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 (Appendixes 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.

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.

The symbol W is included in the median count only when it replaces a height characteristic. This practice represents a change from that listed in issues previous to CRPL-F78.

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 E or G (and B when applied to the E region only) 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 foF2 is less than or equal to foF1, 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 foE. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 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:

Month	Predicted Sunspot Number						
	1951	1950	1949	1948	1947	1946	1945
December		86	108	114	126	85	38
November		87	112	115	124	83	36
October		90	114	116	119	81	23
September		91	115	117	121	79	22
August	57	96	111	123	122	77	20
July	60	101	108	125	116	73	
June	63	103	108	129	112	67	
May	68	102	108	130	109	67	
April	74	101	109	133	107	62	
March	78	103	111	133	105	51	
February	82	103	113	133	90	46	
January	85	105	112	130	88	42	

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 60 and figures 1 to 120 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, Western Australia

University of Graz:
Graz, Austria

Defence Research Board, Canada:
Baker Lake, Canada
Fort Chimo, Canada
Ottawa, Canada
Resolute Bay, Canada
St. John's, Newfoundland

Radio Wave Research Laboratories, National Taiman University, Taipeh, Formosa, China:
Formosa, China

The Royal Netherlands Meteorological Institute:
De Bilt, Holland

Icelandic Post & Telegraph Administration:
Reykjavik, Iceland

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Tiruchy (Tiruchirappalli), India

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

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
Rarotonga, Cook Is.

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

United States Army Signal Corps:
Adak, Alaska
Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Fairbanks, Alaska
Guam I.
Maui, Hawaii
Narsarssuak, Greenland
Point Barrow, Alaska
Puerto Rico, W. I.
San Francisco, California (Stanford University)
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 61 to 72 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 Ft. Belvoir, Virginia.

IONOSPHERIC STORMINESS AT WASHINGTON, D. C.

Table 73 presents ionosphere character figures for Washington, D. C., during August 1951, 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.

RADIO PROPAGATION QUALITY FIGURES

Table 74 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, July 1951, 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 75 lists the daily provisional Zürich relative sunspot numbers, R_Z, as communicated by the Swiss Federal Observatory. The American sunspot numbers which in the past were included in this table are now being prepared on a slower schedule and therefore do not appear in this issue.

OBSERVATIONS OF THE SOLAR CORONA

Tables 76 through 78 give the observations of the solar corona during August 1951 obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. 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 76 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 77 gives similarly the intensities of the first red (6374A) coronal line; and table 78, the intensities of the second red (6702A) coronal line; all observed at Climax in August 1951.

The following symbols are used in tables 76 through 78: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

OBSERVATIONS OF SOLAR FLARES

Table 79 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 Sacramento Peak, New Mexico. The remainder report to Meudon (Paris), and the data are taken from the Paris-URSIgram broadcast, monitored fairly regularly by the CRPL. The data on solar flares reported from Sacramento Peak, New Mexico, communicated by the High Altitude Observatory at 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 area (corrected for foreshortening), 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 80 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, Kw; (2) preliminary international character-figures, C; (3) geomagnetic planetary three-hour-range indices, Kp; (4) magnetically selected quiet and disturbed days.

Kw 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.

Kp 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, 5o 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 Kp 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 Kp 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 Kw, C and selected days. The Chairman of the Committee computes the planetary index.

SUDDEN IONOSPHERE DISTURBANCES

Tables 81 and 82 list respectively the sudden ionosphere disturbances observed at Ft. Belvoir, Virginia, August 1951, and at Lindau, Harz, Germany, July 1951.

ERRATA

1. CRPL-F84, p. 79, fig. 113: (M3000)F2 curve was plotted incorrectly.

2. CRPL-F84, p. 13, table 7, and p. 54, fig. 13: fEs and (M3000)F2 data were interchanged in both table and figure.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.2						2.8
01	280	3.8					2.3	2.8
02	300	3.3						2.8
03	300	3.0						2.8
04	300	2.8						2.7
05	300	2.7						(2.8)
06	270	4.0	240	—	120	2.0		3.1
07	330	4.7	230	3.7	110	2.5	3.5	3.0
08	370	5.0	220	4.2	110	2.9	4.0	2.9
09	360	5.5	200	4.4	100	3.1	3.7	2.8
10	360	5.6	200	4.5	110	3.3		2.9
11	400	5.8	200	4.7	110	3.4		2.8
12	380	5.8	200	4.7	100	3.5		2.8
13	400	5.9	210	4.7	100	3.4		2.8
14	370	6.1	210	4.6	100	3.4		2.9
15	370	6.0	220	4.5	100	3.2		2.8
16	350	6.0	220	4.3	110	3.0		2.9
17	310	6.0	230	4.0	110	2.8		2.9
18	300	6.4	250	—	120	2.3	3.4	2.9
19	250	7.0					3.0	3.0
20	250	6.6					2.3	2.9
21	250	5.8						2.9
22	260	5.0						2.8
23	280	4.4						2.8

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Point Barrow, Alaska (71.3°N, 156.8°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	4.5	---	---	---	---	7.7	3.1
01	300	4.7	240	---	---	---	8.2	3.0
02	310	4.7	280	---	---	---	7.6	3.0
03	310	4.4	260	---	---	---	5.4	3.0
04	370	4.4	260	3.5	110	---	4.5	3.0
05	430	4.6	250	3.7	100	2.4	4.2	2.7
06	440	4.7	230	3.8	100	2.6	4.4	2.7
07	470	4.7	230	3.9	100	3.1	4.6	2.6
08	470	4.8	230	4.0	100	---	4.9	2.6
09	480	4.9	220	4.2	100	3.2	4.8	2.6
10	500	4.8	220	4.2	100	3.3	4.5	2.6
11	480	4.8	210	4.2	100	3.4	4.0	2.6
12	500	4.7	210	4.3	100	3.4	3.2	2.6
13	460	4.8	210	4.3	100	3.4		2.7
14	440	4.9	210	4.3	100	3.2		2.7
15	430	5.1	220	4.3	100	3.2		2.7
16	390	5.3	230	4.2	100	3.2		2.8
17	380	5.3	230	4.2	100	3.0		2.9
18	390	5.1	220	4.0	100	2.9	3.0	2.8
19	380	4.7	240	3.8	100	2.8	3.0	2.9
20	320	4.5	260	3.8	110	2.6	4.3	3.0
21	330	4.6	280	3.5	---	---	4.9	3.0
22	300	4.6	250	---	---	---	4.8	3.0
23	310	4.6	---	---	---	---	7.6	3.0

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 3

Tromso, Norway (69.7°N, 19.0°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	---	---	---	---	---	---		---
08	415	5.4	220	4.3	100	3.0	5.6	2.8
09	400	5.5	220	4.3	100	3.1	5.8	2.8
10	395	5.6	220	4.4	100	(3.1)	5.6	2.8
11	395	5.6	210	4.5	100	3.1	5.8	2.8
12	375	5.7	215	4.5	100	3.2	5.6	2.9
13	395	5.6	215	4.5	100	3.2	8.0	2.8
14	380	5.4	215	4.4	105	3.2	5.8	2.9
15	355	5.4	215	4.3	105	(3.0)		3.0
16	360	5.4	225	4.2	105	2.9	5.4	2.9
17	340	5.3	230	4.2	105	2.8	5.4	3.0
18	310	5.3	250	3.9	105	(2.6)	5.3	3.1
19	320	5.0	(260)	---	110	(2.4)	5.4	3.0
20	320	4.8	---	---	105	---	5.0	3.0
21	330	4.8	---	---	100	---	5.4	2.9
22	350	4.7	---	---	100	---	5.6	2.8
23	(310)	(4.7)	---	---	105	---	5.4	(2.8)

Time: 15.0°E.
Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 4

Fairbanks, Alaska (64.9°N, 147.8°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	420	(3.9)			---	---		(2.6)
01	440	(4.0)			---	---	5.2	(2.5)
02	460	(4.3)			---	---	5.1	(2.3)
03	(480)	(4.6)	---	---	---	---	5.3	(2.3)
04	500	(5.1)	---	---	---	---	4.6	(2.4)
05	480	(5.2)	340	(3.7)	---	---	4.2	2.4
06	500	(5.2)	300	3.8	---	---	4.5	(2.4)
07	540	(5.1)	(300)	(4.0)	---	---		2.3
08	560	(5.1)	(300)	(4.1)	---	---		2.3
09	550	5.2	280	(4.2)	---	---		2.3
10	560	(5.4)	280	(4.3)	---	---		(2.4)
11	570	(5.2)	280	(4.2)	140	---		(2.3)
12	560	5.4	(280)	(4.3)	---	---		2.3
13	590	(5.0)	280	(4.3)	130	---		(2.2)
14	540	(5.2)	(270)	4.2	140	---		(2.4)
15	540	(5.2)	(290)	4.2	---	---		(2.3)
16	530	(5.1)	(300)	(4.1)	---	---		(2.4)
17	490	(5.1)	300	(3.9)	---	---		(2.4)
18	470	(5.2)	320	3.6	---	---		(2.5)
19	(440)	(5.2)	320	---	---	---		(2.5)
20	370	(4.7)	---	---	---	---		(2.6)
21	380	(4.5)			---	---		(2.6)
22	400	(4.1)			---	---		(2.6)
23	370	(3.8)			---	---	3.8	---

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 5

Anchorage, Alaska (61.2°N, 149.9°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	3.8						2.8
01	300	3.7					2.0	2.8
02	320	3.8						2.8
03	340	4.0	290	---	---	---		2.8
04	370	4.4	270	3.2	120	2.0		2.8
05	400	4.5	250	3.4	110	2.3	2.2	2.7
06	420	4.8	230	3.6	110	2.5		2.7
07	430	4.9	210	3.9	110	2.8		2.7
08	450	5.0	220	4.0	100	2.9		2.8
09	450	5.0	210	4.2	110	3.0		2.6
10	450	5.2	200	4.3	100	3.1		2.7
11	460	5.1	210	4.4	100	3.1		2.7
12	490	5.0	210	4.4	100	3.2		2.6
13	490	5.0	210	4.4	100	3.2		2.8
14	450	5.1	210	4.4	100	3.1		2.7
15	440	5.2	220	4.3	100	3.1		2.8
16	415	5.0	220	4.2	110	2.9		2.8
17	400	5.2	230	4.1	110	2.7		2.9
18	350	5.3	240	3.8	110	2.4		2.9
19	300	5.3	250	—	110	2.2		3.0
20	280	5.3	270	—			2.4	3.1
21	270	5.2						3.1
22	280	4.4						3.0
23	300	4.0						2.9

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 6

Narsarssuak, Greenland (61.2°N, 45.4°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(360)	(3.9)					4.4	(2.7)
01	(370)	(3.8)					4.4	(2.7)
02	380	(3.4)			---	---	4.0	(2.6)
03	(360)	(3.8)			(110)	---	4.0	(2.6)
04	(370)	(4.1)	---	---	(110)	---	4.2	(2.7)
05	360	(4.4)	---	---	(110)	---	4.4	(2.8)
06	320	(4.7)	290	4.0	(110)	(3.1)	4.2	2.8
07	380	4.9	260	4.0	(100)	(3.0)	3.7	2.8
08	440	5.0	250	4.2	100	(3.1)	3.5	(2.6)
09	470	5.2	250	4.2	110	(3.1)	3.3	2.6
10	480	5.1	240	4.3	110	(3.2)		2.6
11	460	5.1	240	4.3	110	(3.3)		2.6
12	500	5.2	240	4.3	(120)	(3.4)		2.4
13	470	5.3	240	4.4	(120)	(3.3)		2.6
14	470	5.4	240	4.4	110	(3.3)		2.6
15	500	5.4	250	4.3	110	(3.2)		2.5
16	450	5.2	250	4.2	110	(3.0)		2.6
17	420	(5.2)	280	4.2	110	(3.0)	3.7	2.7
18	380	5.1	300	4.0	120	(2.9)	4.8	2.8
19	(380)	(4.9)	300	3.7	(120)	(2.7)	4.8	(2.7)
20	340	(4.6)	310	(3.2)	120	(2.5)	4.4	(2.8)
21	350	(4.5)			(120)	---	4.4	(2.8)
22	360	(4.2)			---	---	4.5	(2.7)
23	(340)	(4.1)					5.8	(2.7)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 7

Oslo, Norway (60.0°N, 11.0°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.4						(2.9)
01	275	4.9						(2.8)
02	285	4.5					2.2	(2.8)
03	290	3.8	295	---			2.5	2.8
04	305	4.0	260	2.7	---	1.6	2.7	2.8
05	350	4.4	250	3.2	125	2.0	3.0	2.8
06	360	4.5	230	3.5	120	2.2	3.4	(2.8)
07	400	5.1	220	3.8	110	2.5	3.4	2.8
08	380	5.4	220	4.0	110	2.8	3.5	2.8
09	375	5.6	210	4.2	105	2.9	3.6	2.8
10	370	5.8	210	4.3	105	3.1	3.7	2.8
11	375	5.8	205	4.4	105	3.1	3.8	2.8
12	380	5.6	205	4.5	105	3.2	3.7	2.9
13	375	5.7	205	4.5	106	3.2	3.5	2.9
14	390	5.7	205	4.4	105	3.1	3.4	2.8
15	360	5.6	210	4.3	105	3.0	3.2	2.9
16	350	5.5	210	4.1	105	2.8	3.3	2.9
17	350	5.6	220	4.1	110	2.7	3.3	3.0
18	310	5.6	240	3.8	116	2.5	3.3	3.0
19	290	5.8	250	3.4	120	2.2	3.3	3.0
20	270	5.6	250	2.9	135	1.8	3.0	3.0
21	265	5.8	270	---	---	E	1.7	3.0
22	255	6.0						(2.9)
23	275	5.6						2.9

Time: 16.0°E.
Sweep: 1.3 Mc to 14.0 Mc in 8 minutes, automatic operation.

Table 8

Adak, Alaska (51.9°N, 176.6°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(5.1)					2.8	(2.8)
01	280	(4.3)					2.4	(2.8)
02	290	(3.9)					2.3	(2.7)
03	300	3.6	---	---			2.2	2.7
04	360	3.8	280	2.8	120	---	2.0	2.6
05	400	4.5	260	3.3	110	2.1	2.4	2.6
06	410	5.1	240	3.7	110	2.6	3.5	2.7
07	410	5.2	230	4.0	110	2.8	4.0	2.6
08	420	5.4	220	4.1	110	3.0	4.7	2.7
09	430	5.4	220	4.3	110	---	4.8	2.7
10	400	5.5	210	4.4	100	3.3	6.4	2.7
11	400	5.4	210	4.4	100	3.3	5.0	2.8
12	480	5.0	200	4.5	100	3.2	4.8	2.5
13	480	5.3	200	4.4	100	---	4.4	2.6
14	420	5.4	210	4.4	100	3.4	4.5	2.7
15	400	5.4	220	4.3	100	3.3	4.0	2.7
16	400	5.2	230	4.2	110	---	3.3	2.8
17	350	5.2	230	4.1	110	2.7	3.3	2.9
18	320	5.4	240	---	110	2.3	3.6	2.9
19	290	5.6	260	---	120	---	3.8	2.9
20	270	6.2					3.9	2.9
21	270	6.3					3.9	2.8
22	260	5.8					3.4	2.8
23	270	5.3					3.6	2.8

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 9

San Francisco, California (37.4°N, 122.2°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(300)	(4.6)					3.2	(2.7)
01	(300)	4.6					3.6	2.7
02	290	(4.4)					3.0	(2.7)
03	290	4.1					2.9	2.8
04	(290)	3.9					2.3	2.7
06	290	3.6	---	---	---	---		2.8
06	370	4.5	240	3.5	(120)	2.3	3.3	2.8
07	380	5.0	230	3.9	110	2.7	3.7	2.8
08	420	5.4	220	4.3	110	3.0	4.2	2.7
09	390	(5.8)	220	(4.6)	110	(3.2)	4.6	(2.8)
10	410	6.2	210	(4.7)	110	3.4	4.4	2.7
11	420	6.2	200	(4.8)	(110)	(3.4)	4.1	2.7
12	440	6.2	210	(4.8)	(110)	(3.5)		2.6
13	400	6.4	220	(4.7)	110	(3.5)		2.7
14	380	6.3	220	(4.7)	(110)	(3.4)	3.7	2.7
16	380	6.2	220	(4.6)	(110)	(3.4)		2.8
16	350	6.6	230	4.4	110	(3.1)	3.5	2.8
17	340	6.3	240	4.2	110	2.9	4.0	2.9
18	300	6.1	240	3.8	120	2.5	4.3	3.0
19	270	6.3	---	---	---	---	3.6	3.0
20	250	6.8					3.7	3.0
21	(250)	6.4					4.7	3.0
22	(260)	5.4					4.0	2.9
23	(280)	5.0					3.8	2.8

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 10

White Sands, New Mexico (32.3°N, 106.5°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	5.0					4.0	2.9
01	280	4.7					3.0	2.9
02	260	4.7					2.4	3.0
03	260	4.2					3.0	3.0
04	270	3.9					3.0	3.0
05	270	3.7	---	---	---	---	2.5	3.1
06	280	4.7	230	3.4	100	(2.0)	3.2	3.2
07	320	5.4	210	4.0	100	(2.6)	3.9	3.0
08	350	5.7	200	4.3	100	(3.1)	4.2	2.9
09	370	5.9	190	4.6	100	3.3	4.6	3.0
10	400	6.0	190	4.8	100	(3.4)	5.2	2.8
11	400	6.3	190	4.8	100	3.5	4.4	2.8
12	360	6.8	190	4.8	100	3.6	4.3	2.8
13	370	7.0	200	4.8	100	3.6	4.1	2.8
14	340	7.4	200	4.7	100	3.5	4.0	2.9
15	320	7.2	200	4.6	100	3.4		3.0
16	340	6.8	210	4.5	100	3.2	3.5	2.9
17	300	6.6	220	4.2	100	2.9	3.8	3.1
18	280	6.6	220	3.6	100	2.4	3.7	3.1
19	250	6.9	---	---			3.1	3.1
20	230	6.9					3.0	3.1
21	230	6.1					3.2	3.1
22	240	5.5					3.1	3.0
23	260	5.0					3.4	2.9

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 11

Okinawa I. (26.3°N, 127.8°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.2					4.2	2.8
01	270	7.6					4.4	2.9
02	260	6.8					3.9	2.9
03	270	5.9					3.2	2.9
04	270	(5.1)					3.1	(2.8)
05	270	5.1					3.2	2.9
06	250	6.0	240	---	120	2.1		3.1
07	260	7.0	230	---	110	(2.7)	4.7	3.2
08	280	6.6	(230)	---	110	3.2	5.7	3.1
09	330	6.7	(230)	---	110	3.4	6.8	3.0
10	370	6.8	210	(5.0)	110	3.4	6.8	2.6
11	390	7.6	(230)	(5.0)	110	(3.5)	5.6	2.7
12	380	8.2	230	(5.0)	110	(3.6)	6.2	2.6
13	370	8.6	(230)	4.9	(110)	(3.6)	6.3	2.7
14	350	9.6	(230)	4.8	110	(3.6)	5.9	2.8
16	340	10.0	250	(4.8)	110	(3.5)	6.2	2.8
16	320	10.2	230	4.6	110	3.3	5.5	2.9
17	290	10.2	230	---	110	(2.9)	4.9	3.0
18	270	9.6	240	---	120	2.1	5.0	3.0
19	260	8.4					4.7	3.0
20	280	7.4					4.6	2.8
21	310	7.2					3.8	2.7
22	300	7.0					3.8	2.7
23	310	7.2					3.8	2.7

Time: 127.6°E.
Sweep: 1.0 Mc to 26.0 Mc in 15 seconds.

Table 12

Maui, Hawaii (20.8°N, 156.5°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.0					2.3	2.8
01	280	6.9					2.7	2.8
02	270	6.4					3.0	2.9
03	270	6.0					2.3	2.9
04	270	5.6					2.3	2.8
05	270	5.2					2.4	2.9
06	270	5.0	---	---	120	(1.5)	2.4	3.0
07	290	5.8	240	---	110	2.4	3.9	3.0
08	340	6.4	220	4.3	100	2.9	4.2	2.7
09	400	7.0	210	4.7	100	3.2	5.4	2.4
10	400	8.0	200	4.8	100	3.4	5.2	2.4
11	420	8.8	200	4.8	100	3.6	6.1	2.5
12	400	9.5	210	4.9	100	3.6	4.7	2.6
13	380	9.8	200	4.8	110	3.6	4.3	2.7
14	360	10.2	220	4.8	110	3.6	4.3	2.7
15	350	10.6	220	4.7	100	3.5	4.0	2.7
16	330	10.4	220	4.6	110	3.2	3.7	2.8
17	310	10.6	230	4.2	110	3.0	4.2	3.0
18	280	10.6	240	(3.7)	120	2.3	3.7	3.0
19	250	10.4			---	---	3.3	3.1
20	230	8.7					3.4	3.0
21	260	8.2					3.2	2.8
22	280	7.8					2.9	2.8
23	290	7.2					3.6	2.8

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16 seconds.

Table 13

Puerto Rico, W. I. (18.5°N, 67.2°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	6.6						2.9
01	250	7.0						3.0
02	230	6.5						3.1
03	250	6.0						3.0
04	(250)	5.6						3.0
05	270	5.2						3.0
06	260	5.0	---	---	---	---		3.1
07	270	6.2	230	---	100	2.2	4.4	3.2
08	290	6.4	210	4.2	100	(2.8)	4.7	3.1
09	340	6.8	210	4.4	100	3.2	4.9	2.9
10	380	6.8	210	4.7	100	3.4	4.9	2.7
11	360	7.6	200	4.7	100	3.6	4.5	2.8
12	350	8.8	200	4.8	100	3.6	5.2	2.8
13	330	9.0	200	4.8	100	3.6	4.5	2.8
14	320	9.6	200	4.8	100	3.6	4.6	2.8
15	320	9.4	200	4.6	100	3.5		2.8
16	310	9.2	210	4.5	100	3.3		2.9
17	290	9.1	220	4.2	100	2.9	4.6	3.0
18	270	9.2	230	---	100	2.4	3.8	3.0
19	240	8.7					3.3	3.0
20	240	8.0					2.8	2.9
21	(260)	7.5					2.9	2.9
22	(270)	6.8					2.6	2.9
23	(280)	6.8						2.8

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 14

Guam I. (13.6°N, 144.9°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	5.8					1.8	2.7
01	320	5.0					1.5	2.8
02	300	4.8						2.8
03	310	4.6						2.8
04	280	4.6						2.9
05	240	4.2						3.2
06	250	4.8			---	---		3.3
07	250	7.0			120	2.2	3.0	3.2
08	280	7.2	230	---	120	(2.8)	3.8	3.1
09	(320)	7.5	220	---	120	3.1	3.8	2.7
10	360	7.9	220	4.7	110	3.3	3.1	2.6
11	380	8.4	220	4.8	110	3.6	4.0	2.4
12	400	9.0	210	4.8	110	(3.6)	3.7	2.5
13	400	9.6	(210)	4.8	110	3.6	3.6	2.6
14	390	9.9	220	4.9	(120)	3.5	4.5	2.6
15	380	10.2	220	4.8	120	3.4	5.4	2.5
16	360	10.2	230	4.6	120	3.2	5.6	2.5
17	(320)	10.8	240	---	120	2.8	5.0	2.6
18	260	10.8	---	---	120	2.2	4.5	2.6
19	280	10.6					4.0	2.8
20	290	9.8					3.0	2.8
21	300	8.8					2.0	2.8
22	320	8.1					2.0	2.7
23	320	6.5					2.6	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconde.

Table 16

De Bilt, Holland (52.1°N, 5.2°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	(>5.8)						2.8
01	290	5.2						2.8
02	275	5.1					2.4	2.8
03	290	5.0	---	---	---	E	2.7	2.8
04	300	5.0	250	3.1	115	2.0	3.4	2.9
05	306	6.6	230	3.8	100	2.4	3.8	2.9
06	315	6.0	225	4.2	100	2.7	4.6	2.9
07	320	6.4	210	4.4	100	3.1	4.4	3.0
08	320	6.6	210	4.6	100	3.3	4.6	3.0
09	305	6.8	210	4.8	100	3.4	4.8	3.0
10	305	6.8	205	4.7	100	3.5	4.6	3.1
11	310	6.7	200	4.8	100	3.5	4.7	3.0
12	345	6.6	200	4.9	100	3.6	4.3	3.0
13	350	6.6	200	4.8	100	3.5	4.3	3.0
14	320	6.4	200	4.6	100	3.5	3.7	2.9
15	320	6.4	210	4.7	100	3.4	4.2	2.9
16	305	6.6	210	4.5	100	3.2	3.9	3.0
17	300	6.6	215	4.2	100	2.9	3.9	3.0
18	280	6.8	240	4.0	100	2.5	4.2	3.1
19	265	6.6			110	2.1	3.9	3.1
20	260	7.2			---	E	3.7	3.0
21	260	7.2					3.2	3.0
22	260	6.9						2.9
23	280	6.2						2.8

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 7 minutes, automatic operation.

Table 16

Graz, Austria (47.1°N, 15.6°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04	290	6.1					4.8	
05	260	5.7	245	3.6			4.2	
06	300	6.6	220	4.1	110	2.8	4.0	
07	300	6.7	210	4.5	100	3.0	5.0	
08	305	7.1	210	4.6	100	3.2	5.0	
09	300	7.3		4.9	100	3.4	5.3	
10	310	7.2		4.9	100	3.6	5.0	
11	310	7.8		6.0	100	3.6	5.4	
12	325	7.2	200	6.1	100	3.7	6.0	
13	330	7.0		5.0	(100)	(3.8)	5.0	
14	320	7.0		5.0	100	3.6	5.0	
15	310	7.2	200	4.9	100	3.4	4.6	
16	300	7.3	200	4.9	100	3.3	4.0	
17	300	7.0	220	4.2	105	3.0	5.0	
18	280	7.3				2.7	5.0	
19	260	7.7					4.5	
20	250	7.8					6.0	
21	260	7.4					5.4	
22								
23								

Time: 15.0°E.
Sweep: 2.5 Mc to 12.0 Mc in 2 minutes.

Table 17

Boston, Massachusetts (42.4°N, 71.2°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.0					2.8	2.9
01	280	4.2					2.8	2.8
02	300	3.8					3.2	2.8
03	280	3.4						2.8
04	270	3.3					2.8	3.0
05	240	4.0	---	---	120	2.2	2.4	3.0
06	280	4.6	230	3.8	120	2.7	3.0	3.1
07	320	5.5	220	4.0	120	3.0	3.3	3.1
08	350	5.7	220	4.5	120	3.1	3.9	3.0
09	340	6.5	220	4.8	120	3.2	4.1	3.0
10	380	6.0	210	4.6	120	3.2	4.1	2.8
11	380	5.6	220	4.6	120	3.2	4.1	3.0
12	360	5.7	220	4.6	120	3.2	3.9	(2.9)
13	350	6.1	220	4.5	120	3.4	3.4	3.0
14	380	6.0	220	4.6	120	3.4		2.8
15	370	6.0	230	4.6	120	3.3		2.8
16	350	6.2	240	4.2	120	3.1		2.9
17	330	6.0	250	4.0	120	2.8	4.0	3.0
18	300	6.2	240	---	130	2.4	4.6	3.0
19	270	6.2					3.6	3.1
20	270	6.0					3.5	3.0
21	260	5.7					2.8	3.0
22	280	5.8					3.5	2.9
23	280	6.5					3.4	2.8

Time: 76.0°W.
Sweep: 0.8 Mc to 15.0 Mc in 1 minute.

Table 18

Baton Rouge, Louisiana (30.5°N, 91.2°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	4.9					3.4	2.8
01	300	4.6					3.5	2.8
02	280	4.6					3.3	2.9
03	290	4.3					3.0	2.9
04	270	4.1					3.2	2.9
05	280	4.2			---	---	3.6	3.0
06	280	4.8	250	---	120	2.1	3.4	3.1
07	300	6.5	230	4.0	110	2.7	3.8	3.1
08	360	5.6	220	4.2	110	3.1	4.6	2.8
09	400	6.4	220	4.6	110	3.2	4.1	2.8
10	380	6.7	(210)	4.8	110	3.3	3.9	2.8
11	380	6.8	---	4.8	110	3.3	4.0	2.8
12	380	6.8	(240)	5.0	110	---	3.7	2.8
13	380	7.4	(250)	5.1	110	3.4	3.6	2.8
14	360	7.4	230	4.9	110	3.4		2.8
15	360	7.0	240	4.6	110	3.4		2.8
16	350	7.0	240	4.3	110	3.2	3.7	2.8
17	320	7.2	240	4.1	120	2.8	4.0	2.9
18	300	7.8	250	(3.6)	120	2.2	4.7	2.9
19	260	7.9					3.7	3.0
20	250	7.2					3.8	3.0
21	250	6.2					4.0	3.0
22	270	5.2					4.0	2.9
23	300	5.1					3.6	2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconde.

Table 19

Guam I. (13.6°N, 144.9°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(360)	(5.0)					2.3	(2.7)
01	(350)	(4.7)					2.4	(2.7)
02	(350)	(4.6)						(3.0)
03	(340)	(4.6)						(2.8)
04	270	4.4						(3.0)
05	250	3.9						3.3
06	250	4.9						3.2
07	240	6.8			120	2.4	3.2	3.1
08	(260)	7.1	220	---	110	3.0	3.8	2.9
09	(320)	7.6	220	---	(110)	(3.3)	4.1	2.6
10	370	8.2	220	4.6	110	---		2.6
11	380	8.7	(220)	4.8	---	---		2.5
12	410	9.0	230	4.9	(110)	---		2.4
13	410	9.4	(210)	4.7	(120)	---		2.5
14	400	10.0	220	(4.6)	(120)	3.7	4.8	2.6
15	380	10.6	(220)	(4.6)	(110)	(3.4)	4.0	2.6
16	370	10.7	220	4.6	110	3.2		2.6
17	(330)	11.6	240	---	120	(2.9)	4.8	2.7
18	(260)	11.2			---	---	6.4	2.8
19	270	10.5					4.4	2.8
20	(300)	8.6					2.5	2.8
21	(340)	7.8						(2.6)
22	(380)	6.8						(2.6)
23	(380)	(5.6)						(2.6)

Time: 150.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 20

Resolute Bay, Canada (74.7°N, 94.9°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.0	---	---				3.0
01	270	4.8	---	---				3.0
02	280	4.6	260	---				3.0
03	280	4.8	250	---				3.0
04	300	4.8	240	3.4	---	---		3.0
05	320	4.9	240	3.4	---	---		3.0
06	330	4.8	220	3.8	---	---		3.0
07	380	5.0	220	3.8	---	---		3.0
08	360	4.8	220	3.8	100	---		2.8
09	360	6.2	220	3.9	---	---		3.0
10	360	5.4	220	3.9	110	3.2		3.0
11	380	(5.4)	210	3.9	---	---		3.0
12	(380)	(5.4)	200	3.9	---	---		(2.9)
13	(400)	(4.8)	220	4.0	---	---		(3.9)
14	380	5.8	220	4.0	100	---		2.9
15	(370)	5.0	220	4.0	---	---		(3.0)
16	390	5.4	210	4.0	---	---		2.9
17	360	5.3	220	3.9	---	---		2.9
18	370	5.2	230	3.8	---	---		2.9
19	340	5.0	230	3.8	---	---		3.0
20	300	5.2	250	---				3.0
21	280	5.2	250	---				3.0
22	280	5.1	260	---				3.0
23	280	5.0	---	---				3.0

Time: 90.0°W.
Sweep: 1.0 Mc to 26.0 Mc in 15 seconde.

Table 21

Baker Lake, Canadn (64.3°N, 96.0°W) May 1961

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.0	---	---				2.8
01	310	5.0	---	---				2.8
02	300	5.0	---	---				2.8
03	320	4.9	---	---	---	---		2.8
04	320	4.7	---	---	130	2.0		2.9
06	340	4.8	300	---	130	2.0		2.8
06	400	4.9	290	3.7	120	2.3		2.8
07	480	5.0	280	3.8	120	2.8		2.8
08	610	4.9	270	4.0	110	3.3		2.6
09	550	4.9	260	4.1	120	3.4		2.6
10	520	6.0	260	4.2	110	3.4		2.6
11	560	5.0	260	4.3	110	3.5		2.6
12	650	6.2	270	4.3	110	3.5		2.7
13	490	6.5	270	4.4	110	3.4		2.6
14	480	6.0	250	4.2	110	3.2		2.7
15	460	8.0	260	4.3	110	3.2		2.8
16	430	5.8	260	4.2	110	3.0		2.7
17	410	5.6	280	4.1	120	2.9		(2.8)
18	400	6.8	280	3.9	120	2.8		2.8
19	350	5.8	280	---	130	2.4	4.8	2.8
20	330	5.6	---	---	---	---	6.0	2.8
21	320	5.2			---	---	7.0	2.8
22	310	5.0					6.0	2.8
23	310	5.2					3.8	2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 35.0 Mc in 16 seconds.

Table 22

Fort Chimo, Canada (58.1°N, 68.3°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	4.0			---	---	4.8	(2.5)
01	300	4.1			---	---	4.1	---
02	320	3.8			120	2.2	4.0	(2.7)
03	320	3.6			100	2.4	4.0	2.8
04	320	3.9			100	2.8		2.7
06	320	4.3	300	3.9	100	3.3	3.0	3.0
06	380	4.7	260	4.0	100	3.5		2.8
07	500	4.7	260	4.2	100	3.6		2.6
08	400	4.9	240	4.3	100	3.5		2.8
09	440	5.0	230	4.3	100	3.4		2.7
10	440	6.0	240	4.5	100	3.6		2.6
11	420	5.4	230	4.5	100	3.5		2.6
12	430	5.7	230	4.5	100	3.6		2.6
13	400	5.7	230	4.4	100	3.5		2.6
14	420	5.7	220	4.4	100	3.3		2.5
16	400	5.9	230	4.3	100	3.3		2.6
16	380	5.7	250	4.2	100	3.0		2.7
17	350	6.5	260	4.0	100	3.0		2.7
18	330	5.3	280	3.8	100	3.0		2.7
19	300	5.1			100	2.8	6.0	2.7
20	300	4.8			120	2.2	5.0	2.8
21	280	4.6			---	---	5.2	(2.8)
22	300	4.0			---	---	5.0	(2.6)
23	280	3.8			---	---	4.7	(2.7)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 23

St. John's, Newfoundland (47.6°N, 52.7°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.1					2.7	2.7
01	300	3.8					2.7	2.8
02	290	3.6					3.1	2.8
03	300	3.0					3.5	2.8
04	280	3.3			---	---	2.5	3.0
05	270	4.2	250	3.4	110	2.3	3.6	3.1
06	300	4.6	240	3.7	100	2.7	4.1	3.0
07	340	6.0	230	4.0	100	3.0	5.0	3.0
08	350	6.4	220	4.3	100	3.2	5.0	2.9
09	360	6.6	220	4.5	100	3.3	6.0	2.9
10	400	5.8	220	4.6	100	3.4	6.0	2.8
11	390	6.3	220	4.7	100	3.4	6.0	2.8
12	380	6.2	210	4.7	100	3.6	5.0	2.8
13	370	6.4	220	4.7	100	3.5	5.0	2.8
14	370	6.6	230	4.6	100	3.4	4.8	2.8
16	370	6.7	230	4.5	100	3.2	5.0	2.8
16	330	7.3	240	4.3	100	3.0		2.8
17	320	7.2	250	3.8	110	2.6	4.0	2.8
18	280	7.6	260	3.2	110	2.2	3.0	2.9
19	260	7.2			---	---	2.0	2.9
20	260	6.5					1.6	2.8
21	270	6.6					1.5	2.8
22	280	5.2					1.5	2.8
23	290	4.6					1.3	2.8

Time: 60.0°W.
Sweep: 0.6 Mc to 20.0 Mc, automatic operation.

Table 24

Ottawa, Canada (45.4°N, 76.7°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.9					2.0	2.8
01	300	3.7					1.9	2.7
02	300	3.2					2.0	2.7
03	300	2.9					1.8	2.8
04	300	3.0					1.9	2.8
06	270	3.9					2.3	3.0
08	280	4.4	240	3.8	110	2.7		3.0
07	320	4.6	230	4.0	110	2.9		3.0
08	390	5.1	220	4.2	110	3.0		2.9
09	430	5.2	220	4.4	110	3.4		2.8
10	400	5.6	210	4.5	100	3.6		2.8
11	420	5.6	210	4.8	100	3.6		2.8
12	420	5.6	200	4.8	100	3.8		2.7
13	420	5.6	220	4.8	100	3.8		2.7
14	400	6.0	220	4.8	100	3.8		2.8
15	380	6.0	230	4.6	100	3.5		2.8
16	360	6.3	230	4.4	100	3.3		2.8
17	340	6.7	230	4.0	110	3.0		2.8
18	300	7.0	250	3.8	110	2.7		2.8
19	270	8.9	250	---	120	2.0	2.3	2.9
20	260	6.6					2.0	2.9
21	260	6.9					1.8	2.9
22	280	6.0					1.8	2.8
23	290	4.4					1.8	2.8

Time: 76.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 26

Formosa, China (25.0°N, 121.0°E) May 1961

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	9.4					5.8	3.0
01	280	9.0					4.6	3.2
02	260	7.8	---	---	---	---	4.3	3.4
03	250	6.4	---	---	---	---	4.4	3.4
04	270	6.0	---	---	---	---	3.7	3.3
05	270	5.6	---	---	---	---	3.6	3.4
06	260	6.4	225	4.0	120	2.9	3.5	3.5
07	260	7.3	220	4.2	120	3.2	4.9	3.1
08	280	7.9	230	4.6	120	3.5	5.2	3.4
09	310	8.6	240	4.8	120	3.5	5.4	3.2
10	320	9.6	230	5.2	120	4.3	5.6	3.0
11	335	11.2	220	5.2	120	---	6.4	2.9
12	325	12.1	230	6.3	110	4.2	4.8	3.0
13	320	12.8	240	6.9	120	4.3	4.9	3.2
14	320	13.5	240	5.8	120	4.1	5.6	3.1
15	320	13.6	240	6.7	120	3.8	6.6	3.2
16	300	13.7	240	6.5	120	3.5	6.4	3.3
17	280	13.5	240	4.6	120	3.3	6.0	3.3
18	260	12.6	230	4.0	120	3.0	4.8	3.4
19	250	12.0	---	---	120	3.1	4.6	3.4
20	280	10.5					5.4	3.1
21	280	9.8					4.4	3.1
22	295	8.9					4.6	3.0
23	320	9.0					4.9	2.8

Time: 120.0°E.
Sweep: 2.3 Mc to 14.5 Mc in 15 minutes, manual operation.

Table 26

Puerto Rico, W. I. (18.5°N, 67.2°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.3						2.8
01	260	7.4						3.0
02	260	7.3						3.0
03	250	6.5						3.0
04	250	5.8					2.1	3.0
05	260	5.2						3.0
06	260	5.1	---	---	110	(1.6)	3.0	3.1
07	240	6.2	230	---	100	2.4	3.7	3.2
08	290	7.0	220	4.3	(100)	3.0	4.1	3.0
09	310	7.4	220	4.5	(100)	3.3	4.0	2.9
10	320	8.1	220	4.7	110	3.6		2.8
11	330	9.2	220	4.9	100	3.7		2.7
12	350	9.9	220	5.0	110	3.8	5.2	2.7
13	330	10.9	230	5.0	110	3.8	6.4	2.8
14	320	11.3	230	4.9	110	3.7	5.6	2.9
15	320	11.2	220	4.7	110	3.5	6.3	2.9
16	310	11.1	230	4.6	110	3.3	4.9	2.9
17	290	10.9	230	4.2	110	2.9	4.6	2.9
18	260	10.4	240	---	110	(2.1)	3.7	3.0
19	230	9.4			---	---	2.9	3.0
20	(250)	8.2					1.9	2.8
21	(280)	7.6					2.6	2.8
22	(300)	7.3						2.8
23	290	7.3						2.7

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 27

Watheroo, W. Australia (30.3°S, 116.9°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.6					3.1	2.9
01	270	3.7					3.1	2.9
02	270	3.8					3.1	2.9
03	260	4.0					2.9	2.9
04	250	4.0					2.8	3.0
05	240	3.7					3.0	3.0
06	240	3.2					2.8	3.0
07	230	6.2				1.9	2.5	3.4
08	230	7.0	220	3.2		2.5	3.2	3.5
09	250	8.0	230	4.0		2.9	3.1	3.4
10	260	8.6	230	4.3		3.1	3.3	3.3
11	270	8.9	230	4.5		3.2	3.4	3.3
12	260	8.8	230	4.5		3.2	3.7	3.2
13	270	8.6	230	4.5		3.3	3.6	3.2
14	270	9.1	230	4.3		3.2	3.5	3.2
15	260	8.9	230	4.0		3.0	3.2	3.3
16	240	8.5	230	3.2		2.5	3.2	3.3
17	220	7.6				1.8	3.1	3.4
18	220	6.0					3.0	3.2
19	230	4.6					2.8	3.1
20	240	3.9					2.8	3.1
21	260	3.7					2.8	3.0
22	260	3.6					2.6	2.9
23	270	3.6					2.8	2.9

Time: 120.0°E.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 28

Fort Chimo, Canada (58.1°N, 68.3°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(4.0)			---	---	4.4	---
01	330	(4.6)			---	---	4.5	---
02	330	(3.8)			---	---	4.4	---
03	(360)	(3.0)			110	3.0	4.7	(2.8)
04	(400)	---			120	2.7	4.8	---
05	(320)	(4.0)			---	---	4.9	---
06	360	4.5	---	---	---	---	5.0	(3.0)
07	380	4.8	260	---	100	3.8		2.8
08	410	4.8	250	4.1	100	3.6		2.7
09	460	6.0	230	4.2	100	3.6		2.6
10	490	5.0	230	4.2	100	3.3		2.4
11	480	5.4	230	4.2	110	2.8		2.5
12	420	5.8	240	4.3	100	3.4		2.5
13	420	6.0	240	4.2	100	3.4		2.7
14	400	5.9	240	4.2	110	3.2		2.6
15	380	5.6	260	4.1	100	2.7		2.7
16	380	6.0	260	3.9	110	2.7		2.6
17	350	5.2	270	---	110	2.7		2.7
18	300	4.8			110	2.7	5.8	(2.9)
19	300	4.5			---	---	5.6	2.7
20	310	4.9			---	---	5.8	(2.6)
21	290	(4.9)			---	---	5.6	---
22	300	5.0			---	---	6.0	(3.0)
23	300	3.8			---	---	6.0	(2.9)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 29

Calcutta, India (22.6°N, 88.4°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(210)	(7.8)						(3.0)
01	(210)	(7.2)						
02	---	---						
03	(210)	(5.6)						(3.2)
04	---	---						
05	---	---						
06	---	---				---		---
07	---	---				---		
08	---	---				---		
09	---	---				---		---
10	---	---				---		
11	---	---				---		
12	---	---				---		---
13	---	---				---		
14	---	---				---		
15	---	---				---		---
16	---	---				---		
17	(270)	(12.6)				3.0		
18	(240)	(10.7)				2.6		---
19	240	(10.6)				---		
20	(240)	(9.0)						
21	(200)	(8.8)						(3.2)
22	(220)	(8.6)						
23	(240)	(8.4)						

Time: Local.

Table 30

Rarotonga I. (21.3°S, 159.8°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.6					2.6	3.0
01	260	6.2						2.9
02	270	6.3					2.5	2.9
03	260	5.4					2.3	3.0
04	280	5.1						2.9
06	290	5.0					2.8	2.9
06	280	6.4			---	---	3.8	3.0
07	250	8.6	250	---	---	2.1	3.0	3.2
08	250	10.4	240	5.0	110	2.7	3.6	3.3
09	250	12.0	230	4.9	110	3.2	4.0	3.2
10	250	13.2	220	5.0	110	3.4	4.1	3.2
11	250	12.2	240	6.1	110	3.5	4.4	3.2
12	270	11.4	250	5.8	110	3.6	4.5	3.2
13	290	12.5	240	5.9	110	3.6	4.5	3.0
14	290	12.6	250	5.5	110	3.5	4.6	3.0
16	260	12.2	250	5.2	110	3.3	4.5	3.1
16	260	11.3	240	5.5	110	3.0	4.4	3.1
17	250	10.8	250	5.5	---	2.4	4.6	3.0
18	250	10.3	---	---	---	(1.8)	4.0	3.1
19	250	9.0	---	---			4.0	3.1
20	250	7.7	---	---			3.5	3.0
21	270	7.2	---	---			3.2	2.9
22	260	7.3					2.8	3.0
23	260	7.3					2.8	3.0

Time: 157.6°W.
Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 31

Brisbane, Australia (27.5°S, 153.0°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.8						3.0
01	260	4.8					2.8	2.9
02	250	4.8						3.0
03	235	4.4						3.2
04	240	3.9						2.9
05	260	3.4						2.9
06	250	4.0			---	E		3.1
07	230	6.8	---	---	110	2.3		3.3
08	250	8.4	230	4.5	100	2.8	2.2	3.3
09	250	9.3	220	4.6	100	3.2	2.4	3.3
10	250	10.0	210	4.8	100	3.4	3.0	3.2
11	255	9.7	210	4.8	100	3.4	3.5	3.1
12	260	9.8	200	4.8	105	3.6	3.5	3.1
13	270	10.0	220	4.9	105	3.6		3.1
14	260	9.8	230	4.7	110	3.4		3.1
15	260	9.9	230	4.4	105	3.0	2.0	3.2
16	240	9.7	---	3.8	110	2.6	2.0	3.2
17	230	8.8			130	---	2.0	3.3
18	220	6.8					3.2	3.1
19	230	5.5					1.6	2.9
20	260	6.3						2.9
21	260	5.2						2.9
22	260	5.0						3.0
23	270	5.0						2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 65 seconds.

