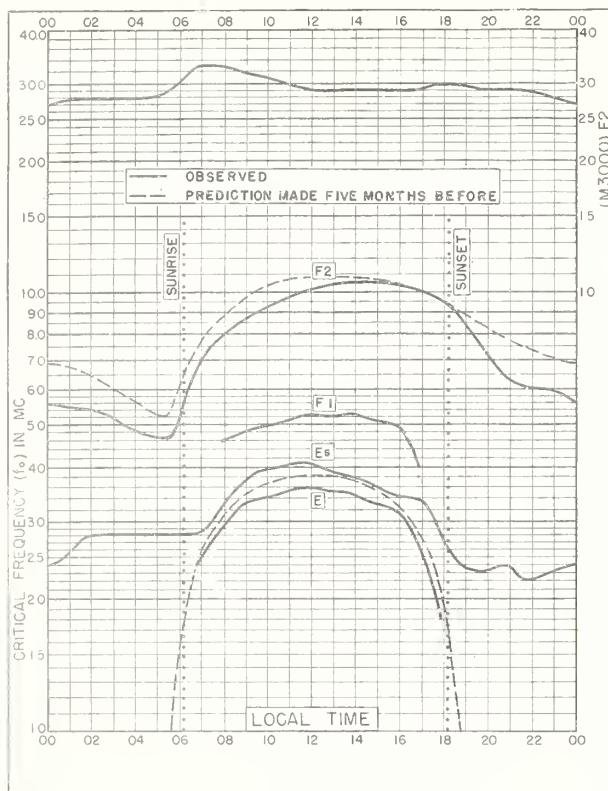


Fig. 45. WATHEROO W. AUSTRALIA  
30.3°S, 115.9°E MARCH 1950

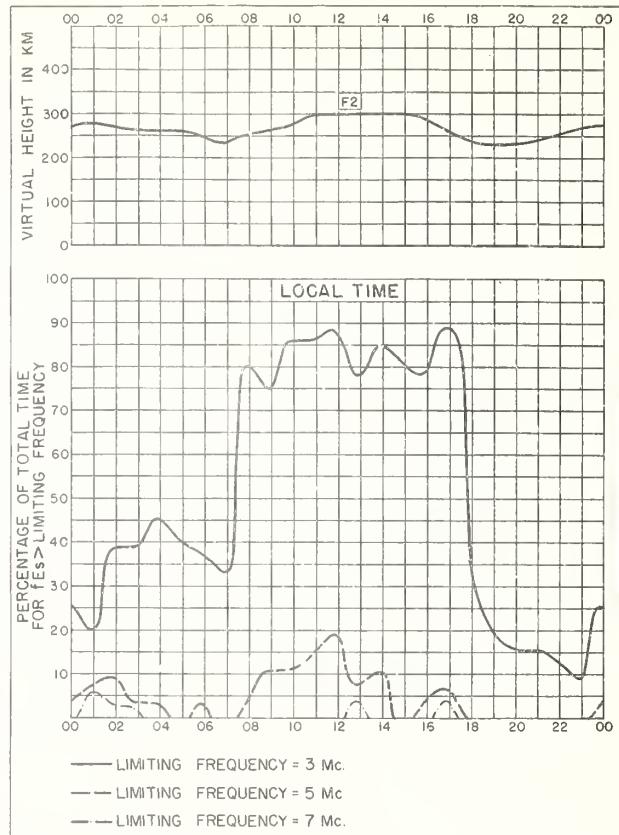


Fig. 46. WATHEROO W. AUSTRALIA MARCH 1950

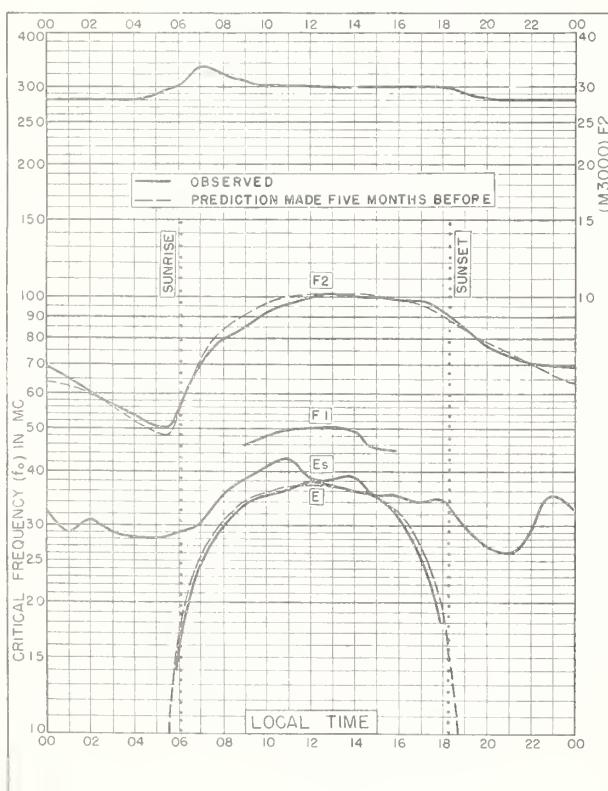


Fig. 47. CANBERRA, AUSTRALIA  
35.3°S, 149.0°E MARCH 1950

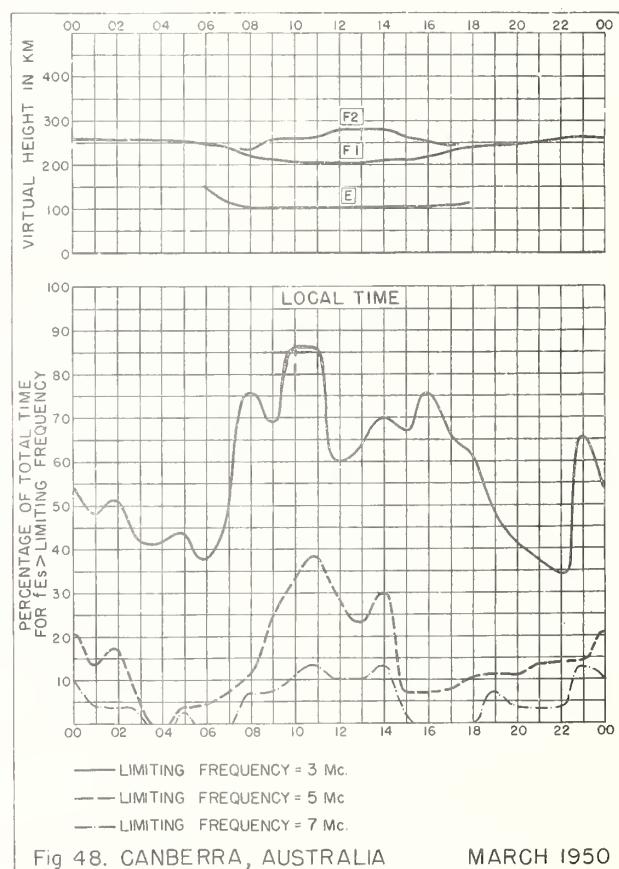


Fig. 48. CANBERRA, AUSTRALIA MARCH 1950

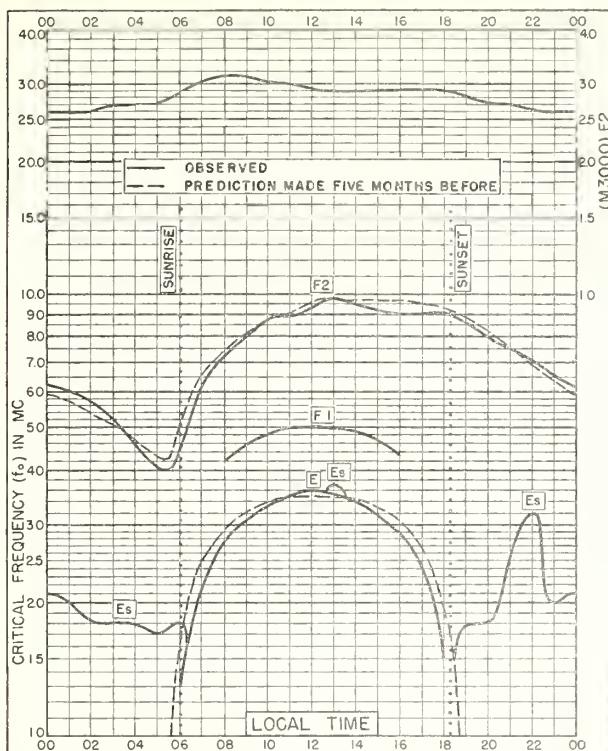


Fig. 49. CHRISTCHURCH, NEW ZEALAND  
43.5°S, 172.7°E MARCH 1950

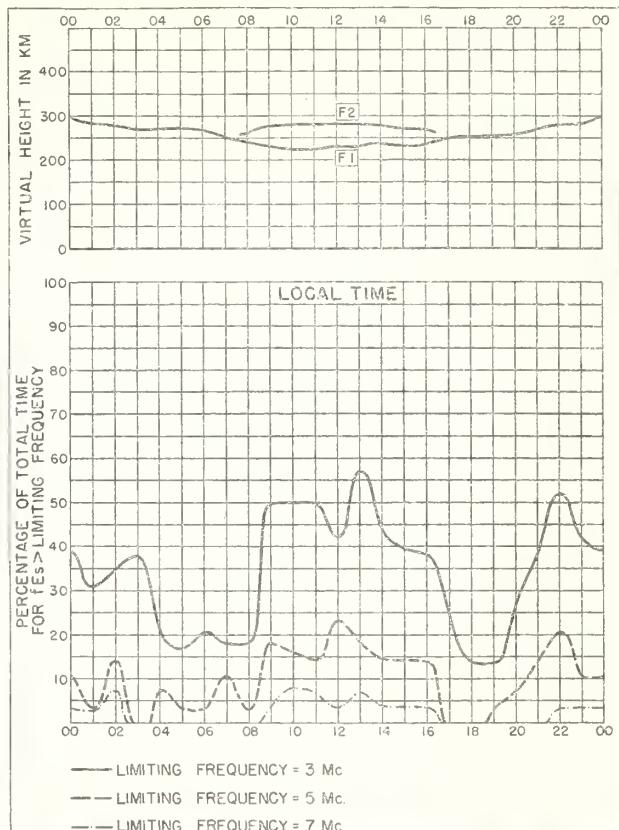


Fig. 50. CHRISTCHURCH, NEW ZEALAND MARCH 1950

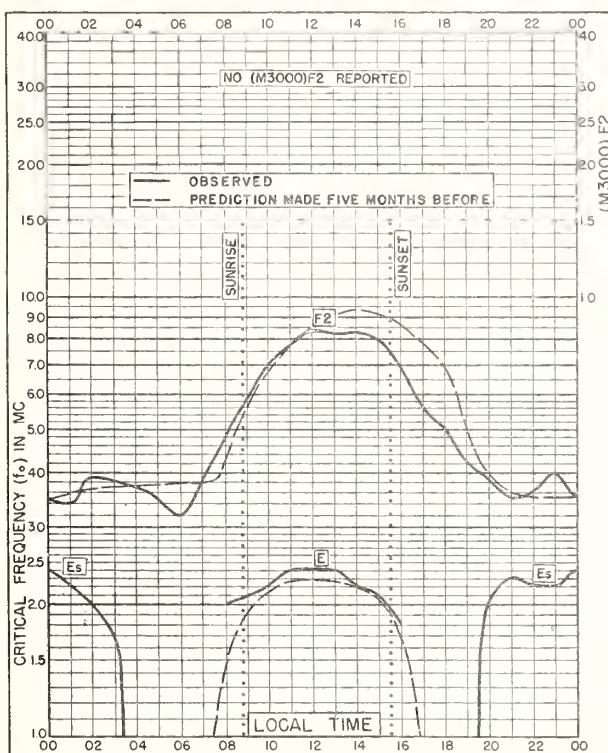


Fig. 51. KIRUNA, SWEDEN  
67.8°N, 20.5°E FEBRUARY 1950

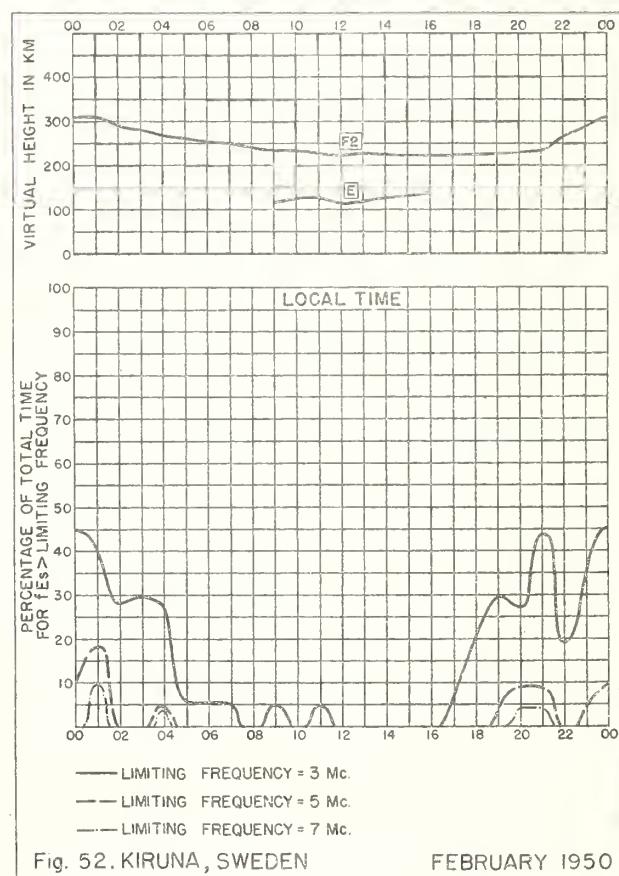


Fig. 52. KIRUNA, SWEDEN FEBRUARY 1950

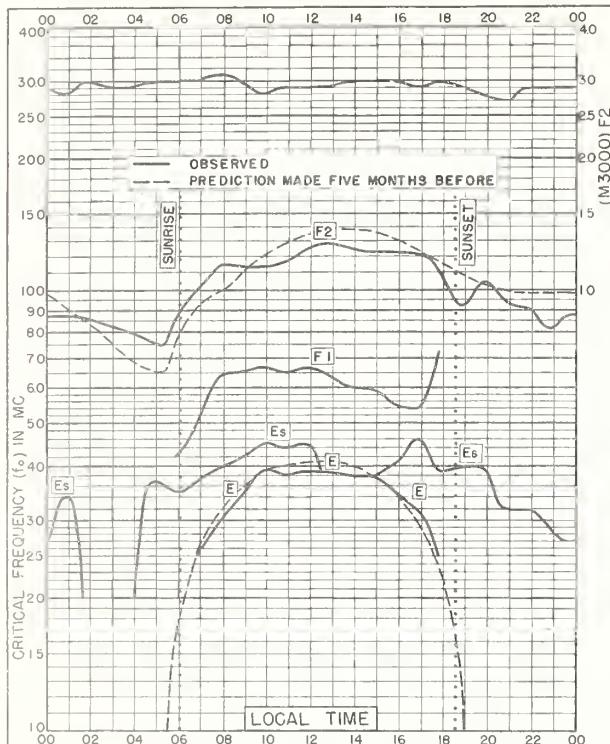


Fig. 53. RAROTONGA I.

21.3°S, 159.8°W

FEBRUARY 1950

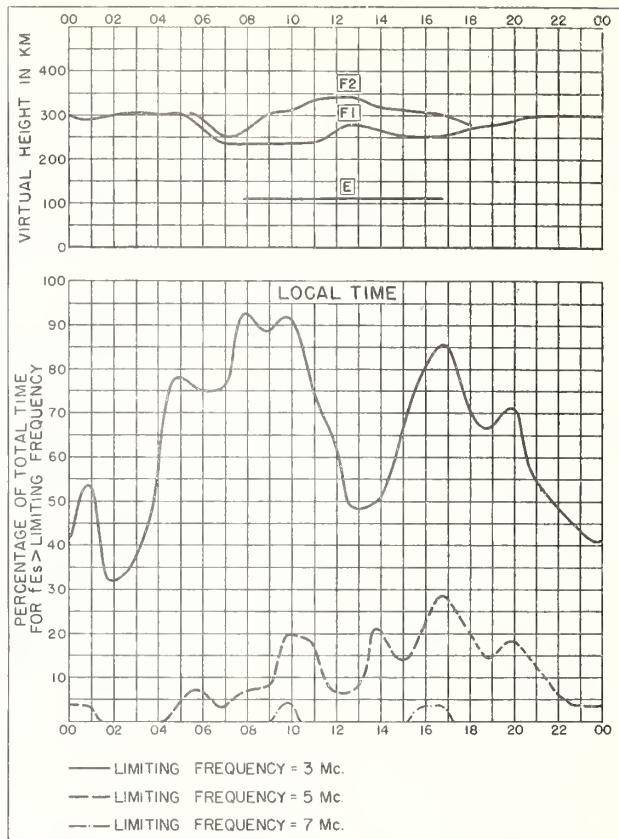


Fig. 54. RAROTONGA I.

