IONOSPHERIC DATA

ISSUED
AUGUST 1954

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F 120

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
24 August 1954

IONOSPHERIC DATA

CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, 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 Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

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.

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 in Document No. 626-E referred to above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, L, M, N, Q, S, or T 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 usually 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 daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit 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									
	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945
December		15	33	53	86	108	114	126	85	38
November		16	38	52	87	112	115	124	83	36
October		17	43	52	90	114	116	119	81	23
September		18	46	54	91	115	117	121	79	22
August		18	49	57	96	111	123	122	77	20
July	8	20	51	60	101	108	125	116	73	
June	9	21	52	63	103	108	129	112	67	
May	10	22	52	68	102	108	130	109	67	
April	10	24	52	74	101	109	133	107	62	
March	11	27	52	78	103	111	133	105	51	
February	12	29	51	82	103	113	133	90	46	
January	14	30	53	85	105	112	130	88	42	

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 77 and figures 1 to 154 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
- Townsville, Australia

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

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
- Leopoldville, Belgian Congo

University of Sao Paulo:
Sao Paulo, Brazil

British Department of Scientific and Industrial Research, Radio Research Board:
Falkland Is.
Inverness, Scotland
Khartoum, Sudan
Port Lockroy
Singapore, British Malaya
Slough, England

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

French Ministry of National Defense (Section of Scientific Research):
Djibouti, French Somaliland
Tananarive, Madagascar

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Casablanca, Morocco
Poitiers, France

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

The Royal Netherlands Meteorological Institute:
De Bilt, Holland

Icelandic Post and Telegraph Administration:
Reykjavik, Iceland

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

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:
Tokyo (Kokubunji), Japan

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

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

Manila Observatory:
Baguio, P. I.

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

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

Royal Board of Swedish Telegraphs, Radio Department, Stockholm, Sweden:
Lulea, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
Schwarzenburg, Switzerland

United States Army Signal Corps:
Adak, Alaska
White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
Narsarssuak, Greenland
Panama Canal Zone
Puerto Rico, W. I.
San Francisco, California (Stanford University)
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 78 through 89 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 90 presents ionosphere character figures for Washington, D. C., during July 1954, as determined by the criteria given in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

SUDDEN IONOSPHERE DISTURBANCES

Table 91 shows that no sudden ionosphere disturbances were observed at Ft. Belvoir, Virginia, during the month of July 1954. Table 92 shows the sudden ionosphere disturbances observed at Enköping, Sweden, during April and June 1954.

RADIO PROPAGATION QUALITY FIGURES

Tables 94a and 94b give for June 1954 the radio propagation quality figures for the North Atlantic area, the relevant CRPL advance and short-term forecasts, a summary geomagnetic activity index and sundry comparisons, specifically as follows:

(a) radio propagation quality figures, Qa, separately for each 6-hour interval of the Greenwich day, viz., 00-06, 06-12, 12-18, 18-24 hours UT (Universal Time or GCT).
(b) whole-day radio quality indices (beginning October 1952). Each index is a weighted average of the four quarter-day Qa-figures, before rounding off, with half weight given to quality grades 5 and 6. This procedure tends to give whole-day indices suitable for comparison with whole-day advance forecasts which designate whenever possible the days when significant disturbance or unusually quiet conditions will occur.
(c) short-term forecasts, issued by CRPL every six hours (nominally one hour before 00^h, 06^h, 12^h, 18^h UT) and applicable to the period 1 to 13 (especially 1 to 7) hours ahead. Note that new scoring rules have been adopted beginning with October 1952 data.
(d) advance forecasts, issued semiweekly (CRPL-J reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole-day quality indices.
(e) half-day averages of the geomagnetic K indices measured by the Cheltenham Magnetic Observatory of the U. S. Coast and Geodetic Survey.
(f) illustration of the comparison of short-term forecasts with Qa-figures and also with estimates of radio quality based on CRPL observations only.
(g) illustration of the outcome of advance forecasts (1 to 3 or 4 days ahead) and, for comparison, the outcome of a type of "blind" forecast. For the latter the frequency for each quality grade, as determined from the distribution of quality grades in the four most recent months of the current season, is partitioned among the grades observed in the current month in proportion to the frequencies observed in the current month.

These radio propagation quality figures, Qa, are prepared from radio traffic data reported to CRPL by American Telephone and Telegraph Company, Mackay Radio and Telegraph Company, RCA Communications, Inc., Marconi Company, British Admiralty Signal and Radar Establishment, and the following agencies of the U. S. Government:--Coast Guard, Navy, Army Signal Corps, and U. S. Information Agency. The method of calculation, summarized below, is similar to that described in a 1946 report, IRPL-R31, now out of print. Only reports of radio transmission on North Atlantic paths closely approximating New York-London are included in the estimation of quality.

The original reports are submitted on various scales and for various time intervals. The observations for each 6-hour interval are averaged on the quality scale of the original reports. These 6-hour indices are then adjusted to the 1 to 9 quality-figure scale by a conversion table prepared by comparing the distribution of these indices for at least four months, usually a year, with a master distribution determined from analysis of the reports originally made on the 1 to 9 quality-figure scale. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. The 6-hourly quality figures are (subjectively) weighted means of the reports received for that period. These 6-hourly quality figures replace, beginning January 1953, the half-daily quality figures which formerly appeared in this table. (These forecasts and quality indices are prepared by the North Atlantic Radio Warning Service, the CRPL forecasting center at Ft. Belvoir, Virginia.)

Table 93 gives for June 1954, the radio propagation quality figures for the North Pacific area, the relevant CRPL advance and short-term forecasts, and sundry comparisons, specifically as follows:

(a) radio propagation quality figures, Qp, separately for each of three 9-hour intervals of the Greenwich day, viz., 03-12, 09-18 and 18-03 UT (Universal Time or GCT).
(b) whole-day radio quality indices for each Greenwich day. These are derived from the same basic data as the 9-hour indices, separately reduced.
(c) short-term forecasts, issued daily at 02, 09 and 18 hours UT.
(d) advance forecasts, issued semiweekly (CRPL-Jp reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole day quality indices.

These radio quality indices, Qp, refer to radio propagation on optimum frequencies over moderately long transmission paths in the North Pacific area. Typical paths are Anchorage (Alaska) to Seattle, or Anchorage to Tokyo. The indices are derived from reports submitted regularly by communications agencies of the U. S. Army and Air Force, and by Aeronautical Radio, Inc. The method of derivation of Qp differs from that of Qa. For data prior to June 1954, the reported quality ratings were reduced to a Q-scale with assumed mean and standard deviation for each of the periods of the day; the Qp published was the average converted rating for each date. Beginning with the data for June 1954 a ranking method has been used with the Q-scale bound statistically to magnetic character figures, as follows:

The original reports from the various contributors are used only to rank the days of the month in order of degree of disturbance. The numerical value of Qp assigned to each day is taken from a table which gives the Qp that corresponds in a statistical sense to the magnetic activity observed during the month, it being assumed that the one-month sample is large enough that the distribution of quiet and disturbance will be the same for magnetic and radio quality indices. This table comes from equating the expected distributions of magnetic activity indices and Qp (For the former, the years 1952-53 of K-Cheltenham were used; for the latter the distribution was arbitrary but strongly influenced by experience with Qa and the previous Qp.). In order to avoid the statistic "average rank," the raw scores for each reporter-period are first converted to the 1-9 scale by ranking and the use of the same table. Mean quality indices for each day-period are then computed and these means ranked and converted by the table to give Qp.

The expected distributions adopted for Qp differ slightly for the different periods of the day for which quality figures are derived. For the 03-12, 18-03 and 00-24 periods 23% of the quality figures are 4 or less and for the 09-18 period 25% are. In the periods 18-03 and 00-24, indices of seven or greater are expected 25% of the time; in the 03-12 period 22% and in the 09-18 period 16%. (These forecasts and quality indices are prepared by the North Pacific Radio Warning Service, the CRPL forecasting center at Anchorage, Alaska.)

These quality figures are, in effect, a consensus of reported radio propagation conditions. The reasons for low quality are not necessarily known and may not be limited to ionospheric storminess. For instance, low quality may result from improper frequency usage for the path and time of day. Although, wherever it is reported, frequency usage is included in the rating of reports, it must often be an assumption that the reports refer to optimum working frequencies. It is more difficult to eliminate from the indices conditions of low quality because of multipath, interference, etc. These considerations should be taken into account in interpreting research correlations between the Q-figures and solar, auroral, geomagnetic or similar indices.

OBSERVATIONS OF THE SOLAR CORONA

Tables 95 through 97 give the observations of the solar corona during July 1954, obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. Tables 98 through 100 list the coronal observations obtained at Sacramento Peak, New Mexico, during July 1954, derived by Harvard College Observatory as a part of its performance of a research contract with the Upper Air Research Observatory, Geophysical Research Directorate, Air Force Cambridge Research Center. 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 95 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 96 gives similarly the intensities of the first red (6374A) coronal line; and table 97, the intensities of the second red (6702A) coronal line; all observed at Climax in July 1954.

Table 98 gives the intensities of the green (5303A) coronal line; table 99, the intensities of the first red (6374A) coronal line; and table 100, the intensities of the second red (6702A) coronal line; all observed at Sacramento Peak in July 1954.

The following symbols are used in tables 95 through 100: a, observation of low weight for whole limb (if in date column) or for portion of limb indicated; -, corona not visible; and X, no observation for whole limb (if in date column) or for portion of limb indicated.

RELATIVE SUNSPOT NUMBERS

Table 101 lists the daily provisional Zürich relative sunspot number, R_Z, for July 1954, as communicated by the Swiss Federal Observatory. Table 102 contains the daily American relative sunspot number, R_A', for June 1954, as compiled by the Solar Division, American Association of Variable Star Observers.

OBSERVATIONS OF SOLAR FLARES

Table 103 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 104 lists various indices of geomagnetic activity based on data from magnetic observatories widely distributed throughout the world. The indices are: (1) preliminary international character-figures, C; (2) geomagnetic planetary three-hour-range indices, Kp; (3) magnetically selected quiet and disturbed days.

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. The details of the currently used method follow. For each day of a month, its geomagnetic activity is assigned by weighting equally the following three criteria: (1) the sum of the eight Kp's; (2) the greatest Kp; and (3) the sum of the squares of the eight Kp's.

Kp is the mean standardized K-index from 11 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 (very quiet) to 9 (extremely disturbed), 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. Kp is available from 1937 to date as noted in F108.

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 C and selected days. The Chairman of the Committee computes the planetary index. Current tables are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

ERRATA

CRPL-F118,	p. 58, fig. 37:	"No (M3000)F2 reported" does not belong on the figure. (M3000)F2 should read 3.2 for the 24 hours.
	p. 60, fig. 45:	At 20.4 hour line, delete "X" at 2.3.
CRPL-F119,	p. 77, fig. 105:	Values of Es from 03 to 10 are plotted one hour too far to the left.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) — July 195-

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(2.9)					3.0	3.2
01	280	(2.4)					3.8	(3.2)
02	(280)	(2.3)					3.7	3.2
03	(280)	(2.2)					3.8	(3.1)
04	(280)	(2.1)					3.4	(3.3)
05	260	2.5	---	---			2.8	3.3
06	330	3.4	230	3.2	120	1.8	3.7	3.3
07	410	3.8	220	3.5	110	2.4	4.4	3.0
08	370	4.3	220	3.8	110	2.7	5.0	3.0
09	370	4.6	210	3.9	110	2.8	4.9	3.0
10	380	4.6	200	4.1	100	2.9	5.0	3.0
11	400	(4.7)	200	4.2	100	3.0	5.0	3.0
12	G	(4.3)	200	4.2	100	(3.1)	5.1	0
13	460	4.5	200	4.2	110	3.1	5.0	2.8
14	430	4.5	200	4.1	110	3.1	4.3	2.8
15	400	4.5	200	4.0	110	3.0	4.7	2.9
16	400	4.4	210	3.9	110	2.9	4.6	2.9
17	350	4.5	220	3.7	110	2.5	4.4	3.0
18	320	4.5	230	3.3	110	2.1	5.2	3.1
19	270	4.7	240	---	---	---	5.0	3.2
20	250	4.8	--	---			4.3	3.2
21	250	4.3					4.2	3.2
22	250	3.8					3.3	3.2
23	(270)	(3.2)					3.2	3.2

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

Table 2

Adak, Alaska (51.9°N, 176.6°W) — June 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	4.2					2.4	3.2
01	250	3.8					2.3	3.1
02	250	3.8					2.4	3.1
03	260	3.6			---	---	2.4	3.1
04	310	3.9	240	2.6	130	1.5	2.4	3.0
05	340	4.3	240	3.1	120	1.9	2.8	3.0
06	350	4.6	230	3.4	110	2.3	4.8	3.0
07	360	4.6	240	3.7	100	2.6	5.9	3.0
08	<370	4.8	230	3.8	100	2.8	6.2	3.0
09	360	4.8	220	4.0	100	3.0	7.4	3.0
10	390	4.8	210	4.0	100	3.0	6.6	2.95
11	390	4.6	200	4.1	100	3.0	6.1	3.0
12	390	4.6	200	4.1	100	3.0	5.4	3.0
13	470	4.4	200	4.1	100	3.0	5.2	2.7
14	440	4.4	200	4.0	100	2.9	4.9	2.8
15	420	4.3	210	4.0	100	2.8	4.2	2.85
16	380	4.4	220	3.8	100	2.7	5.2	3.0
17	360	4.4	230	3.7	110	2.4	5.2	3.1
18	320	4.5	240	3.4	110	2.1	4.8	3.1
19	<300	4.8	240	3.0	120	1.6	4.6	3.15
20	260	5.5					4.8	3.15
21	250	5.9					3.9	3.2
22	230	5.6					3.7	3.3
23	240	4.7					3.5	3.2

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 3

San Francisco, California (37.4°N, 122.2°W) — June 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(260)	(3.3)					5.4	(3.1)
01	(260)	(3.2)					(4.5)	(3.0)
02	(270)	(3.0)					(4.1)	(3.1)
03	(270)	(3.0)					3.8	(3.0)
04	(270)	(2.9)					4.2	(3.0)
05	(300)	(3.2)	250	---	---	---	3.8	(3.1)
06	330	4.0	230	(3.3)	120	(2.0)	4.0	3.1
07	340	4.4	220	3.5	110	(2.5)	4.7	3.0
08	340	4.6	200	(3.8)	100	(2.8)	5.6	3.1
09	350	5.0	(200)	(4.0)	100	(3.0)	6.2	3.1
10	390	4.8	200	4.1	100	(3.1)	5.8	2.9
11	420	4.7	(200)	4.1	(100)	(3.2)	5.8	2.9
12	430	4.8	(200)	4.1	(100)	(3.2)	5.4	2.7
13	380	5.0	(210)	4.1	(100)	(3.2)	5.7	2.8
14	360	5.2	210	(4.0)	110	(3.2)	5.0	2.9
15	380	5.2	220	(4.0)	(110)	(3.0)	5.1	2.9
16	350	5.2	(230)	(3.9)	110	(2.9)	4.4	3.0
17	330	5.0	230	(3.7)	110	(2.6)	4.1	3.0
18	300	5.0	(230)	(3.4)	110	(2.1)	4.0	3.2
19	270	4.8	(240)	---	---	---	4.7	3.1
20	(240)	5.4					3.8	3.1
21	(240)	(5.1)					5.3	(3.2)
22	(240)	(4.4)					5.4	(3.2)
23	(250)	(3.6)					4.3	(3.1)

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

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) — May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	(2.2)					2.4	(3.1)
01	280	(1.8)					3.2	(3.0)
02	280	1.8					2.6	3.0
03	270	2.5	---	---	---	---	2.7	3.1
04	320	3.0	230	2.8	120	1.6	2.9	3.0
05	420	3.5	220	3.0	110	1.8	3.1	2.8
06	450	3.7	210	3.3	110	2.1	3.3	2.8
07	430	3.9	200	3.5	100	2.3	3.6	2.8
08	440	4.0	200	3.6	100	2.6	3.4	2.8
09	450	4.1	200	3.7	100	2.7	3.7	2.7
10	480	4.2	200	3.8	100	2.8	3.3	2.7
11	420	4.3	200	3.9	100	2.8	3.8	2.9
12	430	4.3	200	3.9	100	2.8	3.2	2.8
13	500	4.2	200	3.9	100	2.8	3.2	2.6
14	430	4.3	200	3.9	100	2.8	3.0	2.8
15	450	4.2	210	3.8	100	2.7	2.8	2.7
16	390	4.2	210	3.7	100	2.6	2.7	3.0
17	350	4.2	220	3.6	110	2.4		3.1
18	320	4.2	220	3.3	110	2.1	2.5	3.1
19	290	4.1	230	3.2	130	(1.8)	2.9	3.2
20	240	4.0	240	---	---	---	3.3	3.2
21	240	4.0					3.4	3.2
22	240	3.7					2.8	3.2
23	240	2.8					3.5	3.2

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

Table 5

Narsarssuak, Greenland (61.2°N, 45.4°W) — May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(300)	(2.9)					3.9	(3.35)
01	(310)	(2.8)					4.2	(3.3)
02	---	---					4.4	---
03	---	---					4.9	---
04	---	---					5.0	---
05	(300)	3.5	---	---	---	---	4.4	(3.3)
06	340	3.6	240	3.4	110	2.1	3.2	3.3
07	400	3.8	220	3.5	100	2.5	3.0	3.1
08	410	3.9	210	3.7	100	2.6		3.0
09	420	4.1	210	3.8	100	2.8		3.1
10	400	4.2	210	3.8	100	2.9		3.1
11	410	4.2	210	3.9	100	2.9		3.0
12	420	4.2	210	3.9	100	2.9		3.0
13	430	4.3	210	3.9	100	2.9		2.95
14	410	4.3	210	3.8	100	2.9		3.0
15	400	4.3	210	3.8	100	2.8		3.0
16	370	4.3	220	3.7	110	2.6		3.1
17	380	4.2	220	3.5	120	2.4	3.7	3.1
18	340	4.0	230	3.4	120	(2.1)	4.3	3.3
19	(310)	(4.0)	230	---	---	---	4.5	(3.3)
20	280	(3.8)	---	---	---	---	6.0	3.3
21	280	(3.5)	---	---	---	---	5.9	(3.3)
22	250	(3.2)					5.8	(3.4)
23	(250)	(2.8)					5.3	(3.3)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 6

Adak, Alaska (51.9°N, 176.6°W) — May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.9					3.4	3.1
01	260	3.6					2.6	3.1
02	270	3.6					2.2	3.0
03	270	3.6					2.4	3.0
04	300	3.7	250	2.4	140	1.5	2.4	3.0
05	330	4.0	240	3.1	120	1.8	2.9	3.0
06	340	4.4	240	3.4	110	2.2	3.3	3.0
07	340	4.9	230	3.6	110	2.5	4.4	3.0
08	350	4.8	220	3.9	100	2.7	5.2	3.0
09	350	4.8	210	4.0	100	2.9	6.2	3.1
10	360	4.7	210	4.0	100	3.0	6.0	3.05
11	400	4.6	210	4.1	100	3.0	5.2	2.9
12	380	4.7	210	4.1	100	3.0	5.6	3.0
13	410	4.6	200	4.1	100	2.9	4.8	2.9
14	400	4.6	210	4.0	110	2.8	4.2	3.0
15	400	4.5	220	3.9	110	2.8	4.1	2.9
16	360	4.5	230	3.8	110	2.6	4.3	3.1
17	320	4.6	230	3.6	110	2.4	3.8	3.1
18	290	4.7	240	3.4	110	2.0	4.3	3.2
19	270	4.8	---	---	130	1.5	3.7	3.2
20	250	5.4					3.5	3.2
21	240	5.4					3.0	3.2
22	240	4.8					3.1	3.2
23	240	4.3					3.4	3.2

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 7

San Francisco, California (37.4°N, 122.2°W) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	(3.3)					4.0	(3.0)
01	(280)	(3.4)					(3.6)	(3.0)
02	(280)	(3.2)					(2.8)	(3.0)
03	(270)	(3.0)					(3.2)	(3.1)
04	(280)	(3.0)					(3.8)	(3.1)
05	(280)	(3.0)	270	---			(3.7)	(3.1)
06	310	(3.8)	250	(3.2)	(130)	(2.0)	(3.8)	(3.2)
07	350	4.3	240	(3.6)	110	(2.5)	4.3	3.0
08	350	4.7	230	(3.8)	110	(2.8)	4.8	3.05
09	360	4.8	220	(3.9)	110	(3.0)	5.4	3.0
10	390	5.0	210	(4.0)	110	(3.1)	5.7	2.9
11	380	4.9	(210)	4.1	110	(3.2)	5.5	2.9
12	400	4.9	220	4.2	110	(3.2)	5.5	2.8
13	380	5.2	(220)	4.2	110	(3.0)	4.8	2.9
14	370	5.0	230	4.1	(110)	(3.0)	4.0	2.9
15	370	5.1	230	(4.0)	110	(3.0)	4.5	3.0
16	340	5.0	230	(3.8)	110	(2.8)	4.2	3.0
17	330	4.9	230	(3.6)	120	(2.6)	3.8	3.1
18	300	4.9	240	(3.3)	120	(2.2)	3.7	3.1
19	260	5.0	--	---			4.0	3.1
20	(250)	5.6					3.8	3.2
21	(240)	(4.8)					3.7	(3.2)
22	(240)	(4.0)					(4.3)	(3.2)
23	(260)	(3.6)					(4.0)	(3.1)

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

Table 8

White Sands, New Mexico (32.3°N, 106.5°W) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.3					3.5	3.0
01	280	3.3					2.6	3.0
02	270	3.3					2.5	3.1
03	260	3.2					2.5	3.1
04	270	3.0					3.0	3.1
05	260	3.1					2.9	3.2
06	280	4.0	230	3.2	120	1.8	4.2	3.2
07	310	4.5	230	3.6	120	2.4	5.8	3.1
08	330	4.8	220	3.9	120	2.7	5.0	3.0
09	340	5.0	210	4.0	120	3.0	5.3	3.1
10	370	4.8	200	4.2	120	3.1	5.2	3.0
11	400	5.0	200	4.2	120	3.2	5.0	2.9
12	400	5.0	200	4.2	120	3.3	4.7	2.8
13	400	5.1	200	4.2	120	3.2	4.5	2.8
14	360	5.6	220	4.1	120	3.1	4.5	2.9
15	340	5.6	220	4.0	120	3.0	4.6	3.0
16	320	5.6	220	3.9	120	2.8	4.8	3.1
17	300	5.5	230	3.6	120	2.4	4.7	3.1
18	280	5.6	240	3.2	120	1.9	4.0	3.1
19	240	5.7					3.4	3.2
20	230	5.9					3.6	3.3
21	240	4.4					3.4	3.3
22	260	3.5					3.6	3.1
23	280	3.3					3.8	3.1

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

Table 9

Maui, Hawaii (20.8°N, 156.5°W) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.8					3.5	2.9
01	290	3.8					3.3	3.1
02	270	3.8					3.0	3.2
03	280	3.1					2.3	3.1
04	290	2.9					2.6	3.0
05	280	2.9					2.2	3.1
06	260	3.9	250	---	---	---	2.8	3.2
07	280	4.9	230	3.6	120	2.1	5.8	3.15
08	330	5.5	230	4.0	120	2.6	5.6	3.0
09	380	5.6	220	4.2	110	2.9	5.5	2.8
10	410	6.1	210	4.3	110	3.1	6.0	2.6
11	420	6.6	210	4.3	110	3.2	5.4	2.6
12	410	7.7	210	4.3	110	3.3	5.4	2.7
13	370	8.9	220	4.3	110	3.3	5.5	2.8
14	360	9.4	230	4.2	110	3.2	5.2	2.8
15	350	10.0	230	4.1	120	3.1	4.4	2.9
16	320	10.5	240	4.0	120	2.9	4.2	3.0
17	300	10.7	250	3.8	120	2.5	4.4	3.1
18	270	10.6	250	3.4	130	1.9	3.8	3.2
19	240	9.8					3.2	3.4
20	230	7.0					3.5	3.2
21	250	5.6					3.6	3.1
22	260	4.6					3.5	2.9
23	290	4.0					3.7	2.9

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

Table 10

Puerto Rico, W. I. (18.5°N, 67.2°W) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.0					2.4	2.9
01	270	4.1					2.6	3.0
02	250	3.8					2.4	3.2
03	240	3.5						3.1
04	260	3.1						3.0
05	250	2.9					2.0	3.2
06	240	3.4	---	---			2.2	3.4
07	260	4.7	220	3.5	110	2.0	3.0	3.4
08	280	5.0	210	3.8	110	2.6	4.0	3.35
09	320	5.2	210	4.1	110	2.9	4.0	3.2
10	340	5.6	200	4.2	110	3.1	4.1	3.0
11	350	5.8	220	4.3	110	3.3	4.5	2.9
12	350	6.6	210	4.3	110	3.3	3.1	2.9
13	330	7.6	220	4.3	110	3.3	3.6	2.9
14	310	8.2	220	4.2	110	3.2	3.8	3.0
15	300	8.5	230	4.1	110	3.1	4.4	3.1
16	280	8.7	220	3.9	110	2.9	4.0	3.1
17	270	8.8	220	3.7	110	2.5	4.0	3.2
18	250	8.6	230	---	---	---	3.5	3.3
19	220	8.0					2.5	3.4
20	220	5.9					2.7	3.2
21	250	4.9					2.5	3.1
22	270	4.4					2.8	3.0
23	290	4.1					2.3	3.0

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

Table 11

Guam I. (13.6°N, 144.9°E) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	3.2					3.2	2.9
01	310	3.0					2.9	3.0
02	300	3.0					2.2	3.2
03	280	2.2					2.8	(3.4)
04	270	2.3					2.3	3.45
05	240	2.2					2.6	3.55
06	240	3.5	---	---	---	---	2.9	3.5
07	250	5.3	230	---	120	2.1	2.9	3.5
08	280	6.0	220	---	110	2.6	3.6	3.3
09	330	6.2	210	4.1	110	2.9	4.6	3.0
10	380	6.6	200	4.2	110	3.1	4.7	2.7
11	420	6.9	200	4.2	110	3.2	4.4	2.6
12	420	7.1	200	4.3	110	3.3	4.6	2.4
13	410	7.4	200	4.2	110	3.3	4.2	2.5
14	400	7.8	220	4.2	110	3.2	5.0	2.6
15	370	7.9	220	4.1	110	3.1	4.7	2.6
16	350	8.2	220	3.9	110	2.8	4.4	2.8
17	300	8.9	220	---	110	2.4	4.8	3.0
18	(270)	9.0	230	---	120	1.6	4.2	3.0
19	230	8.2					3.8	3.2
20	240	6.6					4.3	3.2
21	260	5.2					3.1	3.1
22	300	4.5					2.8	3.0
23	310	3.7					2.6	2.9

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

Table 12

Panama Canal Zone (9.4°N, 79.9°W) May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.2					2.2	3.1
01	260	3.8					2.1	3.1
02	260	3.6					2.4	3.0
03	260	3.5					2.3	3.1
04	250	3.2					2.2	3.25
05	250	3.0					2.6	3.2
06	250	3.4					2.8	3.3
07	250	4.5	230	3.6	120	2.2	3.8	3.4
08	300	4.9	220	3.9	110	2.7	4.0	3.2
09	400	5.1	220	4.1	110	3.0	4.1	2.9
10	420	5.9	210	4.2	110	3.2	4.3	2.7
11	400	7.0	200	4.2	110	3.3	4.2	2.7
12	380	8.4	210	4.2	110	3.3	4.4	2.8
13	360	9.2	220	4.2	110	3.3	4.6	2.85
14	330	9.8	220	4.1	110	3.2	4.8	3.0
15	320	10.2	220	4.0	110	3.0	4.1	3.0
16	310	10.5	220	3.9	110	2.8	4.2	3.1
17	280	10.6	230	3.7	110	2.3	4.0	3.2
18	250	10.0	230	---	---	---	3.9	3.3
19	220	8.2					3.6	3.2
20	240	6.7					3.0	3.1
21	260	5.6					2.4	3.0
22	270	5.0					2.1	3.1
23	280	4.4					1.8	3.0

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

Table 13

Anchorage, Alaska (61.2°N, 149.9°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	(2.1)						(3.0)
01	330	(1.8)					2.4	(2.9)
02	340	(1.8)					2.5	(2.9)
03	350	(2.0)					2.4	(2.8)
04	300	2.3					2.7	2.9
05	310	2.7	250	2.7	110	1.6	1.8	2.9
06	640	3.1	230	3.0	110	1.9		2.35
07	780	3.4	210	3.2	110	2.2		2.15
08	560	3.6	210	3.4	110	2.4		2.5
09	600	3.8	210	3.6	110	2.5		2.45
10	580	3.9	210	3.7	110	2.6		2.4
11	500	4.1	200	3.7	110	2.7		2.6
12	480	4.2	200	3.8	110	2.7		2.7
13	480	4.1	200	3.8	110	2.7		2.7
14	430	4.2	210	3.7	110	2.7		2.8
15	370	4.2	220	3.7	110	2.6		3.0
16	330	4.2	220	3.5	110	2.4		3.1
17	310	4.0	230	3.3	110	2.1		3.2
18	280	3.9	240	---	120	(1.8)		3.2
19	250	3.8	240	---	140	(1.7)		3.2
20	250	3.4						3.1
21	260	3.1						3.0
22	290	(2.5)						(3.0)
23	310	(2.2)						(3.0)

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

Table 14

Narsarsuak, Greenland (61.2°N, 45.4°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(300)	(2.7)					4.8	---
01	---	---					4.4	---
02	---	---					4.2	---
03	---	---					4.6	
04	---	---					4.8	
05	---	---					4.4	---
06	(260)	(3.2)	---	---	---	---	4.7	(3.3)
07	(700)	3.5	220	3.3	---	---	3.0	2.45
08	390	3.9	220	3.5	110	2.5		3.0
09	370	4.0	220	3.6	110	2.6		3.2
10	380	4.2	220	3.7	110	2.7		3.05
11	400	4.3	220	3.8	110	2.7		3.0
12	400	4.4	220	3.8	110	2.7		3.0
13	400	4.4	220	3.8	100	2.7		3.0
14	390	4.3	220	3.7	110	2.6		3.05
15	370	4.2	220	3.7	110	2.6		3.1
16	380	4.0	230	3.5	110	2.4	2.3	3.1
17	360	4.0	240	3.3	110	(2.2)	3.9	3.2
18	(330)	(3.8)	250	(3.1)	110	---	4.0	(3.2)
19	300	3.7	---	---	---	---	4.9	3.3
20	280	(3.2)					5.6	(3.3)
21	(300)	(3.0)					7.4	(3.2)
22	(300)	(2.8)					6.7	---
23	---	---					4.8	---

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 15

San Francisco, California (37.4°N, 122.2°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(290)	3.1					(2.8)	2.9
01	(290)	(3.0)					(2.9)	(3.0)
02	(280)	(3.0)					2.3	(3.0)
03	(280)	(2.8)					(3.0)	(3.0)
04	(280)	(2.8)					2.9	(3.0)
05	(280)	(2.8)					2.8	(3.0)
06	(290)	(3.6)	260	---			(3.4)	(3.1)
07	320	4.3	240	(3.4)	120	(2.2)	(3.7)	3.2
08	340	4.8	230	(3.7)	110	(2.6)	3.9	3.1
09	340	5.0	220	(3.9)	110	(2.9)	4.0	3.1
10	360	5.0	220	(4.0)	110	(3.0)	3.9	3.0
11	400	4.9	(220)	(4.1)	(110)	(3.2)	4.2	2.9
12	390	5.1	(220)	(4.1)	110	---	3.8	2.9
13	370	5.2	220	4.1	(110)	(3.2)	3.8	2.9
14	350	5.5	220	(4.0)	(110)	(3.1)	3.3	3.0
15	340	5.2	230	(4.0)	(110)	(3.0)	3.6	3.0
16	320	5.1	240	(3.9)	(120)	(2.7)	3.5	3.1
17	300	4.8	250	(3.5)	120	(2.3)	3.8	3.2
18	270	4.9	250	---	---	---	3.7	3.25
19	250	4.7					2.9	3.2
20	250	4.4					(3.0)	3.1
21	(250)	3.7					(3.6)	3.1
22	(260)	(3.4)					(3.2)	3.0
23	(290)	(3.1)					3.0	2.95

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

Table 16

White Sands, New Mexico (32.3°N, 106.5°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.1					2.4	2.9
01	300	3.1					3.0	2.9
02	280	3.2					2.4	3.0
03	280	3.0					2.4	2.9
04	270	3.1					2.2	3.0
05	280	2.9					2.3	3.0
06	270	3.8	240	---	---	---	3.5	3.2
07	300	4.7	230	3.5	120	2.2	4.4	3.2
08	310	5.0	220	3.8	120	2.6	5.2	3.2
09	350	4.9	210	4.0	120	2.8	5.3	3.0
10	360	5.2	200	4.1	120	3.0	4.9	2.95
11	380	5.2	200	4.2	110	3.1	4.6	2.9
12	380	5.6	200	4.2	120	3.2	4.6	2.9
13	350	5.7	210	4.2	120	3.2	4.0	2.9
14	330	6.2	220	4.2	120	3.1	4.7	3.0
15	320	6.0	220	4.0	120	2.9	3.7	3.05
16	310	5.8	230	3.9	120	2.6	4.0	3.1
17	290	5.6	240	3.5	120	2.3	3.7	3.2
18	250	5.6	240	---	---	---	3.6	3.3
19	240	5.2					2.9	3.3
20	240	4.3						3.3
21	250	3.4						3.0
22	290	3.0						3.0
23	300	3.1					2.2	2.9

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

Table 17

Puerto Rico, W. I. (18.5°N, 67.2°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.8						3.0
01	270	3.7						3.0
02	250	3.6						3.2
03	240	3.3						3.35
04	260	2.9						3.2
05	250	2.7						3.1
06	240	3.0	---	---	---	---		3.3
07	240	4.6	220	---	110	1.8	2.5	3.5
08	270	5.2	220	3.9	110	2.5	3.0	3.4
09	300	5.4	220	4.1	110	2.8	3.4	3.3
10	330	5.6	210	4.2	110	3.1	3.7	3.1
11	340	6.3	230	4.3	110	3.2	2.8	2.9
12	330	7.4	220	4.3	110	3.3	2.8	2.9
13	300	8.4	230	4.3	110	3.3	3.1	3.1
14	280	9.0	230	4.3	110	3.2	2.5	3.2
15	270	8.7	230	4.2	110	3.1	4.1	3.2
16	260	8.1	220	4.0	110	2.9	4.2	3.3
17	270	7.2	230	3.7	110	2.4	4.0	3.3
18	250	6.8	230	---	110	---	3.3	3.4
19	220	6.5	---	---	---	---	3.0	3.4
20	220	5.1					2.8	3.15
21	260	4.2					2.4	3.0
22	290	3.8					2.1	2.9
23	290	3.6						2.9

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

Table 18

Guam I. (13.6°N, 144.9°E) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.2					2.4	2.8
01	310	4.0						3.0
02	280	3.9						3.1
03	260	3.8						3.35
04	240	3.4						3.5
05	240	2.7					1.8	3.6
06	260	2.9						3.35
07	240	5.4	230	---	120	1.8	2.3	3.6
08	270	6.3	230	---	120	2.5	3.0	3.35
09	310	7.0	220	(4.2)	110	2.9	4.2	3.0
10	350	7.4	210	4.3	(110)	3.1	3.9	2.6
11	370	7.9	210	4.3	110	3.2	3.7	2.4
12	370	8.2	210	4.4	110	3.3		2.3
13	370	8.2	210	4.4	110	3.3	3.5	2.4
14	370	8.7	210	4.3	110	3.2	3.6	2.5
15	340	9.6	220	4.2	110	3.0	3.4	2.6
16	320	10.2	220	(3.9)	(110)	2.8	3.8	3.8
17	290	10.9	230	---	120	2.4	3.7	3.0
18	260	10.4	240	---	---	---	3.9	3.15
19	240	9.4					3.1	3.2
20	250	7.6					3.4	3.1
21	260	6.6					3.0	3.0
22	280	5.4					3.2	3.0
23	310	4.9					3.3	2.9

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

Table 19

Panama Canal Zone (9.4°N, 79.9°W) April 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.9						3.0
01	250	3.9						3.05
02	240	3.6						3.15
03	240	3.2					1.9	3.1
04	250	3.1						3.2
05	240	2.8					1.8	3.3
06	250	3.0					2.0	3.1
07	240	4.6	220	---	120	2.0	3.4	3.4
08	310	5.2	220	4.2	110	2.6	3.5	3.1
09	360	5.8	230	4.2	110	3.0	4.0	2.9
10	340	7.2	230	4.3	110	3.2	4.2	2.9
11	360	8.2	220	4.3	110	3.3	4.3	2.8
12	360	9.4	220	4.3	110	3.4	4.6	2.9
13	330	10.4	220	4.3	110	3.4	4.7	2.95
14	310	10.8	220	4.3	110	3.2	4.7	3.0
15	300	11.0	230	4.2	110	3.1	4.6	3.1
16	290	11.0	230	4.1	110	2.8	4.3	3.1
17	270	10.8	230	3.8	110	2.3	4.0	3.2
18	240	9.8	---	---			4.0	3.3
19	220	7.8					3.0	3.2
20	240	6.4					2.2	3.05
21	250	5.4					2.2	3.0
22	270	4.6						3.0
23	280	4.3						3.0

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

Table 20

Resolute Bay, Canada (74.7°N, 94.9°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	2.8						3.2
01	250	2.6						3.2
02	240	2.6						3.2
03	240	2.6						3.2
04	250	2.5						3.2
05	250	2.4			130	1.1		3.2
06	250	3.0			110	1.4		3.2
07	250	3.1	230	---	110	1.6		3.3
08	250	3.2	220	(3.0)	110	1.7		3.25
09	270	3.5	230	3.0	110	1.9		3.3
10	300	3.6	220	3.1	110	2.0		3.15
11	360	3.6	230	3.2	120	2.0		3.0
12	360	3.7	220	3.1	110	2.0		3.05
13	390	3.6	220	3.1	110	2.1		2.95
14	360	3.6	230	3.1	120	2.1		3.0
15	360	3.6	230	3.0	120	2.0		3.0
16	310	3.7	230	3.0	120	2.0		3.1
17	270	3.6	240	3.0	120	1.8		3.1
18	260	3.7	---	---	110	1.6		3.2
19	250	3.5			120	1.3		3.2
20	240	3.7			---	1.1		3.2
21	250	3.1						3.1
22	230	3.5						3.2
23	240	3.0						3.2

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 21

Tromso, Norway (69.7°N, 19.0°E) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06							(1.4)	
07	---	(3.2)	---	---	---	---	1.9	(3.3)
08	(260)	3.6	240	---	---	---		3.3
09	(250)	3.8	240	---	---	---		3.25
10	(240)	4.0	230	3.6	---	---		3.25
11	325	4.0	225	3.6	120	2.3		3.15
12	300	4.2	220	3.6	115	2.4		3.3
13	270	4.1	220	---	115	2.2		3.35
14	(270)	4.1	225	---	115	2.1		3.35
15	(240)	3.9	230	---	120	2.0	2.4	3.3
16	(250)	3.9	240	---	135	1.8	1.7	3.35
17	(240)	3.5	---	---	125	1.6	3.8	3.3
18	(260)	3.2			---	---	4.0	(3.15)
19	---	---			---	---	4.2	---
20	---	---					3.9	---
21	---	---					4.2	---
22							4.4	
23							(4.6)	

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

Table 22

Kiruna, Sweden (67.8°N, 20.3°E) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					3.5	---
01	---	---					3.7	---
02	(350)	(2.0)					2.4	(2.9)
03	---	---					2.1	---
04	(350)	(2.1)					2.1	(3.2)
05	(345)	(2.1)					(2.0)	3.25
06	(290)	(2.1)	---	---				(3.2)
07	260	3.0	---	---	---	---		3.3
08	270	3.6	---	---	110	2.0		3.35
09	260	3.7	240	3.2	110	2.0		3.5
10	280	3.7	240	3.2	110	2.0		3.4
11	305	3.8	230	3.2	110	2.0		3.4
12	300	3.9	230	3.3	110	2.1		3.4
13	285	3.9	230	3.2	110	2.1		3.4
14	280	3.9	230	3.2	110	2.0		3.4
15	265	3.8	230	2.9	110	2.0		3.5
16	260	3.6	---	---	---	1.9		3.45
17	260	3.3	---	---	---	---		3.4
18	275	3.1					2.0	3.4
19	260	3.0					2.8	3.4
20	---	---					3.2	---
21	---	---					3.6	---
22	---	---					3.5	---
23	---	---					3.9	---

Time: 15.0°E.
Sweep: 0.8 Mc to 15.0 Mc in 30 seconds.

Table 23

Lulea, Sweden (65.6 N, 22.1 E) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	2.2					2.0	
01								
02	(330)	2.1					1.8	
03								
04	315	1.9						
05								
06	255	3.0	---	---	---	1.8		
07								
08	255	3.8	225	3.1	120	2.3		
09								
10	305	4.3	205	3.5	110	2.5		
11								
12	305	4.5	205	3.7	110	2.6		
13								
14	270	4.5	205	3.5	110	2.4		
15								
16	245	4.0	225	2.5	140	2.0		
17								
18	250	3.4						
19								
20	300	2.4						
21								
22	325	2.1					2.6	
23								

Time: 15.0°E.
Sweep: 1.5 Mc to 10.0 Mc in 6 minutes.

Table 24

Baker Lake, Canada (64.3°N, 96.0°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	2.2			---	E	3.3	3.1
01	250	2.0			---	E	3.7	3.1
02	250	1.8			---	E	5.3	3.1
03	250	1.9			---	E	5.7	3.0
04	270	1.8			---	E	4.2	3.0
05	260	(2.4)			---	E	4.5	(3.0)
06	250	2.6			120	1.5	4.0	(3.1)
07	250	2.9	---	---	120	1.8	3.3	3.2
08	250	3.3	200	2.9	120	2.1	3.0	3.2
09	300	3.5	240	3.4	120	2.4		3.1
10	320	3.9	250	3.6	110	2.8	4.2	3.1
11	370	3.9	230	3.5	120	2.8	3.9	2.9
12	400	4.0	240	3.5	110	2.8		2.9
13	380	4.1	230	3.5	120	2.8		2.9
14	360	4.3	230	3.4	120	2.8		2.95
15	340	4.2	230	3.3	120	2.6		2.8
16	320	3.9	230	3.2	120	2.3	3.0	3.0
17	260	3.8	230	3.0	120	2.0	3.0	3.1
18	270	3.3	---	---	120	1.8	4.0	3.0
19	250	3.3			120	1.5	3.7	3.1
20	240	3.0			---	E	3.7	3.0
21	240	2.9			---	E	3.8	3.05
22	230	2.8			---	E	3.1	3.2
23	240	2.5			---	E	4.0	3.2

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 25

Reykjavik, Iceland (64.1°N, 21.8°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							5.0	
01							5.0	
02							5.2	
03	---	---					5.4	---
04	---	---					5.2	---
05	---	---					4.4	---
06	(300)	(2.4)			---	---	2.8	(3.2)
07	(280)	(3.0)			---	---	2.1	(3.2)
08	(270)	3.2	---	---	---	---		3.35
09	(290)	(3.6)	---	---	---	---		(3.2)
10	320	4.0	240	3.4	---	---		(3.2)
11	330	4.2	220	3.6	110	---		3.2
12	340	4.2	240	3.6	---	---		3.2
13	340	4.3	230	3.6	---	---		3.2
14	330	4.3	240	3.6	---	---		3.2
15	320	4.3	230	3.5	120	---		3.3
16	310	4.0	240	3.3	110	2.1		3.2
17	300	3.9	250	---	120	2.1	2.3	3.2
18	(260)	3.7	---	---	---	---	4.2	(3.2)
19	(260)	---					4.6	---
20	---	---					4.0	---
21	---	---					4.4	---
22	---	---					5.5	
23	---	---					4.8	

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

Table 26

Narsarssuak, Greenland (61.2°N, 45.4°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							5.0	
01							4.6	
02							4.8	
03	---	---					4.8	---
04	---	---					5.1	---
05	---	---					5.2	
06	---	---					4.8	---
07	(280)	(3.6)	---	---	---	---	3.1	(3.4)
08	(270)	(3.8)	230	---	120	2.2		(3.35)
09	340	3.9	220	3.4	120	2.4		3.3
10	340	4.0	230	3.6	110	2.6		3.2
11	350	4.2	220	3.6	100	2.6		3.2
12	330	4.2	220	3.6	110	2.6		3.2
13	360	4.2	220	3.6	110	2.5		3.1
14	360	4.3	230	3.6	110	2.4		3.2
15	360	4.1	230	3.4	110	2.2		3.2
16	340	3.9	250	3.4	110	2.1	3.9	3.3
17	280	3.7	---	---	---	---	4.7	3.2
18	(270)	(3.2)	---	---	---	---	5.0	(3.3)
19	260	(3.2)					5.1	(3.4)
20	(260)	(3.0)					5.9	(3.25)
21	---	---					7.5	---
22	---	---					7.2	---
23	---	---					5.6	---

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 27

Oslo, Norway (60.0°N, 11.1°E) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(1.7)						---
01	(340)	(1.6)						(2.9)
02	(325)	1.8						2.9
03	(300)	1.8						(3.0)
04	300	1.7						2.95
05	290	1.7						3.05
06	270	2.4			---	---	1.2	3.1
07	250	3.1	230	---	130	1.8		3.35
08	250	3.6	230	---	120	2.0		3.35
09	(335)	4.0	220	3.6	120	2.2	2.4	3.3
10	340	4.2	210	3.7	110	2.4	2.5	3.25
11	320	4.4	210	3.7	115	2.4	2.6	3.25
12	310	4.5	205	3.8	110	2.5	3.0	3.25
13	300	4.6	205	3.7	115	2.5	2.7	3.3
14	295	4.8	210	3.7	115	2.4		3.35
15	290	4.6	225	3.6	120	2.3		3.35
16	260	4.6	230	---	120	2.2		3.35
17	250	4.4	240	---	120	1.9		3.3
18	245	4.3	245	---	---	---		3.3
19	250	3.8						3.2
20	250	3.2						3.1
21	255	2.4						3.1
22	---	1.8						(3.05)
23	---	(1.7)						---

Time: 15.0°E.
Sweep: 0.6 Mc to 14.0 Mc in 8 minutes, automatic operation.

Table 28

Churchill, Canada (58.8°N, 94.2°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(290)	2.4			---	---	9.0	(3.0)
01	(300)	(2.4)			---	---	6.4	(3.2)
02	(300)	(2.6)			---	---	6.0	---
03	---	---			---	---	5.6	---
04	---	---			---	---	5.0	---
05	---	---			---	---	4.6	---
06	(380)	(3.1)			---	---	5.0	---
07	---	(3.2)			---	---	5.7	---
08	(350)	3.8	---	---	---	---	4.6	(3.0)
09	430	3.8	(220)	3.6	---	2.8	4.3	3.1
10	420	3.9	230	3.6	110	2.8	4.0	2.9
11	460	4.0	220	3.7	110	2.8		2.8
12	410	4.0	220	3.8	110	2.8		3.0
13	390	4.2	230	3.7	110	2.8		3.0
14	360	4.5	240	3.7	110	2.8		3.1
15	350	4.6	230	3.5	110	2.7		3.15
16	330	4.4	260	3.4	120	2.6		3.2
17	310	4.2	260	---	120	2.3	3.9	3.2
18	300	3.8			---	---	4.5	3.1
19	340	3.2			---	---	5.0	3.0
20	330	3.0			---	---	5.8	(3.2)
21	310	3.0			---	---	8.0	(3.0)
22	270	2.8			---	---	9.0	3.35
23	280	2.6			---	---	8.0	(3.25)

Time: 90.0°W.
Sweep: 0.6 Mc to 10.0 Mc in 16 seconds.

Table 29

Fort Chiro, Canada (58.1°N, 68.3°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---			---	---	6.0	
01	---	---			---	---	4.2	
02	---	---			---	---	3.8	
03	---	---			100	2.7	4.2	
04	---	<3.0			100	3.2	2.6	
05	---	---			---	---	4.4	
06	(290)	(2.9)			100	2.7	4.2	---
07	(260)	3.4	---	---	100	2.1	4.0	(3.5)
08	(340)	3.7	210	3.4	100	2.4		(3.2)
09	(340)	4.0	220	3.6	100	2.6		3.2
10	350	4.0	220	3.6	100	2.7		3.1
11	360	4.2	210	3.7	100	2.8		3.1
12	380	4.2	210	3.7	100	2.7		3.0
13	360	4.2	230	3.6	100	2.7		3.1
14	340	4.5	220	3.5	100	2.6		3.1
15	350	4.4	230	3.4	100	2.5	2.6	(3.0)
16	320	4.0	230	3.2	100	2.4	3.1	(3.05)
17	290	3.6	240	---	100	2.4	4.2	---
18	(270)	3.2			100	2.3	6.0	---
19	(220)	2.9			---	2.8	6.4	
20	(220)	2.8			---	---	6.7	
21	(260)	2.5			---	---	6.1	---
22	(300)	(2.4)			---	---	6.2	---
23	---	(2.2)			---	---	6.0	

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

Table 30

Prince Rupert, Canada (54.3°N, 130.3°W) March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	1.4						(3.0)
01	300	1.4					1.0	(3.0)
02	320	1.4					1.5	(2.9)
03	300	1.5					1.2	---
04	310	1.5					2.0	---
05	310	1.6					2.3	---
06	300	1.8			---	---	1.6	(3.1)
07	270	2.6	---	---	110	1.7	2.0	3.15
08	250	3.4	230	3.2	120	2.0		3.3
09	300	3.7	220	3.4	110	2.3		3.1
10	400	4.0	210	3.6	110	2.6		2.9
11	420	4.1	200	3.7	110	2.7		3.0
12	380	4.4	200	3.7	110	2.8		3.0
13	370	4.4	200	3.8	100	2.8		3.1
14	360	4.4	220	3.8	110	2.8		3.1
15	340	4.5	220	3.7	110	2.7		3.2
16	300	4.5	230	3.6	110	2.5		3.3
17	260	4.3	230	3.2	120	2.2		3.3
18	240	4.1	230	---	120	1.8		3.4
19	230	3.7	---	---	160	1.6		3.35
20	240	2.8						3.2
21	260	2.3						3.2
22	270	1.9						3.3
23	280	1.6						(3.1)

Time: 120.0°W.
Sweep: 1.0 Mc to 10.0 Mc in 15 seconds.

Table 31

De Bilt, Holland (52.1°N, 5.2°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	2.5						3.0
01	<300	2.5						2.9
02	<300	2.4						3.0
03	<280	2.3						3.0
04	---	2.1						3.1
05	<260	1.9						3.1
06	<260	2.9	230	2.3	---	E		3.4
07	250	3.7	240	2.3	130	2.0		3.4
08	280	4.3	230	3.5	130	2.3		3.3
09	300	4.8	240	3.8	125	2.5	2.2	3.4
10	300	5.0	230	3.9	120	2.6		3.3
11	300	5.0	225	4.0	125	2.8	2.4	3.4
12	300	5.2	230	4.0	120	2.9		3.4
13	310	5.1	235	3.9	120	2.8		3.4
14	300	5.2	240	3.8	125	2.7		3.4
15	280	5.0	240	3.6	125	2.5		3.4
16	270	5.0	250	3.3	130	2.2		3.4
17	250	4.8	250	2.8	---	1.8		3.4
18	240	4.6						3.3
19	<245	4.2						3.3
20	<260	3.5						3.2
21	<260	3.0						3.2
22	---	2.6						3.0
23	<280	2.5						3.0

Time: 0.0°.
Sweep: 1.4 Mc to 11.2 Mc in 6 minutes, automatic operation.

Table 32

Lindau/Harz, Germany (51.6°N, 10.1°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	2.6					2.0	3.1
01	270	2.6					2.0	3.1
02	265	2.6					2.0	3.1
03	260	2.5					2.0	3.1
04	255	2.4					2.1	3.2
05	250	2.0					2.0	3.25
06	260	2.2	---	---			2.0	3.3
07	240	3.4	220	---	---	1.7	2.2	3.5
08	255	4.1	220	3.3	115	2.0	2.5	3.6
09	280	4.5	210	3.6	110	2.4	2.7	3.4
10	290	4.9	205	3.8	105	2.5	3.5	3.4
11	290	5.2	200	3.9	105	2.6	3.5	3.4
12	290	5.2	205	3.9	105	2.8	3.4	3.5
13	280	5.2	205	3.9	105	2.8	3.4	3.4
14	280	5.2	205	3.85	105	2.7	3.3	3.5
15	260	5.2	215	3.7	105	2.6	3.0	3.5
16	260	5.2	225	3.5	110	2.3	2.9	3.5
17	240	5.0	225	---	120	1.9	2.8	3.5
18	230	4.8	---	---			2.2	3.4
19	230	4.6	---	---			2.0	3.3
20	240	3.9					2.0	3.3
21	250	3.4					2.0	3.3
22	260	2.9					2.0	3.2
23	280	2.6					2.0	3.1

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 33

Winnipeg, Canada (49.9°N, 97.4°W) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	390	2.2					2.4	(2.9)
01	400	2.0					3.0	---
02	380	2.0					3.0	---
03	(340)	(2.0)					3.3	---
04	(330)	(2.0)					3.0	---
05	---	---					3.0	---
06	(290)	2.1					2.7	(3.15)
07	260	3.0	---	---	130	1.8		3.2
08	260	3.5	230	3.4	120	2.0		3.2
09	360	3.7	220	3.6	120	2.4		3.1
10	460	3.9	210	3.7	120	2.7		2.7
11	440	4.1	200	3.8	110	2.8		2.8
12	400	4.2	200	3.9	110	2.9		2.9
13	430	4.3	210	3.9	110	2.9		2.9
14	380	4.4	220	3.8	110	2.8		2.9
15	360	4.5	220	3.8	120	2.7		3.0
16	340	4.4	230	3.6	120	2.5		3.1
17	300	4.3	240	3.3	120	2.1		3.2
18	250	4.3	240	---	130	1.9		3.3
19	250	3.8						3.2
20	270	2.9						3.0
21	290	2.3						3.0
22	320	2.2						3.0
23	330	2.0						(2.9)

Time: 90.0°W.
Sweep: 1.0 Mc to 10.0 Mc in 16 seconds.

Table 34

St. John's, Newfoundland (47.6°N, 52.7°W) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	370	1.9						2.8
01	380	1.8					2.6	2.8
02	370	1.8					2.8	(2.9)
03	340	1.6					3.0	2.9
04	320	1.5					3.0	3.0
05	300	1.5			---	E	1.6	2.8
06	260	2.8	---	---	120	1.6		3.2
07	260	3.6	220	3.3	120	2.0		3.3
08	300	4.1	210	3.6	110	2.4		3.2
09	320	4.3	200	3.8	110	2.7		3.1
10	360	4.5	200	3.9	110	2.9		3.1
11	330	4.7	200	4.0	110	2.9		3.1
12	330	4.9	210	4.0	110	3.0		3.2
13	330	4.9	210	3.9	110	2.9		3.2
14	320	4.9	220	3.8	120	2.8		3.1
15	300	5.0	230	3.6	110	2.6		3.2
16	290	4.9	240	3.4	120	2.3		3.2
17	260	4.8	250	2.9	130	1.8		3.1
18	240	4.8			---	E		3.2
19	240	4.2			---	E		3.0
20	270	3.3						3.0
21	280	2.7						3.0
22	300	2.1						2.8
23	330	2.0						2.8

Time: 60.0°W.
Sweep: 0.8 Mc to 10.0 Mc in 18 seconds.

Table 35

Schwarzenburg, Switzerland (46.8°N, 7.3°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	2.8						3.2
01	300	2.8						3.2
02	300	2.8						3.2
03	300	2.8						3.3
04	270	2.7						3.35
05	250	2.6						3.5
06	270	2.1						3.5
07	210	3.3				---		3.6
08	210	4.2		---		2.0		3.8
09	220	4.5		3.6		2.4		3.65
10	260	5.0		3.8		2.6		3.6
11	290	5.2		4.0		2.8		3.6
12	290	5.2		4.0		2.8		3.6
13	300	5.2		4.0		2.8		3.6
14	280	5.3		4.0		2.8		3.6
15	240	5.3		3.8		2.7		3.6
16	200	5.0		3.6		2.5		3.6
17	210	5.0		---		2.2		3.7
18	200	5.0						3.8
19	200	4.6						3.6
20	210	4.5						3.5
21	220	3.6						3.55
22	250	3.1						3.4
23	280	3.0						3.3

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 36

Ottawa, Canada (45.4°N, 75.9°W) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	370	1.9						(3.0)
01	400	1.8						(2.9)
02	400	1.8					3.0	---
03	410	1.5					3.1	---
04	(390)	(1.8)					3.8	---
05	(380)	(1.9)					4.0	---
06	290	2.2			---	---		3.2
07	250	3.3	230	---	130	1.9		3.4
08	300	3.8	220	3.6	120	2.3		3.3
09	310	4.1	210	3.8	120	2.6		3.2
10	360	4.5	200	3.8	120	2.8		3.1
11	360	4.8	210	4.0	120	3.0		3.1
12	370	4.9	200	4.0	120	3.0		3.1
13	350	5.0	210	4.0	120	3.0		3.0
14	330	4.9	220	3.9	120	2.9		3.1
15	320	4.9	230	3.8	120	2.8		3.2
16	300	5.0	230	3.7	120	2.5		3.2
17	270	4.9	240	3.2	130	2.0		3.3
18	250	4.7	---	---	(140)	E		3.1
19	250	4.2						3.1
20	260	3.7						3.1
21	280	2.8						3.0
22	290	2.3						3.0
23	350	2.0						3.0

Time: 75.0°W.
Sweep: 1.0 Mc to 10.0 Mc in 15 seconds.