Table 32

Canberra, Australia (35.3°S, 149.0°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.2					2.4	3.0
01	260	4.2					2.6	3.0
02	260	4.1					2.4	3.0
03	240	4.0					2.4	3.0
04	245	3.5					2.4	3.0
05	235	3.2					2.4	2.9
06	260	(3.0)					2.4	3.0
07	230	5.4	240	---	110	3.0	2.4	3.4
08	225	7.0	220	(4.0)	100	2.5		3.4
09	245	7.8	210	4.1	100	3.0		3.4
10	250	8.0	200	4.5	100	3.1		3.4
11	260	8.2	200	(4.6)	100	3.2		3.3
12	260	8.3	200	4.5	100	3.4		3.2
13	250	8.0	200	4.4	100	3.4		3.1
14	260	8.1	210	4.4	100	3.3		3.2
15	250	8.3	220	(4.0)	100	3.0	2.6	3.2
16	230	8.1	220	---	100	2.7	3.2	3.4
17	220	7.7			(110)	2.0	3.4	3.4
18	210	6.8					3.0	3.2
19	230	5.8					2.7	3.1
20	240	5.0					2.5	3.0
21	250	4.8					2.4	3.0
22	255	4.4					2.6	3.0
23	260	4.3					2.5	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 33

Hobart, Tasmania (42.8°S, 147.4°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.5						2.8
01	260	3.1						2.8
02	250	3.0					2.0	2.9
03	250	2.5						2.9
04	260	2.4					2.2	2.9
05	250	2.2					2.1	3.0
06	265	2.3						2.9
07	230	4.5			120	1.8	2.5	3.2
08	220	6.8			100	2.5		3.2
09	215	6.4	205	4.3	90	2.9		3.1
10	250	6.8	200	4.4	90	3.1		3.1
11	270	7.5	200	4.5	90	3.2		3.1
12	260	7.6	200	4.6	90	3.3		3.0
13	250	9.0	200	4.6	90	3.3		3.0
14	250	8.5	200	4.4	90	3.2		3.1
15	230	8.5	205	4.4	90	3.0		3.1
16	220	8.1	---	---	90	2.5	2.7	3.1
17	220	8.0			100	2.0	2.8	3.1
18	210	6.5					3.2	3.1
19	215	5.6					2.5	3.0
20	225	4.6						2.9
21	240	4.3						2.8
22	250	4.2						2.9
23	250	3.6						2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 34

Calcutta, India (22.6°N, 88.4°E) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	180	9.0						3.2
01	180	8.6						
02	(180)	(7.2)						
03	(160)	(6.5)						(3.4)
04	---	---						
05	(180)	(4.5)						
06	---	---						---
07	(210)	8.2				2.6	(2.6)	
08	(210)	(9.0)				2.9		
09	(210)	(9.5)				3.2		(3.2)
10	(210)	(10.1)				3.6		
11	(210)	(12.0)				3.7		
12	(210)	---				---		---
13	(210)	(12.6)				---		
14	(210)	12.9				---		
15	(210)	(13.1)				---		(3.1)
16	(210)	(13.1)				3.0		
17	210	(13.0)				2.8		
18	(210)	(13.0)				2.4		(3.2)
19	(210)	12.3				2.5		
20	(210)	11.6						
21	(210)	(10.0)						(3.2)
22	210	9.6						
23	200	9.5						

Time: Local.

Table 35

Brisbane, Australia (27.5°S, 153.0°E) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.4					2.0	2.9
01	270	5.3					2.0	2.9
02	250	4.8					2.0	3.0
03	250	4.4					2.0	3.0
04	250	3.8					1.9	2.9
05	270	3.6					2.0	3.0
06	250	4.6			---	1.7		3.2
07	240	6.0	240	---	110	2.4	2.0	3.3
08	260	7.1	230	4.4	110	2.8	3.3	3.3
09	280	7.3	210	4.6	105	3.2	3.7	3.2
10	290	8.0	200	4.6	105	3.4	3.9	3.1
11	290	8.5	200	4.8	100	3.6	3.8	3.1
12	300	8.5	200	4.8	100	3.6	4.0	3.1
13	280	8.7	210	4.7	110	3.6	3.9	3.1
14	290	8.4	220	4.6	105	3.4	3.4	3.1
15	280	8.0	220	4.6	105	3.2	2.4	3.0
16	280	7.9	230	4.3	110	2.8	1.8	3.1
17	250	8.1	245	---	110	2.4		3.3
18	240	8.0			---	E	1.9	3.2
19	220	6.7						3.1
20	(250)	6.8						2.8
21	(270)	6.8						2.8
22	280	5.6					1.8	2.8
23	280	5.5					2.0	2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 56 seconds.

Table 36

Canberra, Australia (35.3°S, 149.0°E) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.8					3.3	2.9
01	260	4.6					3.0	3.0
02	250	4.4					2.6	3.0
03	250	4.2					2.6	3.0
04	250	3.6					2.8	3.0
05	250	3.4			---	E	2.8	2.9
06	250	3.5			---	E	2.2	3.1
07	230	5.1	---	---	110	2.2	2.9	3.3
08	270	6.1	225	(4.2)	100	2.7	3.5	3.3
09	310	6.3	210	4.4	100	3.0		3.2
10	300	6.6	205	4.5	100	3.2	4.1	3.2
11	290	7.0	190	4.5	100	3.3	3.8	3.2
12	300	7.2	195	4.5	100	3.5	3.8	3.1
13	280	7.1	200	4.5	100	3.5	3.7	3.2
14	280	7.3	210	4.5	100	3.4	3.8	3.2
15	265	7.4	220	4.4	100	3.2	3.5	3.2
16	(280)	7.0	226	---	100	3.0		3.2
17	240	7.0	240	---	105	2.4	2.7	3.2
18	230	7.4	---	---	---	(1.8)	3.0	3.2
19	230	6.8					3.0	3.1
20	240	6.3					2.8	3.0
21	250	5.4					2.6	2.9
22	250	5.1					2.7	2.9
23	270	4.8					3.3	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 37

Hobart, Tasmania (42.8°S, 147.4°E) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.6						2.8
01	250	3.5						2.8
02	250	3.2					2.5	2.9
03	250	2.8					2.7	2.9
04	250	2.6					2.8	2.9
05	260	2.4					2.9	3.0
06	250	3.0			---	1.2	2.6	3.1
07	220	4.5			100	2.1	2.6	3.2
08	230	4.9	210	4.0	90	2.6	2.8	3.2
09	300	5.5	200	4.3	90	2.9	3.1	3.1
10	320	6.0	200	4.4	90	3.1	3.3	3.0
11	330	6.3	190	4.5	90	3.2		3.0
12	300	6.5	190	4.6	90	3.3		3.0
13	300	6.4	190	4.6	90	3.4		3.0
14	300	6.7	200	4.5	90	3.3		3.0
15	280	6.5	200	4.4	90	3.1		3.0
16	250	6.5	200	4.0	90	2.9		3.0
17	220	6.5	210	4.0	90	2.4		3.1
18	230	7.0			100	1.7	2.6	3.1
19	215	7.0					2.3	3.1
20	210	6.2					2.6	3.0
21	220	5.4						2.9
22	250	4.6						2.8
23	250	4.0						2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 38

Reykjavik, Iceland (64.1°N, 21.8°W) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(380)	(3.8)					5.0	(2.6)
01	---	(3.2)					4.6	---
02	---	(3.6)					4.8	---
03	---	(4.0)					4.9	---
04	(340)	(2.3)					4.3	(2.6)
05	(310)	(2.8)					3.4	---
06	(300)	(2.8)					2.9	(2.7)
07	(270)	(2.6)			---	---	2.4	(2.9)
08	280	3.3			---	---		2.9
09	260	4.5	---	---	---	---		3.1
10	260	5.0	---	---	---	---		3.1
11	260	5.6	250	---	---	---		3.1
12	270	5.8	240	---	---	---		3.1
13	280	6.0	250	---	---	---		3.0
14	270	6.0	240	---	120	2.2		3.1
15	260	5.5	---	---	120	---		3.1
16	250	5.6	---	---	(120)	---		3.1
17	260	5.1			---	---	2.0	2.9
18	260	(4.5)					4.4	(3.0)
19	(340)	3.6					4.6	2.6
20	(310)	(3.5)					4.5	(2.6)
21	(360)	(3.5)					5.2	(2.6)
22	---	---					5.1	---
23	---	---					4.2	---

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 39

Delhi, India (28.6°N, 77.1°E) February 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	(2.9)						3.4
01	---	(2.8)						
02	---	---						
03	---	---						
04	(300)	(2.8)						
05	290	3.2						
06	260	4.0						
07	250	5.8						
08	260	7.3						3.5
09	280	8.8						
10	280	9.5						
11	280	11.1						
12	280	12.0						3.6
13	280	12.2						
14	290	11.7						
15	280	10.9						
16	270	9.9						3.6
17	270	8.0						
18	270	6.6						
19	280	5.6						
20	290	4.8						3.0
21	290	3.9						
22	290	3.2						3.4
23	300	3.0						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 40

Calcutta, India (22.6°N, 88.4°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	168	5.9						3.5
01	147	5.5						
02	147	4.9						
03	147	4.2						3.5
04	(189)	(3.8)						
05	(189)	(2.9)						
06	(210)	(2.4)				2.0		(3.2)
07	189	5.7				2.5		
08	178	8.8				2.7		
09	189	9.5				3.1		3.5
10	168	11.2				3.4		
11	168	11.4				3.6		
12	189	12.4				3.9		(3.3)
13	(189)	12.6				3.7		
14	(189)	(12.3)				3.5		
15	189	12.9				3.3		3.2
16	189	12.2				3.0		
17	189	12.0				2.6		
18	189	12.0				2.4		(3.3)
19	189	11.2				2.0		
20	189	9.5				2.0		
21	189	8.9						3.3
22	178	8.4						
23	168	6.6						

Time: Local.

Table 41

Bombay, India (19.0°N, 73.0°E) February 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	270	6.2						
08	300	9.6						3.2
09	330	10.0						
10	360	11.2						
11	390	11.9						
12	390	12.8						2.8
13	390	12.8						
14	390	13.5						
15	390	13.2						
16	390	13.0						2.8
17	360	12.3						
18	330	11.8						
19	330	10.8						
20	330	9.7						3.1
21	300	8.7						
22	300	7.6						3.3
23	300	7.6						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 42

Madras, India (13.0°N, 80.2°E) February 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	360	7.1						
08	390	8.4						2.8
09	420	9.2						
10	420	9.4						
11	430	9.6						
12	420	10.0						2.5
13	450	10.4						
14	480	10.5						
15	480	11.4						
16	480	11.8						2.5
17	480	11.4						
18	480	10.9						
19	480	10.7						
20	420	10.1						2.6
21	420	(10.0)						
22	420	9.7						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 43

Tiruchy, India (10.8°N, 78.8°E) February 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	380	4.9						
07	420	6.7						
08	450	8.5						2.6
09	480	9.2						
10	510	8.6						
11	510	8.6						
12	510	9.2						2.4
13	540	9.7						
14	540	9.8						
15	540	10.6						
16	540	10.7						2.4
17	540	10.7						
18	540	10.5						
19	540	10.0						
20	510	9.8						2.1
21	480	9.5						
22	480	9.3						2.7
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 44

Brisbane, Australia (27.5°S, 153.0°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.4					3.4	2.9
01	245	6.0					3.1	3.0
02	240	5.2					2.8	2.9
03	250	4.6					2.4	2.9
04	250	4.4					2.0	2.9
05	250	4.0						3.0
06	240	5.3	345	---	130	1.9	1.9	3.3
07	270	6.4	220	4.1	100	2.6	3.0	3.2
08	270	7.0	210	4.4	100	---	4.0	3.2
09	280	7.5	200	4.7	100	3.4	4.4	3.1
10	300	7.8	200	4.8	100	3.5	4.4	3.1
11	300	8.3	200	4.9	100	3.7	4.4	3.0
12	300	8.2	200	5.0	100	3.7	4.4	3.1
13	315	8.2	200	4.9	100	3.7	4.4	3.0
14	300	8.7	200	4.8	100	3.5	4.2	3.1
15	280	8.5	200	4.7	100	3.3	4.2	3.1
16	280	8.2	220	4.4	100	3.0	4.4	3.1
17	250	8.0	230	4.0	100	2.6	3.6	3.1
18	240	7.4	---	---	---	---	4.0	3.1
19	240	7.3					2.9	3.0
20	240	6.6					3.6	2.8
21	270	6.4					3.2	2.8
22	275	6.2					3.5	2.8
23	275	6.0					2.8	2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 45

Hobart, Tasmania (42.8°S, 147.4°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	4.6					2.7	2.9
01	250	4.0					3.4	3.0
02	250	3.5					3.6	3.0
03	250	3.1					3.6	2.9
04	250	2.8					3.2	3.0
05	260	2.7			---	---	3.1	3.0
06	240	3.8			110	2.0	3.0	3.2
07	215	4.6	210	4.0	90	2.4	3.2	3.2
08	305	5.4	200	4.2	90	2.9	4.8	3.1
09	300	6.0	200	4.5	90	3.2	4.7	3.1
10	300	6.5	200	4.6	90	3.3	5.2	3.1
11	300	6.7	200	4.7	90	3.5	5.0	3.1
12	300	6.8	200	4.8	90	3.5	6.5	3.0
13	310	7.0	200	4.9	90	3.5	6.0	3.0
14	300	7.0	200	4.7	90	3.5	4.2	3.0
15	300	6.9	200	4.6	90	3.4		3.0
16	295	7.0	200	4.4	90	3.1		3.1
17	270	6.7	200	4.0	90	2.8		3.1
18	240	6.8	200	3.5	90	2.4	3.2	3.2
19	225	7.0			110	1.7	3.5	3.2
20	230	6.7					4.1	3.1
21	230	6.0					4.0	3.0
22	250	5.4					3.6	2.9
23	250	5.0					3.4	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 46

Reykjavik, Iceland (64.1°N, 21.8°W) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					5.2	---
01	(380)	(3.6)					4.8	(2.6)
02	360	(4.2)					5.0	(2.6)
03	380	(4.2)					4.6	(2.6)
04	350	3.7					4.4	2.7
05	300	3.5					4.0	2.8
06	280	3.4					3.0	2.8
07	280	3.2						2.9
08	280	2.3						3.0
09	260	3.0			---	---		3.0
10	250	4.8			---	---		3.2
11	240	5.6			(110)	---		3.3
12	240	6.2		---	---	---		3.3
13	240	6.7			(120)	---		3.3
14	240	6.1			(140)	---		3.2
15	250	5.6			(120)	---		3.2
16	270	5.3			(120)	---	2.3	3.1
17	270	3.7					3.9	3.0
18	280	3.2					4.0	2.8
19	340	(3.8)					5.3	(2.8)
20	(320)	(4.3)					5.4	(2.6)
21	330	(4.2)					5.1	(2.9)
22	360	(4.0)					5.5	(2.8)
23	390	(3.8)					4.8	(2.6)

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 47

Delhi, India (28.6°N, 77.1°E) January 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	2.8						3.3
01	(290)	3.6						
02	---	---						
03	---	---						
04	(310)	(2.4)						3.4
05	290	2.8						
06	280	3.2						
07	260	4.6						
08	250	5.7						3.6
09	250	7.0						
10	270	8.4						
11	280	9.0						
12	280	9.9						3.4
13	280	9.4						
14	280	8.9						
15	270	8.5						
16	240	7.5						3.6
17	250	6.5						
18	260	5.2						
19	260	4.2						
20	270	3.8						3.5
21	280	3.0						
22	300	2.9						
23	300	2.9						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 48

Calcutta, India (22.6°N, 88.4°E) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	189	6.0						3.4
01	189	5.5						
02	(178)	(4.8)						
03	(168)	(3.7)						(3.4)
04	---	---						
05	(158)	(3.4)						
06	---	(4.5)				---		---
07	189	5.8				---		
08	189	8.6				2.8		
09	189	10.4				3.2		3.5
10	210	11.0				3.5		
11	210	11.0				3.7		
12	210	11.8				3.7		3.2
13	210	12.4				3.5		
14	210	12.0				3.4		
15	210	12.0				3.1		3.2
16	210	12.2				2.8		
17	210	11.8				2.5		
18	210	11.0				2.4		3.2
19	210	9.8				2.3		
20	210	9.2				---		
21	189	8.6						3.3
22	200	7.5						
23	210	7.5						

Time: Local.

Table 49

Bombay, India (19.0°N, 73.0°E) January 1951**

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	270	6.2						
08	300	9.0						3.3
09	300	9.4						
10	330	10.6						
11	360	11.4						
12	360	12.1						2.8
13	360	12.4						
14	360	12.6						
15	360	12.5						
16	330	12.4						3.1
17	300	11.6						
18	300	11.0						
19	300	9.8						
20	300	8.5						3.2
21	270	8.3						
22	270	6.8						3.4
23	270	(5.2)						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 50

Madras, India (13.0°N, 80.2°E) January 1951**

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	360	7.1						
08	360	8.1						2.8
09	390	9.0						
10	420	9.2						
11	420	8.8						
12	450	9.0						2.6
13	480	9.2						
14	480	9.6						
15	480	9.8						
16	480	9.9						2.4
17	480	10.1						
18	480	10.0						
19	450	9.5						
20	420	8.8						2.6
21	390	8.3						
22	390	8.0						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 6 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 51

Tiruchy, India (10.8°N, 78.8°E) January 1951**

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	4.9						
07	360	6.3						
08	420	8.4						2.7
09	480	8.8						
10	500	8.4						
11	500	8.0						
12	540	8.1						2.4
13	540	8.8						
14	540	9.5						
15	540	10.2						
16	510	10.0						2.4
17	480	9.8						
18	480	9.5						
19	480	9.4						
20	440	8.5						2.6
21	390	8.2						
22	360	7.9						2.8
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 6 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 52

Brisbane, Australia (27.6°S, 153.0°E) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.6					4.4	3.0
01	250	6.8					3.9	3.2
02	250	6.4					4.1	3.0
03	250	4.9					3.2	2.9
04	240	4.2					2.6	3.0
05	250	3.8	---	---	---	<1.5	2.8	3.1
06	240	5.3	240	---	---	2.5	3.5	3.2
07	310	5.9	230	4.4	100	2.8	4.6	3.1
08	300	6.2	210	4.4	100	3.2	4.6	3.0
09	300	7.6	200	4.6	100	---	6.4	2.9
10	320	8.5	200	4.8	100	---	6.0	2.9
11	320	8.5	200	4.8	100	---	6.0	2.9
12	325	8.7	200	5.0	100	---	6.0	2.9
13	310	8.7	200	4.9	100	3.8	4.4	2.9
14	300	8.6	205	4.7	100	3.6	4.8	3.0
15	290	8.4	205	4.7	100	3.4	4.4	3.0
16	285	7.8	210	4.4	100	3.2	4.3	3.1
17	260	7.4	230	4.0	100	2.8	4.1	3.1
18	240	7.0	240	---	---	<1.9	4.0	3.1
19	240	6.9					4.4	2.9
20	(280)	6.9					3.8	2.8
21	300	6.8					4.0	2.8
22	270	6.9					4.4	2.8
23	270	6.8					4.4	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 53

Canberra, Australia (35.3°S, 149.0°E) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(6.1)					3.6	(2.9)
01	240	(5.6)					3.9	3.0
02	250	5.0					3.6	2.9
03	260	4.1					2.6	2.9
04	260	3.5					2.8	2.9
05	270	3.8	---	---		1.3	2.6	3.0
06	240	4.5	240	---		2.2	3.4	3.2
07	305	5.7	225	4.1		2.7	4.0	3.1
08	345	6.1	220	4.5		3.2	5.3	3.0
09	320	6.9	200	4.6		3.3	5.8	3.1
10	310	7.5	210	4.6		3.5	5.6	3.0
11	310	7.5	195	4.7		3.5	5.7	3.1
12	325	7.6	210	5.0		3.7	6.1	2.9
13	320	7.2	200	4.8		3.8	4.9	3.0
14	330	7.4	200	4.8		3.7	4.4	3.0
15	320	7.2	200	4.6		3.5	4.1	3.0
16	300	7.2	210	4.4		3.3		3.0
17	290	7.0	225	4.2		3.0		3.1
18	260	7.0	235	---		2.5	3.1	3.1
19	240	6.6				<1.6	3.4	3.1
20	250	6.7				<1.5	3.8	2.9
21	270	6.6					3.2	2.8
22	275	6.9					3.9	2.9
23	280	6.5					3.8	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 54

Hobart, Tasmania (42.8°S, 147.4°E) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	5.5					3.0	3.0
01	250	4.7					2.7	3.0
02	250	3.9					3.5	3.0
03	250	3.2					3.2	3.1
04	250	3.0					3.0	3.0
05	250	3.3			140	1.7	2.6	3.2
06	220	4.0	---	---	100	2.3	3.4	3.3
07	280	5.8	210	4.0	90	2.7	4.7	3.1
08	350	5.5	200	4.4	90	3.1	5.0	3.1
09	320	6.0	200	4.6	90	3.4	6.0	3.0
10	300	6.7	200	4.9	90	3.5	6.5	3.1
11	320	6.6	200	5.0	90	3.5	6.0	3.1
12	320	6.5	200	5.0	90	3.5	7.0	3.1
13	340	6.5	200	6.0	90	3.5	5.8	3.0
14	340	6.5	200	4.9	90	3.5	5.5	3.0
15	320	6.6	200	4.7	90	3.5	3.7	3.0
16	300	6.5	200	4.5	90	3.2		3.0
17	270	6.8	205	4.2	90	3.0	3.0	3.1
18	250	6.5	220	3.8	100	2.5	3.0	3.2
19	230	6.4			120	2.0	3.6	3.1
20	230	6.5					4.5	3.1
21	240	6.6					4.0	3.0
22	250	6.1					4.5	2.9
23	250	5.6					4.0	2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 55

Calcutta, India (22.6°N, 88.4°E) December 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	180	6.2						3.3
01	189	6.0						
02	190	5.2						
03	180	4.4						3.4
04	180	4.0						
05	180	3.6						
06	189	5.8				2.1		3.4
07	210	8.2				2.6		
08	210	9.2				3.0		
09	210	9.6				3.2		3.2
10	189	10.5				3.5		
11	210	11.0				3.7		
12	210	11.6				3.9		3.0
13	220	11.9				3.5		
14	189	11.8				3.5		
15	189	11.8				3.2		3.3
16	189	11.2				2.8		
17	189	11.0				2.5		
18	189	10.5				2.4		3.3
19	189	9.5				2.1		
20	189	9.2				2.0		
21	189	8.8						3.3
22	200	8.2						
23	194	7.2						

Time: Local.

Table 55

Calcutta, India (22.6°N, 88.4°E) November 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	6.0						3.0
01	240	5.0						
02	210	4.1						
03	195	3.9						3.5
04	210	3.7						
05	210	3.4						
06	240	5.5				2.5		3.3
07	270	8.5				2.8		
08	270	10.5				3.0		
09	270	11.0				3.9		3.1
10	300	11.2				4.0		
11	300	11.3				4.2		
12	360	11.4				---		2.5
13	360	11.5				---		
14	330	11.3				---		
15	300	11.2				---		2.8
16	300	11.0				3.4		
17	300	10.8				3.0		
18	300	10.2				2.5		2.7
19	300	10.0				2.5		
20	300	9.8						
21	300	9.5						2.8
22	270	8.5						
23	300	8.0						

Time: Local.

Table 57

Calcutta, India (22.6°N, 88.4°E) October 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	210	6.4						3.1
01	270	8.0						
02	270	7.7						
03	210	7.0						3.0
04	180	5.6						
05	240	5.8				1.8		
06	270	7.1				2.2		2.9
07	300	9.0				2.4		
08	300	9.8				3.4		
09	300	10.4				3.6		2.7
10	330	11.0				4.2		
11	360	11.0				4.6		
12	360	11.4				---		2.5
13	---	---				---		
14	---	---				---		
15	---	---				---		---
16	(300)	11.0				3.4		
17	300	11.0				3.6		
18	300	10.2				4.2		2.8
19	270	10.1				4.6		
20	270	10.0				---		
21	270	9.9				---		2.8
22	(285)	(9.6)				---		
23	(270)	(9.4)				---		

Time: Local.

Table 58

Calcutta, India (22.6°N, 88.4°E) September 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	285	8.0						2.8
01	270	6.6						
02	240	5.7						
03	240	4.5						3.1
04	210	4.0						
05	---	(4.8)						
06	---	5.8				---		---
07	---	(8.8)				---		
08	(300)	(9.2)				3.6		
09	(300)	10.0				3.8		2.8
10	(330)	(10.5)				4.2		
11	330	(11.0)				4.5		
12	---	(11.5)				---		---
13	---	(11.1)				---		
14	---	(11.0)				---		
15	---	(10.8)				---		---
16	(300)	11.0				3.4		
17	290	10.5				2.8		
18	270	10.8				2.6		2.8
19	300	10.5				2.1		
20	300	10.3				2.0		
21	300	9.5				---		2.8
22	300	9.0				---		
23	270	8.4						

Time: Local.

Table 59

Calcutta, India (22.6°N, 88.4°E) August 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.5				1.4		2.9
01	240	7.6				---		
02	240	7.2				---		
03	210	6.5				---		2.9
04	210	5.2				1.4		
05	210	5.4				1.7		
06	240	5.8				2.0		2.9
07	270	7.8				2.5		
08	300	8.9				3.0		
09	300	9.8				3.5		2.7
10	315	10.4				3.8		
11	345	10.9				4.2		
12	330	11.0				4.5		2.7
13	360	11.0				4.5		
14	345	11.0				4.6		
15	(360)	(11.0)				---		(2.5)
16	330	11.0				4.0		
17	300	11.0				3.5		
18	300	10.9				2.9		2.8
19	330	10.8				2.5		
20	(300)	(10.8)				2.4		
21	300	10.4				2.0		2.8
22	300	10.2				1.7		
23	300	9.2				1.5		

Time: Local.

Table 60

Calcutta, India (22.6°N, 88.4°E) July 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.0						2.8
01	240	8.7						
02	225	8.4						
03	240	7.8				---		3.0
04	210	7.5				1.5		
05	210	7.2				1.8		
06	240	7.8				2.3		3.0
07	270	8.7				2.7		
08	300	9.5				2.9		
09	300	10.0				3.3		2.8
10	330	10.5				3.5		
11	300	11.0				3.5		
12	330	11.0				3.5		2.6
13	(345)	(11.0)				---		
14	(330)	(11.0)				---		
15	(360)	(11.0)				---		(2.6)
16	330	11.5				3.4		
17	300	11.0				3.0		
18	300	11.2				2.7		2.8
19	285	11.0				2.4		
20	300	10.8				2.0		
21	270	10.5				1.9		2.7
22	270	10.0				1.5		
23	270	9.6				---		

Time: Local.

TABLE 61

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

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), August (Month), 1951

Observed at Washington, D.C.

Lat. 38.7°N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., L.H.E., H.C.

Calculated by: McC., L.H.E., H.C.

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	320	270	(260)A	[310]A	(340)S	300	(250)A	300	(380)H	(260)H	280	300	320	350	350	330H	310	310	290	280	270	260	280	280
2	270H	240H	240	(300)S	(380)S	(320)A	G	G	G	410	400	420	G	440	440	420	360	310	300	250	250	250	(270)S	280
3	270	(270)S	(300)S	(270)S	(320)S	300	G	380	(340)H	380	470	450	380H	450	430	[440]M	350	320	300	240	250	230	260	300
4	300	290	280	310	270	280	[320]L	360	370	400	360	420	400	370	360	370	390	350	300	250	220	240	270	(260)S
5	290	270	(300)S	300	(300)S	280	(270)L	G	G	G	G	G	430H	440H	470	500	400	370	[340]A	300	250	260	250	280
6	270	270	260	280	290	280	300	370'	340	350	350	390	450	380	350	370	(390)A	310	300	270	260	(280)A	250	(280)A
7	280	270	(330)S	290	(290)S	300	300	330	330	290H	380	[360]A	380	430	(470)A	(360)A	350	340	300	(250)A	230	(250)B	260	[280]A
8	(300)A	270	(300)S	270	(290)A	250	250	330	350	350	370	320	480	480	490	480H	410	340	300	260	240	240	270	280
9	290	300	300	280	280	280	310	220	380	440	430	510	450	450	390	390	390	350	320	270	250	240	320	330
10	280	280	290	300	300H	280	250	350	330	360	330	400	370	390H	370	360	340	310	300	250	230	250	240	280
11	300	(300)S	280	(300)S	320	310	(350)L	330	(480)H	400	480	360	400	440	370	390	340	320	300	240	(280)A	260	(250)S	280
12	260	(280)A	[280]A	280	250	300	270S	370K	420K	G K	G K	G K	G K	540K	G K	520K	400K	400K	330K	270K	240K	250K	280K	280K
13	(300)SK	(300)SK	350K	(350)SK	(400)SK	310K	280K	G K	G K	G K	G K	G K	G K	590K	G K	500K	530KH	G K	(400)AK	280K	250K	260K	270	280
14	280	260	250	300	280	270	290	290H	380H	360	350	400	360	380	370	410	350	330	260A	220	250	240	240	260
15	260	(340)S	280	(250)S	250	280	250	[280]A	[300]C	260	400	330	320	[320]C	310	310	330	310	360	(360)B	230	250	280	250
16	260B	240	310	(300)A	(230)SK	(360)SK	260K	G K	G K	G K	G K	G K	480K	M K	M K	360K	370K	310K	(300)AK	250K	270K	280H	(280)A	290
17	(340)S	260	280	270	260	260	230	240	280	290	330H	350	360	390	350	310	290	280	[260]L	230	220H	250	260G	280
18	250	[260]A	260	(270)A	270	(300)A	240	250	280	280	280	280	320	300	280	310	290	270	250	240	250	250	230	230
19	260	240	300	290	280	280	300	220H	370	360	360	350	360H	400	400	380	350	300	270K	250	260	300	300	330
20	290	290	(320)S	(300)S	310	(350)SK	260K	G K	G K	G K	G K	G K	G K	G K	G K	B K	B K	490K	320K	(260)AK	250K	280K	(280)SK	300K
21	260SK	280K	(330)SK	(330)SK	(330)SK	[290]SK	250K	G K	G K	G K	G K	G K	G K	550K	380K	450K	360K	(420)LK	340K	270K	A K	A K	300K	280SK
22	300K	290K	310K	260FK	(260)FK	320K	280K	G K	G K	G K	G K	M K	G K	G K	M K	G K	(500)SK	370K	320K	260K	260K	280K	260K	(300)JK
23	(310)SK	(300)SK	(290)SK	(320)SK	S K	S K	220KH	310K	[320]LK	330	320	340H	340H	390	350H	400	350	300	350	230	220	220	240	280
24	280	280	300	(300)S	(300)S	(320)S	240	[320]L	390	360	360	400H	360H	420H	400H	370	340	310	290	250	250H	260	(320)A	[320]A
25	(320)A	[320]A	(320)AK	A K	S K	S K	280K	G K	G K	G K	G K	G K	G K	G K	610K	G K	400K	420KH	(310)LK	260K	260A	(330)AK	[320]AK	(310)AK
26	280HK	(320)SK	310K	A K	S K	(320)SK	270	350*	300	330	320	430H	380	360	350	370	330	300	300	250	250	230	250	280
27	290	280	290H	300	(360)B	(320)B	250	270H	280H	340H	320	410H	480	400	320	330	320	310	280	280	240	230	260	270
28	280	300	300	290	310	(300)S	360	280	310H	340H	300H	320H	320	330	320	340	350	340	240	240	250	(270)A	250	240
29	300	340'	310	300	300	(310)S	260	230	360	350	350	380	360	350	340	330	320	300	280	250	240S	250	(260)S	280
30	280	290	290	290	270	(260)S	250	(270)L	280	270	290	280	350	330	330	300	320	290	270	240	240	250	260	270
31	280	(300)S	310	300	(320)S	(290)S	360	290	280L	270H	300H	320	360	330	300	310	330	300	280	270	(280)A	250	250	260
Median	280	280	300	300	300	300	270	330	370	360	360	400	380	400	370	370	350	310	300	250	250	250	260	280
Count	31	31	31	29	28	29	31	31	31	31	31	30	31	30	29	30	30	31	31	31	30	30	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 62

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

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), August (Month), 1951

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1° W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., L.H.E., H.C.

Calculated by: McC., L.H.E., H.C.

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	4.5	4.2 S	(3.1) F	[2.4] A	1.7	2.5 S	3.9	4.8 J	(5.8) P H	(6.7) V H	6.7	7.2	7.0	7.3	7.0	(6.4) H	7.3	7.0	7.6	7.5	7.6	5.8	6.0	5.8
2	5.3 H	4.6 F H	3.3	2.7	2.5	2.5	<3.5 G	<3.7 G	<4.2 G	5.1	5.3	5.6	<4.8 G	5.4	5.6	5.9	6.0	(6.0) H F	6.4	6.1	5.8	5.6	4.8 S	4.3
3	4.1	3.3	2.8 F	2.5 F	2.0	2.8	<3.7 G	4.8 F	(4.9) H	5.5	(5.2) B	5.3	5.7 H	5.4	5.6	[5.8] M	6.0	6.0	6.3	6.4	6.6	5.8	5.5 Z	5.2 J F
4	4.4	4.1 F	3.9	3.5 Z	3.0	3.0	4.3 F	4.8 F	5.3	5.6 F	6.4	6.2	6.0	6.6	6.5	6.6	6.4	6.6	(7.4) S	7.8	6.6	6.0 S	5.0	4.4
5	4.1	3.6	3.2	3.0	2.9	3.1	4.0	<4.2 G	<4.3 G	<4.6 G	<4.6 G	<4.7 G	5.6 H	5.4 H	5.6	5.8	5.9	6.0	5.9	6.3	6.6	6.4	5.4	5.4
6	4.8	4.4	3.6	3.2	2.8	3.0	4.3	5.0	5.4	6.0	6.2	6.4	6.3	7.2	6.8	6.4	6.2	6.5	6.4	6.8	6.8	7.0	6.0	5.4
7	5.0	4.5	3.9	3.9	3.4	3.1	4.4	5.5	5.8	(6.5) P H	6.4	[6.4] A	6.3	6.1 P	6.2	6.9	7.1	7.2	7.8	8.0	7.7	6.6	6.0	5.6
8	5.4 H	4.4 F	4.2 F	4.1	3.8	3.7	4.7	(5.2) J H	5.7	5.5	5.6	5.6	5.6	5.8	6.0	5.4 J H	6.1	6.6 S	6.6	(7.1) S	7.0	(6.0) S	5.2	4.7 S
9	4.3	4.2 S	3.9	3.9	3.4 F	3.6	4.3	4.9	5.1	5.4	5.5	5.6	5.7	5.7	5.9	6.0	5.7	6.0	6.5	6.4	6.9 S	5.9 F	4.6 F	(4.2) F S
10	4.1 F	(4.0) F	(3.5) F	3.3 F	(3.3) S H	(3.4) J S	4.3	5.1	6.2 J H	6.0 J H	6.5	6.4	6.8	6.6 H	6.6	6.4	6.6	6.8	7.0	8.4	7.2	6.4	5.0	4.4
11	4.3 J	4.1	(3.5) S	3.0 J B	3.1 S	2.9	4.0	5.1	5.0 H	5.4 J H	5.6 J H	6.2	6.4	6.6	6.4	6.8	6.8	6.6	7.0 F	7.6	6.9	6.2	5.7	5.2
12	5.2 J S	4.5	3.8	(3.5) S	3.1	2.7	3.4 J A	4.6 K	4.7 K	<4.4 G K	<4.6 G K	<4.5 G K	<4.4 G K	5.3 K	<4.6 G K	5.2 K	5.4 K	5.4 K	5.6 F K	6.0 K	5.8 S K	5.4 F K	4.5 F K	4.2 F K
13	3.5 F H	3.2 F K	(2.7) F K	[2.3] S K	1.9 F K	K (2.5) F S	3.6 K	<3.7 G K	<3.9 G K	<4.2 G K	<4.4 G K	<4.4 G K	<4.5 G H	4.8 K	K <4.5 G K	K (5.2) P B	4.8 H K	<4.2 G K	5.0 K	5.3 K	5.6 S K	5.4 S K	4.6 J S	(4.5) P S
14	4.1 S	3.8	3.5	3.0 S	(2.7) J S	(2.8) J S	4.5	(4.7) H	5.0 J H	5.8	5.8	6.0	6.0	6.2	6.0 J	6.0 J S	6.4	6.5	6.8 F	6.8 F	(6.4) F	6.1 F	(5.5) F	(5.8) F
15	(6.0) F S	(6.2) J F	4.5	(3.9) F S	(3.5) S	(2.3) S	4.2	5.8	[6.2] C	7.0	(6.4) J F	7.2	7.2	[7.2] C	7.2	6.9	6.6	7.2	(7.9) P	(7.9) B	7.9	(6.6) B	6.0	5.4
16	4.7	4.3	3.9	3.4 S	K (2.7) S P	K (2.9) F E	3.0 K	<3.4 G K	<3.9 G K	<4.1 G H	K <4.2 G H	<4.6 G K	5.3 K	M K	M K	5.6 K	5.5 K	5.8 K	6.1 K	5.8 S K	5.8 K	5.8 S K	(5.0) A	4.9
17	4.5 S	4.0	3.9	3.1 S F	3.0 V	(2.9) S F	5.0	6.0	6.4 F	6.5	6.4 F M	6.4 F	6.8	6.6	7.5	8.2	7.9	7.5	7.9	7.8	6.9 H	5.3 F	4.8	4.8 S
18	(4.5) S	(4.0) S	3.8 F S	(3.4) S	(3.0) S	(2.5) S	4.7	6.5	6.5	6.8	7.0	7.2	7.3	7.4	6.8	6.9	7.0	7.2	6.8	7.0	8.0	(7.8) F V	5 F	S F
19	(5.4) S	(4.7) J F	3.9 J S	(3.5) J S	2.9 F	(2.9) S F	4.2	4.5 H	5.2	5.6	5.6 F	6.0	5.8 H	5.7	5.6	5.6 J S	6.0	6.0	5.6	6.0	5.8 S	5.4 S	5.2	4.5
20	4.8	3.8	3.0	(2.8) P S	2.4 J S	2.2 K	3.0 K	<3.6 G K	<4.0 G K	<4.2 G K	<4.2 G K	<4.3 G K	<4.3 G K	<4.3 G K	<4.2 G K	(4.8) A K	4.7 B K	4.5 K	5.0 K	5.3 K	5.0 G K	3.8 F K	3.4 V K	3.1 K
21	K 3.0 J S	2.4 K	1.9 K	1.7 K	1.7 K	2.0 F K	3.1 K	<3.4 G K	<3.8 G K	<4.1 G K	<4.2 G K	<4.2 G K	<4.3 G K	4.9 K	5.2 K	5.0 K	5.4 K	5.0 K	5.2 K	5.6 K	5.0 K	(3.7) S K	3.5 K	3.8 K
22	3.0 K	3.1 K	K (2.5) F S	F K	F K	(2.6) F K	3.2 F K	<3.4 G K	<3.6 G K	<3.8 G K	<4.0 G K	M K	<4.2 G K	<4.2 D K	M K	<4.0 G K	K 4.6 J S	4.7 K	4.5 K	4.2 K	4.6 K	4.0 K	3.5 K	K 2.8 J S
23	2.7 K	2.4 K	2.1 F K	1.7 F K	1.5 K	K 1.8 J S	3.5 H K	4.8 K	4.7 H K	(5.4) V	6.2	6.4 H	6.4	6.6	6.0	5.8	6.1	5.7 S	(5.6) S	7.4	6.2	5.8	4.1	3.8
24	3.6	3.6 F S	(3.0) J S	2.7	2.4 S	1.9	3.7	4.2 J S	4.8 J S	5.3 J S	5.2 F	5.2 F H	5.2 J H	5.4 H	5.5 H	5.8	5.8	5.7	6.0	6.6	6.3 H	5.0 E	4.3	4.1
25	4.0	3.6 F	K 3.4 J S	K 3.6 F J	K (2.1) S F	K (2.1) F S	3.0 K	<3.5 G K	<3.7 G K	<4.0 G K	<4.2 G K	<4.3 G K	<4.4 G K	<4.3 G K	4.8 K	<4.1 G K	5.0 K	5.0 H K	4.7 K	4.7 K	K 4.2 J S	4.0 K	K 3.6 F H	(3.8) S K
26	3.4 H K	2.9 K	K 2.7 J F	[2.2] A	5 K	K (1.8) S F	3.6	(4.5) J S	5.4	5.4	5.7 S	5.6 H	5.8	5.8	6.1	5.8	6.3	6.0	6.0	7.0	7.2	5.6	(4.5) S	3.6
27	(3.3) J S	(3.5) F S	(3.3) J H	2.6 F	(2.4) S	(2.4) F S	(3.4) S	4.5 H	(4.8) H	5.5	5.8	5.4 H	5.3	5.8	6.2	6.0	5.8	6.1 S	6.1 S	7.0	7.4 S	5.6 S	(4.0) S F	(2.8) S F
28	(3.4) S	3.1 F	(3.0) J S	2.8 S F	(2.7) J S	2.7	4.2	4.7	(5.4) H	(5.7) H	(6.5) J H	(6.2) J H	6.5	6.4	6.3	6.1	6.0	6.4	7.3	7.3	7.2	6.0	5.6 F	3.8
29	3.4 F	3.2 S	3.0	3.0 S	2.8	(2.3) S	3.5	(4.0) S	5.0	5.3	5.6	5.7	6.1	6.2	6.2	6.0	6.0	6.0	6.4	7.0	6.4 S	(5.5) S E	4.5	4.0 F
30	(3.7) S F	(3.4) S F	3.0 F	(3.3) S F	(2.9) S F	(2.5) S F	4.7 S	(6.4) S F	7.2	8.5	7.4 Z	6.8	6.7	7.0	7.2	7.7	7.8	8.0	8.4 S	8.5	7.6	6.6	5.3 F	4.5 F
31	4.2	(3.3) S	3.2 S	(3.2) J S	(3.2) S	(3.0) J S	4.1	(5.0) J S	5.4	5.7 H	(6.6) H	6.0	6.8	6.8	7.1	6.4	6.4	6.6	6.8	7.4	7.4	6.8	6.4	5.3 S
Median	4.2	3.8	3.3	3.0	2.8	2.7	4.0	4.7	5.0	5.5	5.6	5.8	5.8	5.9	6.1	6.0	6.0	6.0	6.4	7.0	6.6	5.8	5.0	4.4
Count	31	31	31	30	29	31	31	31	31	31	31	30	31	30	29	31	31	31	31	31	31	31	30	30

Sweep 4.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1949 O - 702519

TABLE 63

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

Form adopted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), August (Month), 1951

Observed at Washington, D. C.

Lot 38.7°N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., L.H.E., H.C.

Calculated by: McC., L.H.E., H.C.