FEBRUARY 1950

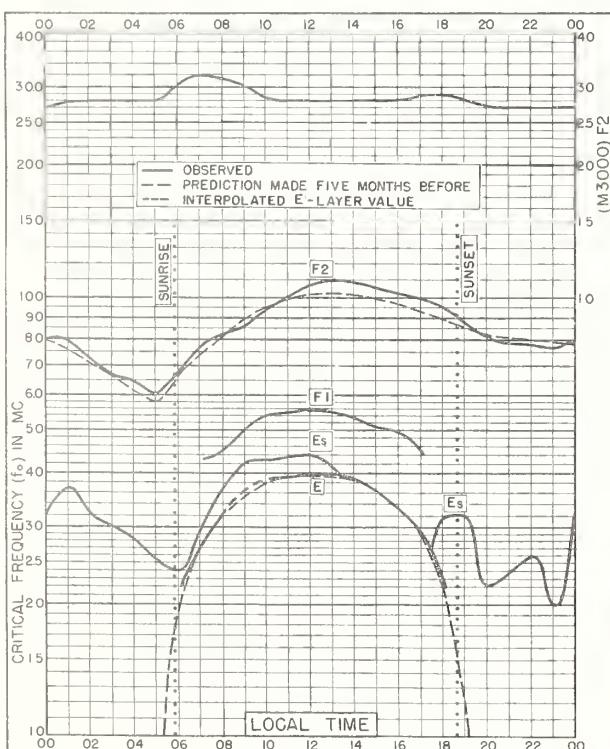


Fig. 55. BRISBANE, AUSTRALIA

27.5°S, 153.0°E

FEBRUARY 1950

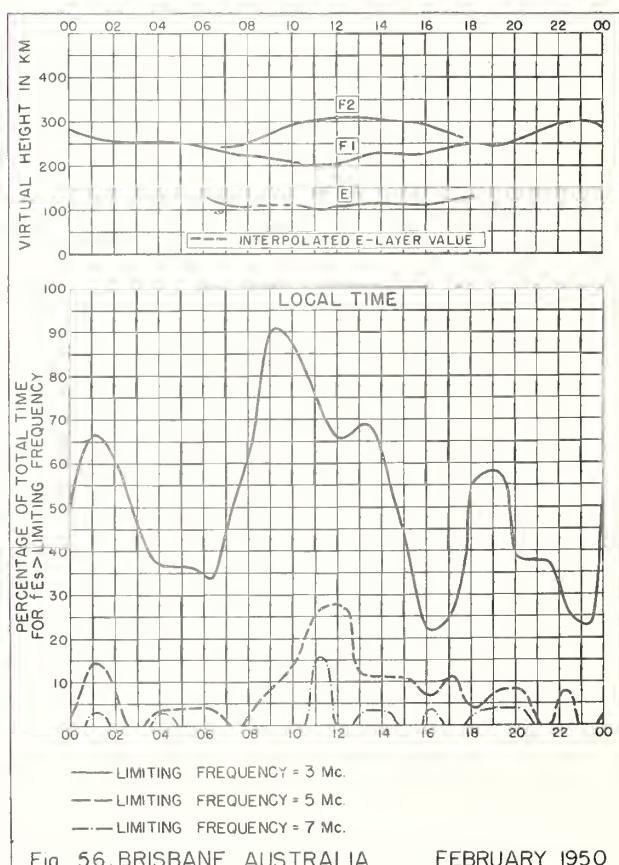


Fig. 56. BRISBANE, AUSTRALIA

FEBRUARY 1950

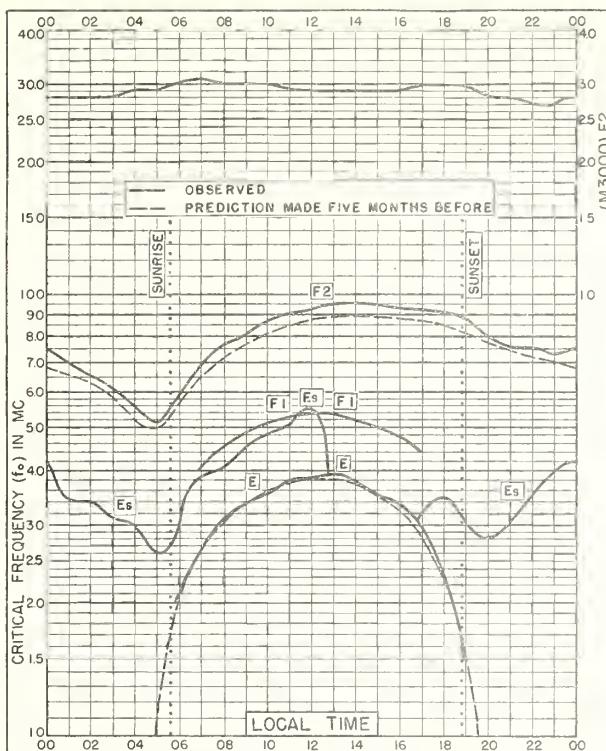


Fig. 57. CANBERRA, AUSTRALIA  
35.3°S, 149.0°E FEBRUARY 1950

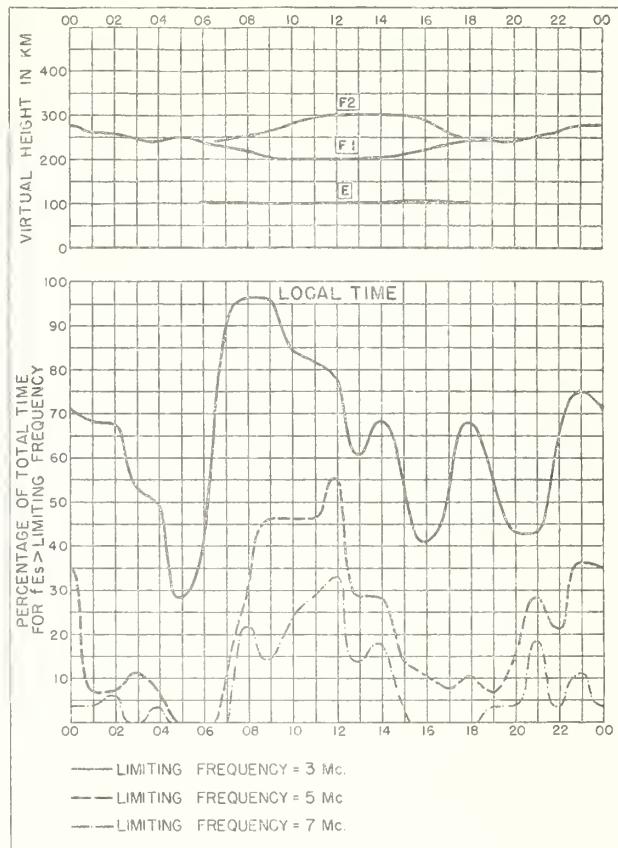