Table 37

Baguio, P. I. (16.4°N, 120.6°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	4.9					1.7	3.2
01	220	5.0					1.8	3.4
02	210	4.4						3.6
03	220	2.7						3.5
04	250	1.9					2.1	3.2
05	(260)	---					2.3	---
06	260	3.2					2.1	3.2
07	240	5.4			110	1.9	3.6	3.5
08	(280)	6.7	230	---	110	2.5	4.0	3.3
09	320	7.4	220	---	110	(2.9)	4.4	3.0
10	340	8.2	210	4.2	110	3.2	4.4	2.75
11	340	8.8	200	4.2	110	3.2	5.0	2.6
12	330	9.4	200	4.2	110	3.2	5.0	2.6
13	330	9.2	200	4.2	110	3.2	4.9	2.6
14	320	9.8	200	---	110	3.2	5.3	2.7
15	300	10.4	200	---	110	3.0	4.0	3.0
16	270	10.4	220	---	110	2.6	4.9	3.2
17	240	9.8	---	---	110	---	4.2	3.2
18	230	9.3					3.4	3.1
19	230	8.6					3.0	3.1
20	240	7.5					4.0	3.2
21	240	7.0					2.7	3.1
22	250	5.9					2.6	3.0
23	260	5.0					2.2	3.1

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

Table 38

Leopoldville, Belgian Congo (4.3°S, 15.3°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M2000)F2
00	230	4.7						2.5
01	230	3.8					1.7	2.4
02	250	3.0						2.4
03	250	3.1					1.6	2.6
04	240	2.3					2.1	2.6
05	245	3.2					2.4	2.6
06	245	5.5	230	---	120	2.1	3.0	2.8
07	285	6.1	220	4.0	110	2.8	3.6	2.5
08	310	6.8	220	4.2	110	3.1	4.0	2.3
09	335	7.9	210	4.3	110	3.2	3.5	2.2
10	370	9.2	210	4.3	110	3.4	3.2	2.1
11	360	10.0	200	4.4	110	3.5	3.4	2.1
12	350	10.9	205	4.4	110	3.4	3.5	2.1
13	340	11.0	210	4.3	110	3.4	4.0	2.2
14	310	11.5	230	4.1	110	3.0	4.1	< 2.3
15	295	> 11.0	230	4.0	110	2.8	3.9	2.3
16	290	11.0	230	---	115	2.3	3.5	2.3
17	255	11.3					3.0	2.4
18	240	10.0					2.6	< 2.5
19	230	9.1					2.0	2.5
20	220	8.0						2.6
21	220	7.1						2.5
22	230	6.2						2.4
23	240	5.1					1.7	2.5

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 39

Huancayo, Peru (12.0°S, 75.3°W) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	6.4						3.3
01	230	5.4						3.3
02	230	4.5						3.4
03	230	3.5						3.4
04	250	2.6						3.4
05	250	1.8					4.0	3.4
06	260	3.0			---	≡	4.2	3.15
07	(280)	6.1	230	---	110	2.2	5.4	3.3
08	(300)	7.4	210	---	110	2.7	10.0	3.1
09	320	8.0	200	4.2	110	---	11.5	2.7
10	350	7.6	200	4.3	100	---	11.5	2.6
11	350	7.0	200	4.3	100	---	11.7	2.6
12	350	7.1	200	4.4	100	---	11.8	2.7
13	350	7.4	190	4.3	100	---	11.8	2.7
14	330	7.7	200	4.3	100	---	11.6	2.7
15	320	8.0	200	4.2	110	---	11.0	2.7
16	(300)	8.4	200	---	110	---	9.4	2.7
17	(270)	8.3	210	---	110	---	5.8	2.7
18	250	8.1			120	---	4.8	2.7
19	270	7.6						2.8
20	270	7.3						2.9
21	250	7.7						3.15
22	230	7.7						3.3
23	230	6.9						3.35

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

Table 40

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.4						3.0
01	250	3.3						3.1
02	240	3.2						3.15
03	240	2.8						3.1
04	240	2.6						3.1
05	< 250	2.6						3.1
06	240	3.2			---	---		3.2
07	240	4.9	230	3.2	120	2.0		3.4
08	270	5.7	220	3.8	110	2.6		3.3
09	280	6.0	210	4.1	110	2.9	3.8	3.2
10	290	6.6	200	4.3	110	3.1	3.7	3.1
11	300	7.1	200	4.4	110	3.3	3.6	3.1
12	300	7.3	200	4.4	110	3.3	3.7	3.1
13	300	7.3	200	4.4	110	3.3	3.6	3.1
14	290	7.3	200	4.3	110	3.2	3.7	3.1
15	290	7.6	220	4.2	110	3.1	3.7	3.2
16	270	7.1	220	3.9	110	2.8	3.6	3.3
17	250	6.6	220	3.4	120	2.3	3.2	3.3
18	230	6.2	---	---	120	---	2.6	3.3
19	230	5.3					2.4	3.3
20	230	4.4					1.8	3.2
21	240	3.7					1.8	3.1
22	250	3.6						3.1
23	250	3.6						3.1

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 41

Watheroo, W. Australia (30.3°S, 115.9°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	3.5					2.7	2.9
01	250	3.5					2.0	3.1
02	250	3.3					1.5	3.1
03	250	3.3					2.2	3.1
04	255	3.0					2.7	3.1
05	250	3.0	---	---			1.3	3.1
06	250	3.2	---	---		---		3.1
07	250	4.2	240	3.0		2.0		3.4
08	270	4.8	220	3.7		2.5	2.7	3.4
09	300	5.3	220	4.0		2.7	3.5	3.3
10	320	5.6	215	4.2		3.0	3.6	3.15
11	330	5.7	200	4.3		3.2	3.5	3.0
12	355	5.8	200	4.3		3.2	3.8	3.0
13	320	6.3	220	4.3		3.3	3.8	3.0
14	320	6.0	210	4.3		3.2	3.6	3.1
15	300	5.8	240	4.0		3.0	3.3	3.1
16	300	5.7	250	4.0		2.7	3.6	3.2
17	270	5.6	240	3.5		2.4	3.6	3.3
18	250	5.0	240	2.8		1.9	3.2	3.4
19	250	4.1					2.9	3.3
20	250	3.8					1.9	3.2
21	250	3.5						3.0
22	270	3.3					1.5	3.0
23	270	3.3						3.0

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 2 minutes.

Table 42

Capetown, Union of S. Africa (34.2°S, 18.3°E) — March 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	< 260	3.1						3.1
01	250	3.1						3.1
02	< 260	3.0						3.0
03	< 260	3.0						3.05
04	< 250	2.9						3.2
05	240	2.8						3.2
06	240	2.7						3.2
07	240	3.9	---	---	---	1.6		3.4
08	260	5.0	230	3.5	120	2.1		3.4
09	280	5.5	220	3.8	120	2.6		3.4
10	290	6.1	210	4.1	110	2.9	3.1	3.3
11	310	6.5	200	4.3	110	3.1	3.4	3.1
12	310	6.7	200	4.3	110	3.2	3.5	3.1
13	310	7.1	210	4.3	110	3.2	3.4	3.1
14	300	7.6	220	4.3	110	3.2		3.1
15	300	7.2	230	4.2	110	3.1		3.2
16	280	6.8	230	4.0	110	2.9	3.1	3.3
17	260	6.1	220	3.6	110	2.6	3.1	3.35
18	250	6.0	230	3.2	120	2.1	2.8	3.4
19	230	5.3	---	---	---	---	2.4	3.4
20	230	4.5						3.4
21	230	3.6						3.3
22	250	3.2						3.1
23	250	3.2						3.1

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 43

Baker Lake, Canada (64.3°N, 96.0°W) February 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	2.0			---	E	6.4	3.2
01	250	2.0			---	E	6.0	(3.0)
02	250	2.0			---	E	5.6	(3.0)
03	250	1.7			---	E	5.2	(3.1)
04	240	2.0			---	E	4.1	---
05	260	2.3			---	1.4	4.6	(3.1)
06	260	(2.5)			120	(1.6)	6.5	---
07	250	(2.7)			140	1.8	5.7	(3.1)
08	240	3.0			120	2.2	5.1	(3.1)
09	260	3.3			110	2.3	5.0	3.2
10	260	3.8	---	---	110	2.4	3.8	3.3
11	280	4.0	---	---	120	2.6	3.6	3.2
12	280	4.0	240	3.4	110	2.6		3.2
13	290	4.1	230	3.2	110	2.6		3.1
14	290	4.4	240	3.1	120	2.4		3.0
15	270	4.1	240	3.0	120	2.3		3.05
16	240	4.0	240	2.8	120	2.1	7.2	3.2
17	260	3.4			110	2.0	6.8	3.0
18	250	3.3			120	1.7	5.6	3.0
19	250	2.9			---	E	5.4	3.0
20	250	2.8			---	E	5.1	3.0
21	250	2.5			---	E	3.9	3.0
22	230	2.3			---	E	6.2	3.1
23	240	2.0			---	E	5.3	3.1

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 44

Churchill, Canada (58.8°N, 94.2°W) February 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					7.8	---
01	---	---					6.8	---
02	---	---					4.9	---
03	---	---					5.0	
04	---	---					5.0	
05	---	---					4.8	---
06	---	---					5.5	
07	---	---					5.7	
08	---	(3.0)			---	---	5.0	---
09	(300)	(4.0)	---	---	---	---	5.3	(3.45)
10	300	4.0	---	---	---	---		3.4
11	300	4.2	---	---	---	---		3.3
12	300	4.6	240	(3.6)	120	(2.5)		3.3
13	310	4.5	240	3.4	120	2.7		3.2
14	290	4.7	240	3.3	120	2.4		3.3
15	290	4.7	230	3.2	120	2.2		3.25
16	270	4.6	---	(3.0)	120	2.1	2.8	3.3
17	260	4.0	---	---	120	1.8	2.8	3.3
18	280	3.4			120	(1.8)	3.9	3.2
19	300	3.1			---	---	4.0	3.2
20	290	2.6			---	---	4.4	---
21	(280)	(2.8)			---	---	7.0	---
22	(290)	(2.6)			---	---	7.8	---
23	(270)	(2.5)			---	---	6.0	---

Time: 90.0°W.
Sweep: 0.5 Mc to 10.0 Mc in 16 seconds.

Table 45

Schwarzenburg, Switzerland (46.8°N, 7.3°E) February 19[illegible]

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.0						3.[illegible]
01	260	3.0						3.[illegible]
02	260	3.0						3.[illegible]
03	250	3.0						3.[illegible]
04	250	2.8						[illegible]
05	240	2.6						3.5
06	240	2.2						3.6
07	210	2.5						3.7
08	200	3.9				---		3.9
09	200	4.6				2.1		3.9
10	200	4.8				2.4		4.0
11	200	5.0				2.6		3.8
12	220	5.6				2.6		3.8
13	200	5.4				2.7		3.8
14	200	5.2				2.6		3.8
15	200	5.2				2.5		3.8
16	200	5.1				2.2		3.8
17	200	4.8				2.0		3.9
18	200	4.4						3.85
19	210	3.8						3.5
20	210	3.6						3.6
21	220	3.1						3.55
22	260	2.9						3.5
23	250	3.0						3.4

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 46

Rarotonga I. (21.3°S, 159.8°W) February 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.8					3.1	2.9
01	260	4.8					3.0	3.15
02	250	4.1					3.0	3.1
03	280	3.5					2.6	3.05
04	290	3.4					2.7	2.9
05	300	3.0					2.5	3.0
06	260	3.5			---	---	2.9	3.1
07	250	5.4	230	3.5	---	2.1	3.5	3.3
08	270	6.6	240	4.0	105	2.6	4.5	3.3
09	280	7.2	210	4.2	105	2.9	5.6	3.2
10	300	8.5	200	4.3	105	3.1	5.2	3.1
11	300	9.1	200	4.4	105	3.3	5.0	3.1
12	310	9.4	200	4.4	105	3.3	4.8	3.0
13	290	10.7	190	4.4	105	3.4	4.4	3.2
14	280	9.8	200	4.3	105	3.3	4.1	3.2
15	280	8.6	200	4.2	105	3.2	4.1	3.2
16	290	7.6	220	4.1	110	3.0	4.4	3.15
17	280	7.2	220	3.8	110	2.6	4.1	3.15
18	260	7.2			130	2.0	4.6	3.2
19	260	7.3					4.6	3.1
20	260	5.8					4.4	3.1
21	280	5.0					4.0	3.0
22	300	4.8					3.2	3.0
23	310	4.7					3.4	2.95

Time: 157.5°W.
Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 47

Delhi, India (28.6°N, 77.1°E) January 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2**
00	290	2.6						3.2
01	280	2.6						3.25
02	(280)	2.5						3.4
03								
04	250	2.4						3.55
05	260	2.5						3.4
06	260	2.8						3.4
07	240	4.2						3.6
08	240	5.2						3.6
09	240	5.6						3.55
10	240	6.1						3.4
11	260	6.9						3.4
12	240	7.0						3.45
13	250	6.3						3.5
14	260	6.8						3.45
15	240	6.0						3.55
16	240	5.4						3.75
17	220	4.8						3.7
18	240	4.0						3.6
19	240	3.6						3.5
20	240	3.2						3.55
21	250	3.0						3.4
22	280	2.6						3.25
23	280	2.7						3.2

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 48

Bombay, India (19.0°N, 73.0°E) January 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2**
00								
01								
02								
03								
04								
05								
06								
07	270	4.9						3.35
08:30	300	6.4						3.1
09	330	6.8						2.95
10	330	7.5						2.9
11	360	8.8						2.8
12	390	9.6						2.8
13	390	10.5						2.7
14	390	11.1						2.65
15	420	11.4						2.55
16	420	12.2						2.55
17	390	11.3						2.6
18	390	10.7						2.7
19	360	9.0						2.85
20	330	7.4						2.95
21	300	6.1						3.15
22	270	4.9						3.25
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Madras, India (13.0°N, 80.2°E) Table 49 January 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	300	> 4.1						3.5
07	330	5.7						2.95
08	360	6.8						2.8
09	390	> 7.0						2.7
10	420	7.0						2.6
11	420	6.8						2.55
12	420	7.0						2.45
13	420	7.3						2.45
14	420	7.7						2.6
15	390	7.8						2.6
16	390	> 7.8						2.7
17	360	7.9						2.7
18	360	7.2						2.8
19	330	6.4						2.9
20	330	6.0						3.0
21	300	5.5						3.5
22	(300)	> 4.9						3.15
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Tiruchy, India (10.8°N, 78.8°E) Table 50 January 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	300	3.4						3.0
07	390	5.7						2.65
08	480	6.3						2.4
09	510	6.5						2.2
10	540	6.4						2.2
11	540	6.3						2.2
12	510	6.3						2.2
13	510	6.5						2.2
14	510	6.9						2.15
15	510	7.5						2.2
16	510	7.4						2.3
17	480	7.4						2.35
18	450	6.9						2.4
19	420	6.5						2.45
20	420	6.0						2.5
21	420	> 5.0						2.55
22								
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Sao Paulo, Brazil (23.5°S, 46.5°W) Table 51 January 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.3						(3.0)
01	245	(4.3)						3.2
02	240	(3.5)						(3.2)
03	240	3.1						(3.1)
04	240	2.7						(3.1)
05	260	2.7						---
06	220	4.4						3.5
07	235	(5.1)						(3.3)
08	(320)	5.8						(3.1)
09	(400)	6.1						2.7
10	450	6.8						2.7
11	460	7.1						2.6
12	440	7.7						2.7
13	420	8.4						2.7
14	380	8.8						2.8
15	320	9.8						3.1
16	270	10.0						3.3
17	260	9.4						3.4
18	235	7.6						3.4
19	240	6.9						3.2
20	260	6.7						3.2
21	260	6.2						3.15
22	265	5.2						3.1
23	280	4.8						(3.0)

Time: Local.
Sweep: 2.5 Mc to 20.0 Mc in 6 minutes.

Inverness, Scotland (57.4°N, 4.2°W) Table 52* December 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	1.8						3.0
01	280	1.7						3.0
02	290	1.7						2.9
03	290	1.6						2.9
04	285	(1.4)					2.0	2.9
05	280	1.3					2.2	2.9
06	(275)	1.4					2.4	3.1
07		1.4					2.4	3.2
08	285	(1.8)					2.0	3.0
09	220	3.5				(1.6)	2.6	3.5
10	215	4.4			140	1.7	2.6	3.7
11	220	4.8			140	1.9	2.4	3.7
12	215	5.2			140	2.0	2.5	3.7
13	210	5.2			140	2.0	2.5	3.7
14	215	5.0			(140)	1.8	2.3	3.7
15	210	4.7			(150)	(1.6)	2.4	3.6
16	210	4.0					2.4	3.5
17	235	3.2					2.2	3.3
18	250	2.4					2.3	3.3
19	275	1.9						3.1
20	290	(1.8)						2.9
21	295	1.7						3.0
22	300	(1.8)						3.1
23	305	(1.8)						2.9

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Slough, England (51.5°N, 0.6°W) Table 53* December 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.1					2.6	3.05
01	255	3.1					2.6	3.05
02	255	2.9					2.5	3.0
03	260	2.5					2.8	3.05
04	250	2.2					2.6	3.1
05	250	2.0					3.1	3.15
06	250	2.0					2.4	3.2
07	265	2.0					2.6	3.1
08	220	3.7			140	(1.5)	3.0	3.5
09	220	4.7			125	1.9	3.2	3.6
10	220	5.3			125	2.1	3.5	3.7
11	225	5.8	(215)	(3.4)	120	2.3	3.6	3.7
12	220	5.8	(215)	(3.4)	120	2.3	3.6	3.65
13	225	5.6	(210)	(3.3)	125	2.3	3.7	3.6
14	220	5.4			125	2.1	3.5	3.65
15	220	5.2			135	1.9	3.4	3.6
16	215	4.4					3.3	3.6
17	225	3.5					2.4	3.4
18	250	2.5					2.3	3.2
19	260	2.5					2.4	3.1
20	260	2.4					2.3	3.15
21	260	2.6					2.5	3.05
22	270	2.9					2.5	3.05
23	270	3.0					2.4	3.0

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Singapore, British Malaya (1.3°N, 103.8°E) Table 54* December 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	3.4					2.7	3.1
01	260	2.9					1.5	2.9
02	275	2.8					2.5	3.0
03	275	2.6					1.9	3.1
04	265	2.4					2.7	3.1
05	260	2.3					2.6	3.2
06	250	3.2			(150)	1.2	2.8	3.3
07	255	5.7	230		120	2.1	3.0	3.2
08	310	6.3	220	4.1	115	2.6	4.0	2.9
09	390	6.6	215	4.2	115	3.0	4.0	2.6
10	430	7.2	210	4.3	110	3.2	4.3	2.3
11	430	7.5	205	4.3	110	3.3	6.1	2.2
12	425	7.6	200	4.4	110	3.4	5.8	2.2
13	425	8.0	200	4.3	110	3.3	5.6	2.2
14	395	8.1	200	4.3	110	3.2	6.0	2.2
15	360	8.1	215	4.2	115	3.0	5.5	2.3
16	325	8.2	215	(4.1)	115	2.7	5.0	2.4
17	(275)	8.3	235		125	2.2	5.4	2.5
18	260	8.0			(150)	1.4	3.3	2.7
19	270	7.6					3.8	2.8
20	275	6.4					3.6	2.8
21	270	6.2					3.0	2.9
22	230	6.2					3.0	3.3
23	210	4.9					2.9	3.4

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 55

Sao Paulo, Brazil (23.5°S, 46.5°W) December 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(3.8)						---
01	260	(4.1)						(3.1)
02	260	3.9						(2.95)
03	260	3.8						(3.0)
04	260	3.2						3.4
05	240	3.5						3.3
06	230	4.9						3.4
07	290	5.8						(3.1)
08	360	6.0						2.8
09	(450)	6.7						2.7
10	440	7.2						2.7
11	450	7.8						2.6
12	420	8.4						2.7
13	390	9.0						2.8
14	320	9.5						3.0
15	300	9.9						3.1
16	280	9.9						3.2
17	250	9.6						3.5
18	230	8.4						3.4
19	240	7.4						3.25
20	270	6.8						3.1
21	280	6.2						3.05
22	280	5.6						3.0
23	300	3.9						(3.0)

Time: Local.
Sweep: 2.5 Mc to 20.0 Mc in 6 minutes.

Table 56*

Khartoum, Sudan (15.6°N, 32.6°E) November 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	6.4					3.1	
01	255	(5.5)					3.1	(2.9)
02	230	6.1					3.1	
03	210	4.1					3.1	
04	220	2.7					3.1	
05	255	2.0					3.1	(3.2)
06	250	4.0					3.1	3.2
07	250	6.6	235	(3.6)	135	2.3	3.2	3.1
08	280	8.2	220	3.9	120	2.7	3.9	3.0
09	290	9.2	210	4.1	115	3.0	3.4	2.9
10	305	9.1	215	4.3		3.2	4.2	2.8
11	315	9.3	215	4.3		3.3	3.8	2.7
12	305	9.8	215	4.3		(3.4)	4.4	2.8
13	300	10.2	215	4.3	115	3.2	4.5	2.9
14	290	10.5	215	4.1	(120)	3.0	4.5	2.9
15	280	10.4	215	3.8	(120)	2.8	4.7	2.9
16	260	10.2	230	3.7	(125)	2.4	4.1	3.0
17	240	10.4					5.6	3.1
18	230	9.0					4.4	3.1
19	235	7.7					4.1	(3.0)
20	250	(7.3)					4.0	(2.8)
21	265	(7.0)					4.3	
22	255	6.5					4.0	(2.9)
23	270	6.3					3.1	

Time: 30.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 57

Sao Paulo, Brazil (23.5°S, 46.5°W) November 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	(6.7)						(3.2)
01	235	6.7						(3.3)
02	220	(6.0)						(3.5)
03	220	5.0						3.4
04	240	(4.5)						(3.2)
05	230	4.4						3.4
06	220	5.4						3.6
07	250	6.2						3.3
08	300	7.0						3.0
09	340	7.4						2.9
10	420	7.8						2.7
11	420	8.5						2.7
12	400	9.4						2.8
13	360	10.2						2.9
14	330	(10.6)						3.1
15	280	11.3						3.2
16	270	11.5						3.2
17	260	11.4						3.4
18	230	11.4						3.4
19	220	10.5						3.35
20	240	9.9						3.3
21	240	(8.7)						(3.3)
22	260	(7.4)						(3.1)
23	270	---						---

Time: Local.
Sweep: 2.5 Mc to 20.0 Mc in 6 minutes.

Table 58*

Falkland Is. (51.7°S, 57.8°W) November 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	5.5					3.1	2.8
01	290	5.3					2.9	2.8
02	285	5.0					1.3	2.8
03	280	4.9						2.8
04	265	5.0	(240)		145	1.4	1.5	2.9
05	240	5.4	(245)		120	1.8	2.4	3.2
06	(280)	5.3	235	3.7	115	2.3	3.1	3.2
07	(320)	5.4	240	3.9	110	2.6	3.8	3.1
08	(335)	5.6	(230)	4.1	105	2.9	4.1	3.0
09	(365)	5.8	215	4.2	105	3.0	5.8	2.9
10	355	6.0	220	4.3	105	3.1	5.4	2.9
11	335	6.7	230	4.3	105	3.1	5.0	2.9
12	325	6.6	225	4.4	105	3.1	4.6	2.9
13	315	6.8	225	4.3	105	3.1	5.0	3.1
14	305	6.3	220	4.2	105	3.1	4.4	3.2
15	305	6.2	220	4.2	105	2.9	4.6	3.1
16	290	6.0	225	4.0	110	2.7	4.4	3.2
17	285	6.0	225	3.8	110	2.4	4.6	3.2
18	275	6.2	240	3.4	125	2.0	4.7	3.2
19	265	6.4					3.6	3.1
20	260	6.6					3.2	3.0
21	270	6.4					2.8	2.9
22	280	6.1					3.4	2.9
23	275	5.8					3.1	2.9

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 59*

Fort Lockroy (64.8°S, 63.5°W) November 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	6.3						2.8
01	265	6.5						2.9
02	265	6.0					1.3	2.9
03	270	5.6			(135)	(1.4)	1.3	2.8
04	255	5.5			125	1.6		2.9
05	250	5.6			110	1.8	2.9	3.0
06	255	5.3			100	2.2	3.6	3.0
07	255	5.0			100	2.4	4.3	3.1
08	265	4.8			100	2.7	4.5	3.0
09	(310)	4.9	(230)	(4.0)	100	2.9	4.6	(3.1)
10	280	5.3	(240)	(4.2)	100	2.8	4.8	3.1
11	290	5.1	215	(4.1)	100	2.9	5.3	3.1
12	300	5.2	215	4.2	100	2.9	4.8	3.1
13	305	5.0	215	4.1	100	2.9	4.6	3.2
14	295	4.9	220		100	2.9	4.6	(3.2)
15	290	5.0	220	(4.0)	100	2.8	3.6	3.2
16	270	5.1	(235)		100	2.7	4.2	3.1
17	245	5.1			100	2.4	3.1	3.1
18	250	5.5			105	2.1	3.0	3.0
19	260	6.2			110	1.8	3.1	3.0
20	255	6.5			130	1.5	1.8	3.0
21	260	6.9						2.9
22	255	7.0						2.9
23	255	6.8						2.9

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 60

Townsville, Australia (19.3°S, 146.8°E) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	4.0						3.4
01	250	3.2					1.9	3.4
02	250	2.9					2.3	3.3
03	250	2.7					2.1	3.1
04	260	2.5					2.5	3.0
05	285	2.5					2.9	3.1
06	260	3.0					2.3	3.1
07	250	5.3	---	---	120	1.8	2.4	3.3
08	290	6.6	230	4.0	120	2.5	3.8	3.3
09	280	> 8.2	230	4.2	130	3.0	4.0	3.3
10	260	8.5	220	4.4	120	3.2	4.3	3.4
11	270	7.2	220	4.4	120	3.3	4.4	3.4
12	280	6.8	210	4.5	120	3.3	4.4	3.4
13	300	6.5	205	4.4	120	3.3	4.4	3.2
14	295	6.4	200	4.2	120	3.2	4.4	3.3
15	290	6.2	210	4.2	120	3.0	4.2	3.3
16	260	5.8	210	3.7	125	2.7	3.8	3.35
17	250	5.8	210	2.8	130	2.2	3.7	3.4
18	250	5.0		---	---	1.4	2.8	3.2
19	250	4.8					2.8	3.15
20	255	4.9						3.1
21	270	4.5					2.3	3.1
22	270	4.4					2.4	3.1
23	250	4.4						3.2

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

Table 61

Brisbane, Australia (27.5°S, 153.0°E) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.9					3.0	3.1
01	245	3.7					2.6	3.2
02	240	3.7					2.3	3.3
03	230	3.2					2.8	3.1
04	260	2.9						3.1
05	270	2.9						3.0
06	240	4.2			---	1.8		3.3
07	250	5.2	240	3.9	110	2.2	2.8	3.4
08	280	5.8	230	4.2	110	2.8	3.2	3.3
09	280	6.0	220	4.4	110	3.0	2.0	3.3
10	300	6.3	210	4.5	100	3.2		3.2
11	300	6.6	210	4.6	100	3.3		3.3
12	280	6.8	200	4.6	100	3.4	3.5	3.3
13	270	6.9	210	4.5	100	3.4		3.3
14	275	6.4	210	4.4	100	3.3		3.4
15	260	6.0	210	4.2	110	3.0		3.4
16	250	5.8	220	3.7	120	2.6		3.4
17	230	5.4	240	2.8	120	2.0	1.9	3.4
18	240	5.0					3.2	3.1
19	250	4.6					3.2	3.1
20	260	4.4					2.3	3.0
21	280	4.3					2.0	3.0
22	260	4.3					3.3	3.1
23	260	4.3					2.5	3.1

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

Table 62

Canberra, Australia (35.3°S, 149.0°E) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.1					2.5	3.0
01	---	3.0					2.7	3.0
02	---	3.0					2.8	3.0
03	---	3.0					3.2	3.1
04	---	2.8					3.0	(3.1)
05	---	2.5					2.9	(3.05)
06	(240)	3.1					2.8	3.2
07	240	4.3			---	1.7	3.2	3.3
08	265	4.9	235	3.9	100	2.3	3.4	3.3
09	290	5.2	210	4.0	100	2.8	3.5	3.2
10	310	5.4	210	4.2	100	3.0	3.4	3.1
11	310	5.5	200	4.2	100	3.1	3.5	3.2
12	290	6.1	200	4.2	100	3.1	3.5	3.3
13	290	6.0	200	4.2	100	3.1	3.5	3.3
14	290	5.8	200	4.2	100	3.1	3.4	3.3
15	275	5.6	200	4.0	100	2.9	3.4	3.3
16	250	5.5	200	(3.7)	100	2.5	3.3	3.4
17	240	5.0	210	---	---	1.8	3.2	3.3
18	220	4.7					3.0	3.2
19	(230)	4.4					3.1	3.0
20	---	4.0					2.6	3.0
21	---	3.7					2.6	3.0
22	---	3.5					2.5	3.0
23	---	3.4					2.9	3.0

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

Table 63

Hobart, Tasmania (42.9°S, 147.3°E) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	2.0						2.9
01	300	1.9						2.9
02	300	1.9						2.9
03	300	1.8						2.85
04	300	1.8						2.8
05	---	E						(2.9)
06	270	2.1			---	E		3.0
07	250	3.5	---	---	120	1.9		3.1
08	230	4.1	---	---	100	2.3		3.0
09	210	4.5	205	3.6	100	2.6		2.9
10	365	4.6	200	4.0	100	2.8		2.85
11	350	5.1	200	4.1	100	3.0		2.8
12	350	5.3	200	4.1	100	3.0		2.85
13	335	5.1	210	4.1	100	3.0		3.0
14	310	5.0	200	4.0	100	2.9		3.0
15	300	5.3	210	3.9	100	2.7		3.0
16	220	5.0	250	3.5	100	2.4		3.0
17	230	4.9			100	2.0		3.1
18	230	4.6			---	---		3.0
19	250	4.3						2.9
20	260	3.6						2.8
21	270	3.0						2.9
22	270	2.5						2.9
23	300	2.2						2.9

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

Table 64

Poitiers, France (46.6°N, 0.3°E) August 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.3					2.6	3.0
01	<270	3.0					2.4	2.95
02	<275	2.9					2.4	2.9
03	<275	2.8					2.4	(2.95)
04	<275	2.7					2.6	(2.95)
05	250	3.1	---	---	---	---	2.8	3.0
06	295	3.9	245	3.2	125	1.8	3.6	3.4
07	320	4.4	230	3.6	110	2.4	3.7	---
08	330	4.6	205	3.8	105	2.6	3.6	(3.5)
09	330	4.9	210	4.0	100	2.8	3.9	---
10	310	5.2	200	4.2	100	2.9	4.5	(2.9)
11	355	5.0	200	4.3	100	3.0	4.3	(3.2)
12	365	5.1	200	4.3	100	3.0	4.3	G
13	360	4.9	205	4.2	100	3.0	3.8	(3.2)
14	345	5.0	225	4.2	100	3.0	3.8	---
15	345	4.9	215	4.2	100	2.9	3.8	(3.2)
16	330	5.0	225	3.9	105	2.7	3.6	3.15
17	305	5.2	230	3.6	110	2.4	4.0	3.15
18	290	5.1	240	3.3	---	1.9	3.8	3.1
19	260	5.7	---	---			3.9	3.1
20	250	5.8					3.9	---
21	240	5.2					3.6	3.3
22	250	4.4					3.6	3.2
23	250	3.7					3.2	3.15

Time: 0.0°.
Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 65

Casablanca, Morocco (33.6°N, 7.6°W) August 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.7					3.5	2.95
01	<280	3.6					3.3	2.9
02	---	3.2					3.1	2.9
03	<285	3.1					3.0	2.9
04	<250	2.8					2.6	3.0
05	<250	3.0					3.0	3.0
06	<235	3.2					3.2	3.35
07	240	4.3	220	3.2	110	2.0	3.5	3.6
08	260	4.8	220	3.7	100	2.4	3.8	3.55
09	270	5.2	210	4.0	100	2.8	5.5	3.6
10	310	5.2	200	4.3	100	3.0	5.0	3.4
11	345	5.4	200	4.4	100	3.2	4.8	3.25
12	350	5.3	190	4.3	100	3.3	3.9	3.1
13	355	5.6	210	4.4	100	3.3		3.0
14	345	5.7	210	4.3	100	3.3		3.05
15	320	6.0	205	4.2	100	3.2		3.2
16	310	6.0	225	4.1	100	3.0	3.5	3.1
17	300	6.6	230	3.8	100	2.7	4.1	3.15
18	280	6.5	230	3.5	100	2.2	3.8	3.2
19	260	6.7	240	3.0			3.8	3.3
20	240	6.8					3.9	3.3
21	<225	5.7					3.8	3.3
22	<230	4.6					3.8	3.2
23	---	4.0					3.6	3.1

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 66

Poitiers, France (46.6°N, 0.3°E) July 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	4.0					2.6	3.0
01	270	3.6					2.4	3.0
02	275	3.4					2.6	3.0
03	<260	3.1					2.5	(3.05)
04	<270	3.0					3.0	(3.0)
05	275	3.6	240	2.8	---	E	2.8	3.1
06	340	4.1	230	3.4	110	2.1	3.9	3.2
07	305	4.8	220	3.8	105	2.5	4.7	3.35
08	345	4.7	210	4.0	105	2.8	4.7	(3.25)
09	345	5.1	205	4.1	100	2.9	4.7	(3.25)
10	380	4.8	200	4.2	100	3.0	4.6	G
11	355	5.1	205	4.3	100	3.1	4.6	(3.25)
12	400	5.2	205	4.3	100	3.2	5.0	---
13	395	5.0	200	4.3	105	3.1	4.8	(2.9)
14	365	5.2	210	4.2	105	3.1	4.1	(3.05)
15	360	5.0	215	4.1	105	3.0	4.6	(3.2)
16	350	5.0	215	4.0	105	2.9	4.0	(3.05)
17	330	5.0	225	3.8	110	2.6	4.0	3.1
18	310	5.1	230	3.5	110	2.2	4.4	3.05
19	270	5.4	245	2.9	---	1.6	4.6	3.2
20	250	5.7					3.2	3.1
21	250	5.3					3.3	3.15
22	250	4.6					3.0	3.1
23	255	4.2					2.5	3.0

Time: 0.0°.
Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 67

Casablanca, Morocco (33.6°N, 7.6°W) July 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	4.4					3.7	3.0
01	<270	4.2					3.5	3.0
02	---	3.8					3.2	3.0
03	<265	(3.5)					3.5	(3.05)
04	---	(3.7)					3.1	(3.05)
05	---	(3.1)					3.4	3.1
06	245	3.5	---	---	---	---	3.8	3.35
07	250	4.6	225	3.5	110	2.1	4.0	3.5
08	265	5.0	210	3.8	105	2.6	4.9	3.5
09	275	5.3	220	4.0	105	2.8	4.9	3.6
10	325	5.0	220	4.2	100	3.1	4.8	3.3
11	385	5.0	205	4.3	105	3.2	5.2	3.0
12	350	5.5	200	4.3	100	3.3	4.5	3.0
13	340	6.0	200	(4.3)	100	3.3	4.1	3.0
14	350	6.0	220	4.3	100	3.3	4.3	2.95
15	325	6.7	220	4.2	105	3.2	4.0	3.1
16	305	6.5	205	4.0	105	3.0	4.5	3.1
17	295	6.1	230	3.8	105	2.7	4.9	3.15
18	280	6.2	230	3.6	110	2.4	4.2	3.2
19	255	6.5	230	3.0	115	1.8	4.2	3.2
20	240	5.9					3.8	3.35
21	<240	5.3					3.5	3.2
22	<250	4.7					3.6	3.05
23	<250	4.6					4.0	3.0

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 68

Tananarive, Madagascar (18.8°S, 47.8°E) July 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	2.7						3.4
01	240	2.3						3.3
02	240	2.3						3.15
03	250	2.0						3.25
04	270	1.8						3.2
05	270	1.8						3.35
06	260	2.0			---	---	1.5	3.25
07	230	4.3	---	---	150	1.8	2.0	3.5
08	240	5.2	230	---	120	2.3	1.4	3.6
09	270	5.4	230	4.0	120	2.6	3.1	3.45
10	280	6.0	220	4.2	120	2.9	3.2	3.4
11	270	6.0	230	4.3	120	3.1	3.3	3.45
12	280	5.9	220	4.3	120	3.2	3.2	3.4
13	280	5.7	220	4.3	120	3.1	3.1	3.3
14	280	5.8	220	4.2	120	3.0	3.0	3.4
15	260	5.7	230	4.0	120	2.8	3.0	3.45
16	240	5.4	230	---	120	2.6	3.0	3.55
17	240	5.1	240	---	130	2.0	2.9	3.5
18	220	4.4					3.2	3.5
19	220	3.0					2.8	3.55
20	240	2.6					2.1	3.2
21	260	2.9						3.05
22	260	3.0						3.1
23	250	3.0						3.3

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 69

Tananarive, Madagascar (18.8°S, 47.8°E) June 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	2.8						3.3
01	250	2.5						3.1
02	260	2.4						3.2
03	260	2.3						3.2
04	270	2.0						3.2
05	275	1.8						3.2
06	270	2.0						3.1
07	240	4.5			147	1.9	2.9	3.5
08	255	5.4	240	---	125	2.3	2.8	3.5
09	260	5.8	232	4.0	121	2.7	3.1	3.4
10	260	6.2	230	4.2	121	3.0	3.2	3.5
11	275	5.8	225	4.3	121	3.1	3.4	3.4
12	280	5.8	230	4.3	119	3.2	3.5	3.3
13	290	5.7	225	4.3	121	3.1	3.3	3.3
14	280	5.9	225	4.1	120	3.0	3.1	3.4
15	260	5.3	235	---	119	2.8	3.1	3.5
16	250	5.2	230	---	125	2.5	3.4	3.5
17	235	5.1			131	1.9	2.8	3.5
18	230	4.3					3.2	3.5
19	220	3.0					3.0	3.5
20	250	2.6					2.8	3.1
21	260	2.8					2.8	3.2
22	252	3.0					1.6	3.2
23	242	2.9						3.3

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 70

Tananarive, Madagascar (18.8°S, 47.8°E) May 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	245	2.8						3.2
01	258	2.6						3.2
02	255	2.4						3.2
03	250	2.6						3.3
04	250	2.2						3.2
05	255	2.2						3.1
06	262	2.6					1.5	3.1
07	240	5.3			139	2.0	2.7	3.5
08	255	6.2	240	---	124	2.5	2.9	3.5
09	265	6.5	230	4.1	121	2.8	3.0	3.5
10	270	7.0	225	4.3	121	3.0	3.1	3.4
11	270	6.8	225	4.4	121	3.1	3.0	3.4
12	280	6.8	220	4.4	122	3.2	3.0	3.3
13	272	6.6	215	4.3	121	3.2	2.9	3.4
14	270	6.1	225	4.2	123	3.0	2.9	3.4
15	265	5.9	230	---	125	2.8	2.9	3.4
16	250	5.7	240	---	124	2.5	3.1	3.4
17	235	5.3			132	1.9	2.9	3.5
18	225	4.6					3.0	3.5
19	230	3.6						3.4
20	232	2.8						3.2
21	250	3.2						3.2
22	240	3.1						3.3
23	248	3.0						3.3

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 71

Tananarive, Madagascar (18.8°S, 47.8°E) April 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	3.2						3.3
01	250	2.9					1.6	3.2
02	248	3.0					1.5	3.3
03	250	2.7					2.5	3.1
04	275	2.7					2.3	3.0
05	268	2.5					1.8	3.1
06	255	3.1						3.2
07	240	5.6			132	2.2		3.5
08	265	6.8	240	---	125	2.6		3.4
09	275	7.5	235	4.3	122	2.9	2.7	3.3
10	280	8.8	230	4.5	123	3.2	2.9	3.3
11	275	8.6	222	4.5	121	3.3		3.3
12	282	7.6	230	4.5	121	3.4		3.3
13	295	7.6	225	4.5	124	3.3		3.1
14	290	8.0	225	4.4	124	3.2	2.6	3.1
15	270	8.0	230	---	125	3.0		3.2
16	260	7.4	240	---	125	2.6	2.3	3.3
17	245	6.8	245	---	---	2.2		3.4
18	240	5.6			---	---	2.1	3.4
19	235	4.8					1.8	3.3
20	240	4.0						3.3
21	250	3.6						3.2
22	250	3.7						3.2
23	250	3.4						3.2

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 72

Djibouti, French Somaliland (11.5°N, 43.1°E) March 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	>5.8						(2.95)
01	250	5.6						3.25
02	235	(4.8)						(3.4)
03	220	4.2						3.55
04	225	2.9						3.55
05	240	2.1						3.55
06	230	5.2	---	---	---	<1.4	3.0	3.5
07	260	7.1	220	---	113	2.4	3.4	3.4
08	300	8.4	210	4.3	107	3.0	4.1	3.1
09	310	8.9	210	4.4	110	3.2	6.5	2.7
10	325	8.4	210	4.6	105	3.5	7.0	2.8
11	330	8.4	200	4.6	107	3.6	6.9	2.75
12	330	8.2	200	4.7	106	(3.6)	7.0	2.75
13	320	9.0	202	4.6	108	3.6	6.3	2.8
14	310	9.6	205	4.5	111	3.4	5.2	2.9
15	290	10.0	210	4.3	111	3.1	4.9	3.0
16	280	9.8	215	---	115	2.8	4.4	3.0
17	240	>9.8	235	---	---	---	4.0	(3.0)
18	250	<9.5					3.5	(3.1)
19	260	9.2					3.0	(3.0)
20	260	8.9					2.9	(3.05)
21	260	8.5					2.4	(3.1)
22	245	8.0					3.1	(3.15)
23	270	6.0					2.8	(3.05)

Time: 35.6°E.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 72

Tananarive, Madagascar (18.8°S, 47.8°E) March 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.9						3.0
01	252	4.0						3.2
02	245	3.4						3.3
03	242	2.7						3.2
04	260	2.3						3.1
05	285	2.2						2.9
06	265	3.1			---	---		3.1
07	250	5.1	250	---	---	2.3		3.3
08	300	6.3	240	---	123	2.7	3.0	3.2
09	315	7.2	235	4.5	123	3.1	3.1	3.0
10	310	8.2	230	4.6	122	3.3	3.1	3.0
11	310	8.3	230	4.7	119	3.5	3.0	3.0
12	320	8.6	230	4.7	121	3.5	3.0	3.0
13	310	8.7	230	4.7	121	3.5		3.0
14	300	8.8	230	4.6	121	3.4		3.0
15	290	8.7	230	4.5	123	3.2		3.1
16	275	8.0	232	4.3	123	2.9		3.3
17	260	7.5	240	---	130	2.5		3.4
18	240	6.5			140	1.8		3.3
19	240	5.7						3.2
20	248	5.0						3.1
21	260	4.1						3.1
22	280	4.0						3.0
23	280	3.9						3.0

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 74

Djibouti, French Somaliland (11.5°N, 43.1°E) February 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	5.0						(3.2)
01	240	4.4						3.3
02	220	4.5						3.5
03	215	3.6						3.55
04	<225	2.5						3.5
05	235	1.7						3.65
06	240	4.2			---	<1.5		3.45
07	(245)	6.8	222	---	112	2.4	3.4	3.35
08	285	7.8	215	4.2	108	2.8	3.8	3.2
09	320	8.6	205	4.4	108	3.2	4.4	2.8
10	340	7.4	200	4.5	107	3.4	6.4	(2.75)
11	350	7.2	195	4.6	105	---	6.4	2.75
12	350	8.1	200	4.6	107	(3.6)	6.4	2.8
13	335	8.0	195	4.5	107	3.4	4.4	2.85
14	320	8.6	205	4.4	107	3.3	4.2	2.95
15	300	9.2	205	4.3	111	3.0	3.8	3.05
16	280	9.3	220	---	109	2.6	3.6	(3.15)
17	240	>9.0	235	---	---	1.9	3.4	(3.15)
18	245	>9.2					2.6	(3.15)
19	250	8.2						<3.1
20	260	7.2					2.4	<3.05
21	245	7.0					3.0	(3.2)
22	240	(6.6)					2.2	(3.05)
23	240	>5.0						3.2

Time: 35.6°E.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 75

Tananarive, Madagascar (18.8°S, 47.8°E) February 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.8					1.8	3.1
01	250	4.5						3.2
02	255	3.8					1.6	3.2
03	260	3.1					2.2	3.1
04	260	2.8						3.0
05	280	2.4						3.0
06	260	3.6			163	1.6		3.3
07	260	5.0	250	---	125	2.3		3.3
08	312	5.7	240	4.3	123	2.8	3.0	3.1
09	330	6.4	230	4.5	122	3.2	3.2	3.1
10	360	6.9	222	4.7	121	3.4		2.9
11	360	7.8	228	4.8	121	3.5		2.8
12	330	8.6	230	4.8	121	3.6	3.0	2.9
13	330	8.9	215	4.7	121	3.5		2.9
14	310	8.5	225	4.6	121	3.6		3.0
15	308	9.0	230	4.5	121	3.4		3.0
16	300	8.5	232	4.4	121	3.0	3.0	3.1
17	285	7.8	240	---	121	2.7		3.0
18	260	7.2	250	---	125	2.2	2.6	3.2
19	250	6.7					2.7	3.1
20	250	6.2					1.8	3.1
21	258	5.5					1.8	3.0
22	275	5.1					2.1	3.0
23	270	4.7					1.6	3.0

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 76

Tananarive, Madagascar (18.8°S, 47.8°E) January 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.9						3.1
01	250	4.4					1.7	3.1
02	255	3.6						3.1
03	250	3.1						3.2
04	260	2.6						3.1
05	290	2.4						2.9
06	250	4.2	---	---	132	1.8	2.7	3.2
07	308	5.3	240	---	122	2.5	3.1	3.2
08	355	6.0	230	4.4	120	3.0	3.2	2.9
09	352	6.7	220	4.6	118	3.2	3.5	2.9
10	370	7.6	215	4.7	119	3.5	3.7	2.8
11	380	7.9	210	4.8	120	3.6	3.5	2.7
12	365	8.3	210	4.8	120	3.7	3.5	2.7
13	340	9.0	230	4.8	121	3.6	3.3	2.9
14	320	9.2	218	4.7	120	3.5	3.3	3.0
15	320	8.6	225	4.6	120	3.4	3.5	3.0
16	310	7.6	230	4.5	120	3.1	3.4	3.0
17	308	6.8	235	4.2	120	2.8	3.2	3.0
18	260	6.5	245	---	126	2.1	2.8	3.1
19	260	6.2					2.8	3.0
20	260	6.1					2.3	3.0
21	270	5.6					2.1	3.0
22	280	5.3					1.5	2.9
23	270	5.2					1.7	3.0

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 77

Tokyo, Japan (35.7°N, 139.5°E) May 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.3					3.0	2.6
01	300	9.1					3.0	2.6
02	280	8.7					2.8	2.6
03	270	8.1					3.0	2.6
04	290	7.8					2.8	2.6
05	270	8.6			100	1.6	2.9	2.7
06	240	10.0			100	2.6	3.7	2.8
07	230	10.6			100	3.4	5.0	2.8
08	270	10.7	220		100	3.6	5.5	2.7
09	320	10.9	240		100	3.8	5.6	2.5
10	360	11.5	240	6.5	100	4.0	5.4	2.6
11	360	11.8	230	6.2			4.9	2.6
12	360	12.1	220	6.2			5.1	2.5
13	360	11.8	240	6.1			4.8	2.6
14	360	11.5	220	6.0			4.4	2.6
15	340	11.3	240		100	3.8	4.2	2.6
16	330	10.9	240		100	3.6	5.3	2.6
17	300	10.6	250		100	3.1	5.5	2.7
18	290	10.0	260		100	2.3	5.2	2.7
19	260	9.4					4.8	2.7
20	290	8.8					5.0	2.6
21	320	9.0					4.8	2.5
22	300	9.3					4.8	2.6
23	300	9.4					3.8	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 15 minutes, manual operation.

TABLE 78

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

Form accepted June 1948

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), July (Month), 1954

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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	260	290	280	260	250	230	G	440	310	390	420	(370)A	A	G	450	[430]S	410	(410)S	370	300	(260)A	240	290	[300]A
2	(300)S	260	280	(280)S	(280)S	[290]A	300	300	290	390	310	350	320	560	480	360	(420)S	380	(300)A	[290]A	270	250	230	[250]A
3	(270)S	280	(300)S	(310)S	A	(370)S	A	A	320	[320]A	330	280	360	490	340	390	380	330	330	300	(260)S	250	230	230
4	250	(260)S	S	S	(290)S	240	350	270	310	370	330	330	380	450	420	380	[350]A	320	300	240	220	250	(250)S	250
5	250	280	(290)S	[280]S	(280)S	250	230	380	320H	250	400	320	470	480	420	350	340	300	(300)A	270	260	270	280	(290)S
6	[280]S	260	[270]A	(280)S	S	A	L	400	A	A	C	G K	G K	A K	A K	G K	A K	390K	380K	280K	240K	270K	(230)S	(270)S
7	(270)S	(270)S	[280]S	290	270	A	L	430	G	G	G	G	G	G	470	A	G	460	350	260	A	A	S	S
8	A	A	A	230	260	240	260	330	330	370	370	A	A	400	360	380	320	320	290	270	250	280	250	250
9	260	280	280	(270)S	(270)S	260	280H	440	[400]A	360	(370)A	320	440H	430	430	(320)S	370	320	300	280	280	(260)S	(280)S	[280]A
10	A	(280)A	[290]A	(300)S	(300)S	250	280	380	350	340	A	A	A	410	430	430	340	[340]A	300	260	[260]A	(270)A	A	A
11	A	A	A	A	A	(270)S	A	410	A	280	300	[380]A	410	430H	460	470	420	330	280	250	230	(230)A	(260)S	A
12	A	250	(280)S	[300]S	(320)S	(250)S	G	310	300	300	350	400	G	350	350	360	[380]A	350	[320]A	300	[280]A	250	220	220
13	250	290	(300)S	(290)S	(330)S	270	(330)L	[320]A	(330)A	[330]A	330	310	G	380	[390]A	400	A	[340]A	290	[260]A	240	(240)A	[260]A	(270)A
14	(280)S	(320)S	(290)S	S	S	250	G	G	A	A	A	470	G	G	A	G	G	A	A	270	250	(250)S	S	A
15	A	S	S	S	(300)S	(290)S	G	G	G	390	320	510	G	490	410	[410]C	410	340	330	(280)A	(270)A	(250)A	(290)A	(290)S
16	250	[260]A	260	250	(270)S	240	L	470	340	A	A	380	[420]A	450H	(400)A	[410]C	370	310	300	260	240	250	250	280
17	270	(250)A	[270]A	(290)S	(310)S	(280)S	[280]L	280	G	330	290	370	330	390	370	350H	330	350	300	250	250	230	250	290
18	290	280	260	(280)S	(260)S	270	260	290	A	460	450	G	440	[460]A	480	580	420	370	340	270	(230)S	240	250	(250)S
19	(290)S	S	(280)S	S	S	270	330	580	420	390	400H	(410)S	G	400H	420	400	330	380H	330	250	240	250	240	260
20	270	280	300	(270)S	S	250	G	310	370	370	[420]S	S	450	G	A	A	430H	330H	320	260	250	250	A	A
21	A	A	A	A	S	250	360	380	300	320	[320]S	330	G	400	410	390	[390]A	390	320	250	260	240	240	(250)S
22	270	280	290	(290)S	(280)S	(260)S	G	G	S	360	G	470	G	G	G	580	390H	320	(310)A	260	240	290	(300)S	(300)S
23	250	250	(290)S	A	A	250	L	560	490	380	300	380	440	[480]A	(320)S	400	420	350	320	270	240	240	250	270
24	260	290	280	[300]S	(320)S	(280)S	470	L	G	470	400	500	G	460	G	490	480	350	330	270	240	240	280	300
25	(300)S	310	(300)S	S	S	320	A	470H	G	G	G	G	G K	G K	G K	540A	(530)K	380K	A K	270K	250K	[250]A	250	[270]A
26	290	300	[290]A	(280)S	(300)S	260	L	G	390	360	A	650	G	A	450	470	380	400	310	[280]A	250	270	(280)S	(280)S
27	[280]A	(290)S	300	290	A	A	240	450	350	350	390	390	420	400	370	[380]A	400	340	310	290	250	240	240	250
28	290	(310)S	(300)S	300	(300)S	260	280H	(400)S	G	G	430	400	G	G	470	520	400	460	360	280	230	280	280	280
29	(280)S	[280]A	270	[280]A	(300)A	330	360	410	G	410	390	G	620	400	510	(380)S	410	370	360	270	240	240	290	290
30	270	270	(280)S	250	260	250	G	620	A	370	(440)S	A	G	A	A	A	A	A	A	A	260	260	260	(280)S
31	280	300	260	300	280	250	[290]L	330H	390	360H	350H	A	A	A	A	420	380	[340]C	300	280	280	280	270	260
Median	270	280	(280)	(280)	(280)	260	330	410	370	370	380	400	G	460	430	400	400	350	320	270	250	250	250	(270)
Count	25	26	26	23	21	28	23	29	25	28	26	26	27	27	26	28	28	29	28	30	30	30	27	26

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 79

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

Form accepted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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	3.5	2.9	2.7 F	(2.4) S	(2.2) S	2.7	< 3.2 G	3.8	4.4	(4.3) P	4.3	(4.6) A	[4.9] A	< 4.2 G	(4.3) P S	4.2	4.2	4.2	4.1	4.3	4.7	(3.9) S	(3.5) F S	[3.2] A
2	(3.0) A S	(2.9) F S	(2.3) S	(2.0) S	(2.0) S	2.9	(4.0) F H	4.3	(4.2) S	4.6	5.2	5.0	5.6	4.6	4.5	4.8	4.5	4.5	(4.8) S	[5.1] A	5.8	5.8	4.1	(3.2) S
3	2.8 F	2.3	(2.3) F S	(2.1) S	[1.8] A S	(3.7) F S	[4.0] A	4.4	4.8 H	[4.8] A	5.2	6.1 H	5.0	4.7	4.9	4.8 H	4.6	4.5	4.4	4.6	5.4	5.6	4.9	4.2
4	3.1	(2.4) J S	(2.1) J S	(2.0) J S	(1.9) J S	2.7	3.6	4.8	4.7	4.7	5.0	5.1	4.8	4.5	4.7 H	4.5	[4.6] A	4.8	4.9	5.4	5.0	4.2	3.8	3.3
5	3.1	2.3	(2.1) S	(2.1) S	(2.1) S	3.5	4.2	4.3	4.6 H	5.4	4.7	(4.8) P S	4.5	4.5 H	4.6	4.9	(5.1) S	5.0	4.9	5.3	5.8	5.3	4.3	4.1
6	(3.6) J S	(2.6) P S	[2.7] A	(2.3) S	S	A	3.0	3.6	A	A	C	< 4.0 G K	< 4.0 G K	A K	A K	< 3.9 G K	[4.7] A K	4.4 K	4.2 K	4.9 K	4.5 K	4.3 K	(2.5) S	(2.9) S
7	(2.5) J S	(2.4) J S	[2.3] S	(2.2) F S	(2.2) F S	2.9	(3.4) S P	3.8	< 3.8 G	< 3.9 G	< 4.0 G	< 4.1 G	< 4.0 G	< 4.0 G	4.2	[4.3] A	< 3.8 G	3.9	3.8	3.9	[3.7] A S	[3.8] A	(3.5) J S	(3.5) S P
8	[3.0] A	[2.7] A	[3.1] A	(2.9) F S	(2.4) P	2.9 F	4.1	4.3	4.8	4.7	4.8	A	A	4.7	5.0	4.8	5.2	5.0	4.9	4.9	4.8	4.2	(3.9) F S	3.0 F
9	(2.8) F	(2.4) F S	2.2	2.3	(2.4) S	3.1	4.4 H	4.5 H	[4.9] A	4.7	(5.0) A	5.0	4.8 H	4.7	4.5	[4.9] S P	4.3	4.6	4.9	5.0	4.7	4.2	(3.4) S	[3.7] A
10	[2.7] A	(2.7) A S	[2.7] A	2.7	(2.0) F S	2.9	3.9 H	4.1 H	4.3 H	4.6	A	A	(4.7) P A	4.8	4.7	4.5	4.8	[4.9] A	4.5	4.7	[4.6] A	4.5	3.9	A
11	A	A	A	A	A	2.7	[3.6] A	3.8	[4.4] A	5.4	5.0	[4.8] A	4.7	4.7 H	4.2	4.5	4.5	4.8	5.5	5.2	5.5	4.5	4.0	[3.5] A
12	(3.0) J A	(2.8) P S	2.2	(1.8) S	(2.2) F S	2.8	< 3.2 G	4.3	4.8	4.9	4.8	4.7	< 4.2 G	5.4	5.3	4.8	[4.6] A	4.7	4.7	5.0	5.7	6.0	5.6	(3.8) F S
13	2.9	(2.2) J S	1.9	1.9	(2.1) F S	(2.4) S	(3.4) S	[3.6] A	(4.4) P A	[4.6] A	4.7	4.7	< 4.2 G	4.5	[4.6] A	4.6	[4.6] A	[4.6] A	4.7	[4.6] A	4.6	4.1	3.3	2.5
14	(2.3) P S	(2.0) P S	2.2	[2.3] F S	(1.8) J S	2.5	< 3.0 G	< 3.3 G	[< 3.6] A	[< 4.7] A	(4.5) A	4.2	< 4.2 G	< 4.3 G	[4.0] A	< 3.9 G	< 3.8 G	A	A	4.6	4.4	(4.0) S	S	A S
15	A S	S	S	S	(2.1) F S	(2.5) J S	< 3.4 G	< 3.6 G	< 3.7 G	(4.6) S	4.7	4.4	< 4.1 G	4.4	(4.4) S	[4.4] C	4.4	4.2	4.1	4.2	(4.6) S	(4.3) A	(4.1) S P	(3.4) S
16	(3.2) J S	[3.0] A	(2.7) S	(2.7) S	(2.3) S	2.9	3.6	3.8	4.5	A	A	4.8	(4.5) A	4.5 H	(4.6) -	[4.6] C	5.2	5.6	5.6	5.2	(4.4) P S	4.7	3.8	(3.7) F S
17	3.5	(3.1) S	[2.6] A	(2.2) F S	2.1 F S	(2.3) P S	3.5	4.2	< 3.8 G	4.8	5.3	4.8	5.0	4.8	4.7	4.9 H	4.5	4.4	4.4	(4.6) -	4.7	(4.6) S	3.7	3.1
18	2.4	2.4 F	(2.5) F S	(1.4) F S	(1.9) S	2.4	3.3	3.7	3.9 A	4.1	(4.3) S	< 4.1 G	4.3	[4.3] A	4.3	4.5	(4.4) S	4.5	4.4	4.5	5.0	4.3	(2.4) S	(2.6) S
19	(2.3) S	(2.4) J S	(2.3) J S	S	S	(2.4) S	3.5	3.7	4.3	(4.6) S P	4.5 H	(4.5) S	< 4.2 G	4.5 H	(4.5) S P	4.4	4.7	4.4 H	4.5	4.7	4.8	4.5	(4.0) J S	3.3
20	2.4	2.2	2.0	(2.2) S P	(1.7) J S	2.5 -	< 3.3 G	4.1	(4.5) S	4.7	[4.3] S	(4.4) S	4.3	< 4.1 G	[< 4.0] A	[4.0] A	4.3 H	4.8 H	(4.5) S	4.8	(4.5) S P	3.9	A	A S
21	A	A	A S	A S	S	2.6	3.5	3.4	4.7	(4.8) S	(4.5) J S	4.7	< 4.2 G	4.8	4.7	4.7	[4.6] A	4.5	(4.5) S	4.4	5.0	(4.4) P	3.4	3.5
22	(2.6) F S	(2.4) S P	2.3	(2.3) S	(2.2) S	(2.5) S	< 3.1 G	< 3.6 G	(4.1) J S	(4.4) S	< 4.2 G	4.7	< 4.2 G	< 4.1 G	< 4.0 G	4.2	4.5 H	4.5	4.4	4.5	3.7	3.1	(2.8) S	(2.6) S
23	(2.4) S	2.3	(2.1) P S	A	A	2.5	3.4	3.7	4.1	4.5	4.7	4.9	4.7	[4.6] A	(4.5) -	4.5	(4.4) S P	4.7	4.6	5.2	5.3	4.5	3.8	3.1
24	2.8	(2.4) S	2.2 F	(1.9) J S	1.9	2.4	3.2	3.4	< 3.7 G	4.3	4.5	(4.6) S P	< 4.1 G	4.4	< 4.1 G	4.3	4.3	4.7	4.4	4.7	4.7	3.8	3.0	2.3
25	2.3	2.2	(2.0) S	(1.7) S	1.7	2.3	3.0	3.7 H	< 3.7 G	< 3.9 G	< 3.9 G	< 4.0 G	< 4.0 G K	< 4.0 G K	< 4.0 G K	4.2 K	(4.1) S K	4.5 K	[4.6] A K	4.7 K	5.0 K	[4.5] A	4.0	[3.7] A
26	2.9	(3.3) F S	(3.0) J A	2.8	2.3	3.0	3.7	< 3.7 G	4.1	4.6	[4.7] A	(4.3) S	< 4.1 G	[< 4.3] A	4.4	4.3	(4.4) S	4.1	4.3	4.6	(4.8) S	(3.7) S P	(3.0) J S	(3.0) S
27	(2.8) A	(2.7) S	2.4	(2.3) S	A S	A	3.5	3.7	4.5	4.7	4.7	4.8	4.8	4.6	4.8	[4.5] A	(4.3) S P	4.5	4.4	4.4	5.6	5.4	4.2	3.5
28	2.9	(2.4) S	(2.2) S	2.2	2.0	(2.4) S	3.1 H	(3.5) S	< 3.7 G	< 3.8 G	4.3	(4.5) F S	< 4.1 G	< 4.0 G	4.3	4.2	4.2	4.1	4.3	4.5	(4.5) S	(3.5) S	(3.5) J S	(3.6) F S
29	(2.9) F S	(3.3) A	3.1	[2.6] A	(2.2) F	2.5	3.4	3.8	< 3.7 G	4.3	4.6	< 4.1 G	4.3	4.6	(4.5) P S	4.6	4.3	4.3	4.3	4.7	(4.7) J S	4.3	3.5 F S	3.2
30	3.1	2.9	2.6	(2.5) S P	(2.2) F S	(2.4) S P	< 3.3 G	(3.7) P S	[4.0] A	4.4	(4.4) S P	[4.3] A	< 4.2 G	A	A	A	A	A	A	A	5.0	4.2	3.4	(2.7) F S
31	(2.5) S	(2.5) F S	2.4 F S	(2.1) S	1.9	2.5	3.4	3.9	4.3	4.7 H	4.8 H	[4.8] A	(4.7) A	A	A	4.4	(4.3) S	[4.4] C	4.5	4.3	4.6 S	3.7 F	3.6	3.0
Median	(2.9)	(2.4)	(2.3)	(2.2)	(2.1)	2.5	3.4	3.8	4.3	4.6	4.6	(4.7)	(4.3)	4.5	4.5	4.5	4.4	4.5	4.5	4.7	4.8	4.3	3.8	(3.2)
Count	28	28	28	26	25	29	31	31	30	29	28	29	30	28	28	30	30	29	29	30	31	31	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 80

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

Form accepted June 1946

IONOSPHERIC DATA

foF2 (Characteristic) . Mc (Unit) July (Month) , 1954

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 38.7°N , Long. 77.1°W

75°W Mean Time

Scaled by: E.J.W. , J.W.P. , J.J.S.