Day	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	4.5	4.0	2.9	2.0	1.7	3.3 H	4.7 J S	5.8 J H	(5.6) H	6.8	7.3	7.2	6.8	7.0	6.8	7.2	7.4	7.6	7.6	7.2 J S	7.1	5.9	4.6 F	5.6 V
2	(4.8) H	3.5 S H	3.1 V	2.7 V	2.3 S	3.1	G < (3.5) S A	< (3.9) S G	4.8	4.9	5.4	5.6 H	5.2	5.5	5.8	6.0	(6.2) H	6.0	6.4	5.8	5.7	4.8	4.5	4.1
3	3.5	3.0	(2.7) J S	2.3 F	2.0 F	3.3	4.2	5.3	< 4.4 G	5.7	5.4	5.7	5.6	5.5	5.6	5.8	6.0	6.4	6.6	6.2	6.4	5.4	4.7 F	4.5
4	4.2 J S	(4.0) J S	3.6 F	3.3 F	2.8 F	3.7	4.7 F H	5.2 F	[5.4] A	6.0	6.2	6.2	6.4	6.8	6.0	6.4	6.4	(7.2) S	7.6	7.6 J S	6.3	5.5	4.9	4.2
5	3.9	3.3	3.2	3.0	2.9	3.9	4.0	< 4.1 G	< 4.4 G	5.4	< 4.6 G	< 4.6 G	5.2	5.4	4.3	5.8	5.8	6.0	(6.0) A	6.7	6.6	5.8	5.4	5.2
6	4.6	4.0	5.3	2.9	(2.6) S	3.5	4.7	5.4	5.4	5.8	6.4 H	6.4	6.8	7.0	6.5	6.2	6.5	6.4	6.6	6.5 S	6.8	6.5	5.9	5.1
7	4.7	4.0	3.9	3.8	3.2	3.9	4.7	5.5	5.7	6.3	6.2	6.0	6.0	6.0	6.9	6.9	7.2	7.6	7.8	8.1	7.2	6.4	[5.8] A	5.4 H
8	5.0	4.2	4.2	4.1	(3.6) S	4.0 Z	5.0 J H	5.7 H	5.9 P	5.7	5.6 J H	< 5.0 G	5.6	5.8	5.8 J H	5.9	6.2	6.6	7.0	6.9	(6.4) J S	5.3	4.7 J S	4.4
9	4.2	4.2	3.9	3.7	3.4	4.2	4.9	5.0	5.5	5.4	5.3	5.6	5.5	5.8	5.7	5.9	6.0	6.1	6.5	6.5	6.6	5.1 F	4.8 F	4.5 F
10	(3.8) F	3.7 F	3.7 F	3.4 F	3.5	3.6	4.8	5.8	6.0 J H	6.6	6.0 H	7.0	6.8	6.6	6.5	6.6	6.6	6.9	7.6	7.6	6.6	5.8	4.8	4.5
11	4.4	4.1	3.5	2.9 F	2.8 F	3.0	4.6	4.8 J H	4.8	5.2	6.0 H	6.4	6.2 H	6.0	6.4	6.8	6.6	6.6 S	7.5	7.2	6.3	5.9	5.4	5.3
12	4.9	4.1	4.0	3.5	(2.6) J S	3.1	4.1	< 4.0 G K	< 4.3 G K	< 4.4 G K	< 4.5 G K	< 4.5 G K	5.2 K	< 4.7 G K	5.3 K	5.5 K	5.3 K	5.6 K	6.0 K	5.8 F K	5.6 F K	4.8 F A	4.3 F K	3.7 S K
13	(3.2) F K	(3.1) F K	(2.5) F K	(3.2) F K	K (1.8) F J	3.0 F K	< 3.8 G K	< 3.8 G K	< 4.2 G K	< 4.3 G K	< 4.4 G K	< 4.4 G K	< 4.5 G K	< 4.5 G K	K (5.2) V P	5.1 F K	4.8 F K	5.0 K F	(5.3) S K	5.5 K	5.4 S K	(4.9) S	4.5 S	(4.1) J S
14	(4.1) S	3.6	3.1 J S	2.8 S	2.7 J S	3.7 S	5.0	5.0 J H	5.5 H	5.8	5.9 J S	< 5.0 G	5.8	6.2	6.0 J S	6.1 S	6.4	6.8 F	(7.0) F	6.4 F	(6.4) J S	5.8 F	(5.8) F	F
15	F	(5.5) F S	(4.2) S F	[3.7] S	(3.2) S	3.5 S	5.0	6.2	7.0	(7.0) J P	6.6	7.0	C	C	7.2	6.6	7.0	7.8	(7.9) P	8.0 P	(7.4) B	6.0	5.9	5.3
16	4.6	3.8	(4.6) S	2.7	[2.8] F K	2.9 K	< 3.3 G K	< 3.6 G K	< 3.9 G K	< 4.4 G K	K < 4.5 B G	K < 4.7 B G	M K	M K	5.8 K	5.8 K	5.7 K	5.9 K	6.0 K	5.9 K	5.8 K	5.4	4.9	4.8
17	4.3	3.6 F S	3.2 S F	3.1	(2.7) S	4.0	5.6	6.0 F	6.4	6.4 F	6.5	6.8	6.8	7.0	7.9	8.5	9.0	7.3	7.6	7.6	6.0 F	5.0 S	4.9	4.9
18	4.2 S	3.9	3.5 V S	(3.1) A 6	(2.9) S	3.9	5.7 V	6.5	6.9	7.0	7.1	7.0 V	7.4	7.5	7.0	7.0	7.0 S	6.9	6.8	(7.4) S	7.2 S	F S	S F	S F
19	(5.9) S	(4.1) J S	(4.0) J S	3.2 F	2.9 F	3.4 S F	4.5	4.7 F	5.2 F	5.6	6.0	6.0	5.6	4.8	4.8	5.8	6.0	6.0	5.8	5.8 F	5.4 F	5.1	4.7 V S	4.7
20	4.3	3.3	2.9	2.9	[2.3] S	2.8 H K	(3.3) S K	3.5 H K	4.0 K	4.2 A	4.2 K	(4.2) S K	< 4.3 G K	< 4.3 G K	5.0 K	< 4.6 G K	4.5 K	4.9 K	5.0 K	5.2 K	K (4.2) S F	K (3.4) J S	3.1 A	3.6 K
21	2.8 K	2.3 K	1.7 F K	K 1.6 J S	1.6 F K	2.5 F K	K 3.3 F J	< 3.6 G K	< 4.0 G K	< 4.2 G K	< 4.3 G K	< 4.3 G K	< 4.2 G K	5.2 K	5.8 K	5.3 K	5.1 K	4.9 K	5.5 K	5.5 V K	4.9 S K	4.6 J A	(4.0) S A	3.4 K
22	3.0 K	(2.6) S K	F K	F K	F K	2.6 K	(3.8) S A	< 3.7 G K	< 3.8 G K	C K	M K	M K	M K	4.2 K	M K	< 3.9 G K	4.6 K	4.5 K	4.4 K	4.2 K	(4.2) S A	3.9 K	3.2 K	2.7 K
23	(2.6) S K	2.3 K	2.0 K	K 1.6 J S	K 1.4 J S	2.9 K	K 4.0 S K	5.8 S K	4.8 K	(5.4) H	5.8	6.6	5.8	6.8	5.8	5.8	6.0	5.3	6.8 S	7.2	6.2 S	4.6	(3.6) S	(3.6) S
24	3.7	3.3	3.0 J S	2.5	(2.0) J S	3.0	(4.0) S	4.5	5.2	5.2 F	5.4 F	5.8 J S	5.3 H	5.6	5.7	5.8	5.8	5.9	6.4	6.6	5.7	4.8 S F	4.2	4.2 J S
25	3.8 F	3.4 F	3.5 F K	2.6 K	K [2.5] F S	(2.4) S K	K 2.6 J S	< 3.6 G K	< 3.8 G K	< 4.1 G K	< 4.3 G K	< 4.3 G K	< 4.4 K	4.8 K	< 4.2 G K	4.7 K	4.9 H K	4.9 K	4.7 K	4.7 K	K 4.6 J A	4.6 K	(3.8) S K	K 3.4 H K
26	3.0 K	2.7 F K	K (2.6) S A	K (1.7) J S	[2.2] S K	2.8 S K	3.8	4.7 F	5.2 J	5.8	5.4 H	5.8	5.9	6.0	5.8	6.0	6.2	6.1	6.8	7.0	6.4	5.0	3.9 S	3.2 V
27	(3.7) J F	(2.9) V	(2.7) J F	(2.6) F	2.5	2.7	4.0 H	4.8 J H	5.0	5.8	5.5	5.4	5.8	6.2	6.1	6.0	6.0	6.2	6.4	7.4	6.6 S	7.7 S F	4.0 S	3.5 S
28	3.2 F	3.2	2.9	(2.7) J S	(2.5) S	3.2	4.7	5.2	5.4	5.9 J	(6.8) H	6.1 F	6.1	6.4	6.3 F	6.0	6.1	6.9	7.3	7.0 V H	6.6	5.6	5.6 F	3.4
29	3.3	3.0	2.9	2.8	(3.6) S	(2.7) V S	(4.0) S	4.4 F	5.2	5.4	5.7	5.8	6.0	6.2	6.1	5.8	6.0	6.0	6.8	6.8 S	6.0	4.9	4.2 F	(4.0) S F
30	(4.0) S F	(3.4) F	(3.1) P F	(2.9) S F	2.9 F	(3.5) S F	5.4	6.8	7.4 H	7.4	7.4	6.8	6.8	7.4	7.6	7.7	8.0	8.2	8.6	7.8	7.2	6.0	5.0 S F	4.3
31	3.6 S F	3.3 F	3.1	(3.0) J S	3.1 J S	3.3	4.5 H	5.7	5.9	5.9	6.4	6.1	[6.5] C	7.0	6.6	6.2	6.4	6.8	7.0 S	7.6	7.4	6.7	5.7	4.9
Median	4.0	3.5	3.2	2.9	2.7	3.3	4.5	5.0	5.2	5.7	5.8	5.8	5.8	6.0	5.9	6.0	6.1	6.2	6.8	6.8	6.4	5.2	4.7	4.2
Count	30	31	30	30	30	31	31	31	31	30	30	30	28	29	30	31	31	31	31	31	31	30	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 64

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

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit) August (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., L.H.E., H.C.

Calculated by: McC., L.H.E., H.C.

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							A	220	210	210	[200]A	200	200	210	210	230	(220)A	230	240					
2							230H	(220)H	220H	200H	200H	220H	200H	200H	200	260	230	230	230					
3							250	230	210H	(190)A	210	200	200	200	220	[220]M	210	A	A					
4							240	240	[230]A	(220)A	200	200	200	220H	220	[220]A	220	230	270					
5							240	220	210	210H	(200)A	(220)A	(180)H	200H	200H	220	A	A	A					
6							250	220	230	A	A	A	200	220H	230	220	[220]A	(210)H	A					
7							260	230K	AK	AK	200K	[200]AK	190K	(230)AK	200K	[220]AK	250K	230K	(260)AK					
8							240K	230K	210K	220K	200K	200K	200K	230K	200HK	200HK	230K	[240]AK	260AK					
9							Q	Q	(200)A	190H	200	200	(220)B	200	220	220	230H	240	240					
10							Q	230	210	220	200	220	200	(200)S	210H	220	220	220	(260)S					
11							270	230	220	200	200	(260)A	220	220H	220	[240]A	250	240	270					
12							Q	220	220	220	200	210	200	220	210	210	220H	220	250					
13							240	250	220	200	220	(250)A	230	210H	230	220	210	250	A					
14							240	210H	200H	(230)A	220	190H	190H	220	220	210	220	210	A					
15							A	A	[200]C	190H	180H	(200)H	180H	[190]C	200	210	210	(220)B	Q					
16							QK	220K	210K	180HK	170HK	240K	220K	MK	MK	210BK	220K	(250)AK	AK					
17							Q	220	220	(220)H	200H	190	200H	200	210	210	210	210	(230)B					
18							Q	A	210A	210	200	[180]A	170	200	220	200	210	220	A					
19							L	Q	230	220	200	200	200	200	210	200	(220)B	210H	230					
20							QK	260HK	210HK	190HK	200HK	180K	200K	200K	220K	[220]BK	220K	220K	240K					
21							QK	220K	220K	190K	190K	200K	200K	230K	230K	210K	210K	210K	AK					
22							QK	230K	230K	200K	230K	[240]MK	250K	220K	[210]MK	200K	230K	210K	(200)MK					
23							QK	230K	220HK	200H	200	200H	200	220	200H	220H	220	220	260					
24							Q	230	220	220	200F	210	220	230	220	230H	220	230	A					
25							QK	230K	220HK	200K	230K	200K	200K	200HK	200HK	230K	250HK	230HK	(260)KA					
26							Q	230	250	230	200H	200	230	210	210	200H	220	[240]B	250					
27							Q	220	220H	200	200H	190H	220	220	[210]B	210	220	230	250					
28							240	230	220	220H	190H	220	220	220H	220	210H	230	250	Q					
29							Q	Q	240	220	210H	200H	210H	220	220	220	230	230	260					
30							Q	230	220	200	200	200H	210H	200H	210H	230H	230	230	260					
31							240	230	210	200H	200H	210H	200H	200	230H	200	210H	240	240					
Median							240	230	220	200	200	200	200	210	210	220	220	230	250					
Count							12	26	30	29	30	30	31	30	30	31	30	29	20					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 65

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

Form adopted June 1946

IONOSPHERIC DATA

foF1 (Characteristic), Mc (Unit), August (Month), 1951

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: Mc C., L.H.E., H.C.

Calculated by: Mc C., L.H.E., H.C.

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							A	(3.7)L	4.3	[4.4]L	(4.5)A	4.7	(4.7)A	4.7	4.6	4.5J	4.3	4.1	L					
2							(3.5)H	(3.7)H	(4.2)S	(4.3)S	4.4H	4.6H	4.8H	4.8H	4.6	4.5	4.4	4.2	3.6					
3							3.7	4.0	(4.2)H	4.5	4.7B	4.7	4.7	4.7	4.6	[4.5]M	4.4	A	A					
4							L	4.0	(4.4)A	[4.6]A	4.7	4.8	4.8	4.8H	4.7	(4.6)A	4.5	4.1P	L					
5							L	4.2	4.3	4.6H	[4.6]A	4.7P	(4.7)H	(4.7)H	(4.4)H	(4.4)H	4.3	4.2H	A					
6							L	(4.1)L	4.4	(4.5)A	(4.8)A	(4.9)A	5.1	(5.0)H	4.9	4.8	[4.4]L	(4.0)H	L					
7							L	4.0	4.5H	4.7	4.9	[6.0]A	5.0	5.0	4.9	[4.8]A	4.7P	4.2	A					
8							L	3.9	4.5	4.6	4.7	4.9	5.0	5.0	4.9H	(4.8)H	4.5	4.2	L					
9							Q	Q	4.5	4.6H	4.7	4.8	5.0	5.0H	4.9	4.7	4.5H	4.2	3.6L					
10							Q	L	4.5	4.7	4.9	5.2	5.0	5.0J	5.0H	4.8V	4.6	4.1P	L					
11							L	3.8	4.3	4.5	4.7	4.9	5.1	5.1H	4.9	(4.7)A	4.4	4.1	L					
12							Q	3.8K	4.0K	4.4K	4.5K	4.5K	4.7K	4.7K	(4.6)SK	4.5K	4.3HK	4.0K	LK					
13							LK	3.7K	3.9K	4.2K	4.4K	4.4K	4.5K	4.5HK	4.5K	4.4K	4.3K	4.2K	AK					
14							L	L	4.3H	4.4	4.7	4.9H	4.9H	4.9	4.8	4.7	4.5	4.2	A					
15							A	A	[4.3]C	4.5H	[4.7]L	4.9H	4.8H	[4.8]C	4.7	4.6	4.4	(3.8)B	Q					
16							QK	3.4FK	3.9K	4.1HK	(4.2)HK	4.6K	4.6K	MK	MK	4.5K	4.3K	4.0K	AK					
17							Q	L	(4.3)P	(4.4)H	4.6H	4.8	4.9H	4.8	4.7	4.5	4.4	(4.0)L	L					
18							Q	A	4.2	4.5	4.7J	4.9H	5.0J	4.8J	4.7J	4.6	4.2	4.1	L					
19							L	Q	4.2	4.4	4.5	4.6	4.6	4.7	4.6	4.4	4.3	4.0H	L					
20							QK	3.6HK	4.0HK	4.2HK	4.2HK	(4.3)BK	[4.3]BK	4.3K	4.2K	[4.1]BK	4.0K	3.7K	3.2K					
21							QK	3.4K	3.8K	4.1K	4.2K	4.3K	4.3K	4.3K	4.2K	4.1K	3.7K	(3.4)SK	LK					
22							QK	3.4K	3.6K	3.8K	4.0K	[4.1]MK	4.2K	4.2K	[4.1]MK	4.0K	3.9SK	3.7K	LK					
23							QK	3.5K	[3.9]LK	4.3V	4.4	4.6H	4.6	4.6	4.5H	4.4H	4.2	L	L					
24							Q	L	4.1	4.3	(4.5)F	4.6	4.7	4.7	4.5	4.4H	4.2	3.6	A					
25							QK	3.5K	3.7HK	4.0JK	4.2K	4.3K	4.4P	4.3HK	4.3HK	4.1K	3.9HK	3.7HK	LK					
26							Q	3.7	4.2	4.4	4.5H	4.6	4.6	4.6	4.5	4.4H	4.1	L	L					
27							Q	3.5	3.8H	4.1	4.4H	4.6H	4.7	4.6	[4.6]B	4.4	4.2	3.6	L					
28							L	L	4.2	4.4H	(4.6)H	4.7	4.7	4.7H	4.5	4.4H	4.3	(4.0)L	Q					
29							Q	Q	4.1	4.3	4.5H	4.6H	4.6H	4.6	4.5	4.4	4.2	L	L					
30							Q	L	L	4.3	4.5H	4.5H	4.7H	4.7H	4.6H	4.5H	4.3	L	L					
31							L	L	L	4.4H	(4.6)H	4.7H	4.7H	4.7	4.5H	4.4	(4.2)H	3.7	L					
Median							—	3.7	4.2	4.4	4.5	4.7	4.7	4.7	4.6	4.5	4.3	4.0	—					
Count							2	19	29	31	31	31	31	30	30	31	31	26	3					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 66

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

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), August (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: Mc C., L.H.E, H.C.

Lat. 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: Mc C., L.H.E, H.C.

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							110	120	110	100	100	110	110	100	110	100	110	110	120					
2							A	110	100	100	110	110	100	100	100	100	110	100	100					
3							110	110	100	100	(110)B	(110)B	110	110	110	[120]M	120	110	110					
4							120	120	110	110	110	120	(110)B	(110)B	110	110	110	120	120					
5							120	120	110	110	110	110	110	110	110	120	110	120	120					
6							120	120	110	110	110	110	110	110	110	100	110	110	120					
7							120	110	110	110	110	(110)A	(110)A	(110)A	110	110	110	110	A					
8							120	110	110	110	110	110	120	120	110	110	110	110	120					
9							120	110	110	100	100	110	100	100	100	110	100	100	110					
10							120	100	110	110	110	100	110	100	100	100	100	100	110					
11							110	110	100	110	110	110	100	110	100	110	110	120	120					
12							100	110K	100K	100K	100K	[100]BK	100K	100K	(100)SK	100K	100K	110K	110K					
13							110K	110K	100K	100K	(100)AK	100K	(100)AK	100K	100K	100K	100K	100K	110K					
14							110H	100	100	100	100	100	100	A	A	100	100	100	A					
15							A	110	[100]C	A	A	100	A	C	A	A	A	B	B					
16							100K	110K	100K	110K	100K	100K	100BK	MK	MK	100K	110AK	110K	110K					
17							120	110	110	100	100	100	100	100H	[100]A	100	110	100	110					
18							120	110	100	100	110	100	100	100	110	A	A	A	A					
19							120H	110	100	100	110	100	100	100	100	100	(100)B	(120)B	(130)B					
20							130K	100K	110K	100K	100K	100K	(100)BK	100K	100K	[100]BH	(100)BK	100K	120SK					
21							120K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K	110K	110K					
22							110K	110K	110K	100K	100K	MK	MK	100HK	[100]MK	100K	100K	110K	(120)SK					
23							(110)SK	110K	(100)AK	(100)A	(100)A	100	100	100	100	100	100	100	110					
24							110	110	100	100	100	(100)B	100	100	100	100	110	110	130					
25							140K	120K	110K	110K	110K	110K	110K	110K	110K	110K	110K	110K	AK					
26							A	(120)A	110	100	110	110	110	110	100	110	110	(110)B	120					
27							A	120	110	110	110	110H	110	110	(100)B	110	110	120	130					
28							S	110	110	110	110	100	110	100	110	110	110	110	130					
29							120	110	(100)A	(100)A	120	110	100	110	110	120	110	110	(120)A					
30							A	120	110	110	110	110	110	110	110	(110)B	110	110	120					
31							(120)S	110	110	110	110	110	110	110	110	110	110	120	120					
Median							120	110	110	100	110	110	100	100	100	100	110	110	120					
Count							25	31	31	30	30	30	29	28	28	29	29	29	26					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 67

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

Form adopted June 1946

IONOSPHERIC DATA

foE (Characteristic), Mc (Unit), August (Month), 1951

Observed at Washington, D. C.

Lat. 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., L.H.E., H.C.

Calculated by: McC., L.H.E., H.C.

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							2.0	2.5	2.7	[2.9]A	(3.1)A	3.3	[3.3]A	3.3	3.2	[3.1]B	3.0	2.8	2.3					
2							A	2.5	2.8	3.2	3.4	3.5	3.5	(3.5)A	3.4	3.3	3.1	2.8	2.3					
3							(2.2)A	2.5	2.8	3.1P	3.4P	[3.4]A	(3.5)P	A	A	M	3.2P	A	A					
4							2.2	2.6	3.0	[3.2]A	3.4	3.6	3.6P	3.6P	B	A	(2.8)A	2.8	2.4					
5							A	2.6	3.0	[3.1]A	3.2	3.4P	(3.6)P	3.6P	3.6	3.5	3.3	3.0	2.5P					
6							1.9	2.6	3.0	A	A	A	[3.3]A	3.5	3.5	3.4	3.3	3.0	(2.4)A					
7							2.1	2.7	3.0	A	A	A	A	A	3.6P	3.5	[3.2]B	3.0	A					
8							2.1	(2.6)A	2.9	[3.1]A	3.4P	(3.6)P	3.7	[3.7]B	(3.6)P	3.4P	3.2	3.0	2.4					
9							2.1	2.8P	[3.1]A	3.4	3.5	3.5P	3.6P	(3.6)P	3.5	3.4	3.2	2.9	2.4					
10							2.0	2.4	3.0	A	B	3.6P	B	5	5	3.5	(3.3)P	2.9	(2.6)S					
11							2.1	2.5	(3.1)A	3.3	3.5P	[3.6]A	3.6P	3.6	3.5	[3.4]B	3.3	2.9	2.3					
12							A	5K	2.9K	3.1PK	AK	BK	(3.5)PK	[3.4]BK	(3.4)SK	3.3K	3.2K	3.0K	2.1K					
13							2.1K	[2.4]AK	2.7K	[3.0]BK	3.4PK	AK	AK	3.2HK	(3.4)PK	(3.3)PK	3.2PK	3.0K	2.5K					
14							(2.1)H	2.5	2.9	3.1P	3.4	3.5P	B	A	A	3.5P	[3.1]A	2.7	A					
15							A	2.5	C	A	A	B	A	C	A	A	A	B	B					
16							2.0K	2.5K	3.0K	3.2K	[3.4]BK	(3.6)PK	BK	M1K	MK	BK	3.2AK	2.9K	AK					
17							1.9	2.5	2.9P	(3.1)P	3.2	[3.4]A	(3.7)H	3.6H	A	A	3.1	2.8	B					
18							1.8	(2.5)S	(2.8)H	(3.0)P	3.1	A	A	B	B	A	A	A	A					
19							(1.9)H	2.4P	3.1	3.2P	3.3	[3.4]B	3.5P	3.5P	3.3	3.1	(3.0)B	(2.5)B	2.3					
20							2.0K	2.3K	2.8K	2.9PK	3.1PK	BK	BK	BK	SK	CK	(3.0)BK	2.5K	2.3HK					
21							1.9K	2.4K	2.8K	3.0K	3.2PK	[3.4]BK	3.4PK	3.3K	[3.2]BK	3.0K	(2.9)PK	2.5K	2.1K					
22							BK	AK	3.1K	3.2PK	(3.2)PK	MK	MK	3.3HK	[3.2]MK	3.1K	2.8PK	2.6K	2.0K					
23							1.9K	2.3K	(2.7)AK	(3.0)A	A	A	3.4	3.4	3.4	3.2P	2.9	2.6	2.6					
24							2.0	[2.5]A	2.9	3.1	3.2P	[3.3]B	3.4B	[3.4]S	3.4	3.2	3.0	2.6	2.6					
25							1.9K	2.4PK	[2.8]AK	3.1K	[3.2]BK	3.3PK	3.4K	3.4K	3.3K	3.1K	3.0K	2.6K	AK					
26							A	A	3.0	3.1P	3.2	3.4P	3.4P	3.4P	3.4	3.2	3.0	(2.6)B	2.6					
27							A	2.5	(2.8)P	3.1	3.4	3.5H	[3.4]B	3.4	[3.3]B	3.1P	2.9	2.6	2.6					
28							S	2.4	2.7	(3.1)A	3.4	(3.4)P	3.6	3.5	3.4	3.3	2.9	2.5	1.9					
29							(1.8)P	(2.5)P	(2.9)A	3.1	3.2	3.3	3.5	(3.4)B	3.3	3.2	3.0	2.5	A					
30							A	2.2	(2.5)A	[2.9]A	3.3	3.4	[3.4]A	(3.4)P	[3.3]B	(3.2)B	3.0	2.6	2.6					
31							(1.7)S	(2.4)A	3.0	3.2	3.4	[3.4]B	3.5	3.4	3.3	3.1	3.0	2.8	2.1					
Median							2.0	2.5	2.9	3.1	3.3	3.4	3.5	3.4	3.4	3.2	3.0	2.8	2.3					
Count							22	28	30	27	25	22	22	23	22	24	27	28	22					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 68

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit) August (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 39.7°N, Long. 77.1°W

75°W Mean Time

Scaled by: Mc C., L.H.E., H.C.

Calculated by: Mc C., L.H.E, H.C.

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	E	E	3.5/100	3.8/100	5.8/110	2.8/120	3.7/120	3.8/110	4.0Y/110	6.6Y/100	5.6Y/110	G	5.0/110	G	G	G	11.6/100	3.3/120	G	E	E	E	E	E
2	3.8/110	4.0/110	E	E	E	2.9/120	7.2Y/120	3.5/120	3.9/110	G	G	5.2/120	7.2Y/120	3.4/100	G	4.9/120	4.2/130	4.2/130	G	2.8/120	3.3/110	E	E	E
3	E	E	E	6.2Y/110	3.3/130	7.0/110	6.4/130	5.7/110	4.4/110	5.3/110	G	5.5/120	G	7.6Y/110	4.7/120	M	5.0/120	6.8/120	3.4/120	3.2/120	2.9/120	E	E	E
4	E	2.4/110	E	E	E	3.0/120	G	4.0/130	5.8/120	6.4F/120	G	G	G	G	G	5.8/110	4.1/120	G	3.4Y/130	3.5/120	E	E	E	E
5	E	E	E	E	E	6.6Y/130	2.9Y/130	6.4/130	4.0Y/110	G	5.5/120	4.7/120	G	G	6.8/130	G	5.0/130	6.2/130	6.6/120	5.4/120	E	3.3/120	E	2.7/120
6	E	E	E	E	E	E	3.0/130	3.6/120	5.7/120	6.4/120	5.8/110	6.0/110	3.6/110	G	6.6Y/130	G	5.4/130	3.6/120	9.0/120	10.Y/110	6.2Y/110	5.8/110	3.1/110	5.6/110
7	3.0/110	5.4/100	3.8/100	2.6/100	6.2/110	5.7/110	G	4.1/120	5.4Y/110	5.3/110	6.9/110	8.8/110	4.8Y/110	7.0Y/110	7.3/120	8.2/120	G	G	8.6/110	8.0/110	5.6Y/110	E	6.6/120	7.6/110
8	6.4Y/110	3.2/110	3.0/100	3.0/100	3.0/100	(2.5)3/130	G	3.9/120	4.2/120	3.8/110	G	G	G	5.4/120	G	G	G	5.0/120	5.4Y/130	E	E	E	E	E
9	3.8/110	3.8Y/100	E	E	E	E	E	E	3.9/110	G	G	G	G	G	G	G	G	G	G	4.3/120	3.7/110	3.2/10	5.6/100	5.5/110
10	E	2.5/110	2.6Y/110	E	E	9.3/130	G	3.7/100	G	G	G	G	G	G	G	G	G	G	G	3.6/120	E	E	E	2.8Y/110
11	2.5/100	2.7/120	E	E	E	E	2.8/120	9.8Y/120	13.4/100	G	G	4.0/110	G	G	G	5.2/130	G	G	G	2.3/110	3.9/110	E	E	E
12	2.5/130	3.1/130	3.5/120	3.5/120	(2.0)5/100	E	12.9/100	G	G	5.6Y/100	3.5/100	G	G	5.4Y/100	G	G	G	G	3.7/110	E	E	2.4/100	2.7/100	2.7/100
13	2.9/100	E	E	8.5Y/110	3.9/120	9.6/110	G	3.5/120	G	G	3.1/100	4.9/100	4.5/100	G	G	G	G	G	5.4/110	3.8/110	E	2.7/110	6.2/120	2.7/100
14	2.2/100	E	E	E	18.2Y/120	6.8Y/120	3.0/130	7.3Y/90	4.0Y/110	4.8/100	G	G	G	3.2/110	3.4/110	G	3.4/100	4.0H/100H	4.6/100	3.7/110	3.7/110	E	E	E
15	E	E	E	E	E	E	6.5/110	5.4/100	C	3.0/100	3.3Y/100	G	3.0/100	C	4.4Y/100	4.5H/100	4.0/100	4.0Y/100H	G	E	E	E	E	E
16	E	2.4/100	E	3.0/100	1.7/100	E	G	G	G	G	G	G	G	M	M	G	5.4/110	6.8/110	4.2/110	5.4Y/110	2.3/100	3.9/100	3.0/100	
17	2.3/100	2.3/100	E	E	E	E	3.4Y/130	G	4.4Y/120	4.8Y/110	3.7/110	4.6/100	G	6.0/100	10.0Y/100	3.6/110	G	G	G	1.7/120	E	3.0/110	E	E
18	3.9/100	3.8/100	5.0/100	6.2/100	4.9 5/100	3.7/100	3.4/120	4.9/110	4.5/110	4.5Y/110	4.8/110	4.9/100	3.6/100	G	G	3.5/100	3.8/100	3.6/100	3.6Y/100	3.3/120	3.5/110	3.8/110	3.6/110	(2.5)5/100
19	2.4/100	2.3/100	2.4/100	3.0/100	E	E	G	3.5Y/110	5.3/110	5.0/110	G	G	G	G	G	G	G	G	G	3.4/110	2.9/120	E	E	E
20	E	E	E	E	E	E	G	G	6.2Y/100	G	G	G	G	G	G	B	G	G	G	3.8/110	3.0Y/120	E	E	E
21	E	2.5/140	E	E	E	E	G	6.4Y/110	G	G	G	G	G	G	G	G	G	3.0/130	3.4/120	3.8/120	3.8/110	5.0/110	3.2/110	E
22	E	E	E	E	E	E	G	G	9.0Y/120	8.5Y/110	G	M	G	G	M	G	G	G	G	1.9/130	2.3/120	E	E	E
23	E	E	E	2.3Y/130	E	E	G	3.5Y/120	4.7/100	6.6Y/100	6.8/100	5.0/100	G	8.0Y/120	G	G	4.4Y/130	G	5.6Y/100	E	E	E	E	E
24	E	E	E	E	E	E	G	4.9Y/110	G	G	G	G	G	G	G	G	G	G	3.7/130	5.8/120	2.6Y/120	3.5/120	3.2/110	5.0/110
25	7.4/110	5.6/110	5.0/110	2.9/110	E	E	G	G	3.7/120	G	G	G	G	G	G	G	G	G	3.1Y/120	E	E	3.6/120	3.9/120	4.5Y/110
26	E	3.0/120	4.5/110	6.6/110	4.0/130	E	3.0/130	3.5/120	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
27	E	E	E	E	E	2.4/110	1.9/120	3.2Y/140	G	G	G	G	G	G	G	8.8/100	G	G	3.4Y/130	2.1/120	E	E	E	E
28	E	E	2.7/100	E	7.6Y/120	E	2.0/120	3.3/120	G	3.8Y/120	G	G	4.7/130	G	G	G	G	G	G	E	E	4.8/110	5.0/110	E
29	E	E	E	E	E	E	G	G	7.3Y/130	3.7Y/120	G	G	G	G	G	G	G	G	3.3Y/120	E	3.2/110	E	E	E
30	E	E	E	2.9Y/100	E	E	2.1/120	3.3Y/120	8.2Y/110	4.0/120	G	G	4.2/110	G	G	9.0Y/110	G	8.2Y/120	G	1.7/120	E	3.8/110	E	E
31	E	8.4Y/110	E	E	E	E	G	3.2Y/130	G	G	G	G	G	G	G	G	G	C	3.4/120	3.0/120	3.7/120	6.4/120	E	E
Median	**	2.3	**	**	**	**	**	3.5	4.0	3.7	**	**	**	**	**	**	**	**	3.4	3.0	2.3	**	**	**
Count	31	31	31	31	31	31	31	31	30	31	31	30	31	29	29	30	31	31	31	31	31	31	31	31

** MEDIAN fEs LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 69

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

Form adopted June 1946

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), August (Month), 1951

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W 75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., H.C., L.H.E.

Colculated by: McC., H.C., L.H.E.

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	1.7	2.0^{S}	(2.1)$^{I}_{F}$	A	1.8	2.0^{S}	2.0	(2.0)$^{I}_{S}$	(2.0)$^{D}_{H}$	(1.9)$^{V}_{H}$	2.2	2.1	2.0	1.9	2.0	(1.7)^{H}	2.0	1.9	2.0	1.9	2.0	1.9	1.8	1.9
2	1.9^{H}	2.0$^{F}_{H}$	1.9	1.9	1.8	1.7	G	G	G	1.9	1.9	1.9	G	1.8	1.8	1.8	1.9	(2.0)$^{H}_{E}$	2.0	2.2	1.9	2.0	1.9^{S}	1.9
3	2.0	2.0	2.0^{F}	2.0^{F}	1.8	2.0	G	2.0^{F}	(2.2)^{H}	1.9	(1.8)^{B}	1.8	2.0^{H}	1.8	1.8	M	1.9	2.1	2.0	2.0	1.9	1.9	1.9^{Z}	(1.8)$^{I}_{F}$
4	1.8	1.9^{F}	1.9	1.8^{Z}	2.0	1.9	2.0^{F}	2.0^{F}	2.0	1.8^{F}	1.9	1.8	1.8	1.9	1.9	1.9	1.8	1.9	(1.9)^{S}	2.0	1.9	2.0^{S}	1.8	1.8
5	1.9	1.9	1.9	1.9	1.9	1.9	2.3	G	G	G	G	G	1.8^{H}	1.8^{H}	1.7	1.6	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
6	1.9	1.9	1.9	1.9	1.9	2.0	2.1	1.9	2.0	2.0	2.0	1.8	1.7	1.8	2.0	1.9	1.9	2.0	1.9	2.0	1.9	2.0	1.9	1.9
7	1.9	2.0	1.7	1.9	1.8	1.9	2.0	2.0	2.1	(1.9)$^{D}_{H}$	2.0	A	1.9	1.8^{P}	1.7	1.9	1.9	1.8	2.0	1.9	1.9	1.9	1.9	1.8
8	1.9^{H}	1.9^{F}	1.9^{F}	1.9	1.9	2.0	2.4	(2.0)$^{I}_{H}$	2.1	1.8	1.8	2.3	1.7	1.7	1.6	(1.7)$^{I}_{H}$	1.8	1.9^{S}	1.9	(2.1)^{S}	2.1	(2.1)^{S}	1.8	1.9^{S}
9	1.8	1.8^{S}	1.8	1.8	1.8^{F}	1.9	2.1	2.0	2.0	1.8	1.8	1.7	1.8	1.8	1.9	1.8	1.8	2.0	2.0	1.9	2.0^{S}	2.1^{F}	1.8^{F}	(1.9)$^{E}_{S}$
10	1.8^{F}	(1.9)^{F}	(1.8)^{F}	1.7^{F}	(1.7)$^{S}_{H}$	(1.9)$^{I}_{S}$	2.0	1.9	(2.1)$^{I}_{H}$	(1.9)$^{I}_{H}$	1.7	1.9	1.9	1.9^{H}	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	1.9	1.8
11	(1.8)$^{I}_{S}$	1.8	(1.9)^{S}	(1.9)$^{I}_{B}$	1.8^{S}	1.8	1.9	2.1	1.6^{H}	(1.9)$^{I}_{H}$	(1.7)$^{I}_{H}$	1.9	1.9	1.8	1.9	1.8	1.9	1.9	2.0^{F}	2.0	1.9	1.9	1.8	1.8
12	(1.9)$^{I}_{S}$	1.9	1.8	(1.9)^{S}	2.0	1.9	(1.9)$^{I}_{A}$	2.0^{K}	1.8^{K}	G^{K}	G^{K}	G^{K}	G^{K}	1.6^{K}	G^{K}	1.6^{K}	1.8^{K}	1.7^{K}	1.9$^{F}_{K}$	1.9^{K}	2.0$^{S}_{K}$	1.9$^{F}_{K}$	1.9$^{F}_{K}$	1.9$^{F}_{K}$
13	1.8$^{F}_{K}$	1.7$^{F}_{K}$	(1.6)$^{F}_{K}$	S^{K}	1.6$^{F}_{K}$	^{F}(1.9)$^{S}_{K}$	2.1^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	1.6^{K}	G.^{K}	^{P}(1.6)$^{F}_{K}$	1.6$^{H}_{K}$	G^{K}	1.7^{K}	1.9^{K}	1.9$^{S}_{K}$	1.9^{S}	(1.9)$^{I}_{S}$	(1.7)$^{P}_{S}$
14	1.9^{S}	1.9	2.0	1.8^{S}	(1.8)$^{I}_{S}$	(1.9)$^{I}_{S}$	2.3	(2.2)^{H}	(1.9)$^{I}_{H}$	2.0	2.1	1.9	2.0	1.9	(1.9)^{I}	(1.8)$^{I}_{S}$	1.9	1.9	2.0^{F}	2.1^{F}	(1.9)^{F}	1.9^{F}	(1.7)^{F}	(1.9)^{F}
15	(1.9)$^{F}_{S}$	(1.9)$^{S}_{E}$	1.9	(1.9)$^{F}_{S}$	(2.0)^{S}	(1.6)^{S}	2.0	21	C	2.3	(1.8)$^{I}_{P}$	1.7	2.0	C	2.1	2.0	1.9	1.9	(1.8)^{P}	(1.7)^{B}	2.0	(1.9)^{B}	1.9	1.9
16	1.9	1.8	1.8	1.9^{S}	^{S}(1.8)$^{D}_{K}$	^{Z}(1.8)$^{F}_{K}$	2.3^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	1.7^{K}	M^{K}	M^{K}	2.0^{K}	1.9^{K}	2.1^{K}	2.1^{K}	2.1^{K}	1.9^{K}	1.9^{S}	(1.9)^{A}	2.0
17	1.9^{S}	2.0	1.9	1.9$^{S}_{E}$	2.1^{V}	(2.0)$^{S}_{E}$	2.3	2.4	2.2^{F}	2.2	1.9$^{F}_{H}$	1.9^{F}	1.9	1.8	1.9	1.9	1.9	2.0	2.0	2.2	2.1^{H}	2.0^{F}	1.9	1.9^{S}
18	(2.0)^{S}	(1.9)^{S}	2.0$^{S}_{E}$	(2.1)^{S}	(1.8)^{S}	(2.1)^{S}	2.1	2.3	2.1	2.0	2.0	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	(2.0)$^{F}_{V}$	5^{F}	5^{F}
19	(1.9)^{S}	(2.2)$^{S}_{I}$	(1.9)$^{I}_{S}$	(1.9)$^{I}_{S}$	2.0^{F}	(1.9)$^{S}_{E}$	2.0	2.1^{H}	1.9	2.0	21^{F}	2.0	2.0^{H}	1.9	1.9	(1.8)$^{I}_{S}$	2.0	2.1	2.0	2.1	1.9^{S}	1.8^{S}	1.8	1.7
20	1.9	1.9	1.8	(1.8)$^{D}_{S}$	(1.8)$^{I}_{S}$	1.7^{K}	2.1^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	B^{K}	1.7$^{B}_{K}$	1.7^{K}	2.0^{K}	2.1^{K}	2.0$^{S}_{K}$	1.8$^{F}_{K}$	2.0$^{V}_{K}$	1.9^{K}
21	^{I}(2.1)$^{S}_{K}$	2.1^{K}	2.0^{K}	1.9^{K}	1.8^{K}	1.9$^{F}_{K}$	2.3^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	1.5^{K}	1.9^{K}	1.7^{K}	1.9^{K}	1.7^{K}	1.8^{K}	2.0^{K}	2.1^{K}	(1.6)$^{S}_{K}$	1.8^{K}	1.7^{K}
22	1.9^{K}	1.9^{K}	^{S}(1.9)$^{F}_{K}$	F^{K}	F^{K}	(1.8)$^{F}_{K}$	2.1$^{F}_{K}$	G^{K}	G^{K}	G^{K}	G^{K}	M^{K}	G^{K}	G^{K}	M^{K}	G^{K}	^{I}(1.6)$^{S}_{K}$	2.0^{K}	2.0^{K}	2.0^{K}	1.9^{K}	1.9^{K}	2.0^{K}	^{I}(1.9)$^{S}_{K}$
23	1.9^{K}	1.9^{K}	2.0$^{F}_{K}$	2.0$^{F}_{K}$	1.8^{K}	^{S}(1.8)$^{I}_{K}$	2.1$^{H}_{K}$	2.2^{K}	2.4$^{H}_{K}$	(2.0)^{V}	2.0	2.0^{H}	2.0	1.9	2.0	1.9	2.0	2.0^{S}	(1.8)^{S}	2.1	2.0	2.1	2.0	1.9
24	1.8	1.9$^{F}_{S}$	(1.8)$^{I}_{S}$	1.9	1.9^{S}	1.9	2.2	(2.1)$^{I}_{S}$	(1.9)$^{I}_{S}$	(2.0)$^{I}_{S}$	1.9^{F}	1.9$^{F}_{H}$	(2.1)$^{I}_{H}$	1.9^{H}	1.9^{H}	2.0	2.0	2.0	2.0	2.0	2.0	2.0^{H}	1.9$^{F}_{S}$	1.7	1.7
25	1.8	1.8^{F}	^{I}(1.8)$^{K}_{S}$	^{F}(1.9)$^{I}_{K}$	^{F}(1.7)$^{S}_{K}$	^{F}(1.7)$^{S}_{K}$	2.0^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	1.7^{K}	G^{K}	1.9^{K}	1.8$^{H}_{K}$	2.0^{K}	2.0^{K}	^{I}(1.9)$^{S}_{K}$	1.8^{K}	^{F}1.8$^{H}_{K}$	(1.9)$^{S}_{K}$
26	1.9$^{H}_{K}$	1.8^{K}	^{I}(1.9)$^{F}_{K}$	A^{K}	5^{K}	^{S}(1.8)$^{F}_{K}$	1.9	(2.0)$^{I}_{S}$	2.2	2.0	2.1^{S}	1.9^{H}	1.9	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	(2.0)^{S}	1.9
27	(1.9)$^{I}_{S}$	(1.7)$^{F}_{S}$	(1.9)$^{I}_{N}$	1.8^{F}	(1.7)^{S}	(1.7)$^{F}_{S}$	(2.0)^{S}	2.4^{H}	(1.9)^{H}	2.0	2.1	1.9^{H}	1.7	1.9	2.0	2.0	2.0	1.9^{S}	2.0^{S}	2.0	2.1^{S}	2.1^{S}	(2.0)$^{S}_{F}$	(2.0)$^{S}_{F}$
28	(1.9)^{S}	1.9^{F}	(1.9)$^{I}_{S}$	1.9$^{S}_{E}$	(1.8)$^{I}_{S}$	1.9	2.2	2.1	(2.1)^{H}	(2.0)^{H}	(2.2)$^{I}_{H}$	(2.0)$^{I}_{H}$	2.1	2.0	2.1	2.0	2.0	1.9	2.0	2.1	2.1	1.9	2.1^{F}	2.0
29	1.8^{F}	1.9^{S}	1.9	1.8^{S}	1.8	(2.0)^{S}	2.1	(2.0)^{S}	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1^{S}	(2.0)$^{S}_{E}$	1.9	1.9^{F}
30	(1.9)$^{S}_{E}$	(1.9)$^{S}_{E}$	1.9^{F}	(1.9)$^{S}_{E}$	(1.8)$^{S}_{E}$	(2.0)$^{S}_{E}$	(2.1)$^{I}_{S}$	(2.1)$^{S}_{E}$	2.2	2.4	2.0^{Z}	2.2	2.0	2.0	1.9	2.0	2.0	2.0	2.0^{S}	2.0	2.0	2.0	1.9^{F}	1.9^{F}
31	1.9	(1.8)^{S}	1.8^{S}	(1.8)$^{I}_{S}$	(1.8)^{S}	(2.0)$^{I}_{S}$	2.1	(2.1)$^{I}_{S}$	2.2	2.4^{H}	(1.9)^{H}	2.0	1.9	2.0	2.2	2.0	1.9	1.9	2.0	2.0	1.9	2.0	2.0	1.9^{S}
Median	1.9	1.9	1.9	1.9	1.8	1.9	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.9
Count	31	31	31	27	29	31	31	31	30	31	31	29	31	29	29	29	31	31	31	31	31	31	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 70

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

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F2 (Characteristic) ____ (Unit) August (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: Mc C., L.H.E., H.C.

Calculated by: Mc C., L.H.E., H.C.