Fig. 58. CANBERRA, AUSTRALIA FEBRUARY 1950

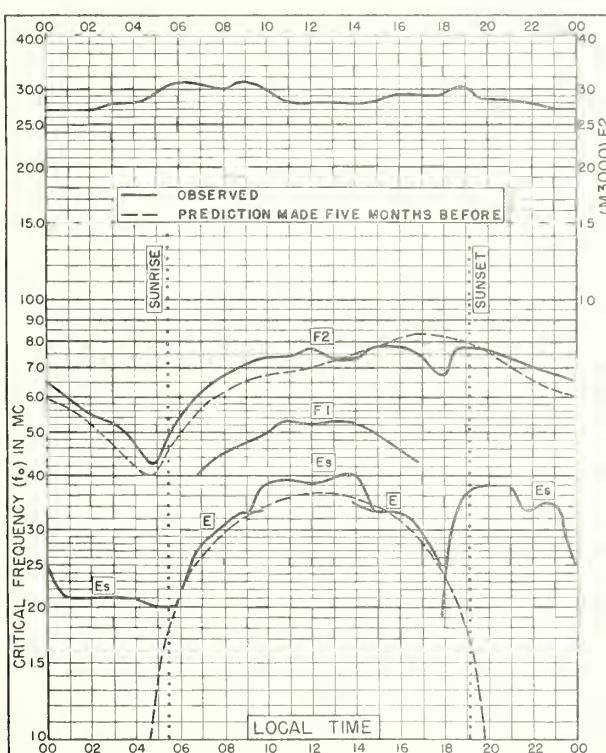


Fig. 59. HOBART, TASMANIA  
42.8°S, 147.4°E FEBRUARY 1950

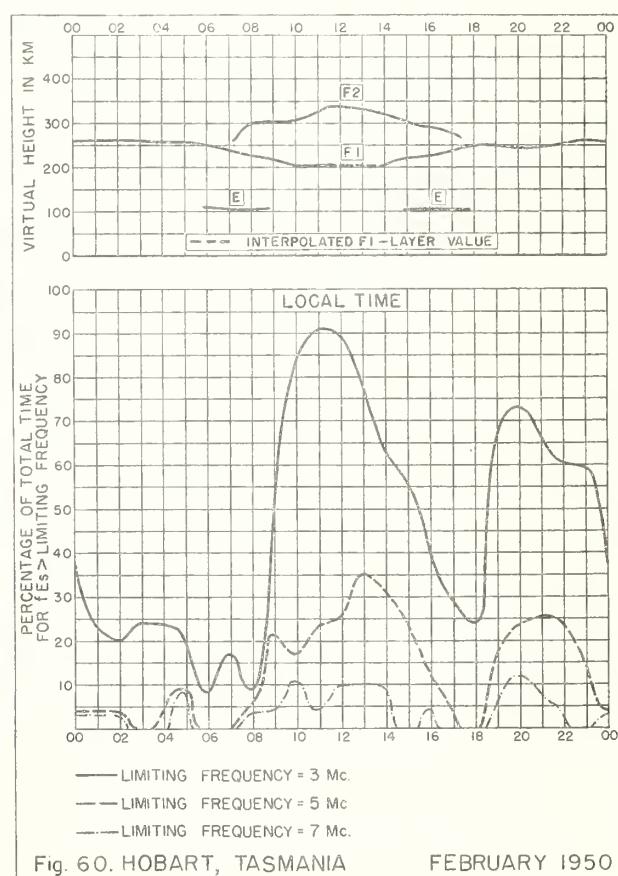
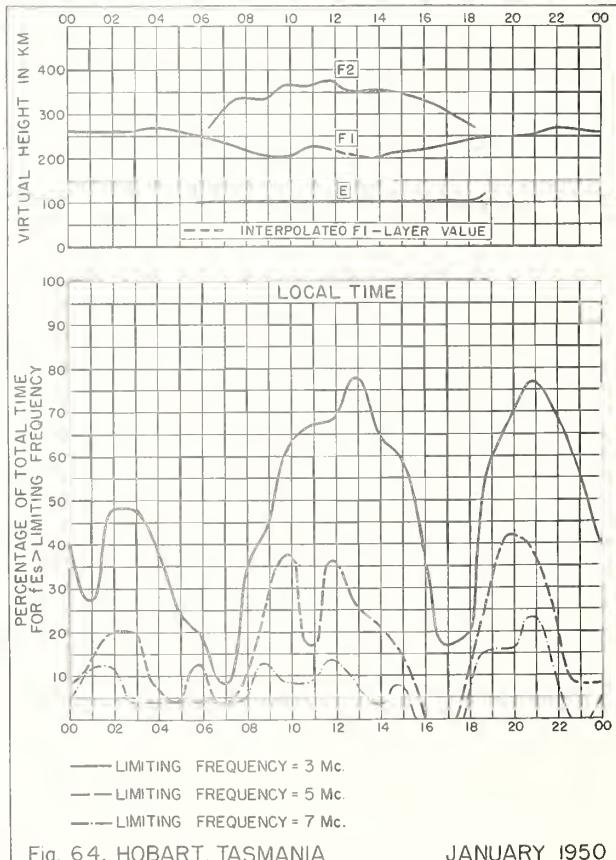
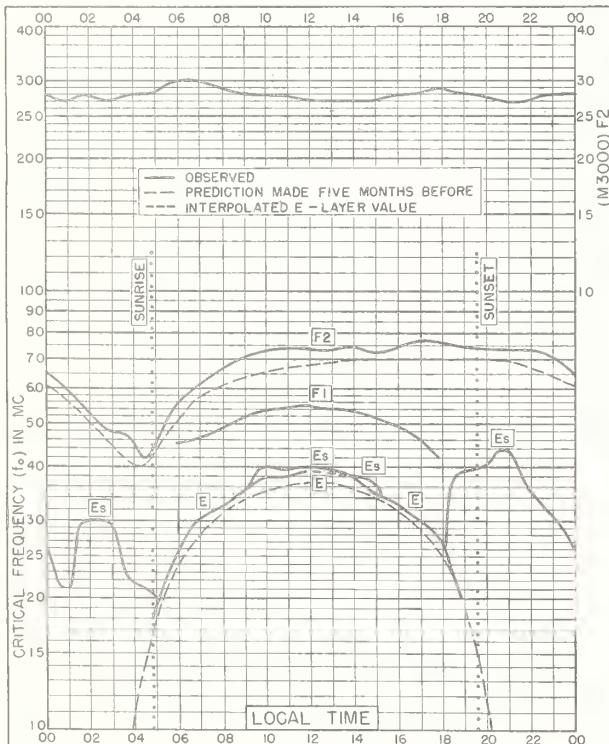
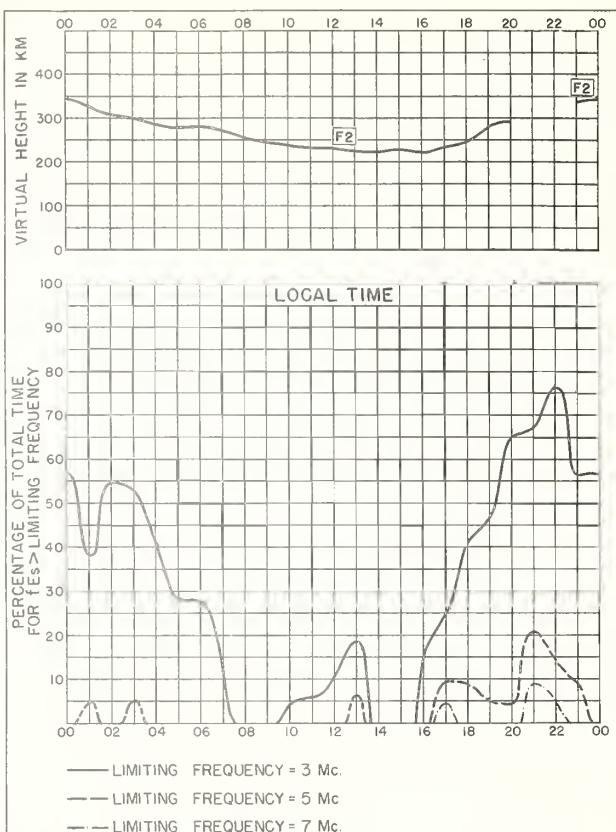
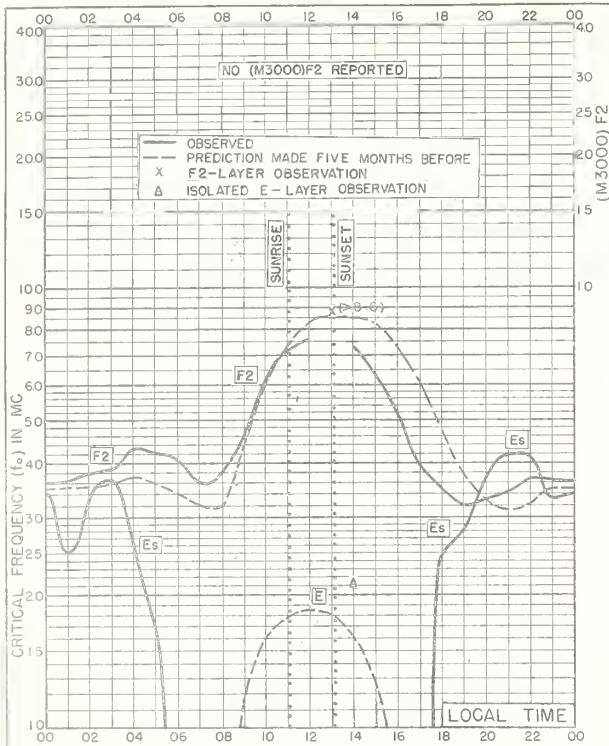