Calculated by: E.J.W. , J.W.P. , J.J.S.

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	3.1	(2.7)	(2.8)	(2.3)	(2.0)	3.0	3.7	4.5	4.1	4.2	4.3	A	A	< 4.2	(4.3)	(4.2)	(4.1)	(3.9)	(4.2)	4.3	4.5	(3.9)	(3.3)	[3.1]
2	(2.9)	(2.6)	(2.2)	(1.8)	(2.4)	3.2	4.2	4.5	4.2	4.8	5.2	5.3	5.0	4.6	4.5	4.7	4.5	4.8	4.9	5.3	5.9	4.8	[3.6]	3.1
3	2.7	(2.2)	(2.1)	[2.2]	(2.3)	(3.7)	4.2	[4.9]	4.8	4.7	5.2	6.0	4.8	4.8	4.8	4.8	4.5	4.2	4.4	4.8	5.7	5.4	4.3	4.1
4	(2.9)	(2.2)	(2.1)	(2.0)	(2.0)	< 3.1	4.1	4.9	4.8	4.8	5.0	4.8	4.5	4.5	4.5	[4.5]	4.7	4.8	4.9	5.5	4.9	4.2	3.5	(3.2)
5	2.7	(2.1)	[2.1]	(2.1)	2.4	3.8	(4.2)	4.8	5.3	(4.5)	4.7	4.9	4.7	4.5	4.9	4.9	5.0	4.8	5.0	5.4	5.5	4.9	4.2	4.0
6	(3.3)	(2.5)	(2.3)	S	S	A	3.3	A	A	C	< 4.0	< 4.1	< 4.1	A	A	4.2	4.5	4.3	4.2	4.4	4.3	4.1	(3.4)	(2.7)
7	(2.5)	(2.4)	2.2	(2.2)	(2.2)	3.2	< 3.5	(3.8)	(4.2)	< 4.0	< 4.1	< 4.0	< 4.1	< 4.0	4.3	[4.2]	4.0	4.1	[3.8]	(3.9)	[3.8]	(3.7)	(3.7)	[3.2]
8	(2.8)	[3.0]	(3.1)	(2.4)	(2.5)	3.6	4.2	4.5	4.8	4.6	A	A	(4.5)	4.8	4.9	5.0	5.3	4.9	4.8	4.9	4.3	(4.1)	(3.7)	(2.9)
9	(2.5)	(2.2)	(2.1)	2.2	(2.5)	3.6	[4.4]	4.6	[4.4]	4.8	5.6	4.7	4.7	4.6	4.7	4.5	4.7	4.3	4.9	5.0	4.2	3.7	(3.2)	3.0
10	[2.8]	(2.7)	(2.5)	2.3	(2.1)	3.1	4.0	4.5	[4.4]	A	A	A	4.6	[4.9]	4.6	4.5	4.8	4.6	(4.5)	4.6	[4.6]	[4.2]	3.5	A
11	A	A	A	A	2.3	(3.7)	3.5	(3.9)	4.8	5.4	5.1	4.7	4.7	4.6	(4.5)	[4.5]	4.7	5.3	5.3	5.3	5.1	4.0	A	A
12	(3.0)	(2.5)	[1.9]	A	[2.5]	3.2	3.3	4.7	4.8	[4.7]	4.9	4.5	5.0	5.3	5.1	4.7	4.5	[4.7]	4.8	[5.4]	5.9	6.0	4.9	(3.4)
13	(2.6)	2.0	(2.2)	(1.9)	(1.9)	3.0	(3.5)	(3.6)	M	A	4.8	< 4.2	(4.3)	A	A	A	4.5	4.6	A	A	(4.5)	3.9	(3.0)	(2.5)
14	2.3	(2.0)	F	[1.7]	S	3.1	< 3.1	< 3.3	< 3.8	A	< 4.1	A	< 4.1	A	< 4.0	< 3.9	A	A	A	4.4	(4.4)	S	A	A
15	A	S	S	(2.1)	(2.2)	(3.0)	3.7	< 3.6	4.4	5.0	4.6	4.3	< 4.1	4.6	4.5	[4.4]	4.3	4.3	4.3	(4.5)	(4.8)	[4.2]	(3.6)	(3.6)
16	[3.2]	(2.7)	(2.5)	2.4	(2.8)	3.2	3.8	4.1	(4.4)	A	A	4.8	4.6	4.8	4.6	4.7	5.7	5.5	5.2	5.6	4.7	4.5	3.7	3.5
17	3.2	[2.7]	(2.3)	(2.2)	(2.2)	3.0	3.8	< 3.8	4.4	5.2	4.8	5.0	4.7	4.8	5.0	4.8	(4.5)	4.4	4.5	4.3	4.7	3.9	(3.5)	3.0
18	2.9	2.6	2.2	1.9	1.7	2.9	3.5	< 3.5	3.7	< 3.7	< 4.1	< 4.1	A	A	4.4	4.4	4.4	4.6	4.5	4.8	4.6	3.5	(2.9)	[2.4]
19	(2.4)	S	S	S	S	3.0	(3.5)	4.5	4.4	4.5	(4.6)	(4.5)	4.4	(4.4)	(4.8)	4.3	4.5	4.5	4.7	4.9	4.7	4.3	(3.5)	(3.1)
20	(2.7)	(2.1)	2.2	2.0	(1.9)	3.1	3.6	(4.1)	4.6	[4.7]	4.5	[4.4]	< 4.1	< 4.0	A	4.2	(4.6)	(4.5)	4.4	(5.1)	4.7	3.3	A	A
21	A	A	A	A	(2.0)	3.2	3.8	4.4	[4.2]	[4.2]	4.4	< 4.2	4.7	4.7	4.6	(4.7)	4.6	4.4	4.8	4.9	4.8	(4.3)	3.8	3.1
22	2.5	(2.4)	2.3	(2.1)	(2.1)	(3.1)	< 3.2	3.4	4.5	4.3	(4.5)	4.5	< 4.2	< 4.2	[4.2]	4.3	4.6	4.4	4.3	4.0	3.5	2.8	(2.7)	(2.2)
23	(2.4)	[2.2]	A	A	(2.1)	3.1	3.6	(4.0)	4.4	4.7	4.7	4.9	4.7	4.4	4.5	4.4	4.5	4.6	5.0	5.4	5.2	4.0	(3.3)	3.1
24	(2.5)	2.2	(2.0)	1.9	(2.0)	2.9	3.5	3.5	< 3.8	4.2	(4.2)	< 4.1	< 4.1	< 4.1	< 4.0	4.3	4.3	4.5	5.7	4.9	4.2	(3.4)	(2.7)	2.2
25	[2.2]	(2.1)	(2.0)	[1.7]	1.9	2.9	3.5	(3.9)	< 3.8	< 4.0	[4.0]	< 4.0	< 4.1	< 4.1	4.3	[4.2]	4.3	4.6	4.8	4.7	(4.8)	(4.1)	3.4	2.8
26	(2.9)	[3.2]	3.0	(2.7)	(2.6)	3.2	3.9	< 3.7	[4.4]	A	(4.2)	4.2	A	A	4.3	4.5	4.3	4.3	4.7	4.6	(4.4)	3.2	3.1	(3.0)
27	(2.7)	(2.7)	(2.4)	A	A	3.1	< 3.7	4.1	4.6	4.6	4.7	4.7	4.7	4.8	(4.6)	4.4	4.5	4.6	4.8	5.5	(5.1)	4.8	4.2	(3.1)
28	(2.8)	2.3	2.3	(1.9)	1.9	2.8	(3.3)	< 3.7	< 3.9	< 3.9	4.5	(4.5)	< 4.1	< 4.0	4.3	4.2	(4.1)	4.2	4.2	(4.5)	(3.6)	(3.5)	(3.2)	(2.8)
29	(3.2)	(3.1)	(2.4)	[2.6]	2.2	3.0	3.6	(3.9)	4.0	4.3	4.5	< 4.2	(4.5)	(4.3)	(4.6)	(4.5)	4.3	4.3	4.4	4.7	(4.7)	(4.0)	3.3	(3.3)
30	3.0	2.8	2.6	2.3	1.9	3.2	< 3.3	(3.9)	(4.2)	4.7	(4.5)	4.5	4.5	(4.6)	A	A	A	A	A	A	(4.7)	3.8	3.0	(2.4)
31	[2.4]	(2.4)	(2.3)	(2.0)	(2.2)	3.0	3.7	4.1	4.3	(4.5)	4.8	A	A	A	4.2	4.9	C	C	4.5	4.5	4.4	(3.8)	3.3	2.4
Median	(2.8)	(2.4)	(2.3)	(2.1)	(2.2)	3.1	3.7	4.0	4.4	4.6	4.6	4.5	4.5	4.6	4.5	4.4	4.5	4.6	4.7	4.8	4.7	4.0	(3.4)	(3.1)
Count	28	27	25	24	27	30	31	30	24	25	28	26	27	25	27	27	28	28	28	29	31	30	28	27

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 81

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

Form accepted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), July (Month), 1954

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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						Q	250	[230]R	210H	190H	180H	R	R	(230)R	200H	200H	200H	220H	R	R				
2						R	R	230	190H	190H	180H	180H	170H	200H	190H	210H	220	R	R	R				
3						240	R	R	R	R	180H	R	R	200	180	170	(200)S	230	240	S				
4						Q	230	210	200	[200]R	190H	180H	220	180H	(200)R	200	[220]R	230	250	(230)S				
5						220	210	200H	(220)R	(210)R	190H	(200)H	200H	(210)R	220	200H	R	R	R	R				
6						R	(220)R	[210]R	(200)R	R	C	210HK	200K	RK	RK	210K	RK	RK	RK	250K				
7						R	240	200	[200]R	200	180	R	R	210H	220H	[220]R	210	220	[220]R	220				
8						Q	240	220H	220	[200]R	180H	R	R	210	210H	210H	210	(200)R	(240)R	230	240			
9						Q	250H	R	R	R	R	200H	180H	R	R	200	230H	R	R	R				
10						Q	230	220H	R	R	R	R	R	200H	210H	200H	R	R	220H	R				
11							R	R	R	R	(240)R	[210]R	190H	190H	180H	170H	R	R	R	R				
12							(230)R	230	(220)R	[210]R	(200)R	(170)H	190H	180H	170H	(210)R	R	R	R	R				
13							230	R	R	R	R	200	200	R	R	R	R	R	R	R				
14							210	230	R	R	R	190	170H	210	[200]R	200H	(210)R	R	R	(250)S				
15						S	240	220	(220)R	(210)R	(220)R	210	200H	180H	210	[210]C	210	240H	(250)R	R				
16						Q	230H	R	R	R	R	R	R	210H	R	[210]C	210H	220	R	R				
17						Q	250	(240)R	(240)R	200	R	R	R	210	200H	180H	200	200H	220	230				
18							240	210H	[200]R	200	220H	190H	200H	[200]R	200	190H	230H	200H	220H	(240)S				
19							250	220	[220]R	210	200H	180	190	180H	200H	[200]R	210	(240)R	[240]R	(240)S				
20							240	220	200H	200	210	200	190H	210	R	R	210H	[200]R	200	220				
21							230	(220)R	230	(220)R	190	200H	190	170H	220H	R	R	[210]R	200H	(240)S				
22							220	220H	250	200H	200	190	170H	(200)R	200	R	R	200H	R	R				
23							230	220	230	220	[210]R	200	[210]R	(220)R	190H	200H	200	200H	210	250				
24							200	210H	200H	230	210	200H	220	200H	200	R	R	R	R	R				
25							200	220H	(200)R	200H	[200]R	190	190K	200K	RK	RK	RK	RK	RK	RK				
26							230	220	230	(210)R	[200]R	190H	220H	[220]R	220	230	210H	230	R	R				
27							R	210H	[210]R	210	200H	200H	[200]R	200	R	R	R	200H	230	240				
28							R	200H	220H	200	190	200H	200	220	200	210	200H	220H	[230]R	250				
29							220	(220)R	210	210H	180H	180H	170H	200	190H	190	220H	200H	240	240				
30							240	(240)R	[230]R	220H	200H	200R	210	R	R	R	R	R	R	R				
31							240H	210H	210H	(220)R	200	R	R	R	R	220	200	[220]C	240	R				
Median						—	230	220	220	210	200	200	200	200	200	200	210	220	230	240	—			
Count						2	26	26	24	23	24	23	23	26	22	23	19	19	16	14	1			

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 82

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

Form accepted June 1946

IONOSPHERIC DATA

foF1 (Characteristic), Mc (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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						Q	3.2	3.5	3.8 H	3.9 H	4.0 S	A	A	4.2	4.0 H	4.0 H	4.0 H	3.6 H	A	A				
2						A	3.2	3.7	3.9 H	4.0 H	4.0 H	4.2 H	4.2 H	4.2 H	4.1 H	(4.0) S	3.9	3.7	A	A				
3						3.1 F	A	A	A	A	4.2 H	A	A	4.3	4.2	4.1	3.9	3.8	3.4	L				
4						Q	3.2	3.6	3.8	4.1	4.1 H	4.2 H	4.3	4.2 H	4.1	3.9	[3.8] A	3.7	3.3	L				
5						L	L	3.6 H	(3.9) A	4.1	4.1 H	4.2 H	4.2 H	4.2	4.1	4.0 H	3.9	3.9	A	A				
6						A	L	A	(3.7) A	A	C	4.0 H A	4.0 K	A K	A K	3.9 K	A K	A K	A K	L K				
7						A	L	3.5 H	3.8	3.9	4.0	4.1	4.0	4.0 H	4.0 H	[3.9] A	3.8	3.6	A	L				
8						Q	L	3.6 H	3.8	(4.0) A	4.0 H	A	A	4.2	4.0 H	4.0 H	(3.9) S	3.8	L	L	L			
9						Q	L	(3.9) S	A	A	A	4.2 H	4.2 H	4.2	4.1	4.1	3.9 H	[3.6] A	(3.5) A	L				
10						Q	3.3	3.5 H	A	A	A	A	A	4.2 H	4.2 H	4.0 H	(3.9) A	[3.6] A	3.5 H	A				
11							A	A	A	A	4.1	[4.2] A	4.2 H	4.1 H	(4.0) S	3.9 H	3.8	(3.8) A	H	A				
12							3.2	3.6	(3.8) A	4.0	4.2	4.2 H	4.2 H	4.2 H	4.1 H	4.0	[3.8] A	3.7	A	A				
13							3.2	A	A	(3.9) A	4.0	4.1	4.2	A	A	A	A	A	(3.3) A	A				
14							3.0	3.3	(3.7) S	A	A	4.1	4.2 H	4.0	[4.0] A	3.9 H	(3.8) A	A	A	L				
15						S	3.4	3.6	3.7	3.9	4.1	4.2	4.1 H	4.2 H	4.1	[4.0] C	(3.8) S	3.6 H	3.4 H	A				
16						Q	3.4 H	3.5	3.7	A	A	A	A	4.1 H	A	[4.0] C	3.8 H	3.6 F	3.3	A				
17						Q	L	L	3.8	3.9	A	A	4.1	4.2	4.2 H	4.0 H	3.9	3.6 F	3.2	L				
18							L	3.5 H	[3.7] A	3.9	4.0 H	4.1 H	4.1 H	[4.2] A	4.2	4.0 H	3.9 H	3.6 H	3.5 H	L				
19							3.2	3.5	(3.9) S	4.0	4.2 H	4.2	4.2	4.2 H	4.1 H	(3.9) A	3.8 H	3.7	A	L				
20							3.3	3.5	3.8 H	4.0	4.1	4.1	4.0 H	4.1	A	A	3.9 H	[3.8] A	3.6	L				
21							3.4	3.6	3.8	3.9	4.1	4.2 H	4.2	4.0 H	4.0 H	A	A	3.8 H	3.1 H	L				
22							3.1	3.6 H	(3.9) S	(3.9) S	4.2	4.2	4.2	4.1	4.0	4.0	3.9	3.7 H	A	A				
23							3.2	3.5	3.8	4.0	4.1	4.2	4.2	(4.1) A	4.1 H	4.0 H	(3.9) S	3.7 H	3.3	L				
24							3.0	3.3 H	3.7 H	3.9	4.0	4.2 H	4.1	4.2 H	4.1	(3.9) S	3.9	3.6	A	A				
25							S	3.4 H	3.7	(3.9) S	3.9	4.0	4.0 K	4.0 K	4.0 K	3.9 K	3.9 K	A K	A K	A K				
26							L	3.7 S	3.7	3.9	[4.0] A	4.1 H	4.1 H	[4.0] A	4.0	4.0	3.9 H	3.7	A	A				
27							L	3.5 H	[3.7] A	3.9	4.1 H	4.1 H	4.1	4.2	4.1	[4.0] A	3.9	3.7 H	3.3	L				
28							A	3.2 H	3.7 H	3.9	4.0	4.0 H	4.1	4.0	4.0	3.9	3.8 H	3.5 H	3.3	L				
29							3.0	3.6	3.7	3.9 H	4.1 H	4.1 H	4.1 H	4.2	4.1 H	4.0	3.8 H	3.6 H	3.5	L				
30							3.3	3.4	[3.7] A	4.0 H	4.0 H	[4.1] A	4.2	A	A	A	A	A	A	A				
31							L	3.5 H	3.8 H	4.0	4.1	A	A	A	A	4.0	3.8	[3.6] C	3.5	A				
Median						—	3.2	3.5	3.8	3.9	4.1	4.2	4.2	4.2	4.1	4.0	3.9	3.7	3.3	—	—			
Count						1	17	26	26	24	25	24	25	27	25	27	27	26	16					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 83

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

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 84

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

Form accepted June 1946

IONOSPHERIC DATA

foE (Characteristic), Mc (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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						S	2.2 H	A	A	A	2.9	(3.0) A	A	A	A	(3.2) S	[2.8] S	(2.5) S	S	A				
2						S	(2.0) A	(2.4) P	2.7	A	A	A	A	A	3.1	(2.9) P	2.8 H	2.6	2.3	S				
3						S	2.1 H	2.5 S	2.7 H	3.0	3.1 H	3.1	(3.2) A	[3.2] A	(2.8) P	(2.5) P	(2.4) P	S	S	S				
4						S	1.9	2.4 H	(2.7) S	2.9	3.0 H	[3.0] A	3.0	3.0	(3.0) S	3.0	2.9	2.6	(2.1) S	S				
5						S	A	A	A	S	A	S	A	3.2	3.2	(3.2) S	(3.0) S	(2.7) S	S	S				
6						S	(1.8) S	S	(2.4) S	(2.6) S	[2.8] C	2.9 K	3.1 K	(3.2) A K	3.2 K	3.0 K	2.8 K	2.5 K	2.1 K	S K				
7						S	(1.8) A	S	S	2.6	2.9	2.9	A	A	A	3.1	2.9	2.5	2.1	S				
8						S	A	2.4	2.7 S	2.9	A	A	A	A	A	3.0	2.8	(2.6) S	2.1	S	S			
9						S	(1.9) S	2.1	2.8 H	3.0	3.0 H	(3.2) P	(3.1) P	[3.0] A	(2.8) P	B	A	(2.5) S	2.1	A				
10						S	2.0 H	(2.4) P	2.7 H	(2.9) P	[3.0] A	3.1	(3.1) P	(3.2) H	3.2 H	(3.0) P	2.9	2.4	A	A				
11							A	(2.4) A	(2.7) A	(2.8) A	A	A	A	A	(3.1) P	(2.9) P	2.9 H	(2.4) H	A	A				
12							A	A	A	A	A	A	A	A	3.2	3.2	3.0 H	2.8 H	2.4	1.8				
13							A	(2.4) S	[2.6] C	(2.9) A	3.0	3.1	(3.2) A	3.2	3.2 H	(3.0) P	2.9	2.7 H	2.1	A				
14							1.8	2.3	2.7	2.9	3.0	3.0 H	A	A	A	3.2 H	3.0 H	2.7	A	S				
15						S	1.8 H	(2.4) S	(2.7) S	[2.8] A	(2.8) P	A	A	3.2	3.2	[3.0] C	2.9	2.8	A	S				
16						S	1.8 H	2.4	2.7	(3.0) A	2.9	2.9	[2.9] A	(2.9) A	A	[3.0] C	2.7 H	2.6	2.1	S				
17						S	1.9	(2.3) A	2.7 H	[2.8] A	3.0	3.0	(3.0) P	3.1	A	A	2.7	2.5	A	S				
18							1.7	(2.2) P	2.6	2.9	3.0	3.0	3.1	3.0	(2.9) P	2.8	[2.6] A	(2.4) S	A	S				
19							1.8	(2.5) S	2.8	(2.8) A	[3.0] A	(3.2) P	(3.2) P	[3.2] A	3.1 H	3.0 H	2.8 H	(2.3) S	(2.1) S	S				
20							(1.8) P	(2.4) P	2.6	A	A	A	A	3.1 H	3.1	3.0	2.9	2.6	A	S				
21							1.8	2.4	2.8	2.9	3.0 H	3.0	(3.0) P	(3.2) H	3.2 H	3.2 H	2.9	(2.4) P	2.0	S				
22							1.8	2.2 H	2.5	2.6	(2.7) P	(3.1) P	(3.2) A	A	A	2.9	2.9 H	(2.5) A	(2.2) A	S				
23							A	2.2	A	A	A	A	A	A	A	A	2.8	2.7 H	2.2	S				
24							1.7	2.3	(2.5) S	2.8	[3.0] A	(3.2) H	A	A	(3.0) A	3.1	3.0	(2.3) S	A	S				
25							A	2.3	2.5	2.7	2.9 H	3.0 H	3.0 K	(3.1) P K	3.0 K	2.9 H K	2.9 K	[2.5] S K	2.1 K	S K				
26							1.8	2.3	2.5	2.7	2.9	(3.0) P	(3.0) A	3.0	3.0	3.0	2.9	S	A	S				
27							A	2.1	(2.4) P	2.7	[2.8] A	(3.0) A	A	A	A	A	2.7	A	A	S				
28							1.8	2.3 H	[2.5] S	(2.7) A	2.9 H	(2.9) P	(2.7) A	3.1 H	3.1 H	3.1	2.8	(2.5) P	2.0	S				
29							A	A	2.7	A	A	A	A	A	A	(2.8) S	2.7	2.6	2.5	S				
30							(1.7) A	2.4	2.6	2.9	(2.9) P	A	A	A	(3.1) A	(3.0) A	2.8	2.5	2.0	S				
31							A	A	2.7	(2.8) P	2.8	A	A	A	A	A	A	C	2.2	S				
Median							1.8	2.4	2.7	2.8	2.9	3.0	(3.1)	3.1	3.1	3.0	2.9	2.5	2.1					
Count							21	24	26	24	23	20	15	17	20	26	29	27	18	1				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 85

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc, Km (Unit), July (Month), 1954

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Lang 77.1°W

75°W Mean Time

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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	E	E	E	G	3.0 110	4.7 110	3.6 100	4.3 100	4.1 110	5.5 100	9.0 100	5.8 100	4.8 100	(3.8) S (100)	(3.2) S (110)	2.9 130	4.1 130	15.0 110	5.2 110	4.2 120	4.2 110	5.2 110
2	4.7 110	E	E	3.1 130	5.0 130	4.2 110	3.9 120	3.7 110	4.2 110	4.7 100	5.4 130	4.0 110	4.1 120	4.0 100	3.6 110	3.3 130	3.9 140	5.8 130	16.0 110	16.0 110	7.2 110	7.6 110	4.6 110	4.8 110
3	3.9 110	5.4 120	4.9 110	7.0 (110) S	5.0 M 110	8.0 110	5.6 120	6.2 110	5.6 110	8.6 110	4.3 110	7.6 M 110	6.6 100	3.4 110	3.8 110	4.0 100	(3.0) S 110	(3.2) S 110	S	S	2.4 120	3.6 110	3.1 110	E
4	(2.4) S 120	E	E	E	E	G	3.2 130	3.7 120	5.8 120	4.8 110	4.7 110	5.0 110	4.5 120	G	4.7 140	4.9 120	5.9 120	3.7 M 130	5.8 M 120	3.3 110	(2.3) S 110	(2.3) S 110	E	3.0 110
5	2.7 100	3.0 100	3.6 100	(3.1) S (110)	2.7 100	G	3.7 120	4.4 110	7.2 110	4.5 110	6.4 110	3.3 110	3.9 110	5.0 130	4.0 130	4.7 130	4.6 120	4.4 120	6.0 120	5.2 110	3.7 110	6.6 110	4.3 110	3.1 110
6	E	4.1 120	4.4 120	4.2 120	E	3.8 120	4.9 110	5.8 110	6.4 110	9.8 100	C	4.5 110	6.4 110	12.5 110	14.4 110	11.5 110	6.0 120	7.4 110	5.2 110	4.2 110	2.7 120	2.3 120	(3.0) S 100	(3.2) S (110)
7	E	3.2 110	(3.7) S 120	4.0 110	4.1 110	4.3 110	4.7 M 110	6.6 M 120	4.5 110	4.9 110	3.7 110	4.2 110	4.5 100	5.3 110	5.2 110	7.6 120	4.7 120	8.4 120	6.0 110	6.4 M 110	11.3 110	11.0 110	4.3 110	8.6 110
8	5.2 110	4.5 110	5.4 100	3.8 100	4.3 100	6.6 M 100	4.3 M 100	4.4 120	4.3 120	5.3 110	8.8 100	10.2 100	8.4 100	4.3 110	3.3 110	4.5 120	5.4 120	5.3 110	5.7 110	3.8 120	6.0 120	7.4 110	8.0 110	(6.8) S 130
9	(2.4) S (120)	3.0 120	4.0 110	4.5 110	5.0 M 110	7.4 120	3.7 120	4.6 120	10.0 120	7.2 120	6.6 110	3.7 120	4.5 110	5.0 110	4.9 110	4.2 110	3.9 110	4.5 130	7.2 120	5.6 110	4.7 110	13.5 100	12.0 100	9.0 110
10	7.2 110	6.8 100	5.4 100	5.0 100	3.4 110	2.7 100	3.7 130	4.4 120	6.6 120	6.2 120	7.6 120	5.8 120	6.4 120	5.4 120	5.2 120	6.0 120	6.8 110	12.0 110	4.2 M 120	12.5 110	6.6 120	4.5 120	5.5 Y 120	8.0 120
11	10.3 M 110	6.8 110	5.6 110	4.2 110	5.7 110	7.4 110	4.9 120	5.0 120	5.6 120	7.6 110	4.7 110	5.4 110	4.2 Y 110	3.1 110	3.7 Y 110	G	5.1 130	5.3 120	4.8 120	5.6 110	3.2 120	5.4 Y 110	6.6 Y 110	7.0 110
12	6.0 Y 110	3.0 100	E	2.9 Y 120 M	4.1 110	3.7 110	5.0 M 100	5.1 Y 110 M	4.5 110	5.4 110	6.8 M 100	4.3 100	6.0 M 100	4.2 100	3.6 120	4.9 130	7.6 120	4.5 130	5.8 120	4.2 120	8.0 110	4.8 110	2.3 110	3.3 110
13	E	(2.3) S (120)	E	5.0 110	E	3.2 120	3.6 110	5.6 110	5.3 110	7.0 110	7.1 Y 110 M	3.7 M 120	4.3 120	5.0 120	5.7 110	4.9 120	8.5 120	10.4 120	5.8 110	7.3 120	8.4 110	4.3 120	5.1 110	2.7 140
14	2.7 Y 130	2.1 130	2.2 120	E	E	E	2.2 120	3.5 130	5.0 110	5.0 110	5.6 110	5.3 110	6.3 110	5.0 100	7.5 110	G	4.9 130	4.0 120	10.8 110	11.4 110	(4.6) S 100	4.9 100	5.0 100	13.7 100
15	8.2 100	5.8 100	(3.5) S (100)	4.3 100	S	G	(2.9) S 120	4.3 110	4.7 120	6.4 110	5.0 110	4.8 100	4.8 100	3.5 M 110	3.9 M 100	C	(3.2) S 100	5.0 M 110	7.8 110	6.0 120	5.2 110	4.9 110	5.0 110	7.6 110
16	5.9 100	7.0 100	5.0 100	4.9 110	3.0 120	G	G	4.0 120	4.9 120	5.0 110	5.6 110	6.5 100	7.0 100 M	3.2 110	6.0 110	C	3.8 120	3.7 120	4.4 110	4.5 110	3.0 110	E	2.4 110	(3.4) S 110
17	7.0 150	8.0 110	10.0 110	(2.8) S 110	2.4 100	G	3.0 130	6.6 120	5.0 110	9.0 110	5.6 110	7.8 M 110	9.0 110	4.3 110	3.8 110	3.4 110	4.2 120	3.9 120	(3.2) S 110	2.6 140	(3.7) S (100)	2.3 130	5.4 130	2.9 120
18	2.4 110	3.5 110	E	(2.4) S (120)	(3.3) S (110)	E	2.0 130	2.7 130	4.9 120	4.2 110	4.4 100	3.6 110	5.1 110	5.4 110	4.2 110	4.0 110	3.9 110	3.0 120	2.9 S 110	2.9 120	E	E	2.3 120	E
19	E	4.0 110	4.2 110	3.0 110	3.4 110	3.8 110	4.0 120	5.2 120	4.9 110	4.2 110	3.7 110	G	G	4.1 110	G	5.6 130	4.4 130	4.1 120	4.7 120	3.6 120	3.0 130	3.4 120	(3.2) S 130	2.4 120
20	3.6 110	(4.0) S 100	E	5.6 110	E	(3.3) S (120)	2.2 120	3.6 110	3.9 110	4.8 110	4.2 100	4.8 100	4.0 110	6.8 120	6.8 120	11.1 120	4.0 120	4.4 120	3.7 M 100	(3.8) S (120)	5.7 110	3.2 110	4.0 110	4.9 110
21	5.6 100	4.2 100	(3.8) S 100	4.1 130	3.0 100	2.7 100	3.1 130	3.9 120	4.1 110	4.7 110	4.3 110	4.3 110	4.0 M 110	3.5 120	G	5.6 130	4.3 120	4.1 120	G	3.1 120	3.7 110	3.2 110	(3.0) S (120)	E
22	2.8 (110) S	(3.8) S (120)	E	E	E	E	3.8 120	3.8 110	4.0 120 M	3.8 110	3.8 110	2.8 110	5.2 110 M	4.7 100	4.4 100	5.0 M 110	5.0 110	5.0 120	4.9 120	4.8 120	2.9 120	3.7 120	4.3 110	3.9 110
23	2.5 110	E	3.1 100	4.9 100	3.9 100	7.4 110	5.2 100	5.0 M 100	4.3 M 100	4.5 110	5.3 110	4.3 110	5.0 100	6.6 100	4.3 110	4.0 110	3.7 110	4.3 120	1.9 110	5.7 110	3.0 110	2.9 120	2.8 120	(2.1) S 110
24	E	E	2.7 120	3.0 110	2.9 110	E	2.0 120	3.9 120	4.3 100	4.1 120	4.2 110	5.2 130	5.3 110	4.0 110	3.8 110	3.9 100	4.3 130	4.1 140	5.3 M 110	5.3 100	5.0 110	3.0 110	3.0 110	2.1 100
25	3.0 100	2.8 100	E	2.3 130	6.4 110	1.9 120	4.2 120	3.3 120	4.3 120	7.0 120	5.0 110	5.3 110	3.3 120	5.2 130	6.6 130	4.9 130	4.7 130	5.2 120	7.0 120	5.0 120	4.0 120	7.0 110	3.3 110	4.9 110
26	5.2 100	3.8 100	3.8 100	3.4 100	4.2 100	3.0 100	3.5 130	4.7 120	10.0 M 120	13.5 M 100	9.0 M 110	6.4 M 120	4.9 110	5.4 120	3.6 130	4.3 130	3.2 140	4.3 130	6.2 120	6.2 120	5.7 110	5.3 110	4.3 Y 110	(2.6) S 100
27	4.0 110	6.6 M 110	5.8 110	4.2 Y 100	4.7 Y 100	4.0 Y 110 M	3.8 100	3.8 120	5.6 110	4.4 110	4.7 110	5.0 110	5.4 110	5.1 110	5.4 110	7.4 110	4.9 110	3.2 120	4.8 110	3.7 120	4.7 120	E	E	E
28	E	E	E	4.4 100	2.3 100	E	4.5 120	3.4 110	3.7 120	3.8 110	3.3 120	7.0 Y 110	3.0 110	G	G	G	G	G	3.7 120	G	E	2.3 120	E	3.2 110
29	3.0 100	5.8 110	4.8 100	4.9 100	4.2 100	2.1 110	2.3 M 110	3.8 110	5.0 120	3.0 110	4.7 100	4.2 100	4.0 110	4.5 110	4.2 110	4.2 120	3.0 120	4.3 120	2.8 140	2.8 130	E	3.0 110	3.2 120	3.2 110
30	2.8 110	3.6 110	7.0 110	2.3 110	(5.0) S 110	7.8 Y 110	2.7 110	3.5 M 120	6.2 120	4.4 110	4.7 110	9.6 100	8.4 M 100	10.0 110	8.5 110	6.6 120	10.0 120	12.5 120	7.2 120	9.0 120	7.0 120	8.4 110	3.0 110	E
31	(3.0) S (100)	4.7 110	(4.0) S 100	E	E	2.8 110	2.0 120	6.0 110	4.8 120	5.4 110	5.3 110	7.6 100	6.6 100	6.2 100	6.3 100	4.9 110	4.7 110	C	2.8 130	5.0 120	4.3 120	4.2 120	3.0 110	4.5 110
Median	3.0	3.8	3.7	3.8	3.4	2.8	3.7	4.4	5.0	4.9	5.0	5.0	5.1	5.0	4.3	4.7	4.6	4.4	5.2	5.0	4.3	4.2	3.3	3.2
Count	31	31	31	31	30	31	31	31	31	31	30	31	31	31	31	29	31	30	30	30	31	31	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 86

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

Form accepted June 1946

IONOSPHERIC DATA

(MI500)F2 (Characteristic), ____ (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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	2.2	2.0	2.2^{F}	(2.2)^{S}	(2.3)^{S}	2.3	G	1.8	2.3	(2.0)^{P}	1.9	(2.0)^{A}	A	G	(1.8)$^{S}_{P}$	S	2.0	1.9	1.9	2.1	2.2	(2.2)^{S}	J^{S}	A
2	(1.9)$^{A}_{S}$	(2.1)$^{F}_{S}$	(2.1)^{S}	(2.1)^{S}	(2.2)^{S}	2.2	(2.3)$^{F}_{H}$	2.3	(2.4)^{S}	1.9	2.2	2.1	2.1	1.6	1.8	2.0	1.9	2.0	(2.1)^{S}	A	2.2	2.3	2.3	(2.3)^{S}
3	2.2^{F}	2.3	(2.1)$^{F}_{S}$	(2.0)^{S}	A^{S}	(2.0)$^{F}_{S}$	A	2.0	2.2^{H}	A	2.1	2.4^{H}	2.1	1.7	2.2	1.9^{H}	2.0	2.2	2.1	2.1	2.0	2.2	2.3	2.2
4	2.4	J^{S}	J^{S}	J^{S}	(2.1)$^{S}_{J}$	2.2	2.1	2.4	2.2	2.0	2.1	2.2	2.0	1.8	1.8^{H}	2.0	A	2.1	2.2	2.3	2.2	2.1	2.3	2.2
5	2.2	2.3	(2.2)^{S}	(2.3)^{S}	(2.3)^{S}	2.4	2.5	2.1	2.2^{H}	2.6	1.9	(2.3)$^{S}_{P}$	1.7	1.7^{H}	1.9	2.1	(2.1)^{S}	2.2	2.1	2.2	2.2	2.2	2.2	2.1
6	J^{S}	(2.3)$^{S}_{P}$	A	(2.2)^{S}	S	A	2.3	2.0	A	A	C	G^{K}	G^{K}	A^{K}	A^{K}	G^{K}	A^{K}	1.9^{K}	1.9^{K}	1.9^{K}	2.1^{K}	2.0^{K}	(2.4)^{S}	(2.1)^{S}
7	J^{S}	J^{S}	S	(2.0)$^{F}_{S}$	(2.2)$^{F}_{S}$	2.2	(2.3)$^{S}_{P}$	1.9	G	G	G	G	G	G	1.8	A	G	1.8	2.0	2.2	A^{S}	A	J^{S}	(2.1)$^{S}_{P}$
8	A	A	A	(2.4)$^{F}_{S}$	(2.4)$^{S}_{P}$	2.4^{F}	2.4	2.2	2.2	2.0	2.1	A	A	1.9	2.0	1.9	2.1	2.1	2.2	2.3	2.2	2.1	(2.2)$^{F}_{S}$	2.2^{F}
9	(2.3)^{F}	(2.2)$^{F}_{S}$	2.2	2.1	(2.3)^{S}	2.3	2.4^{H}	1.8^{H}	A	2.1	(2.0)^{A}	2.3	1.8^{H}	1.9	1.9	P^{S}	2.1	2.2	2.2	2.2	2.1	2.2	(2.1)^{S}	A
10	A	(2.2)$^{A}_{S}$	A	1.9	(2.1)$^{F}_{S}$	2.3	2.3^{H}	2.1^{H}	2.1^{H}	2.1	A	A	P^{A}	1.9	1.9^{H}	1.8	1.9	A	2.1	2.2	A	2.1	2.2	A
11	A	A	A	A	A	2.1	A	1.9	A	2.3	2.3	A	1.9	1.9^{H}	1.8	1.8	1.9	2.1	2.2	2.3	2.2	2.3	2.0	A
12	J^{A}	(2.1)$^{P}_{S}$	2.2	(2.1)^{S}	(2.1)$^{P}_{S}$	2.3	G	2.3	2.3	2.3	2.1	2.0	G	2.0	2.0	2.1	A	2.0	2.1	2.0	2.0	2.1	2.3	(2.3)$^{F}_{S}$
13	2.2	J^{S}	1.9	1.9	(1.9)$^{F}_{S}$	(2.3)^{S}	(2.2)^{S}	A	(2.2)$^{P}_{A}$	A	2.2	2.4	G	2.1	A	2.0	A	A	2.2	A	2.2	2.2	1.9	2.2
14	(2.2)$^{A}_{S}$	(2.0)$^{P}_{S}$	2.1	F^{S}	J^{S}	2.3	G	G	A	A	(2.0)^{A}	1.8	G	G	A	G	G	A	A	2.2	2.1	(2.3)^{S}	S	A^{S}
15	A^{S}	S	S	S	(2.1)$^{F}_{S}$	(2.2)$^{S}_{J}$	G	G	G	(2.1)^{S}	2.2	1.7	G	1.7	(1.9)^{S}	C	1.9	2.2	2.2	2.2	(2.3)^{S}	(2.3)^{A}	(2.1)$^{S}_{P}$	(2.1)^{S}
16	(2.3)$^{S}_{J}$	A	(2.3)^{S}	(2.3)^{S}	(2.2)^{S}	2.4	2.0	1.8	2.2	A	A	2.1	A	1.8^{H}	(1.9)^{S}	C	1.9	2.0	2.0	2.3	(2.2)$^{P}_{S}$	2.1	2.1	(2.0)$^{F}_{S}$
17	2.2	(2.3)^{S}	A	(2.2)$^{F}_{S}$	2.1$^{F}_{S}$	(2.3)$^{S}_{P}$	2.2	2.3	G	2.2	2.3	2.0	2.2	1.9	2.1	2.1^{H}	2.2	2.2	2.2	(2.3)^{S}	2.1	(2.3)^{S}	2.2	2.0
18	2.1	2.1^{F}	(2.2)$^{F}_{S}$	(2.2)$^{F}_{S}$	2.3)^{S}	2.2	2.4	2.3	A	1.8	(1.8)^{S}	G	1.4	A	1.8	1.7	(1.9)^{S}	1.7	2.0	2.1	2.3	2.3	(2.4)^{S}	(2.2)^{S}
19	(2.1)^{S}	J^{S}	(2.2)$^{S}_{J}$	S	○	(2.4)^{S}	2.2	1.6	1.4	(2.0)$^{S}_{P}$	2.0^{H}	S	G	1.4^{H}	(1.9)$^{S}_{P}$	1.9	2.2	2.0^{H}	2.1	2.2	2.3	2.1	J^{S}	2.1
20	2.3	2.2	2.2	(2.1)$^{S}_{P}$	J^{S}	2.3	G	2.3	(2.0)^{S}	2.0	S	S	1.8	G	A	A	1.9^{H}	2.0^{H}	(2.1)^{S}	2.2	(2.3)$^{S}_{P}$	2.3	A	A^{S}
21	A	A	A^{S}	A^{S}	S	2.3	2.1	2.1	2.3	(2.3)^{S}	J^{S}	2.2	G	2.0	1.8	1.9	A	2.0	(2.2)^{S}	2.3	2.2	(2.2)$^{S}_{P}$	2.2	2.2
22	(2.2)$^{F}_{S}$	(2.2)$^{S}_{P}$	2.2	(2.1)^{S}	(2.1)^{S}	(2.2)^{S}	G	G	J^{S}	(2.2)^{S}	G	1.7	G	G	G	1.6	2.0^{H}	2.3	2.1	2.4	2.2	2.2	(2.1)^{S}	(2.0)^{S}
23	(2.3)^{S}	2.3	(2.2)$^{P}_{S}$	A	A	2.3	2.1	1.6	1.7	2.0	2.1	2.0	1.7	A	(1.6)^{S}	1.9	(1.9)$^{S}_{P}$	2.0	2.0	2.2	2.2	2.3	2.2	2.2
24	2.2	(2.2)^{S}	2.2^{F}	J^{S}	2.1	2.1	1.8	2.2	G	1.8	2.0	(1.7)$^{S}_{P}$	G	1.8	G	1.8	1.7	2.0	2.1	2.2	2.2	2.3	2.1	2.1
25	2.0	2.1	(2.2)^{S}	J^{S}	S	2.1	2.3	1.8^{H}	G	G	G	G	G^{K}	G^{K}	G^{K}	1.7^{K}	(1.6)$^{S}_{A}$	1.9^{K}	A^{K}	2.2^{K}	2.2^{K}	A	A	A
26	2.0	(2.1)$^{F}_{S}$	J^{A}	2.3	2.2	2.0	2.2	G	2.0	2.1	A	(1.5)^{S}	G	A	1.8	1.8	(2.0)^{S}	2.0	2.2	2.2	(2.3)^{S}	(2.3)$^{S}_{P}$	J^{S}	(2.1)^{S}
27	A	(2.0)^{S}	2.1	(2.3)^{S}	A^{S}	A	2.5	1.9	2.1	2.1	2.0	2.0	1.9	2.0	2.1	A	(2.0)$^{S}_{P}$	2.1	2.0	2.0	2.1	2.2	2.2	2.1
28	2.1	(2.0)^{S}	(2.2)^{S}	2.1	2.0	(2.3)^{S}	2.4^{H}	(2.0)^{S}	G	G	1.9	(2.0)$^{F}_{S}$	G	G	1.8	1.7	1.9	1.8	2.0	2.1	(2.2)^{S}	(2.0)^{S}	J^{S}	(2.2)$^{F}_{S}$
29	(2.0)$^{F}_{S}$	(2.3)^{A}	2.2	A	(2.2)^{F}	2.1	2.1	1.9	G	2.0	1.9	G	1.5	1.9	(1.7)$^{S}_{P}$	2.0	1.9	2.1	2.0	2.1	J^{S}	2.2	2.1$^{F}_{S}$	2.0
30	2.2	2.1	2.1	(2.3)$^{S}_{P}$	(2.3)$^{F}_{S}$	(2.3)$^{S}_{P}$	G	(1.5)$^{P}_{S}$	A	2.1	(1.9)$^{S}_{P}$	A	G	A	A	A	A	A	A	A	3.2	3.3	3.3	(3.3)$^{F}_{S}$
31	(2.2)^{S}	(2.0)$^{F}_{S}$	2.3$^{F}_{S}$	(2.0)^{S}	2.3	2.5	2.4	2.2^{H}	1.9	2.2^{H}	2.1^{H}	A	(2.0)^{A}	A	A	1.9	(2.1)^{S}	C	1.9	2.1	2.2^{S}	2.1^{F}	2.2	2.2
Median	2.2	(2.2)	2.2	(2.1)	(2.2)	2.3	2.2	2.0	2.0	2.0	2.0	2.0	G	1.8	1.8	1.9	1.9	2.0	2.1	2.2	2.2	2.2	2.2	2.2
Count	22	22	21	21	2	29	24	30	24	26	25	24	27	25	25	23	25	26	28	28	28	29	24	24

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 87

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

Form accepted June 1946

IONOSPHERIC DATA

(M3000)F2 (Characteristic), ____ (Unit), July (Month), 1954

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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	3.2	3.0	3.2 F	(3.2)S	(3.3)S	3.3	C	2.7	3.4	(3.0)P	2.9	(3.0)A	A	C	(2.8)SP	S	3.0	2.9	2.9	3.1	3.2	(3.3)S	J >	A
2	(2.8)AS	(3.1)FS	(3.1)S	(3.1)S	(3.2)S	3.3	(3.3)FH	3.4	(3.5)S	2.9	3.2	3.1	3.1	2.4	2.7	3.0	2.9	3.0	(3.1)S	A	3.2	3.3	3.3	(3.3)S
3	3.3 F	3.3	(3.1)FS	(3.0)S	A S	(3.0)FS	A	3.0	3.2H	A	3.1	3.5H	3.1	2.6	3.2	2.9H	3.0	3.2	3.1	3.1	3.0	3.2	3.3	3.2
4	3.5	J >	J S	J S	(3.1)JS	3.2	3.1	3.5	3.3	3.0	3.1	3.2	3.0	2.8	2.7H	3.0	A	3.1	3.2	3.3	3.3	3.1	3.4	3.2
5	3.2	3.3	(2.3)S	(2.3)S	(2.3)S	3.5	2.6	3.1	3.3H	3.7	2.9	(2.3)SP	2.6	2.6H	2.8	3.1	(3.1)S	3.3	3.1	3.2	3.2	3.2	3.2	3.1
6	J S	(3.3)SP	A	(2.3)S	D	A	3.4	3.0	A	A	C	C K	C K	A K	A K	C K	A K	2.9 K	2.9 K	2.9 K	3.1 K	3.0 K	(3.5)S	(3.1)S
7	J S	J S	D	(3.0)FS	(3.3)FS	3.3	(3.3)SP	2.9	C	C	C	C	C	C	2.7	A	C	2.8	3.0	3.3	A S	A	J S	(3.1)SP
8	A	A	A	(3.5)FS	(3.5)SP	3.5 F	3.5	3.2	3.2	3.0	3.1	A	A	2.9	3.0	2.9	3.1	3.1	3.2	3.3	3.2	3.1	(3.2)FS	3.2 F
9	(2.3)F	(3.2)FS	3.2	3.1	(3.3)S	3.3	3.5H	2.7H	A	3.1	(3.0)A	3.3	2.8H	2.8	2.8	D	3.1	3.2	3.2	3.2	3.1	3.2	(3.1)S	A
10	A	(3.3)AS	A	2.9	(2.1)FS	3.4	3.4H	3.1H	3.1H	3.2	A	A	P A	2.9	2.8	2.8	3.1	A	3.2	3.2	A	3.1	3.2	A
11	A	A	A	A	A	3.1	A	2.9	A	3.4	3.4	A	2.9	2.8H	2.7	2.7	2.8	3.1	3.3	3.3	3.3	3.3	3.0	A
12	J A	(3.1)PS	3.2	(3.1)S	(3.1)PS	3.3	C	3.4	3.3	3.4	3.1	3.0	C	3.0	3.0	3.1	A	3.0	3.1	3.0	3.0	3.1	3.4	(3.4)FS
13	3.2	J S	2.9	2.9	(2.8)FS	(3.3)S	(3.3)S	A	(3.2)PA	A	3.2	3.4	C	3.1	A	3.0	A	A	3.3	A	3.3	3.2	2.8	3.3
14	(3.2)PS	(3.0)PS	3.1	F S	J S	3.4	C	C	A	A	(3.0)A	2.7	C	C	A	C	C	A	A	3.2	3.1	(3.3)S	D	A S
15	A S	D	D	D	(3.2)FS	(3.2)JS	C	C	C	(3.1)S	3.2	2.6	C	2.6	(2.4)S	C	2.9	3.3	3.2	3.2	(3.3)S	(3.3)A	(3.1)SP	(3.1)S
16	(2.3)JS	A	(2.3)S	(2.3)S	(3.3)S	3.4	3.0	2.7	3.2	A	A	3.1	A	2.7H	(2.4)S	C	2.8	3.0	3.0	3.3	(3.3)PS	3.1	3.1	(3.0)FS
17	3.2	(3.4)S	A	(3.2)FS	3.2FS	(3.3)SP	3.3	3.4	C	3.2	3.3	3.0	3.3	2.9	3.1	3.1H	3.2	3.2	3.3	(3.3)S	3.1	(3.4)S	3.3	3.0
18	3.1	3.1 F	(2.3)FS	(2.3)FS	(2.4)S	3.3	3.5	3.3	A	2.7	(2.8)S	C	2.8	A	2.7	2.6	(2.9)S	2.6	3.0	3.1	3.4	3.3	(3.5)S	(3.2)S
19	(2.2)S	J S	(2.2)JS	D	S	(3.5)S	3.3	2.4	2.9	(3.0)SP	3.0H	D	C	2.9H	(2.8)SP	2.9	3.2	3.0H	3.1	3.3	3.4	3.1	J S	3.1
20	3.3	3.2	3.2	(3.1)SP	J S	3.4	C	3.3	(3.0)S	3.0	D	D	2.8	C	A	A	2.9H	3.0H	(3.1)S	3.2	(3.3)SP	3.3	A	A S
21	A	A	A S	A S	D	3.3	3.1	3.1	3.4	(3.3)S	J S	3.3	C	3.0	2.8	2.9	A	3.0	(3.2)S	3.3	3.2	(3.2)SP	3.2	3.2
22	(3.2)FS	(3.2)PS	3.2	(3.1)S	(3.1)S	(3.3)S	C	C	J S	(3.2)S	C	2.6	C	C	C	2.4	3.0H	3.4	3.1	3.4	3.2	3.2	(3.1)S	(3.0)S
23	(3.3)S	3.3	(3.2)PS	A	A	3.4	3.1	2.9	2.6	3.0	3.1	3.0	2.8	A	(2.5)S	2.9	(2.9)PS	3.0	3.0	3.2	3.2	3.3	3.2	3.2
24	3.3	(3.2)S	3.2 F	J S	3.1	3.1	2.7	3.2	C	2.7	3.0	(2.6)SP	C	2.8	C	2.8	2.6	3.0	3.1	3.2	3.3	3.3	3.1	3.1
25	3.0	3.1	(3.2)S	J S	D	3.1	3.4	2.7H	C	C	C	C	C K	C K	C K	2.5K	(2.5)SK	2.9 K	A K	3.3 K	3.2K	A	3.1	A
26	3.0	(3.1)FS	J A	3.3	3.3	3.0	3.3	C	3.0	3.1	A	(2.3)S	C	A	2.8	2.7	(3.0)S	3.0	3.2	3.2	(3.3)S	(3.3)PS	J S	(3.1)S
27	A	(3.0)S	3.1	(3.3)S	A S	A	3.5	2.8	3.1	3.1	3.0	3.0	2.9	3.0	3.1	A	(3.0)PS	3.1	3.0	3.0	3.1	3.3	3.2	3.2
28	3.1	(3.0)S	(3.2)S	3.1	3.0	(3.4)S	3.5H	(3.0)S	C	C	2.8	(3.0)FS	C	C	2.7	2.6	2.9	2.7	3.0	3.1	(3.2)S	(3.0)S	J S	(3.2)FS
29	(3.0)FS	(3.3)A	3.2	A	(3.3)F	3.1	3.1	2.9	C	3.0	2.9	C	2.3	2.4	(2.6)SP	3.0	2.9	3.1	3.0	3.1	J S	3.3	3.1 FS	3.0
30	3.2	3.1	3.1	(3.4)SP	(3.4)FS	(3.4)SP	C	(2.2)PS	A	3.1	(2.8)SP	A	C	A	A	A	A	A	A	A	3.2	3.2	3.3	(3.3)FS
31	(3.2)S	(3.0)FS	3.3 FS	(3.0)S	3.3	3.5	3.4	3.2H	2.9	3.3H	3.2H	A	(3.0)A	A	A	2.8	(3.1)S	C	2.9	3.1	3.2S	3.1F	3.2	3.2
Median	3.2	(3.2)	3.2	(3.1)	(3.3)	3.3	3.3	3.0	3.0	3.0	3.0	3.0	C	2.8	2.8	2.9	2.9	3.0	3.1	3.2	3.2	3.2	3.2	3.2
Count	22	22	21	21	21	29	27	30	24	23	25	31	27	25	25	23	25	26	28	28	28	29	29	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 88

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

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1 (Characteristic), ____ (Unit), July (Month), 19 54

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

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						Q	3.6	A	3.9 H	3.4 H	4.1 S	A	A	3.8	4.0 H	3.9 H	3.7 H	3.6 H	A	A						
2						A	3.7	3.7	4.0 H	3.9 H	3.4 H	4.1 H	4.1 H	4.0 H	4.1 H	(3.9) S	3.8	3.7	A	A						
3						3.7	A	A	A	A	4.0 H	A	A	3.9	4.0	3.9	3.8	3.5	3.6	L						
4						Q	3.7	3.8	3.4	3.8	4.0 H	4.0 H	3.9	4.0 H	A	4.1	A	3.6	3.6	L						
5						L	L	3.7 H	(3.4) A	3.9	4.0 H	3.9 H	4.0 H	3.9	3.9	4.0 H	3.8	A	A	A						
6						A	L	A	(4.0) A	A	C	3.8 H K	4.0 K	A K	A K	3.8 K	A K	A K	A K	L K						
7						A	L	3.6 H	3.8	4.0	4.1	4.1	4.1	3.9 H	4.0 H	A	4.0	3.8	A	L						
8						Q	L	3.8 H	4.0	A	4.0 H	A	A	3.9	4.0 H	3.9 H	(3.9) S	3.6	L	L	L					
9						Q	L	S A	A	A	A	4.0 H	4.0 H	3.9	3.8	3.8	3.7 H	A	(3.6) A	L						
10						Q	3.6	3.7 H	A	A	A	A	A	3.9 H	3.9 H	3.9 H	A	A	3.7 H	A						
11							A	A	A	A	3.4	A	4.0 H	4.1 H	(4.1) S	4.1 H	A	A	A	A						
12							3.6	3.7	(3.4) A	A	4.0	4.1 H	4.0 H	4.0 H	3.9 H	3.9	A	A	A	A						
13							3.6	A	A	A	A	4.1	4.2	A	A	A	A	A	A	A						
14							3.8	3.8	S	A	A	4.1	4.0 H	4.2	A	4.1 H	(4.0) A	A	A	L						
15						S	3.4	3.7	3.9	3.9	3.4	3.4	3.9 H	3.9 H	3.8	C	(3.9) S	3.8 H	3.7 H	A						
16						Q	3.4 H	3.6	3.8	A	A	A	A	3.9 H	A	C	3.8 H	3.7 F	3.5	A						
17						Q	L	L	3.8	4.0	A	A	A	3.9	4.0 H	3.9 H	4.0	4.0 F	3.8	L						
18							L	3.5 H	A	3.4	3.8 H	4.1 H	3.9 H	A	4.0	3.9 H	3.7 H	3.7 H	3.5 H	L						
19							3.5	3.9	S A	4.0	4.1 H	4.0	4.1	4.0 H	3.9 H	A	3.8 H	3.7	A	L						
20							3.4	3.8	3.4 H	3.8	4.0	4.0	4.1 H	4.0	A	A	3.9 H	A	3.8	L						
21							3.4	3.7	3.8	3.9	4.0	3.8 H	4.0	4.0 H	3.9 H	A	A	H A	3.9 H	L						
22							3.4	3.5 H	(3.7) S	(3.4) S	4.3	4.3	4.1	4.3	4.2	A	A	3.6 H	A	A						
23							3.6	3.6	3.7	3.9	3.9	4.1	3.8	(4.0) A	3.9 H	3.8 H	(3.8) S	3.7 H	3.6	L						
24							3.3	3.8 H	3.7 H	3.8	4.0	4.0 H	3.9	3.9 H	4.0	(3.7) S	3.6	3.5	A	A						
25							S	3.8 H	3.7	(3.8) S	3.7	4.2	4.1 K	3.9 K	3.7 K	A K	A K	A K	A K	A K						
26							L	3.5 S	3.7	3.8	A	4.0 H	3.9 H	A	3.8	3.8	3.6 H	3.6	A	A						
27							L A	3.6 H	A	3.8	3.8 H	3.9 H	3.9	3.9	3.9	A	3.6	3.5 H	3.7	L						
28							A	3.8 H	3.8 H	3.8	3.9	4.0 H	3.9	3.9	3.8	3.7	3.7 H	3.8 H	3.5	L						
29							3.7	3.6	4.0	3.9 H	4.0 H	4.0 H	4.1 H	4.1	4.0 H	4.0	3.6 H	3.7 H	3.6	L						
30							3.4	3.6	A	3.9 H	4.0 H	A	3.9	A	A	A	A	A	A	A						
31							L	3.6 H	3.8 H	3.8	4.0	A	A	A	A	3.9	3.9	C	3.5	A						
Medion						—	3.6	3.7	3.8	3.9	4.0	4.0	4.0	3.9	3.9	3.9	3.8	3.7	3.6	—	—					
Count						1	17	24	21	21	23	22	20	25	23	24	2	18	15							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 89

Form accepted June 1946

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

IONOSPHERIC DATA

(M1500) E (Characteristic), _____ (Unit), July (Month), 1954

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: E.J.W, J.W.P., J.J.S.