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	2.6	2.9^{S}	(3.1)$^{T}_{F}$	A	2.7	3.0^{S}	2.9	(2.9)^{S}	(2.9)$^{D}_{H}$	(2.8)$^{V}_{H}$	3.2	3.1	3.0	2.8	2.9	(2.4)^{H}	2.9	2.8	3.0	2.9	2.9	2.9	2.8	2.9
2	2.9^{H}	3.0$^{F}_{M}$	2.9	2.8	2.7	2.6	G	G	G	2.8	2.9	2.8	G	2.7	2.7	2.7	2.9	(3.0)$^{H}_{F}$	3.0	3.2	2.9	3.0	2.8^{S}	2.9
3	3.0	3.0	2.8^{F}	3.0^{F}	2.7	3.0	G	3.0^{F}	(3.2)^{H}	2.9	(2.7)^{B}	2.8	3.0^{H}	2.7	2.7	M	2.9	3.1	3.0	3.0	2.9	2.8	2.8^{L}	(2.7)$^{T}_{F}$
4	2.7	2.8^{F}	2.9	2.7^{L}	3.0	2.9	3.0^{F}	3.0^{F}	3.0	2.8^{F}	2.9	2.8	2.7	2.8	2.9	2.9	2.7	2.8	(2.8)^{S}	3.0	2.9	2.9^{S}	2.8	2.7
5	2.8	2.9	2.8	2.8	2.8	2.9	3.3	G	G	G	G	G	2.7^{H}	2.8^{H}	2.6	2.4	2.7	2.8	2.9	2.8	2.9	2.8	2.8	2.8
6	2.8	2.9	2.9	2.8	2.8	3.0	3.1	2.9	2.9	3.0	3.0	2.7	2.6	2.8	2.9	2.9	2.8	3.0	2.9	3.0	2.8	2.9	2.9	2.8
7	2.8	3.0	2.6	2.8	2.7	2.8	3.0	3.0	3.1	(2.7)$^{D}_{H}$	3.0	A	2.8	2.7^{P}	2.6	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.8
8	2.8^{H}	2.8^{F}	2.8^{F}	2.8	2.8	3.0	3.4	(3.0)$^{T}_{H}$	3.0	2.7	2.7	3.3	2.6	2.6	2.5	(2.4)$^{T}_{H}$	2.8	2.9^{S}	2.8	(3.1)^{S}	3.0	(3.0)^{S}	2.8	2.8^{S}
9	2.7	2.7^{S}	2.7	2.7	2.7^{F}	2.9	3.1	3.0	3.0	2.7	2.7	2.6	2.7	2.7	2.9	2.8	2.8	2.9	2.9	2.9	3.0^{S}	3.0^{F}	2.7^{F}	(2.8)$^{F}_{S}$
10	2.8^{F}	(2.9)^{F}	(2.7)^{F}	2.6^{F}	(2.6)$^{S}_{H}$	(2.8)$^{S}_{S}$	3.0	2.9	(3.1)$^{T}_{H}$	(2.8)$^{T}_{H}$	2.6	2.8	2.9	2.8^{H}	2.9	2.9	2.9	3.0	2.9	3.0	3.0	2.9	2.9	2.8
11	(2.7)$^{S}_{S}$	2.7	(2.8)^{S}	(2.9)$^{T}_{B}$	2.7^{S}	2.7	2.8	3.1	2.4^{H}	(2.8)$^{T}_{H}$	(2.6)$^{T}_{H}$	2.8	2.8	2.7	2.8	2.8	2.9	2.9	3.0^{F}	3.0	2.8	2.8	2.8	2.7
12	(2.9)$^{T}_{S}$	2.8	2.7	(2.8)^{S}	3.0	2.8	(2.8)$^{T}_{A}$	3.0^{K}	2.8^{K}	G^{K}	G^{K}	G^{K}	G^{K}	2.4^{K}	G^{K}	2.5^{K}	2.8^{K}	2.6^{K}	2.9$^{F}_{K}$	2.9^{K}	2.9$^{S}_{K}$	2.8$^{F}_{K}$	2.8$^{F}_{K}$	2.9$^{F}_{K}$
13	2.7$^{F}_{K}$	2.5$^{F}_{K}$	(2.4)$^{F}_{K}$	5^{K}	2.5$^{F}_{K}$	K(2.8)$^{F}_{S}$	3.0^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	2.4^{K}	G^{K}	K(2.4)$^{D}_{F}$	2.4$^{H}_{K}$	G.^{K}	2.6^{K}	2.8^{K}	2.8$^{S}_{K}$	2.8^{S}	(2.8)$^{T}_{S}$	(2.6)$^{P}_{S}$
14	2.8^{S}	2.9	3.0	2.7^{S}	(2.8)$^{T}_{S}$	(2.8)$^{T}_{S}$	3.3	(3.2)^{H}	(2.8)$^{T}_{H}$	3.0	3.1	2.9	3.0	2.8	(2.8)^{T}	(2.7)$^{T}_{S}$	2.8	2.8	3.0^{F}	3.1^{F}	(2.8)^{F}	2.9^{F}	(2.7)^{F}	(2.8)^{F}
15	(2.8)$^{F}_{S}$	(2.8)$^{S}_{F}$	2.8	(2.9)$^{F}_{S}$	(3.0)^{S}	(2.6)^{S}	3.1	3.1	C	3.3	(2.7)$^{T}_{P}$	2.6	2.9	C	3.1	3.0	2.9	2.8	(2.7)^{P}	(2.6)^{B}	3.0	(2.9)^{B}	2.9	2.9
16	2.9	2.7	2.7	2.8^{S}	K(2.7)$^{S}_{P}$	K(2.7)$^{L}_{F}$	3.3^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	2.6^{K}	M^{K}	M^{K}	3.0^{K}	2.9^{K}	3.1^{K}	3.1^{K}	3.1^{K}	2.8^{K}	2.9^{S}	(2.8)^{A}	2.9
17	2.8^{S}	3.0	2.9	2.9$^{S}_{F}$	3.1^{V}	(3.0)$^{S}_{F}$	3.3	3.4	3.2^{F}	3.2	2.9$^{F}_{H}$	2.9^{F}	2.8	2.7	2.8	2.9	2.9	3.0	3.0	3.2	3.1^{H}	3.0^{F}	2.8	2.7^{S}
18	(3.0)^{S}	(2.9)^{S}	3.0$^{F}_{S}$	(3.1)^{S}	(2.7)^{S}	(3.1)^{S}	3.1	3.4	3.2	3.0	3.0	3.3	3.0	3.1	3.2	3.1	3.1	3.1	3.1	3.1	2.9	(2.9)$^{F}_{V}$	5^{F}	5^{F}
19	(2.9)^{S}	(3.2)$^{S}_{F}$	(2.8)$^{T}_{S}$	(2.8)$^{T}_{S}$	3.0^{F}	(2.8)$^{S}_{F}$	3.0	3.1^{H}	2.8	3.0	3.1^{F}	3.0	3.0^{H}	2.8	2.8	(2.8)$^{T}_{S}$	2.9	3.1	3.0	3.1	2.8^{S}	2.7^{S}	2.7	2.6
20	2.8	2.8	2.7	(2.7)$^{F}_{S}$	(2.7)$^{T}_{S}$	2.6^{K}	3.1^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	B^{K}	2.6$^{B}_{K}$	2.5^{K}	2.9^{K}	3.1^{K}	3.0$^{S}_{K}$	2.7$^{F}_{K}$	3.0$^{V}_{K}$	2.8^{K}
21	K(3.1)$^{T}_{S}$	3.1^{K}	2.9^{K}	2.8^{K}	2.7^{K}	2.9$^{F}_{K}$	3.4^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	2.3^{K}	2.9^{K}	2.5^{K}	2.8^{K}	2.6^{K}	2.7^{K}	3.0^{K}	3.1^{K}	(2.5)$^{S}_{K}$	2.7^{K}	2.6^{K}
22	2.8^{K}	2.8^{K}	K(2.8)$^{F}_{S}$	F^{K}	F^{K}	(2.7)$^{F}_{K}$	3.1$^{F}_{K}$	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	M^{K}	G^{K}	G^{K}	M^{K}	G^{K}	K(2.5)$^{T}_{S}$	3.0^{K}	2.9^{K}	3.0^{K}	2.9^{K}	2.9^{K}	3.0^{K}	K(2.8)$^{T}_{S}$
23	2.8^{K}	2.8^{K}	2.9$^{F}_{K}$	2.9$^{F}_{K}$	2.7^{K}	K(2.7)$^{T}_{S}$	3.1$^{H}_{K}$	3.2^{K}	3.4$^{H}_{K}$	(3.0)^{V}	3.0	3.0^{H}	3.0	2.8	2.9	2.8	3.0	3.0^{S}	(2.7)^{S}	3.0	3.0	3.0	3.0	2.8
24	2.7	2.8$^{F}_{S}$	(2.7)$^{T}_{S}$	2.8	2.8^{S}	2.8	3.2	(3.1)$^{T}_{S}$	(2.9)$^{T}_{S}$	(3.0)$^{T}_{S}$	2.8^{F}	2.8$^{F}_{H}$	(3.1)$^{T}_{H}$	2.9^{H}	2.9^{H}	2.9	3.0	3.0	3.0	3.0	3.0^{H}	2.9$^{F}_{S}$	2.6	2.6
25	2.7	2.7^{F}	K(2.7)$^{T}_{S}$	K(2.8)$^{F}_{S}$	K(2.6)$^{S}_{F}$	K(2.6)$^{F}_{S}$	3.0^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	G^{K}	2.5^{K}	G^{K}	2.8^{K}	2.7$^{H}_{K}$	2.9^{K}	3.0^{K}	K(2.9)$^{T}_{S}$	2.7^{K}	K 2.7$^{F}_{H}$	(2.8)$^{S}_{K}$
26	2.9$^{H}_{K}$	2.8^{K}	K(2.8)$^{T}_{F}$	A^{K}	5^{K}	K(2.8)$^{S}_{F}$	2.9	(3.0)$^{T}_{S}$	3.2	3.0	3.1^{S}	2.8^{H}	2.9	3.0	3.0	2.9	3.0	3.0	2.9	2.9	3.0	3.0	(3.0)^{S}	2.9
27	(2.9)$^{T}_{S}$	(2.5)$^{F}_{S}$	(2.8)$^{T}_{H}$	2.9^{F}	(2.6)^{S}	(2.6)$^{F}_{S}$	(3.0)^{S}	3.4^{H}	(2.9)^{H}	3.0	3.2	2.9^{H}	2.6	2.8	3.0	3.0	3.0	2.9^{S}	3.0^{S}	2.9	3.1^{S}	3.1^{S}	(2.9)$^{S}_{F}$	(2.9)$^{S}_{F}$
28	(2.9)^{S}	2.8^{F}	(2.8)$^{T}_{S}$	2.8$^{S}_{F}$	(2.7)$^{T}_{S}$	2.8	3.2	3.1	(3.2)^{H}	(2.9)^{H}	(3.2)$^{T}_{H}$	(3.0)$^{T}_{H}$	3.2	3.0	3.1	3.0	3.0	2.9	3.0	3.1	3.1	2.9	3.1^{F}	3.0
29	2.7^{F}	2.8^{S}	2.8	2.7^{S}	2.7	(3.0)^{S}	3.1	(3.0)^{S}	3.0	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1^{S}	(3.9)$^{S}_{F}$	2.9	2.9^{F}
30	(2.8)$^{S}_{F}$	(2.8)$^{S}_{F}$	2.8^{F}	(2.9)$^{S}_{F}$	(2.8)$^{S}_{F}$	(3.0)$^{S}_{F}$	(3.1)$^{T}_{S}$	(3.1)$^{S}_{F}$	3.2	3.5	3.0^{Z}	3.2	3.0	3.0	2.9	3.0	2.9	3.0	3.0^{S}	3.1	3.0	3.0	2.9^{F}	2.9^{F}
31	2.9	(2.7)^{S}	2.7^{S}	(2.7)$^{T}_{S}$	(2.8)^{S}	(3.0)$^{T}_{S}$	3.2	(3.1)$^{T}_{S}$	3.2	3.5^{H}	(2.9)^{H}	3.0	2.8	3.0	3.2	3.0	2.9	2.9	3.0	3.0	2.9	3.0	3.0	2.9^{S}
Median	2.8	2.8	2.8	2.8	2.7	(2.8)	3.1	3.0	2.9	2.8	2.9	2.8	2.8	2.8	2.9	2.8	2.9	2.9	2.9	3.0	2.9	2.9	2.8	2.8
Count	31	31	31	27	29	31	31	31	30	31	31	29	31	29	29	29	31	31	31	31	31	31	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 71

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

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1 (Characteristic), (Unit) August (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Lang 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: Mc C., L.H.E., H.C.

Calculated by: Mc C., L.H.E., H.C.

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							A	(3.6)^{L}	3.7	L	(3.6)^{A}	3.7	(3.7)^{A}	3.7	3.8	(3.5)^{J}	3.7	3.6	L							
2							H	(3.4)^{H}	(3.4)^{S}	(3.8)^{S}	3.8^{H}	3.7^{H}	3.8^{H}	3.7^{H}	3.8	3.4	3.5	3.6	3.5							
3							3.0	3.4	(3.6)^{H}	3.7	3.7^{B}	4.0	3.8	3.8	3.8	M	3.5	A	A							
4							L	4.0	A	A	3.7	3.7	3.7	3.7^{H}	3.6	A	3.3	3.6^{P}	L							
5							L	3.5	3.5	3.5^{H}	A	3.7^{P}	(3.7)^{H}	(3.7)^{H}	(4.0)^{H}	(3.6)^{H}	3.6	3.4^{H}	A							
6							L	(3.3)^{L}	3.5	A	A	(3.4)^{A}	3.6	(3.5)^{H}	3.5	3.4	L	(3.7)^{H}	L							
7							L	3.4	3.4^{H}	3.6	3.7	A	3.9	3.5	3.8	A	3.4^{P}	3.7	A							
8							L	3.5	3.9	3.7	4.0	4.1	4.1	3.2	3.7^{H}	(3.8)^{H}	3.6	3.7	L							
9							Q	Q	3.5	3.6^{H}	3.7	3.8	3.6	3.7^{H}	3.8	3.7	3.7^{H}	3.3	3.6^{L}							
10							Q	L	3.4	3.5	3.5	3.6	3.7	(3.7)^{J}	3.7^{H}	3.7^{V}	3.7	3.7^{P}	L							
11							L	3.4	3.5	3.6	3.8	3.3	3.5	3.6^{H}	3.7	(3.5)^{A}	3.5	3.6	L							
12							Q	3.5^{K}	3.7^{K}	3.7^{K}	3.9^{K}	3.7^{K}	3.7^{K}	3.7^{K}	(3.7)$^{S}_{K}$	3.7^{K}	3.8$^{H}_{K}$	3.5^{K}	L^{K}							
13							L^{K}	3.3^{K}	3.7^{K}	3.7^{K}	3.8^{K}	3.7^{K}	3.7^{K}	3.7$^{H}_{K}$	3.6^{K}	3.6^{K}	3.5^{K}	3.3^{K}	A^{K}							
14							L	L	3.6^{H}	3.6	3.6	3.5^{H}	3.9^{H}	3.6	3.7	3.6	3.4	3.3	A							
15							A	A	C	3.6^{H}	L	3.0^{H}	3.9^{H}	C	3.5	3.6	3.6	(3.7)^{B}	Q							
16							Q^{K}	3.6$^{F}_{K}$	3.6^{K}	3.6$^{H}_{K}$	(4.0)$^{H}_{K}$	3.6^{K}	3.8^{K}	M^{K}	M^{K}	3.6^{K}	3.6^{K}	3.6^{K}	A^{K}							
17							Q	L	(3.6)^{D}	(3.7)^{H}	4.0^{H}	3.7	3.6^{H}	3.5	3.6	3.5	3.6	(3.6)^{L}	L							
18							Q	A	3.9	3.8	(4.0)^{J}	3.9^{H}	(3.8)^{J}	(3.9)^{J}	(3.6)^{J}	3.5	3.6	3.5	L							
19							L	Q	3.5	3.6	3.8	3.5	3.8	3.6	3.5	3.6	3.5	3.4^{H}	L							
20							Q^{K}	3.4$^{H}_{K}$	3.4$^{H}_{K}$	3.8$^{H}_{K}$	3.9$^{H}_{K}$	(4.1)$^{B}_{K}$	B^{K}	3.6^{K}	3.7^{K}	B^{K}	3.7^{K}	3.6^{K}	3.6^{K}							
21							Q^{K}	3.5^{K}	3.7^{K}	3.9^{K}	4.0^{K}	3.8^{K}	3.7^{K}	3.8^{K}	3.7^{K}	3.7^{K}	4.0^{K}	(4.1)$^{S}_{K}$	L^{K}							
22							Q^{K}	3.5^{K}	3.7^{K}	3.8^{K}	3.7^{K}	M^{K}	M^{K}	3.9^{K}	M^{K}	3.7^{K}	3.6$^{S}_{K}$	3.5^{K}	L^{K}							
23							Q^{K}	3.6^{K}	L^{K}	4.0^{V}	3.8	3.7^{H}	3.7	3.6	3.6^{H}	3.5^{H}	3.6	L	L							
24							Q	L	3.5	3.5	(3.7)^{F}	3.7	3.7	3.6	3.5	3.5^{H}	3.3	3.6	A							
25							Q^{K}	3.5^{K}	3.7$^{H}_{K}$	(3.7)$^{J}_{K}$	3.7^{K}	3.9^{K}	3.8$^{P}_{K}$	3.8$^{H}_{K}$	3.8$^{H}_{K}$	3.6^{K}	3.5$^{H}_{K}$	3.6$^{H}_{K}$	L^{K}							
26							Q	3.4	3.5	3.7	3.6^{H}	3.8	3.4	3.7	3.6	3.5^{H}	3.5	L	L							
27							Q	3.5	3.7^{H}	3.9	3.7^{H}	3.6^{H}	3.6	3.5	B	3.5	3.4	3.7	L							
28							L	L	3.5	3.6^{H}	(3.7)^{H}	3.7	3.7	3.7^{H}	3.6	3.6^{H}	3.5	(3.5)^{L}	Q							
29							Q	Q	3.5	3.6	3.5^{H}	3.6^{H}	3.8^{H}	3.6	3.5	3.5	3.5	L	L							
30							Q	L	L	3.8	4.0^{H}	4.0^{H}	3.6^{H}	3.6^{H}	3.5^{H}	3.5^{H}	3.6	L	L							
31							L	L	L	4.0^{H}	(3.9)^{H}	3.7^{H}	3.7^{H}	3.5	3.6^{H}	3.5	(3.6)^{H}	3.7	L							
Median							–	3.5	3.6	3.7	3.8	3.7	3.7	3.7	3.6	3.6	3.6	3.6	–							
Count							1	19	26	28	28	29	29	29	28	27	30	26	3							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 72

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

Form adopted June 1948

32

IONOSPHERIC DATA

(M 1500) E , ____ , August , 1951
(Characteristic) (Unit) (Month)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards
(Institution)

Scaled by: Mc C., L.H.E , H.C.

Calculated by: Mc C., L.H.E , H.C.

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							4.3	4.2	4.3	A	(4.3)^{A}	4.3	A	4.3	4.3	B	4.3	4.2	4.2					
2							A	4.0	4.3	4.2	4.4	4.3	4.2	(4.2)^{A}	4.3	4.2	4.2	4.3	4.1					
3							(4.0)^{A}	4.3	4.2	4.2^{P}	4.2^{P}	A	(4.3)^{P}	A	A	M	4.3^{P}	A	A					
4							3.7	3.3	4.2	A	4.3	4.3	4.3^{P}	4.1^{P}	B	A	(4.3)^{A}	4.1	4.1					
5							A	4.0	4.0	A	4.3	4.1^{P}	(4.3)^{P}	4.2^{P}	4.2	4.0	4.0	4.0	4.3^{P}					
6							4.2	4.1	4.3	A	A	A	A	4.1	4.1	4.0	4.0	4.1	(4.1)^{A}					
7							4.0	4.2	4.5	A	A	A	A	A	4.2^{P}	4.2	B	4.1	A					
8							4.1	(4.3)^{A}	4.3	A	4.6^{P}	(4.5)^{P}	4.3	B	(4.2)^{P}	4.3^{P}	4.2	4.3	4.5					
9							4.1	4.1^{P}	A	4.6	4.6	4.4^{P}	4.2^{P}	(4.4)^{P}	4.2	4.5	4.2	4.5	4.2					
10							4.2	4.2	4.3	A	B^{A}	4.3^{P}	B	5	5	4.3	(4.3)^{P}	4.3	(4.2)^{S}					
11							4.3	4.3	(4.1)^{A}	4.4	4.2^{P}	A	4.3^{P}	4.2	4.2	B	4.2	4.1	4.1					
12							A	5^{K}	4.2^{K}	4.3$^{P}_{K}$	A^{K}	B^{K}	(4.4)$^{P}_{K}$	B^{K}	(4.3)$^{S}_{K}$	4.3^{K}	4.3^{K}	4.2^{K}	4.4^{K}					
13							4.6^{K}	A^{K}	4.4^{K}	B^{K}	4.3$^{F}_{K}$	A^{K}	A^{K}	4.3$^{H}_{K}$	(4.5)$^{P}_{K}$	(4.4)$^{F}_{K}$	4.3$^{P}_{K}$	4.3^{K}	4.3^{K}					
14							(4.3)^{H}	4.4	4.4	4.3^{F}	4.3	4.3^{P}	B	A	A	4.7^{F}	A	4.8	A					
15							A	4.5	C	A	A	b	A	C	A	A	A	B	B					
16							4.5^{K}	4.3^{K}	4.1^{K}	4.4^{K}	B^{K}	(4.2)$^{P}_{K}$	B^{K}	M^{K}	M^{K}	B^{K}	4.1$^{A}_{K}$	4.1^{K}	A^{K}					
17							4.3	4.1	4.5^{P}	(4.4)^{F}	4.7	A	(4.4)^{H}	7.5^{H}	A	A	4.5	4.4	B					
18							4.2	(4.5)^{S}	(4.6)^{A}	(4.8)^{F}	4.7	A	A	B	B	A	A	A	A					
19							(4.1)^{H}	4.3^{P}	4.3	4.3^{P}	4.3	B	4.3^{P}	4.3^{F}	4.3	4.2	(4.2)^{B}	(4.2)^{B}	4.2					
20							4.2^{K}	4.3^{K}	4.2^{K}	4.5$^{P}_{K}$	4.4$^{P}_{K}$	B^{K}	B^{K}	B^{K}	5^{K}	B^{K}	(4.4)$^{P}_{K}$	4.2^{K}	(4.2)$^{H}_{K}$					
21							4.1^{K}	4.1^{K}	4.2^{K}	4.2^{K}	4.3$^{P}_{K}$	B^{K}	4.3$^{F}_{K}$	4.8^{K}	B^{K}	4.4^{K}	(4.6)$^{P}_{K}$	4.4^{K}	4.4^{K}					
22							B^{K}	A^{K}	3.9^{K}	4.3$^{P}_{K}$	(4.3)$^{F}_{K}$	M^{K}	M^{K}	4.3$^{H}_{K}$	M^{K}	4.3^{K}	4.3$^{P}_{K}$	4.1^{K}	4.2^{K}					
23							3.8^{K}	4.2^{K}	(4.5)$^{A}_{K}$	(4.6)^{A}	A	A	4.1	4.0	4.2	4.2^{P}	4.3	4.2	4.4					
24							4.4	A	4.2	4.2	4.3^{P}	B	4.1^{B}	5	4.1	4.0	4.2	4.2	4.0					
25							4.0^{K}	4.0$^{P}_{K}$	A^{K}	4.2^{K}	B^{K}	4.2$^{P}_{K}$	4.3^{K}	4.2^{K}	4.1^{K}	4.1^{K}	4.0^{K}	4.0^{K}	A^{K}					
26							A	A	4.2	4.1^{P}	4.1	4.1^{P}	4.1^{P}	4.0^{P}	4.0	4.0	3.9	(4.0)^{B}	4.1					
27							A	4.2	(4.4)^{F}	4.6	4.1	4.1^{H}	B	4.2	B	4.3^{P}	4.0	3.9	4.3					
28							5	4.2	4.5	(4.5)^{A}	4.6	(4.4)^{F}	4.2	4.3	4.2	4.2	4.5	4.0	4.3					
29							(4.1)^{P}	(4.5)^{F}	(4.1)^{A}	4.2	4.2	4.2	4.2	(3.9)^{B}	4.0	4.1	4.1	4.1	A					
30							A	4.3	(4.2)^{A}	A	4.2	4.1	A	(4.3)^{P}	B	(4.2)^{S}	4.2	4.1	4.1					
31							(4.0)^{S}	(4.1)^{A}	4.5	4.3	4.1	B	4.0	4.0	4.2	4.3	4.0	4.0	4.2					
Median							4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2					
Count							22	26	28	21	24	15	18	20	18	22	27	28	22					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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Table 73

Ionospheric Storminess at Washington, D. C.

August 1951

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	3	3			3	4
2	1	3			4	3
3	2	2			2	2
4	2	2			2	4
5	2	3			2	3
6	1	3			2	3
7	2	1			3	3
8	1	2			2	2
9	2	2			2	3
10	1	3			2	3
11	2	0			4	4
12	1	5	1200	----	4	3
13	4	5	----	----	4	4
14	1	1	----	0200	1	3
15	1	3			3	4
16	1	4	0900	----	4	3
17	1	3	----	0200	3	3
18	1	3			3	1
19	1	2			2	3
20	3	6	1000	----	5	3
21	4	5	----	----	5	4
22	4	6	----	----	5	3
23	4	1	----	1100	3	3
24	2	3			4	3
25	3	6	0700	----	5	3
26	4	3	----	1100	5	4
27	2	3			4	3
28	2	1			3	3
29	2	1			4	3
30	2	2			2	3
31	2	2			3	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 74

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and Forecasts)
July 1951

Day	North Atlantic quality figure		CRPL* Warning		CRPL Forecasts (J-reports)	North Pacific quality figure		Geomagnetic K_{CH}	
	Half day GCT (1)	(2)	Half day GCT (1)	(2)		Half day GCT (1)	(2)	Half day GCT (1)	(2)
1	6	5				8	8	2	(4)
2	(2)	(3)	W	W		6	5	(6)	(4)
3	(3)	(4)	W	U		(4)	6	(4)	(5)
4	(4)	5	U	U	X	5	5	(4)	3
5	6	5				6	6	3	2
6	6	5				6	6	3	3
7	7	6				5	7	2	3
8	8	7				7	7	2	3
9	6	6				7	7	3	3
10	7	6				7	7	3	2
11	7	6				6	6	2	2
12	8	6				7	7	2	3
13	8	6				8	5	2	2
14	8	7				7	7	2	2
15	7	6			X	9	7	2	(4)
16	6	5	W		X	6	6	3	3
17	6	5				8	5	(4)	(4)
18	5	5				5	5	(4)	(4)
19	5	(4)				6	5	3	3
20	6	6				6	6	3	2
21	7	7				7	7	(4)	1
22	5	(4)		W		6	6	(4)	(4)
23	(4)	(4)	W	U		6	5	(4)	3
24	5	6	U			7	6	3	2
25	6	6				7	5	2	3
26	(4)	(4)		(U)		7	5	(4)	(4)
27	(4)	(4)	U			6	6	(4)	3
28	(4)	(4)		(W)		6	5	(5)	(4)
29	6	5	W	U	X	5	6	(4)	2
30	7	6	U		X	6	5	2	3
31	5	(3)		U	X	5	(4)	(5)	(4)

Score:	Warning N.A.	N.P.	Forecast N.A.	N.P.
H	14	6	2	1
(M)	1	0	0	0
M	4	0	14	1
G	40	44	36	49
O	3	12	10	11

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

Geomagnetic K_{Ch} - 0 to 9, 9 representing the greatest disturbance; $K_{Ch} \geq 4$ 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 ($Q \leq 4$) 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.

Table 75

Zürich Provisional Relative Sunspot Numbers

August 1951

Date	R_Z*	Date	R_Z*
1	64	17	54
2	71	18	49
3	55	19	66
4	57	20	67
5	73	21	54
6	74	22	62
7	83	23	38
8	102	24	42
9	121	25	24
10	132	26	8
11	121	27	6
12	112	28	8
13	82	29	24
14	66	30	15
15	62	31	40
16	58	Mean:	61.0

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

Note: The American sunspot numbers for August will appear in a later issue of this bulletin.

Table 76a

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	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	8	5	3	3	5	5	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	3	3	5	5	5	8	10	10	8	5	5	8	12	15	20	28	12	5	3	-	-	-	-	-	-	-	-	-	-	-
6.9	-	-	-	-	-	-	-	-	3	3	3	3	3	3	5	3	3	-	-	3	5	10	8	8	5	3	3	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	3	3	5	8	8	8	5	3	5	8	8	8	8	10	10	5	3	-	-	-	-	-	-	-	-	-	-
8.8a	-	-	-	-	-	-	-	-	-	-	3	3	5	8	10	8	5	3	3	3	3	3	3	3	3	5	5	3	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	X	X	X	X	-	-	-	-	-	-	-	-	2	2	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	5	5	8	8	5	3	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	5	8	10	12	15	15	8	5	3	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	5	8	8	3	3	3	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	5	5	5	8	8	3	3	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	5	5	5	5	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	5	5	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	10	8	5	5	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	-	-	-	-	-	-	-	-	3	3	3	3	5	8	8	8	8	5	5	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	3	3	3	3	-	-	3	3	5	12	12	12	12	8	5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	3	3	3	5	8	8	8	12	12	15	12	3	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	2	3	3	3	3	2	3	3	3	3	3	8	10	10	12	12	12	8	5	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
29.9	X	X	X	5	5	3	3	3	3	5	8	10	10	12	15	18	18	20	15	15	12	12	15	12	5	3	3	X	X	X	X	X	X	X	X	X	X	X
30.9	-	-	-	-	3	3	3	3	3	3	3	5	5	5	8	12	15	17	15	15	14	13	15	10	5	3	3	3	3	3	5	5	3	3	-	-	-	-
31.6	-	-	-	-	-	2	2	3	3	3	5	5	5	5	8	12	14	12	12	15	15	20	17	15	8	5	2	-	-	2	2	3	3	2	-	-	-	-

Table 77a

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	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	5	5	3	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	8	10	10	8	3	3	3	2	2	3	2	2	2	-	-	-	-	-	-
6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	4	3	3	3	3	-	-	-	-	-	-	-	-	-	-
7.6	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	2	3	8	5	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2
8.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	5	5	8	3	2	2	2	3	3	3	3	3	2	2	2	2	2	2
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	5	3	2	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	12	5	3	2	3	10	3	5	3	2	3	2	2	2	2	2	2	2	2	2	2	2
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	3	3	10	12	10	3	2	2	2	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	-	2	3	3	2	8	5	5	8	14	3	3	3	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	3	2	3	8	8	3	3	10	8	3	2	2	2	2	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	2	2	3	3	2	3	2	3	3	2	5	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	3	3	5	3	3	3	3	2	2	3	2	2	-	-	-	-	-	-	-	-	-	-
22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	5	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	8	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	10	5	3	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.9	X	X	X	2	2	2	2	2	2	2	2	2	2	2	2	3	20	14	8	3	10	8	2	3	2	2	3	X	X	X	X	X	X	X	X	X	X	X
30.9	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	8	12	3	12	3	3	8	8	3	2	2	2	3	8	3	2	3	3	3	3	3	3	3
31.6	3	3	3	3	3	3	2	2	2	2	2	2	2	3	2	3	5	3	5	2	3	5	8	2	2	2	2	2	5	4	3	3	3	3	3	3	3	3

Table 76b

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	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
1951																																							
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5		5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	8	10	15		12	10	8	8	3	-	-	-	-	-	-	-	-	-	-	-	-	-
6.9	-	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	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	8	12	10		8	12	8	5	3	3	2	2	2	2	2	3	3	3	-	-	-	-
8.8	-	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	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	8	12		13	13	12	15	10	5	3	3	3	3	5	8	10	8	5	5	3	-
10.8	-	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	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	8	12		15	12	12	8	8	5	3	3	3	2	2	3	3	3	5	5	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	5		12	22	25	15	15	12	5	3	3	3	3	5	8	8	10	8	3	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	8		25	20	15	15	15	15	12	8	5	3	2	3	5	8	8	5	3	-
14.7	-	-	-	2	3	3	3	3	2	2	3	3	3	3	3	5	5	5	3		12	15	15	12	12	10	8	5	3	3	2	3	3	5	5	3	3	-
15.6	-	-	-	-	3	3	3	3	3	3	3	3	5	8	10	10	8	8	5		8	12	13	13	12	8	10	8	3	2	2	3	5	8	8	5	3	-
16.6	-	-	-	-	-	-	-	-	-	-	-	3	3	5	8	10	13	12	5		5	8	8	8	8	5	3	3	3	3	3	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	5	3		3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	X	X	X	X	X	X	X	3	3	5	5	5	8	12	20	20	12	8		5	5	5	5	5	3	3	3	3	3	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	X	X	X	3	3	3	3	3	3		3	3	3	8	8	3	3	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	3	3	5	5	5	5	5	3		3	3	3	3	3	3	3	3	3	3	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	3	3	3	3	5	8	15	12	8	3	3		3	3	3	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	3	3	3	3	5	10	15	13	8	5		3	3	3	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-
29.9	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
30.9	-	-	-	-	-	-	-	-	3	3	3	3	3	3	5	8	10	12	15		15	12	10	5	5	3	-	-	-	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	2	2	2	3	3	3	3	3	8	10	12	15		12	10	8	5	3	3	3	3	2	2	-	-	-	-	-	-	-	-

Table 77b

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	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
1951																																							
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	8	8	8	10		5	8	3	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	3	2	2		8	3	5	2	2	3	3	3	2	2	2	-	-	-	-	-	-	-	-
6.9	-	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	-
7.6	2	2	2	2	2	2	-	-	-	-	-	-	-	-	2	5	14	8	5		3	5	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.8	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	X	X	X	X	-
9.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2		3	8	3	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	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
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		3	3	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		10	13	5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	2	-	-	-	-	-	-	-	2	2	3	2	2	-	-	-	-	-	2		17	10	5	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	3	3	3	3	2	2	2	3	3		3	8	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	2	2	5	3	2	3	3		3	3	5	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	5	5	8	5		5	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	5	2	2		2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	X	X	X	X	X	X	X	-	-	-	-	-	-	3	8	20	8	5		2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2	3	3		2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	2	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2		2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	-	-	-	-	3	12	15	12	5	5	3		3	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	10	10	2	2		2	5	5	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-
29.9	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
30.9	3	-	-	-	2	2	2	2	2	2	2	3	5	3	3	2	-	2	13		2	2	3	2	5	8	-	-	-	-	2	2	2	2	2	2	2	2
31.6	3	3	3	3	3	3	3	3	3	3	2	3	5	3	2	2	3	15	8		3	3	3	2	3	5	3	5	3	3	3	3	3	3	3	3	3	3

Table 7f.

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	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	3	3	3	3	2	2	2	-	-	-	-	-	-	-	-	-
6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
8.8a	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	X	X	X	X	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
22.9	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.9	X	X	X	2	2	2	2	2	2	2	3	3	3	3	5	5	5	5	3	2	2	2	2	2	2	2	2	X	X	X	X	X	X	X	X	X	X
30.9	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	4	5	5	4	3	3	3	3	2	2	2	2	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	4	4	3	3	3	3	5	3	3	2	2	2	-	-	-	-	-	-	-	-	-

Table 7Cb

Coronal observations at Climax, Colorado (6702A), 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	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																							
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2		2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2		2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.9	-	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	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
8.8	-	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	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-
10.8	-	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
11.6	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2		2	3	3	3	3	3	3	3	3	3	2	2	2	2	-	-	-	-	-	-
12.7	-	-	-	5	5	5	3	3	3	2	2	2	2	2	2	2	2	2		2	2	5	8	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2		3	5	5	5	5	5	3	3	3	2	2	2	2	2	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2		2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	X	X	X	X	X	X	X	-	-	2	2	2	2	3	3	3	3		2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	4	4	2		2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
29.9	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	X
30.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2		2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3		3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 79

Solar Flares July 1951

Observatory	Date 1951	Time Observed Beginning (GCT)	Time Observed Ending (GCT)	Duration (Min)	Area (Mill) (of) (Visible) (Hemisph)	Position Latitude (Deg)	Position Longitude Diff (Deg)	Time of Maximum (GCT)	Int. of Maximum	Relative Area of Maximum (Tenths)	Importance	SID Observed
McMath	July 2		1140			S08	W70				1	
Sacramento Peak	" 10	1623	1640	17	60	S12	E62	1632	12	4		
"	" 10	1730	1755	25	60	S08	E58	1736	10	2		
"	" 11	1750	1755	5	27	S13	E42	1752	10	4		
"	" 14	--	--	--	41	N11	W21	1620	10	3		
McMath	" 15		1404			S09	W13				1 +	
Sacramento Peak	" 15	--	1430	--	21	S11	W11	--	10	5		
"	" 16	1420	1440	20	59	S10	W27	1429	7	3		
"	" 16	2120	--	--	36	S10	W24	2127	8	6		
"	" 18	1415	1445	30	23	S08	W72	1425	8	8		
"	" 18	1505	--	--	12	S08	W72	1519	7	10		
"	" 19	1430	1445	15	70	S11	W61	1434	11	8		
Wendelstein	" 22	1022	1033		242	S06	E83	1024			1 +	
Schaun-island	" 23		1130			N00	E20				1	
"	" 27		0540			S10	E10				1	
Sacramento Peak	" 28	1530	1555	25	64	S16	W54	1541	14	3		
"	" 28	1635	1649	14	12	S15	W54	1641	6	10		
"	" 28	1700	1711	app.15	29	S15	W54	1710:45	12	6		yes

Table 80

Indices of Geomagnetic Activity for July 1951

Preliminary values of mean K-indices, Kw, from 36 observatories;
Preliminary values of international character-figures, C;
Geomagnetic planetary three-hour-range indices, Kp;
Magnetically selected quiet and disturbed days

Gr. Day 1951	Values Kw	Sum	C	Values Kp	Sum	Final Sel. Days
1	3.2 1.6 1.0 2.5 2.9 3.5 4.1 5.7	24.5	1.2	3+2-1+3- 3-3+5o7o	27o	Five
2	6.1 6.2 5.5 4.9 3.6 4.0 3.4 3.9	37.6	1.7	7+8-7-6o 4o5-4o5-	45o	Quiet
3	3.4 3.3 2.9 3.4 4.1 3.6 3.7 3.9	28.3	1.2	4o4-3+4- 5-4+5-4+	33-	
4	3.6 4.1 3.5 2.5 2.3 2.7 2.6 3.2	24.5	1.0	4o5o4o3- 2+3+3o4-	28o	10
5	3.1 2.6 2.8 2.5 2.8 1.9 1.7 1.9	19.3	0.6	3o3o3+3- 3o2o2-2o	21-	12
						13
6	1.4 1.9 2.0 2.3 2.8 3.1 2.5 2.2	18.2	0.7	2-2o2o3- 3-3o2+3-	19o	14
7	1.6 1.6 1.8 1.4 1.5 2.7 2.2 2.9	15.7	0.4	2-2-2-2- 1+3o2+3+	17-	24
8	2.6 1.7 1.2 1.5 1.4 2.0 2.4 3.0	15.8	0.5	3-2-1o2- 1o2o3-4-	16+	
9	3.4 3.5 2.0 2.0 2.3 3.3 3.3 2.0	21.8	0.8	4o4o2o2o 3-4o4o2+	25o	
10	2.6 1.7 2.3 1.7 1.6 1.6 2.5 1.6	15.6	0.4	3o2-3-2o 2-2-3-2-	17o	
11	0.9 1.3 2.2 2.3 2.9 2.6 2.3 1.6	16.1	0.4	1-1o3-2o 3o3-2+2o	16+	Five
12	1.7 1.7 1.3 1.7 2.0 2.3 1.4 2.1	14.2	0.3	2o2-1+2o 2o2+1+2+	15o	Dist.
13	2.9 2.3 1.7 1.9 1.4 1.3 1.4 1.5	14.4	0.3	3+2+2-2o 1o1c1+2-	14+	
14	1.7 1.3 1.6 2.0 1.7 1.4 1.4 2.2	13.3	0.2	2-1+2o2o 2-1o1+2+	13+	2
15	2.0 1.4 1.9 1.3 2.3 2.8 2.9 4.7	19.3	0.9	2o1+2o1+ 2+3o3+6-	21o	3
						26
16	2.8 3.3 1.7 3.6 4.1 3.8 3.2 2.4	24.9	1.0	3+4o2-4o 5o4+4-3o	29o	28
17	2.7 2.3 3.5 4.0 3.2 3.6 3.4 2.5	25.2	1.1	3o3-4-5o 3+4o4+3o	29o	31
18	2.6 3.1 3.2 3.2 3.9 4.0 2.9 2.9	25.8	1.1	3-3+4o4- 5-5o3+3+	30o	
19	1.7 1.9 2.6 3.1 2.0 2.7 2.6 1.7	18.3	0.6	2-2o3o4- 2+3-3-1+	19+	
20	2.8 2.6 2.2 2.2 2.6 2.0 1.2 1.4	17.0	0.6	3o3-3-2+ 3o2+1+2-	19o	Ten
						Quiet
21	2.4 2.2 2.7 2.1 2.0 2.2 1.3 1.0	15.9	0.3	3o2+3o2+ 2-2o1+1-	16+	
22	1.6 3.7 4.7 3.6 3.0 4.0 3.4 3.6	27.6	1.2	2-4+6o4o 3+5o4-4o	32o	7
23	4.7 3.0 3.4 3.5 2.1 1.9 2.4 2.4	23.4	1.1	5+3+4o4+ 2+2-2+3-	26o	8
24	1.7 2.1 2.4 2.0 2.6 1.7 1.1 1.1	14.7	0.3	2-2+3o2- 3o2-1o1+	16-	10
25	0.8 2.1 2.9 2.9 2.9 3.0 3.1 2.8	20.5	0.8	1-2-3+3o 3-3+3+3o	21o	11
						12
26	2.9 4.0 4.1 3.8 3.7 4.7 2.4 3.9	29.5	1.3	3-5o5o4+ 4+5o2+4+	33o	13
27	4.2 3.0 3.2 3.2 2.0 2.4 2.4 3.3	23.7	1.1	4+3+4o4o 1+3-2o4-	25+	14
28	3.8 4.4 3.5 4.1 3.2 4.1 4.2 3.1	30.4	1.3	5-5+4-5- 4-5o5-4-	35+	20
29	2.9 3.4 2.8 3.1 2.7 2.6 2.4 2.2	22.1	0.7	3o4o3+3+ 3-3-2+2+	24-	21
30	2.2 2.0 1.8 2.9 2.8 2.7 3.3 3.4	21.1	0.8	2o2+2o3o 3o2+3+4-	22-	24
31	3.3 4.0 3.8 3.7 4.5 4.7 4.1 4.4	32.5	1.4	4-5o5-4+ 5+6o5+5o	39+	
Mean	2.69 2.65 2.67 2.62 2.69 2.74 2.87 2.73	2.71	0.82			

Table 81

Sudden Ionosphere Disturbances Observed at Washington, D. C.

August 1951

No sudden ionosphere disturbances observed.

Table 82

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

1951 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
July 4	1404	1416	München**, Lindau***	0.1	

*Ratio of received field intensity during SID to average field intensity before and after, for station München, 6160 kilocycles, 400 kilometers distant.

**Station München, 6160 kilocycles.

***Station Lindau, 1780 kilocycles, pulse, transmitter and receiver at Lindau.

Erratum on footnotes in a previous table from Lindau: In table 88 on page 52 of CRPL-F83, the reference symbols under the heading "Location of transmitters" for April items should be changed to conform with those for the May items.