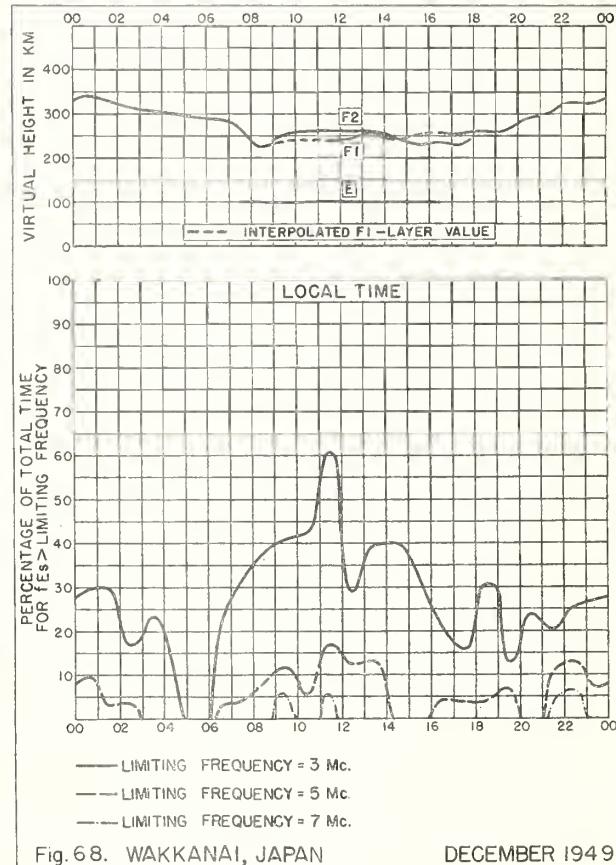
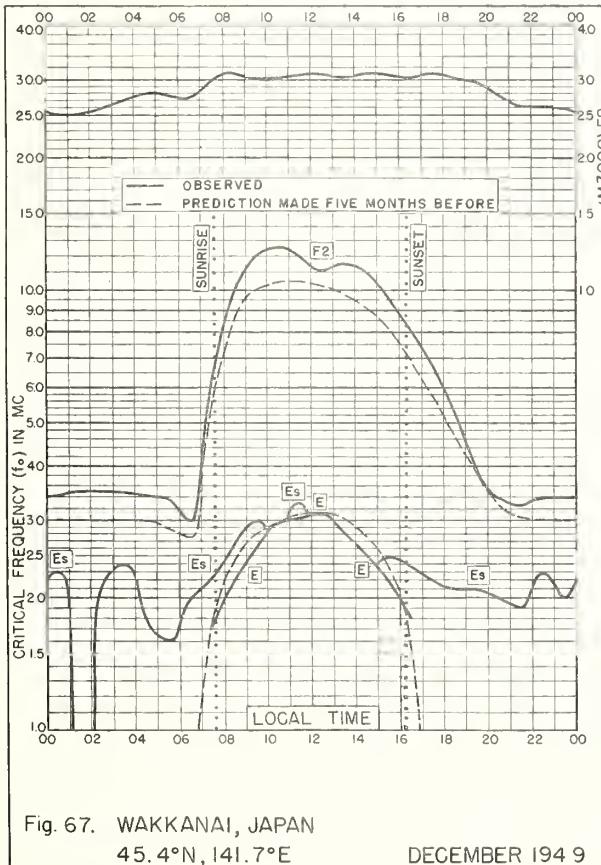
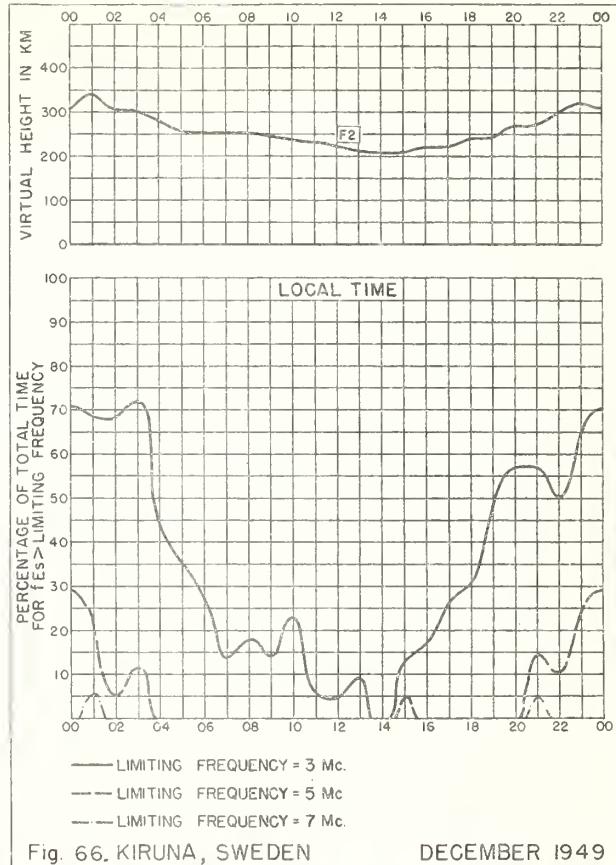
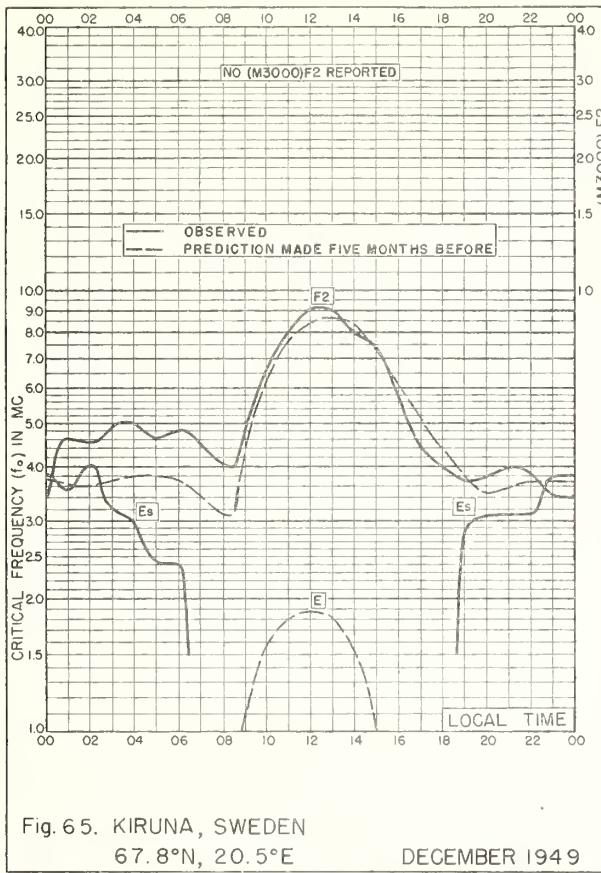
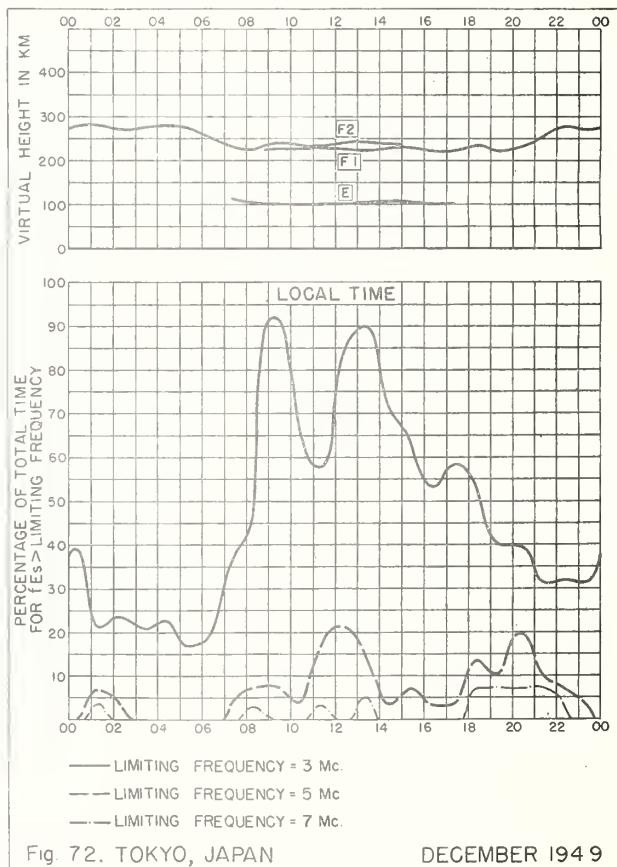
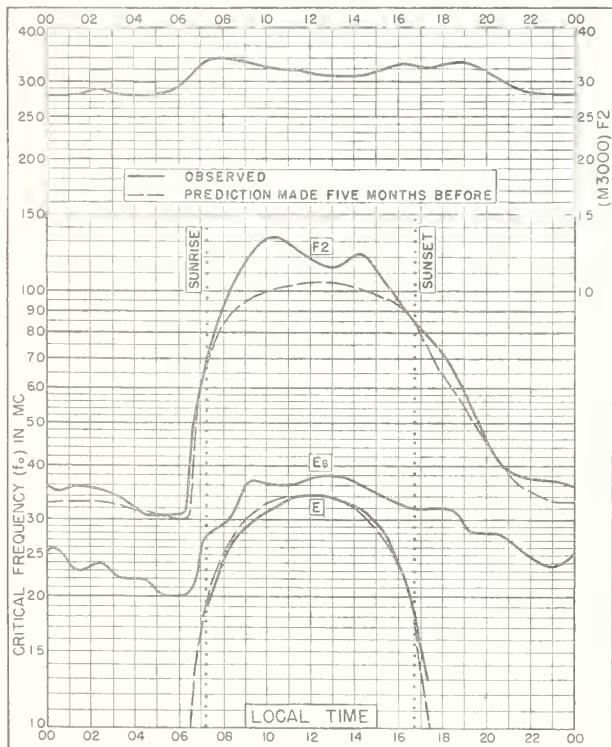
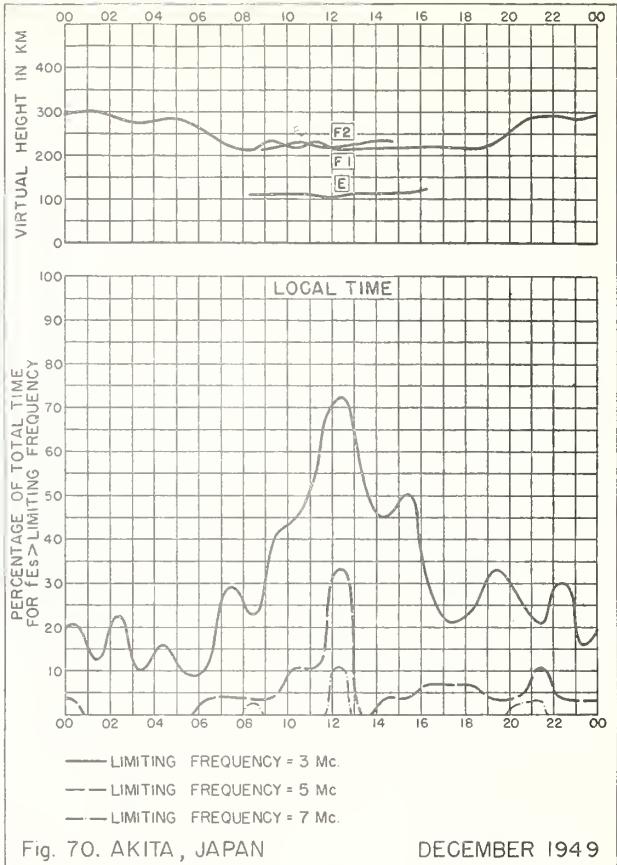
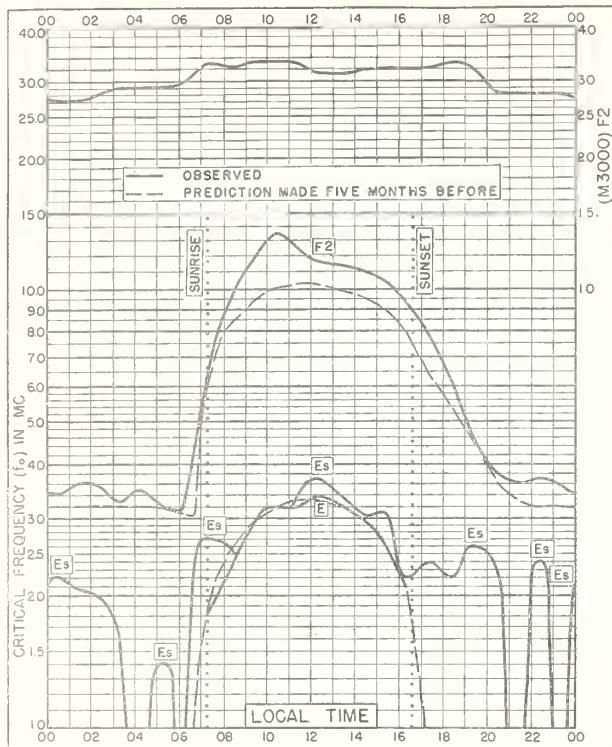