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

Calculated by: E.J.W, J.W.P., J.J.S.

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						S	4.3 H	A	A	A	4.5	(4.5) A	A	A	A	(4.5) S	S	(4.4) S	S	A						
2						S	(4.4) A	(4.4) D	4.4	A	A	A	A	A	4.4	(4.4) D	4.4 H	4.3	4.3	S						
3						S	4.3 H	4.4 S	4.4 H	4.5	4.5 H	4.5	(4.4) A	A	(4.4) D	(4.5) D	(4.4) D	S	S	S						
4						S	4.2	4.3 H	(4.4) S	4.4	4.3 H	A	4.4	4.4	(4.4) S	4.3	4.3	4.3	(4.4) S	S						
5						S	A	A	A	S	A	S	A	4.4	4.3	(4.4) S	(4.4) S	(4.5) S	S	S						
6						S	(4.4) S	S	(4.4) S	(4.4) S	C	4.4 K	4.4 K	(4.5) A K	4.5 K	4.4 K	4.3 K	4.4 K	4.4 K	S K						
7						S	(4.5) A	S	S	4.5	4.4	4.5	A	A	A	4.3	4.3	4.3	4.4	S						
8						S	A	4.3	4.4 S	4.5	A	A	A	A	A	4.4	4.4	(4.3) S	4.4	S	S					
9						S	(4.4) S	4.4	4.4 H	4.4	4.4 H	(4.5) D	(4.5) D	A	4.5 D	B	A	(4.4) S	4.4	A						
10						S	4.4 H	(4.5) D	4.2 H	(4.2) D	A	4.4	(4.4) D	(4.4) H	4.3 H	(4.4) D	4.4	4.4	A	A						
11							A	(4.4) A	(4.4) A	(4.5) A	A	A	A	A	(4.4) D	(4.5) D	4.4 H	(4.4) A	A	A						
12							A	A	A	A	A	A	A	A	4.4	4.2	4.2 H	4.3 H	4.3	4.5						
13							A	(4.4) S	C	(4.4) A	4.4	4.3	(4.4) A	4.5	4.5 H	(4.4) D	4.3	4.4 H	4.4	A						
14							4.4	4.4	4.4	4.4	4.5	4.5 H	A	A	A	4.3 H	4.2 H	4.2	A	S						
15						S	4.4 H	(4.3) S	(4.4) S	A	(4.5) D	A	A	4.4	4.3	C	4.4	4.3	A	S						
16						S	4.4 H	4.4	4.4	(4.5) A	4.5	4.5	A	(4.5) A	A	C	4.4 H	4.4	4.5	S						
17						S	4.4	(4.4) A	4.3 H	A	4.4	4.5	(4.4) D	4.5	A	A	4.4	4.5	A	S						
18							4.3	(4.4) D	4.4	4.5	4.5	4.5	4.4	4.5	(4.5) D	4.5	A	(4.5) S	A	S						
19							4.5	(4.5) S	4.5	(4.5) A	A	(4.3) D	(4.4) D	A	4.3 H	4.5 H	4.3 H	(4.4) S	(4.5) S	S						
20							(4.5) D	(4.4) D	4.5	A	A	A	A	4.5 H	4.4	4.5	4.4	4.4	A	S						
21							4.4	4.4	4.3	4.4	4.4 H	4.5	(4.4) D	(4.4) H	4.4 H	4.4 H	4.4	(4.4) D	4.3	S						
22							4.4	4.4 H	4.4	4.5	(4.5) D	(4.4) D	(4.5) A	A	A	4.5	4.4 H	(4.4) A	(4.4) A	S						
23							A	4.4	A	A	A	A	A	A	A	A	4.5	4.5 H	4.2	S						
24							4.4	4.4	(4.4) S	4.5	A	(4.5) H	A	A	(4.5) A	4.5	4.5	(4.5) S	A	S						
25							A	4.3	4.4	4.5	4.4 H	4.4 H	4.4 K	(4.4) D K	4.3 K	4.3 H K	4.5 K	S K	4.3 K	S K						
26							4.3	4.4	4.4	4.5	4.4	(4.4) D	(4.5) A	4.5	4.4	4.4	4.5	S	A	S						
27							A	4.4	(4.4) D	4.5	A	(4.4) A	A	A	A	A	4.4	A	A	S						
28							4.3	4.3 H	S	(4.3) A	4.4 H	(4.4) D	(4.5) A	4.3 H	4.4 H	4.5	4.4	(4.4) D	4.3	S						
29							A	A	4.5	A	A	A	A	A	A	(4.5) S	4.3	4.3	4.3	S						
30							(4.4) A	4.4	4.4	4.5	(4.4) D	A	A	A	(4.4) A	(4.4) A	4.5	4.4	4.3	S						
31							A	A	4.3	(4.4) D	4.5	A	A	A	A	A	A	C	4.3	S						
Median							4.4	4.4	4.4	4.5	4.4	4.5	(4.4)	4.4	4.4	4.4	4.4	4.4	4.4	—						
Count							21	24	24	22	18	19	14	14	20	24	27	26	18	1						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 90

Ionospheric Storminess at Washington, D. C.

July 1954

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	1	3			2	1
2	2	1			1	2
3	2	1			1	1
4	1	1			1	1
5	2	1			1	2
6	2	5	1100	2100	3	2
7	2	3			2	2
8	2	2			1	2
9	2	2			2	2
10	2	1			2	1
11	3	1			2	2
12	2	1			2	3
13	1	2			2	1
14	3	3			3	3
15	2	2			3	2
16	1	1			2	3
17	2	1			3	1
18	2	3			3	2
19	2	1			2	3
20	2	3			3	1
21	#	1			2	2
22	2	3			2	2
23	2	1			2	2
24	2	3			3	2
25	3	4	1200	2000	3	2
26	2	3			2	2
27	2	2			3	2
28	2	3			4	3
29	2	2			3	2
30	2	2			2	2
31	2	2			2	2

*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.

#No I-figure owing to insufficient data; conditions probably severely disturbed.

Table 91

Sudden Ionosphere Disturbances Observed at Washington, D. C.

July 1954

No sudden ionosphere disturbances were observed during the month of July.

Table 92

Sudden Ionosphere Disturbances Reported by Direction Générale des Télécommunications de Suède-Stockholm, as Observed at Enköping, Sweden

1954 Day	GCT Beginning	GCT End	Location of transmitters
April 1	1220	1230	Budapest, Beirut, Belgrad, Istanbul
June 22	1024	1028	Buenos Aires

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Boulder, Colorado; Attention: Mr. Vaughn Agy.

Table 93

Radio Propagation Quality Figures

(Including Comparisons with Short-Term and Advance Forecasts)

June 1954

Day	North Pacific 9 - hourly quality figures			Short-term forecasts issued at			Whole day quality index	Advance forecasts (J_p reports) for whole day; issued in advance by:		
	03 to 12	09 to 18	18 to 03	02	09	18		1-4 days	4-7 days	8-25 days
1	6	6	6	7	7	7	6	6	6	
2	5	6	5	6	6	7	6	7	6	
3	6	6	6	6	6	7	6	7	6	
4	6	6	6	6	5	7	6	6	6	
5	7	7	6	7	6	7	7	6	6	
6	6	6	7	6	6	7	6	6	6	
7	7	7	7	7	7	7	7	6	6	
8	6	6	7	7	7	7	7	6	6	
9	7	6	7	7	6	7	7	7	6	
10	6	6	7	7	6	7	6	7	6	
11	6	6	6	7	6	7	6	7	6	
12	6	5	6	6	6	7	5	7	7	
13	6	6	6	6	6	6	6	6	7	
14	7	6	6	6	6	7	7	6	6	
15	7	7	7	7	6	7	7	6	6	
16	6	6	7	7	7	7	6	7	6	
17	7	6	6	7	7	7	6	7	6	
18	6	6	7	7	6	7	7	7	6	
19	6	6	7	7	6	7	7	7	7	
20	7	7	7	7	6	7	7	7	7	
21	7	7	7	7	6	7	7	7	7	
22	7	7	7	7	6	7	7	7	7	
23	6	6	7	7	7	7	7	7	7	
24	7	6	7	7	7	7	7	7	7	
25	6	6	6	7	6	7	6	7	7	
26	6	6	7	7	6	7	6	7	7	
27	7	6	6	7	7	7	7	7	7	
28	6	6	7	7	6	6	6	7	7	
29	7	6	6	6	6	7	6	7	7	
30	7	6	6	7	6	7	7	7	7	
Score: Quiet Periods			P	18	16	16		14	17	
			S	14	14	15		15	12	
			U	0	0	1		1	1	
			F	0	0	0		0	0	
Disturbed Periods			P	0	0	0		0	0	
			S	0	0	0		0	0	
			U	0	0	0		0	0	
			F	0	0	0		0	0	

Scales:

Q-scale of Radio Propagation Quality

(1) - useless
(2) - very poor
(3) - poor
(4) - poor to fair
5 - fair
6 - fair to good
7 - good
8 - very good
9 - excellent

Scoring: (beginning October 1952)

P - Perfect: forecast quality equal to observed
S - Satisfactory: (beginning October 1952) forecast quality one grade different from observed
U - Unsatisfactory: forecast quality two or more grades different from observed when both forecast and observed were ≥ 5, or both ≤ 5
F - Failure: other times when forecast quality two or more grades different from observed

Symbols:

X - probable disturbed date

Note: All times are UT (Universal Time or GCT)

Table 94a

Radio Propagation Quality Figures

(Including Comparisons with Short-Term and Advance Forecasts)

June 1954

Day	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day quality index	Advance forecasts (J-reports) for whole day; issued in advance by:			Geomagnetic K_{Ch}	
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-4 days	4-7 days	8-25 days	Half day (1)	Half day (2)
1	7	6	7	7	7	6	7	7	7	X	7		2	1
2	7	6	7	7	6	6	7	7	7	6	7		3	1
3	7	6	7	7	6	6	7	7	7	7	7		2	2
4	7	6	7	7	7	7	7	7	7	7	7		3	2
5	7	7	7	7	7	7	7	7	7	7	6		0	2
6	7	7	7	7	7	7	7	7	7	6	6		2	2
7	7	7	7	7	7	7	7	7	7	6	6		2	3
8	7	7	7	7	7	7	7	7	7	7	7		2	2
9	7	7	7	7	7	7	7	7	7	7	7		2	2
10	7	6	6	6	7	7	6	6	6	7	7		(4)	2
11	7	6	7	7	6	6	7	7	7	6	7		1	1
12	7	7	7	7	6	6	7	6	7	7	7		1	2
13	7	6	7	7	6	6	7	7	7	7	7		2	3
14	7	6	7	7	6	6	7	6	7	6	7		2	2
15	6	5	7	7	7	6	7	7	6	7	6		2	2
16	6	6	7	7	6	6	7	7	7	7	7		2	1
17	7	7	7	7	7	7	7	7	7	7	7		1	2
18	7	6	7	7	7	7	6	7	7	7	7		1	2
19	7	6	7	7	7	7	7	7	7	7	7		2	2
20	7	7	7	7	7	7	7	7	7	7	7		2	1
21	7	7	7	7	7	7	7	7	7	7	7		1	2
22	7	6	7	7	7	6	6	7	7	7	7		2	2
23	7	6	7	7	7	7	7	7	7	7	7		2	2
24	7	7	7	7	7	6	7	7	7	7	7		1	2
25	7	7	7	7	7	7	7	7	7	7	7		1	2
26	7	7	7	7	7	7	7	7	7	7	7		2	2
27	7	6	7	7	6	6	7	7	7	7	7		2	3
28	6	6	7	7	7	6	6	6	7	7	7		3	2
29	6	7	7	7	6	5	6	7	7	6	7		2	1
30	7	6	7	7	7	7	7	7	7	7	7		2	2

Score:

		00	06	12	18	1-4 days	4-7 days
Quiet periods	P	21	20	26	27	21	26
	S	9	9	4	3	8	4
	U	0	1	0	0	0	0
	F	0	0	0	0	0	0
Disturbed periods	P	0	0	0	0	0	0
	S	0	0	0	0	0	0
	U	0	0	0	0	0	0
	F	0	0	0	0	0	0

Scales:

Q-scale of Radio Propagation Quality
(1) - useless
(2) - very poor
(3) - poor
(4) - poor to fair
5 - fair
6 - fair to good
7 - good
8 - very good
9 - excellent

K-scale of Geomagnetic Activity
0 to 9, 9 representing the greatest disturbance; $K_{Ch} \geq 4$ indicates significant disturbance, enclosed in ( ) for emphasis

Scoring: (beginning October 1952)
P - Perfect: forecast quality equal to observed
S - Satisfactory: (beginning October 1952) forecast quality one grade different from observed
U - Unsatisfactory: forecast quality two or more grades different from observed when both forecast and observed were ≥ 5, or both ≤ 5
F - Failure: other times when forecast quality two or more grades different from observed

Symbols:
X - probable disturbed date

Note: All times are UT (Universal Time or GCT)

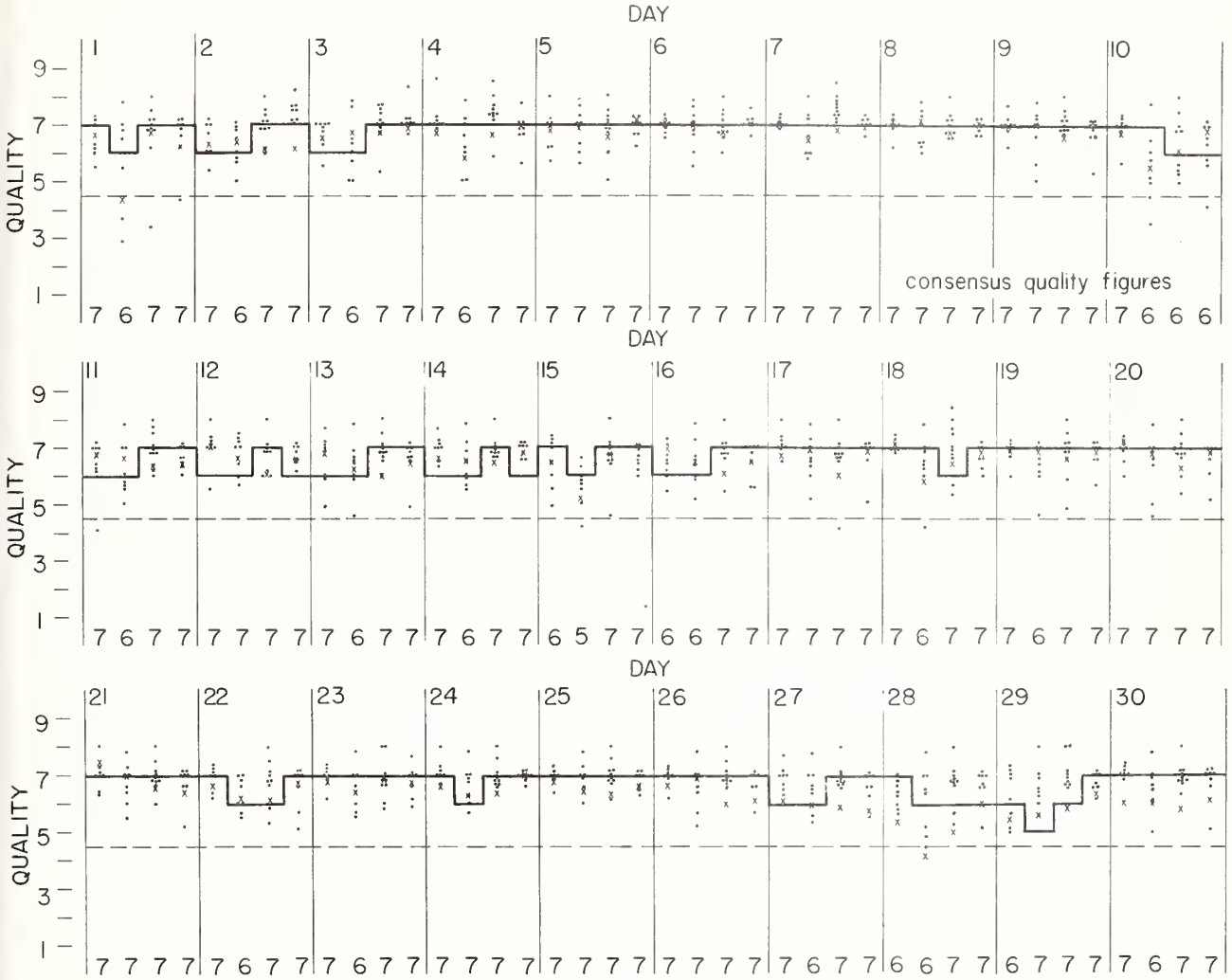
Table 94b

Short-Term Forecasts--- June 1954

— forecast

• individual reports of quality (adjusted to CRPL scale)

× CRPL observation (not in consensus)



Outcome of Advance Forecasts (1 to 4 days ahead) --- June 1954

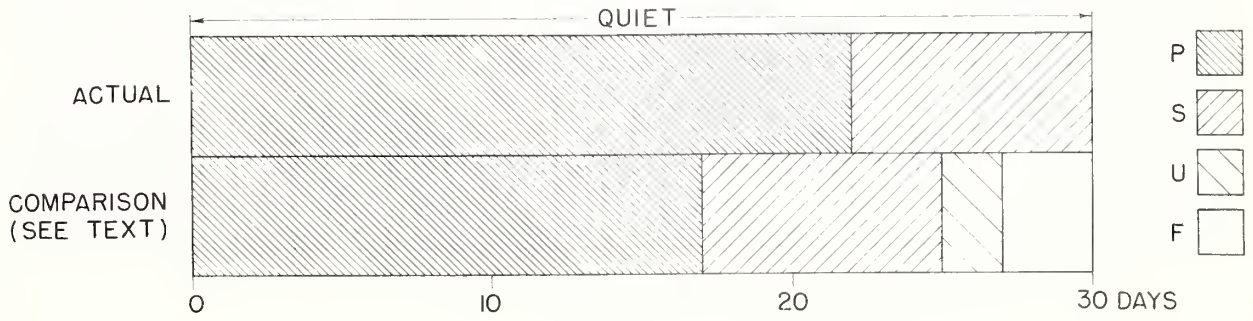


Table 9ba

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

Date UT	Degrees north of the solar equator																					Degrees south of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.x																																					
8.x																																					
9.x																																					
10.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.x																																					
12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.x																																					
15.x																																					
16.x																																					
17.x																																					
18.x																																					
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.7	-	-	-	-	-	-	-	-	-	-	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.x																																					
24.0	-	-	-	-	-	-	-	-	-	-	1	2	1	1	1	1	3	5	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
24.x																																					
25.6	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	-	-	-
27.8	-	-	-	-	-	-	-	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.7	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.7	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.9a	-	-	-	-	-	-	-	-	1	1	1	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 9ca

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

Date UT	Degrees north of the solar equator																					Degrees south of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.6	2	2	1	1	-	-	-	-	-	-	1	2	4	5	4	4	4	5	5	4	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2
2.7	1	1	1	-	-	-	-	-	-	-	2	3	4	4	3	3	3	4	4	4	3	3	2	1	1	2	1	2	1	1	1	1	1	1	1	1	1
3.6	2	2	1	-	-	-	-	-	-	-	1	2	3	3	2	2	2	2	2	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2
4.7a	1	1	1	1	1	1	1	1	1	1	2	2	3	4	3	3	3	3	3	3	3	3	2	2	-	-	-	-	-	-	-	-	-	-	1	1	1
5.6	2	2	1	1	1	1	1	1	1	1	2	4	5	5	5	5	6	5	6	6	6	5	5	4	4	4	5	3	1	1	1	1	1	1	1	2	2
6.7	1	1	1	1	1	1	1	1	1	1	3	5	6	6	6	6	6	6	6	6	6	6	5	3	3	4	4	2	1	1	1	1	1	1	1	2	2
7.x																																					
8.x																																					
9.x																																					
10.7a	2	1	1	1	1	1	-	-	-	-	3	4	5	4	4	3	3	4	5	5	5	5	3	1	1	1	2	2	2	2	1	1	1	1	1	2	2
11.x																																					
12.7	2	1	1	1	1	1	1	1	1	2	2	3	4	3	3	3	3	3	4	4	4	4	4	3	3	3	2	1	1	2	2	2	2	2	2	2	2
13.6	2	1	1	1	-	-	-	-	-	-	2	3	4	5	4	2	3	3	3	4	4	4	3	3	3	4	3	2	1	1	1	1	1	1	1	2	2
14.x																																					
15.x																																					
16.x																																					
17.x																																					
18.x																																					
19.6	2	2	2	1	1	1	1	1	1	1	1	1	3	4	4	4	5	5	5	5	4	4	4	3	3	3	2	1	1	1	1	2	2	2	2	2	2
20.7	2	2	1	1	1	1	1	1	1	2	2	3	4	5	5	5	5	5	5	5	5	4	3	3	3	3	3	1	1	1	1	1	1	2	2	2	2
21.6	2	2	1	1	1	1	1	1	1	1	1	1	1	2	3	5	5	5	4	4	6	5	4	4	4	4	4	4	4	2	2	2	2	2	2	1	1
22.x																																					
24.0	2	1	1	1	1	1	1	1	1	1	1	2	2	3	4	4	10	13	9	5	5	4	4	4	3	3	3	2	2	1	1	1	1	1	1	2	2
24.x																																					
25.6	2	2	2	2	1	1	1	1	1	1	1	1	4	5	5	6	8	8	7	7	5	5	5	5	6	6	4	1	1	1	1	1	2	2	2	2	2
26.6	2	2	2	1	1	1	1	1	1	2	2	2	3	3	4	5	5	5	4	4	4	4	4	4	4	3	3	2	2	2	1	1	1	1	1	1	2
27.8	3	2	1	1	1	1	1	1	2	2	2	3	4	5	5	5	5	5	5	4	4	4	3	3	4	4	2	2	2	2	2	2	2	2	2	2	2
28.7	2	1	1	1	1	1	1	1	2	2	3	5	5	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1	1	1	2	2	2
29.7	2	1	1	1	1	1	1	1	1	2	3	4	4	4	4	5	4	4	4	4	4	4	3	2	2	2	2	2	1	1	1	1	2	2	2	2	2
30.7	2	1	1	1	1	1	1	1	1	1	2	2	7	6	4	3	3	3	3	3	3	3	4	3	3	2	2	2	2	1	1	1	1	2	2	2	2
31.9a	2	1	1	1	1	1	1	1	1	1	1	2	11	12	3	3	3	3	3	3	2	2	2	3	3	3	2	1	1	1	1	1	1	2	2	2	2

Table 95b

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

Date UT	Degrees south of the solar equator																					Degrees north of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.x																																					
8.x																																					
9.x																																					
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.x																																					
12.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.x																																					
15.x																																					
16.x																																					
17.x																																					
18.x																																					
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	-	-	-	-	-	-
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
22.x																																					
24.0a	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.x																																					
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-
26.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
27.8a	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 96b

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

Date UT	Degrees south of the solar equator																					Degrees north of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.6	2	2	1	1	1	1	1	1	1	1	1	2	3	3	3	4	5	5	4	3	3	3	3	3	3	3	2	2	2	1	1	1	1	1	1	2	2
2.7	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	4	4	4	3	3	3	3	3	3	3	3	2	1	1	1	1	2	2	2	2	1
3.6	2	1	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	1	1	1	1	1	1	2	2	2
4.7a	1	1	1	1	1	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5	6	4	4	3	3	2	2	2	2	2	1	1	1	1	1
5.6	2	2	2	1	1	1	1	1	1	2	2	3	3	3	3	3	3	4	3	5	5	6	6	4	3	2	3	1	1	1	1	1	1	1	1	1	2
6.7	2	2	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4	4	3	2	2	2	2	2	2	1	1	1	2	2
7.x																																					
8.x																																					
9.x																																					
10.7	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	3	3	3	2	2	2	3	2	1	1	1	1	1	2	2	2	2
11.x																																					
12.7a	2	2	1	1	1	1	1	1	1	2	2	3	3	4	4	3	2	5	5	5	5	4	3	3	2	2	2	1	1	1	1	1	1	1	1	2	2
13.6	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	4	4	4	4	5	5	5	5	4	4	3	3	3	2	1	1	1	1	1	1	2	2
14.x																																					
15.x																																					
16.x																																					
17.x																																					
18.x																																					
19.6	2	1	1	2	2	1	1	1	1	1	2	2	3	3	3	4	4	5	6	6	6	5	5	4	4	3	2	2	2	2	2	2	2	2	2	2	2
20.7	2	3	2	2	2	2	2	2	1	1	3	6	5	3	3	4	5	5	5	6	6	5	5	5	6	5	2	1	1	1	1	1	1	2	2	2	2
21.6	1	1	1	1	1	1	1	1	1	3	4	4	4	4	4	4	5	5	8	9	11	8	5	5	5	5	2	2	1	1	1	1	1	1	1	2	2
22.x																																					
24.0a	2	2	2	1	2	1	1	1	1	1	1	2	2	3	3	4	4	6	6	6	10	9	8	7	7	6	4	2	1	1	2	1	1	2	2	2	2
24.x																																					
25.6	2	2	2	1	1	1	1	1	1	2	3	3	4	5	6	6	6	7	10	10	7	7	9	7	6	6	4	3	1	2	2	2	2	2	3	3	2
26.6a	2	2	2	1	1	1	1	1	1	2	2	2	3	3	3	4	4	4	5	6	4	4	4	5	5	4	3	3	3	1	1	1	1	1	2	2	2
27.8a	2	2	2	2	2	2	2	2	2	2	2	3	4	4	5	5	5	6	5	5	4	3	3	4	5	4	3	3	2	2	2	2	2	2	2	3	3
28.7	2	2	2	2	2	1	1	1	1	2	2	4	5	3	5	5	5	6	5	5	6	2	3	3	4	3	3	3	2	2	2	2	2	2	2	3	2
29.7	2	2	1	1	1	1	1	1	1	2	2	2	3	3	3	4	5	5	6	4	4	2	2	2	4	5	4	2	1	1	1	2	2	2	2	2	2
30.7a	2	2	1	1	1	1	1	1	1	1	2	3	3	3	4	3	4	4	3	2	2	2	2	3	3	2	2	2	1	1	1	2	2	2	2	2	2
31.9a	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	3	4	3	2	2	1	1	1	1	1	1	2	2

Table 97a

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

Date UT	Degrees north of the solar equator 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5	0	Degrees south of the solar equator 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954			
Jul 1.6			
2.7			
3.6			
4.7a			
5.6			
6.7			
7.x			
8.x	The 6702 A coronal line was not visible at the east limb on any of the observation dates in July.		
9.x			
10.7a			
11.x			
12.7			
13.6			
14.x			
15.x			
16.x			
17.x			
18.x			
19.6			
20.7			
21.6			
22.x			
24.0			
24.x			
25.6			
26.6			
27.8			
28.7			
29.7			
30.7			
31.9a			

Table 98a

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

Date UT	Degrees north of the solar equator 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5	0	Degrees south of the solar equator 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954			
Jul 1.x			
2.x			
3.7a	- - - - - - - - 2 3 5 4 4 3 2 2 2 3	2	3 3 3 2 - - - - - - - - - - - - X X
4.6a	- - - - - - - 2 3 3 4 4 3 2 - - - 2	3	2 2 2 - - - - - 2 2 3 - - - - - - -
5.x			
6.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
7.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
8.7	- - - - - - 2 3 3 3 3 3 2 2 2 - - -	-	- 2 3 3 2 - - - - - - - - - - - - -
9.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
10.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
11.6	- - - - - - - - - 2 3 3 2 3 - - - -	-	- - - - 2 2 3 3 2 3 3 2 - - - - - -
12.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
13.7a	- - - - - - - - - 2 3 3 3 2 - - - -	-	- - - - - - - - - - - - - - - - - -
14.7a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
15.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
16.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
17.9a	- - - - - - - - - 2 3 3 3 2 - - - -	-	- - - - - - - 2 3 3 3 2 - - - - - -
18.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - 2 3 3 2 - -
19.6	- - - - - - - - - 2 3 3 3 4 3 2 - -	-	- - - - - - - - - - - - - - - - - -
20.7a	- - - - - - - - - - 2 3 3 2 - - - -	-	- - - - - - - - - - - - - - - - - -
21.x			
22.7	- - - - - - - - 2 2 3 3 2 - - - 9 14	3	2 - - - - - - - - - - - - - - - - -
23.9a	- - - - - - - 2 3 4 5 4 - - 2 3 8 12	7	5 3 - - - - - - - - - - - - - - - -
24.9a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
25.x			
26.8a	- - - - - - - - - 2 3 3 4 3 2 2 - -	-	- - - - - - - 2 3 3 3 2 - - - - - -
27.7a	- - - - - - - - - 2 2 3 2 2 - - - -	-	- - - - - - - 2 3 4 3 3 2 - - - - -
28.x			
29.x			
30.x			
31.x			

Table 97b

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

Date UT	Degrees south of the solar equator 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0	Degrees north of the solar equator 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954		
Jul 1.6		
2.7		
3.6		
4.7a		
5.6		
6.7		
7.x		
8.x	The 6702A coronal line was not visible at the west limb on any of the observation dates in July.	
9.x		
10.7		
11.x		
12.7a		
13.6		
14.x		
15.x		
16.x		
17.x		
18.x		
19.6		
20.7		
21.6		
22.x		
24.0a		
24.x		
25.6		
26.6a		
27.8a		
28.7		
29.7		
30.7a		
31.9a		

Table 98b

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

Date UT	Degrees south of the solar equator 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5	0	Degrees north of the solar equator 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954			
Jul 1.x			
2.x			
3.7a	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 - - - - - - -
4.6a	- - - - - - - 2 3 3 2 2 2 2 3 3 2 2	2	3 3 2 2 - - 3 3 4 5 4 2 2 - - - - -
5.x			
6.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
7.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
8.7	- - - - - - - - 2 2 3 3 2 - - 2 - -	-	- - - - 2 3 2 2 2 2 - - - - - - - -
9.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
10.6	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
11.6	- - - - - - - - - 2 2 3 3 3 2 - - -	-	- - - - 2 3 3 4 3 3 4 2 - - - - - -
12.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
13.7a	- - - - - - - - - - - - - - - - - -	-	- - - - - - X X X X X X - - - - - -
14.7a	- - - - - - - - - - - - - - - - - -	-	- - - - - 2 2 3 3 3 2 3 2 2 - - - -
15.6a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
16.6	- - - - - - - - - - - - - - - - - -	-	- - - 2 2 4 3 3 3 3 4 3 2 - - - - -
17.9a	- - - - - - - - - 2 3 3 2 - - - - -	-	- - - 2 3 5 4 3 3 3 2 - - - - - - -
18.6a	- - - - - - - - - - - - - - - - - -	2	3 3 5 4 3 3 2 2 2 3 5 4 2 - - - - -
19.6	- - - - - - - - - - - - - - - - - -	-	- - - - - 2 2 2 3 2 2 - - - - - - -
20.7a	- - - - - - - - - - - - - - - - - -	-	- - - - - - 2 3 3 3 2 - - - - - - -
21.x			
22.7	- - - - - - - - - - - 2 3 3 2 - - -	-	- - - - - - - - - - - - - - - - - -
23.9a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
24.9a	- - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - -
25.x			
26.8a	- - - - - - 2 2 3 3 2 - - - - - - -	-	- - 2 3 3 2 2 - 3 3 2 - - - - - - -
27.7a	- - - - - - - - - 2 3 3 2 - - - - -	-	- - - - - 2 3 3 2 2 - - - - - - -
28.x			
29.x			
30.x			
31.x			

Table 99a

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

Date	Degrees north of the solar equator																				Degrees south of the solar equator																		
UT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.x																																					
2.x																																					
3.7a	-	-	-	-	-	-	-	-	-	2	2	4	5	7	5	4	4	3	3	4	5	4	3	3	2	4	3	2	2	2	2	2	3	3	X	X	X
4.6a	3	3	3	3	2	2	-	2	2	2	3	11	13	11	9	8	7	5	6	7	8	5	8	10	9	8	7	5	3	2	-	2	3	3	-	-	3
5.x																																					
6.6a	-	-	-	-	-	2	2	-	2	3	2	2	3	4	4	4	5	4	4	3	4	4	4	3	2	2	2	2	2	-	2	2	-	-	-	-	-
7.6a	-	-	-	-	-	-	-	-	-	-	2	3	4	4	4	5	5	5	4	4	4	3	3	2	3	3	3	2	-	-	-	2	-	-	-	-	-
8.7	-	-	-	2	2	2	-	2	2	3	2	4	5	5	7	7	7	8	8	7	7	8	7	5	4	4	4	3	3	2	2	2	2	2	3	3	3
9.6	-	-	-	-	-	-	-	-	-	-	2	3	4	5	4	5	5	4	6	6	8	7	5	3	2	2	2	3	3	2	2	2	2	2	2	2	3
10.6	3	2	-	-	-	-	2	2	2	3	3	3	5	7	8	7	6	7	7	8	8	9	10	5	4	3	2	3	3	2	2	2	2	2	3	2	2
11.6	3	3	3	-	2	2	2	2	2	3	3	6	9	10	10	9	7	6	9	9	11	11	12	10	8	6	4	3	4	3	2	2	2	3	3	3	4
12.6	-	-	-	-	-	-	-	-	-	2	3	3	5	6	6	5	5	4	3	6	8	8	7	7	6	5	6	5	3	3	2	-	-	-	2	-	2	2
13.7a	3	3	3	2	2	2	-	2	3	-	3	3	7	7	8	7	7	5	6	6	7	8	7	7	6	6	5	4	3	2	2	2	3	2	3	3	2
14.7a	-	-	-	-	-	-	-	-	2	2	3	3	5	5	3	3	5	5	4	3	3	2	5	5	4	3	3	2	3	3	2	2	-	-	2	2	3
15.6	2	3	2	2	-	-	2	2	2	2	3	3	4	3	2	2	4	3	5	5	6	5	4	4	3	4	2	2	2	2	2	-	-	-	-	-	-
16.6	3	2	3	3	3	2	2	2	-	3	3	5	3	7	5	5	6	7	8	8	9	8	9	5	5	5	4	3	2	2	2	2	2	2	3	3	2
17.9a	-	-	-	-	-	-	-	-	-	2	2	3	3	6	5	5	5	4	4	5	4	5	6	5	4	5	4	2	2	2	2	2	-	2	2	2	2
18.6	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	7	7	6	5	5	4	4	4	5	5	5	5	4	3	2	2	2	-	-	2	2
19.6	-	-	-	-	-	2	3	2	2	-	-	2	-	2	4	5	6	6	5	7	6	7	8	7	6	5	5	4	4	3	2	2	-	-	-	-	-
20.7a	-	-	-	-	-	-	-	-	-	2	2	3	4	5	4	5	5	4	5	7	8	7	5	6	4	4	3	2	2	3	2	-	-	-	-	-	-
21.x																																					
22.7	-	-	-	-	-	-	-	-	-	2	3	4	6	5	5	8	15	16	11	8	5	8	9	12	7	5	6	5	5	4	2	2	2	-	2	3	3
23.9a	-	-	-	-	-	-	-	-	2	3	5	5	5	4	5	7	16	11	10	7	8	7	7	7	6	5	4	4	4	3	2	2	2	2	3	3	2
24.9a	-	2	-	2	-	-	-	-	2	2	2	3	3	3	4	5	6	11	10	8	7	5	5	5	4	5	3	3	-	-	2	2	3	-	2	-	-
25.x																																					
26.8a	-	-	-	-	-	-	-	2	2	2	3	3	4	5	6	5	5	6	5	5	5	4	3	3	4	3	3	4	3	2	2	2	2	-	2	2	2
27.7a	-	-	2	2	3	2	2	2	2	3	2	3	4	5	6	5	5	5	4	5	5	6	7	6	5	5	4	4	3	3	2	-	-	-	-	-	-
28.x																																					
29.x																																					
30.x																																					
31.x																																					

Table 100a

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

Date	Degrees north of the solar equator																				Degrees south of the solar equator																		
UT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1954																																					
Jul 1.x																																					
2.x																																					
3.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
4.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.x																																					
6.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.x																																					
22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.x																																					
26.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.x																																					
29.x																																					
30.x																																					
31.x																																					

Table 99b

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

Date UT	Degrees south of the solar equator																			Degrees north of the solar equator																					
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90				
1954																																									
Jul 1.x																																									
2.x																																									
3.7a	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	-	-	-	-	-	-	-						
4.6a	3	2	-	2	2	2	2	-	2	3	6	5	7	8	8	10	8	9	9	11	12	14	15	11	10	5	3	2	-	2	3	3	3	2	2	-	3				
5.x																																									
6.6a	-	-	-	-	-	-	-	-	-	2	3	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	3	2	-	-	-	-	-	-	-	-	-				
7.6a	-	-	-	-	-	-	-	-	-	2	3	4	2	4	2	4	5	4	4	3	5	4	4	3	3	2	-	-	-	2	-	-	-	-	-	-	-				
8.7	3	3	2	3	3	2	-	-	2	2	3	3	4	5	5	8	7	5	4	5	5	5	5	5	5	6	5	4	3	2	-	-	-	-	-	-	-				
9.6a	3	3	2	2	2	2	-	-	-	3	2	3	4	4	5	5	4	3	3	3	3	3	4	2	2	3	3	4	2	-	-	-	-	-	-	-	-				
10.6	2	3	2	2	2	-	-	2	-	2	3	4	5	7	8	8	7	7	7	8	7	6	5	5	3	2	2	2	2	2	2	-	2	2	2	2	3				
11.6	4	4	3	3	2	3	2	-	-	3	5	6	7	11	10	9	8	8	8	9	8	7	6	6	5	3	4	2	2	2	2	2	2	2	2	2	3				
12.6a	2	2	2	-	2	2	2	2	2	3	4	5	6	8	5	4	4	5	4	5	4	8	3	3	3	2	2	-	-	-	-	-	-	-	-	-	-				
13.7a	2	3	3	2	2	-	-	-	2	3	4	3	3	4	5	5	5	5	7	8	8	9	7	7	X	X	X	X	X	X	3	2	3	3	2	2	3				
14.7a	3	3	2	2	2	2	3	-	2	3	3	3	4	5	5	6	5	5	6	6	8	8	7	7	6	5	4	3	2	2	-	-	-	-	-	-	-				
15.6a	-	2	3	2	2	2	-	-	2	2	3	2	3	3	3	3	3	2	4	4	5	6	6	5	4	3	2	3	2	2	2	2	-	-	2	2	2				
16.6	2	4	5	5	4	3	2	2	2	3	3	4	6	8	9	9	10	11	10	9	8	8	11	15	16	8	4	2	2	2	2	2	-	2	3	2	3				
17.9a	2	3	2	3	2	2	-	2	-	-	2	2	3	3	3	3	4	5	5	6	6	7	8	10	11	10	2	2	2	2	-	-	-	-	-	-	-				
18.6a	2	2	2	3	-	2	2	2	2	-	-	2	3	4	4	3	4	4	5	5	5	6	6	8	7	7	6	6	3	2	-	-	-	-	-	-	-				
19.6	-	-	-	2	3	3	2	-	-	2	-	-	2	3	4	5	5	6	6	5	5	8	7	10	8	7	5	5	3	-	-	-	-	-	-	-	-				
20.7a	-	-	-	2	2	-	-	2	2	-	3	5	8	2	3	5	6	4	4	5	5	8	7	6	5	4	5	4	2	-	-	-	-	-	-	-	-				
21.x																																									
22.7	3	2	3	4	2	2	-	-	3	2	3	5	7	5	6	5	4	5	4	5	14	13	11	3	3	5	2	2	-	-	-	-	-	-	-	-	-				
23.9a	2	3	3	2	3	2	2	-	-	3	-	4	5	6	5	5	4	5	11	12	13	15	13	11	10	8	6	5	2	3	2	-	-	-	-	-	-	-				
24.9a	-	3	3	2	2	2	-	-	2	-	2	2	3	3	4	3	3	4	5	6	7	8	4	5	4	4	3	2	2	2	-	-	-	-	-	-	-				
25.x																																									
26.8a	2	3	3	-	-	-	-	-	-	2	2	3	4	4	5	5	6	5	5	5	4	4	4	5	5	4	3	2	3	2	-	-	-	-	-	-	-				
27.7a	-	-	-	-	-	-	-	-	2	2	2	3	3	2	2	4	3	4	4	4	5	3	4	3	4	3	2	2	-	2	2	2	2	-	-	-	-				
28.x																																									
29.x																																									
30.x																																									
31.x																																									

Table 100b

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

Date UT	Degrees south of the solar equator																			Degrees north of the solar equator																					
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90				
1954																																									
Jul 1.x																																									
2.x																																									
3.7a																																									
4.6a																																									
5.x																																									
6.6a																																									
7.6a	The 6702A coronal line was not visible at the west limb on any observation date in July; the position angles observed were the same as for the 6374A coronal line.																																								
8.7																																									
9.6a																																									
10.6																																									
11.6																																									
12.6a																																									
13.7a																																									
14.7a																																									
15.6a																																									
16.6																																									
17.9a																																									
18.6a																																									
19.6																																									
20.7a																																									
21.x																																									
22.7																																									
23.9a																																									
24.9a																																									
25.x																																									
26.8a																																									
27.7a																																									
28.x																																									
29.x																																									
30.x																																									
31.x																																									

Table 101

"Zurich Provisional Relative Sunspot Numbers

July 1954

Date	R_Z*	Date	R_Z*
1	0	17	7
2	0	18	7
3	8	19	0
4	0	20	0
5	0	21	0
6	0	22	0
7	0	23	0
8	7	24	8
9	0	25	10
10	0	26	7
11	0	27	0
12	7	28	10
13	10	29	7
14	15	30	7
15	8	31	6
16	15	Mean:	4.5

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

Table 102

American Relative Sunspot Numbers

June 1954

Date	R_A'	Date	R_A'
1	2	17	0
2	1	18	0
3	0	19	0
4	0	20	0
5	0	21	0
6	0	22	1
7	0	23	1
8	0	24	0
9	0	25	0
10	0	26	0
11	0	27	0
12	0	28	0
13	0	29	0
14	0	30	0
15	0		
16	0	Mean:	0.2

Errata: The mean R_A' for April 1954 is 0.6 and not 4.0 as published in F 118.

Table 103

Solar Flares, July 1954

No solar flares were reported for the month of July.

Table 104

Indices of Geomagnetic Activity for June 1954

Preliminary values of international character-figures, C;
Geomagnetic planetary three-hour-range indices, Kp;
Magnetically selected quiet and disturbed days

Gr. Day 1954	C	Values Kp Three-hour interval 1	2	3	4	5	6	7	8	Sum	Final Selected Days
1	0.2	2o	2-	0+	1+	1+	1o	0+	1+	9+	Five
2	0.3	1+	2+	1+	3o	1+	1o	0+	1+	12o	Quiet
3	0.2	1o	1+	2+	1+	1o	0+	1o	2-	10o	
4	0.4	2o	2o	3+	2+	1-	1o	2o	1o	14+	5
5	0.1	0+	0o	0o	0+	1-	1+	1o	2-	5+	8
											11
6	0.2	1o	1o	0+	1-	2-	1+	1+	2-	9o	16
7	0.6	1+	1o	1-	1-	3o	2-	2+	2o	13-	24
8	0.0	1+	1o	1+	1-	1-	0+	1-	1o	7o	
9	0.3	2+	1+	1-	2-	1o	1+	1o	2o	11+	
10	0.8	3+	3-	4+	3-	1+	2o	2+	2-	20+	
11	0.1	1o	1-	0+	2o	2-	1-	1-	1-	8-	Five
12	0.6	0o	0+	0o	1+	2-	3o	4o	2o	12+	Disturbed
13	0.6	2-	1+	1o	2-	1+	3o	3o	2o	15o	
14	0.6	1o	2-	1+	2o	4-	2o	2-	1o	14+	10
15	0.2	1+	1+	2-	1-	0+	0+	1-	2-	8o	12
											13
16	0.0	2-	1+	1-	2-	0+	0+	0+	1o	7+	14
17	0.2	1o	0+	0+	1-	1+	1-	1o	2+	8-	28
18	0.5	1-	0+	0+	0+	0+	2-	4-	2+	10-	
19	0.3	1o	1+	1-	2-	1+	1o	2o	2-	11-	
20	0.3	2o	1+	1+	1+	1o	1-	1o	2-	10+	
21	0.5	0+	0o	1o	2-	2-	1o	1+	3+	10+	Ten
22	0.5	3o	3-	2-	1o	1o	2-	1+	2o	14+	Quiet
23	0.4	2o	1o	0+	1o	1-	2-	3-	2-	11o	
24	0.1	1+	2-	1-	1-	1-	1-	1o	1+	8o	1
25	0.3	0+	1o	1-	1o	3+	2-	1-	1o	10-	5
											6
26	0.4	1-	1o	1o	2-	1+	1+	2o	2o	11o	8
27	0.5	1+	1o	1o	1+	2o	2o	2o	3-	13+	11
28	0.8	4-	3-	3o	2o	1+	1+	2o	1+	17+	15
29	0.2	1-	1+	2+	1o	1-	1-	0+	1+	8+	16
30	0.6	1-	1-	2-	2-	1+	1o	1o	3+	11+	17
											24
Mean:	0.36										29

Errata: Incorrect Kp for May 1954 were received and published as Table 99 in F-119. The revised table will appear in F-121.