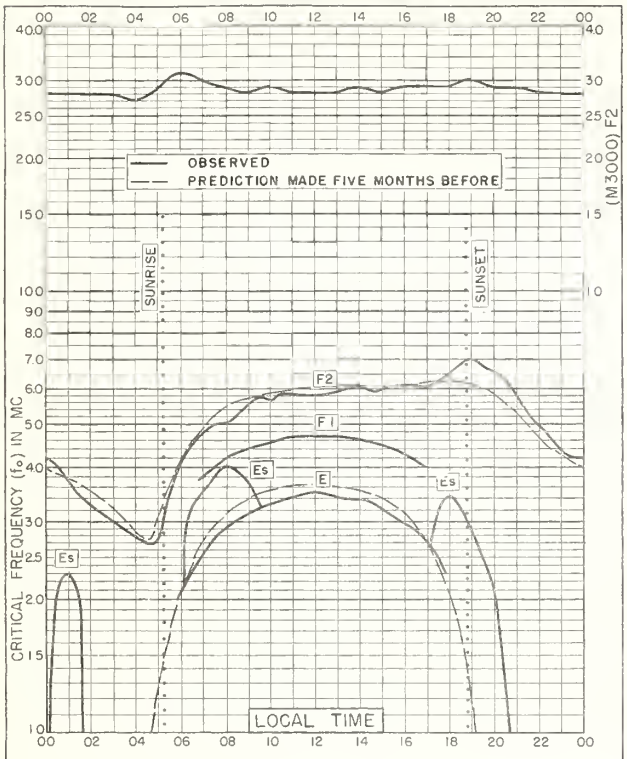


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W AUGUST 1951

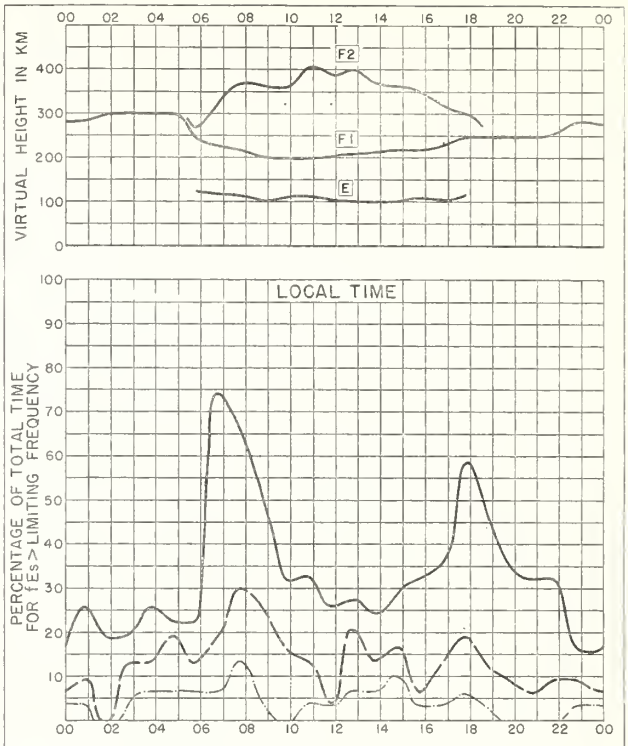


Fig. 2. WASHINGTON, D. C. AUGUST 1951

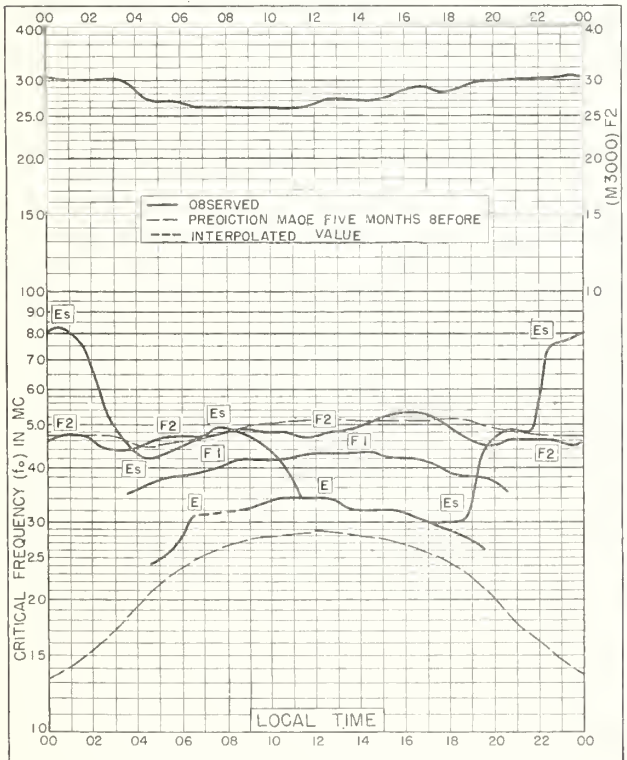


Fig. 3. POINT BARROW, ALASKA
71.3°N, 156.8°W JULY 1951

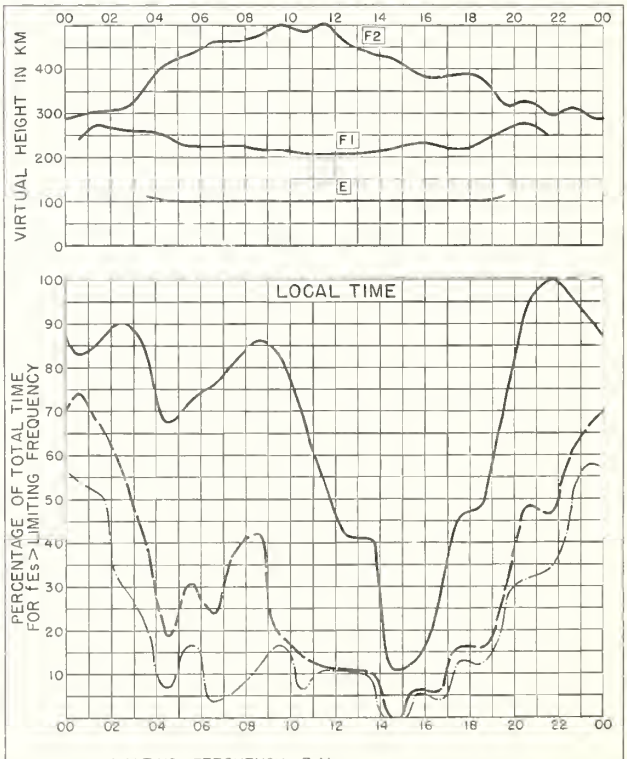


Fig. 4. POINT BARROW, ALASKA JULY 1951

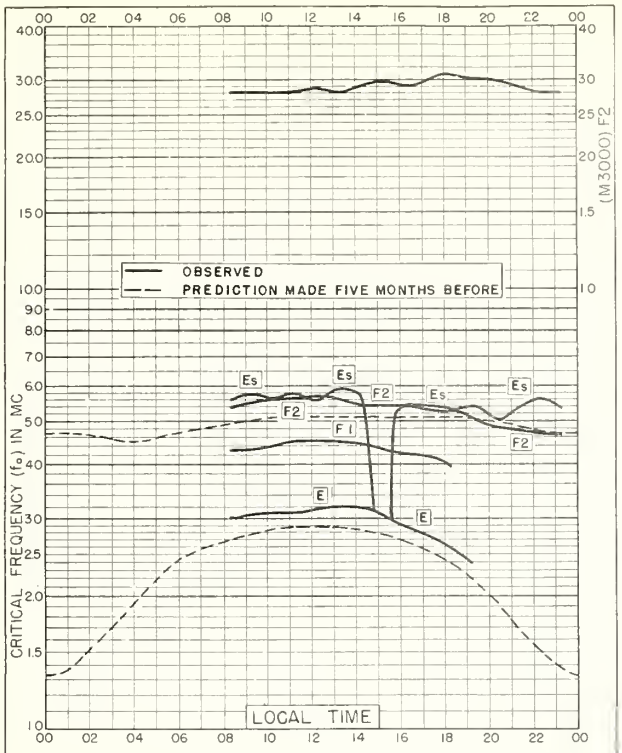


Fig. 5. TROMSO, NORWAY
69.7°N, 19.0°E JULY 1951

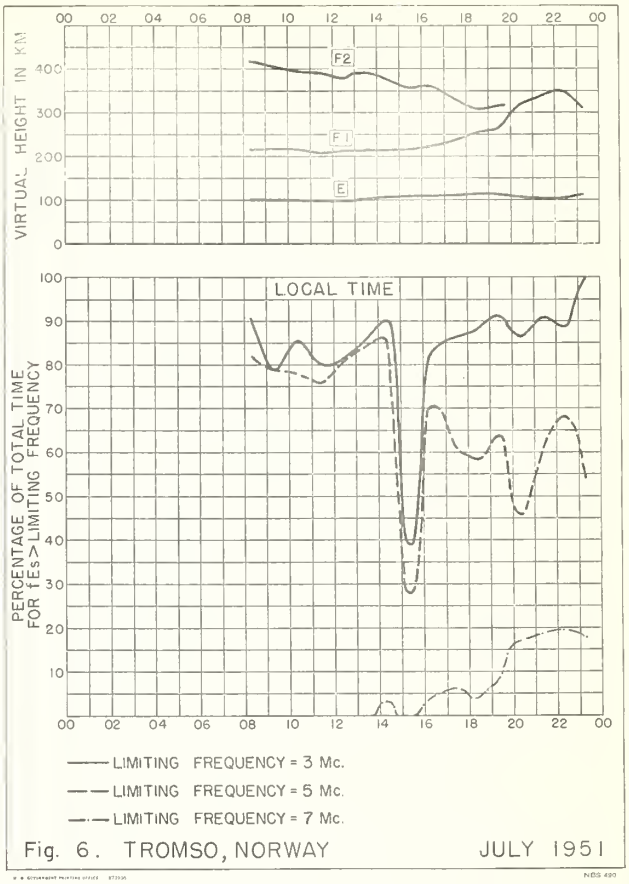


Fig. 6. TROMSO, NORWAY JULY 1951

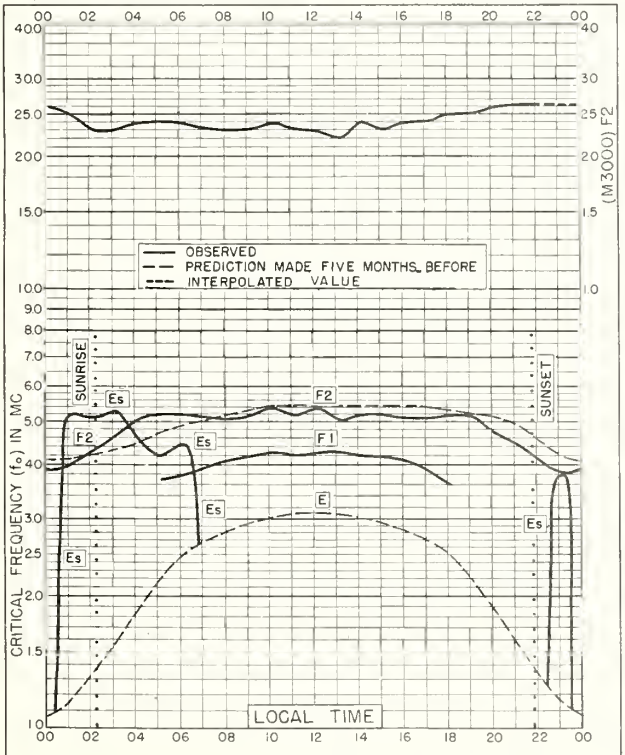


Fig. 7. FAIRBANKS, ALASKA
64.9°N, 147.8°W JULY 1951

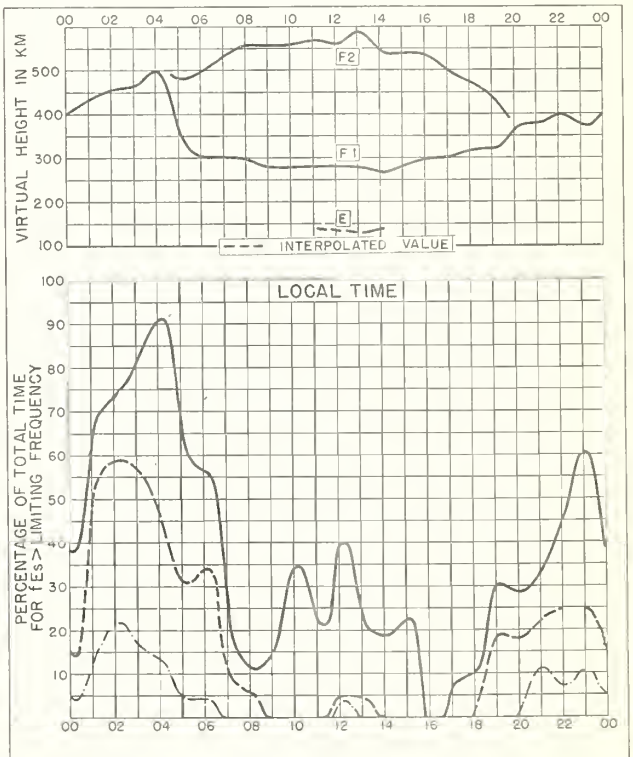


Fig. 8. FAIRBANKS, ALASKA JULY 1951

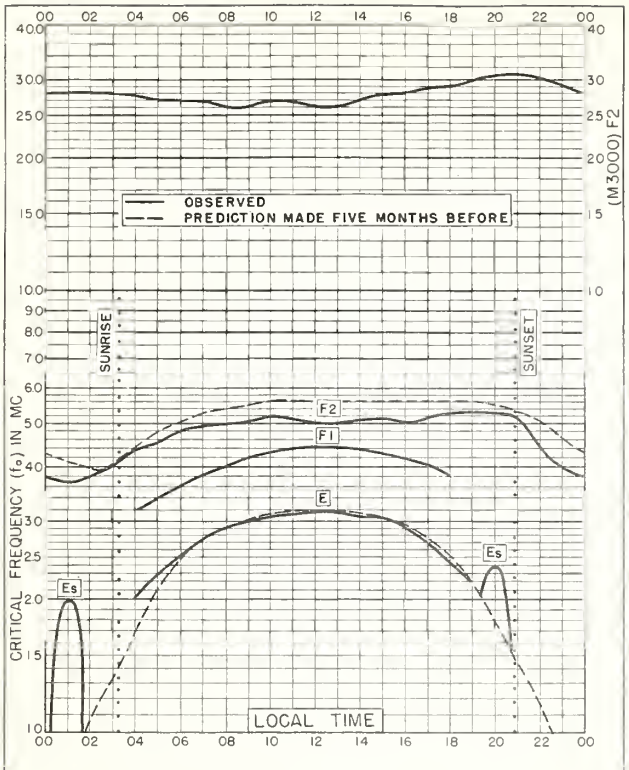


Fig. 9. ANCHORAGE, ALASKA
61.2°N, 149.9°W JULY 1951

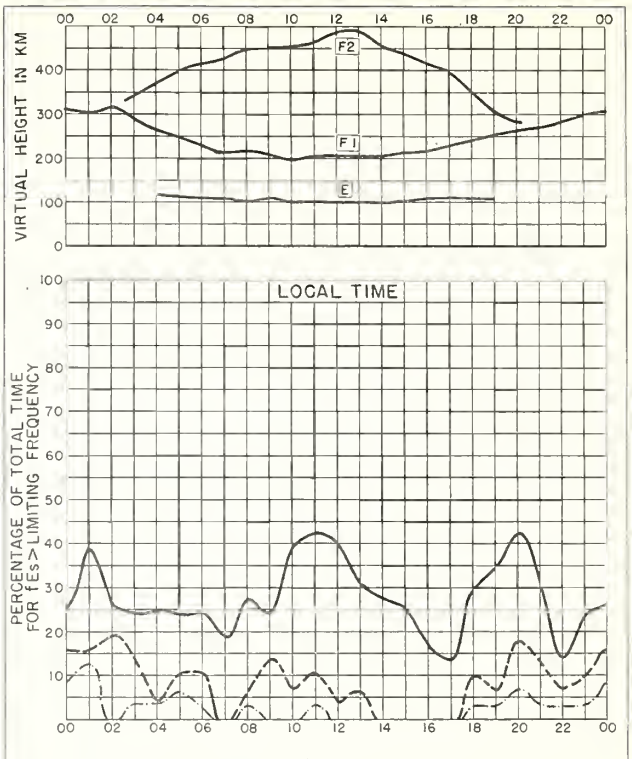


Fig. 10. ANCHORAGE, ALASKA JULY 1951

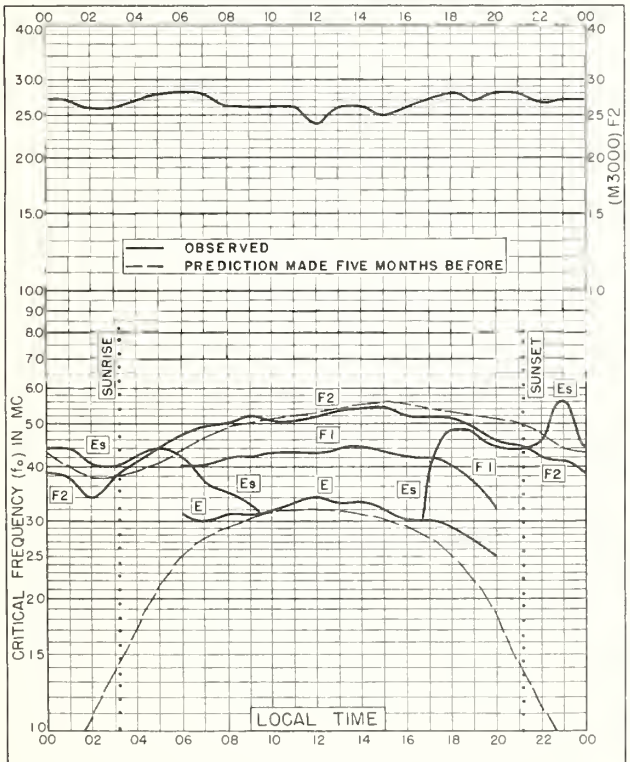


Fig. 11. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W JULY 1951

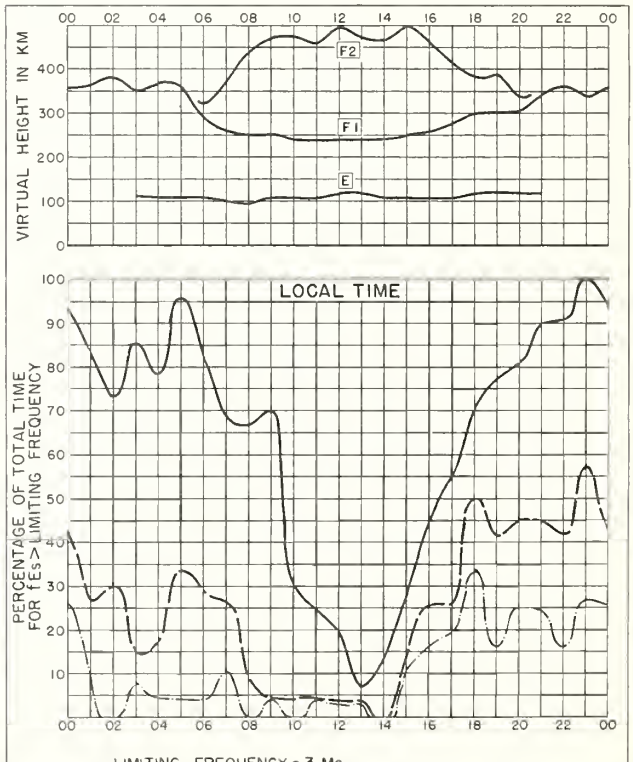


Fig. 12. NARSARSSUAK, GREENLAND JULY 1951

NBS 490

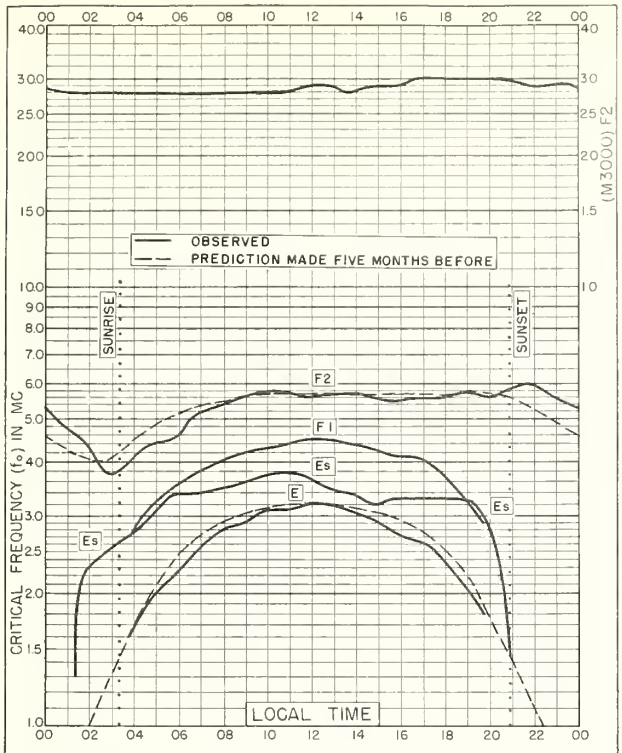


Fig. 13. OSLO, NORWAY
60.0°N, 11.0°E JULY 1951

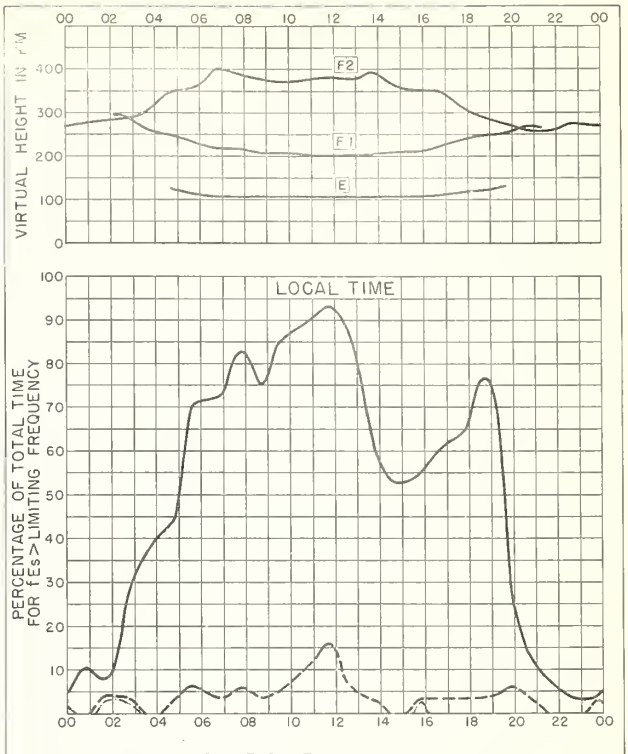


Fig. 14. OSLO, NORWAY JULY 1951

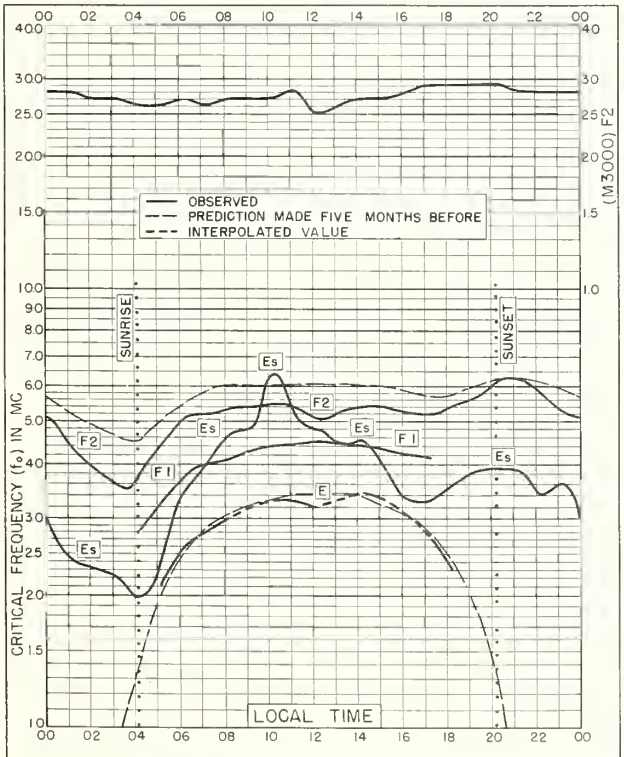


Fig. 15. ADAK, ALASKA
51.9°N, 176.6°W JULY 1951

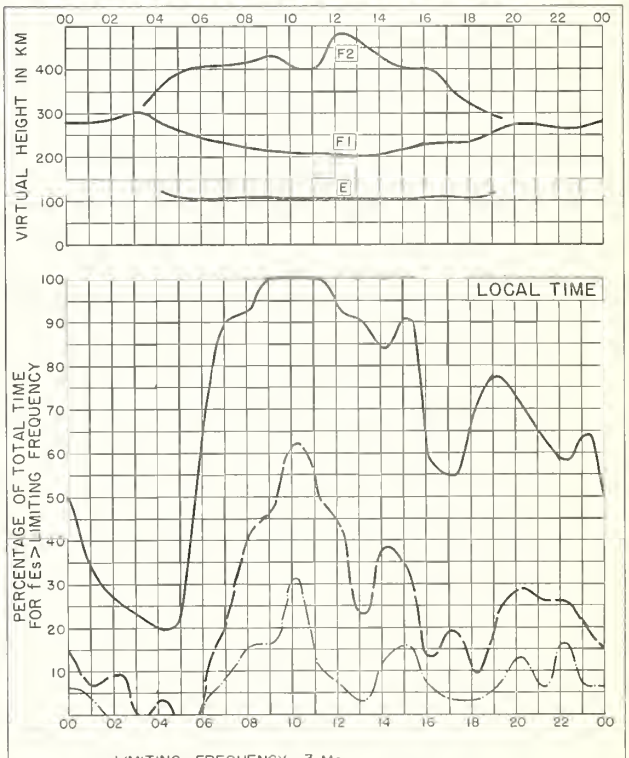


Fig. 16. ADAK, ALASKA JULY 1951

NDS 490

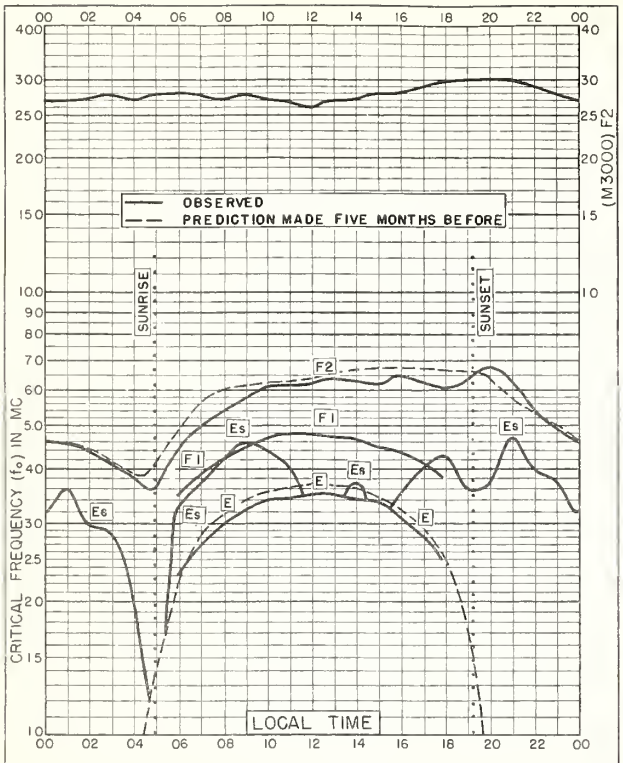


Fig. 17. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JULY 1951

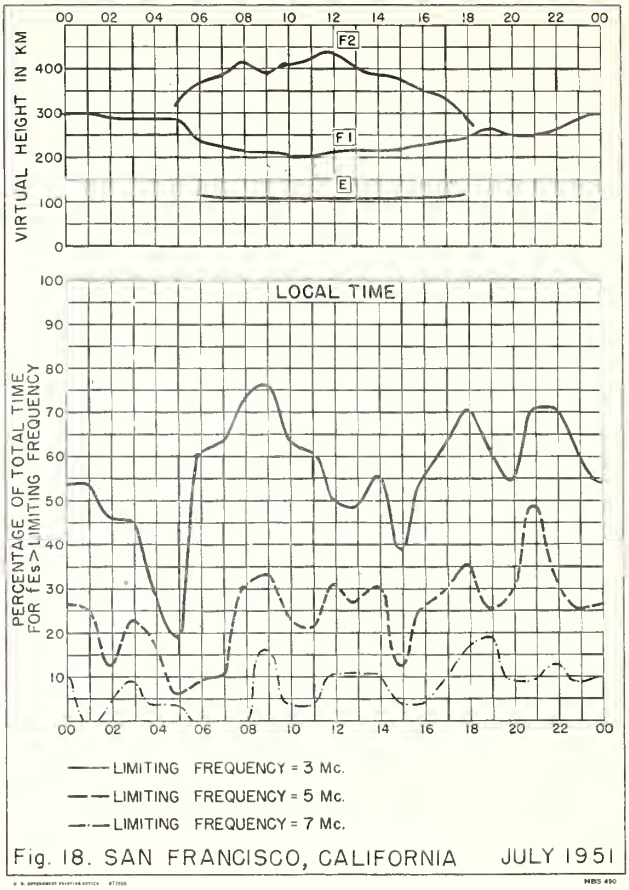


Fig. 18. SAN FRANCISCO, CALIFORNIA JULY 1951

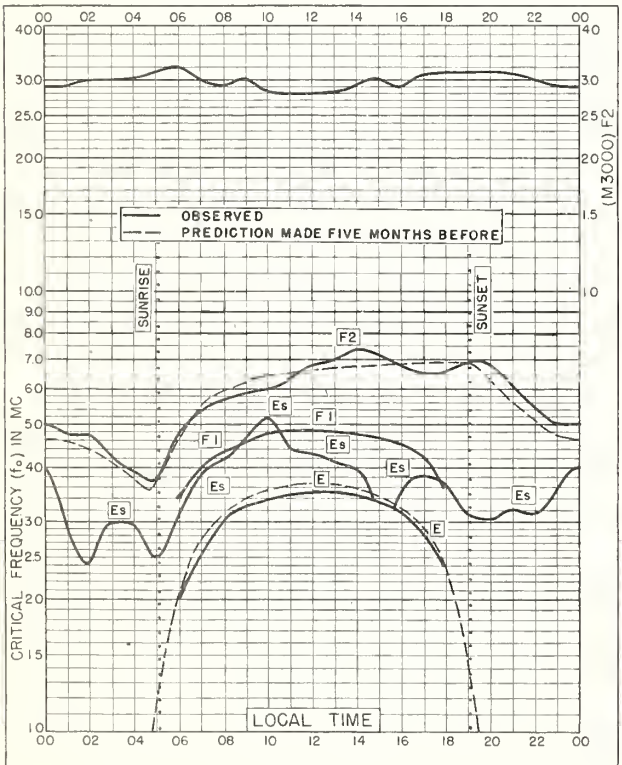


Fig. 19. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JULY 1951

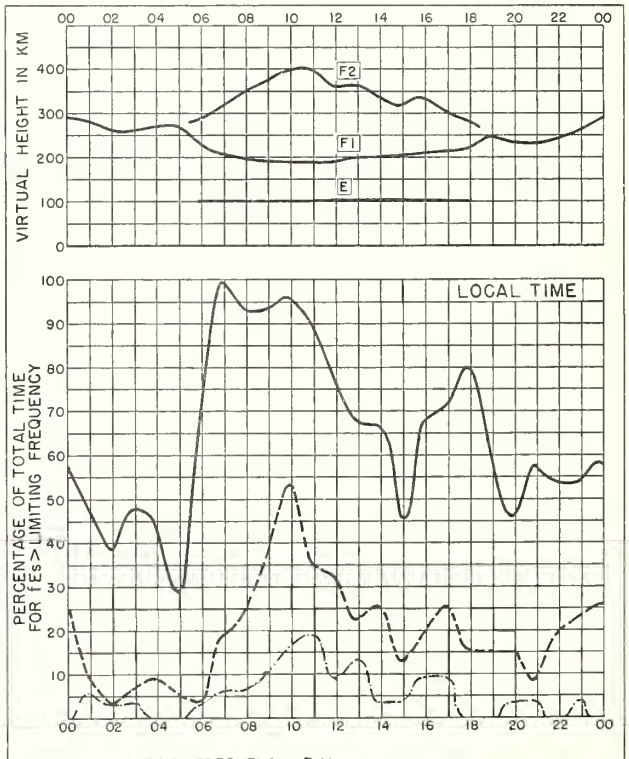


Fig. 20. WHITE SANDS, NEW MEXICO JULY 1951

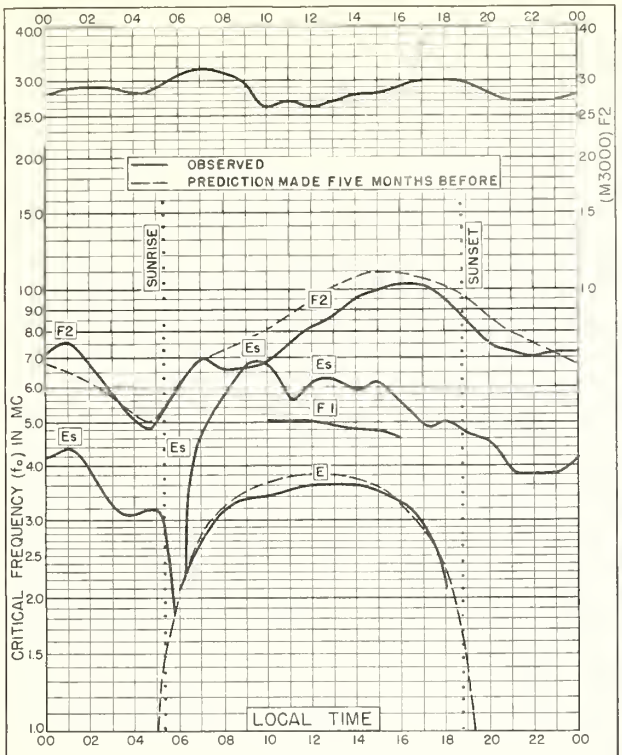


Fig. 21. OKINAWA I.
26.3°N, 127.8°E JULY 1951

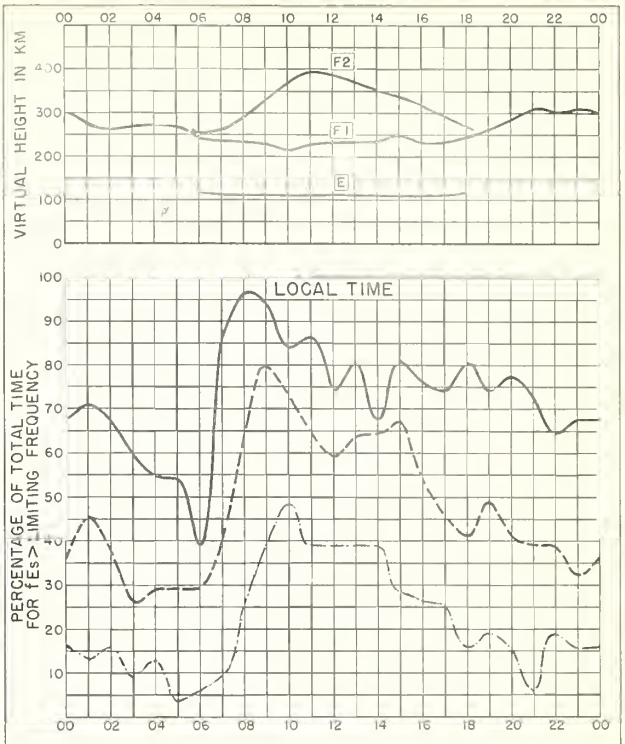


Fig. 22. OKINAWA I. JULY 1951

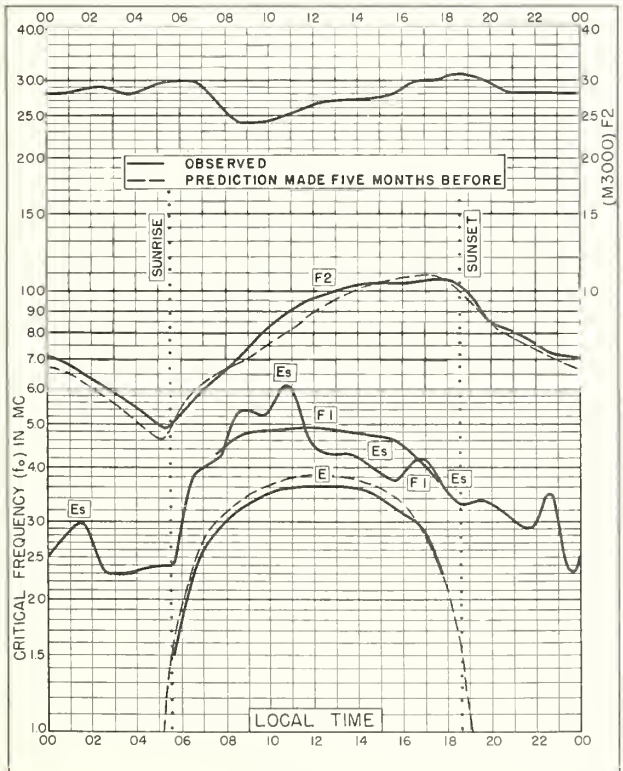


Fig. 23. MAUI, HAWAII
20.8°N, 156.5°W JULY 1951

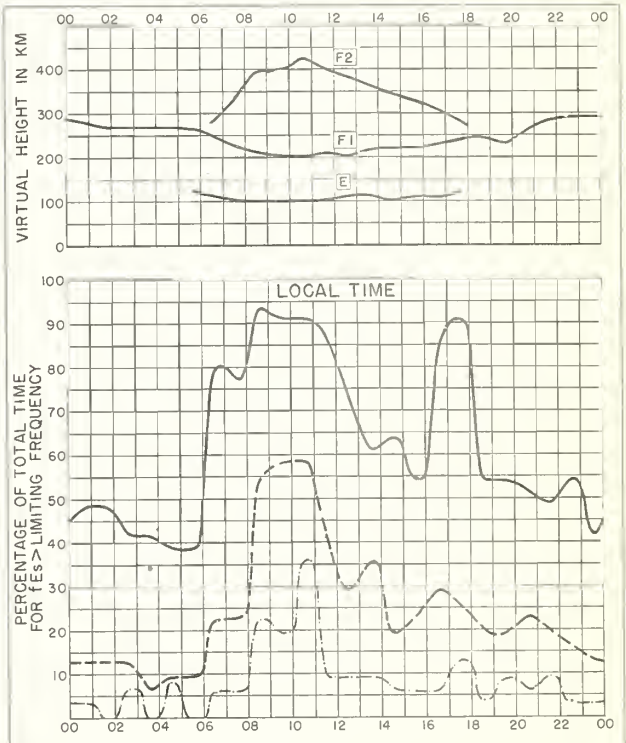


Fig. 24. MAUI, HAWAII JULY 1951

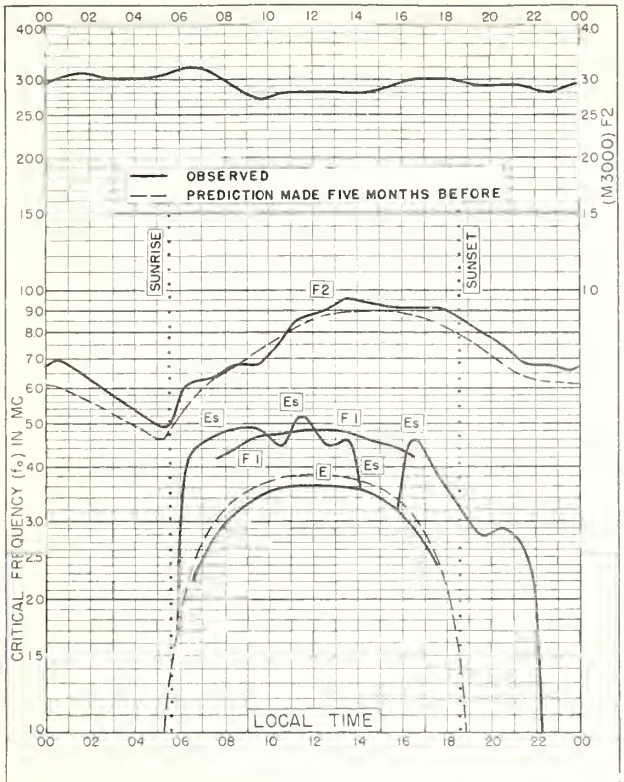


Fig. 25. PUERTO RICO, W. I.
18.5°N, 67.2°W JULY 1951

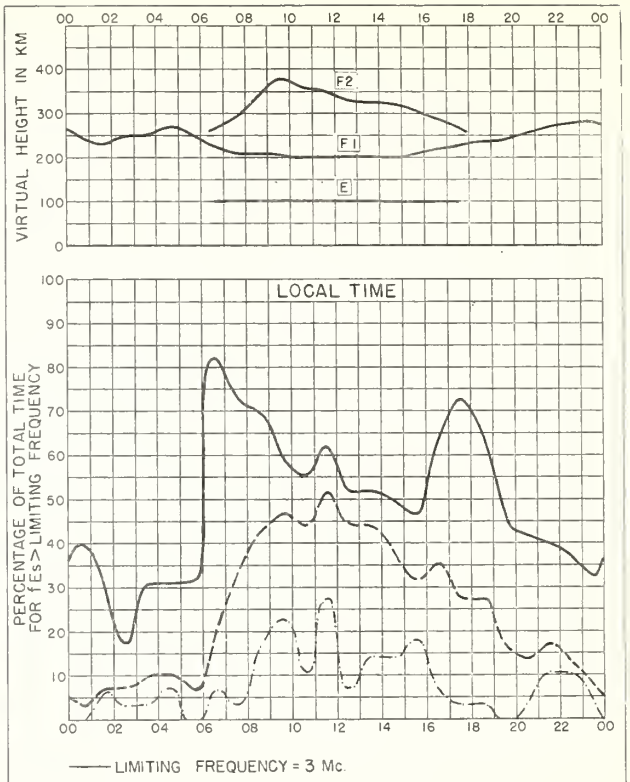


Fig. 26. PUERTO RICO, W. I. JULY 1951

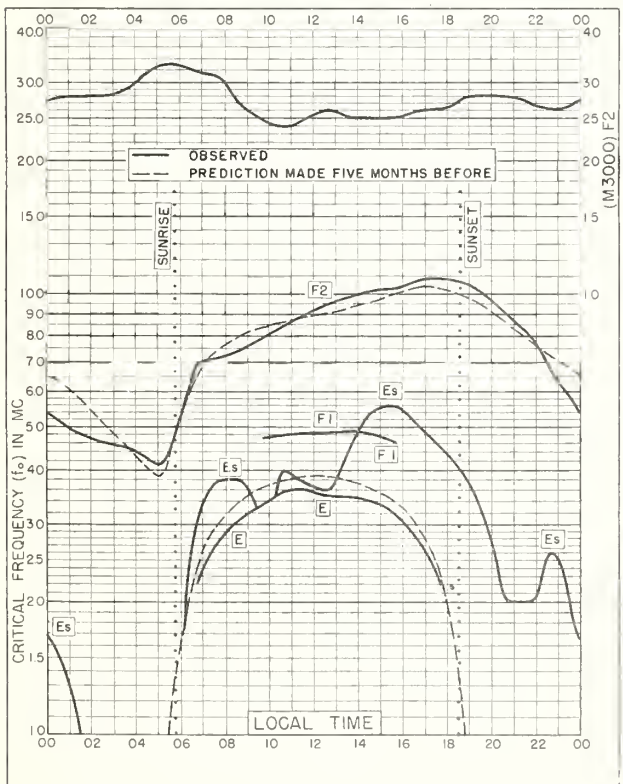


Fig. 27. GUAM I.
13.6°N, 144.9°E JULY 1951

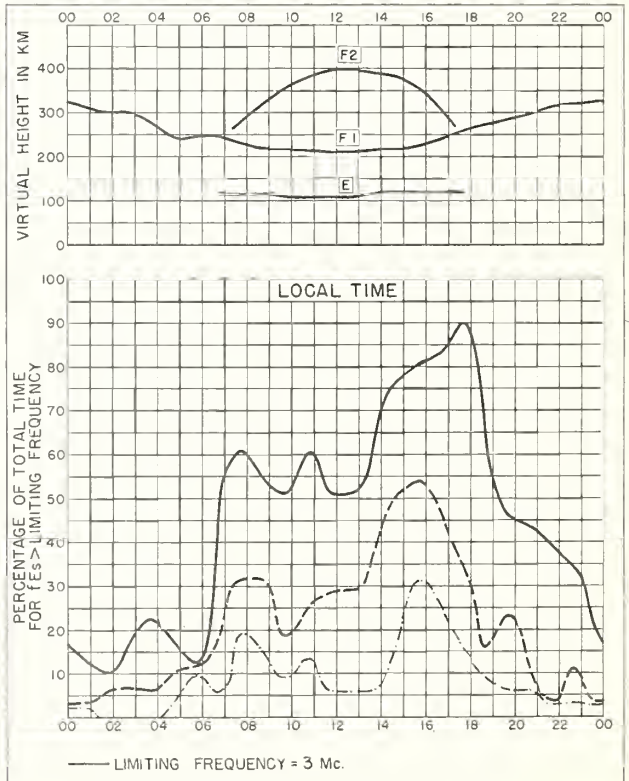


Fig. 28. GUAM I JULY 1951

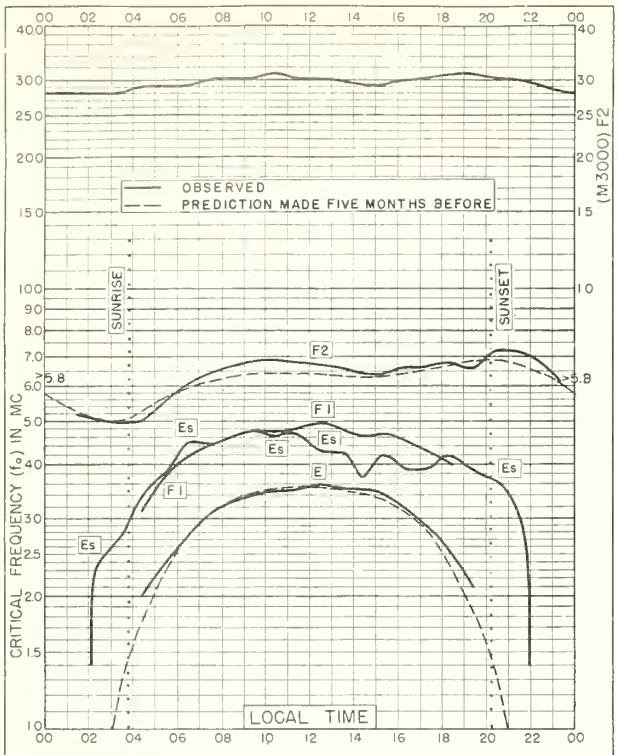


Fig. 29. De BILT, HOLLAND
52.1°N, 5.2°E JUNE 1951

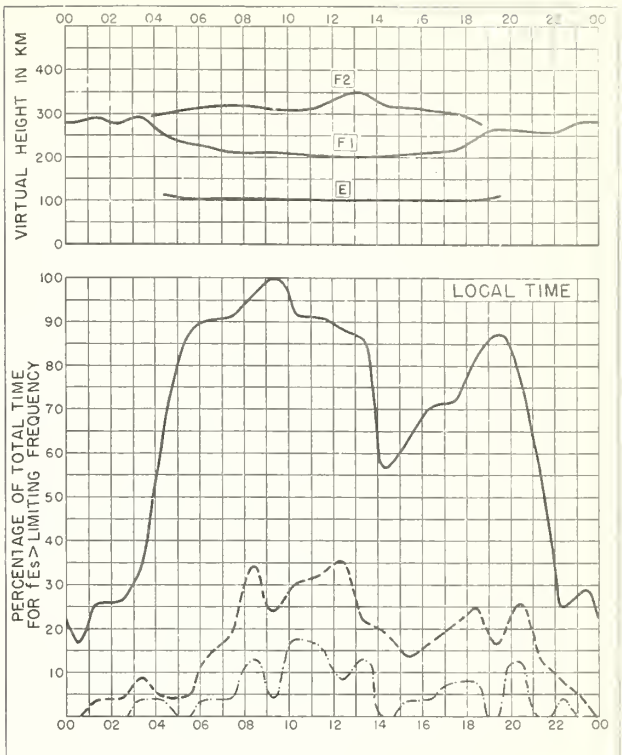


Fig. 30. De BILT, HOLLAND JUNE 1951