Fig. 60. HOBART, TASMANIA FEBRUARY 1950







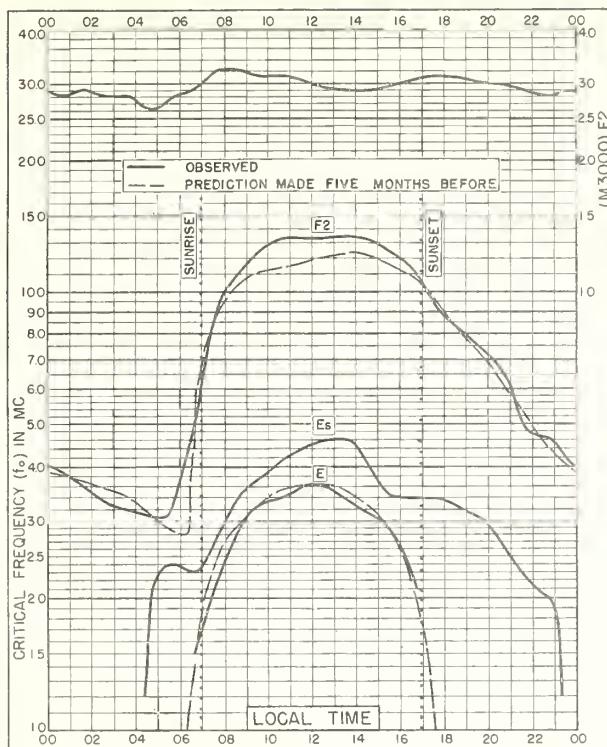


Fig. 73. YAMAGAWA, JAPAN  
31.2°N, 130.6°E DECEMBER 1949

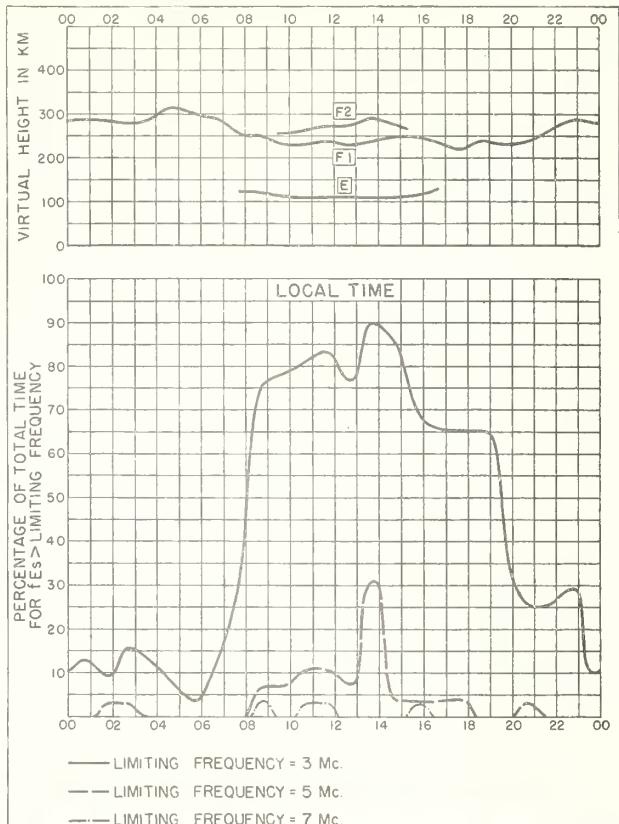


Fig. 74. YAMAGAWA, JAPAN DECEMBER 1949

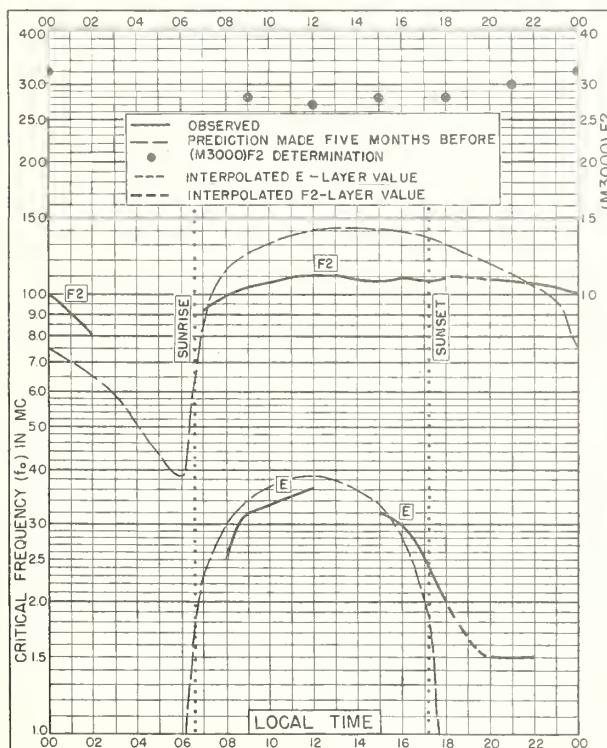


Fig. 75. CALCUTTA, INDIA  
22.6°N, 88.4°E DECEMBER 1949

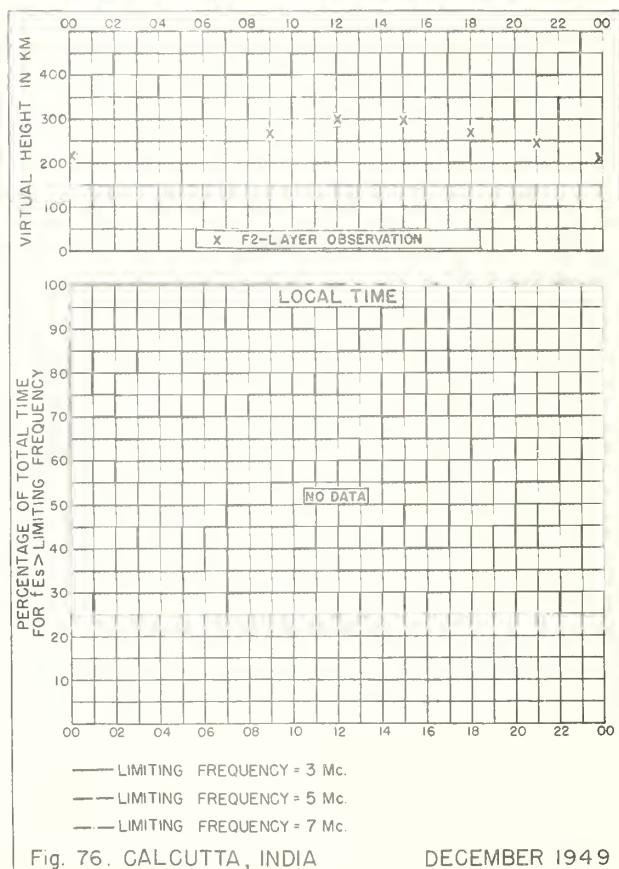


Fig. 76. CALCUTTA, INDIA DECEMBER 1949

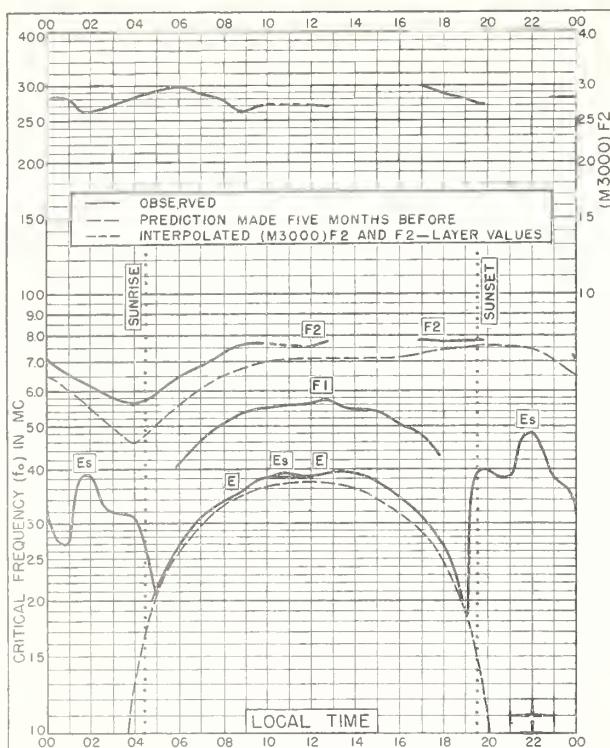


Fig. 77. HOBART, TASMANIA  
42.8°S, 147.4°E DECEMBER 1949

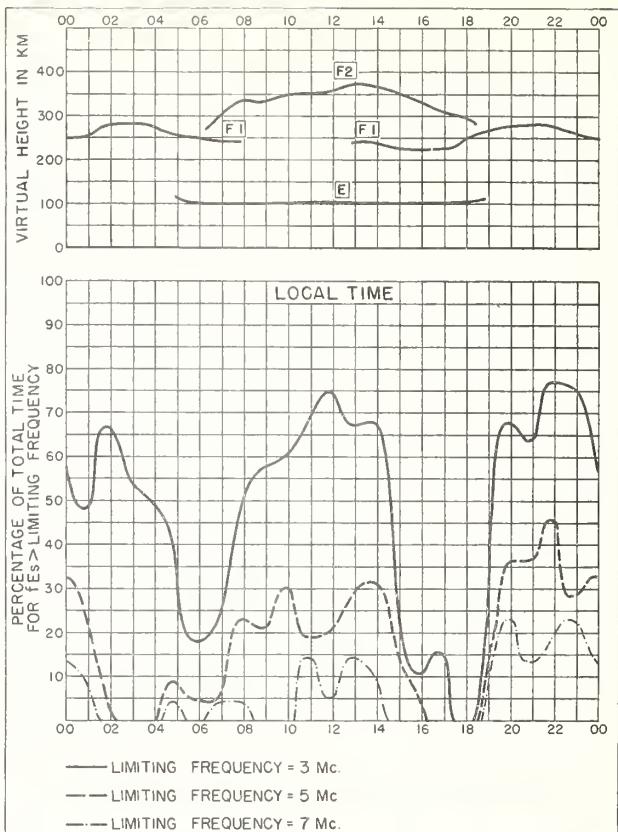


Fig. 78. HOBART, TASMANIA DECEMBER 1949

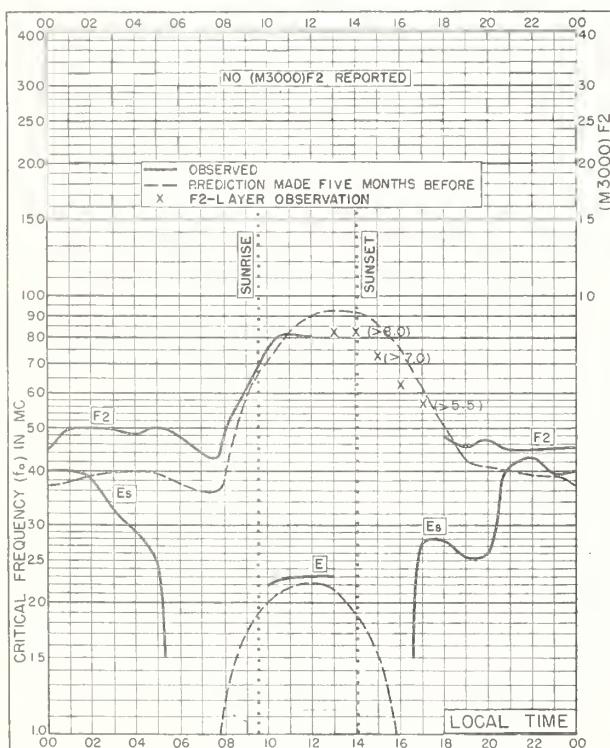


Fig. 79. KIRUNA, SWEDEN  