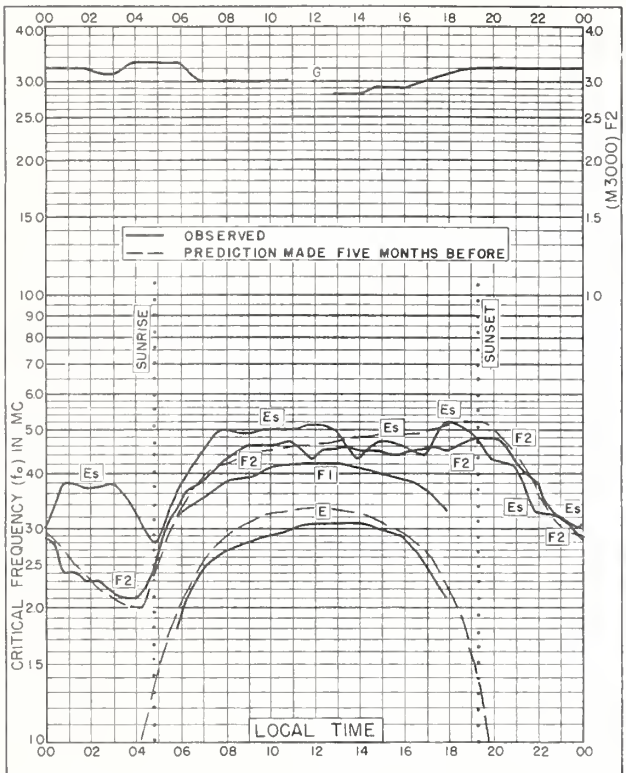


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W JULY 1954

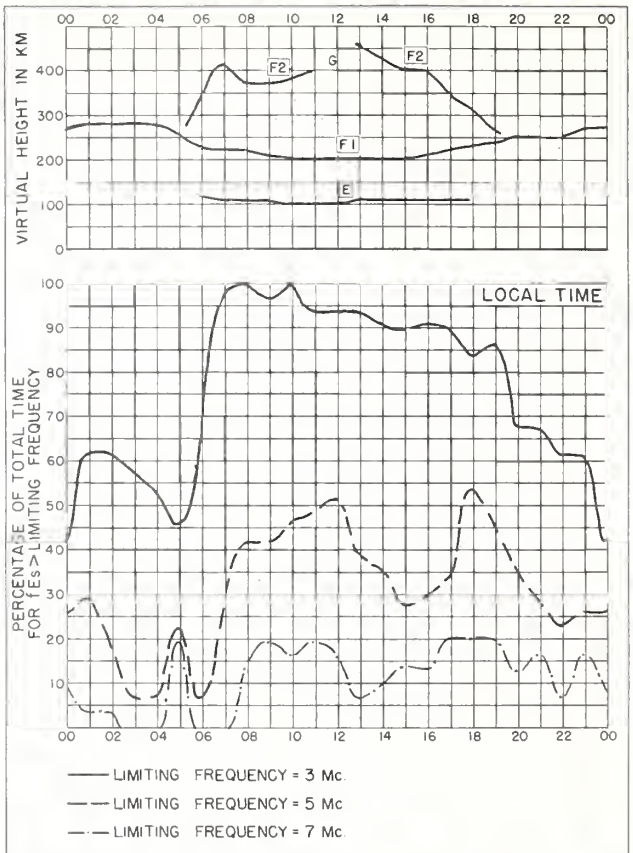


Fig. 2. WASHINGTON, D. C. JULY 1954

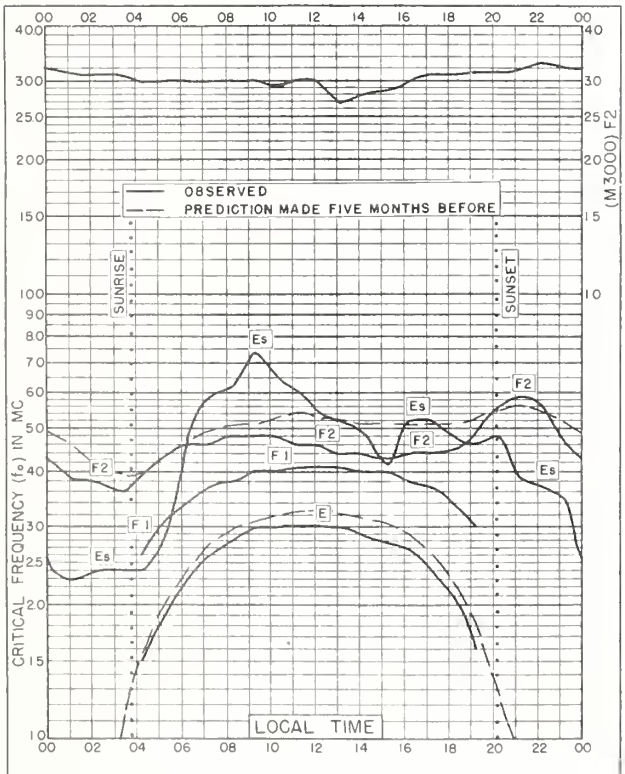


Fig. 3. ADAK, ALASKA
51.9N, 176.6°W JUNE 1954

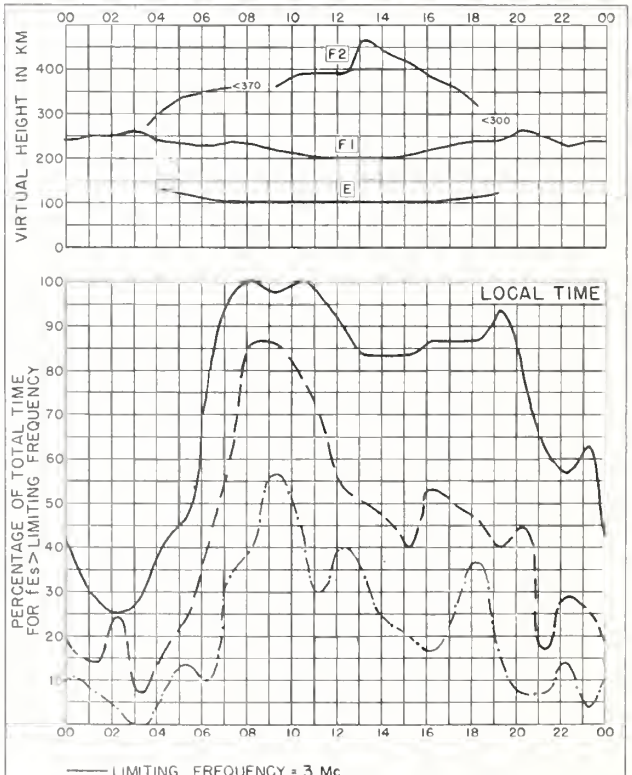


Fig. 4. ADAK, ALASKA JUNE 1954

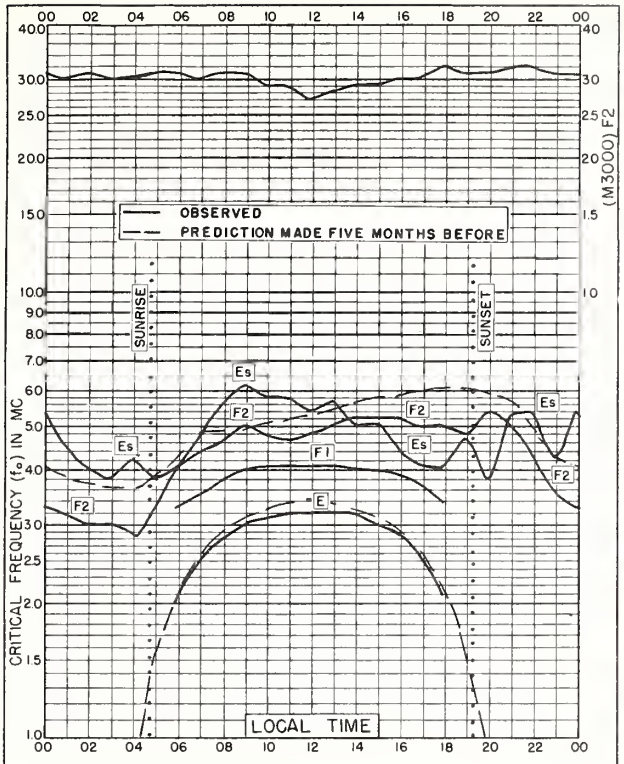


Fig. 5. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JUNE 1954

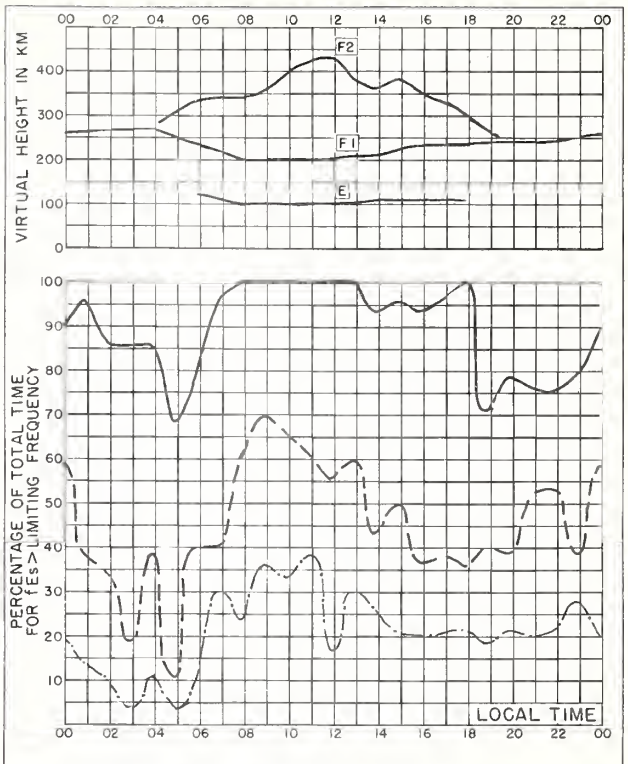


Fig. 6. SAN FRANCISCO, CALIFORNIA JUNE 1954

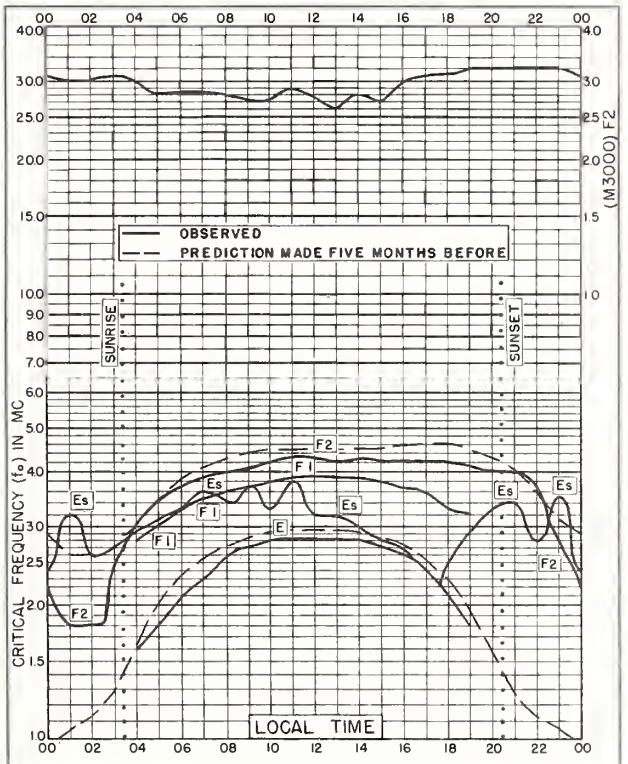


Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W MAY 1954

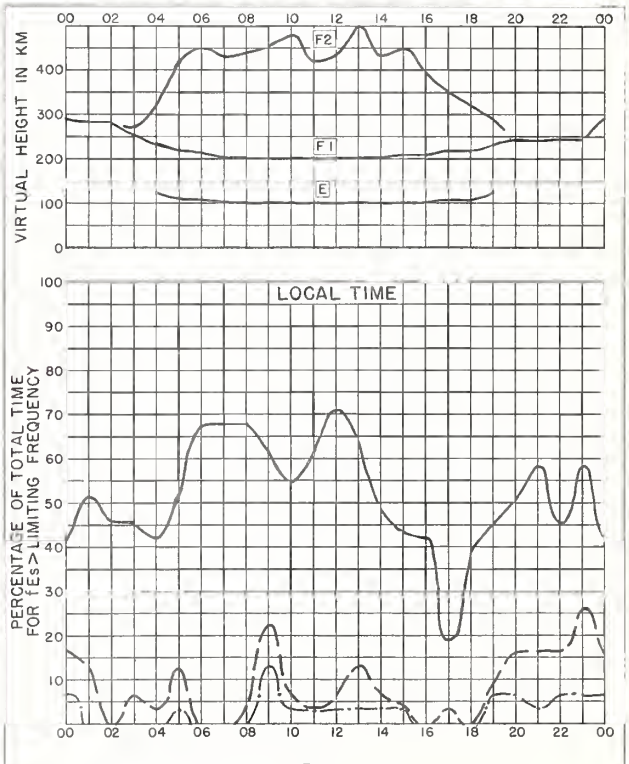


Fig. 8. ANCHORAGE, ALASKA MAY 1954

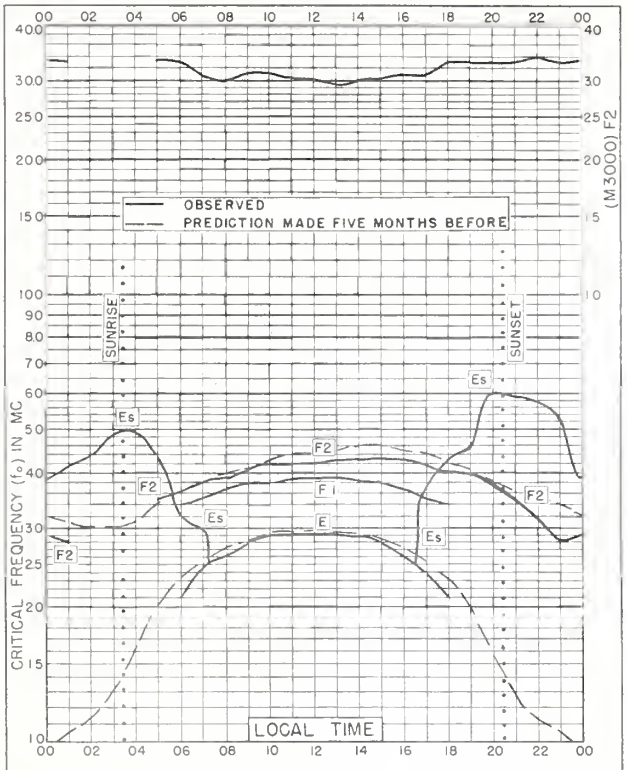


Fig. 9. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W MAY 1954

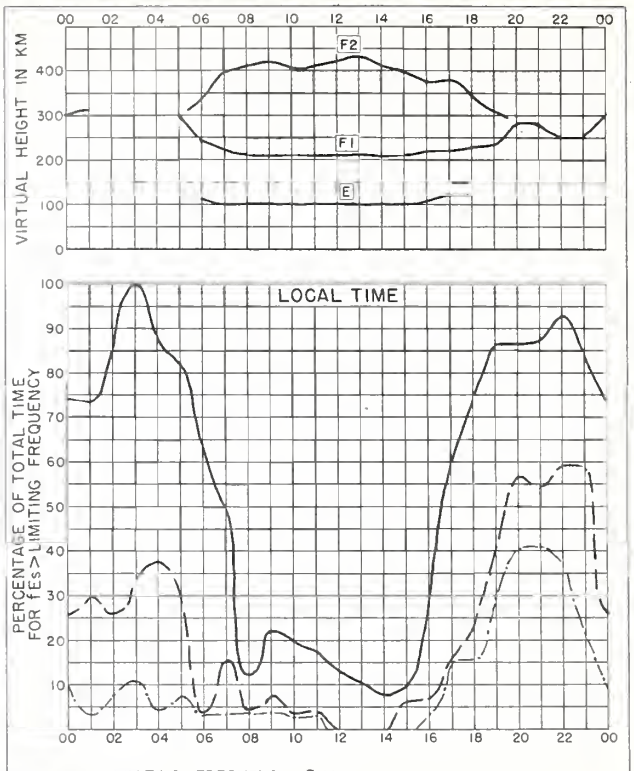


Fig. 10. NARSARSSUAK, GREENLAND MAY 1954

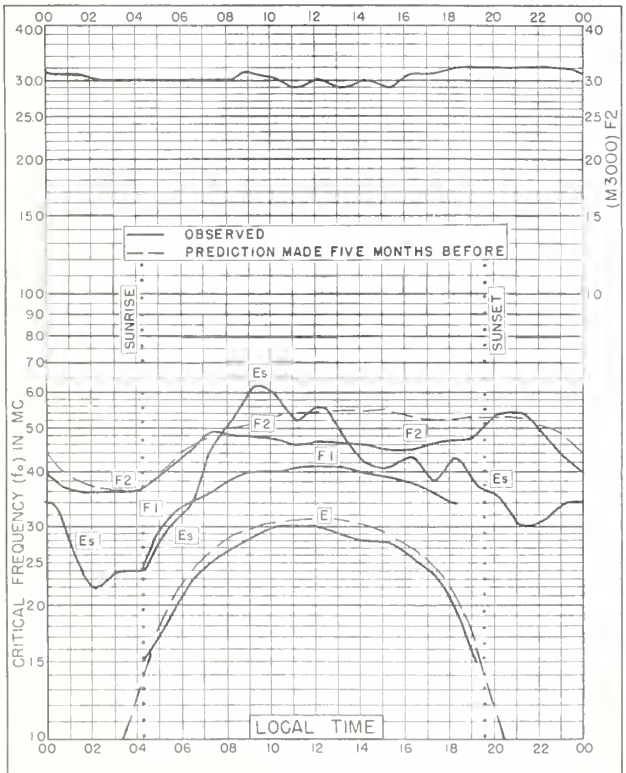


Fig. 11. ADAK, ALASKA
51.9°N, 176.6°W MAY 1954

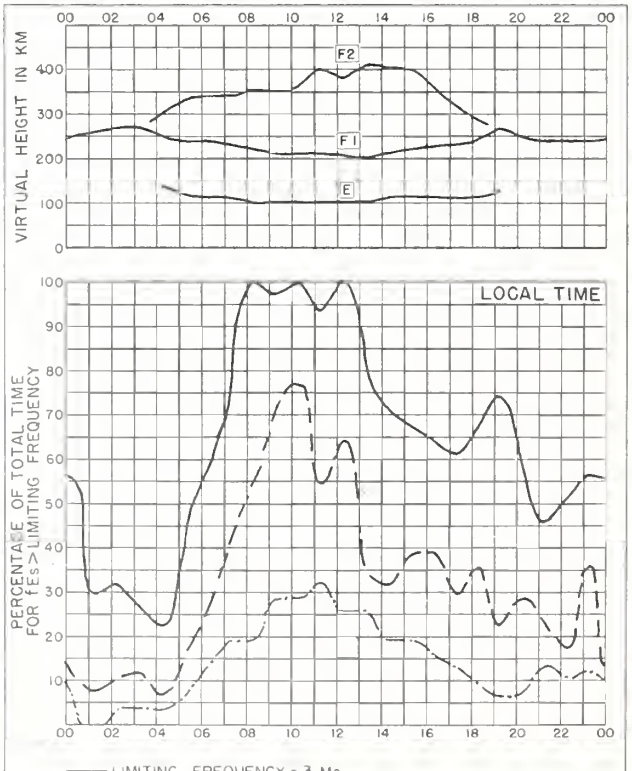


Fig. 12. ADAK, ALASKA MAY 1954

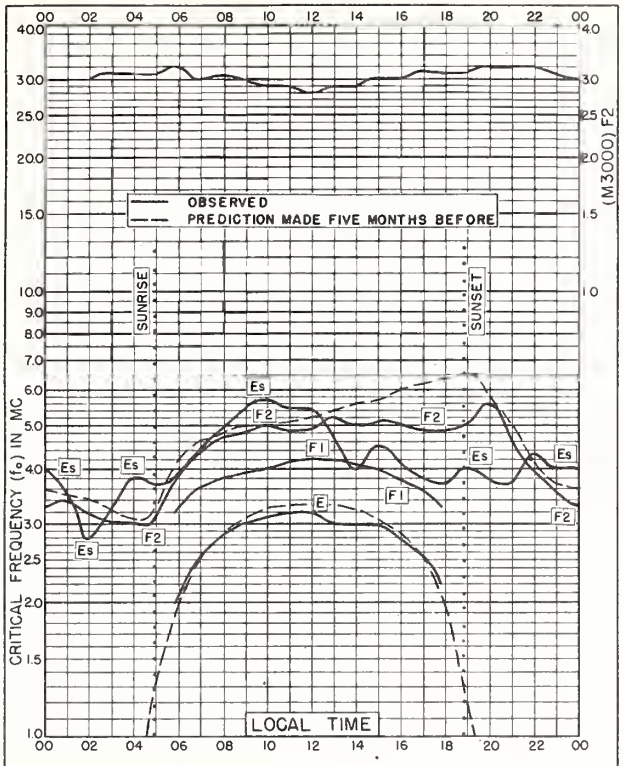


Fig. 13. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2° W MAY 1954

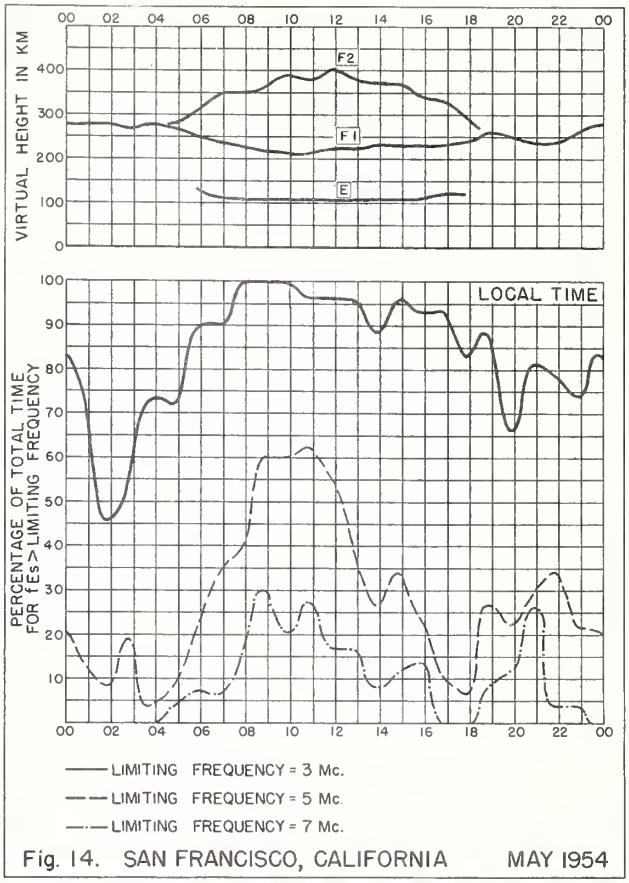


Fig. 14. SAN FRANCISCO, CALIFORNIA MAY 1954

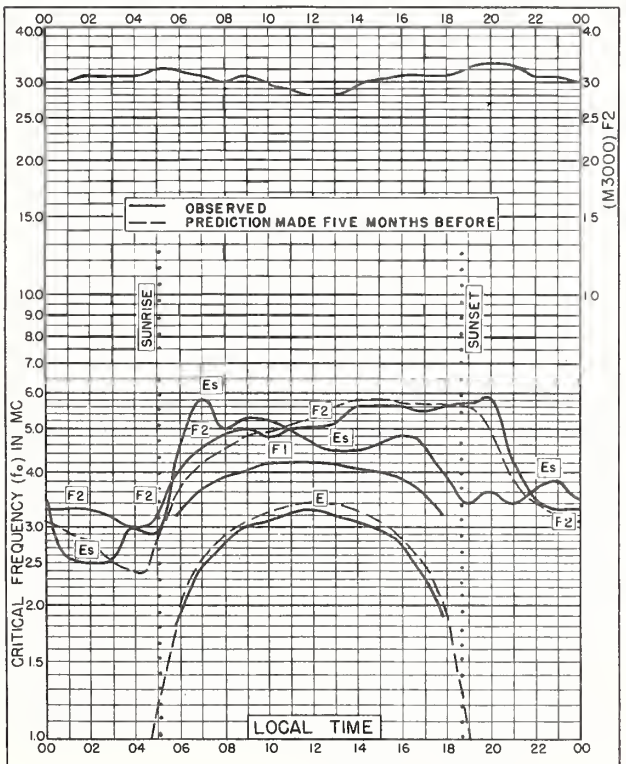


Fig. 15. WHITE SANDS, NEW MEXICO
32.3° N, 106.5° W MAY 1954

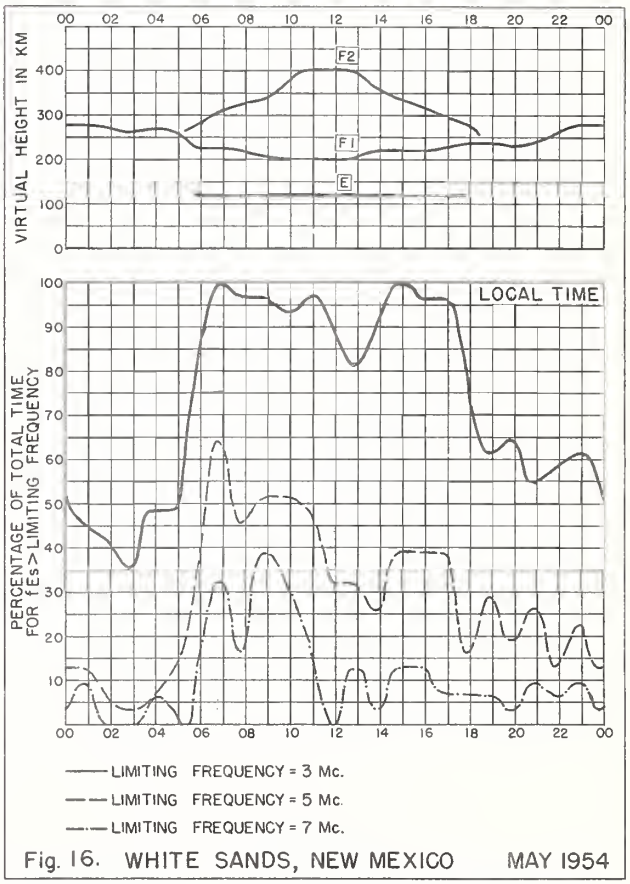


Fig. 16. WHITE SANDS, NEW MEXICO MAY 1954

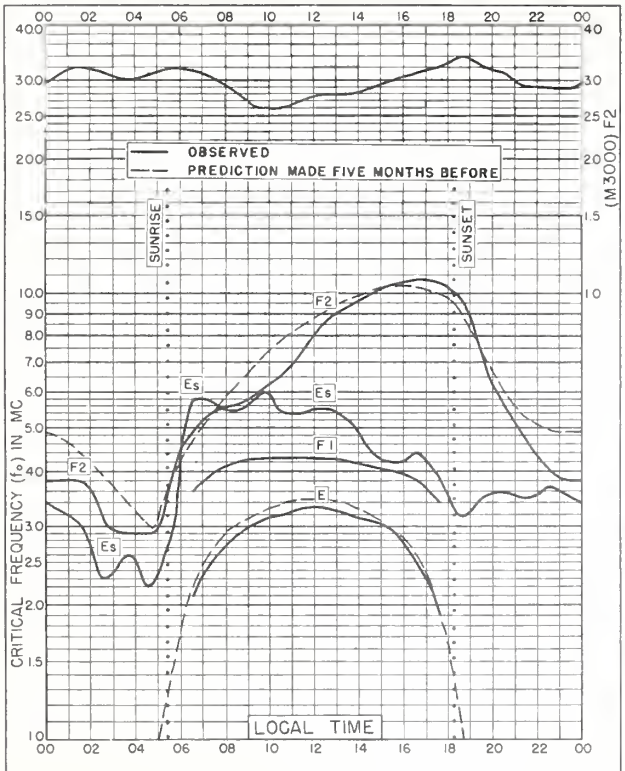


Fig. 17. MAUI, HAWAII
20.8°N, 156.5° W
MAY 1954

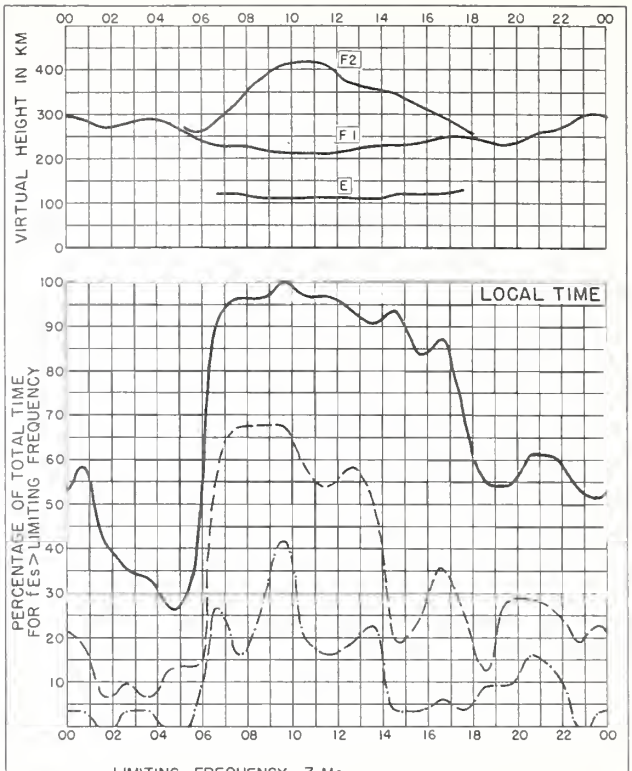


Fig. 18. MAUI, HAWAII
MAY 1954

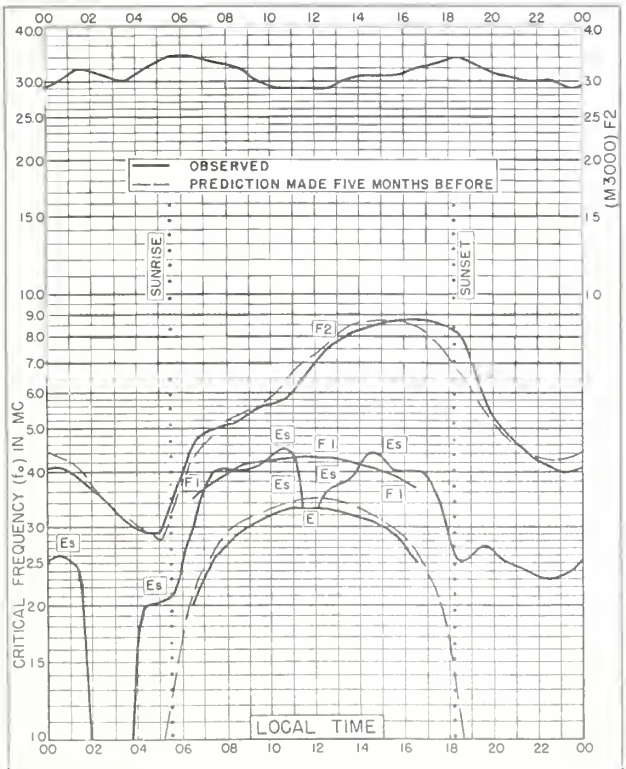


Fig. 19. PUERTO RICO, W.I.
18.5° N, 67.2° W
MAY 1954

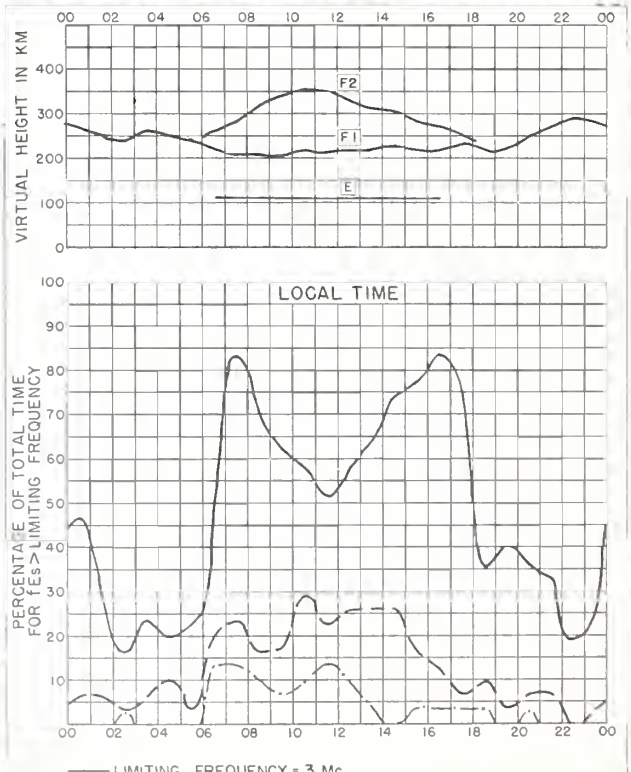


Fig. 20. PUERTO RICO, W.I.
MAY 1954

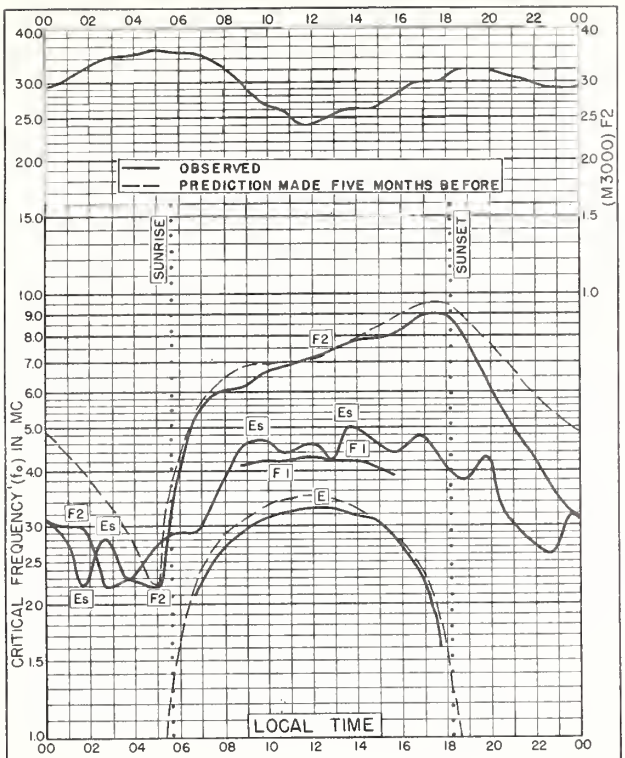


Fig. 21. GUAM I.
13.6°N, 144.9°E
MAY 1954

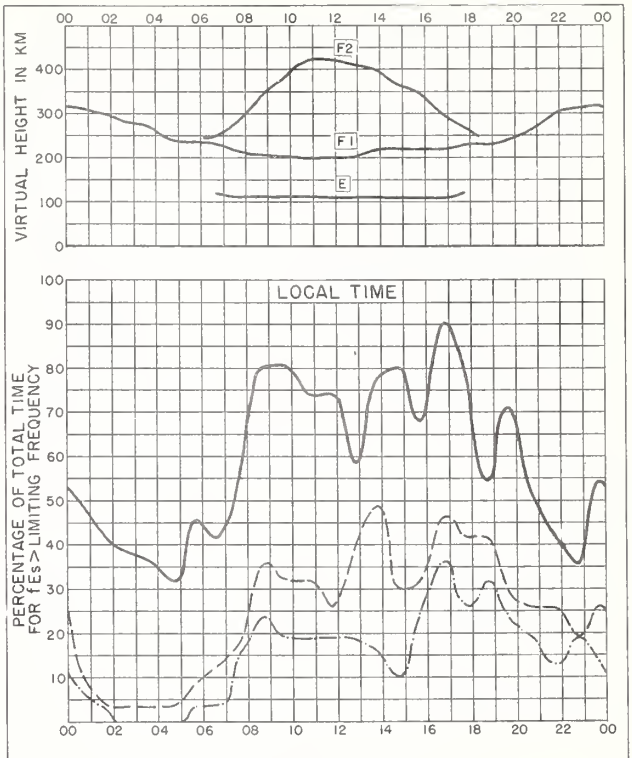


Fig. 22. GUAM I.
MAY 1954

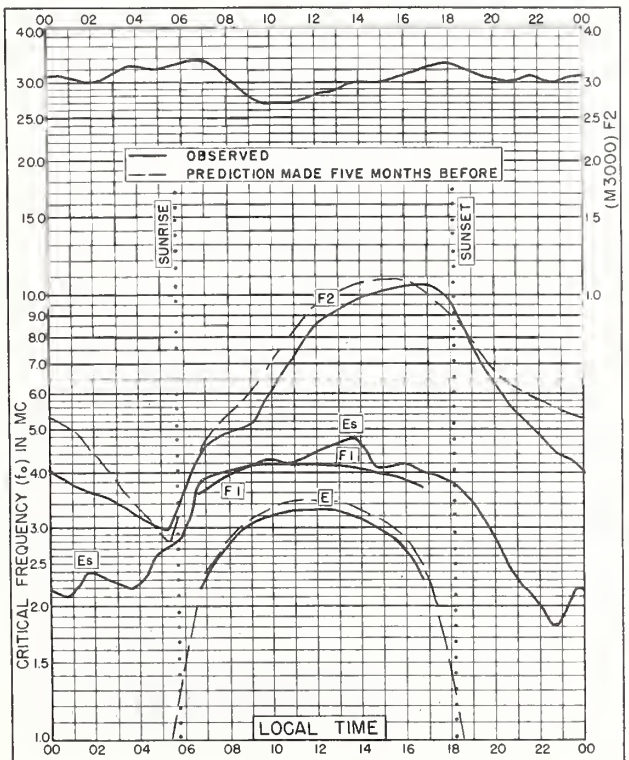


Fig. 23. PANAMA CANAL ZONE
9.4°N, 79.9°W
MAY 1954

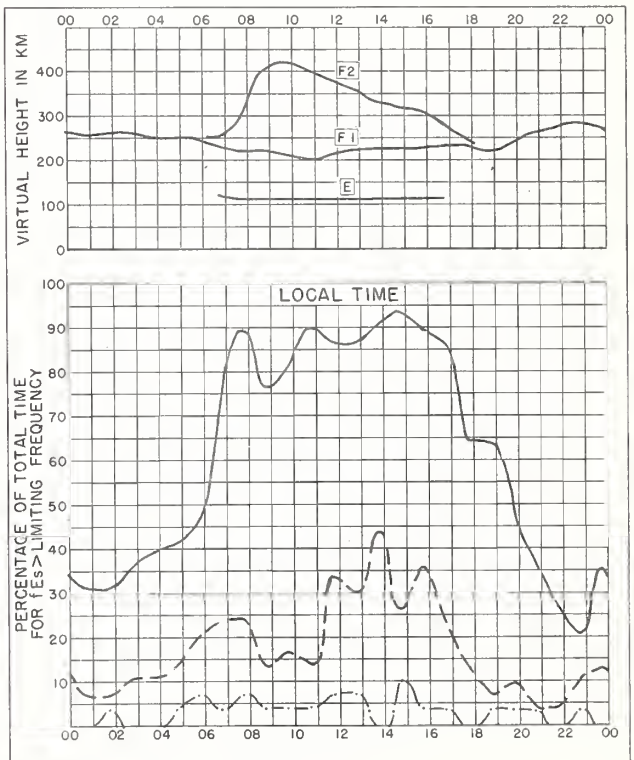


Fig. 24. PANAMA CANAL ZONE
MAY 1954

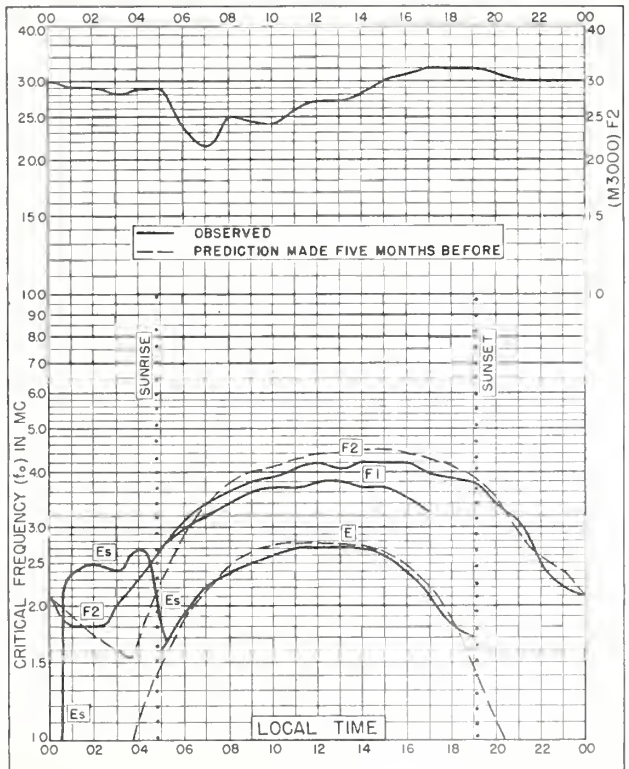


Fig. 25. ANCHORAGE, ALASKA
61.2° N, 149.9° W APRIL 1954

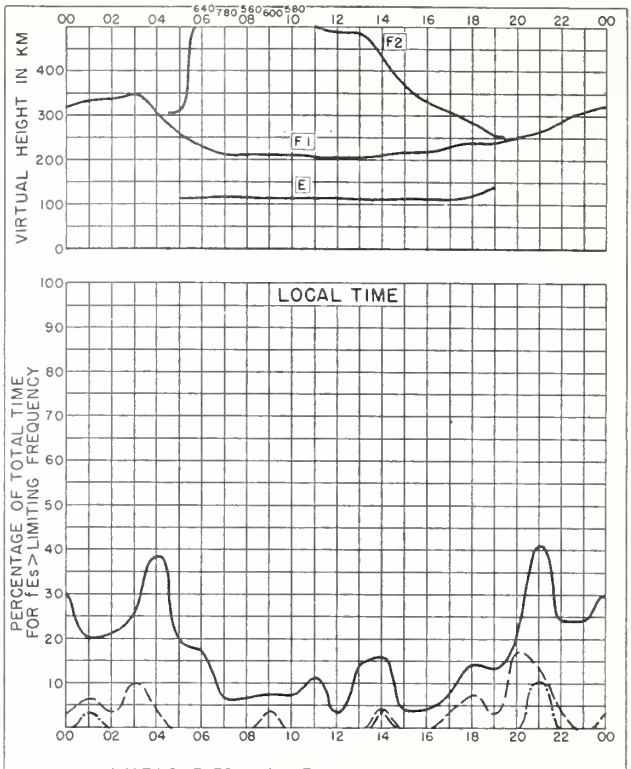


Fig. 26. ANCHORAGE, ALASKA APRIL 1954

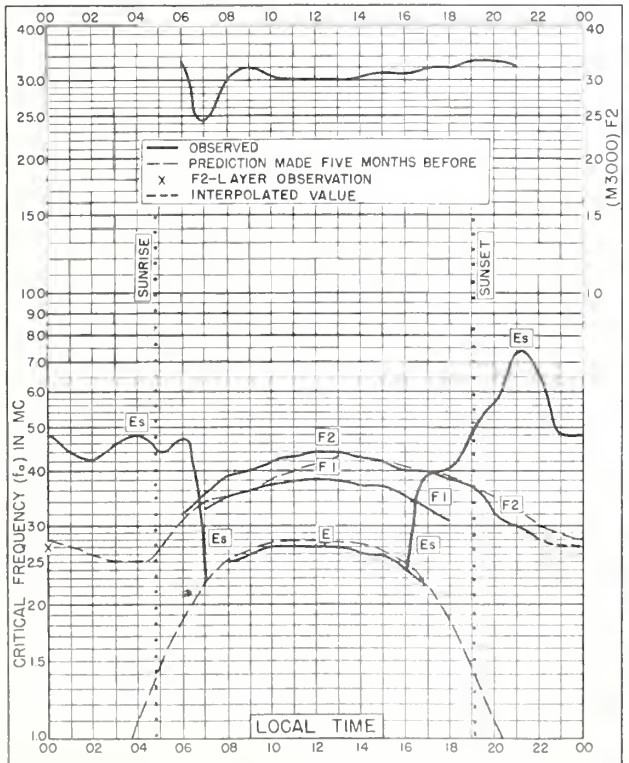


Fig. 27. NARSARSSUAK, GREENLAND
61.2° N, 45.4° W APRIL 1954

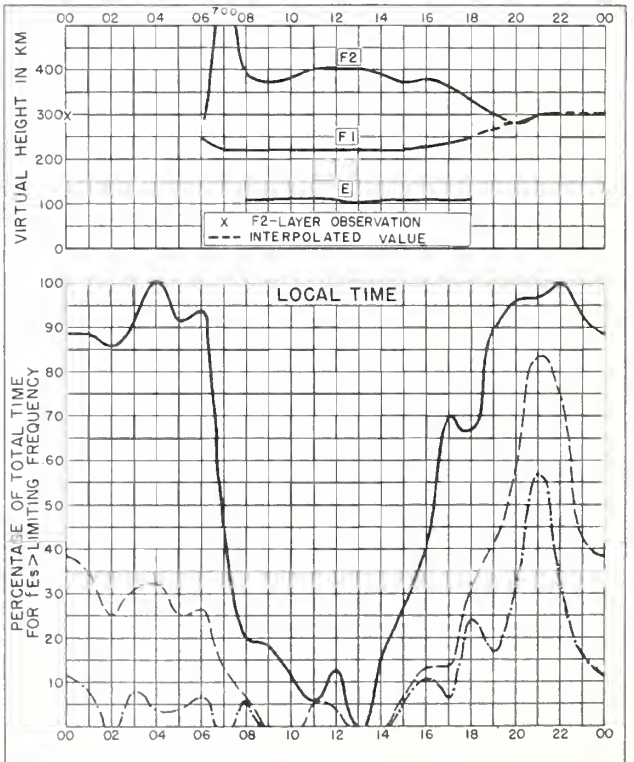


Fig. 28. NARSARSSUAK, GREENLAND APRIL 1954

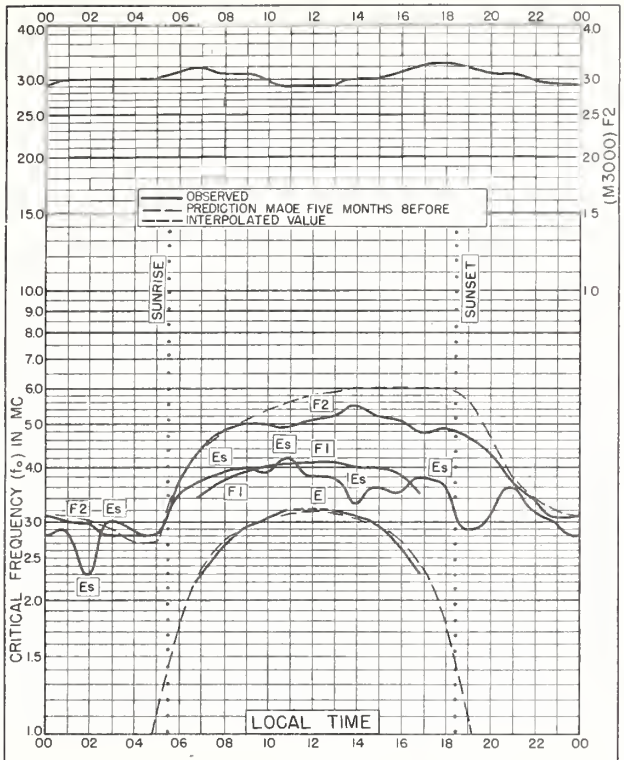


Fig. 29. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2° W APRIL 1954

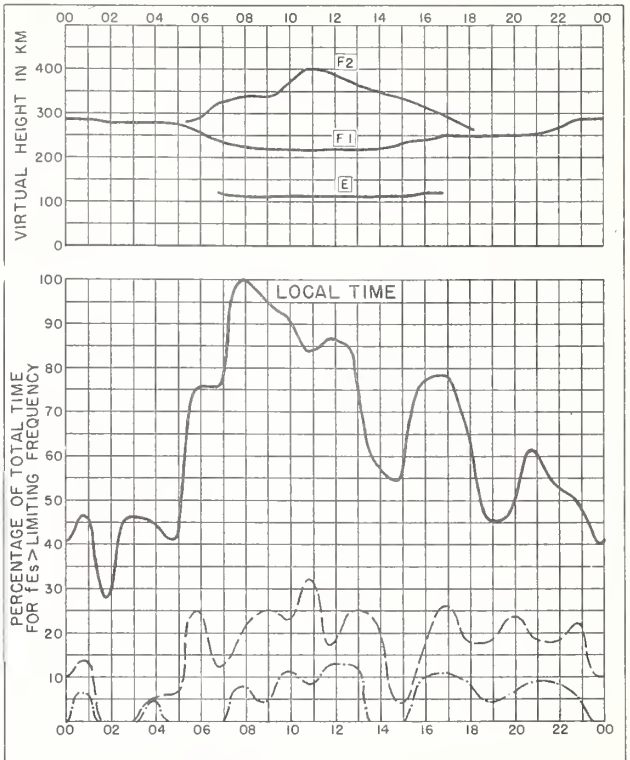


Fig. 30. SAN FRANCISCO, CALIFORNIA APRIL 1954

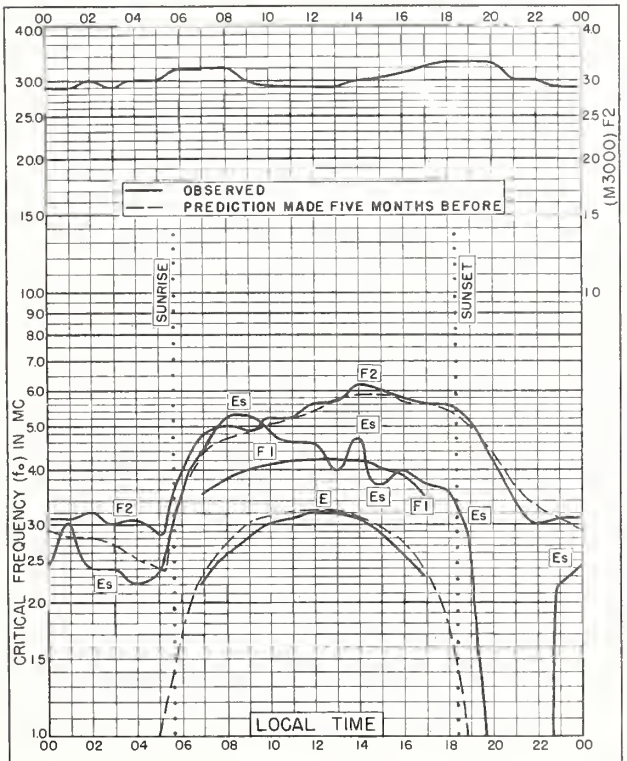


Fig. 31. WHITE SANDS, NEW MEXICO
32.3° N, 106.5°W APRIL 1954

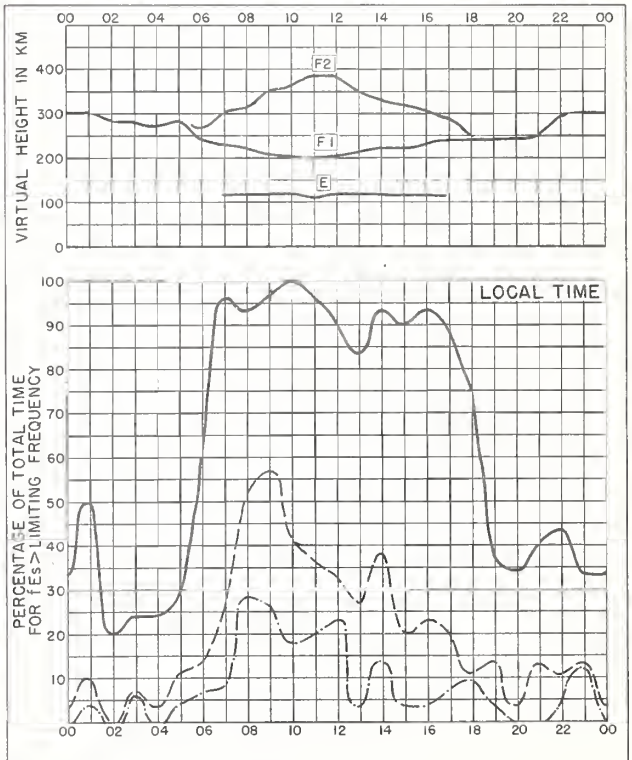


Fig. 32. WHITE SANDS, NEW MEXICO APRIL 1954

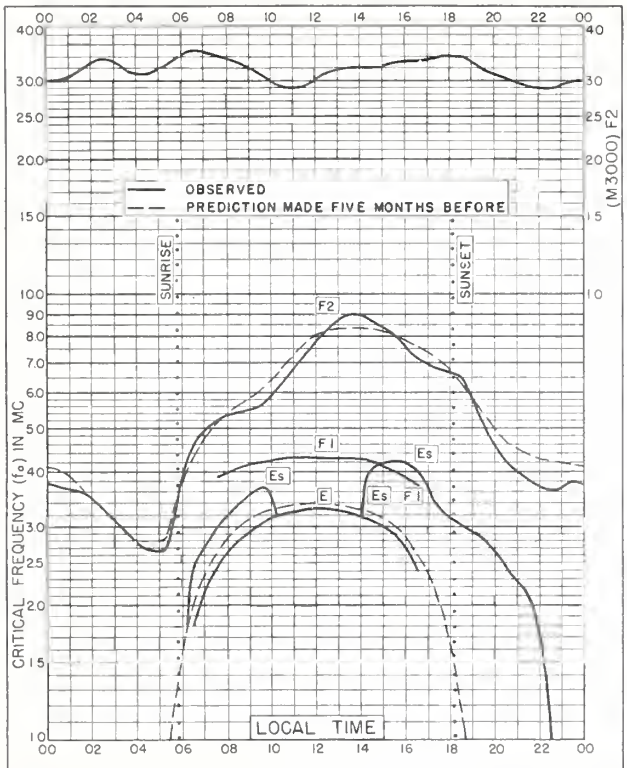


Fig. 33. PUERTO RICO, W.I.
18.5°N, 67.2°W APRIL 1954

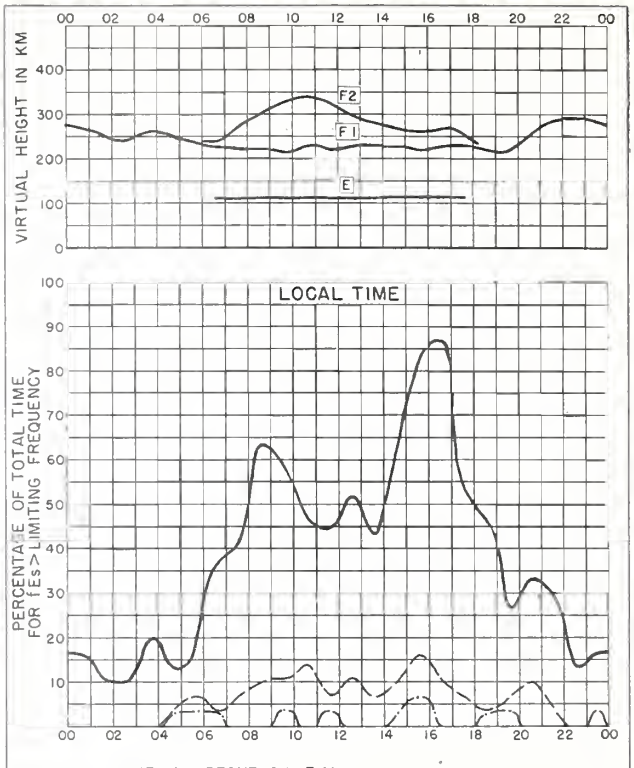


Fig. 34. PUERTO RICO, W.I. APRIL 1954