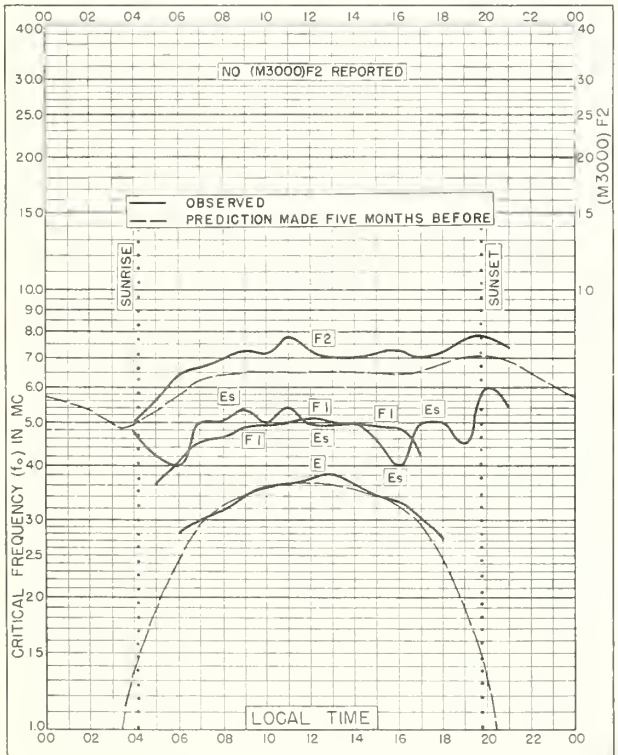


Fig. 31. GRAZ, AUSTRIA
47.1°N, 15.5°E JUNE 1951

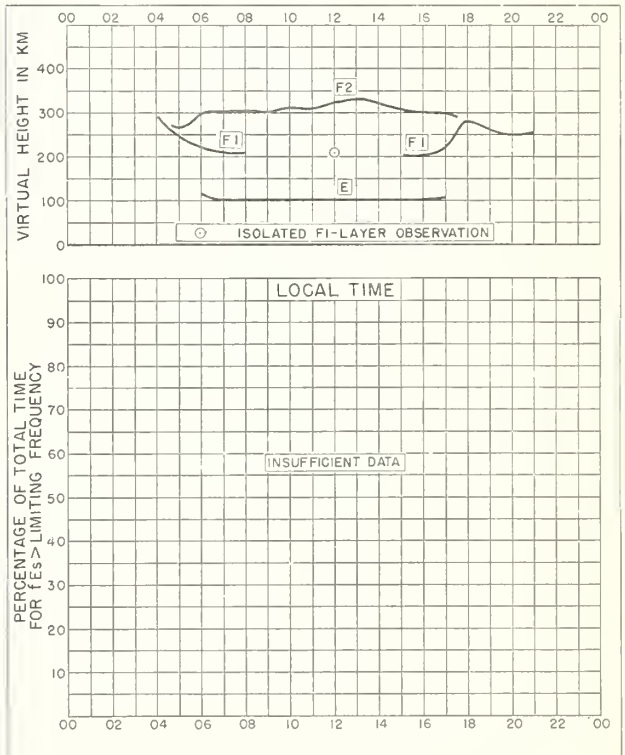


Fig. 32. GRAZ, AUSTRIA JUNE 1951

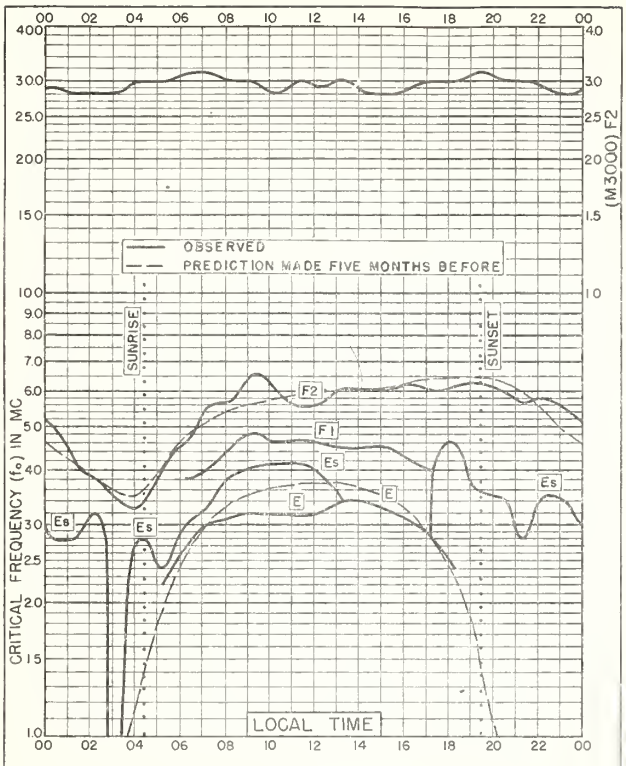


Fig. 33. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W JUNE 1951

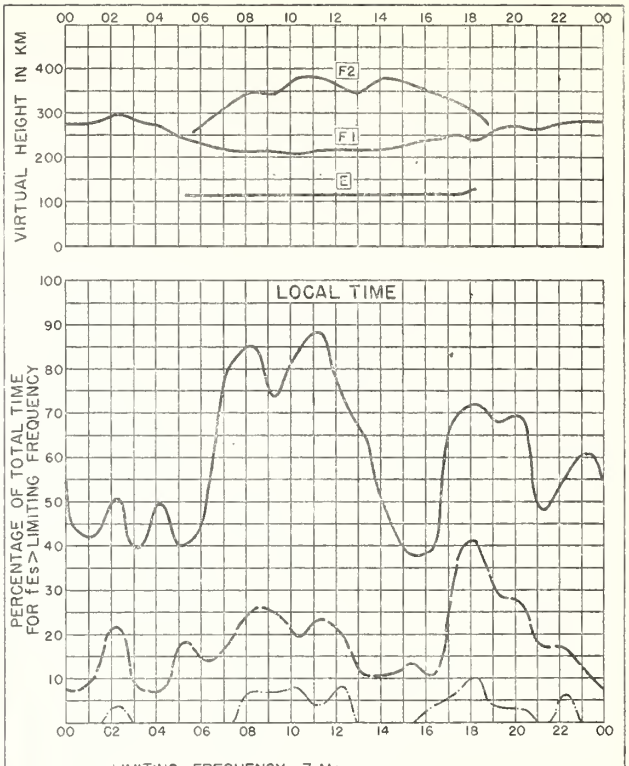


Fig. 34. BOSTON, MASSACHUSETTS JUNE 1951

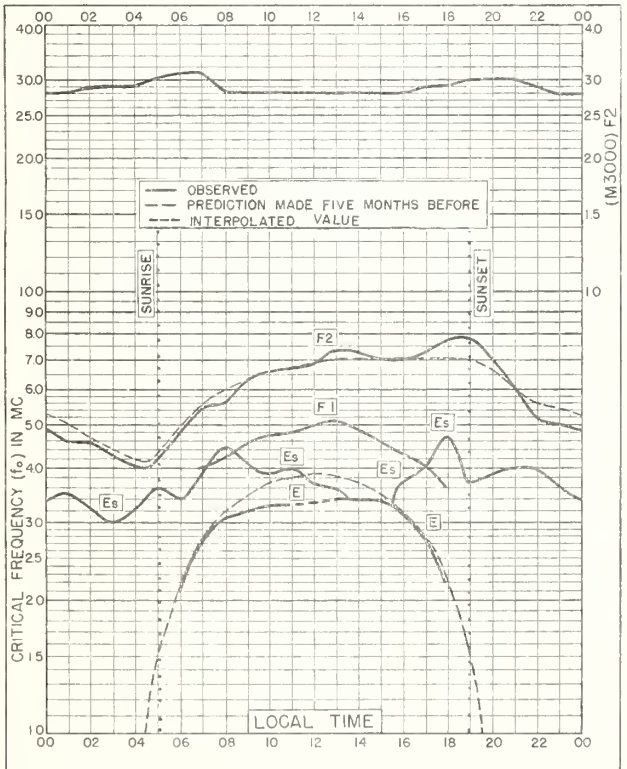


Fig. 35. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JUNE 1951

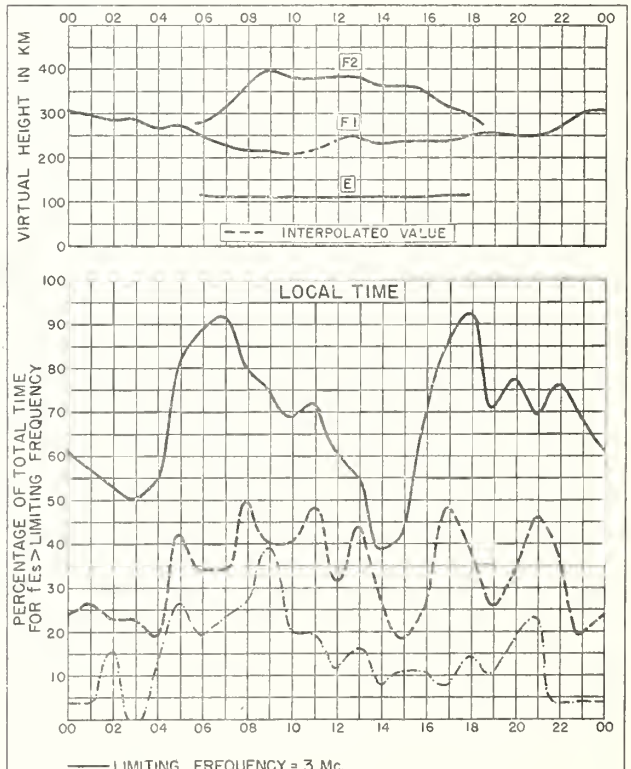


Fig. 36. BATON ROUGE, LOUISIANA JUNE 1951

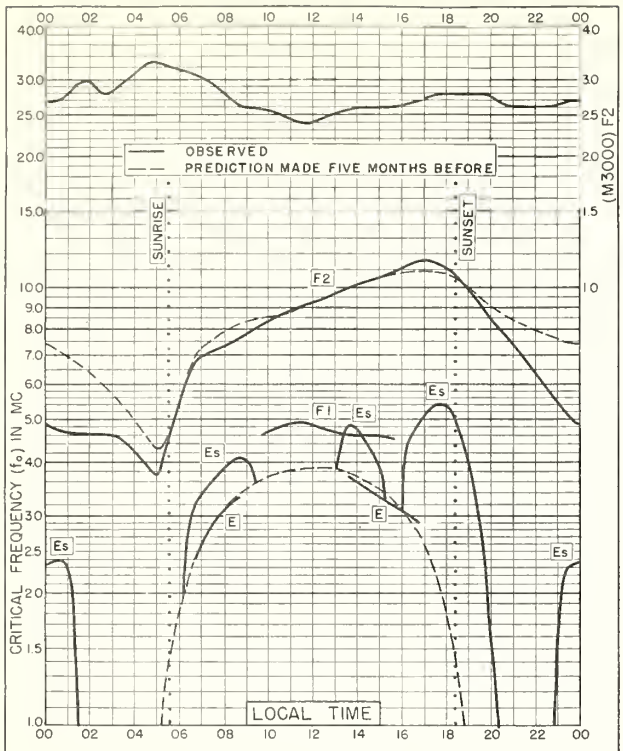


Fig. 37. GUAM I.
13.6°N, 144.9°E JUNE 1951

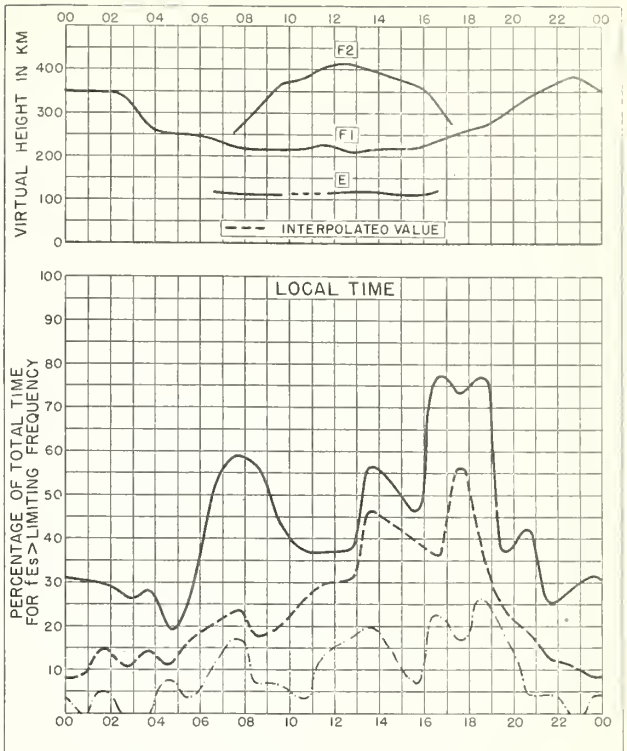


Fig. 38. GUAM I. JUNE 1951

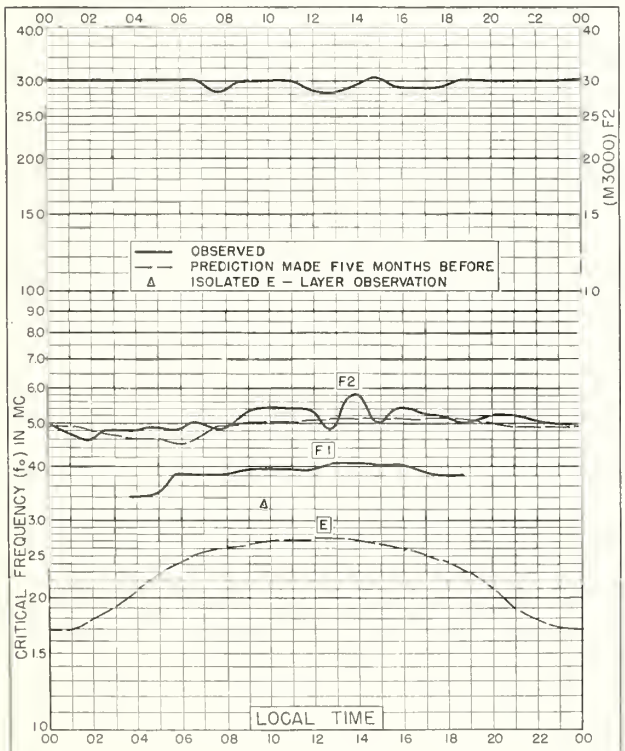


Fig. 39. RESOLUTE BAY, CANADA
74.7°N, 94.9°W MAY 1951

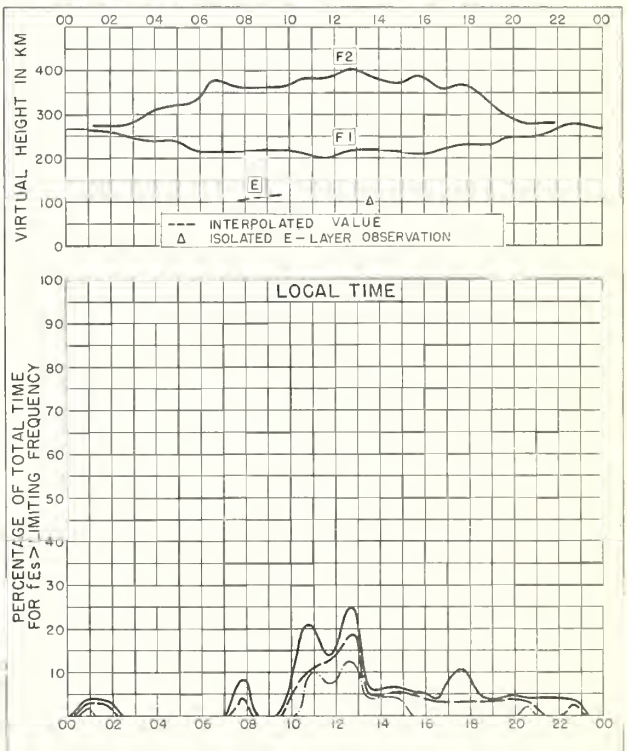


Fig. 40. RESOLUTE BAY, CANADA MAY 1951

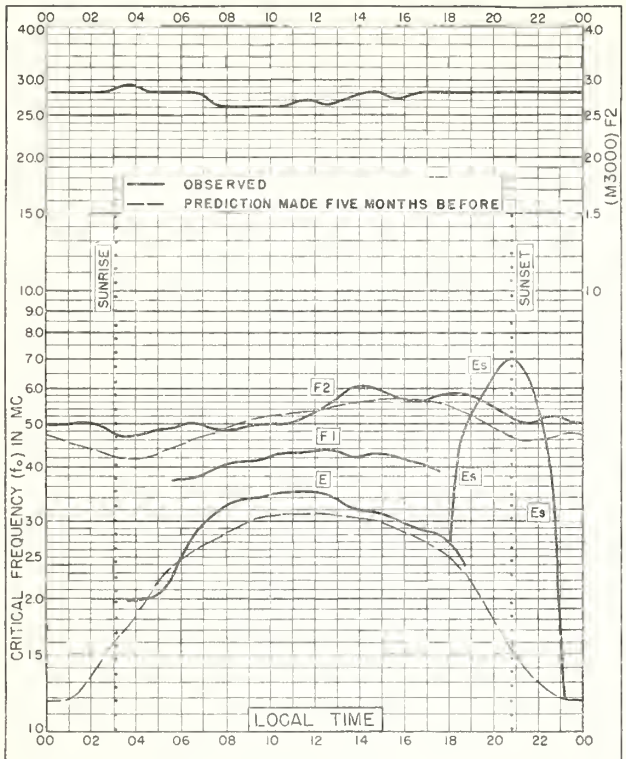


Fig. 41. BAKER LAKE, CANADA
64.3°N, 96.0°W MAY 1951

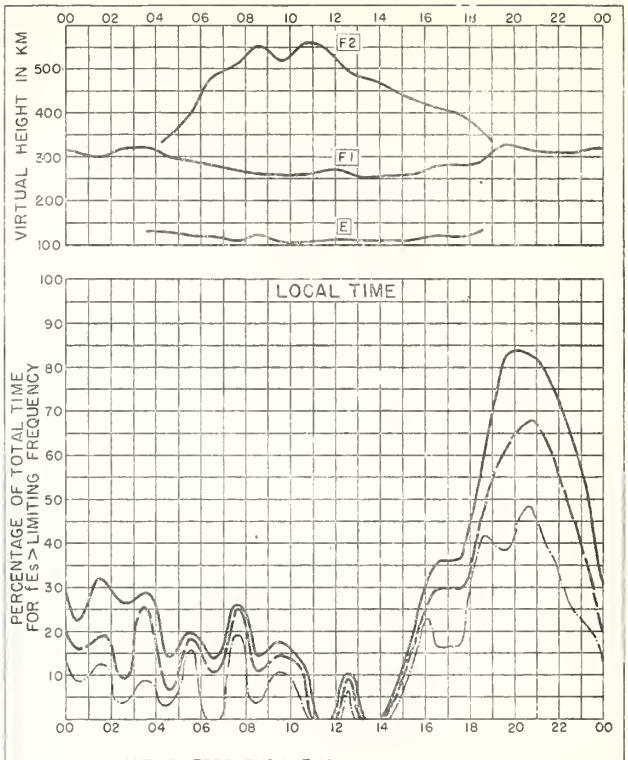


Fig. 42. BAKER LAKE, CANADA MAY 1951

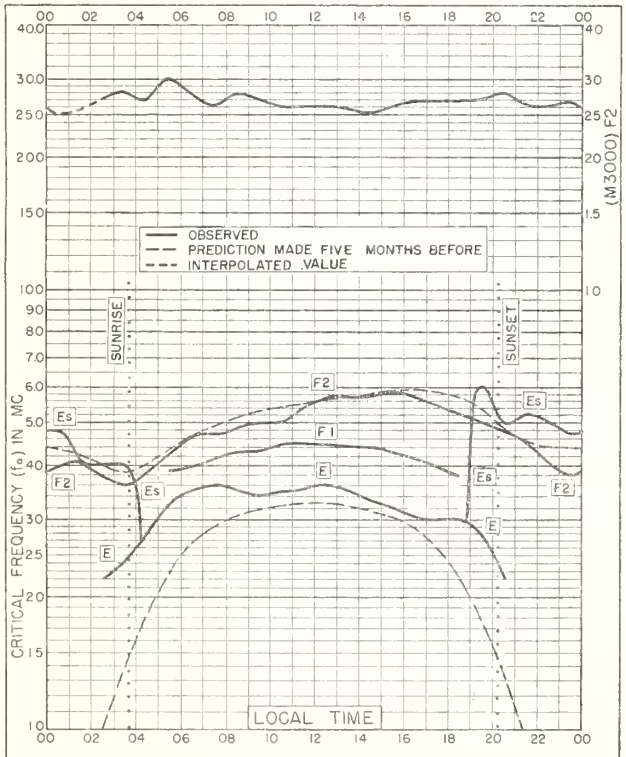


Fig. 43. FORT CHIMO, CANADA
58.1°N, 68.3°W MAY 1951

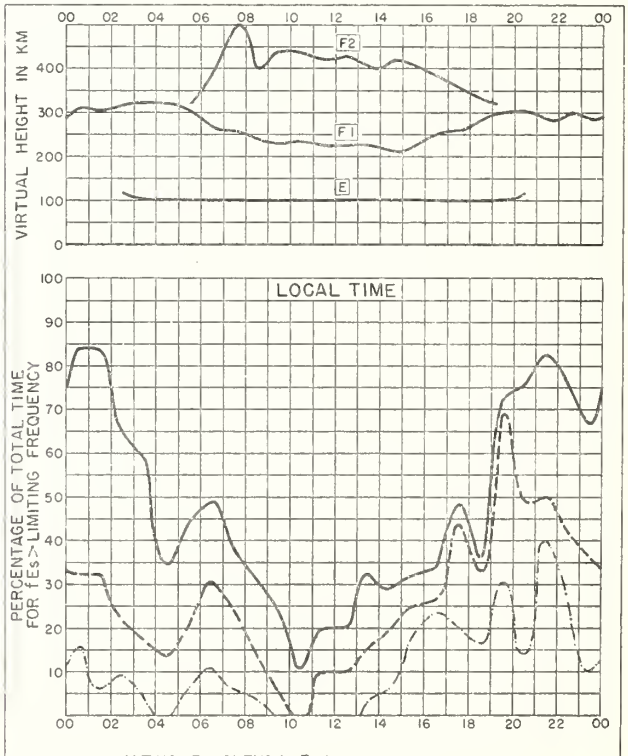


Fig. 44. FORT CHIMO, CANADA MAY 1951

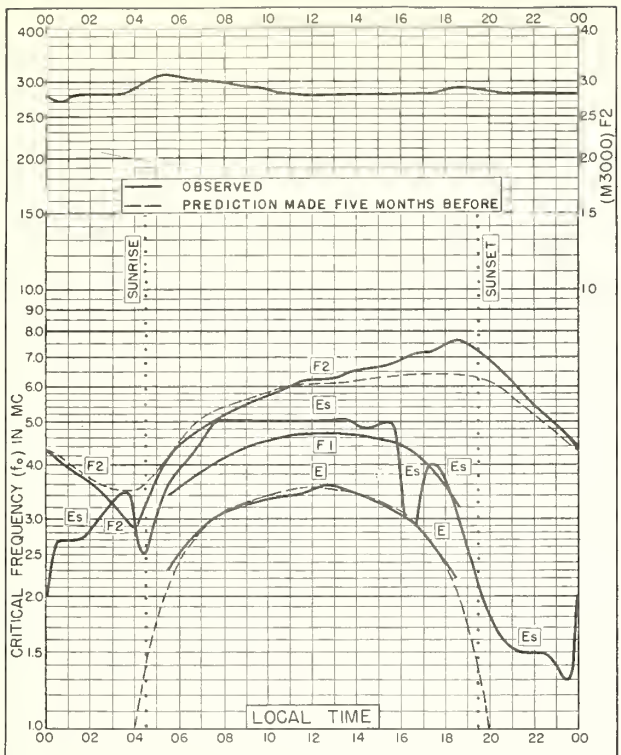


Fig. 45. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7° W MAY 1951

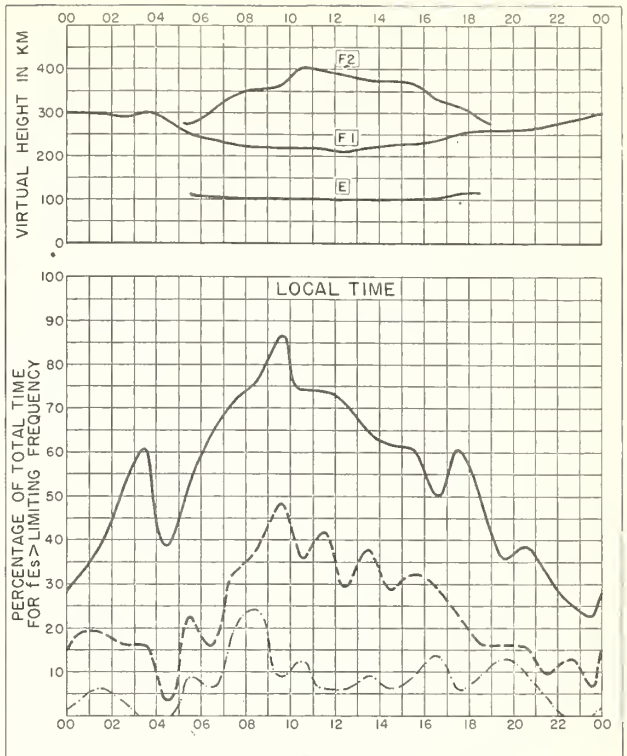


Fig. 46. ST. JOHN'S, NEWFOUNDLAND MAY 1951

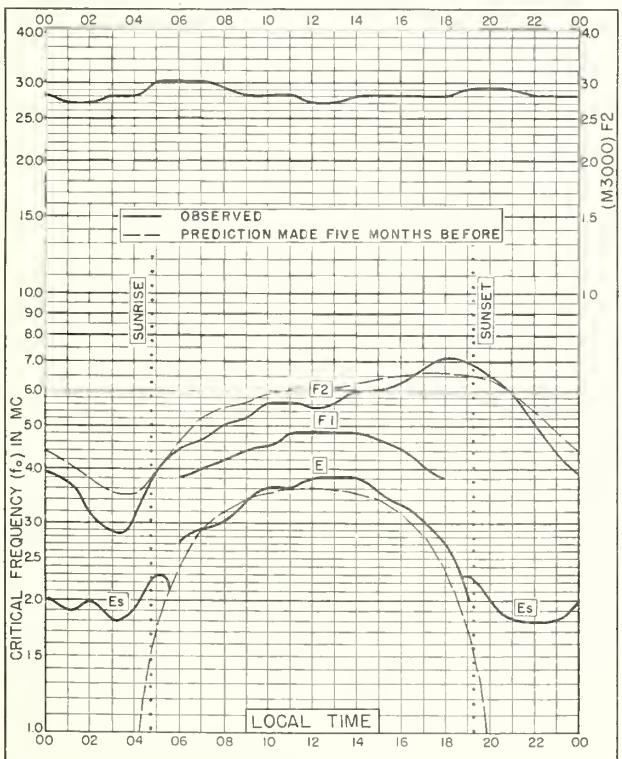


Fig. 47. OTTAWA, CANADA
45.4°N, 75.7° W MAY 1951

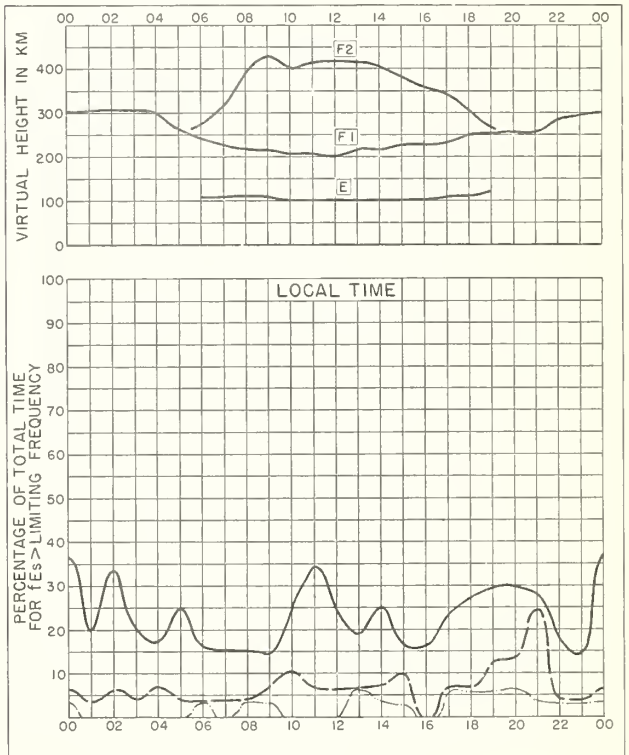


Fig. 48. OTTAWA, CANADA MAY 1951

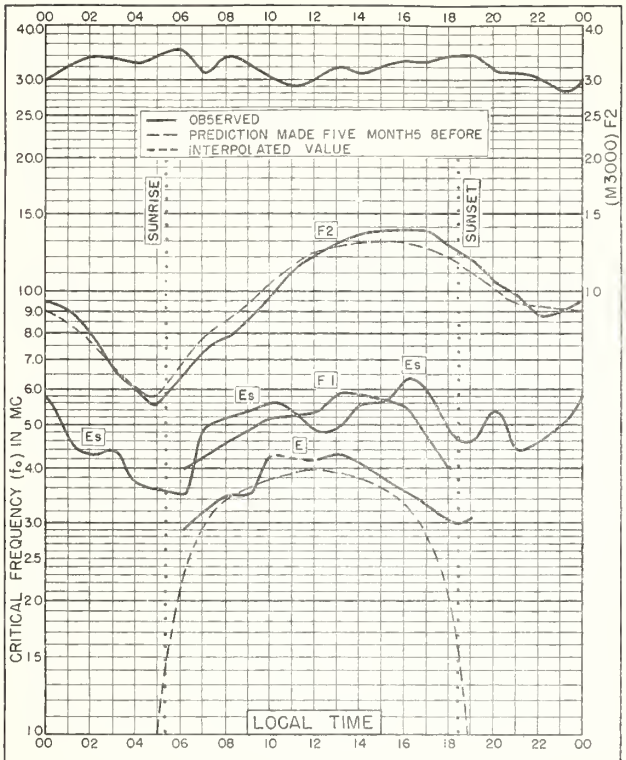


Fig. 49. FORMOSA, CHINA
25.0°N, 121.0°E MAY 1951

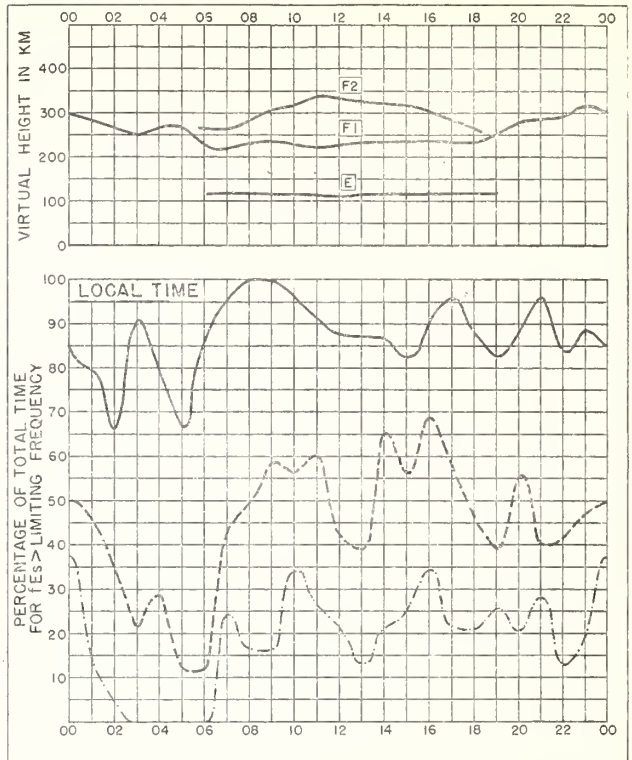


Fig. 50. FORMOSA, CHINA MAY 1951

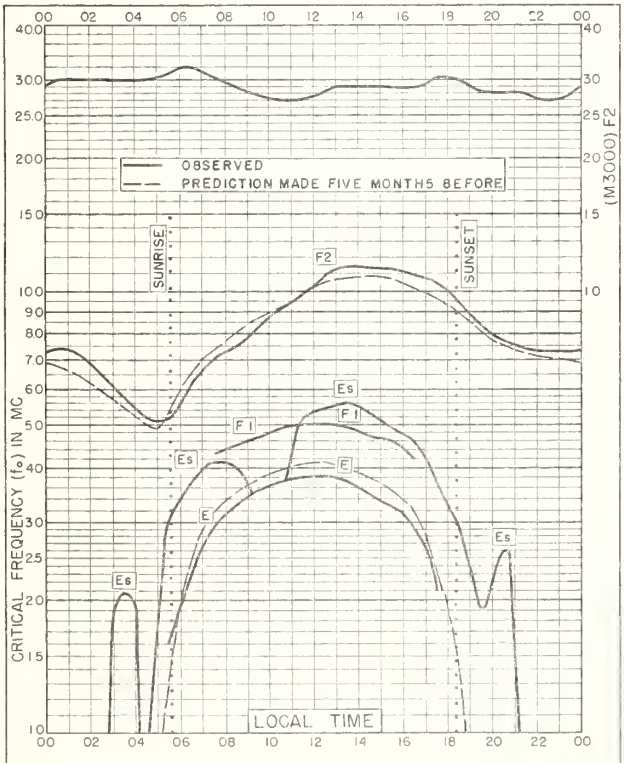


Fig. 51. PUERTO RICO, W. I.
18.5°N, 67.2°W MAY 1951

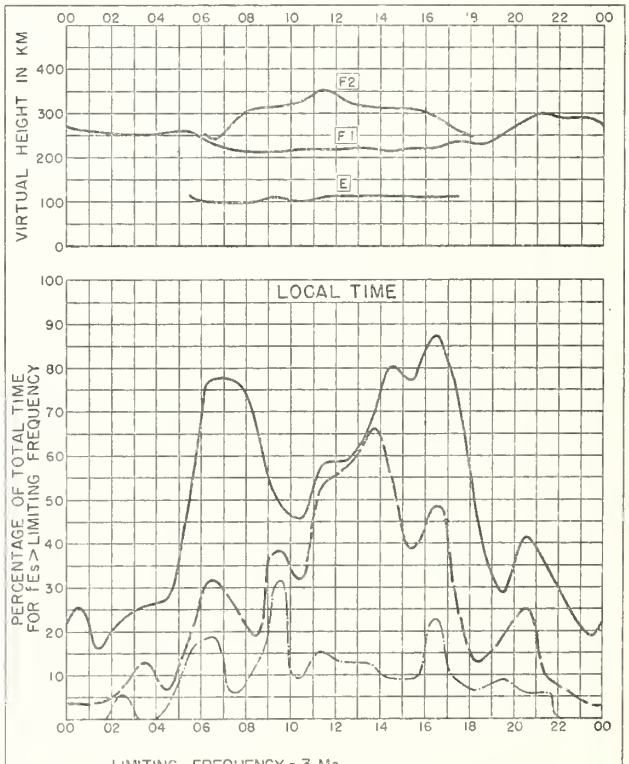


Fig. 52. PUERTO RICO, W. I. MAY 1951

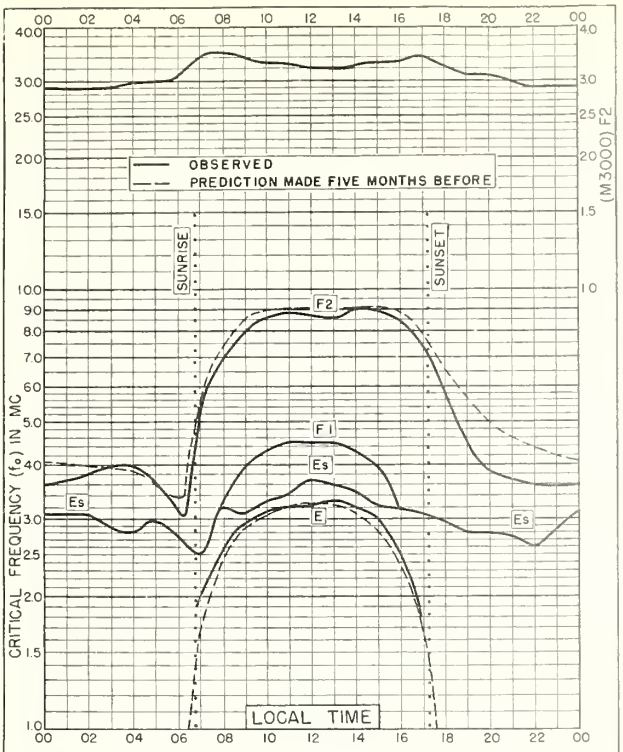


Fig. 53. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MAY 1951

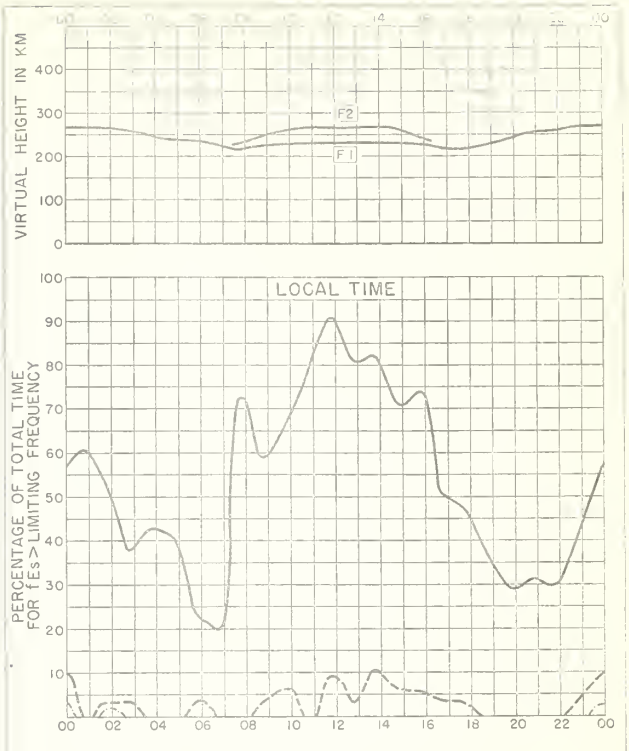


Fig. 54. WATHEROO, W. AUSTRALIA MAY 1951

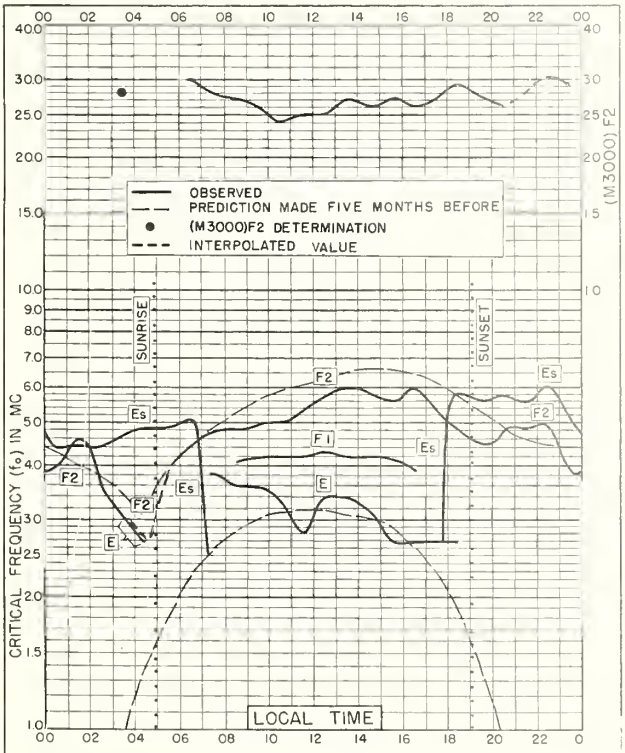


Fig. 55. FORT CHIMO, CANADA
58.1°N, 68.3°W APRIL 1951

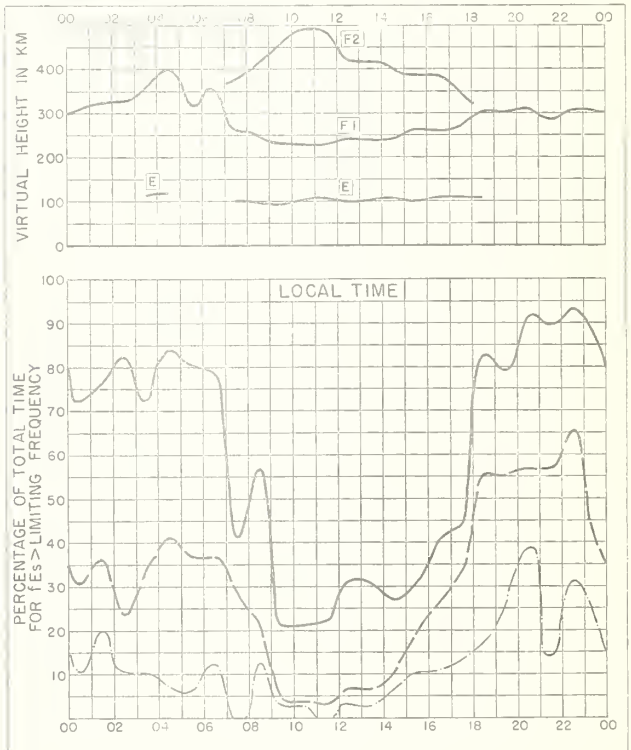


Fig. 56. FORT CHIMO, CANADA APRIL 1951

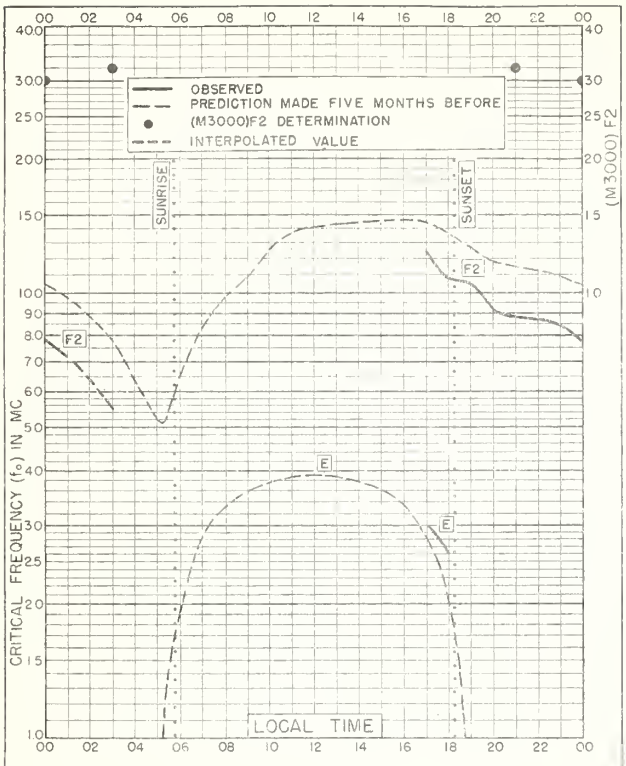


Fig. 57. CALCUTTA, INDIA
22.6°N, 88.4°E APRIL 1951

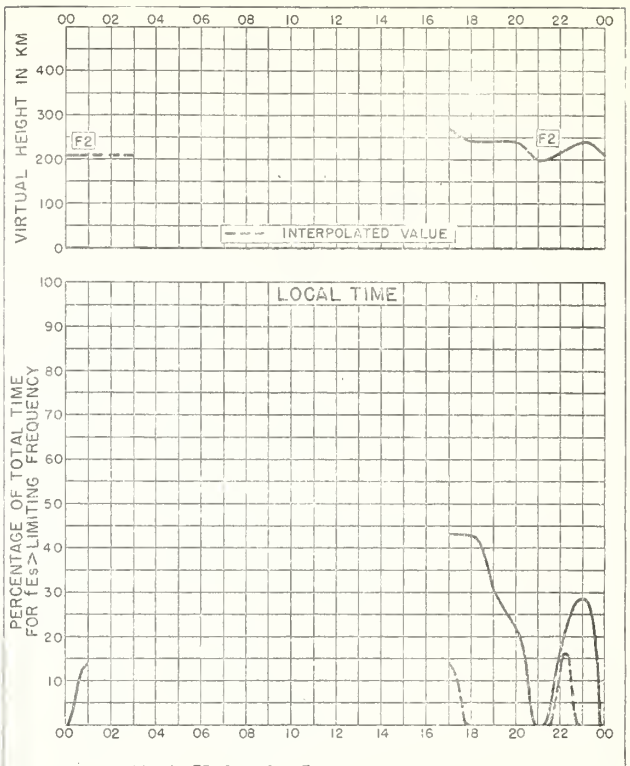


Fig.58. CALCUTTA, INDIA APRIL 1951

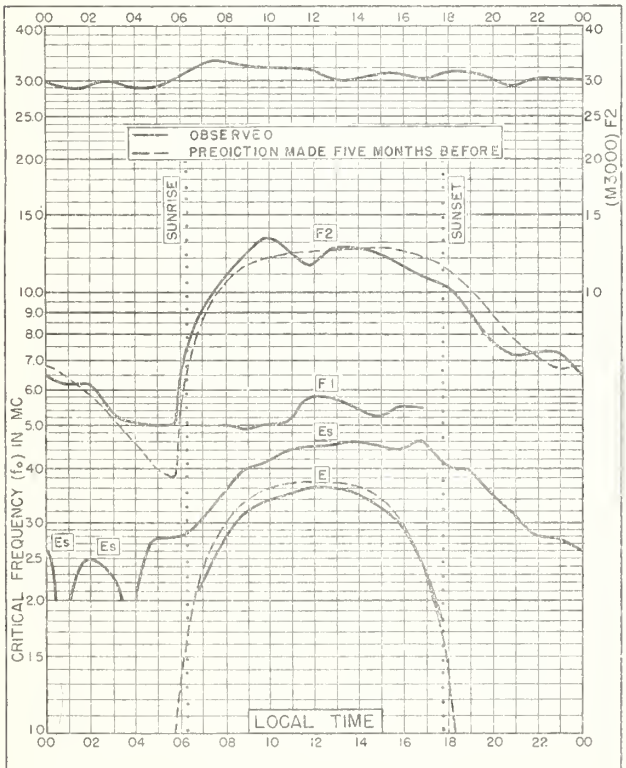


Fig. 59. RAROTONGA I.
21.3°S, 159.8°W APRIL 1951

Fig. 60. RAROTONGA I. APRIL 1951

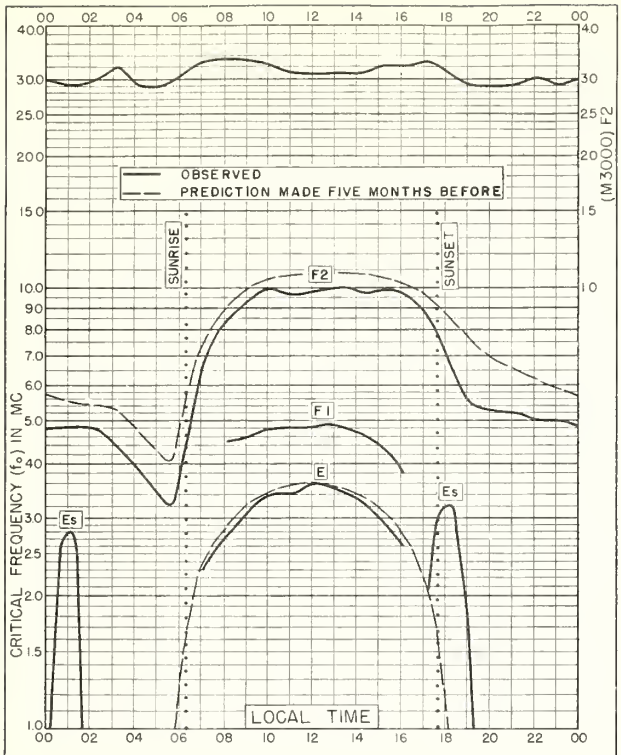