67.8°N, 20.5°E NOVEMBER 1949

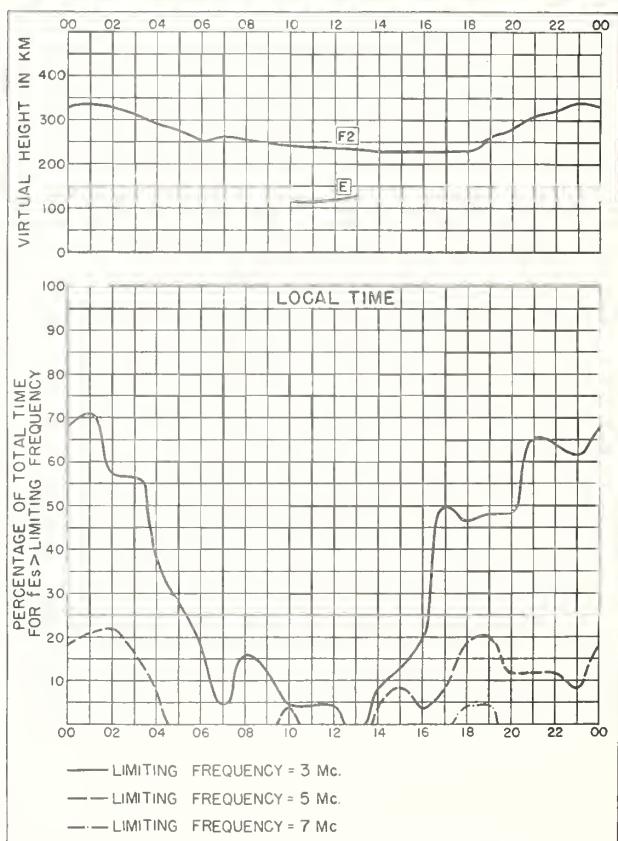


Fig. 80. KIRUNA, SWEDEN NOVEMBER 1949

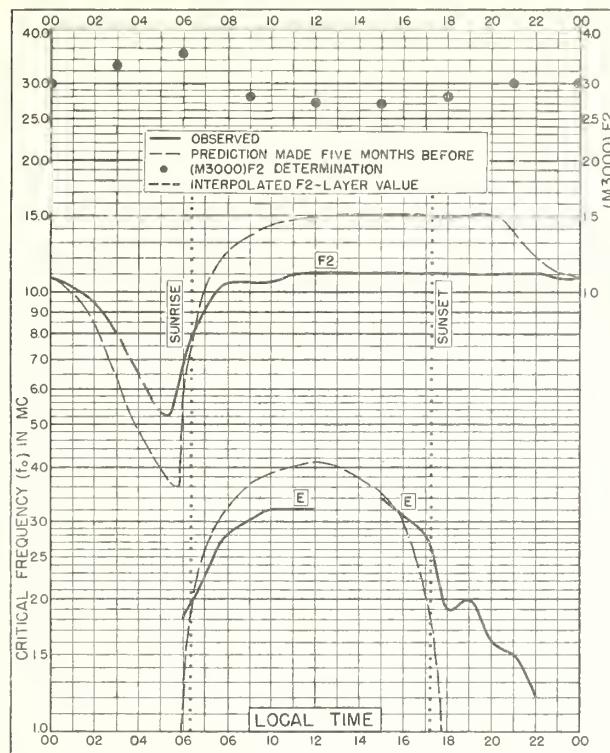


Fig. 81. CALCUTTA, INDIA  
22.6°N, 88.4°E

NOVEMBER 1949

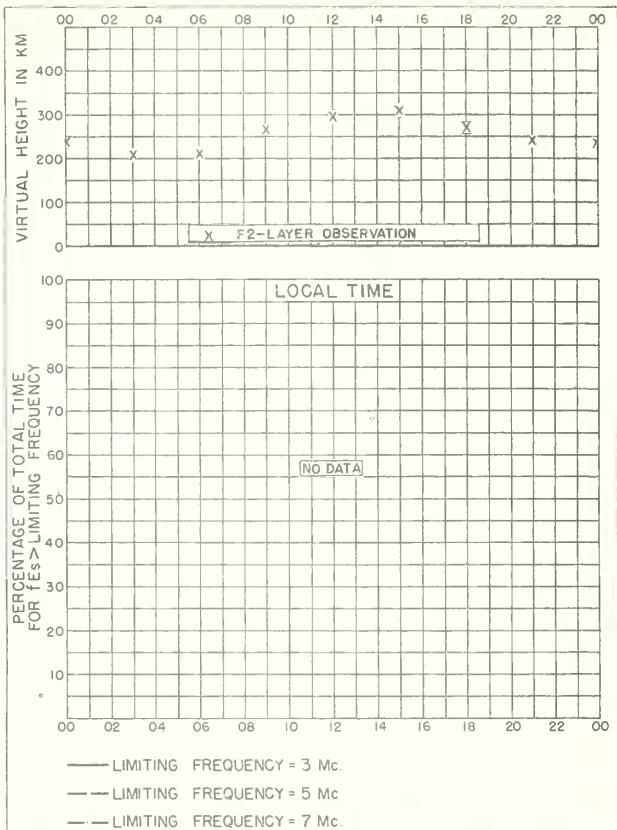


Fig. 82. CALCUTTA, INDIA

NOVEMBER 1949

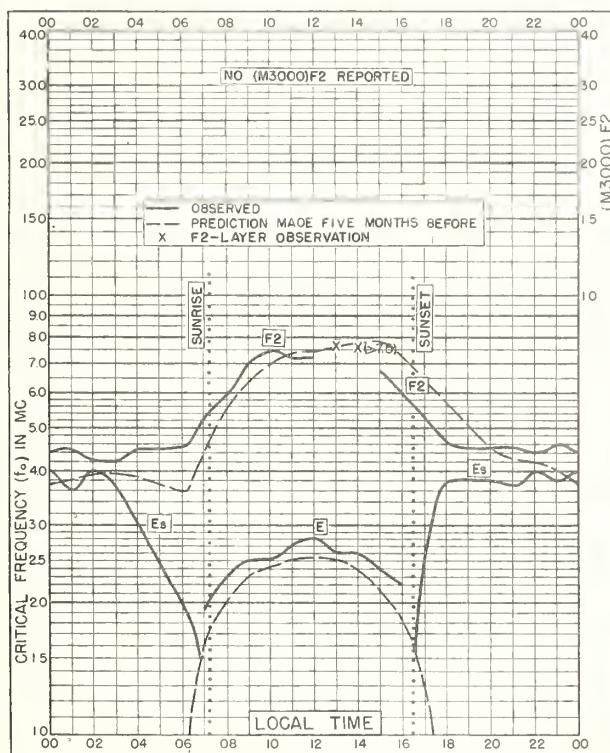


Fig. 83. KIRUNA, SWEDEN  
67.8°N, 20.5°E

OCTOBER 1949

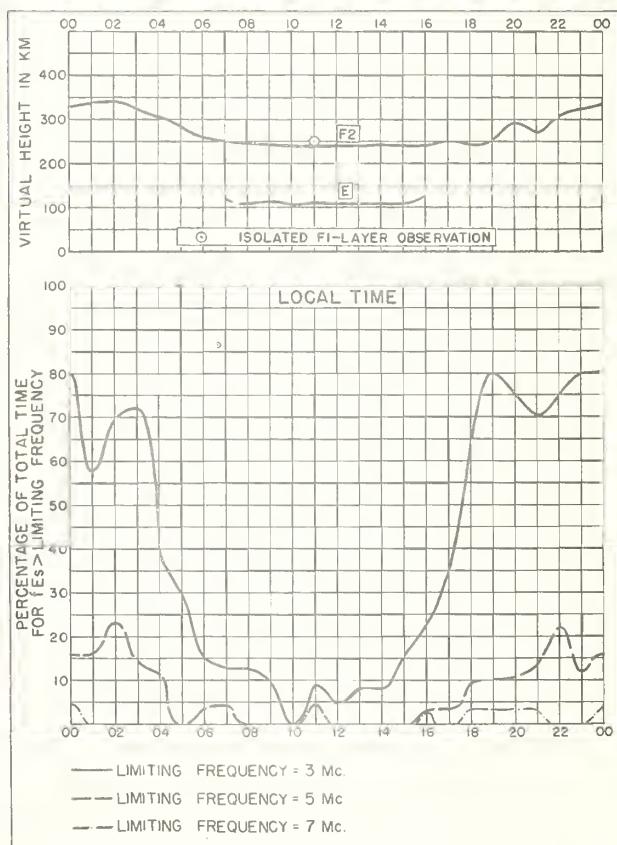


Fig. 84. KIRUNA, SWEDEN

OCTOBER 1949

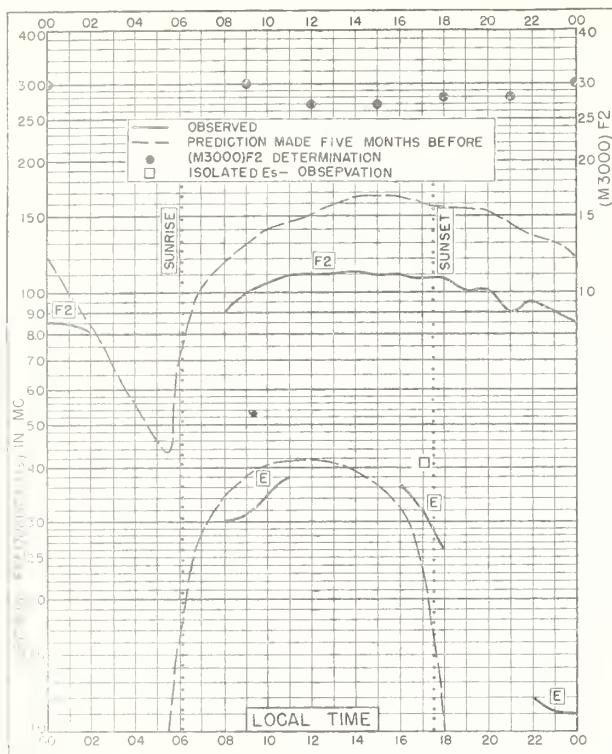


Fig. 85. CALCUTTA, INDIA  
22.6°N, 88.4°E      OCTOBER 1949

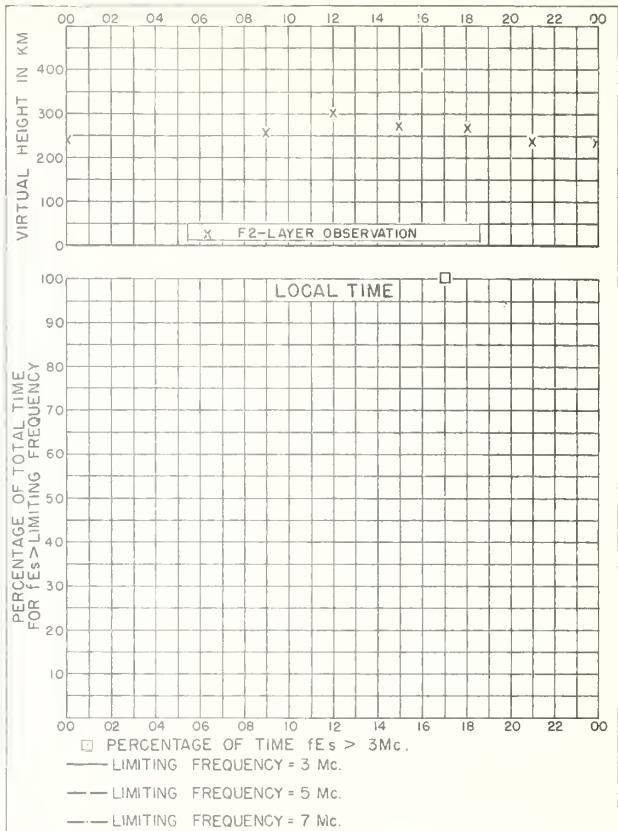


Fig. 86. CALCUTTA, INDIA      OCTOBER 1949