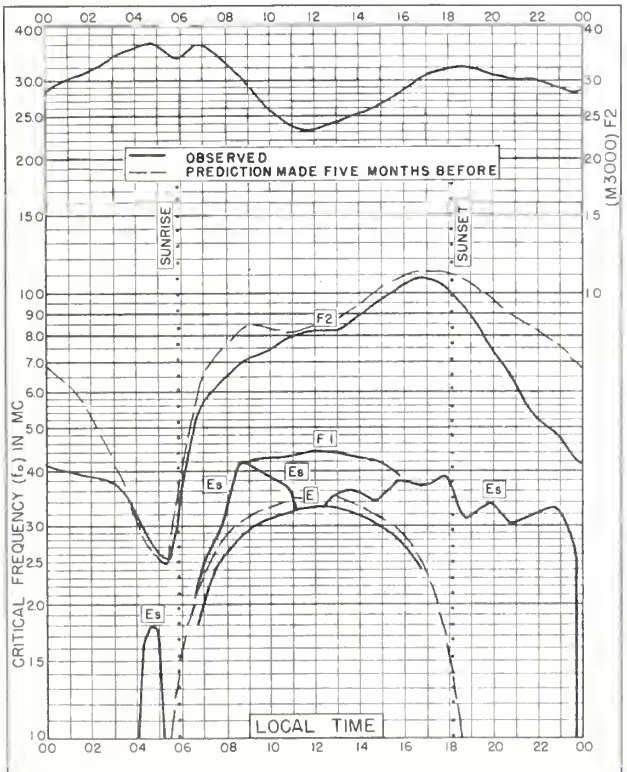


Fig. 35. GUAM I.
13.6°N, 144.9°E APRIL 1954

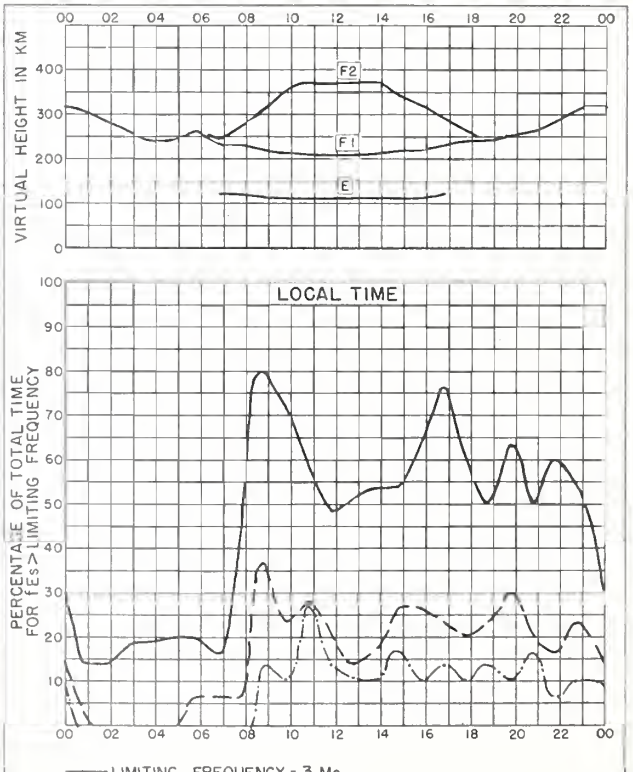


Fig. 36. GUAM I. APRIL 1954

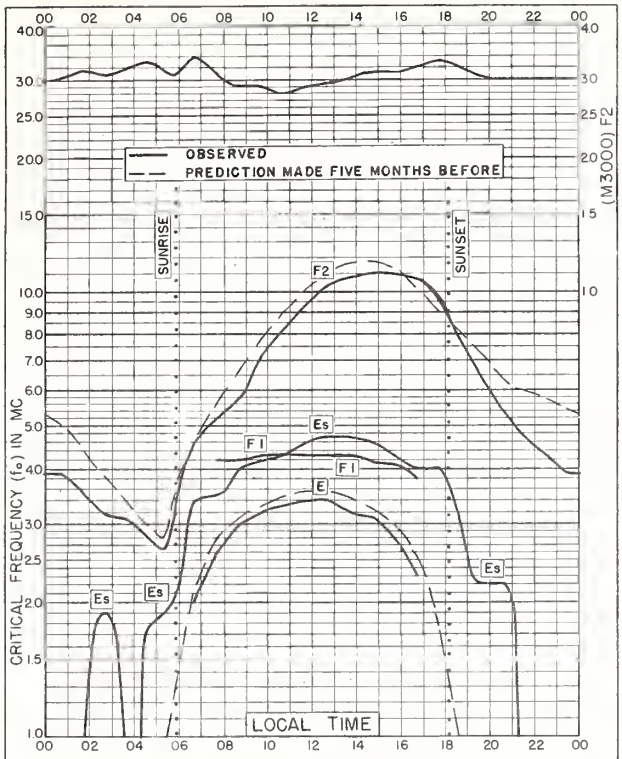


Fig. 37. PANAMA CANAL ZONE
9.4°N, 79.9°W APRIL 1954

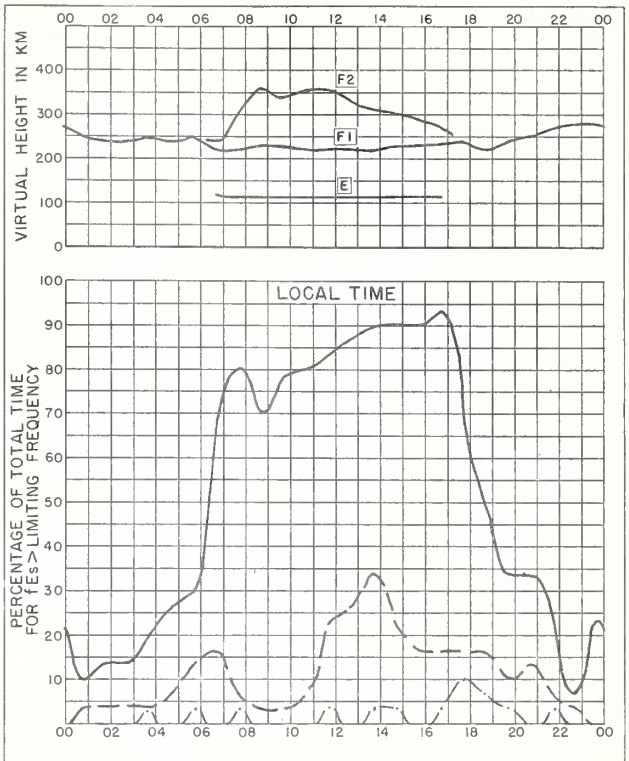


Fig. 38. PANAMA CANAL ZONE APRIL 1954

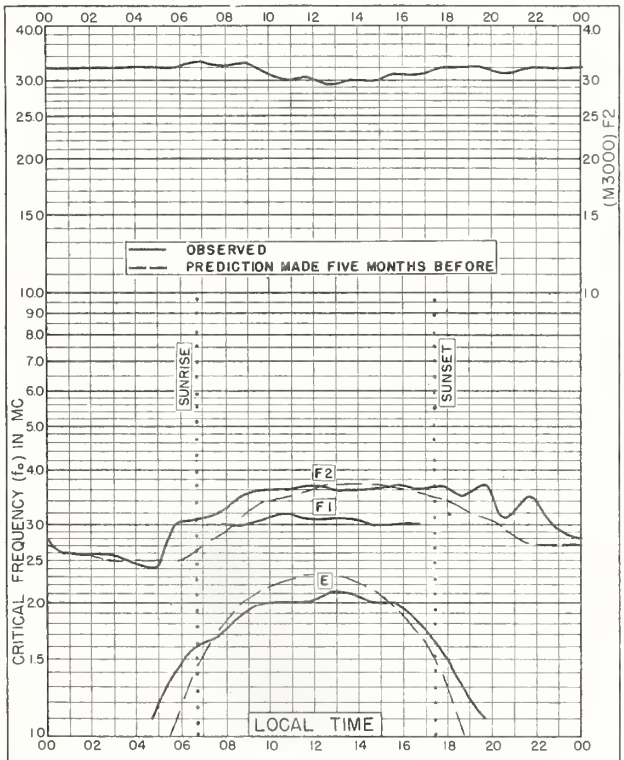


Fig. 39. RESOLUTE BAY, CANADA
74.7°N, 94.9°W MARCH 1954

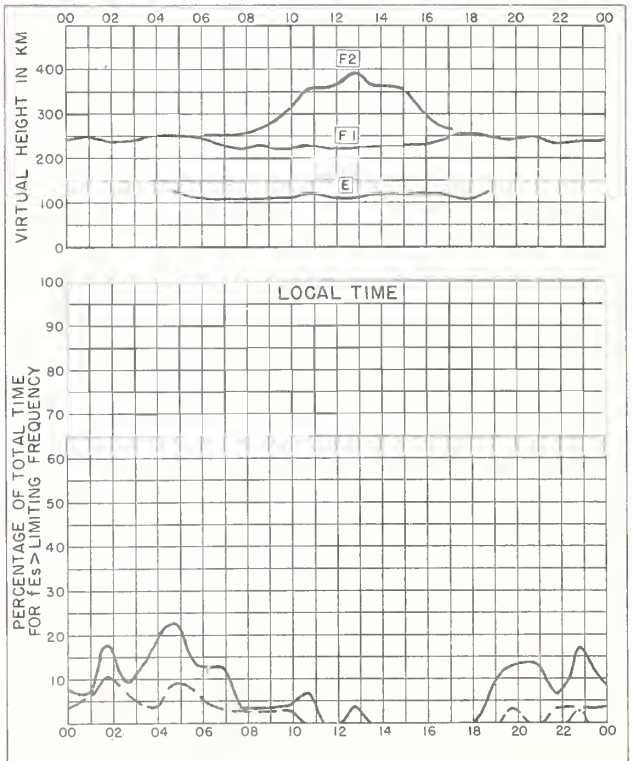


Fig. 40. RESOLUTE BAY, CANADA MARCH 1954

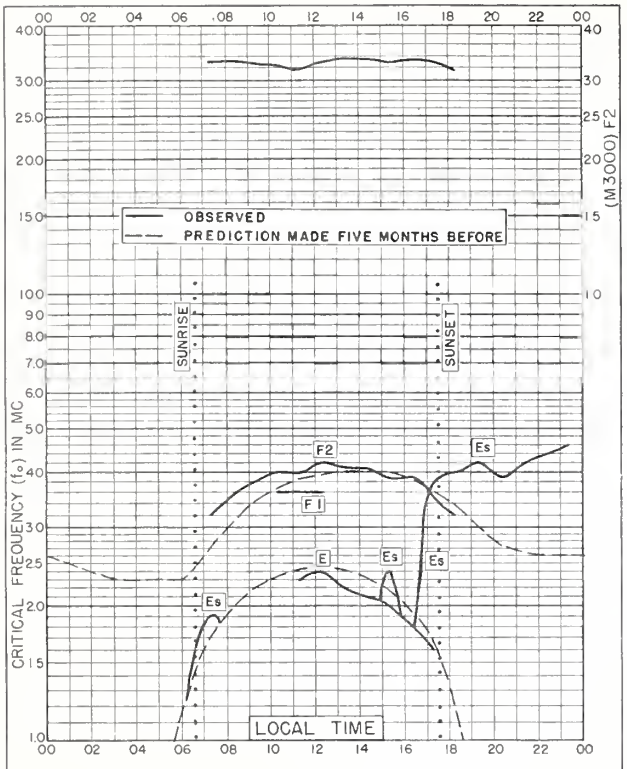


Fig. 41. TROMSO, NORWAY
69.7°N, 19.0° E
MARCH 1954

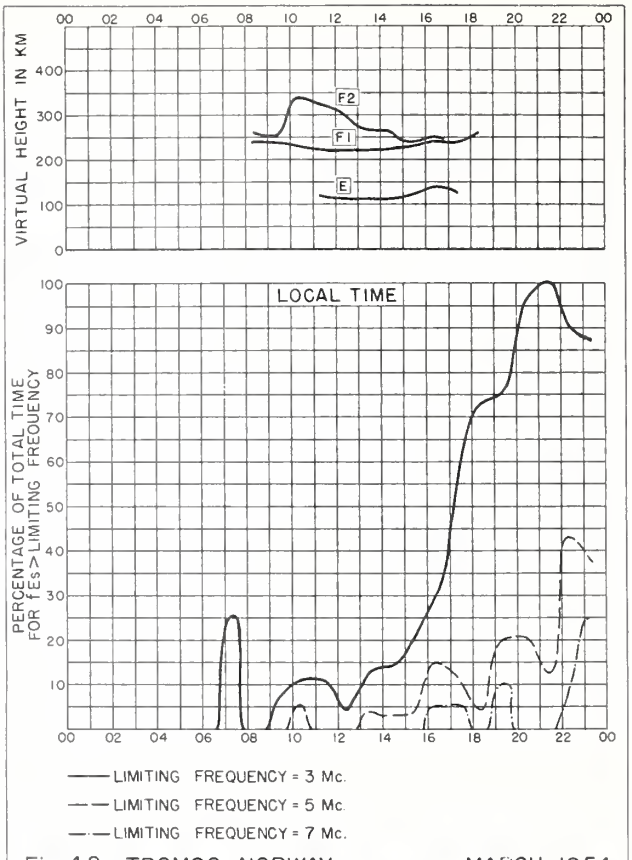


Fig. 42. TROMSO, NORWAY
MARCH 1954

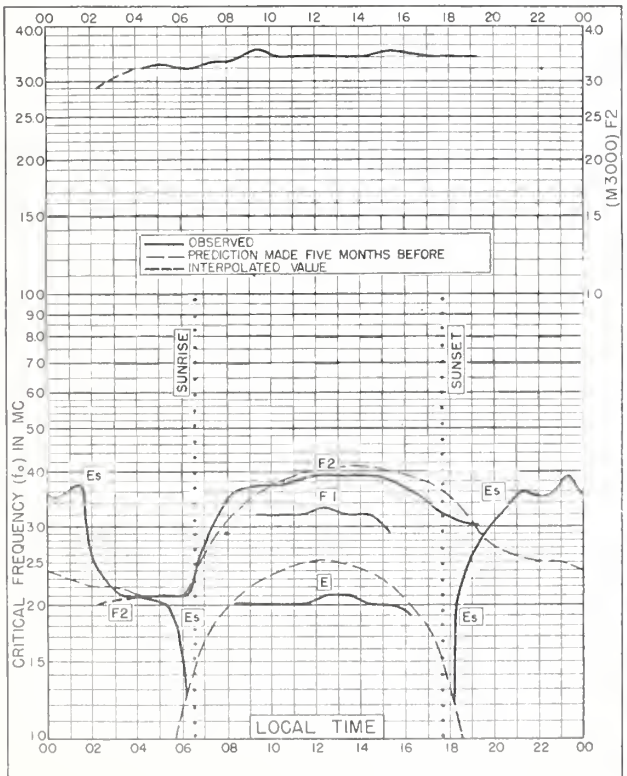


Fig. 43. KIRUNA, SWEDEN
67.8°N, 20.3° E
MARCH 1954

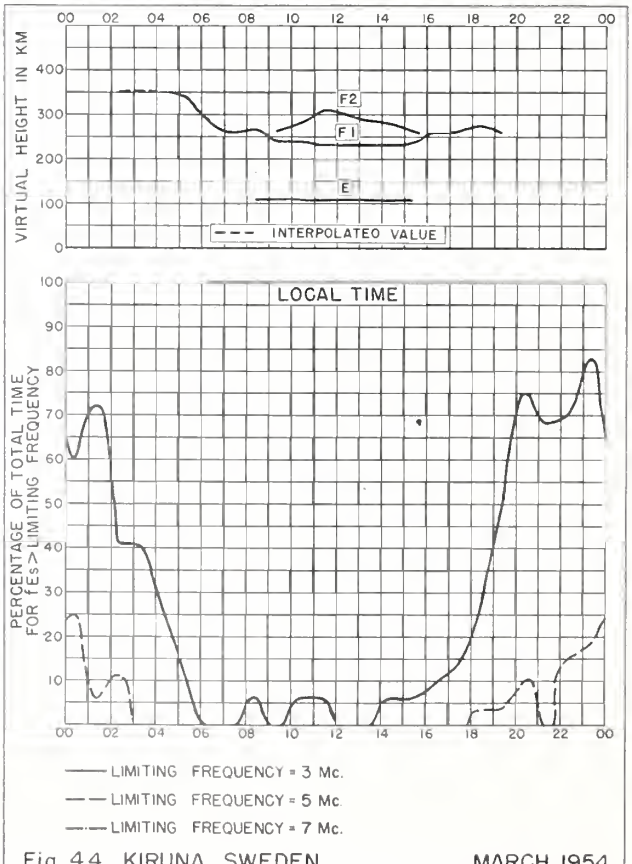


Fig. 44. KIRUNA, SWEDEN
MARCH 1954

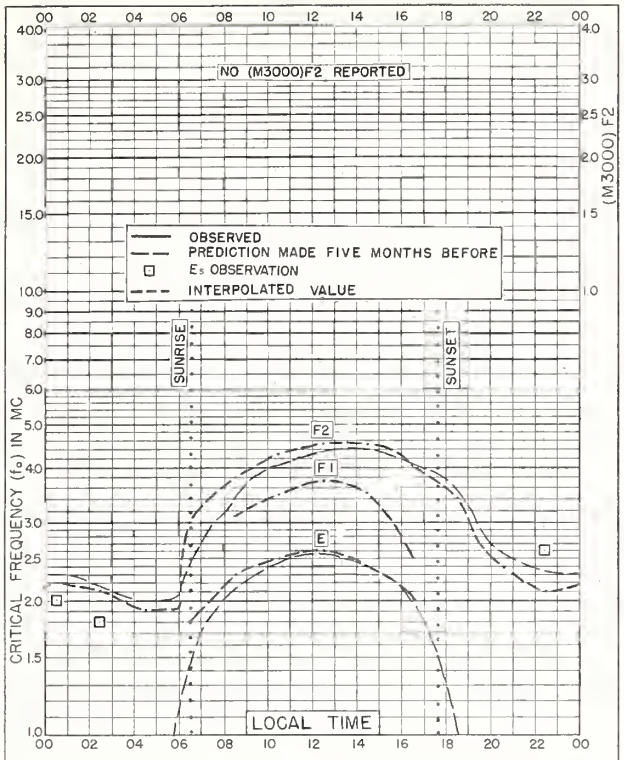


Fig. 45. LULEA, SWEDEN
65.6°N, 22.1°E MARCH 1954

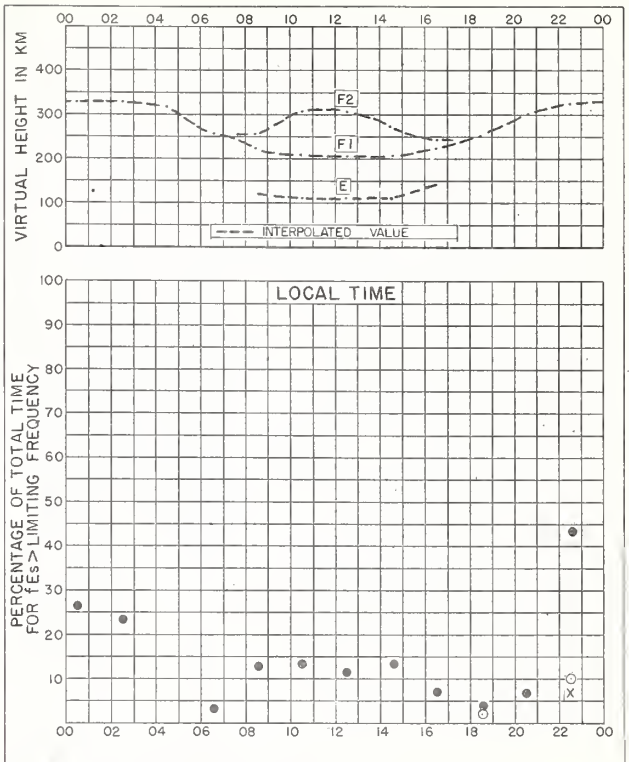


Fig. 46. LULEA, SWEDEN MARCH 1954

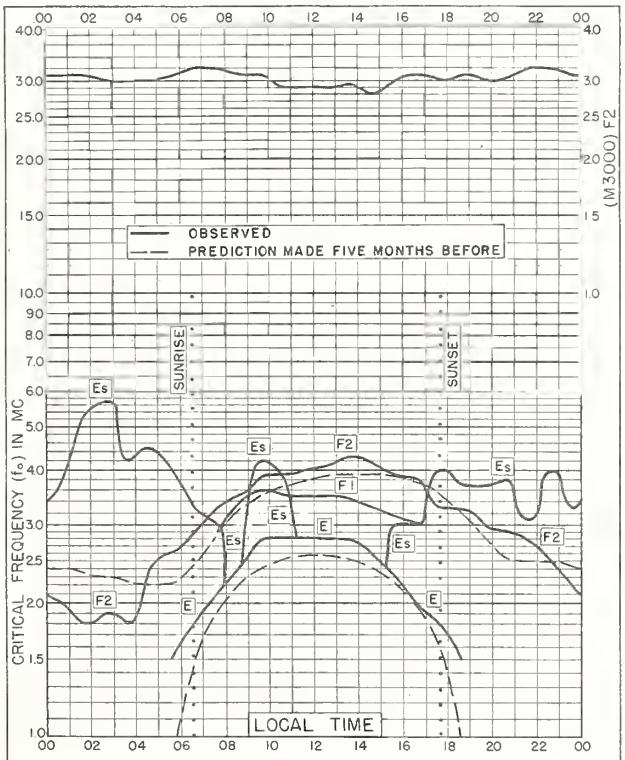


Fig. 47. BAKER LAKE, CANADA
64.3° N, 96.0° W MARCH 1954

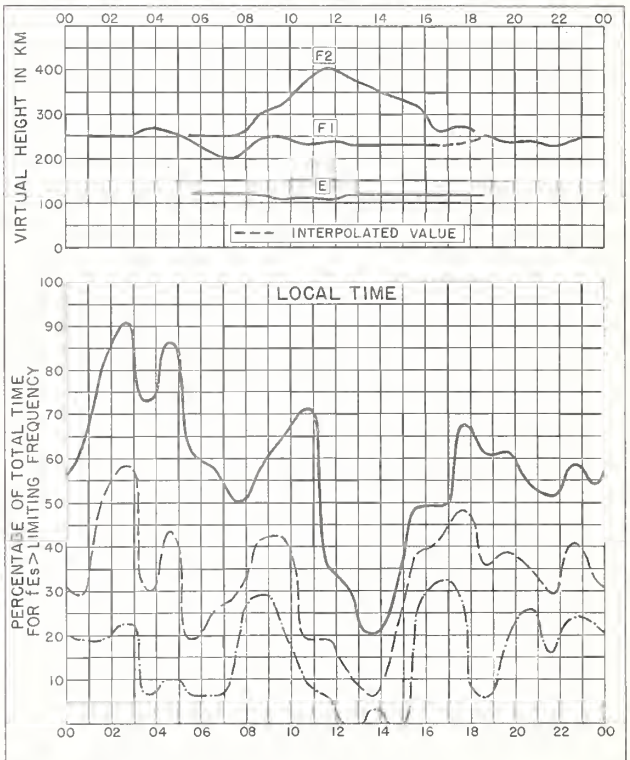


Fig. 48. BAKER LAKE, CANADA MARCH 1954

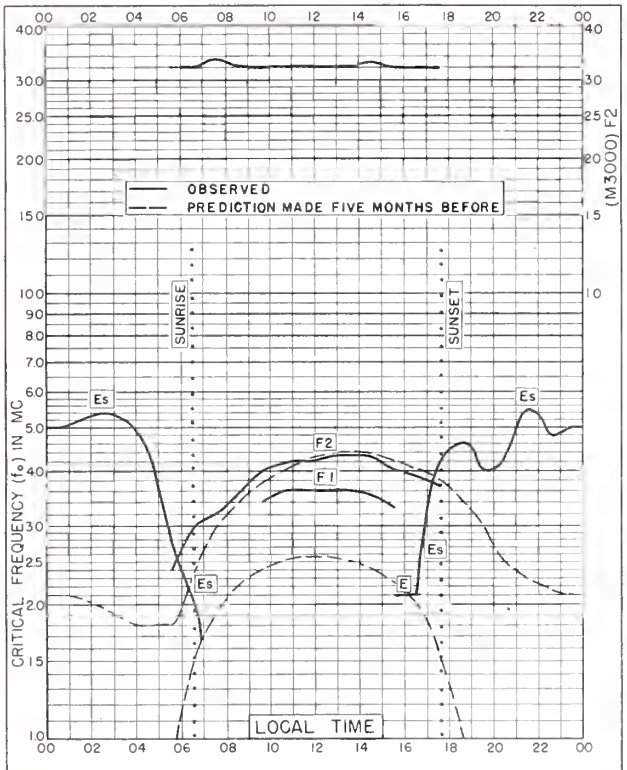


Fig. 49. REYKJAVIK, ICELAND
64.1° N, 21.8° W MARCH 1954

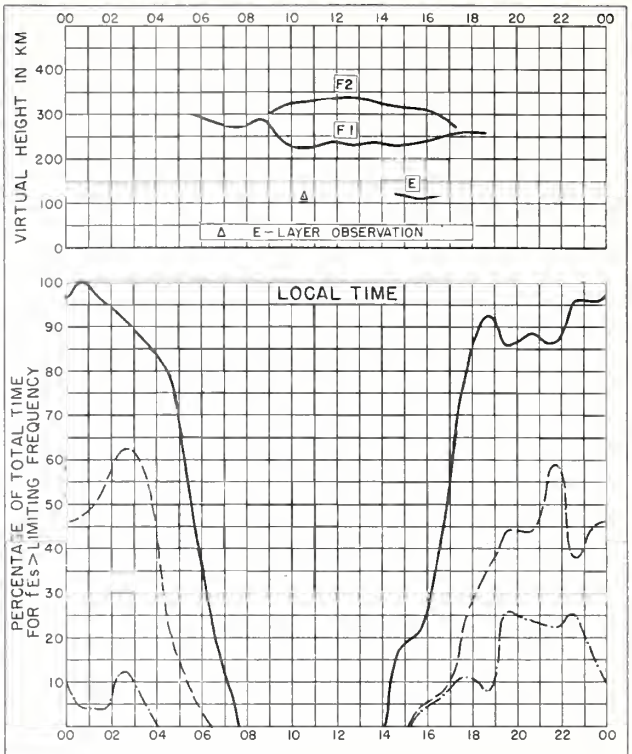


Fig. 50. REYKJAVIK, ICELAND MARCH 1954

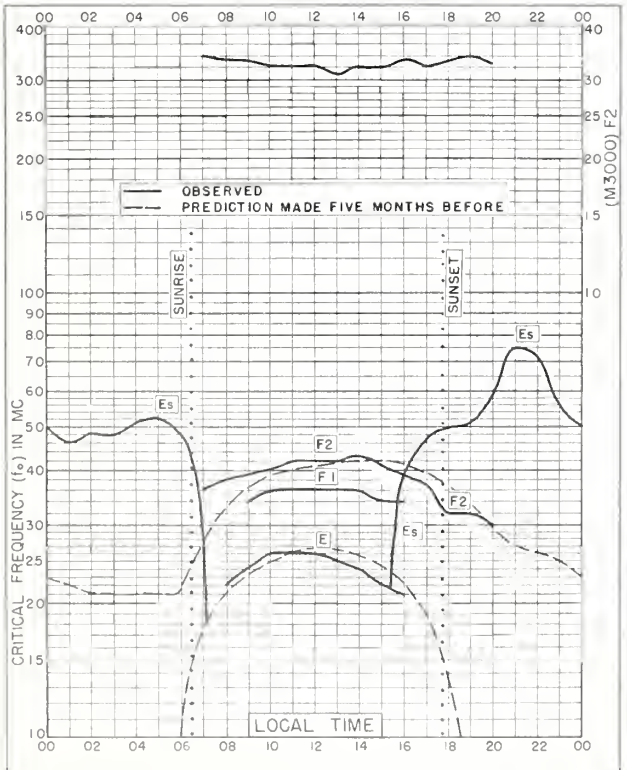


Fig. 51. NARSARSSUAK, GREENLAND
61.2° N, 45.4° W MARCH 1954

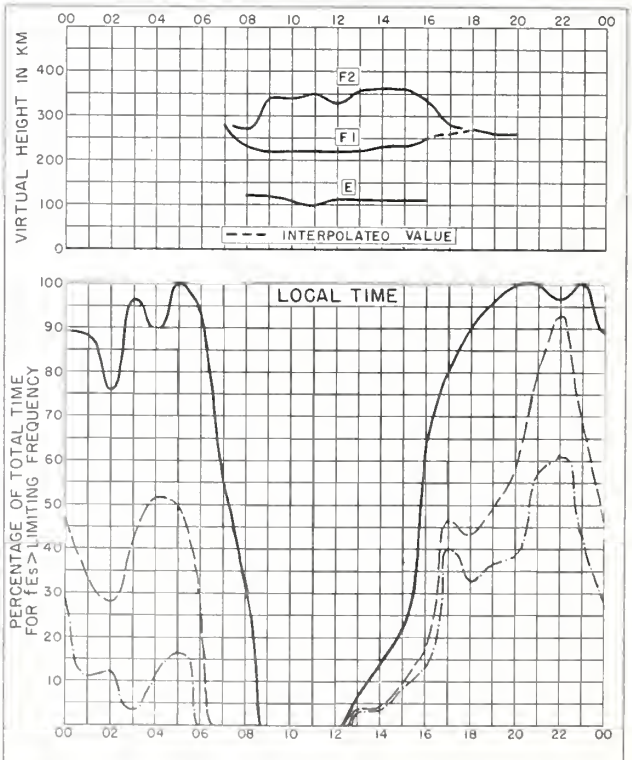


Fig. 52. NARSARSSUAK, GREENLAND MARCH 1954

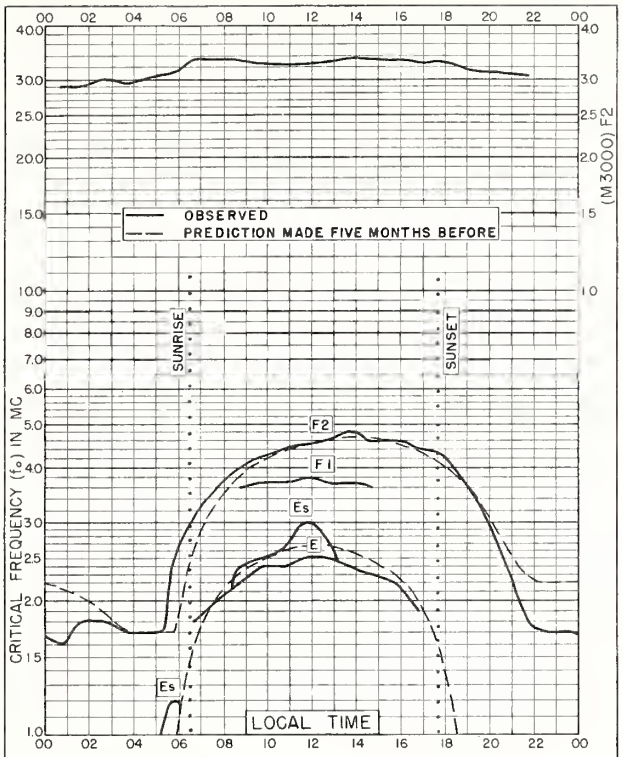


Fig. 53. OSLO, NORWAY
60.0°N, 11.1°E
MARCH 1954

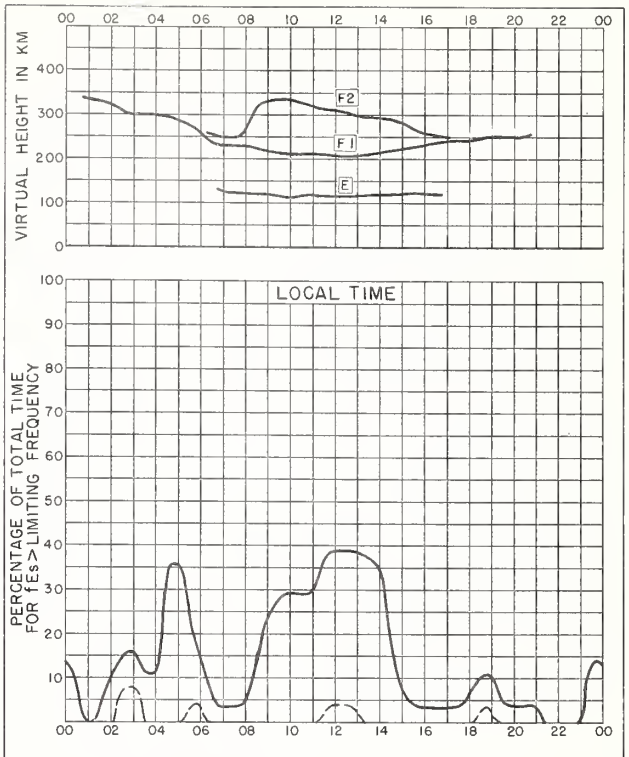


Fig. 54. OSLO, NORWAY
MARCH 1954

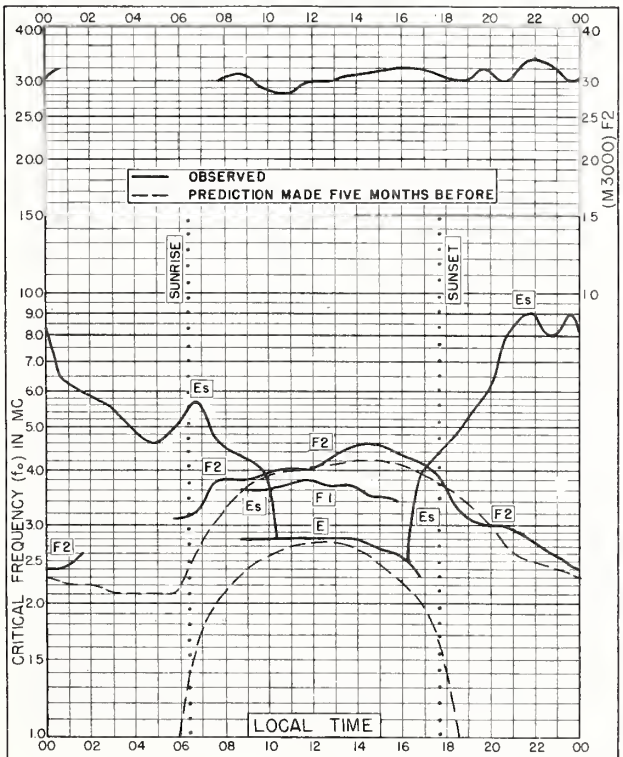


Fig. 55. CHURCHILL, CANADA
58.8°N, 94.2° W
MARCH 1954

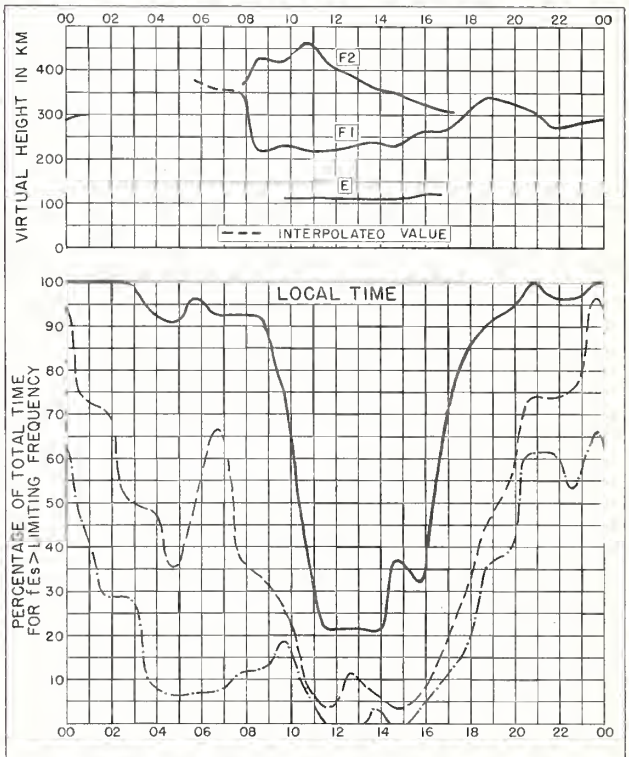


Fig. 56. CHURCHILL, CANADA
MARCH 1954

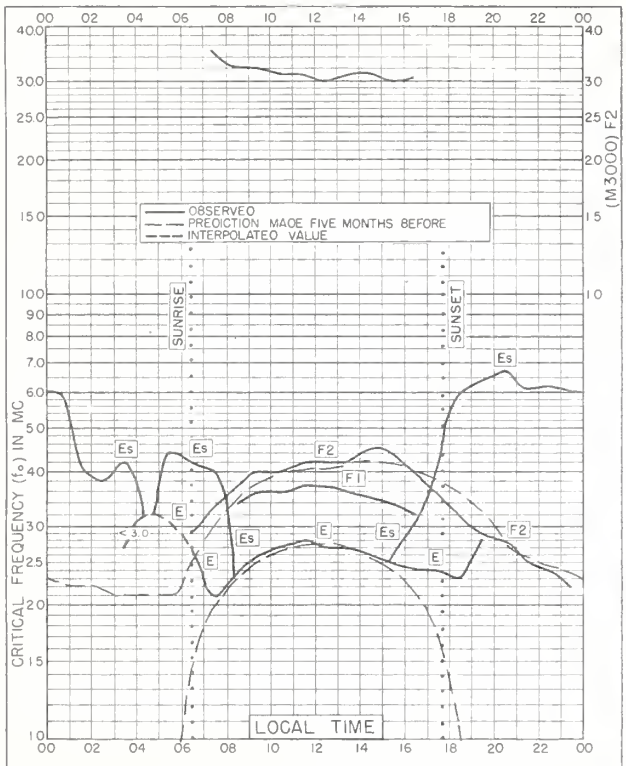


Fig. 57. FORT CHIMO, CANADA
58.1°N, 68.3°W MARCH 1954

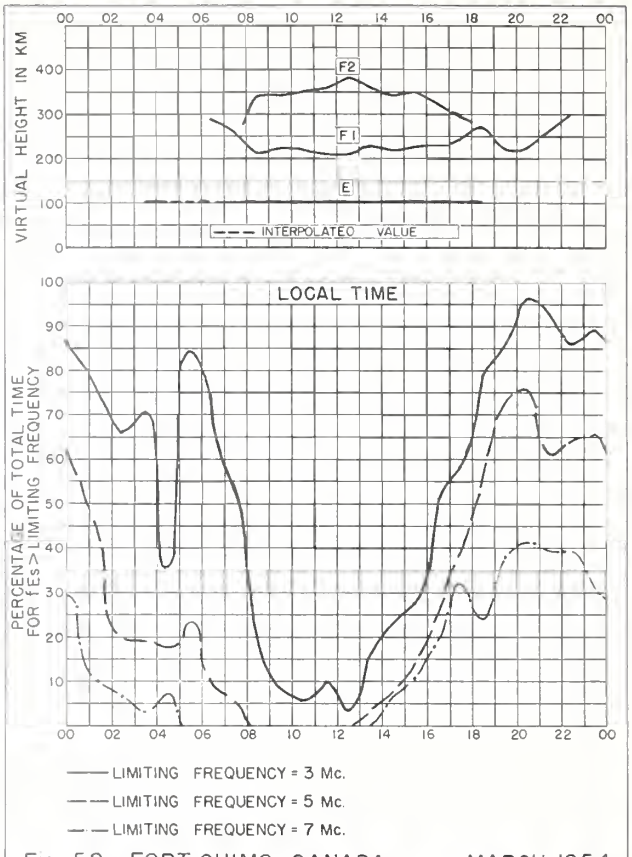


Fig. 58. FORT CHIMO, CANADA MARCH 1954

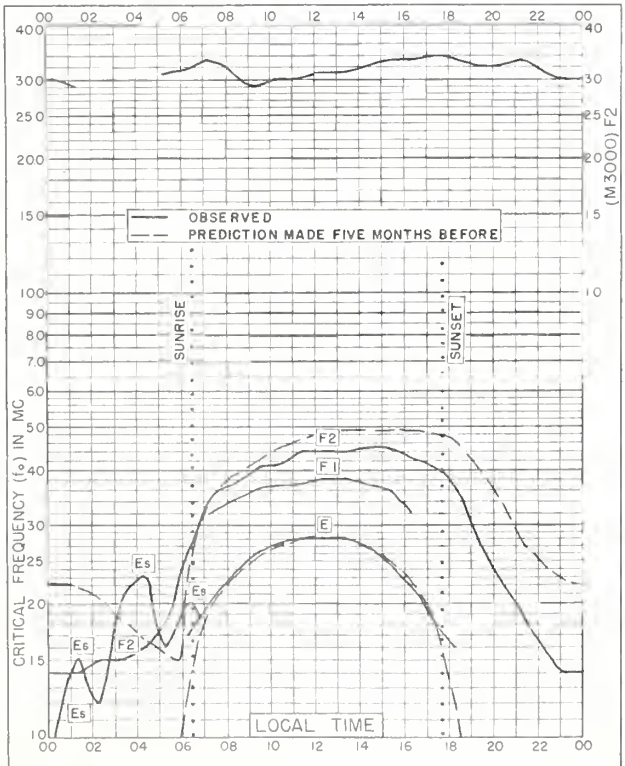


Fig. 59. PRINCE RUPERT, CANADA
54.3°N, 130.3°W MARCH 1954

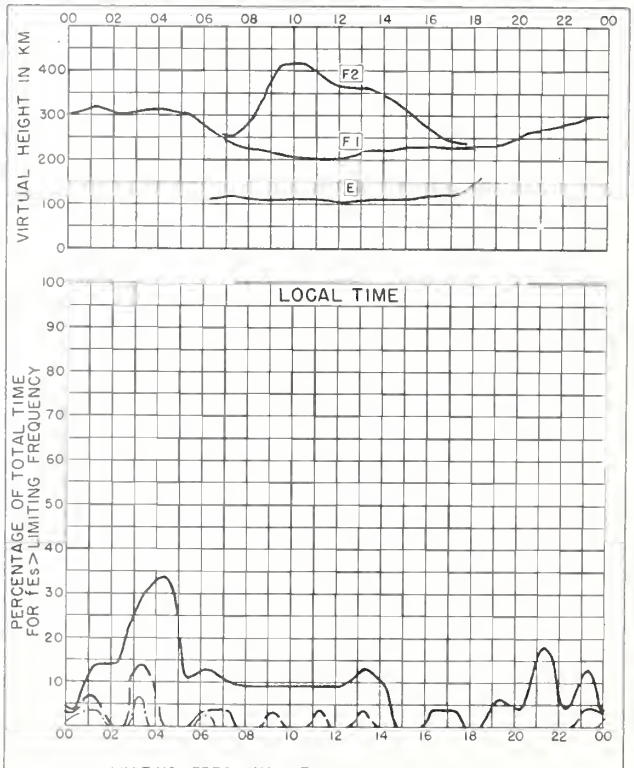


Fig. 60. PRINCE RUPERT, CANADA MARCH 1954

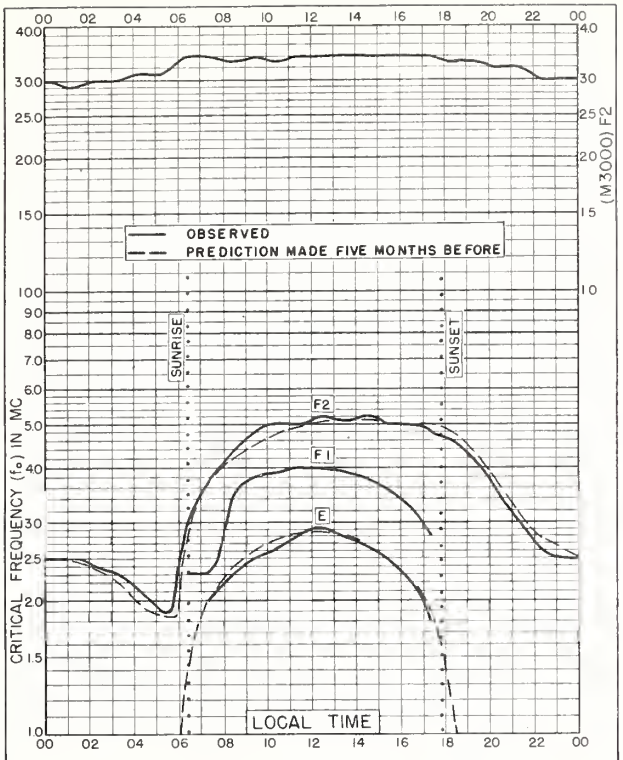


Fig. 61. DE BILT, HOLLAND
52.1° N, 5.2° E MARCH 1954

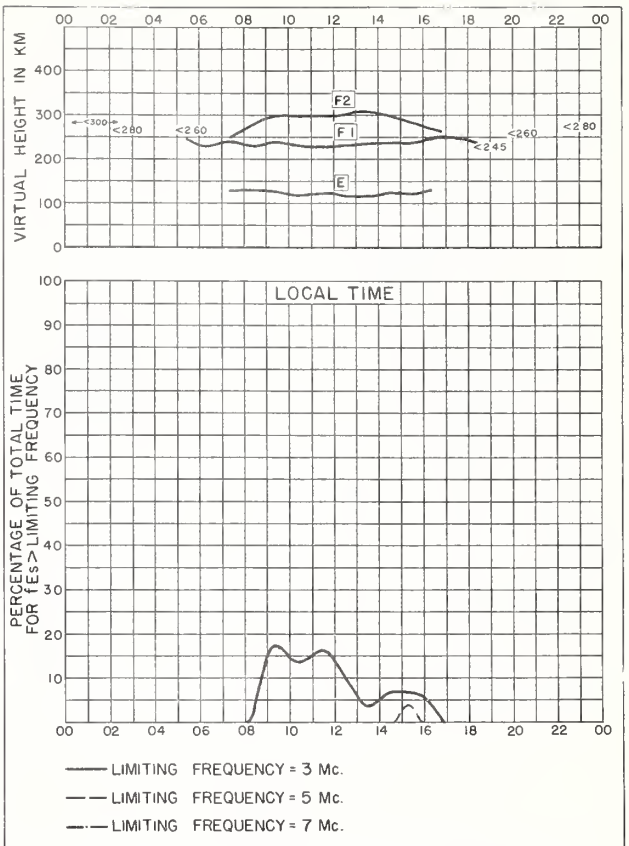


Fig. 62. DE BILT, HOLLAND MARCH 1954

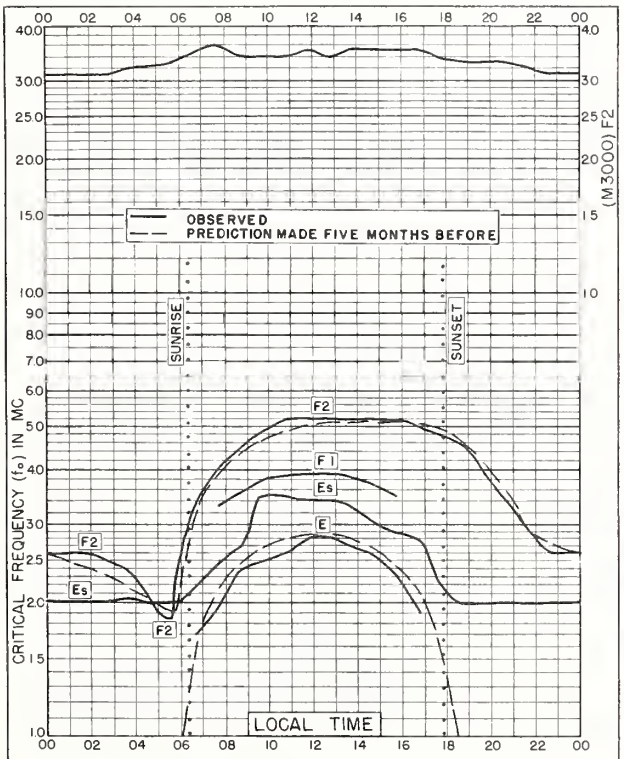


Fig. 63. LINDAU/HARZ GERMANY
51.6° N, 10.1° E MARCH 1954

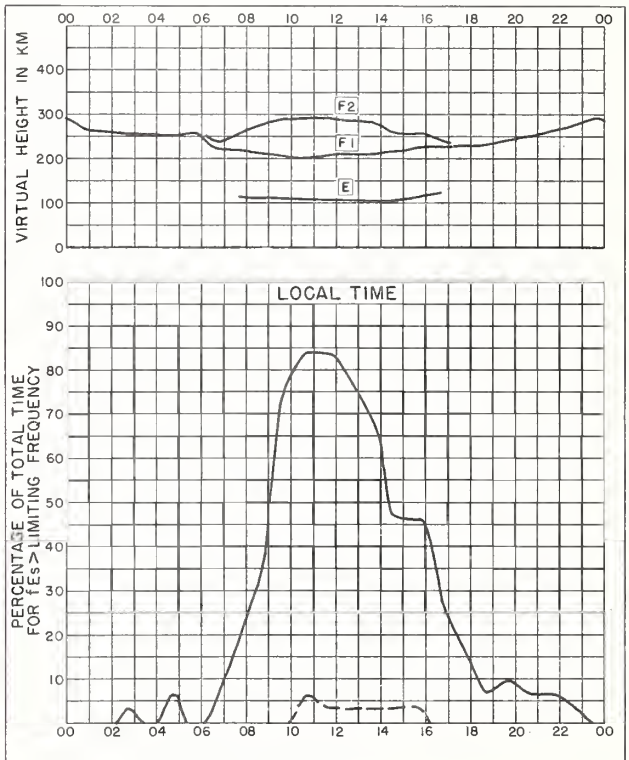


Fig. 64. LINDAU/HARZ, GERMANY MARCH 1954

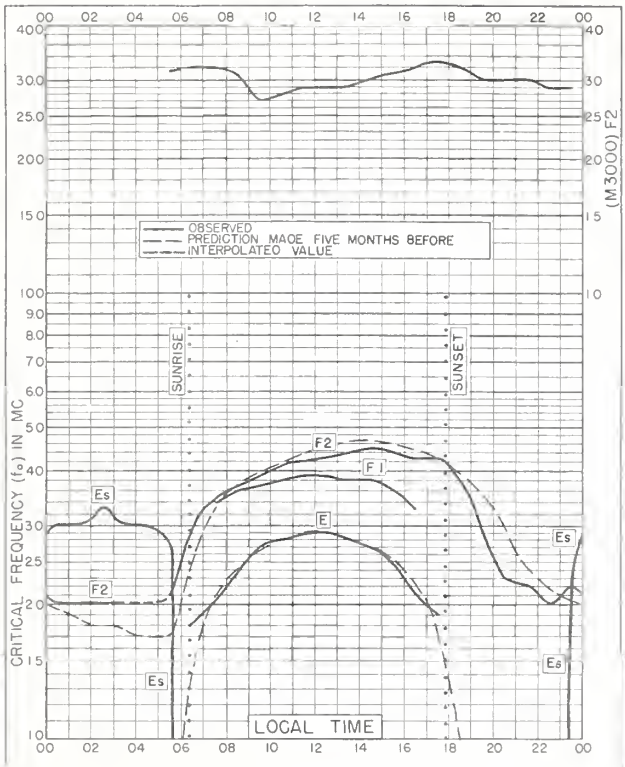


Fig. 65. WINNIPEG, CANADA
49.9° N, 97.4° W MARCH 1954

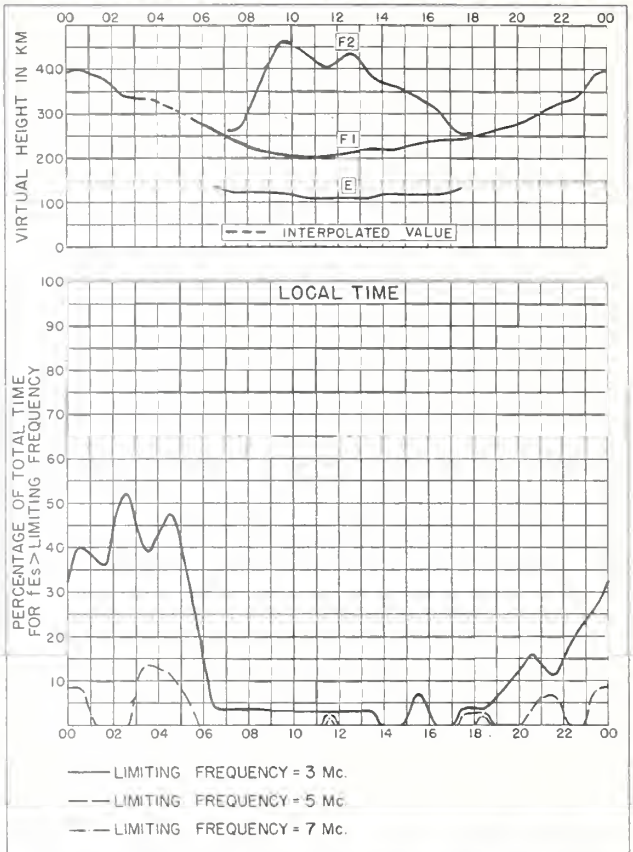


Fig 66. WINNIPEG, CANADA MARCH 1954

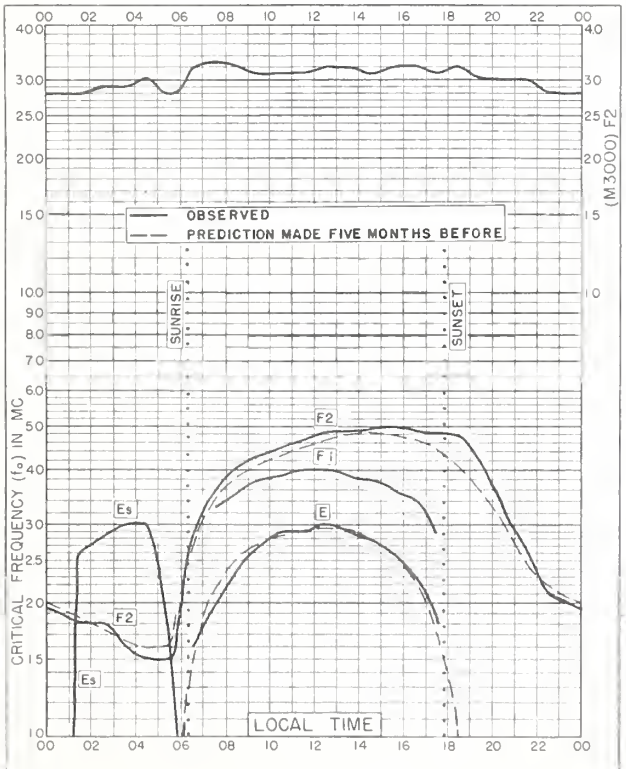


Fig. 67. ST. JOHN'S, NEWFOUNDLAND
47.6° N, 52.7° W MARCH 1954

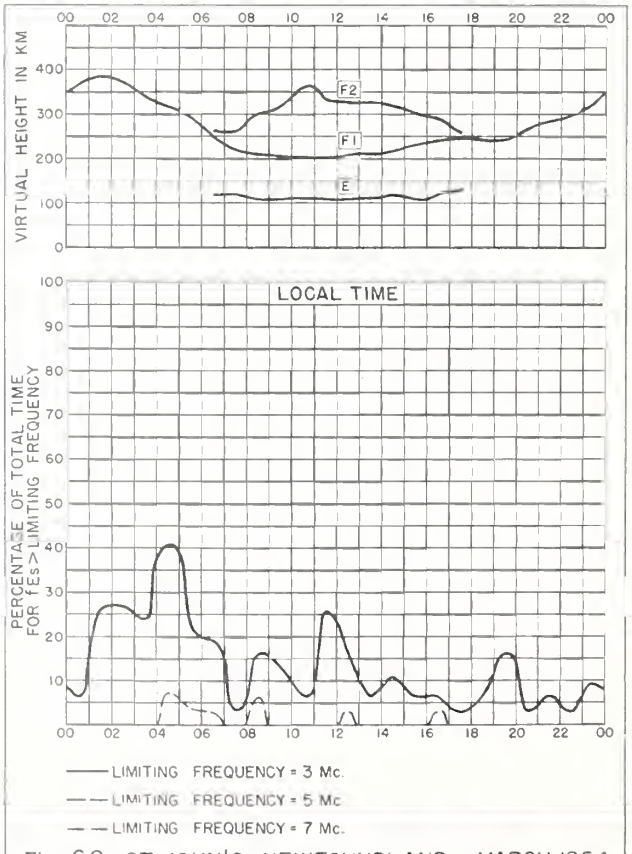


Fig. 68. ST. JOHN'S, NEWFOUNDLAND MARCH 1954

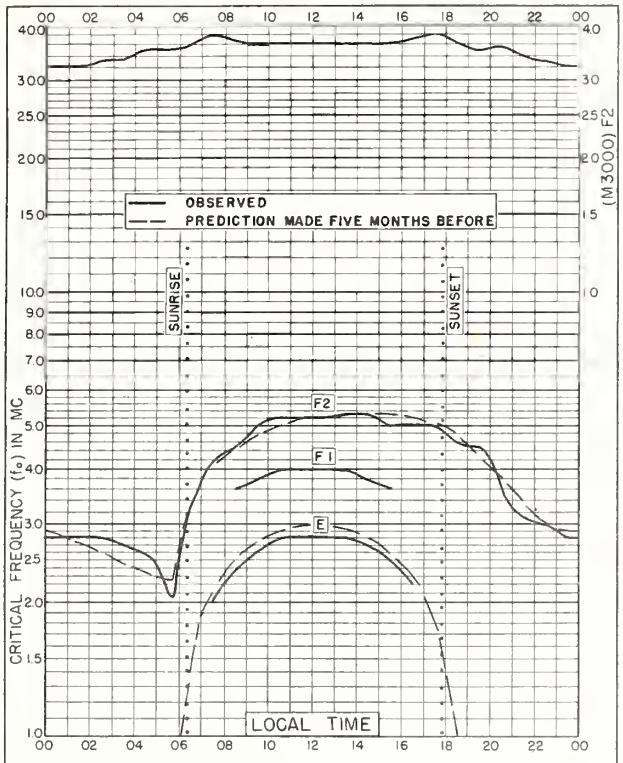
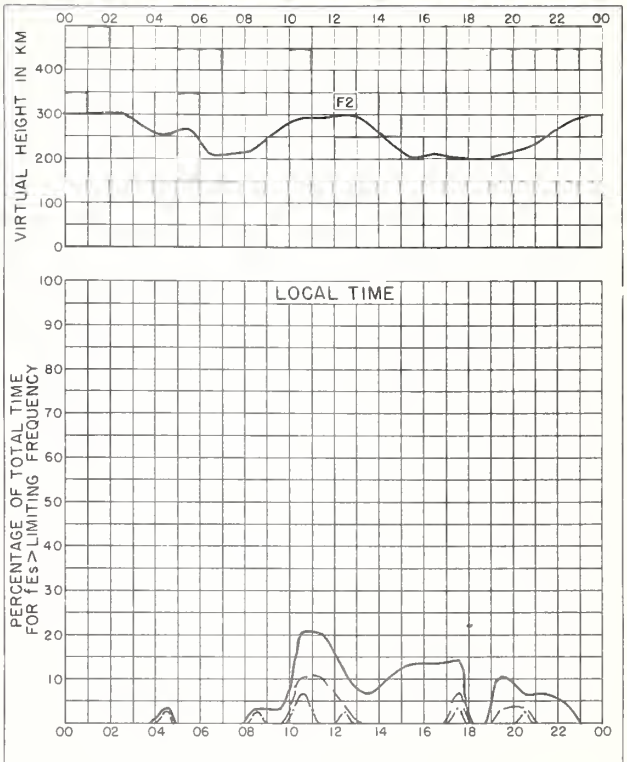