Fig. 61. BRISBANE, AUSTRALIA
27.5°S, 153.0°E APRIL 1951

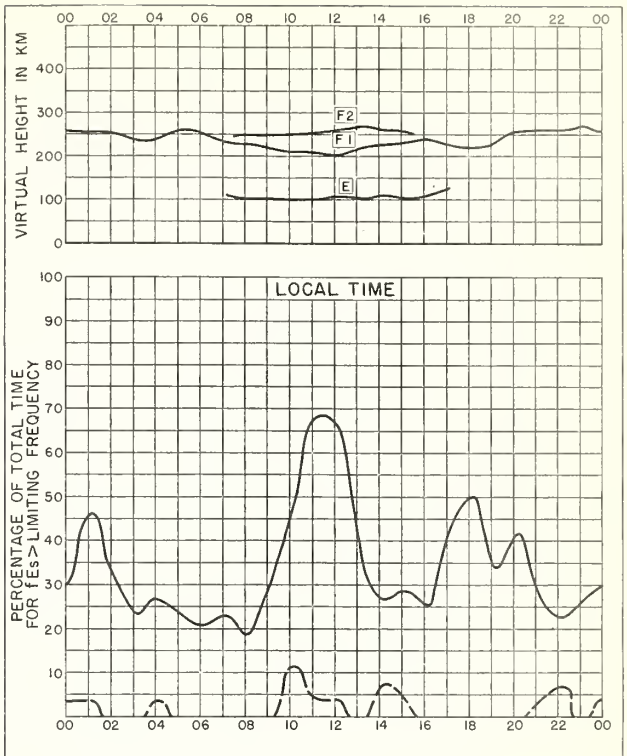


Fig. 62. BRISBANE, AUSTRALIA APRIL 1951

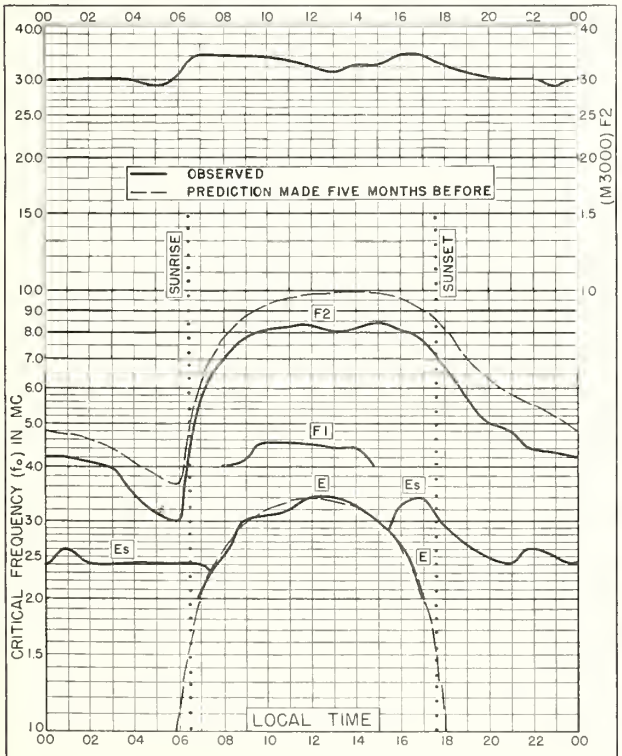


Fig. 63. CANBERRA, AUSTRALIA
35.3°S, 149.0°E APRIL 1951

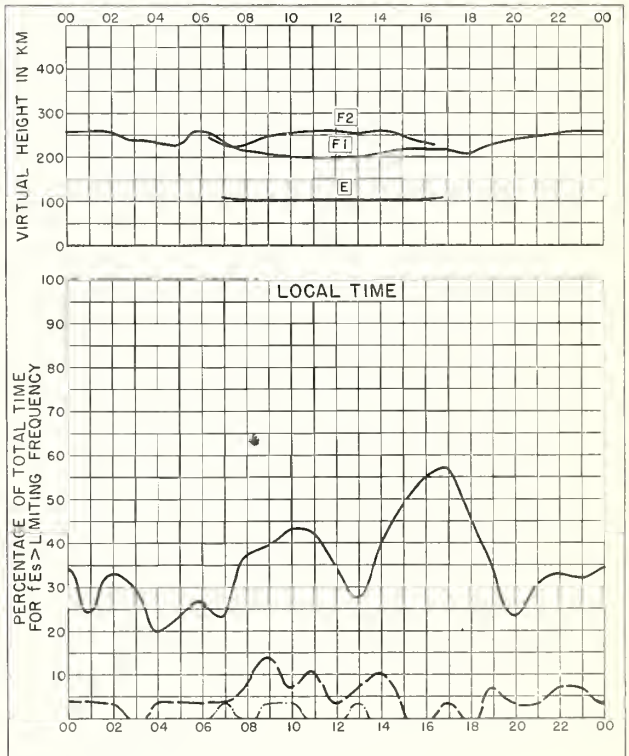


Fig. 64. CANBERRA, AUSTRALIA APRIL 1951

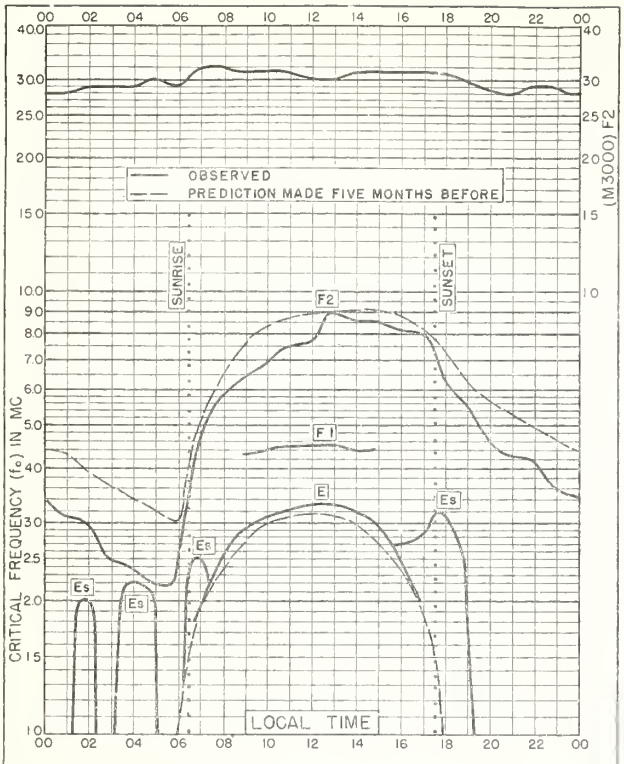


Fig. 65. HOBART, TASMANIA
42.8°S, 147.4°E APRIL 1951

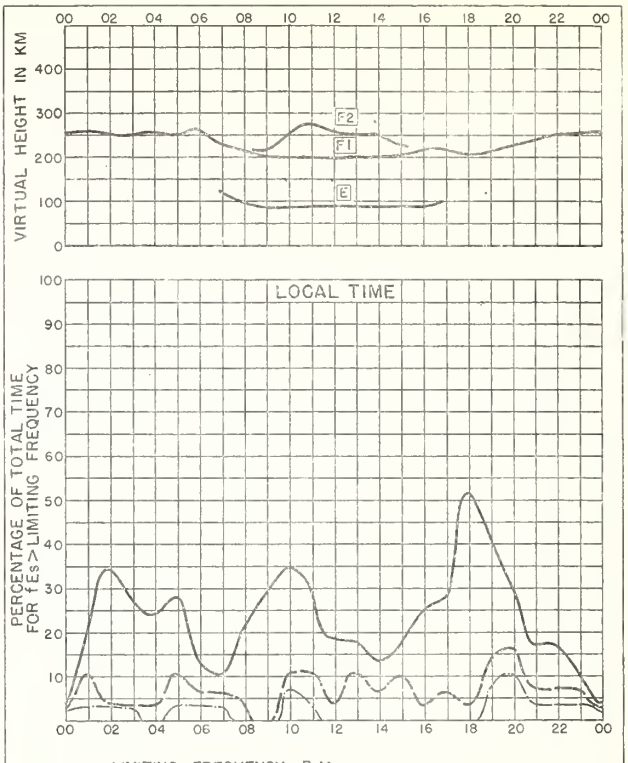


Fig. 66. HOBART, TASMANIA APRIL 1951

NBS 480

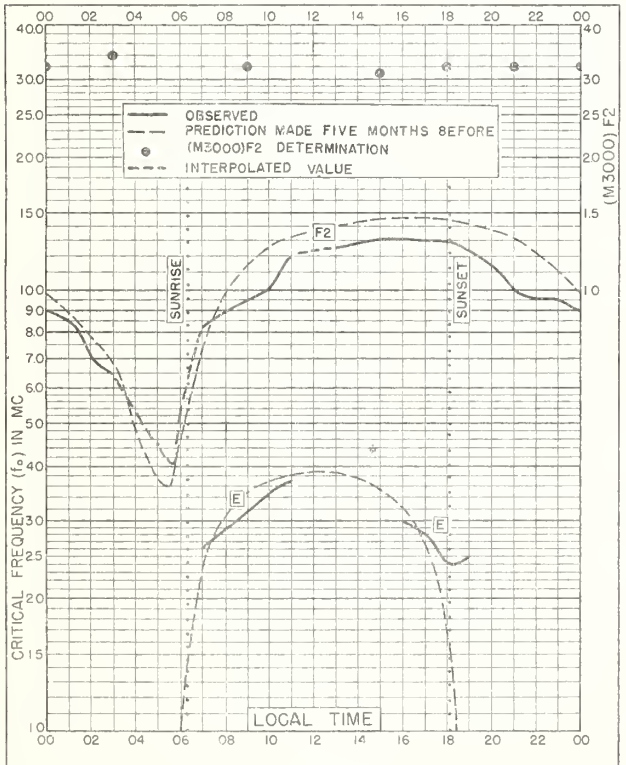


Fig. 67. CALCUTTA, INDIA
22.6°N, 88.4°E MARCH 1951

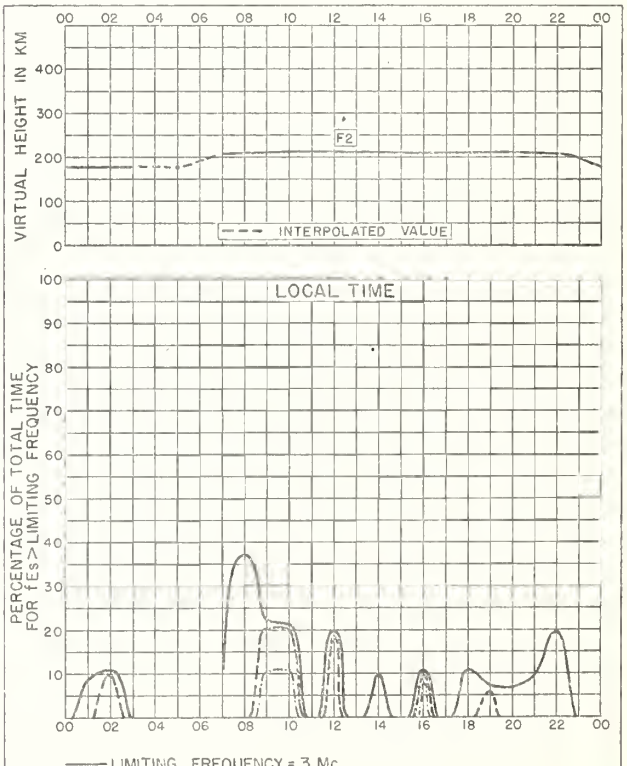


Fig. 68. CALCUTTA, INDIA MARCH 1951

NBS 480

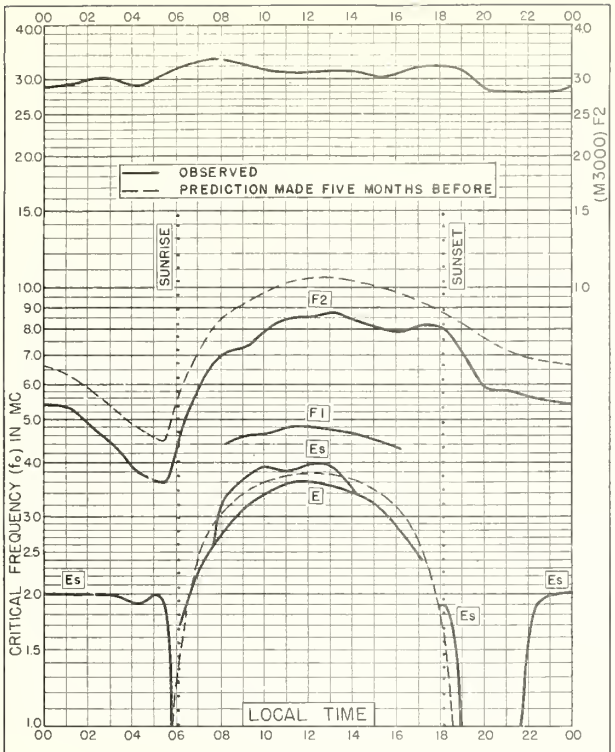


Fig. 69. BRISBANE, AUSTRALIA
27.5°S, 153.0°E MARCH 1951

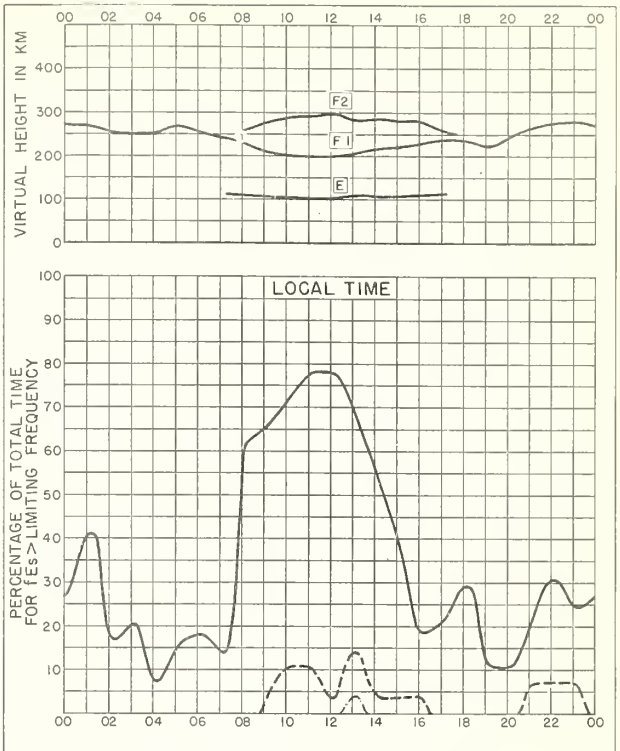


Fig. 70. BRISBANE, AUSTRALIA MARCH 1951

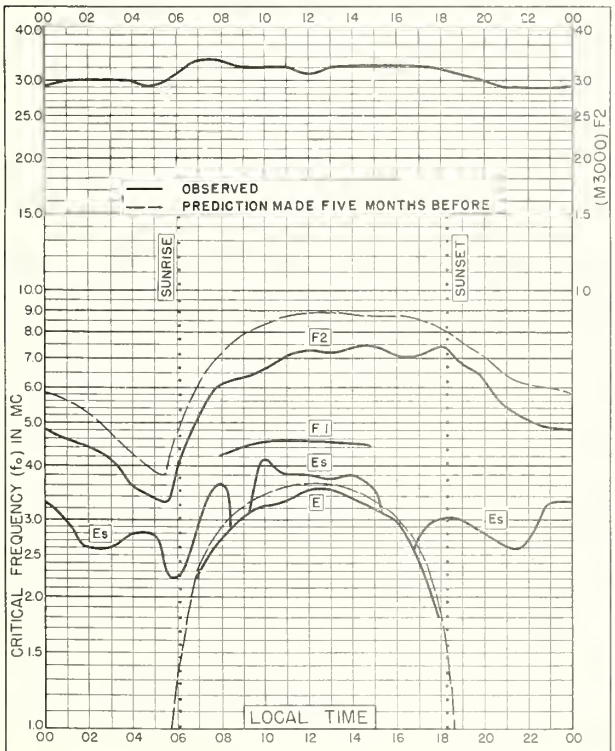


Fig. 71. CANBERRA, AUSTRALIA
35.3°S, 149.0°E MARCH 1951

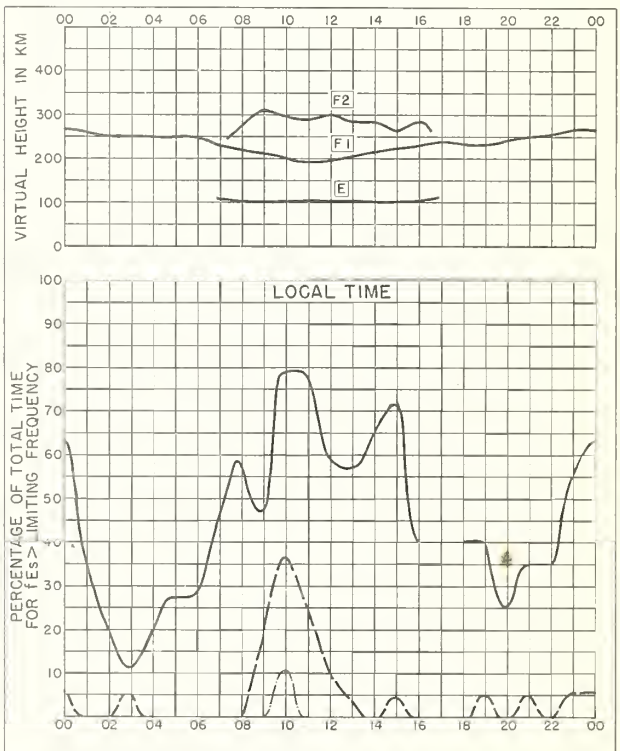


Fig. 72. CANBERRA, AUSTRALIA MARCH 1951

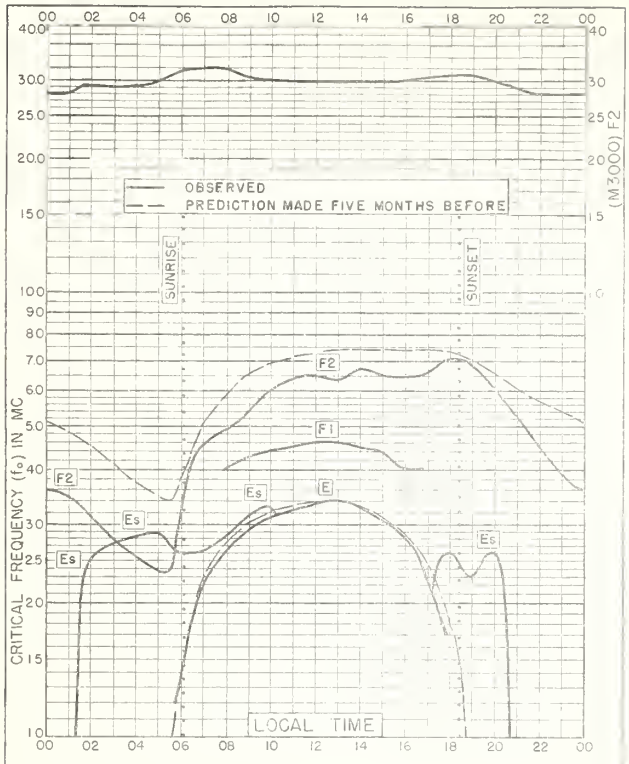


Fig. 73. HOBART, TASMANIA
42.8°S, 147.4°E MARCH 1951

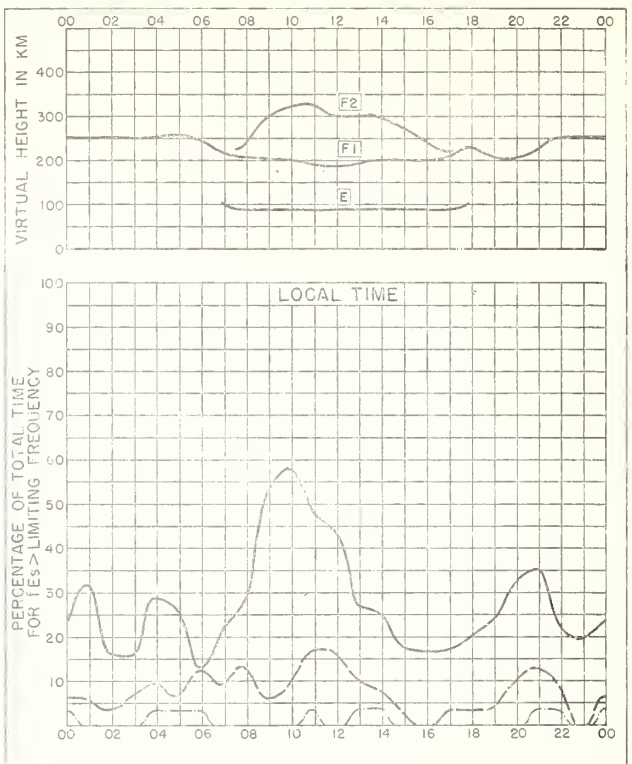


Fig. 74. HOBART, TASMANIA MARCH 1951

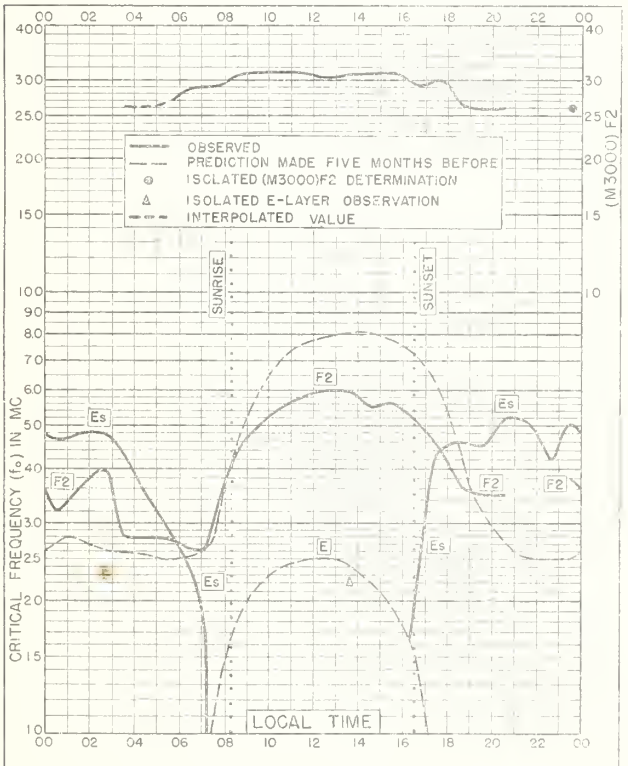


Fig. 75. REYKJAVIK, ICELAND
64.1°N, 21.8°W FEBRUARY 1951

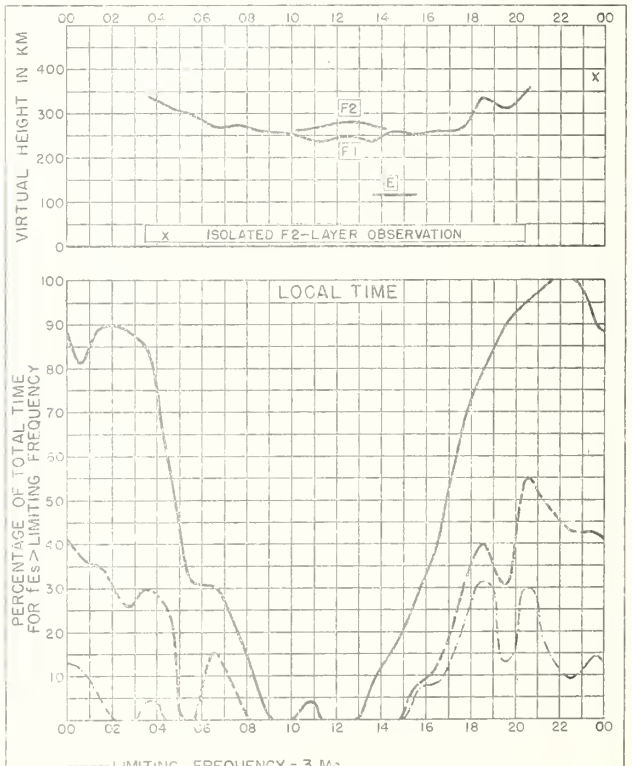


Fig. 76. REYKJAVIK, ICELAND FEBRUARY 1951

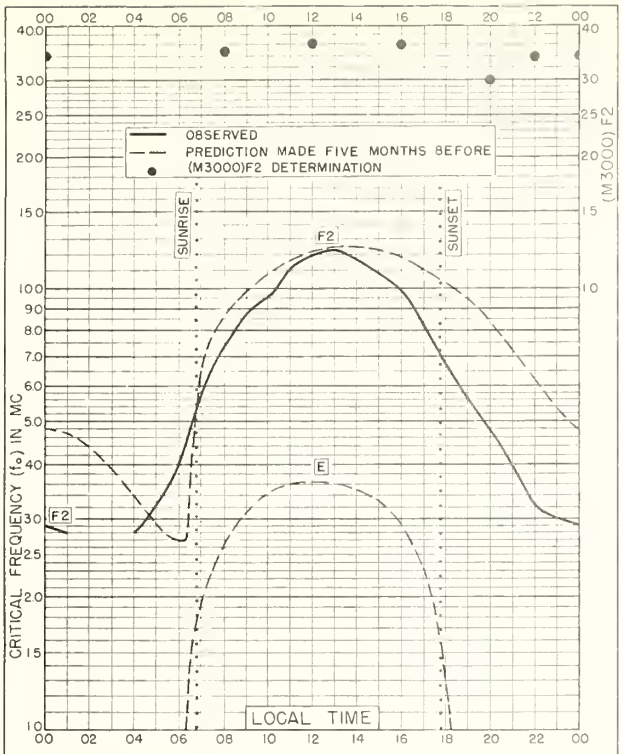


Fig. 77. DELHI, INDIA
28.6°N, 77.1°E FEBRUARY 1951

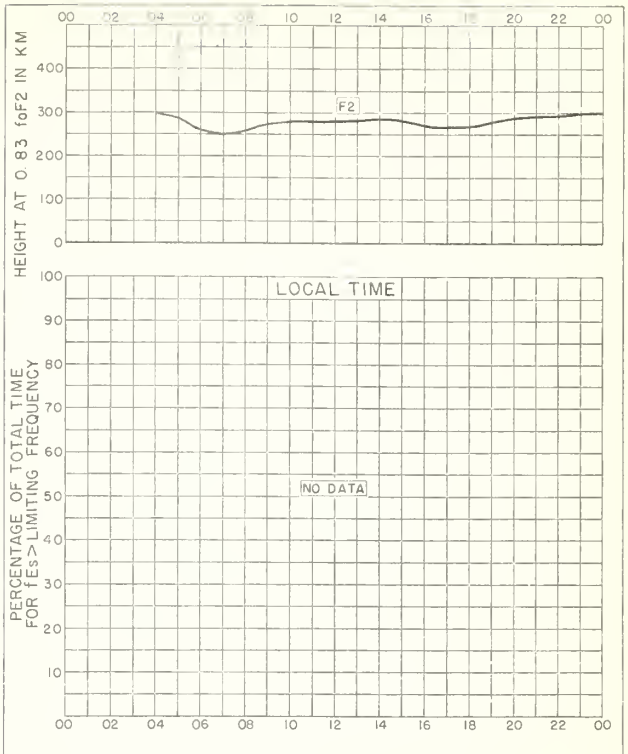


Fig. 78. DELHI, INDIA FEBRUARY 1951

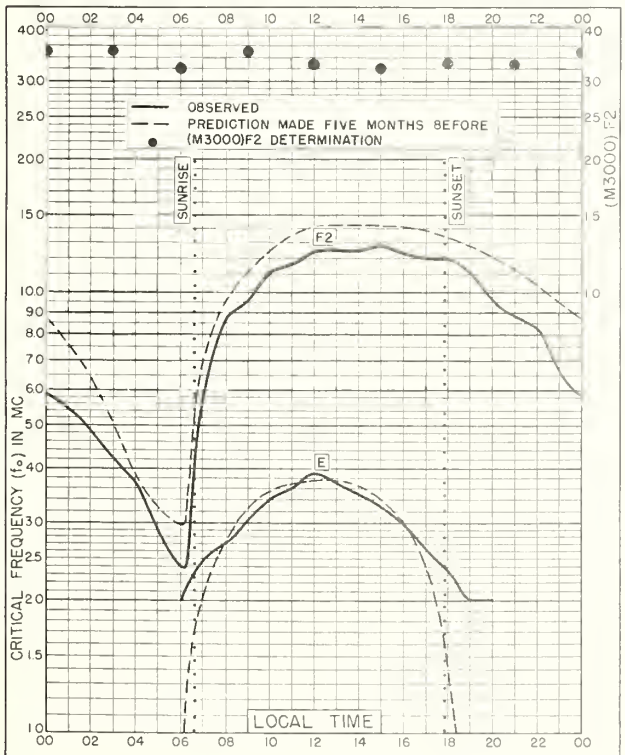


Fig. 79. CALCUTTA, INDIA
22.6°N, 88.4°E FEBRUARY 1951

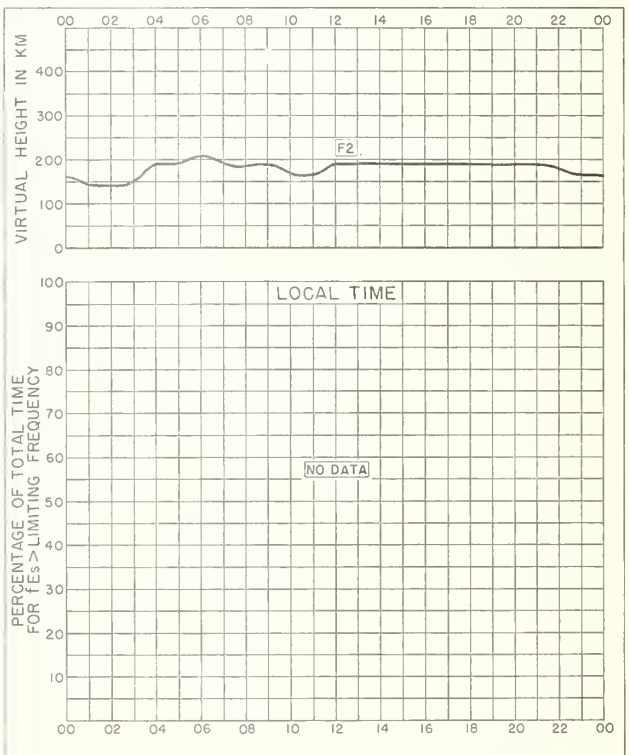


Fig. 80. CALCUTTA, INDIA FEBRUARY 1951

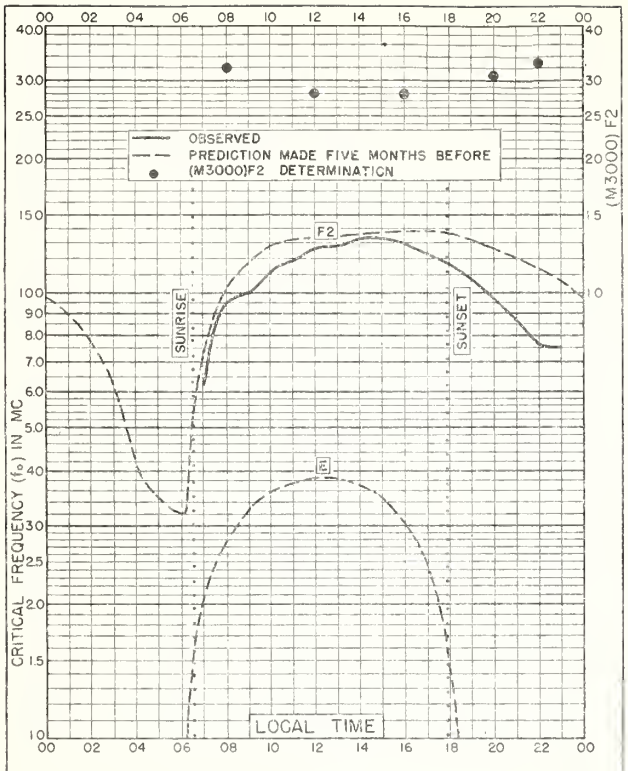
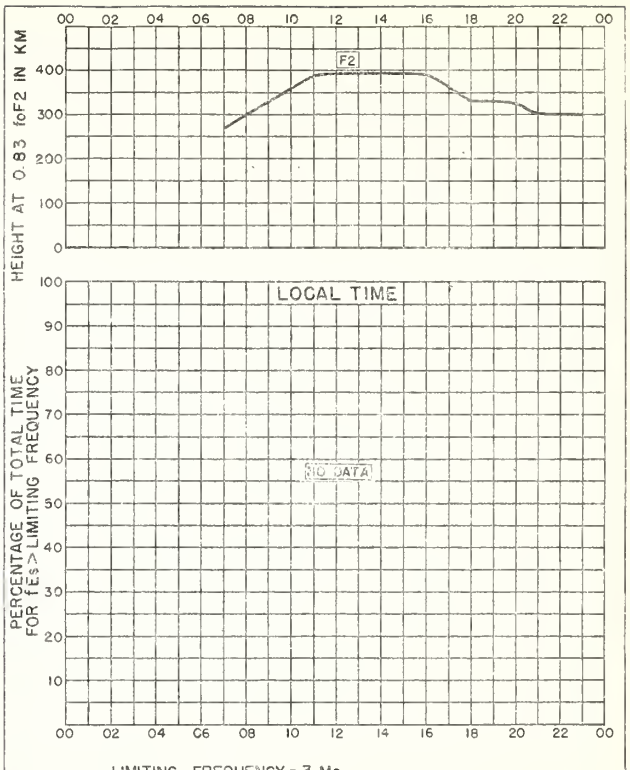


Fig. 81. BOMBAY, INDIA
19.0°N, 73.0°E FEBRUARY 1951



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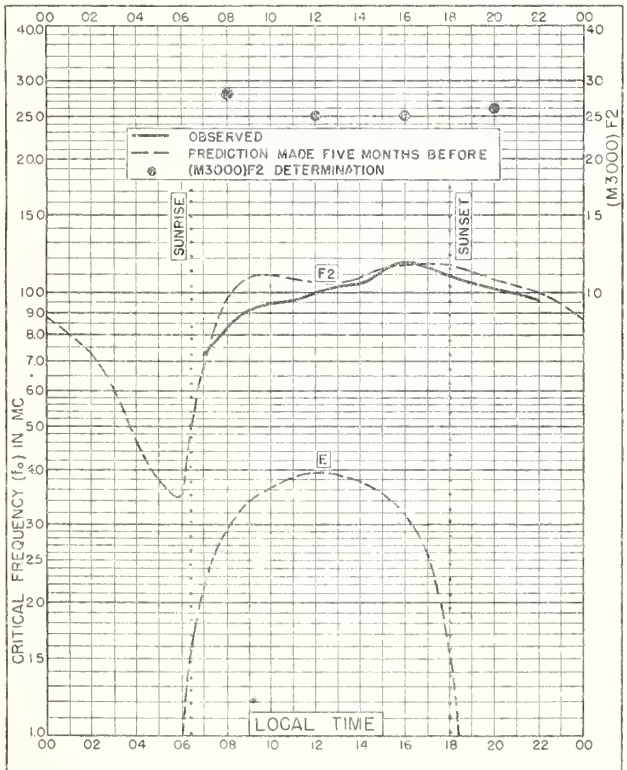

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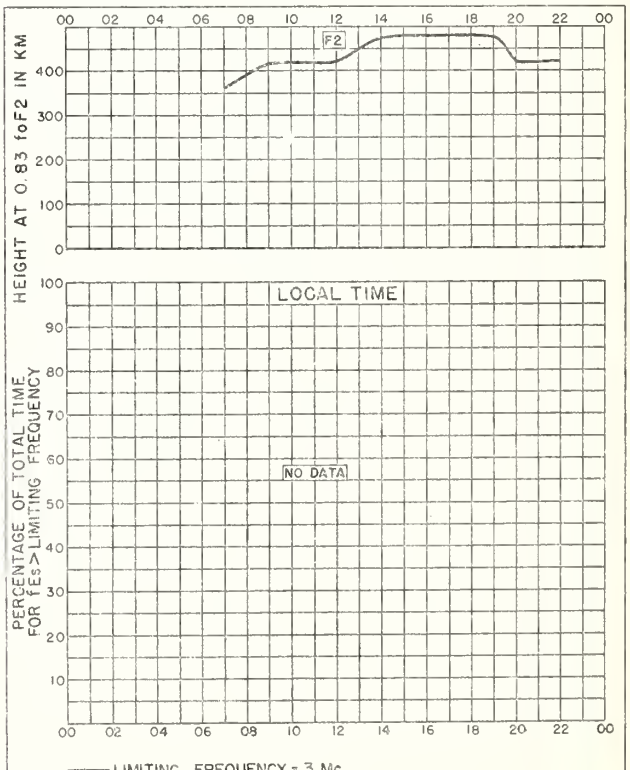

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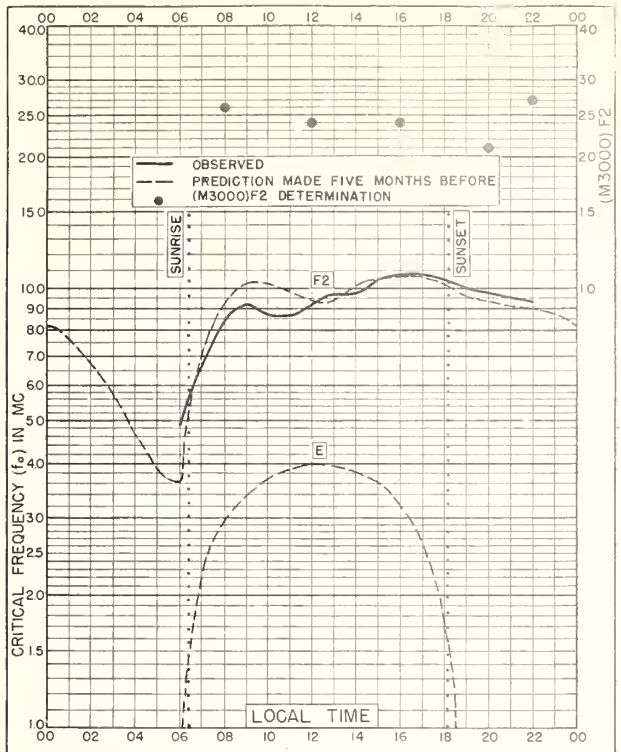

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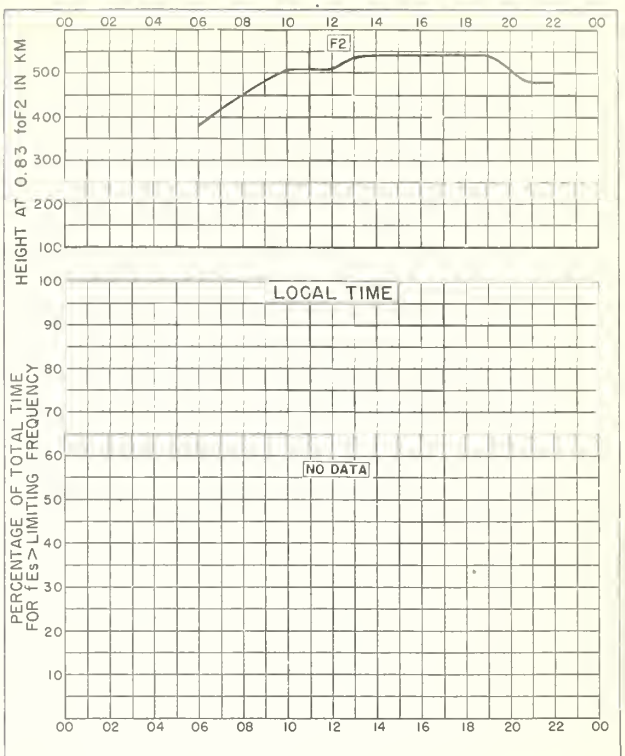

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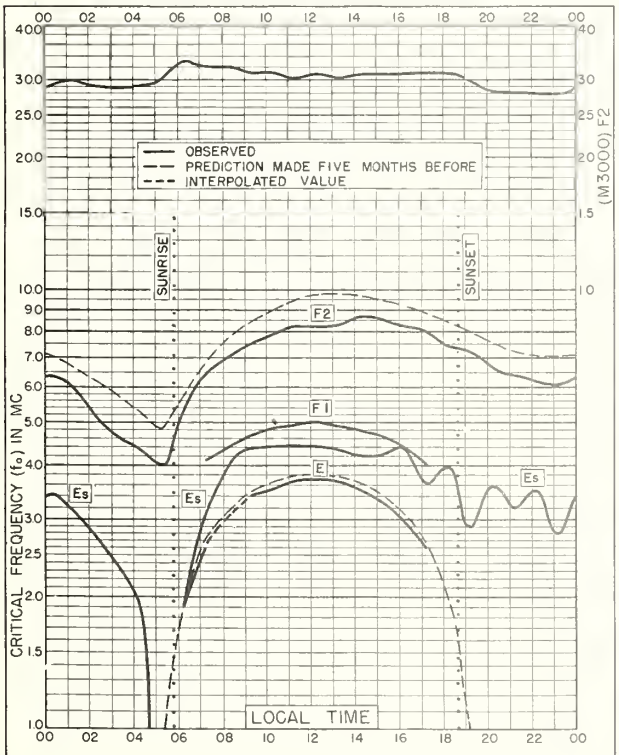

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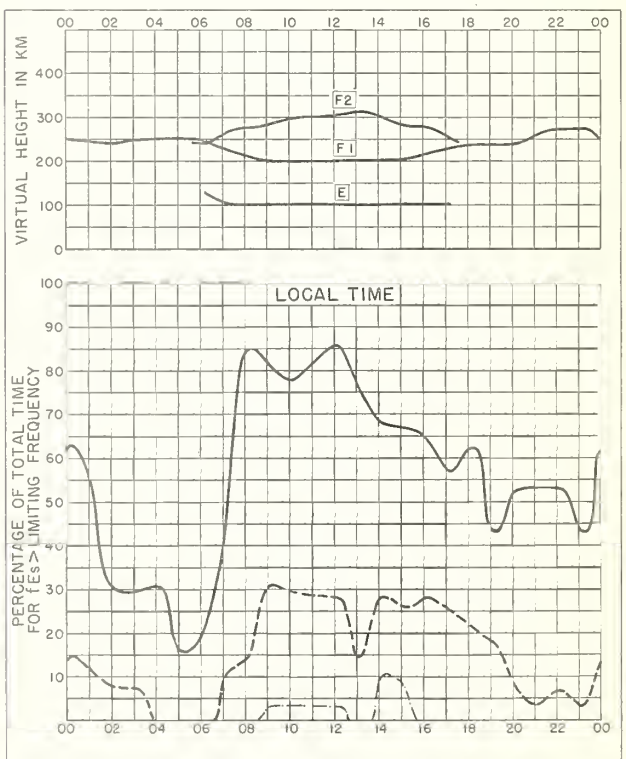

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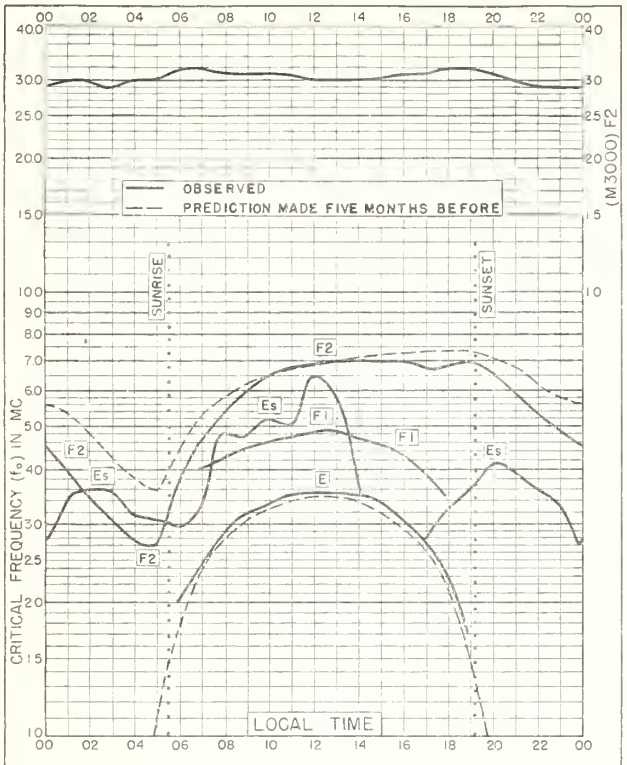

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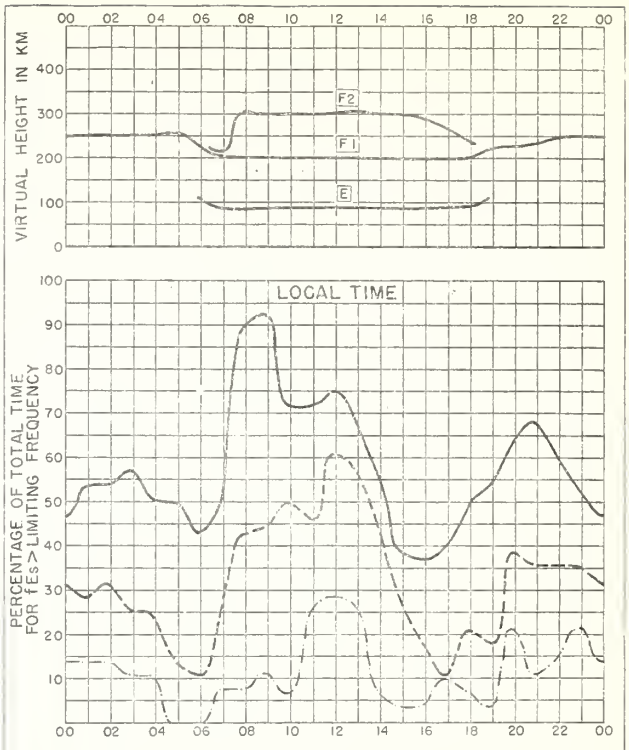