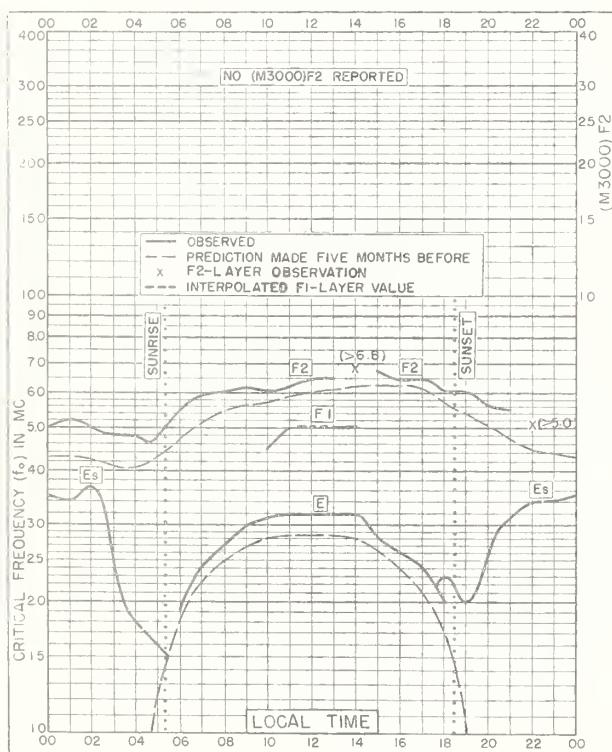


Fig. 87. KIRUNA, SWEDEN  
67.8°N, 20.5°E      SEPTEMBER 1949

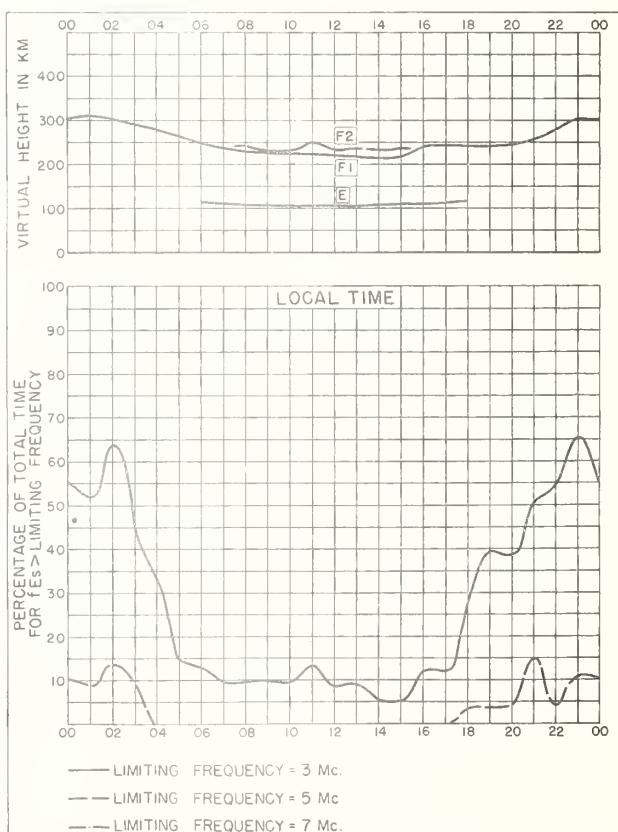


Fig. 88. KIRUNA, SWEDEN      SEPTEMBER 1949

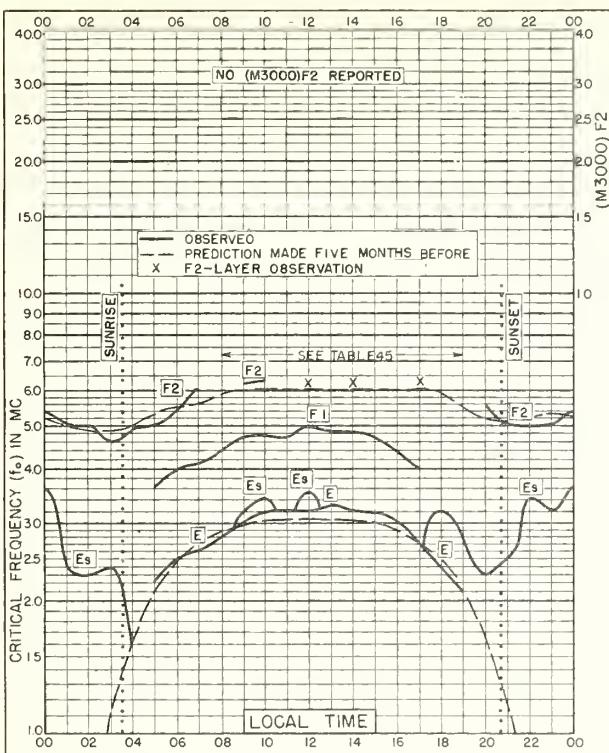


Fig. 89. KIRUNA, SWEDEN  
67.8°N, 20.5°E AUGUST 1949

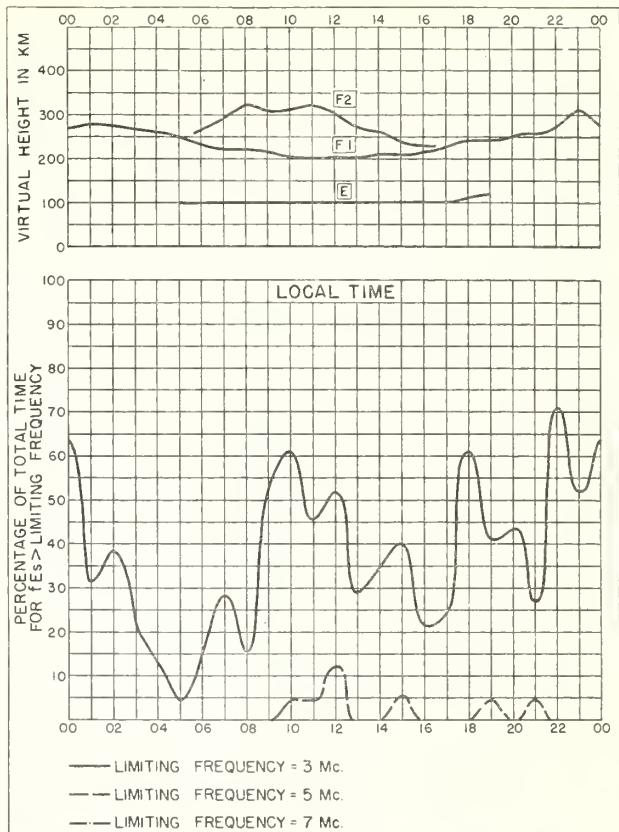


Fig. 90. KIRUNA, SWEDEN AUGUST 1949

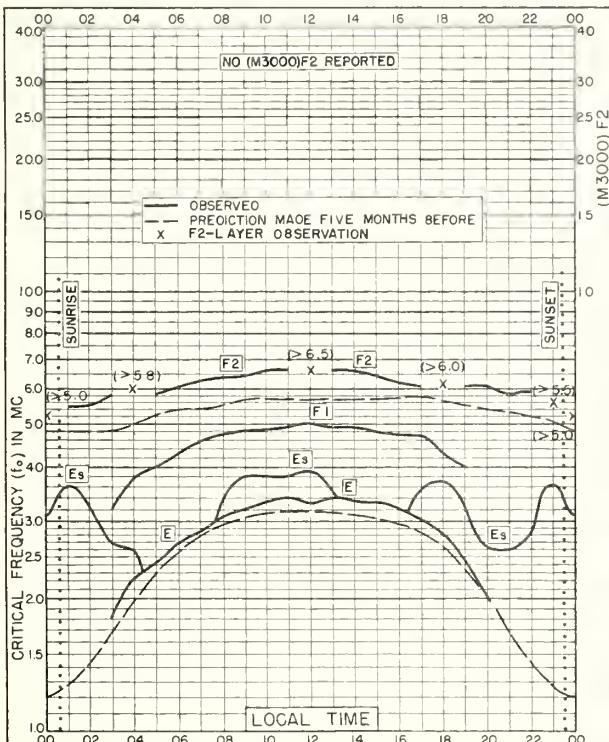


Fig. 91. KIRUNA, SWEDEN  
67.8°N, 20.5°E JULY 1949

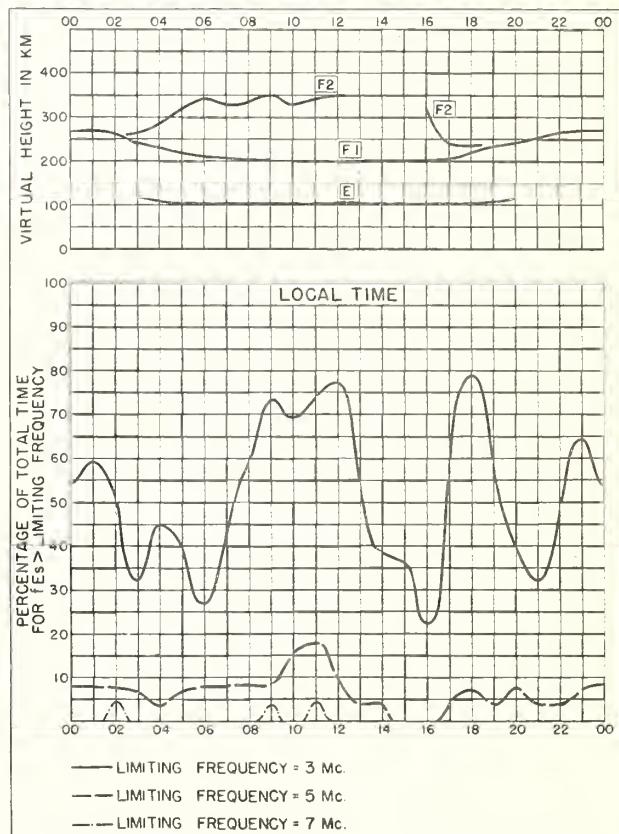
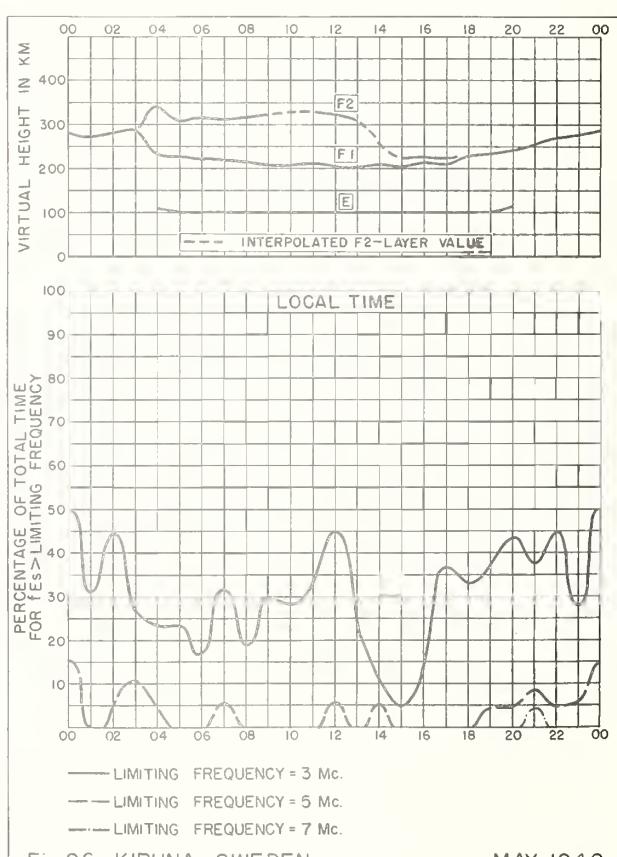
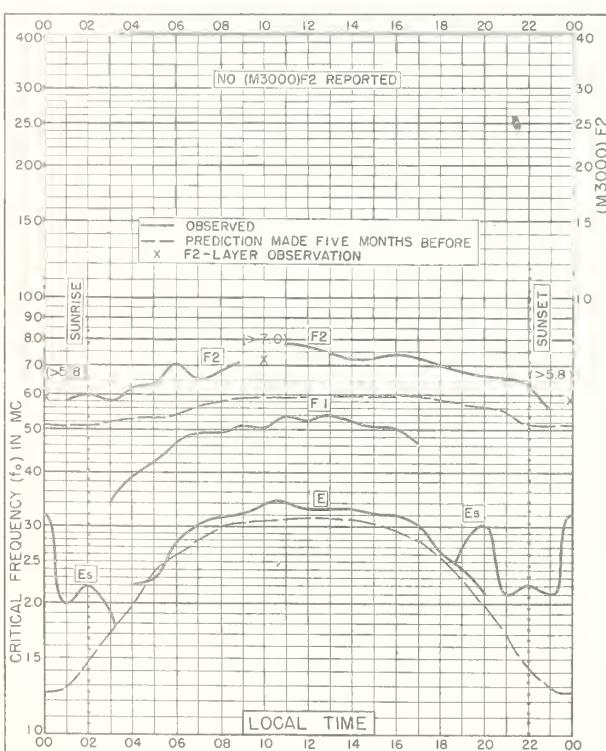
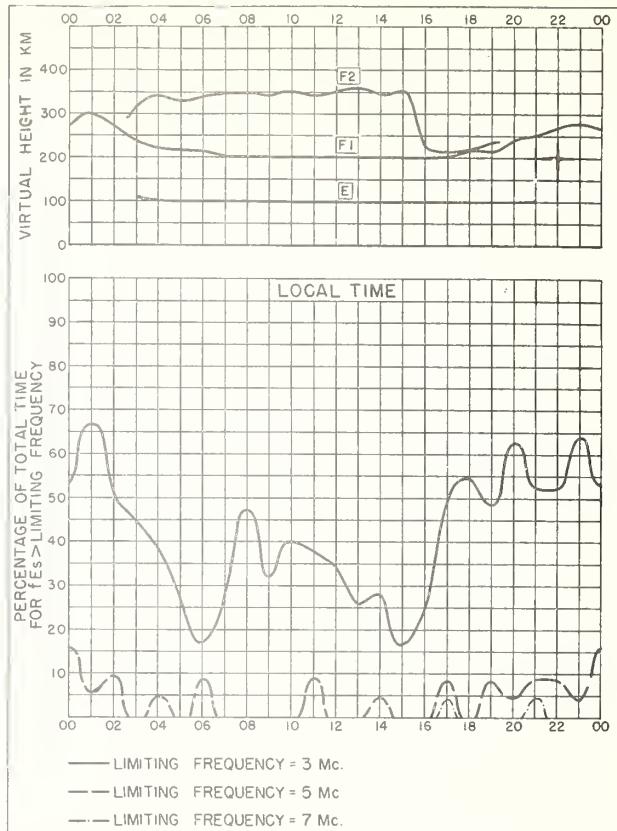
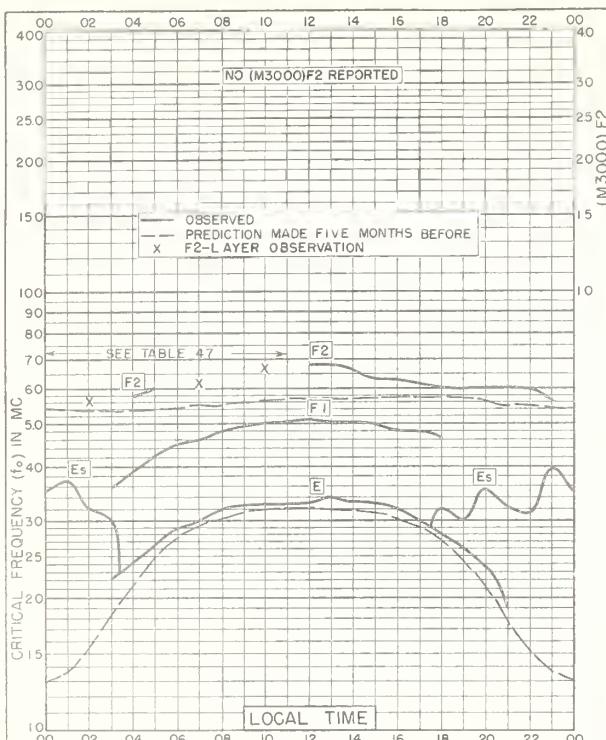