Fig. 69. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E MARCH 1954



MARCH 1954

Fig. 70. SCHWARZENBURG, SWITZERLAND

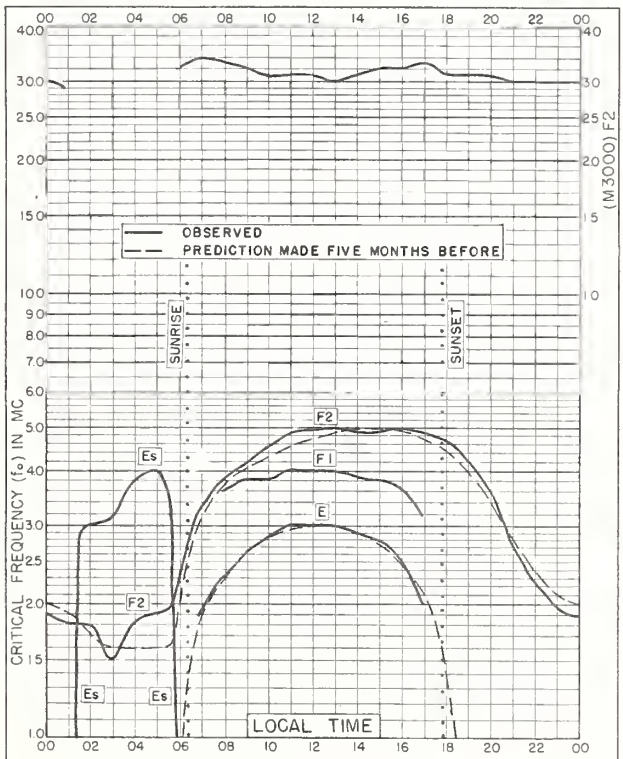


Fig. 71. OTTAWA, CANADA
45.4°N, 75.9°W MARCH 1954

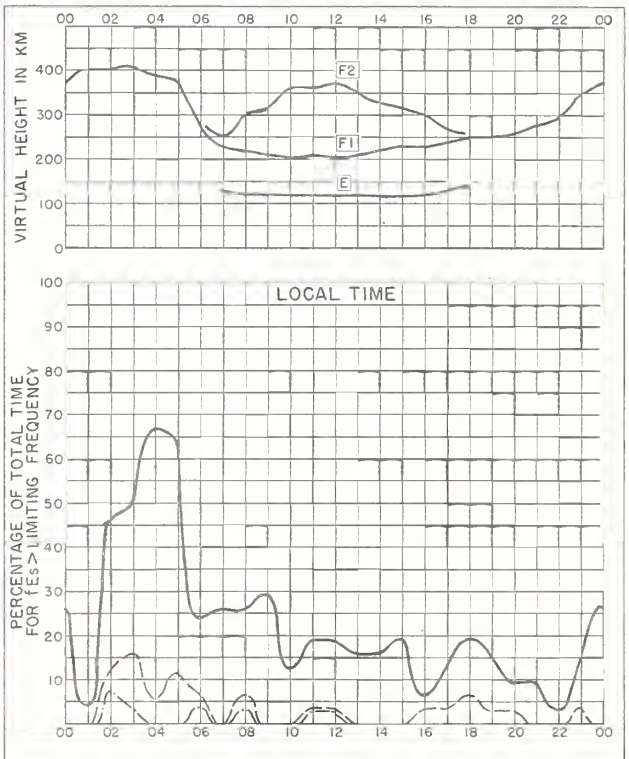


Fig. 72. OTTAWA, CANADA MARCH 1954

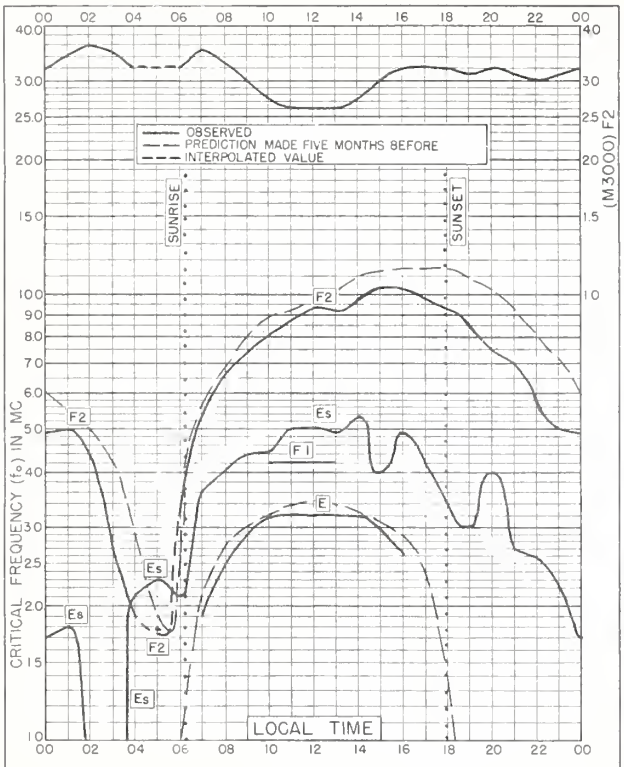


Fig. 73. BAGUIO, P. I.
16.4°N, 120.6°E MARCH 1954

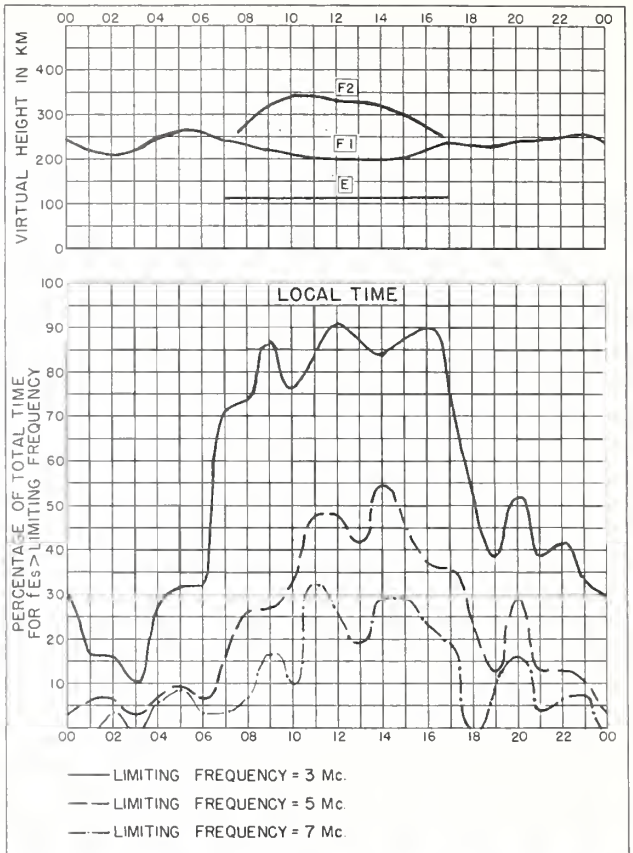


Fig. 74. BAGUIO, P. I. MARCH 1954

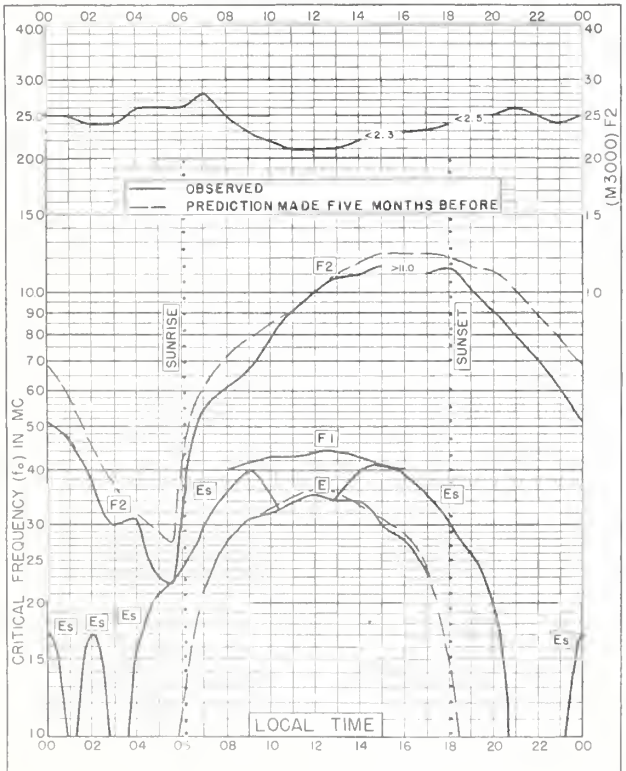
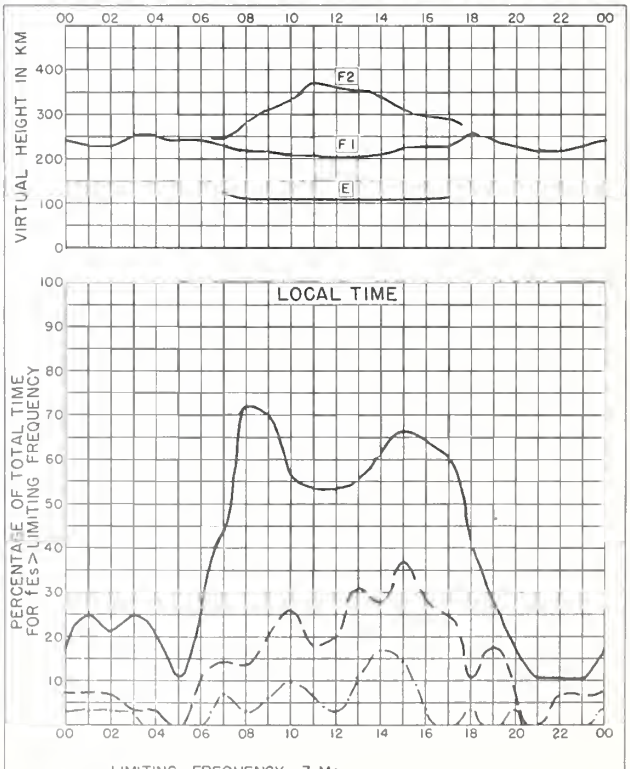


Fig. 75. LEOPOLDVILLE, BELGIAN CONGO
4.3°S, 15.3°E MARCH 1954



MARCH 1954

Fig. 76. LEOPOLDVILLE, BELGIAN CONGO

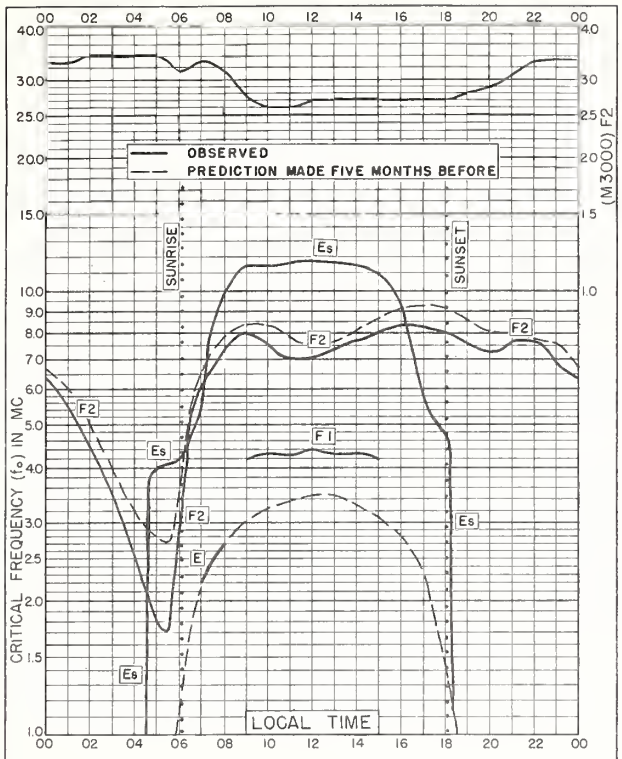


Fig. 77. HUANCAYO, PERU
12.0° S, 75.3° W MARCH 1954

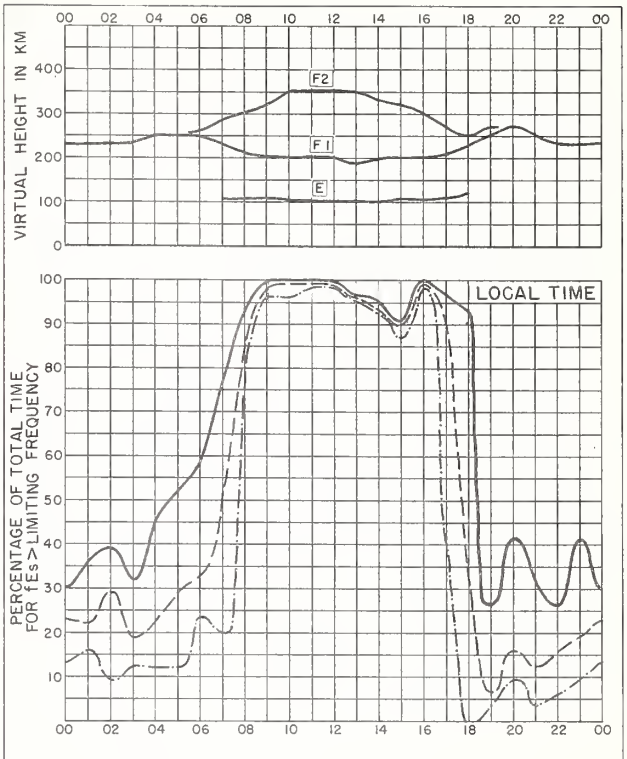


Fig. 78. HUANCAYO, PERU MARCH 1954

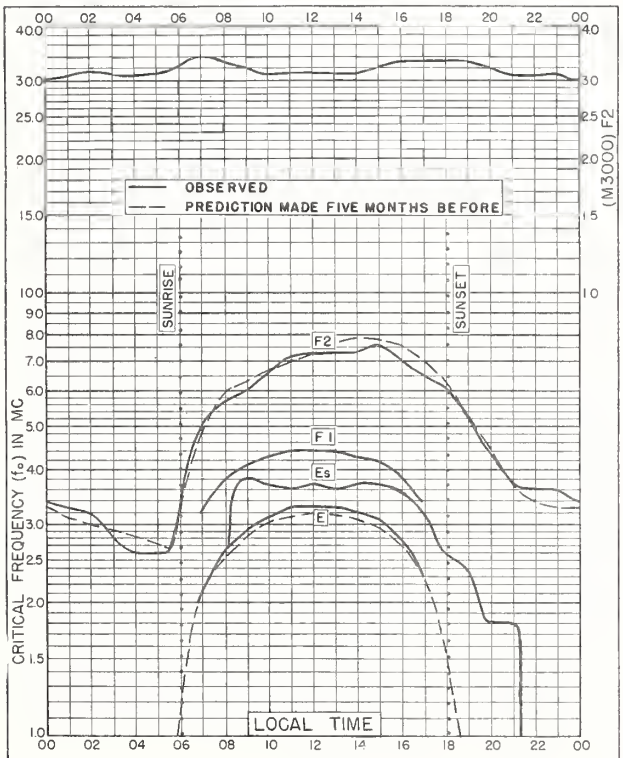


Fig. 79. JOHANNESBURG, UNION OF S. AFRICA
26.2° S, 28.1° E .MARCH 1954

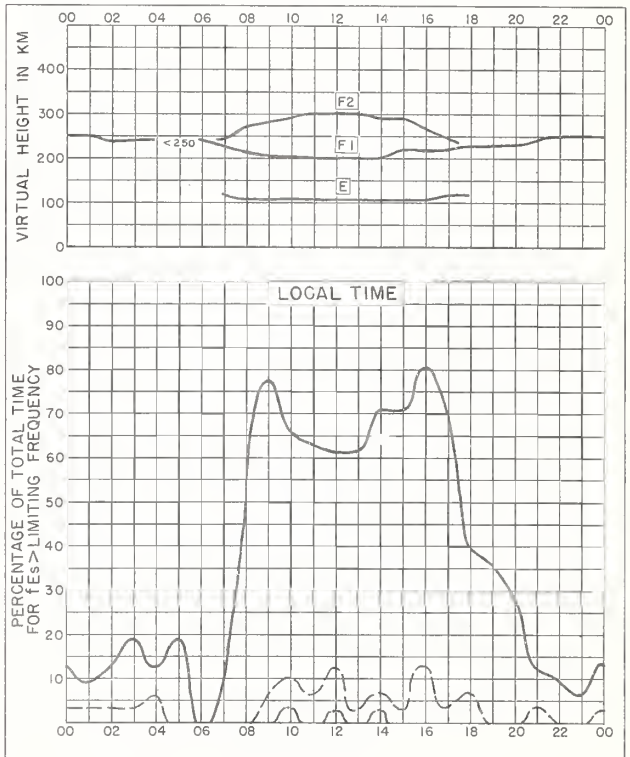


Fig. 80. JOHANNESBURG, UNION OF S. AFRICA MARCH 1954

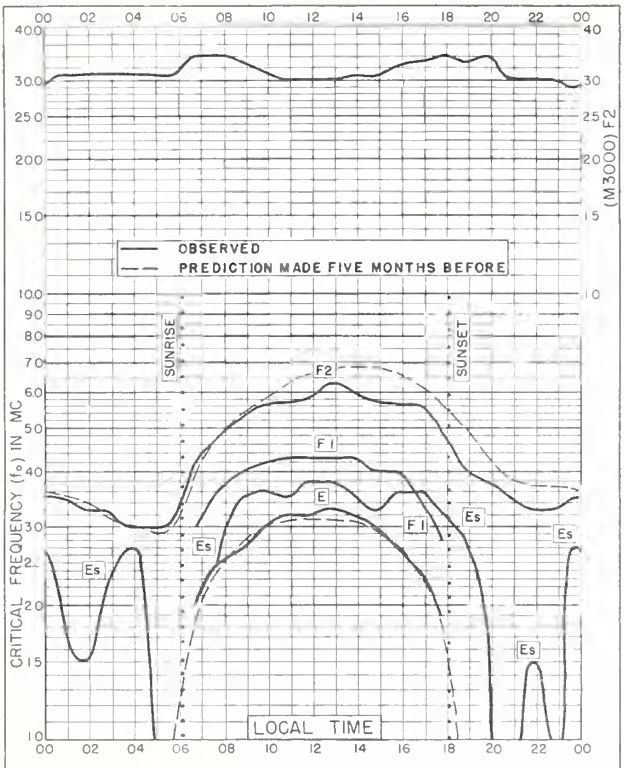


Fig. 81. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MARCH 1954

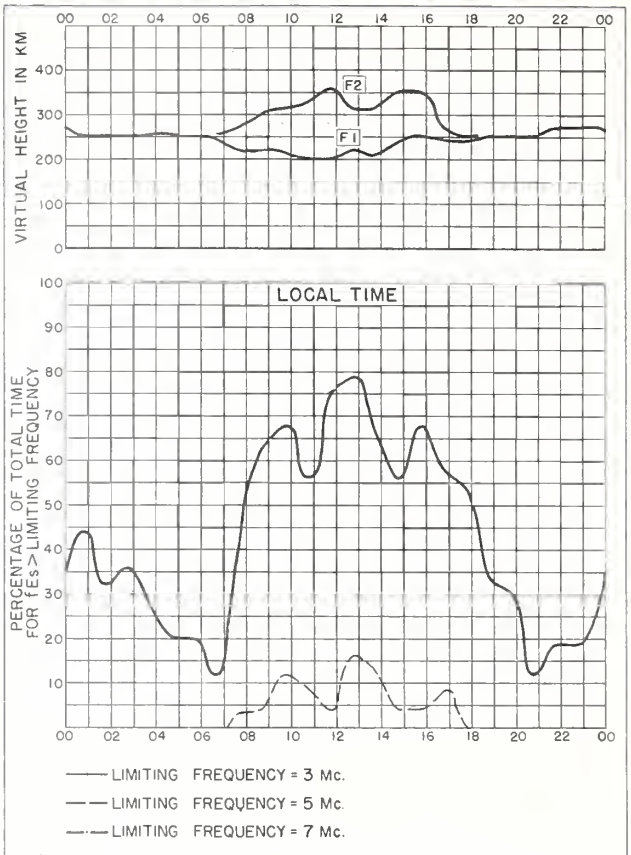


Fig. 82. WATHEROO, W. AUSTRALIA MARCH 1954

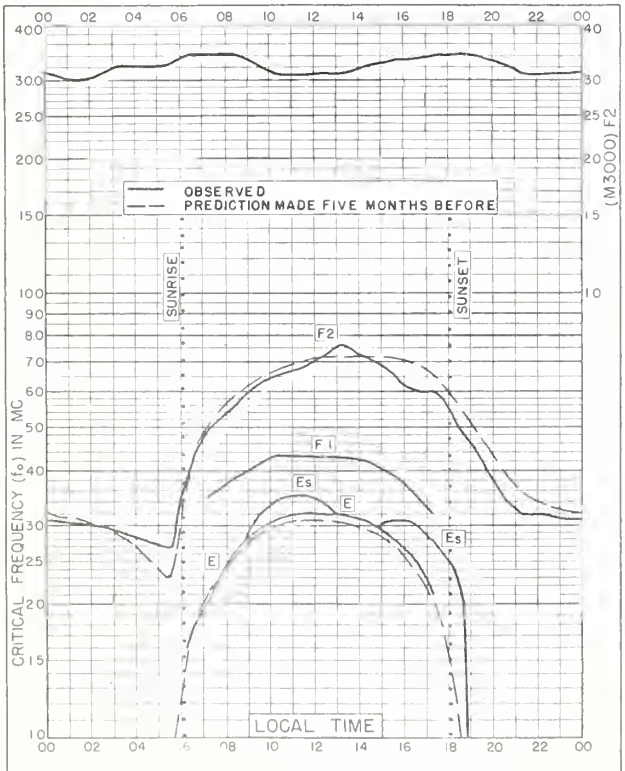


Fig. 83. CAPETOWN, UNION OF S. AFRICA
34.2°S, 18.3°E MARCH 1954

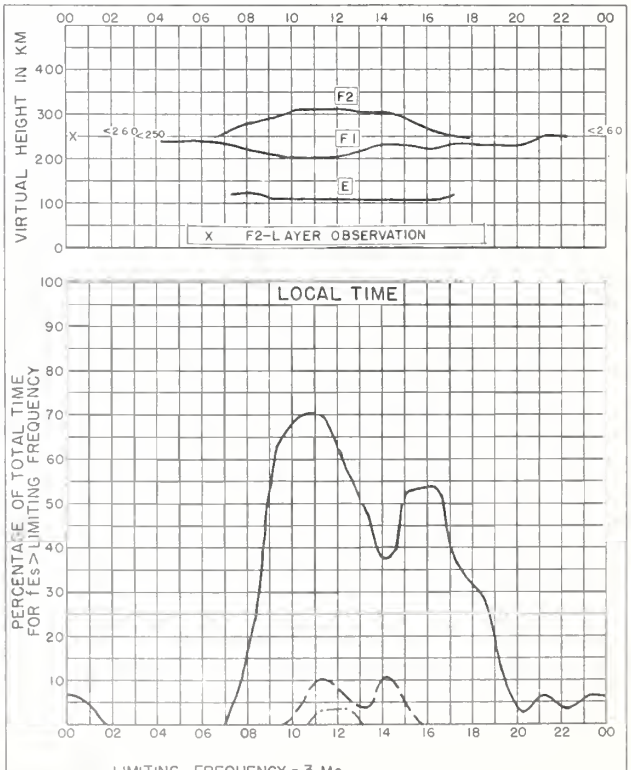


Fig. 84. CAPETOWN, UNION OF S. AFRICA MARCH 1954

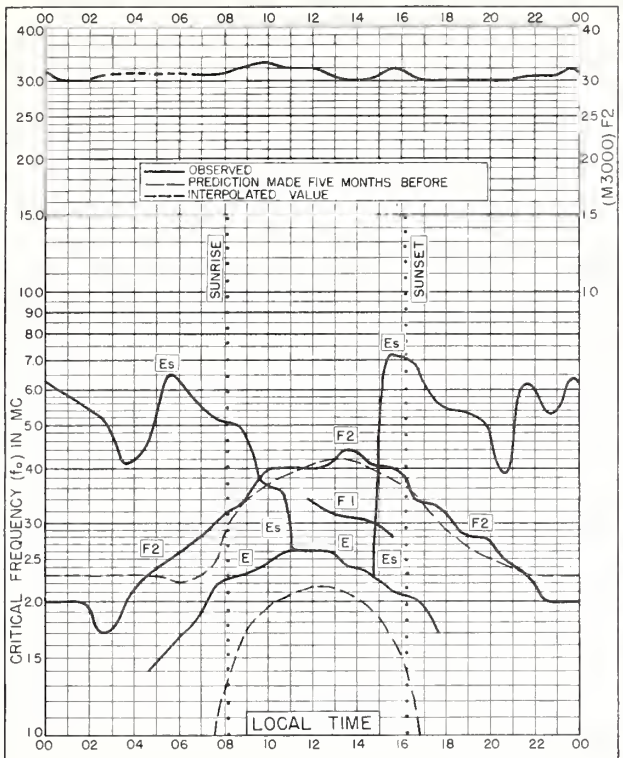


Fig. 85. BAKER LAKE, CANADA
64.3°N, 96.0° W FEBRUARY 1954

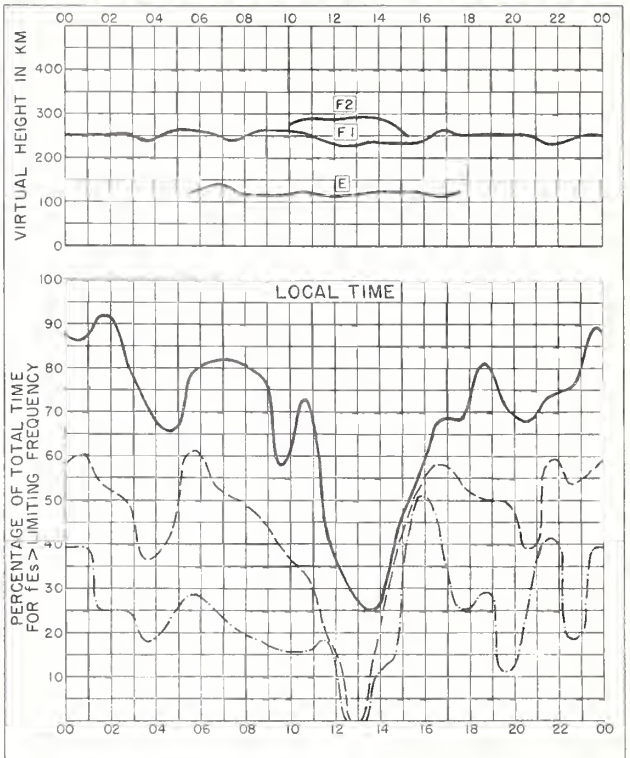


Fig. 86. BAKER LAKE, CANADA FEBRUARY 1954

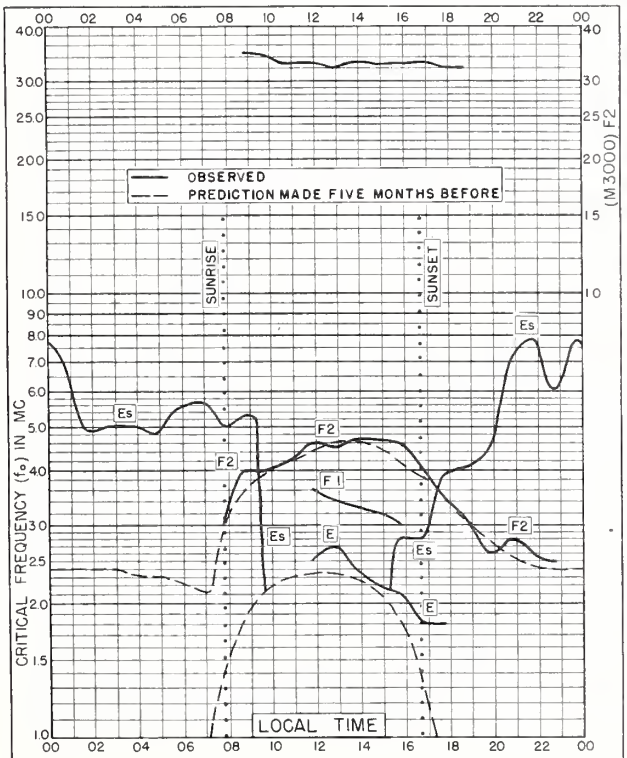


Fig. 87. CHURCHILL, CANADA
58.8°N, 94.2° W FEBRUARY 1954

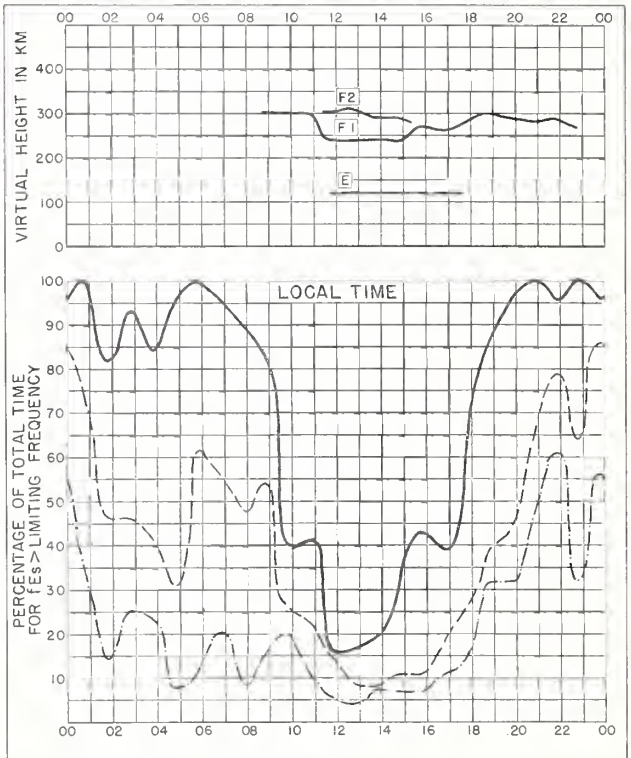


Fig. 88. CHURCHILL, CANADA FEBRUARY 1954

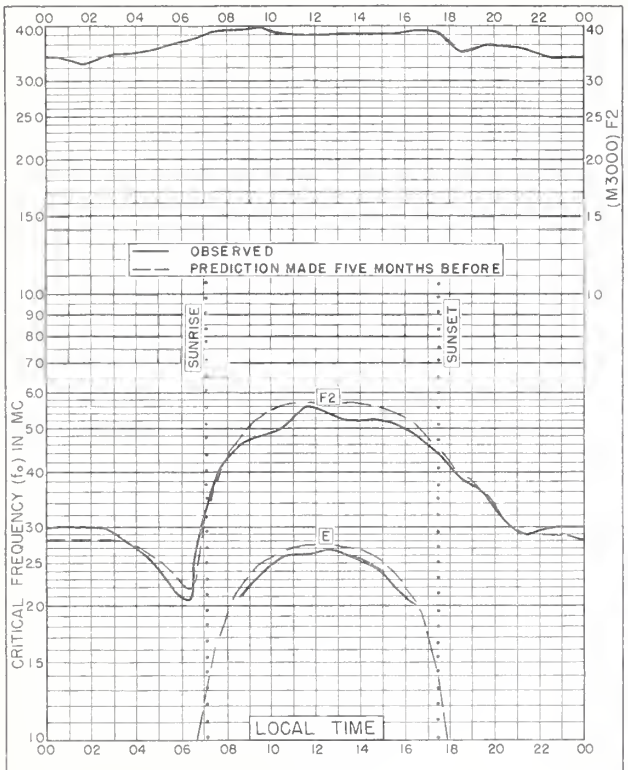
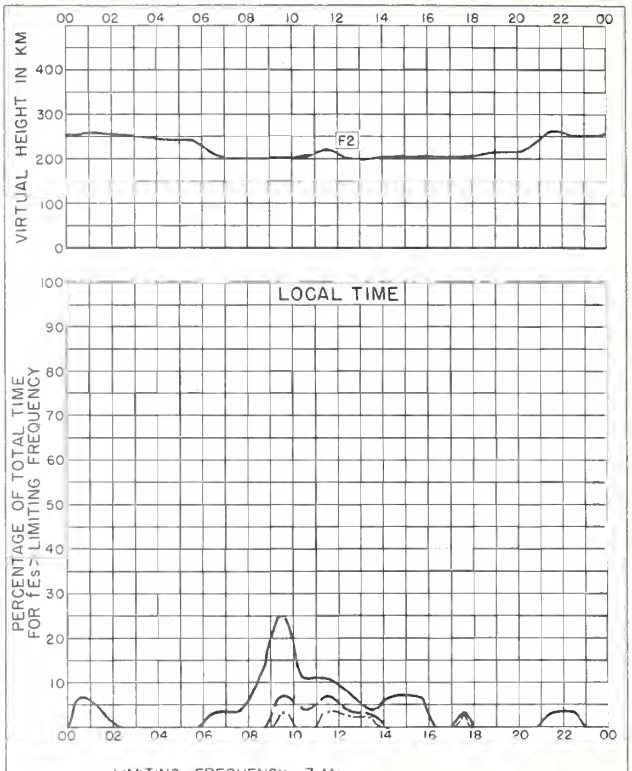


Fig. 89. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E FEBRUARY 1954



FEBRUARY 1954
Fig. 90. SCHWARZENBURG, SWITZERLAND

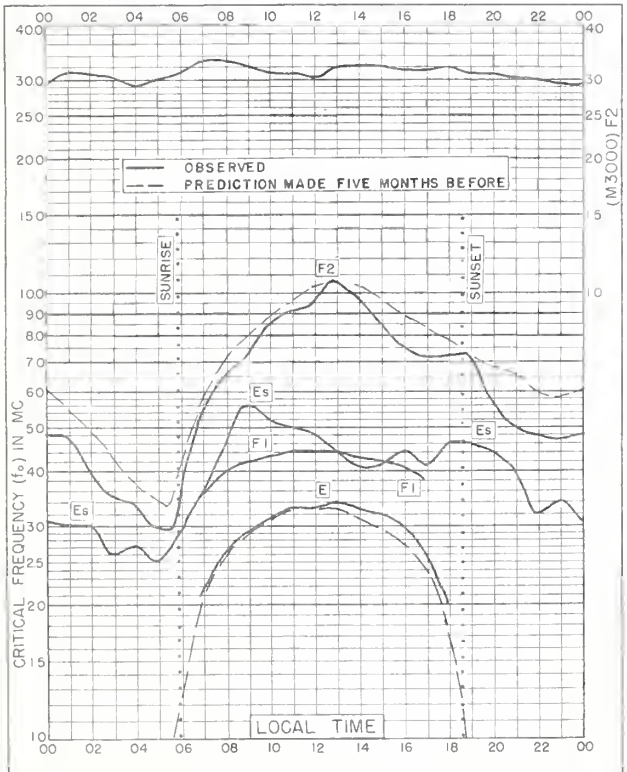


Fig. 91. RAROTONGA I.
21.3° S, 159.8° W FEBRUARY 1954

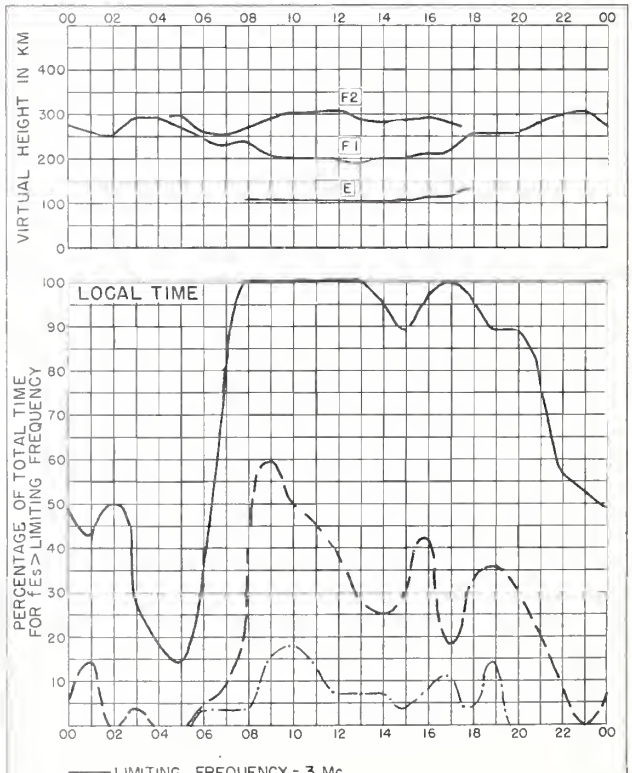


Fig 92. RAROTONGA I. FEBRUARY 1954

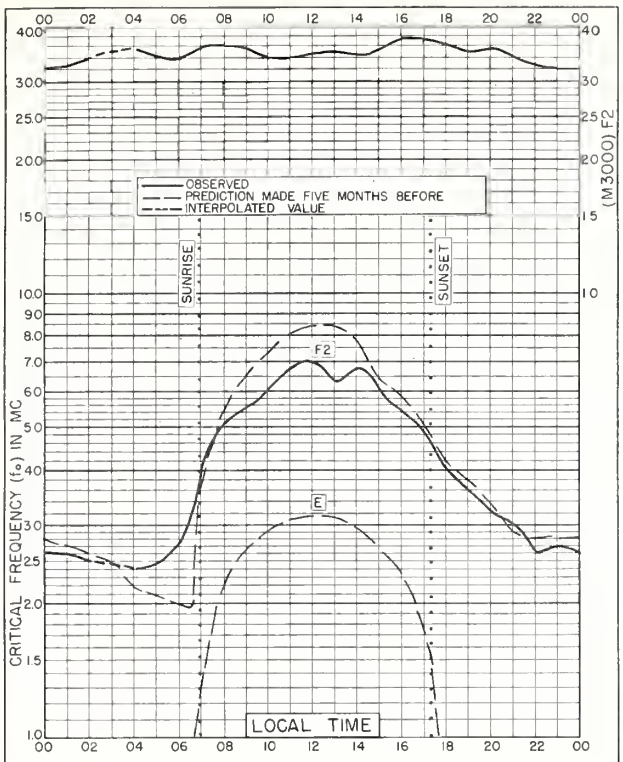


Fig. 93. DELHI, INDIA
28.6°N, 77.1°E JANUARY 1954

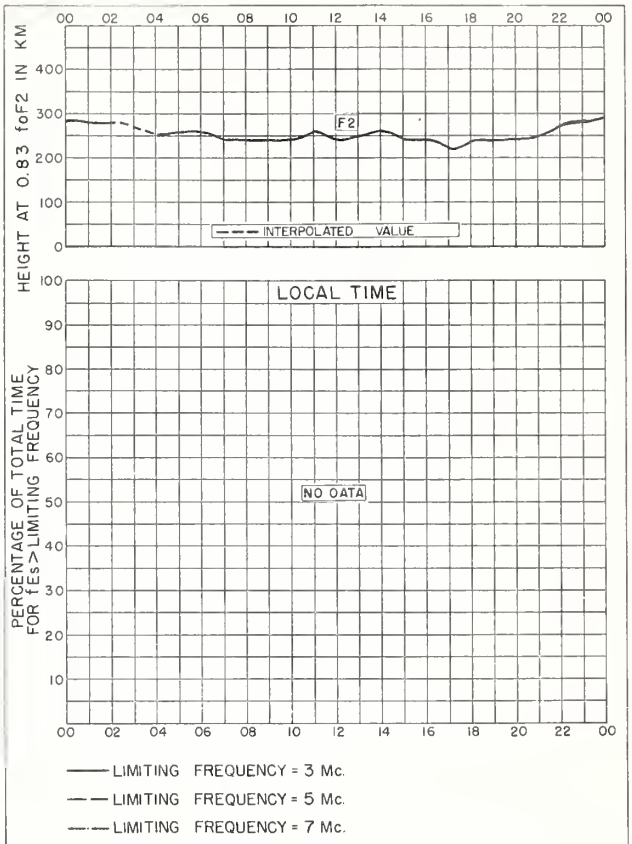


Fig. 94. DELHI, INDIA JANUARY 1954

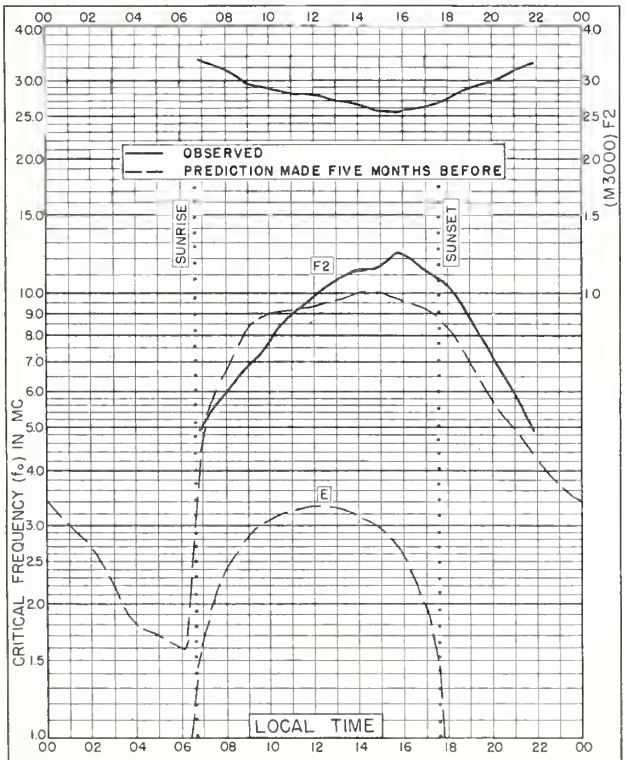


Fig. 95. BOMBAY, INDIA
19.0°N, 73.0°E JANUARY 1954

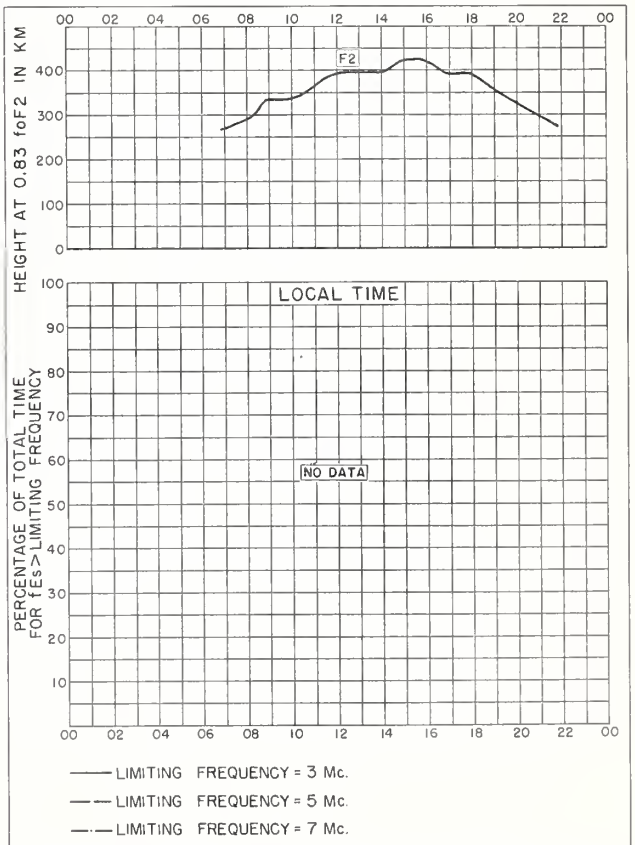


Fig. 96. BOMBAY, INDIA JANUARY 1954

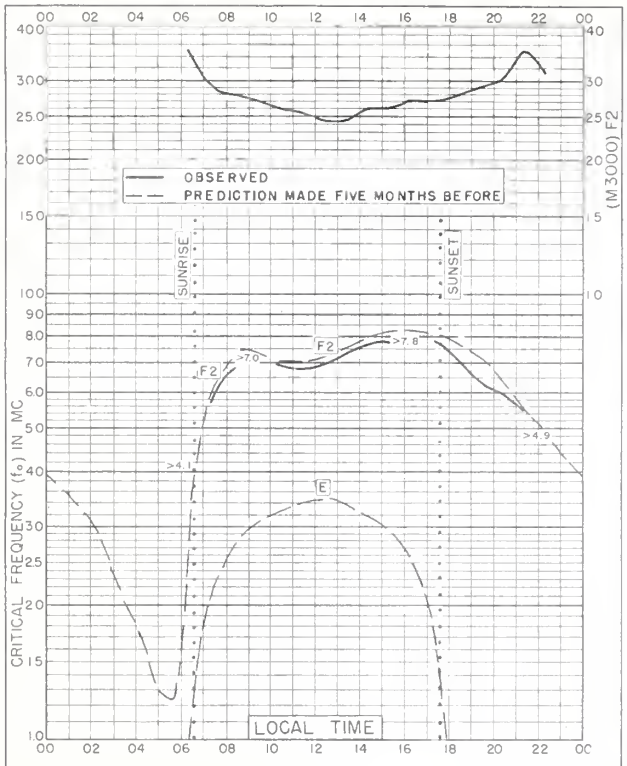


Fig. 97. MADRAS, INDIA
13.0°N, 80.2°E JANUARY 1954

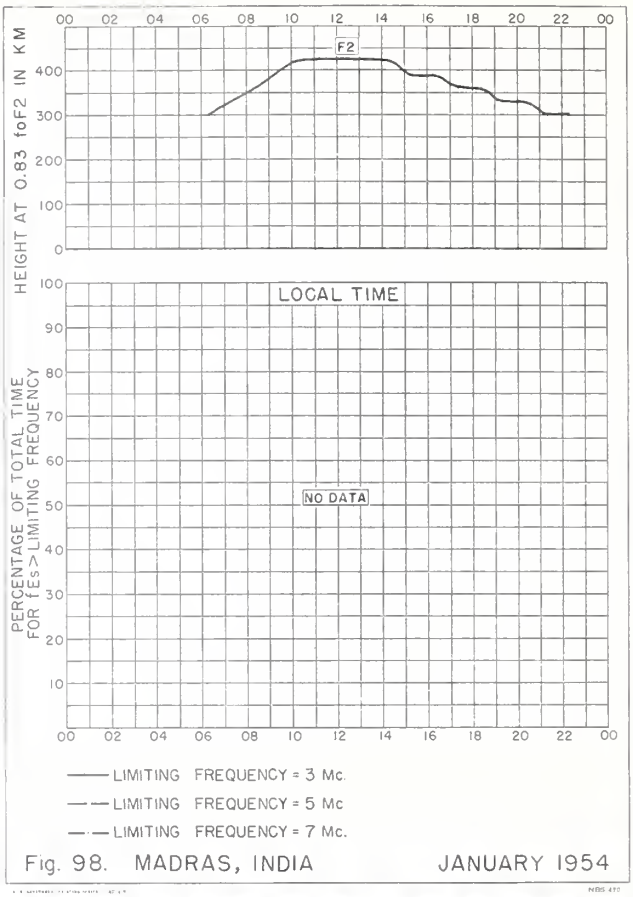


Fig. 98. MADRAS, INDIA JANUARY 1954

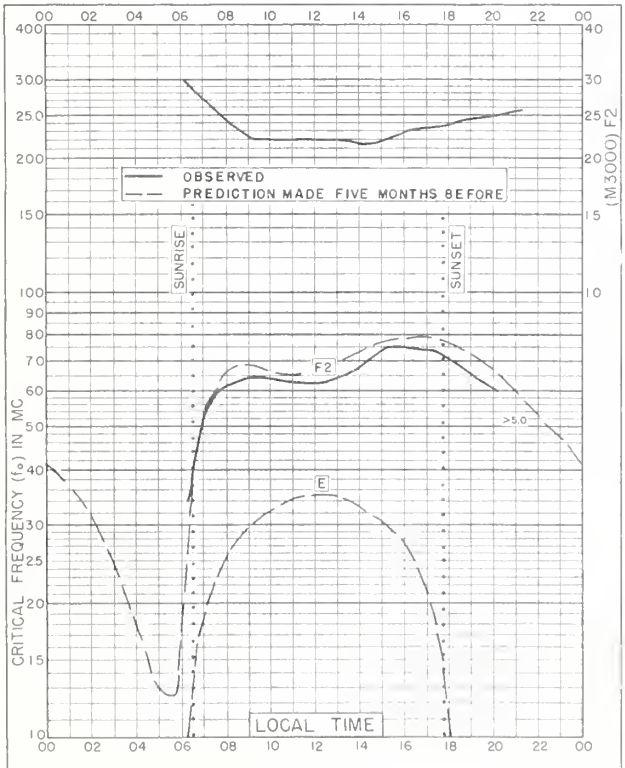


Fig. 99. TIRUCHY, INDIA
10.8°N, 78.8°E JANUARY 1954

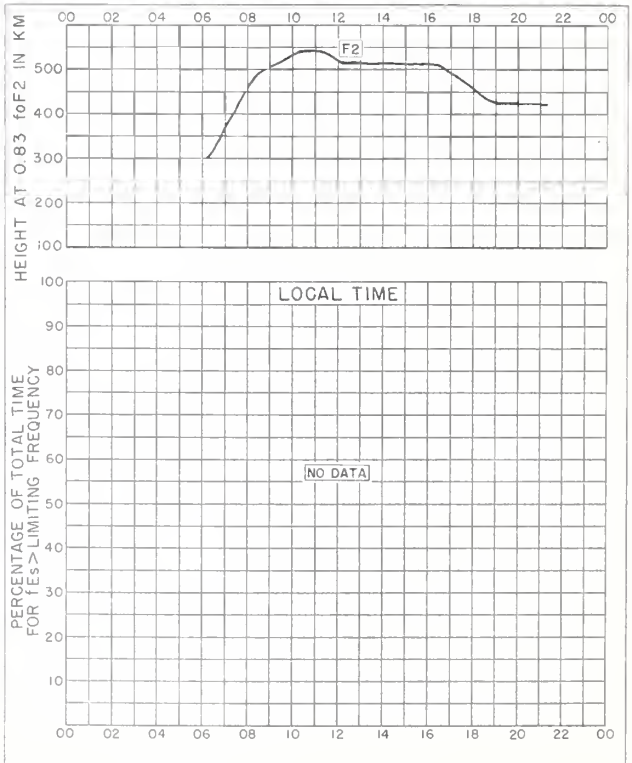


Fig. 100. TIRUCHY, INDIA JANUARY 1954

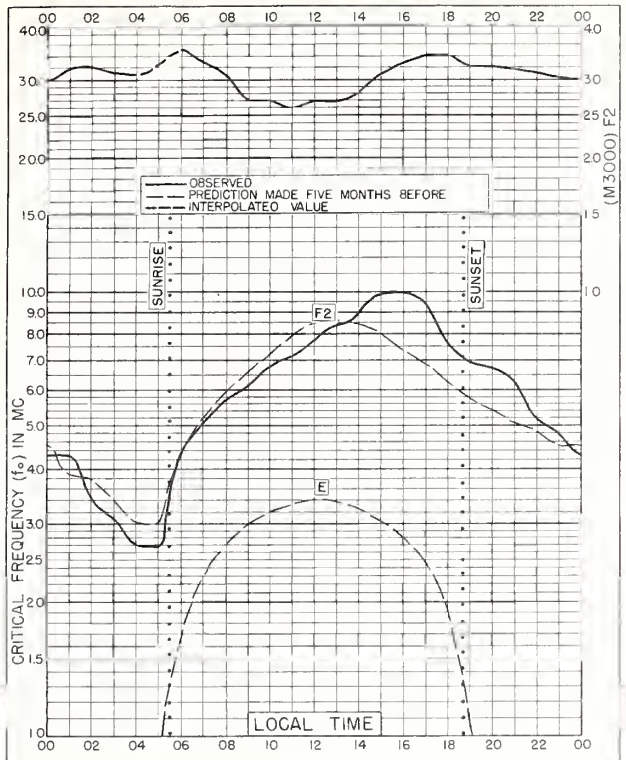


Fig. 101. SAO PAULO, BRAZIL
23.5°S, 46.5°W JANUARY 1954

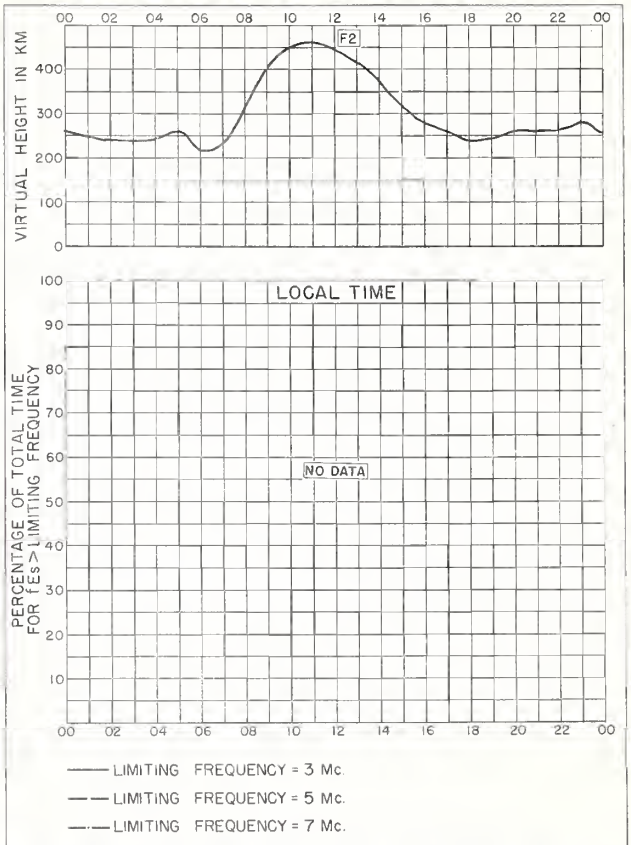


Fig. 102. SAO PAULO, BRAZIL JANUARY 1954

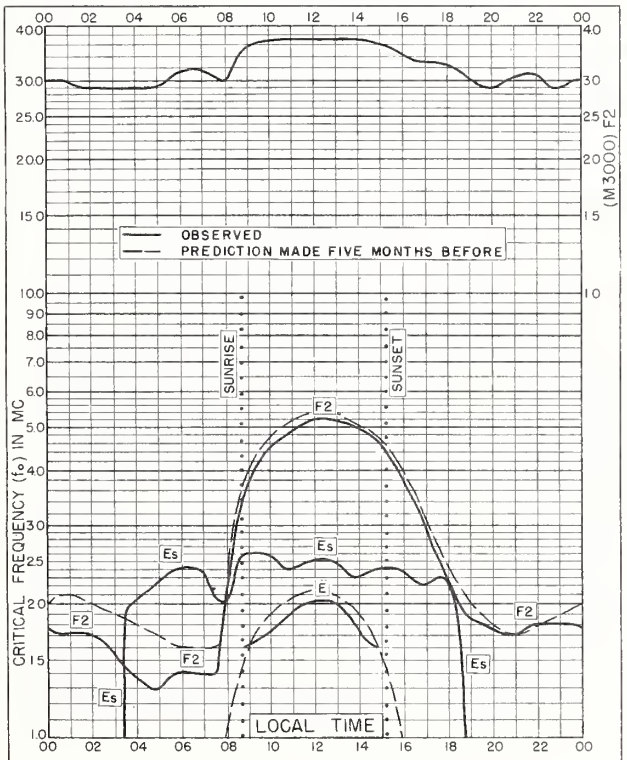


Fig. 103. INVERNESS, SCOTLAND
57.4°N, 4.2°W DECEMBER 1953

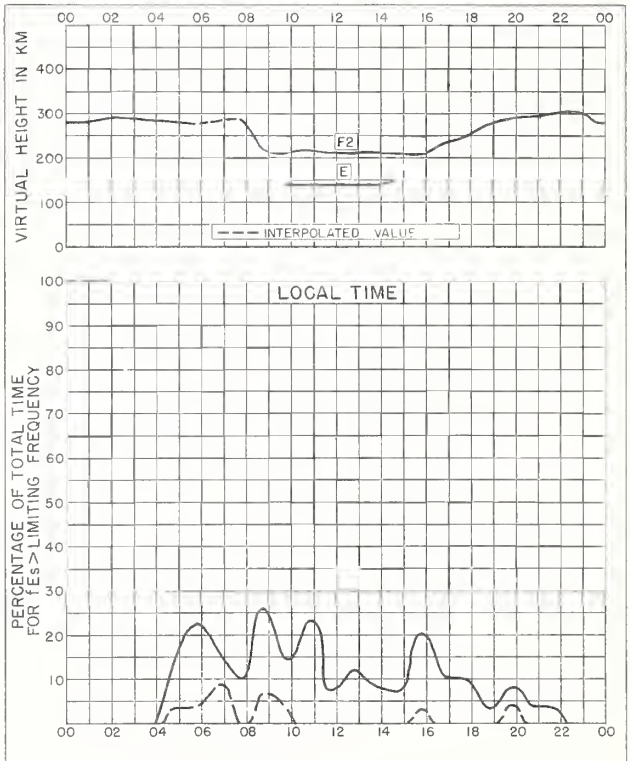


Fig. 104. INVERNESS, SCOTLAND DECEMBER 1953

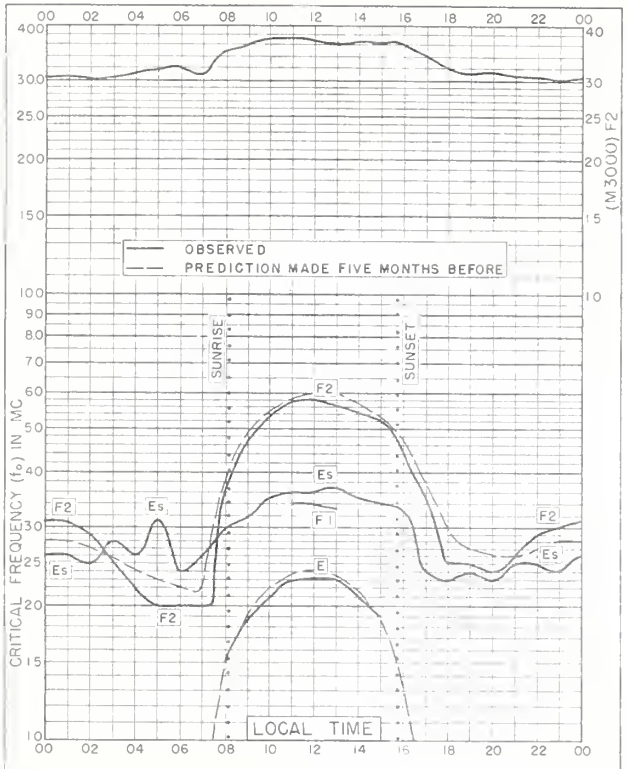


Fig. 105. SLOUGH, ENGLAND
51.5°N, 0.6°W DECEMBER 1953

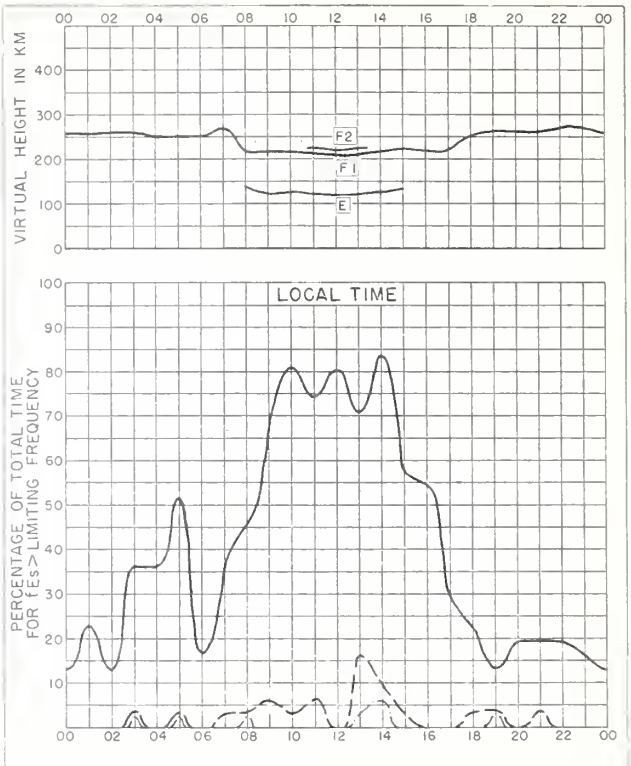


Fig. 106. SLOUGH, ENGLAND DECEMBER 1953

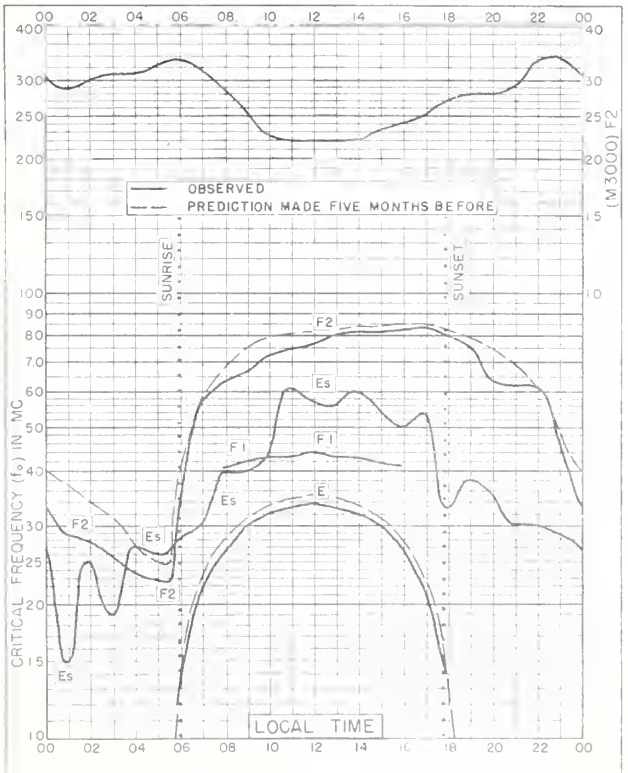
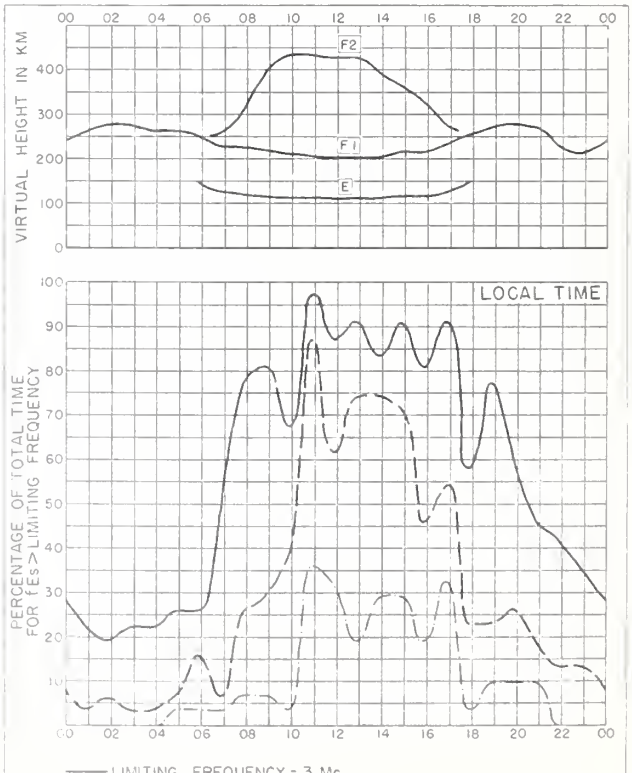