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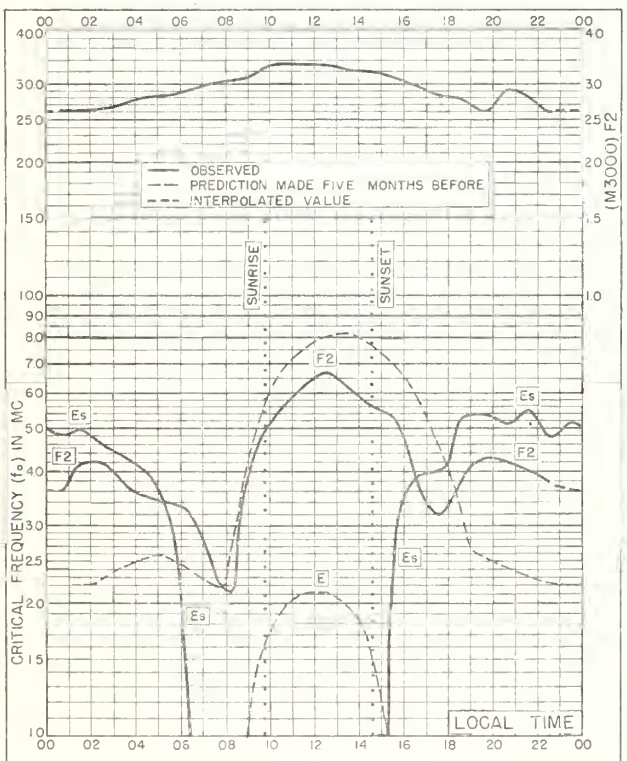

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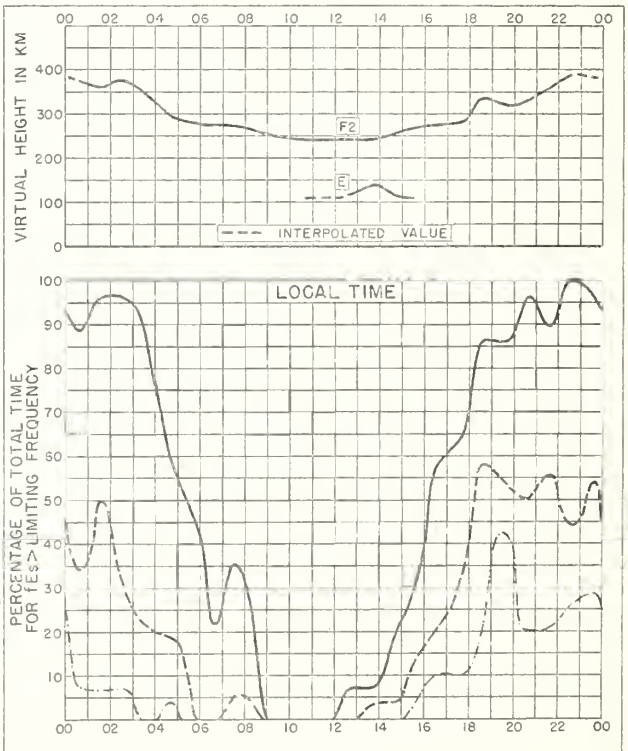

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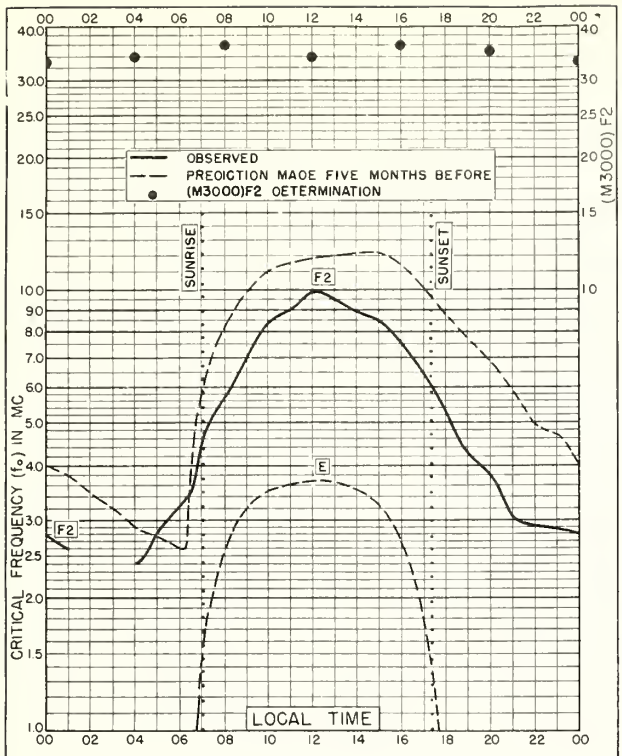

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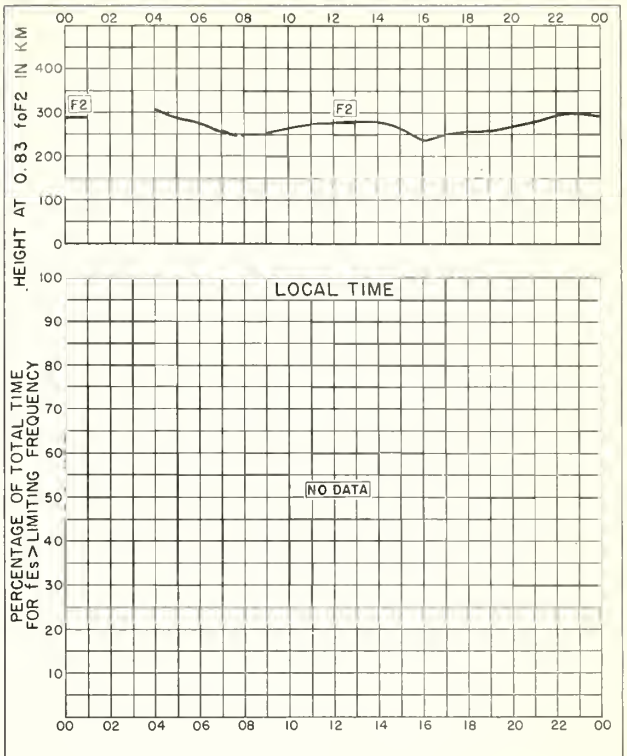

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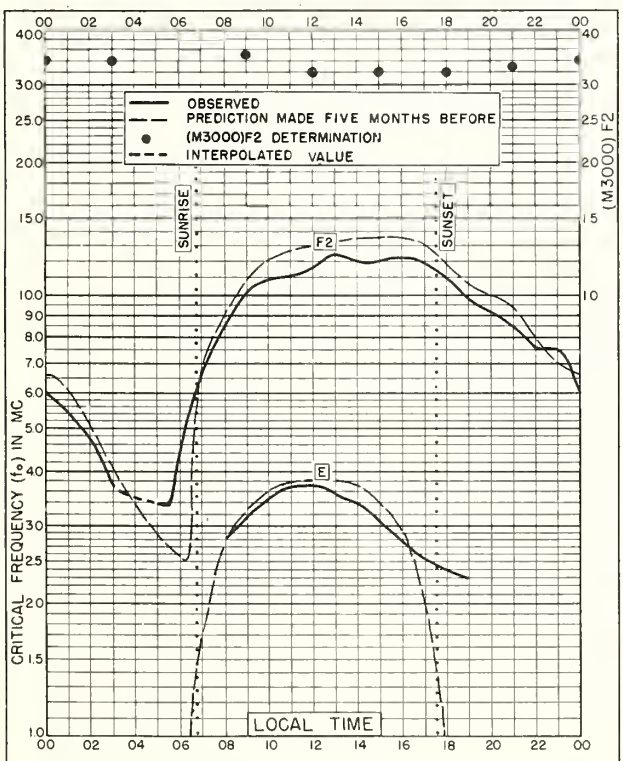

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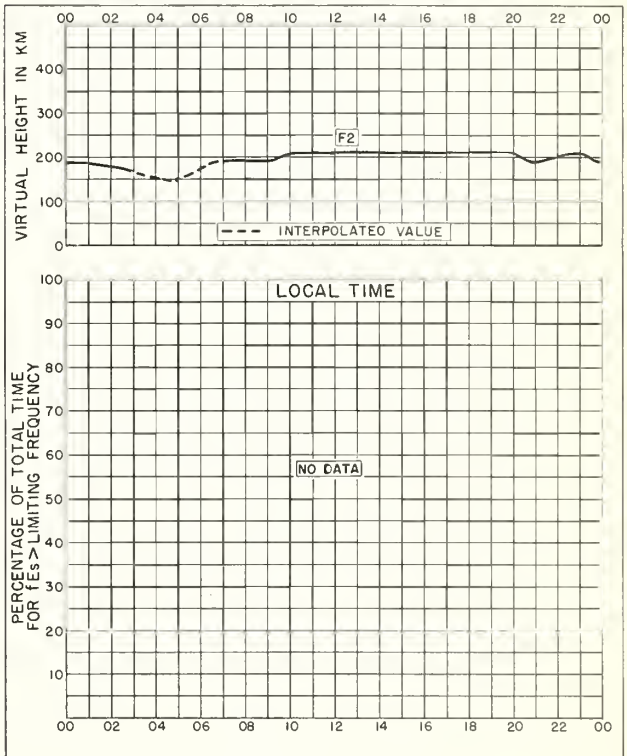

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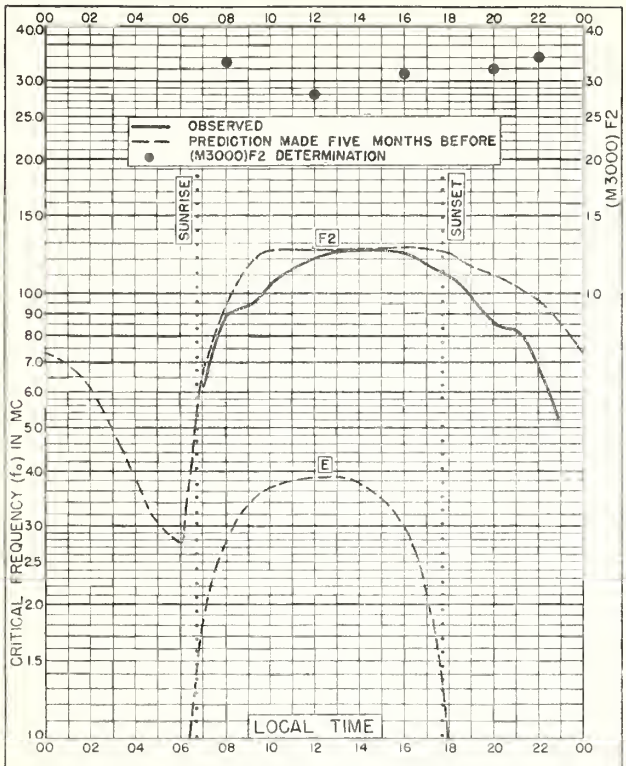

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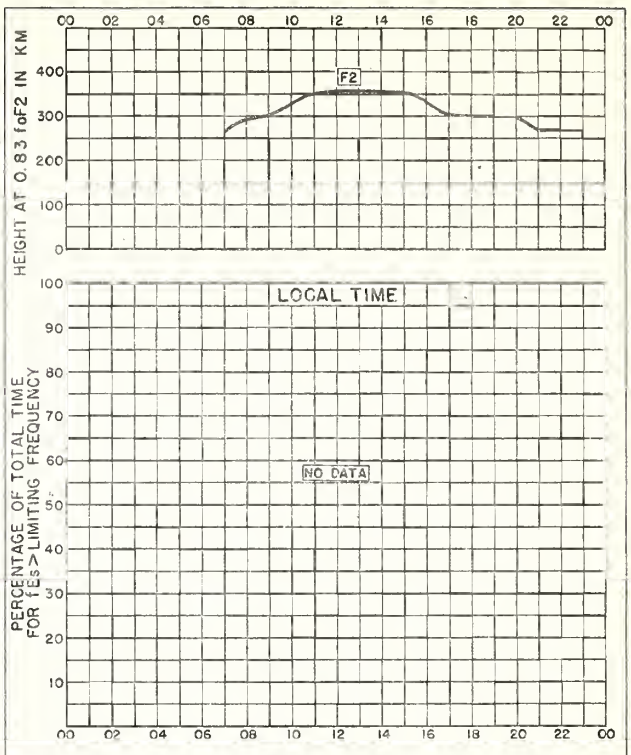

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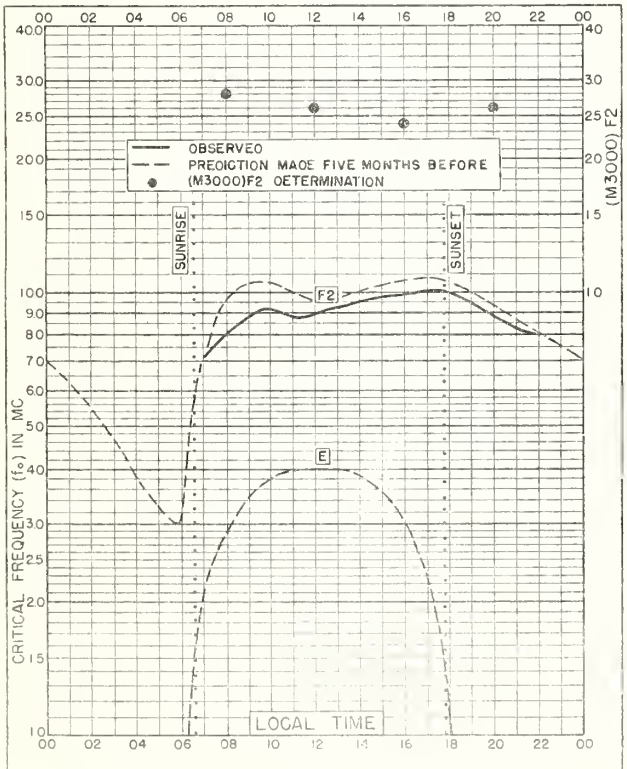

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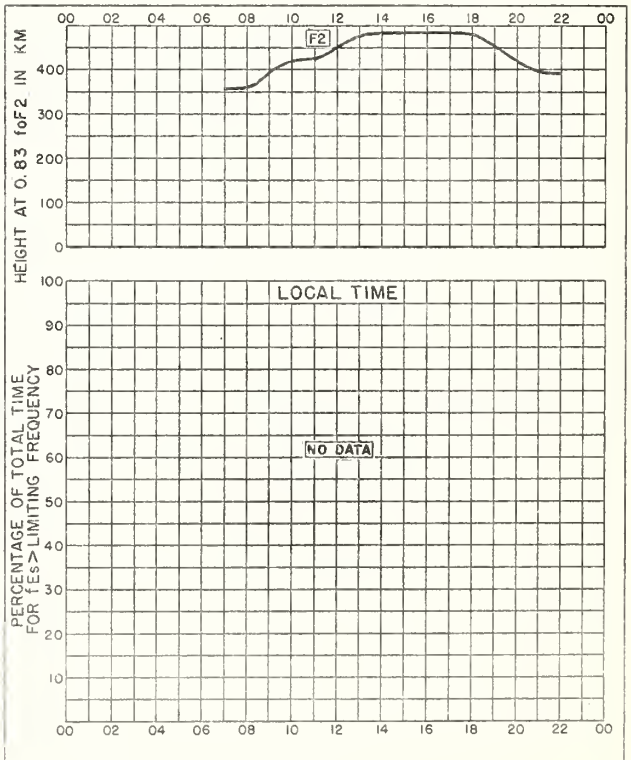

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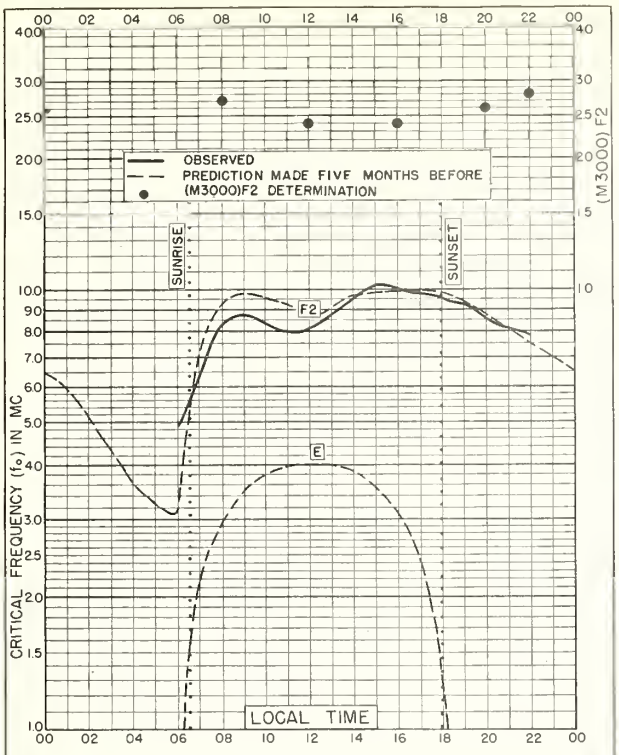

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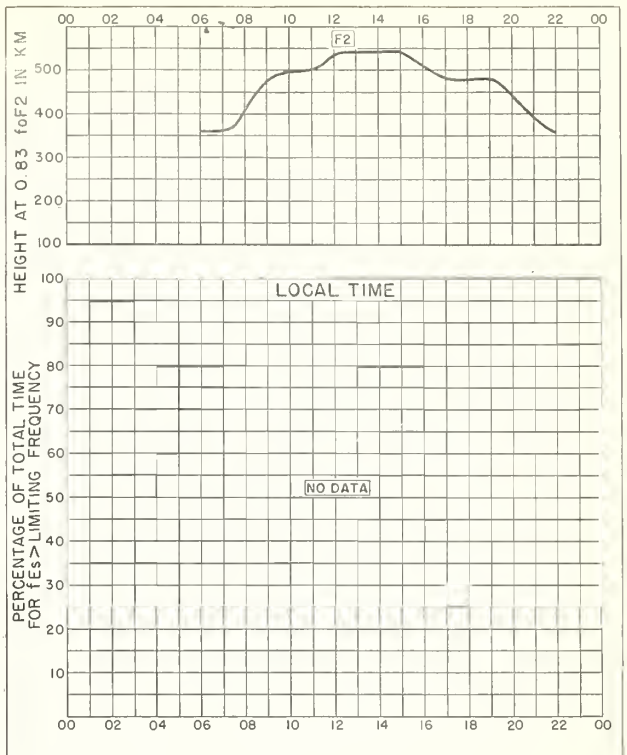

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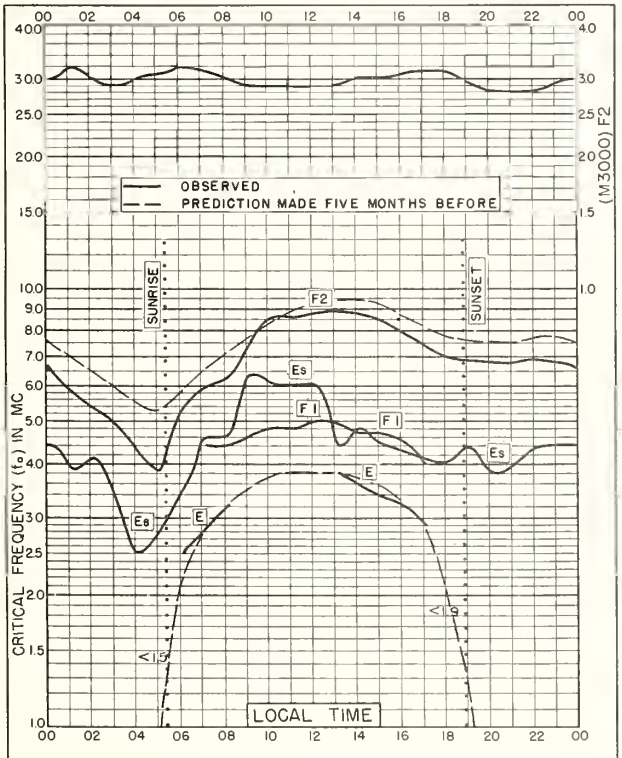

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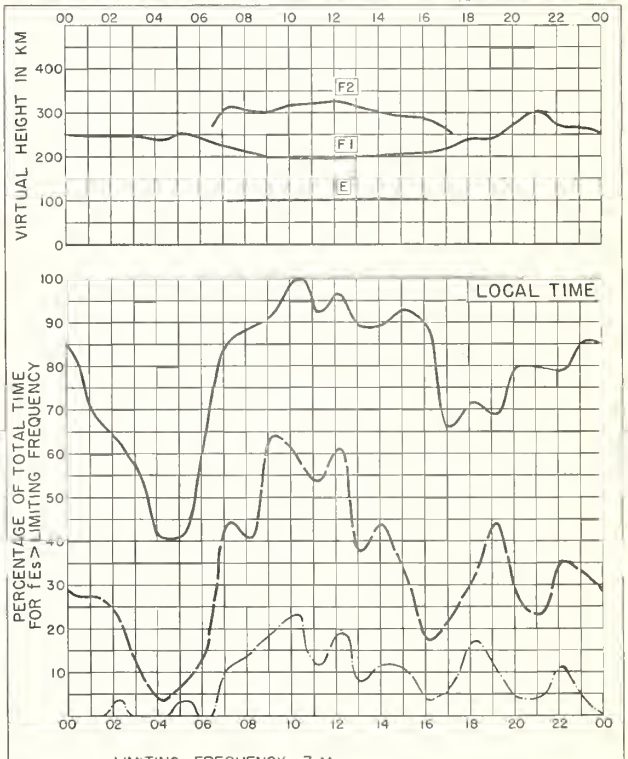

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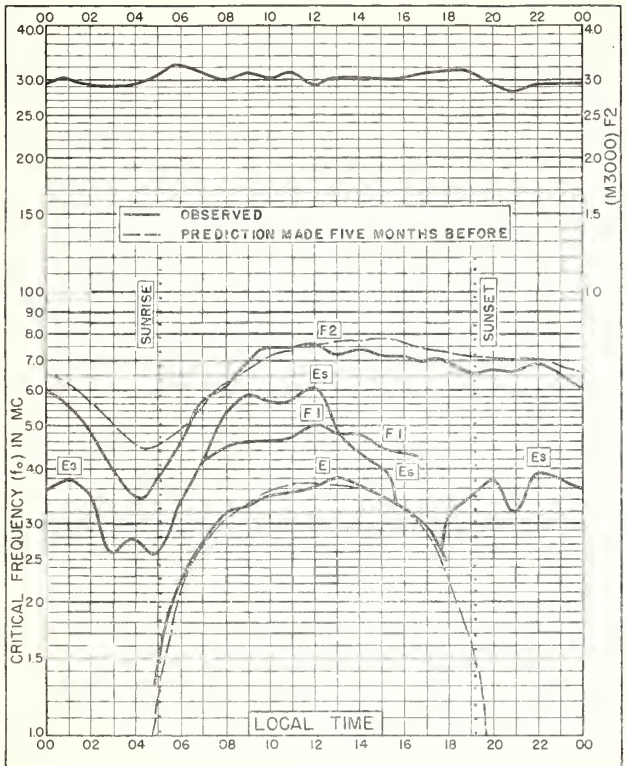

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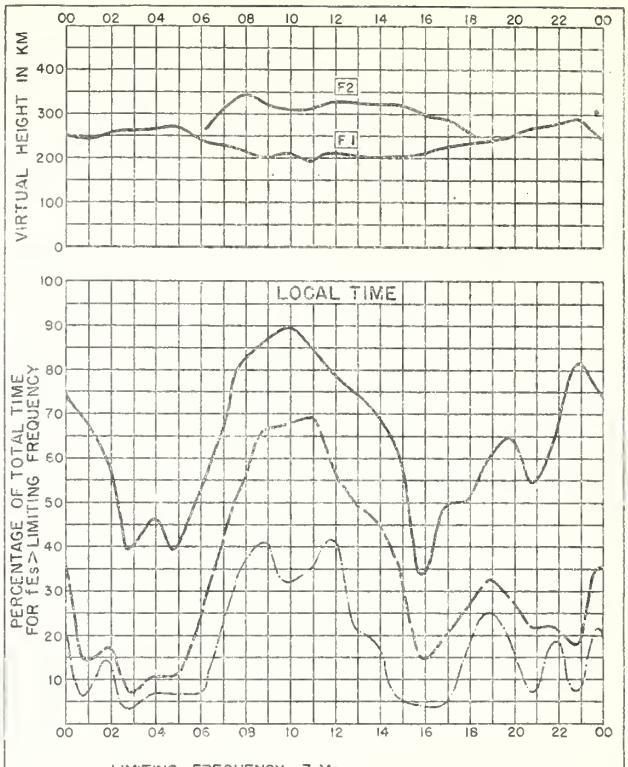

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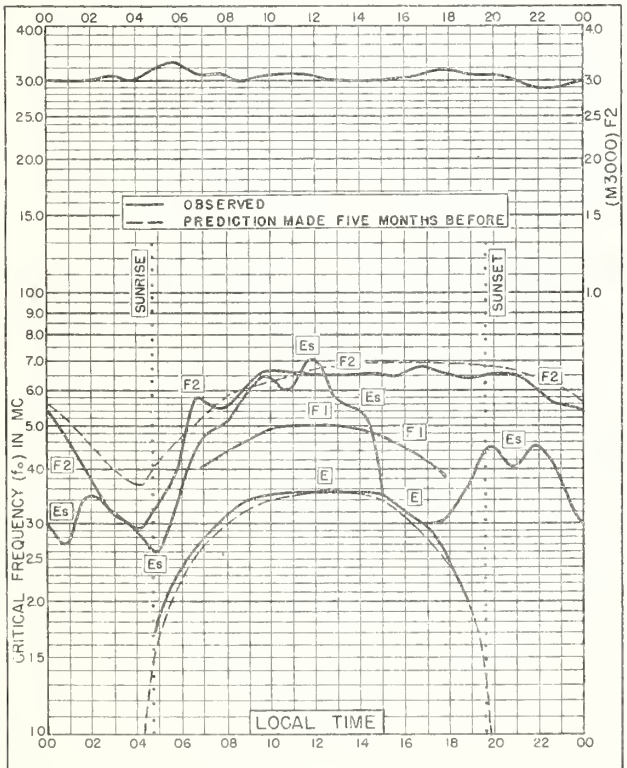

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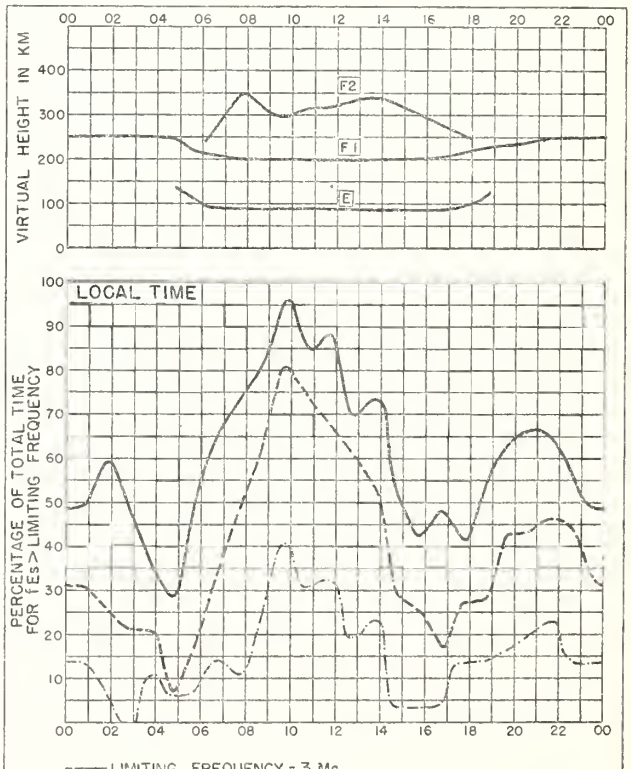

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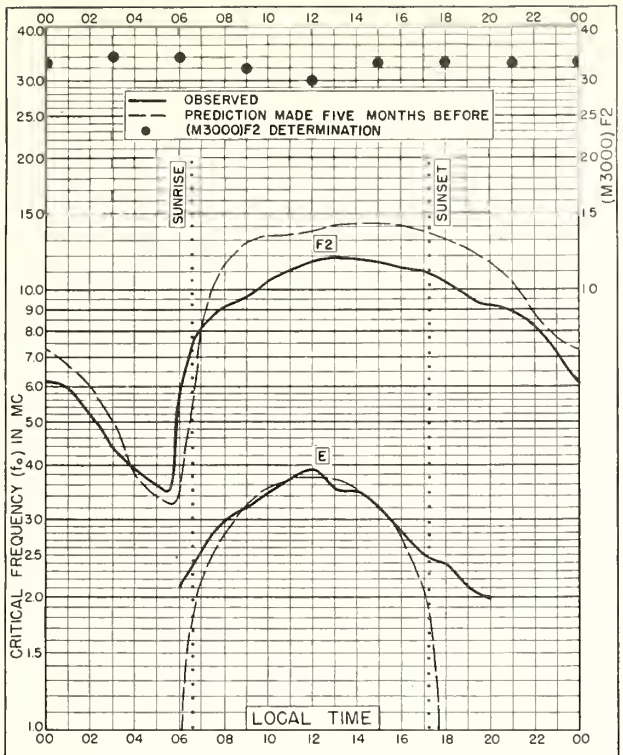

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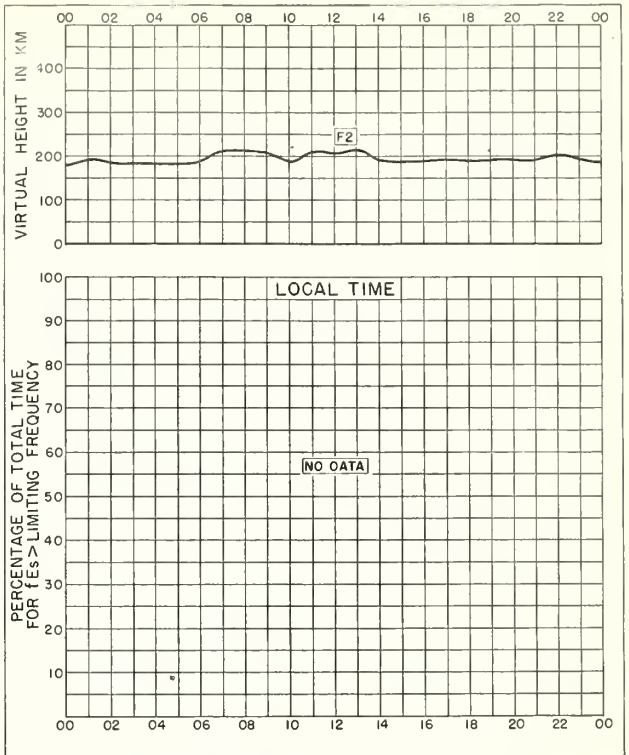

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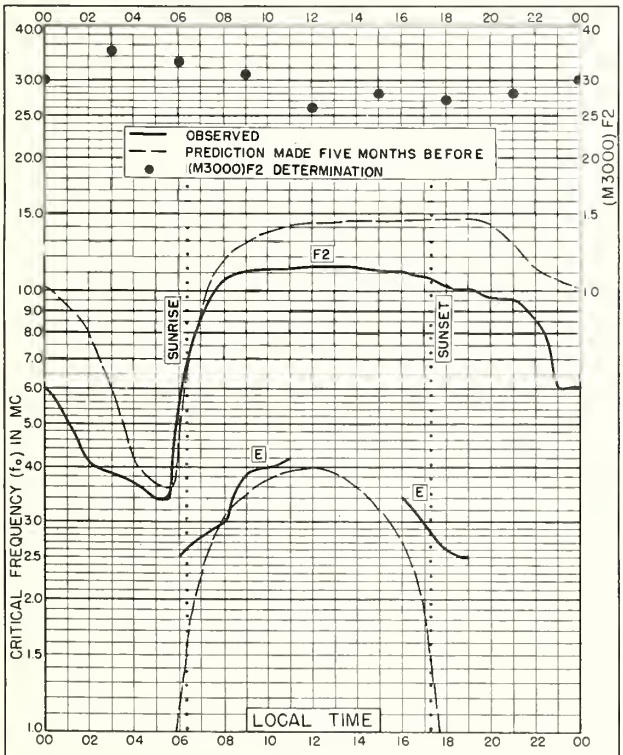

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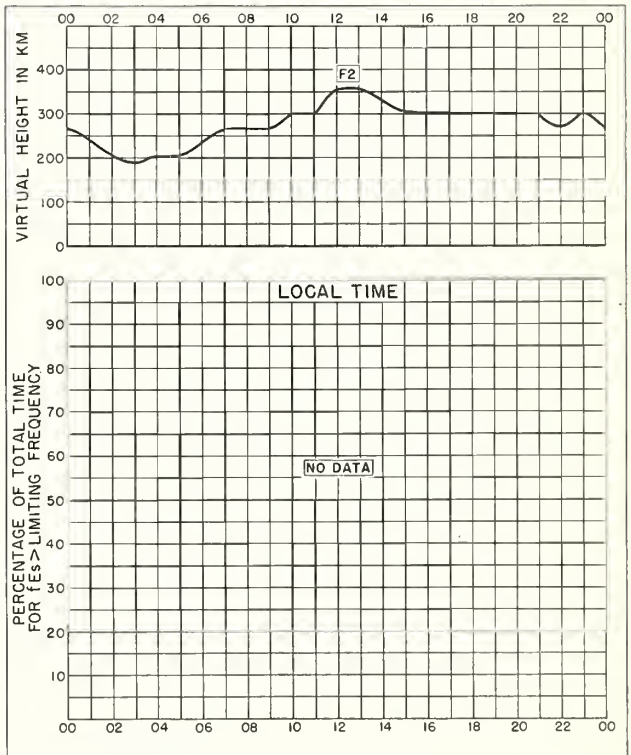

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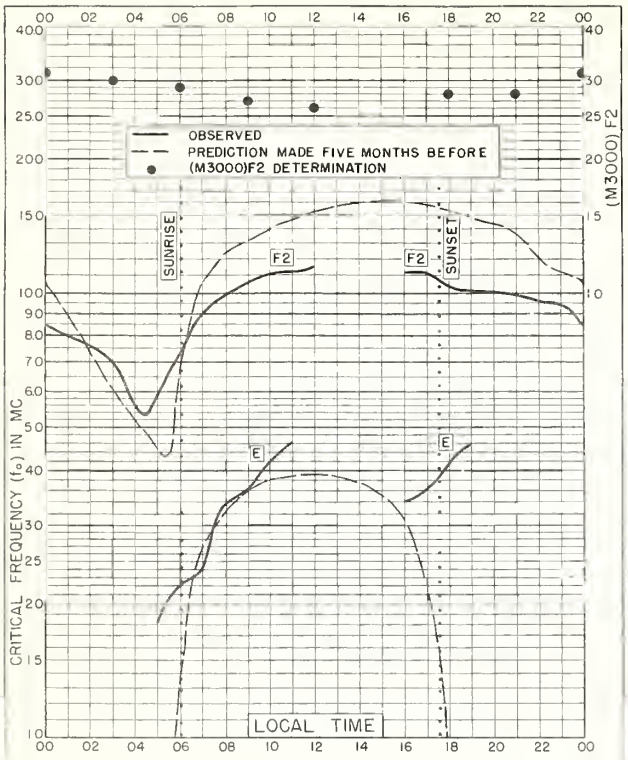

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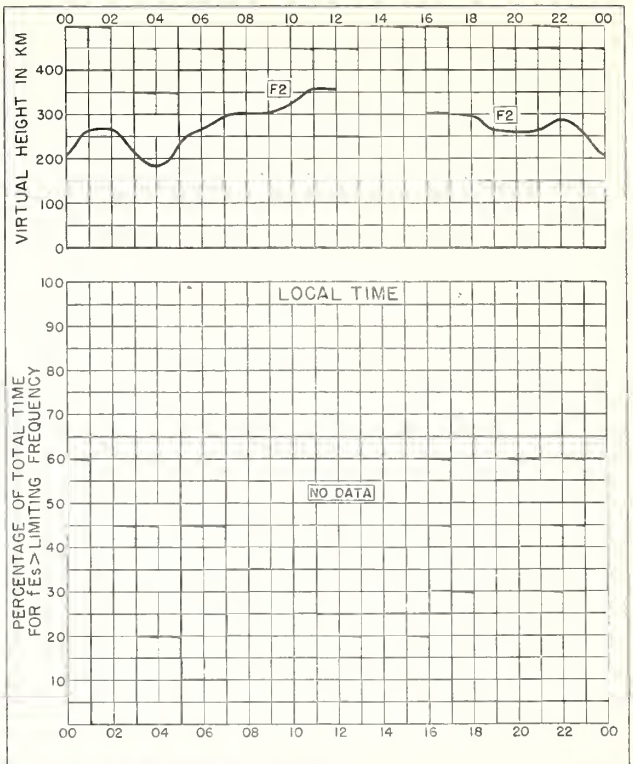

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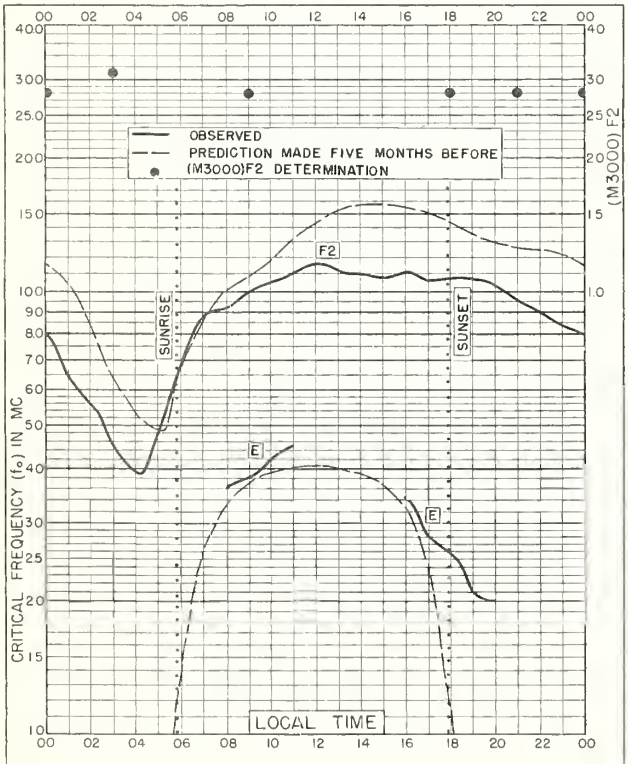

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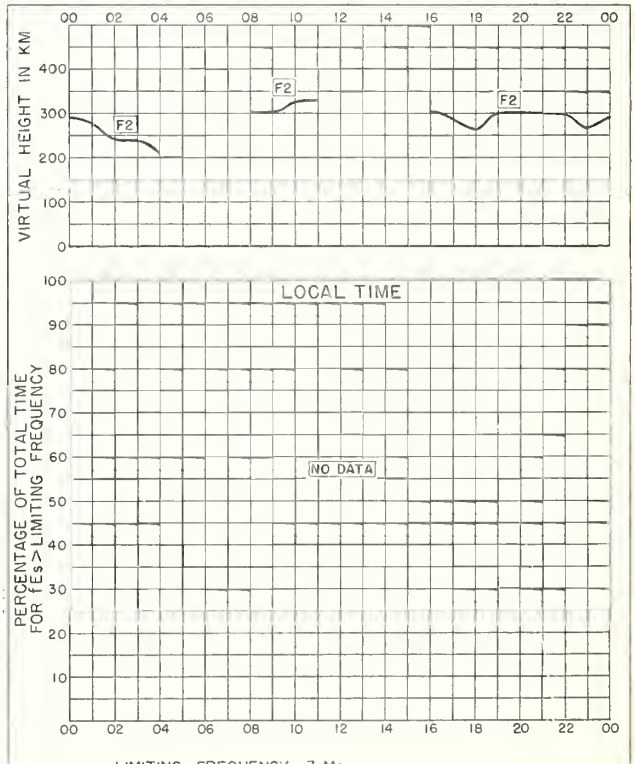

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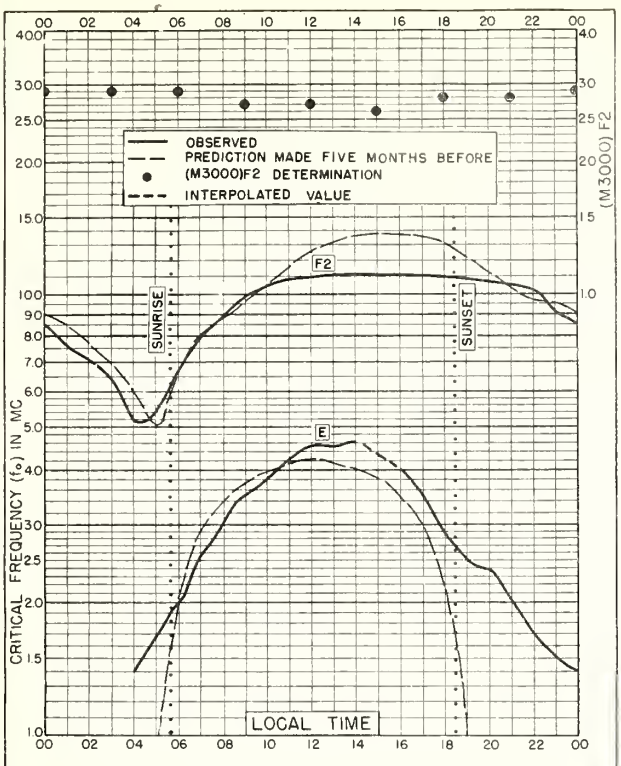

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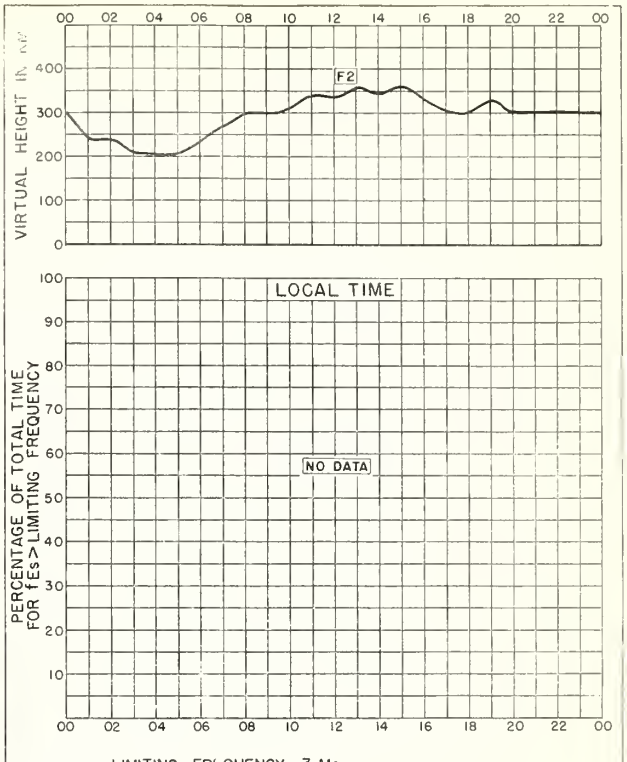

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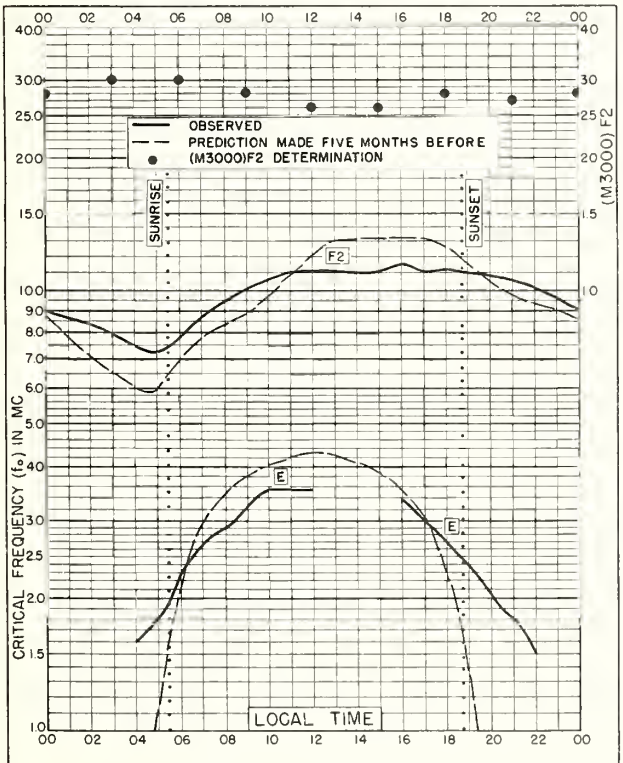

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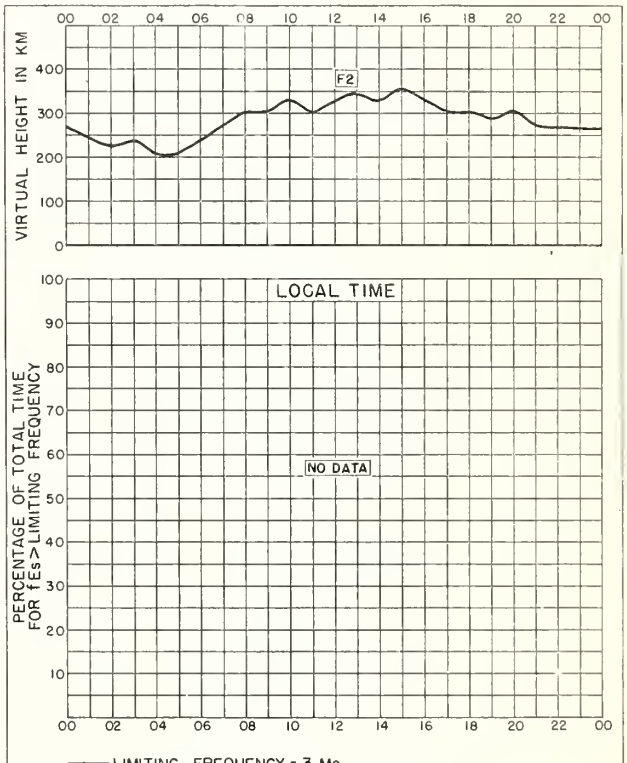

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CRPL–F. Ionospheric Data.
*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.
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R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
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.
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**R11. A Nomographic Method for both Prediction and Observation Correlation of Ionosphere Characteristics.
**R12. Short Time Variations in Ionospheric Characteristics.
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**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.
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