Fig. 92. KIRUNA, SWEDEN JULY 1949



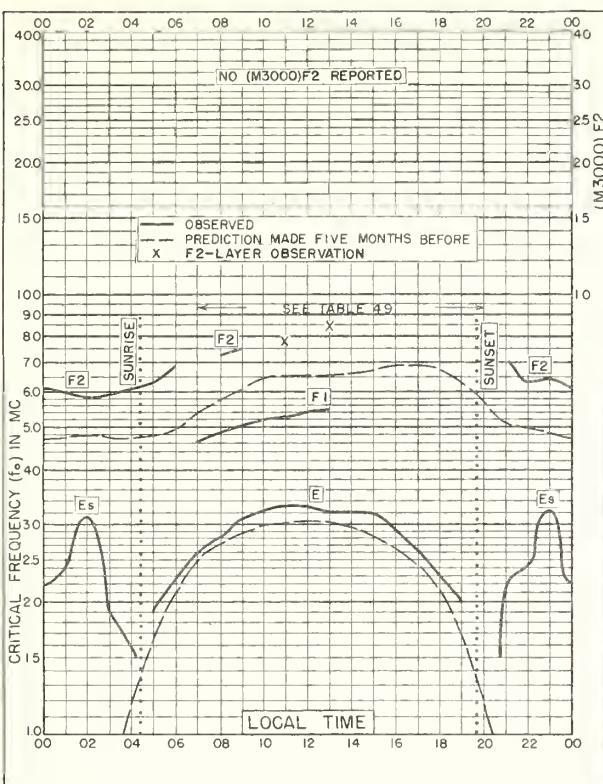


Fig. 97. KIRUNA, SWEDEN  
 67.8°N, 20.5°E

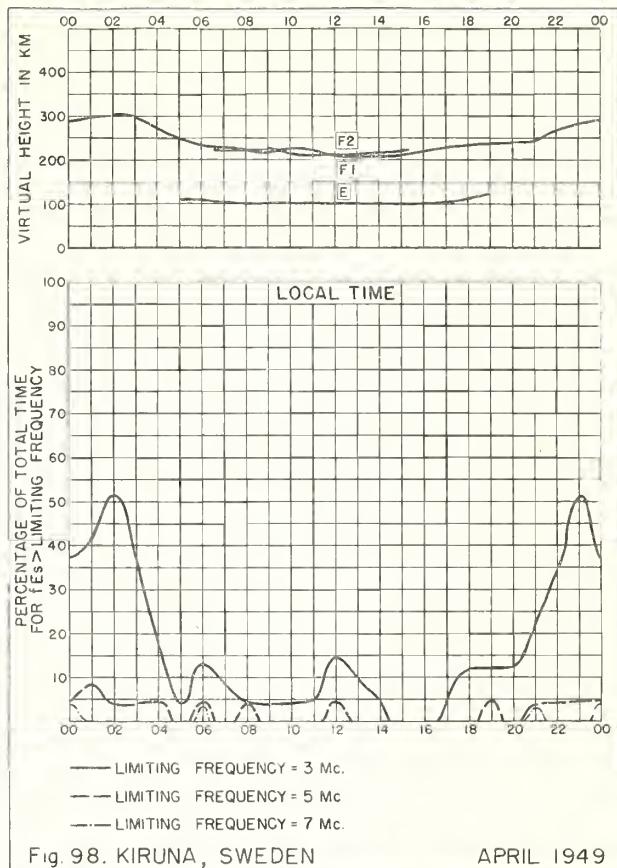


Fig. 98. KIRUNA, SWEDEN APRIL 1949

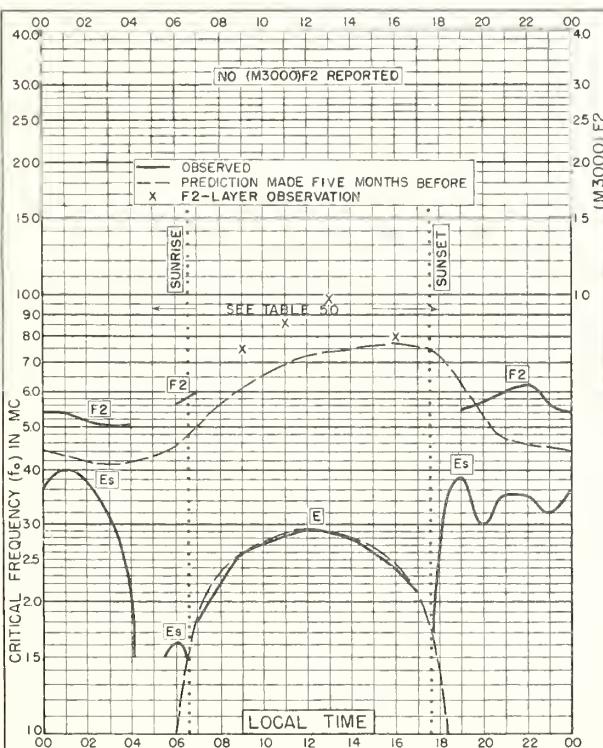


Fig. 99. KIRUNA, SWEDEN  
67.8°N, 20.5°E MARCH 1949

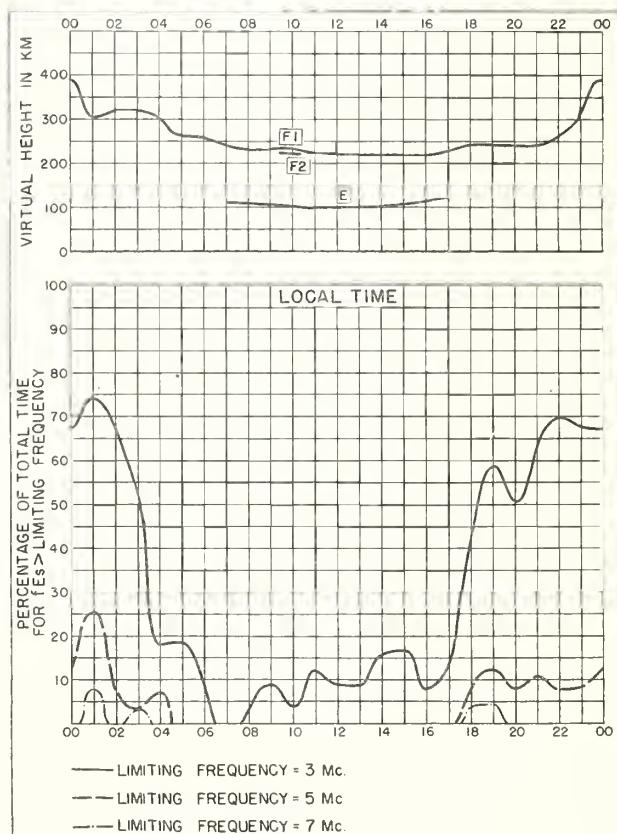


Fig. 100. KIRUNA, SWEDEN MARCH 1949

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Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

*Weekly:*

CRPL-J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

*Semimonthly:*

CRPL-Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

*Monthly:*

CRPL-D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499-, monthly supplements to TM 11-499; Dept. of the Navy, DNC-13-1 ( ), monthly supplements to DNC-13-1.)

CRPL-F. Ionospheric Data.

*Quarterly:*

\*IRPL-A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.

\*IRPL-H. Frequency Guide for Operating Personnel.

*Circulars of the National Bureau of Standards:*

NBS Circular 462. Ionospheric Radio Propagation.

NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

*Reports issued in past:*

IRPL-C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.

IRPL-G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.

IRPL-R. Nonscheduled reports:

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R5. Criteria for Ionospheric Storminess.

R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.

R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.

R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.

R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.

§R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.

§R12. Short Time Variations in Ionospheric Characteristics.

R14. A Graphical Method for Calculating Ground Reflection Coefficients.

§R15. Predicted Limits for F2-Layer Radio Transmission Throughout the Solar Cycle.

§R17. Japanese Ionospheric Data—1943.

R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.

§R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)

§R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.

R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.

§R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.

R26. The Ionosphere as a Measure of Solar Activity.

R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.

§R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.

R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.

§R33. Ionospheric Data on File at IRPL.

§R34. The Interpretation of Recorded Values of fEs.

R35. Comparison of Percentage of Total Time of Second-Multiple Es Reflections and That of fEs in Excess of 3 Mc.

IRPL-T. Reports on tropospheric propagation:

T1. Radar operation and weather. (Superseded by JANP 101.)

T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL-T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG-5.)

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