Fig. 107. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E DECEMBER 1953



DECEMBER 1953
Fig. 108. SINGAPORE, BRITISH MALAYA

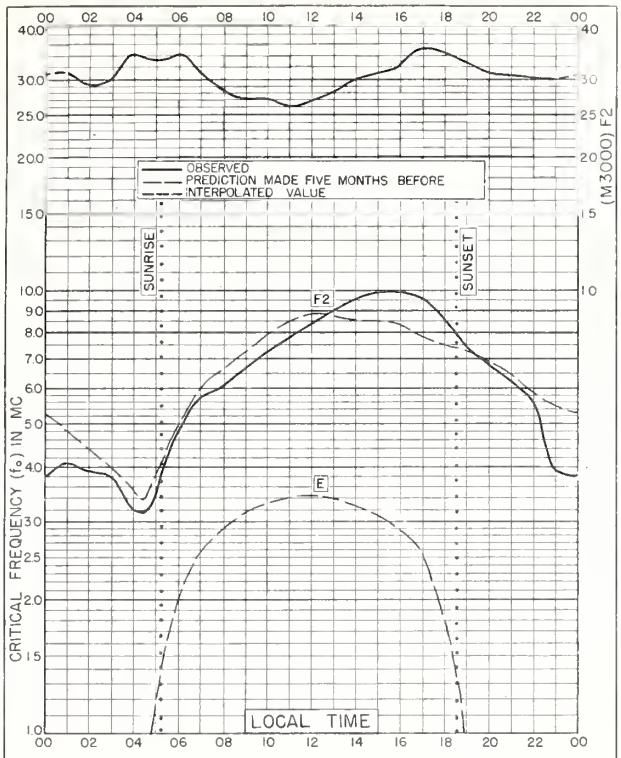


Fig. 109. SAO PAULO, BRAZIL
23.5°S, 46.5°W DECEMBER 1953

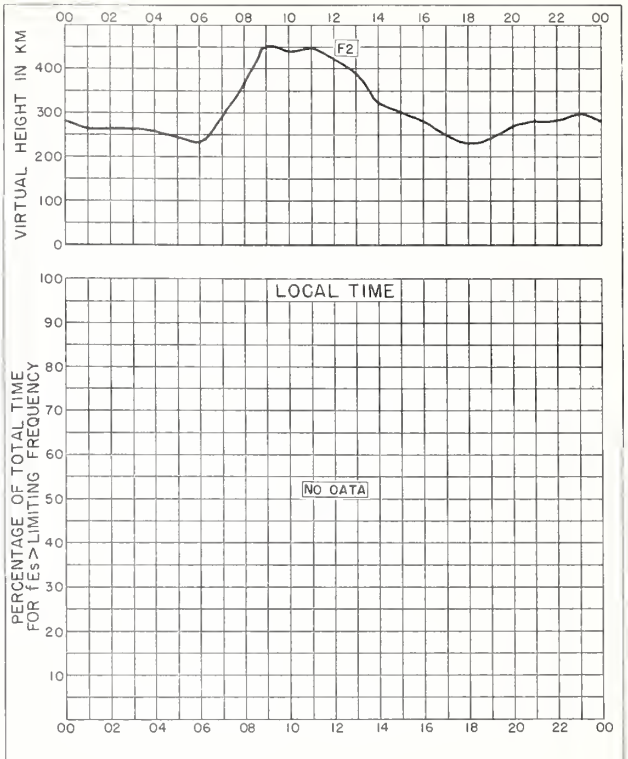


Fig. 110. SAO PAULO, BRAZIL DECEMBER 1953

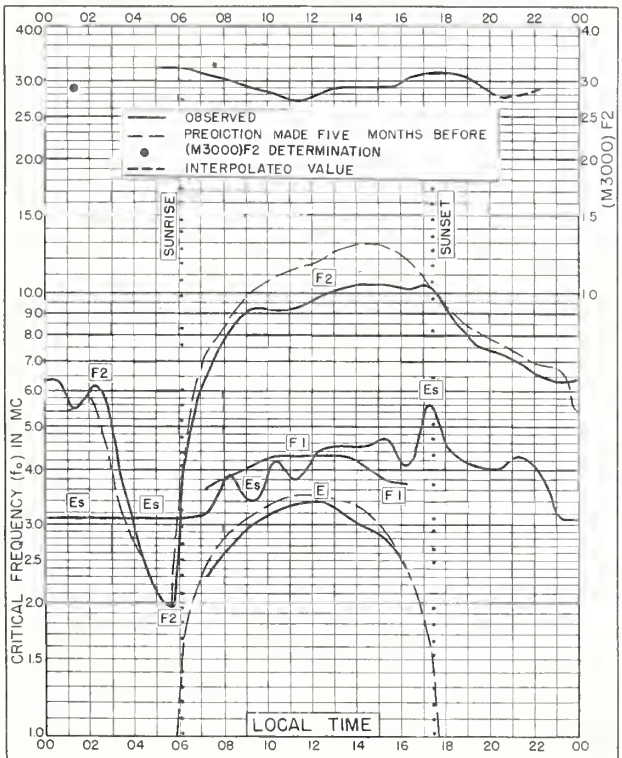


Fig. 111. KHARTOUM, SUDAN
15.6°N, 32.6°E NOVEMBER 1953

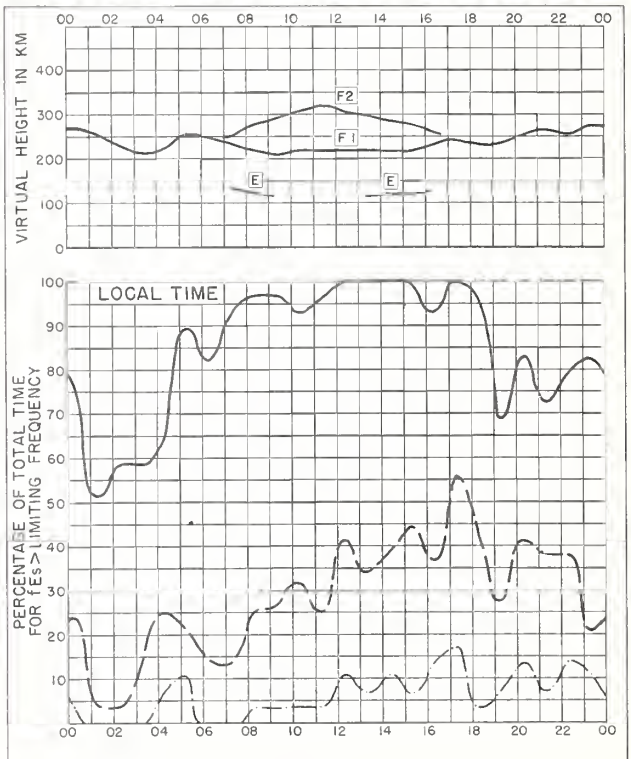


Fig. 112. KHARTOUM, SUDAN NOVEMBER 1953

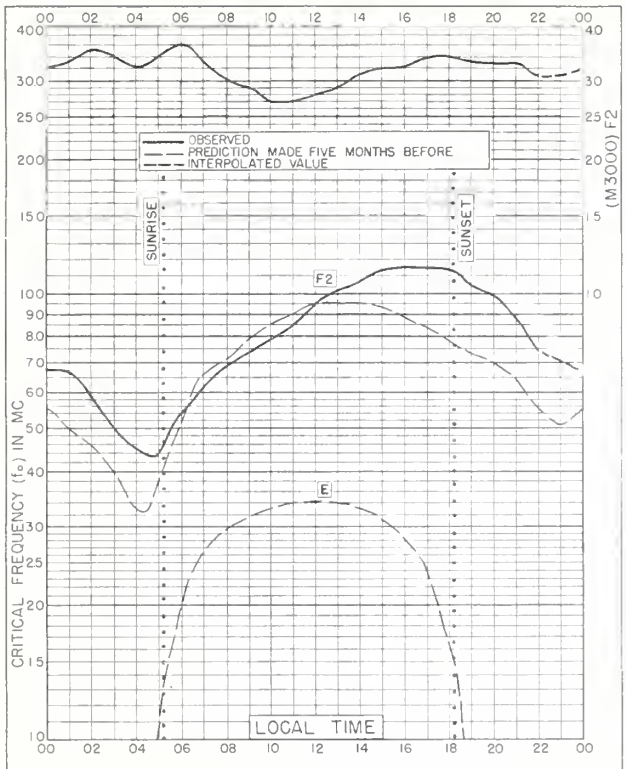


Fig. 113. SAO PAULO, BRAZIL
23.5°S, 46.5°W NOVEMBER 1953

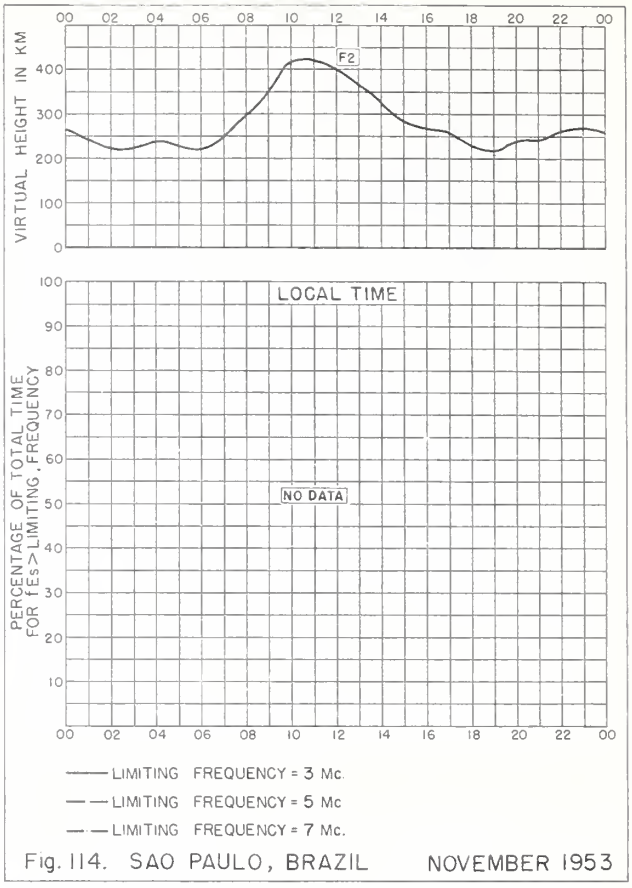


Fig. 114. SAO PAULO, BRAZIL NOVEMBER 1953

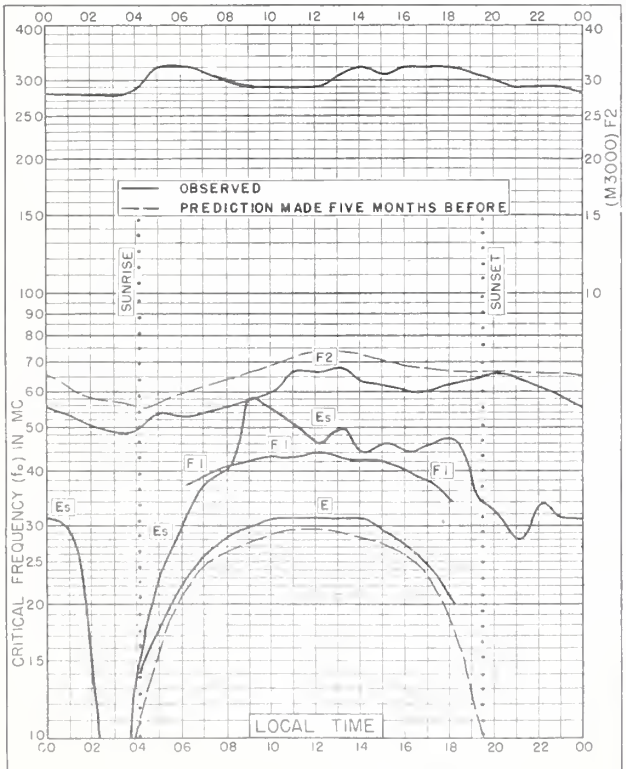


Fig. 115. FALKLAND IS.
51.7°S, 57.8°W NOVEMBER 1953

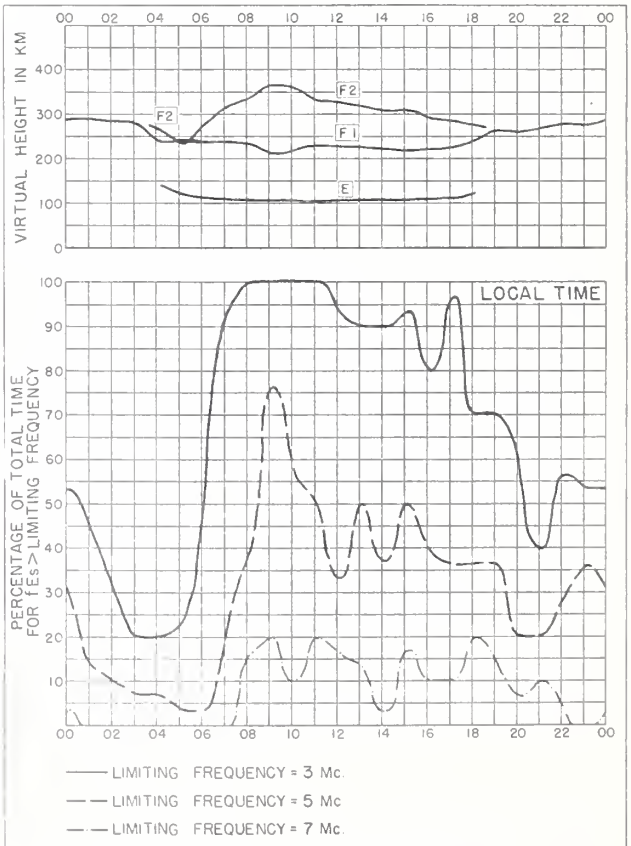


Fig. 116. FALKLAND IS. NOVEMBER 1953

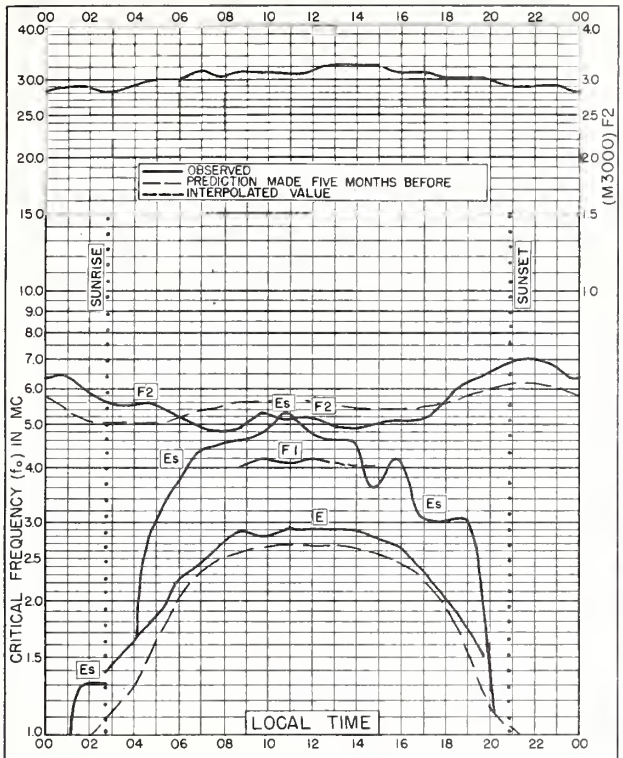


Fig. 117. PORT LOCKROY
64.8°S, 63.5°W NOVEMBER 1953

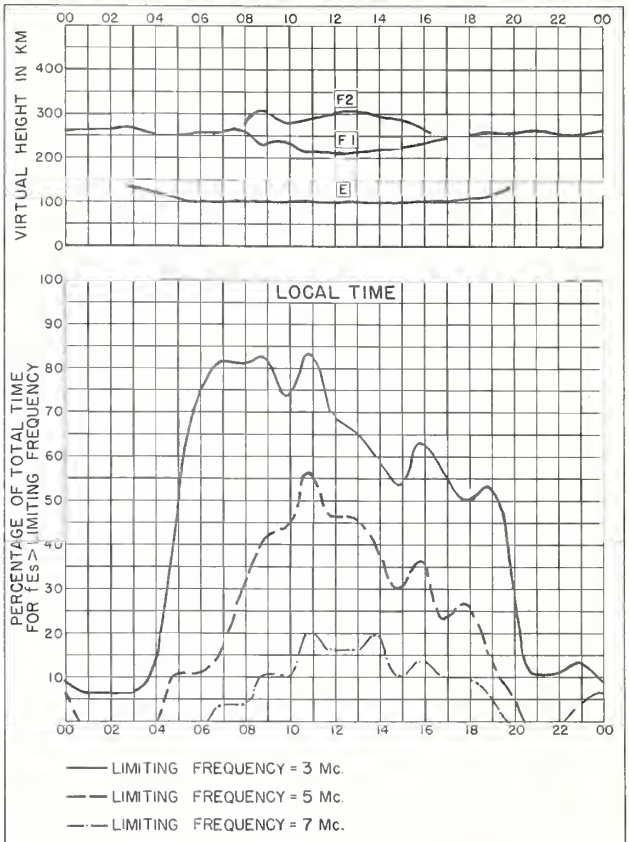


Fig. 118. PORT LOCKROY NOVEMBER 1953

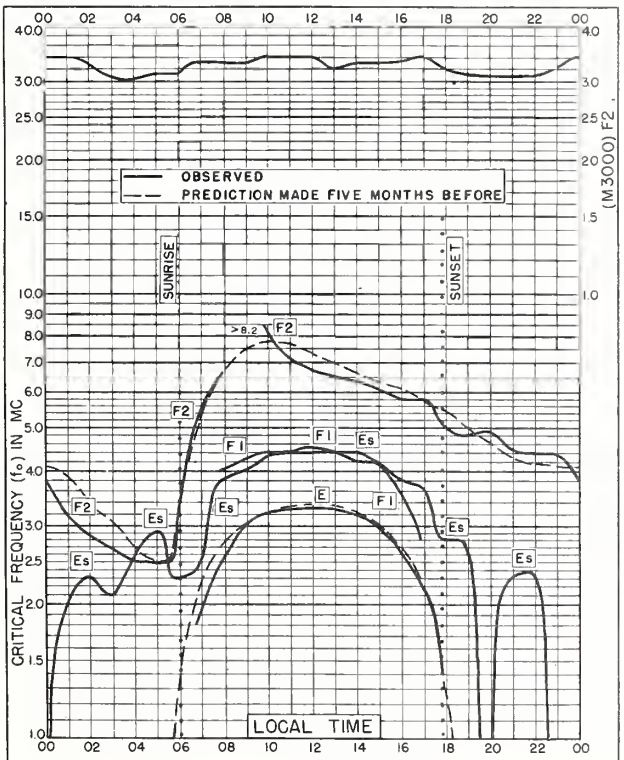


Fig. 119. TOWNSVILLE, AUSTRALIA
19.3°S, 146.8°E SEPTEMBER 1953

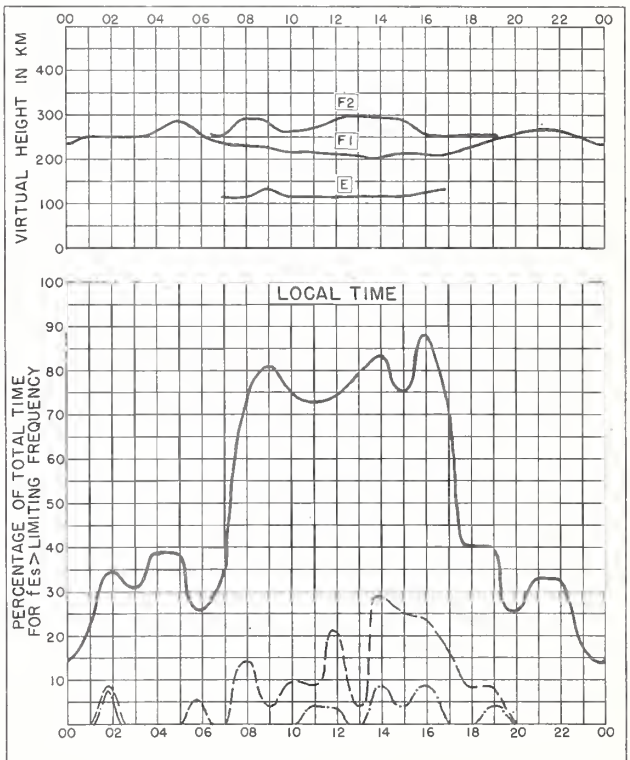


Fig. 120. TOWNSVILLE, AUSTRALIA SEPTEMBER 1953

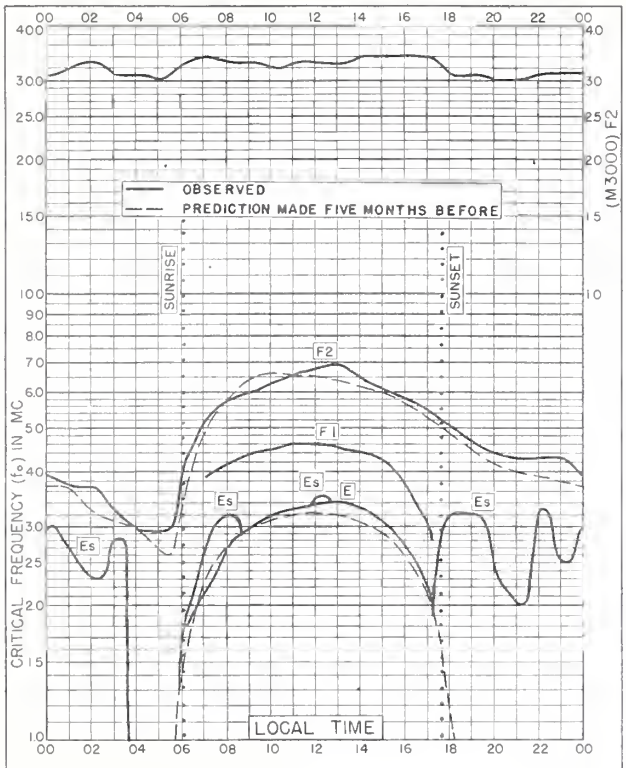


Fig 121. BRISBANE, AUSTRALIA
27.5°S, 153.0°E SEPTEMBER 1953

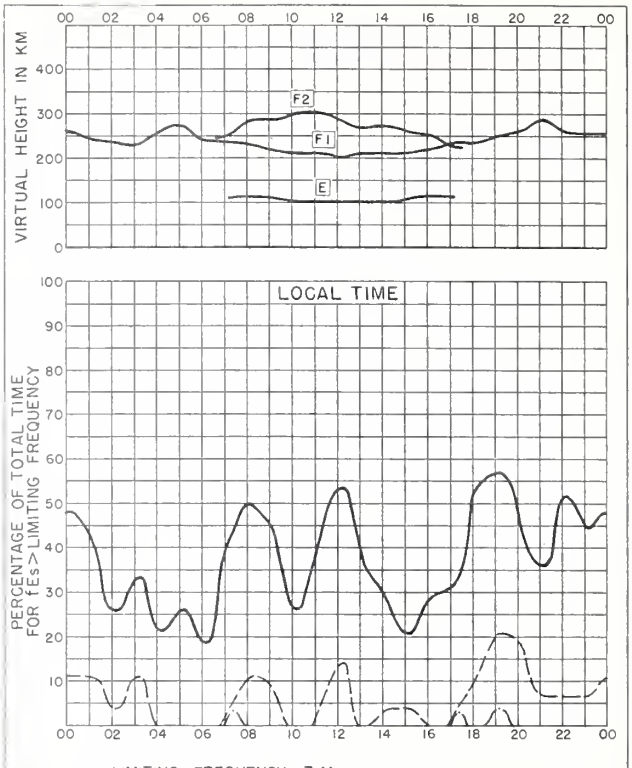


Fig. 122. BRISBANE, AUSTRALIA SEPTEMBER 1953

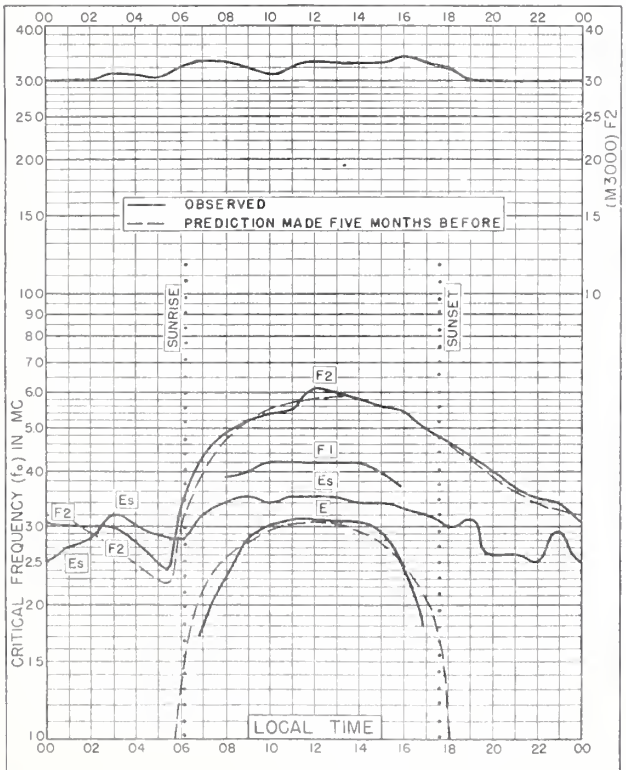


Fig. 123. CANBERRA, AUSTRALIA
35.3°S, 149.0°E SEPTEMBER 1953

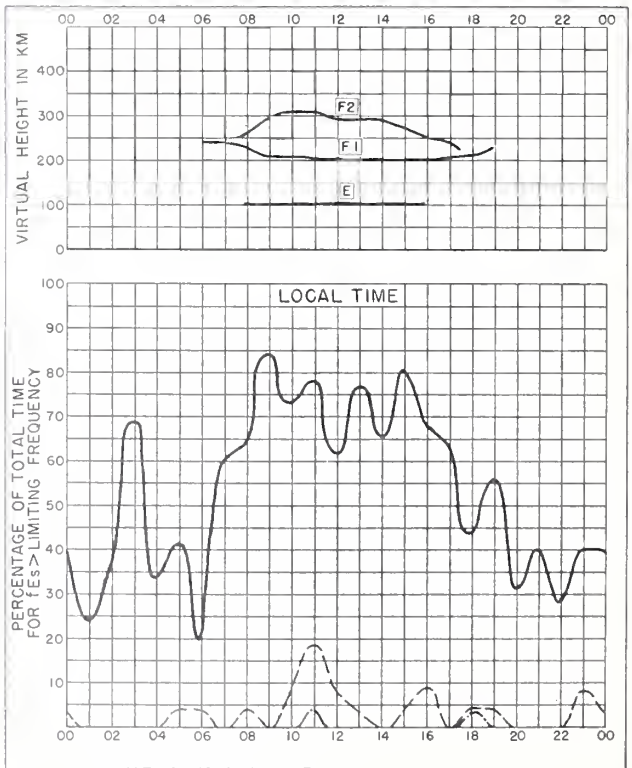


Fig. 124. CANBERRA, AUSTRALIA SEPTEMBER 1953

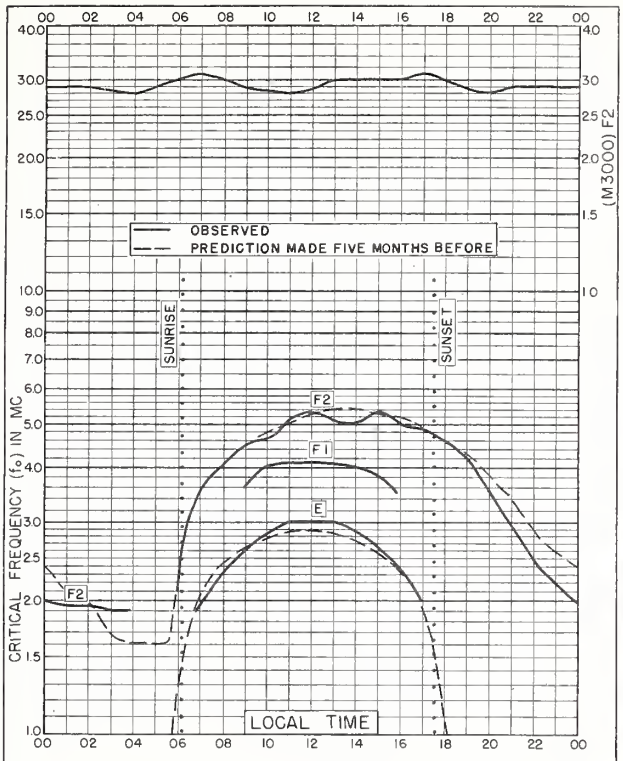


Fig. 125. HOBART, TASMANIA
42.9°S, 147.3°E SEPTEMBER 1953

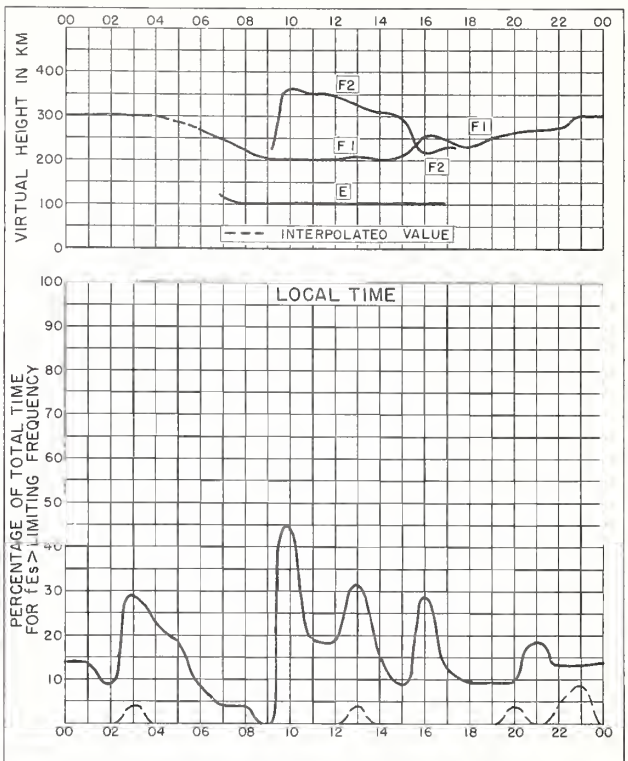


Fig. 126. HOBART, TASMANIA SEPTEMBER 1953

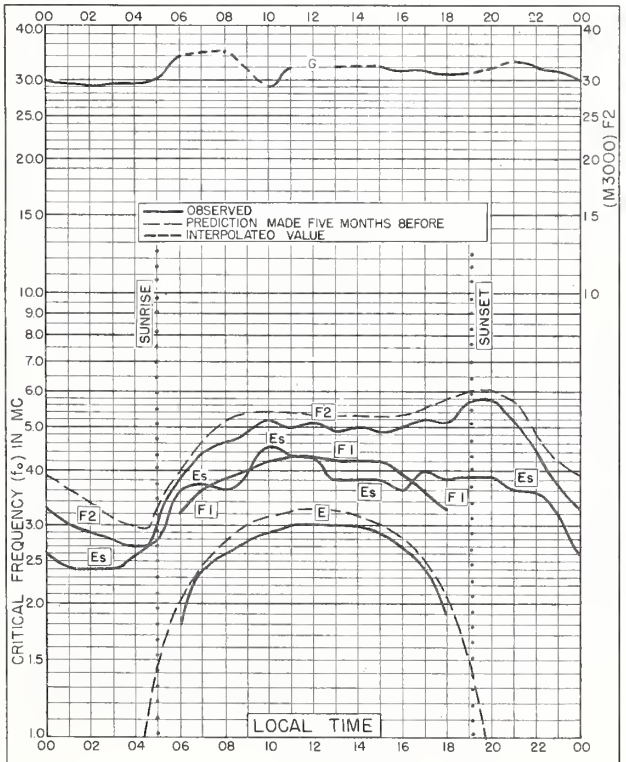


Fig. 127. POITIERS, FRANCE
46.6°N, 0.3°E AUGUST 1953

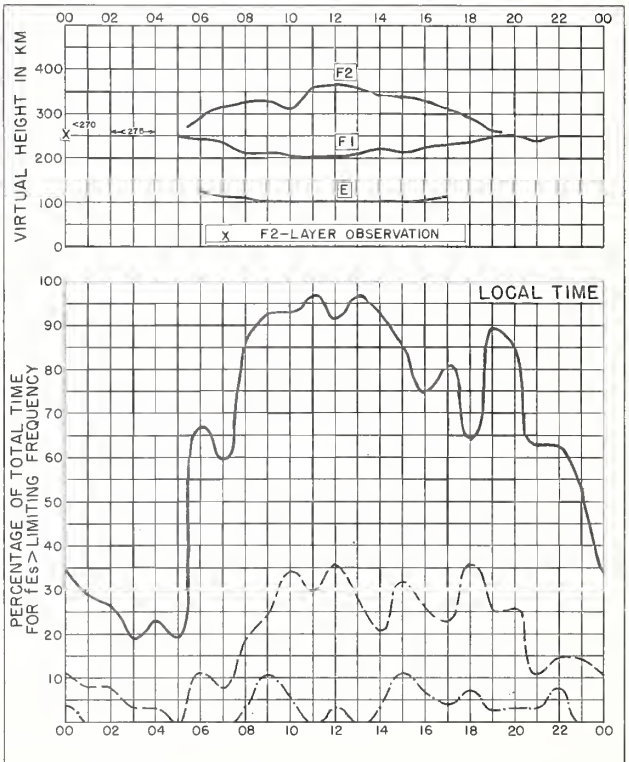


Fig. 128. POITIERS, FRANCE AUGUST 1953

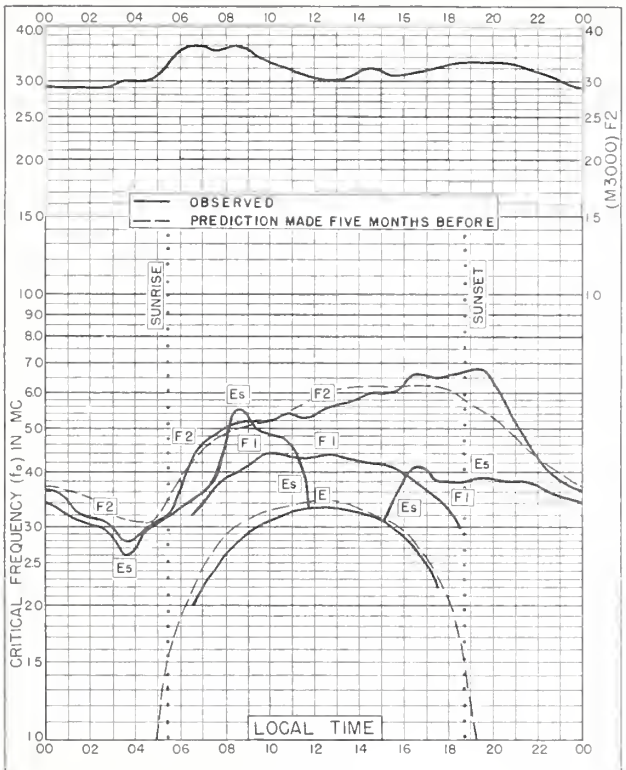


Fig. 129. CASABLANCA, MOROCCO
33.6°N, 7.6°W AUGUST 1953

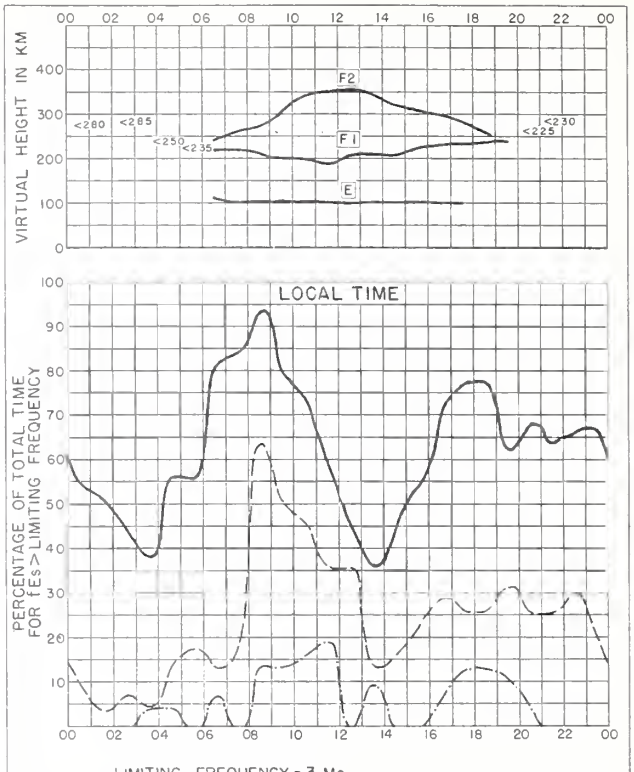


Fig. 130. CASABLANCA, MOROCCO AUGUST 1953

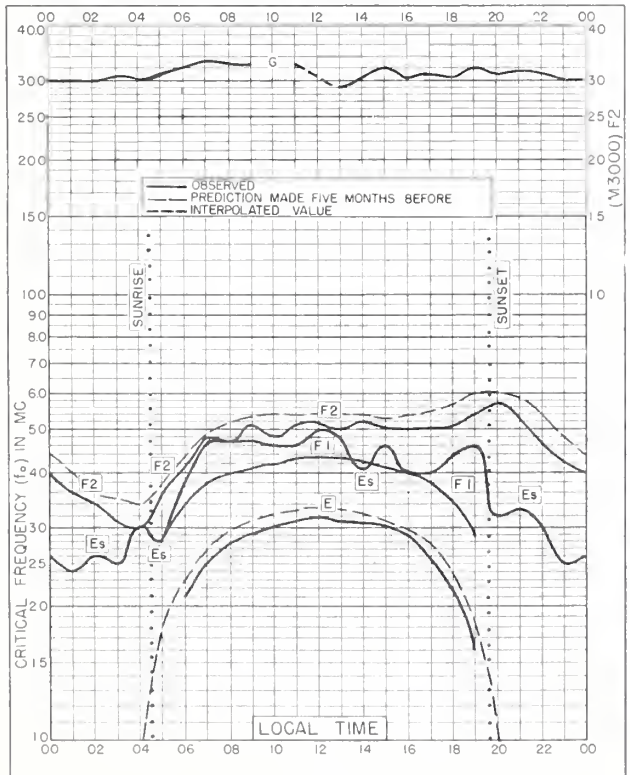


Fig. 131. POITIERS, FRANCE
46.6°N, 0.3°E. JULY 1953

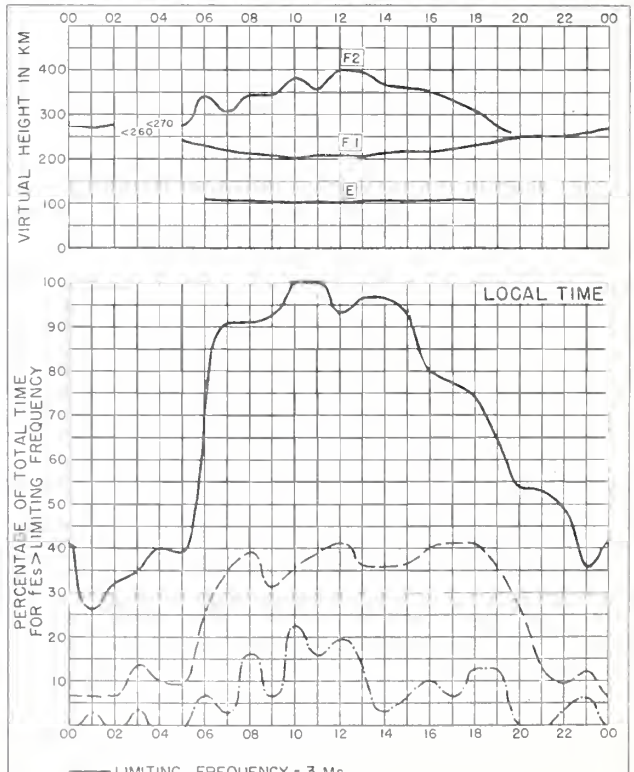


Fig 132. POITIERS, FRANCE JULY 1953

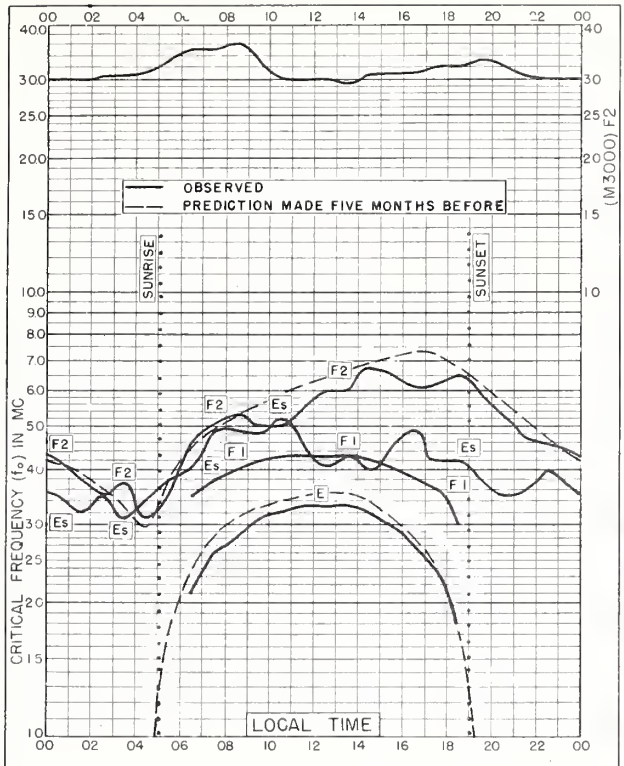


Fig. 133. CASABLANCA, MOROCCO
33.6°N, 7.6°W JULY 1953

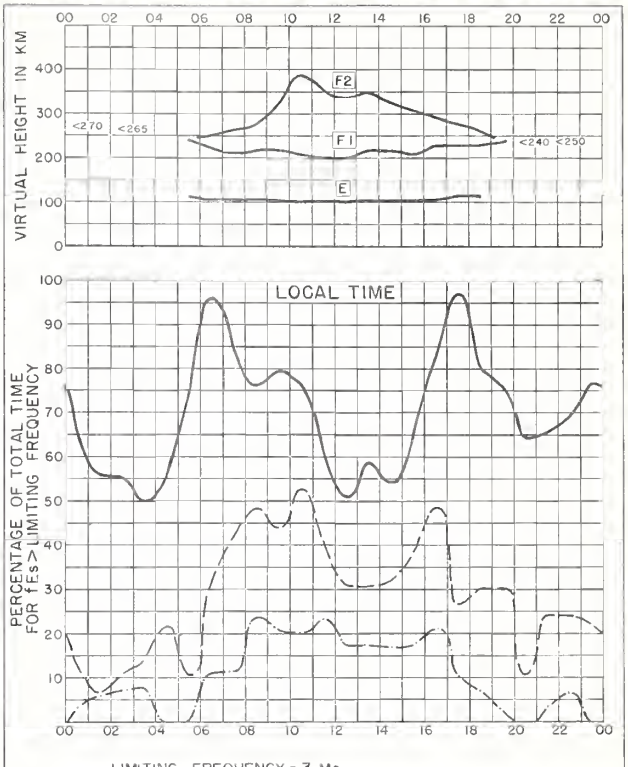


Fig. 134. CASABLANCA, MOROCCO JULY 1953

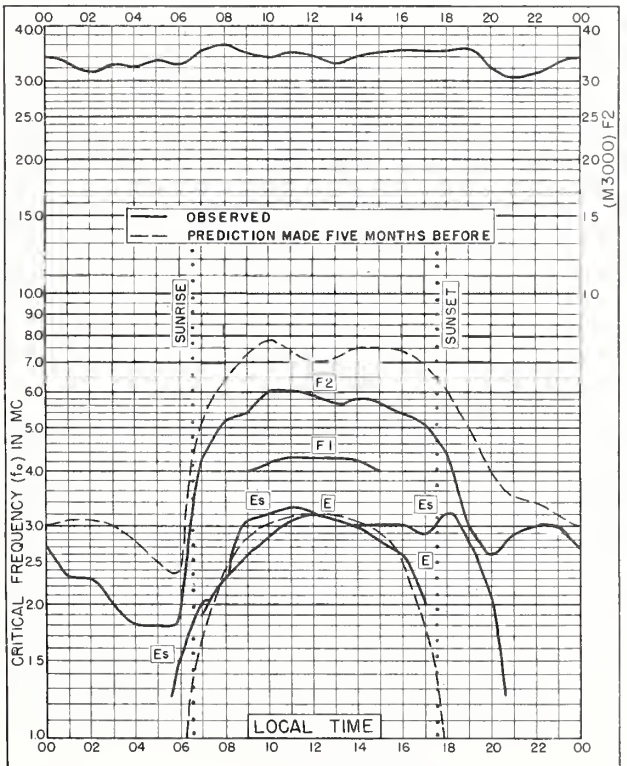


Fig. 135. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E JULY 1953

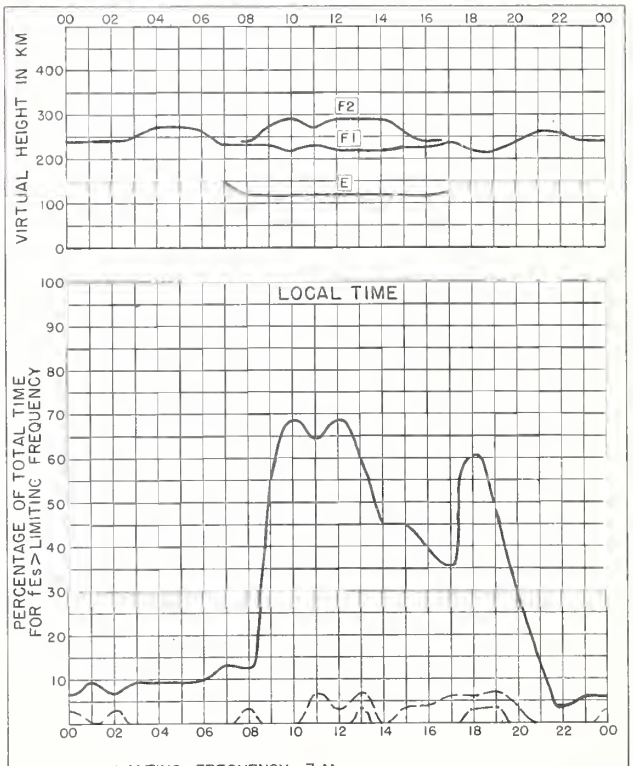


Fig. 136. TANANARIVE, MADAGASCAR JULY 1953

Fig. 137. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E JUNE 1953

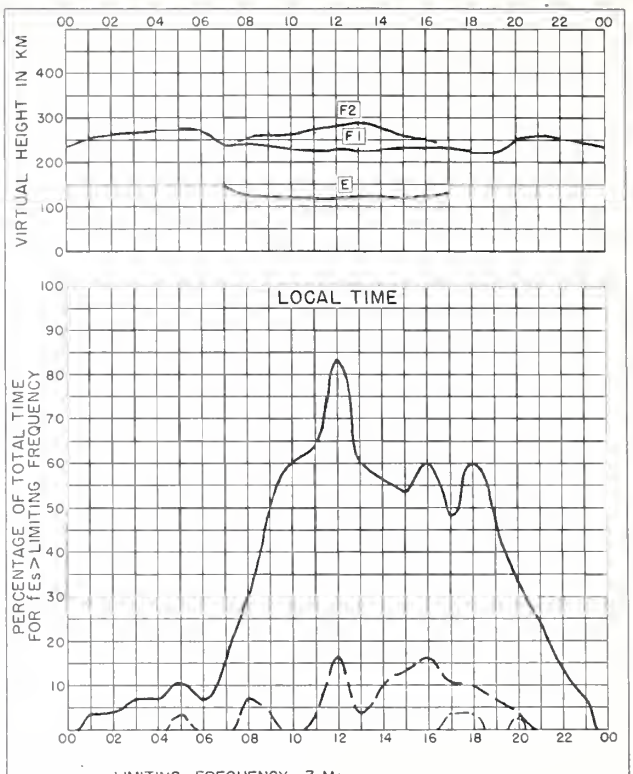


Fig. 138. TANANARIVE, MADAGASCAR JUNE 1953

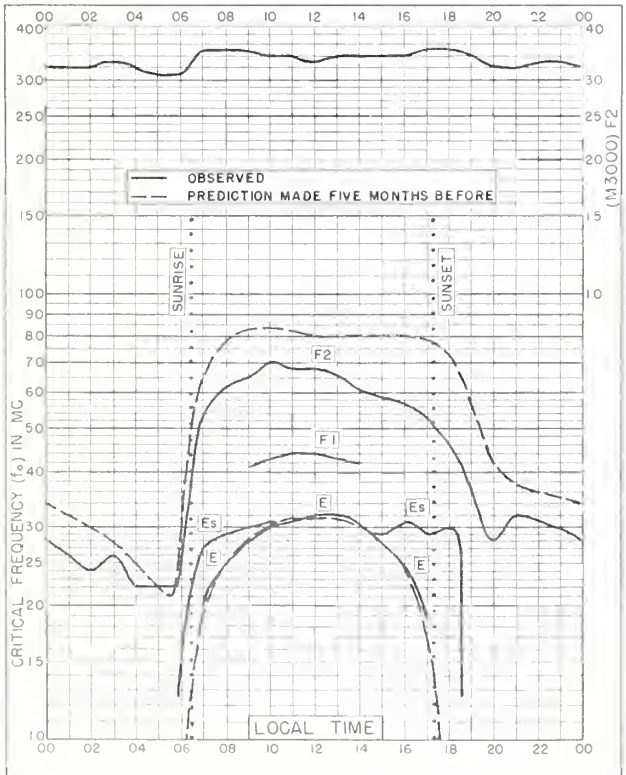


Fig. 139. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E MAY 1953

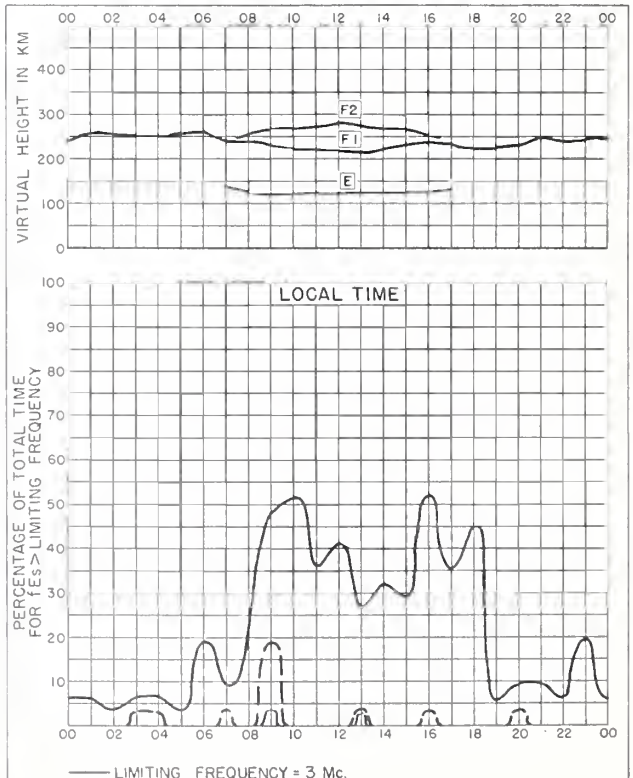


Fig. 140. TANANARIVE, MADAGASCAR MAY 1953

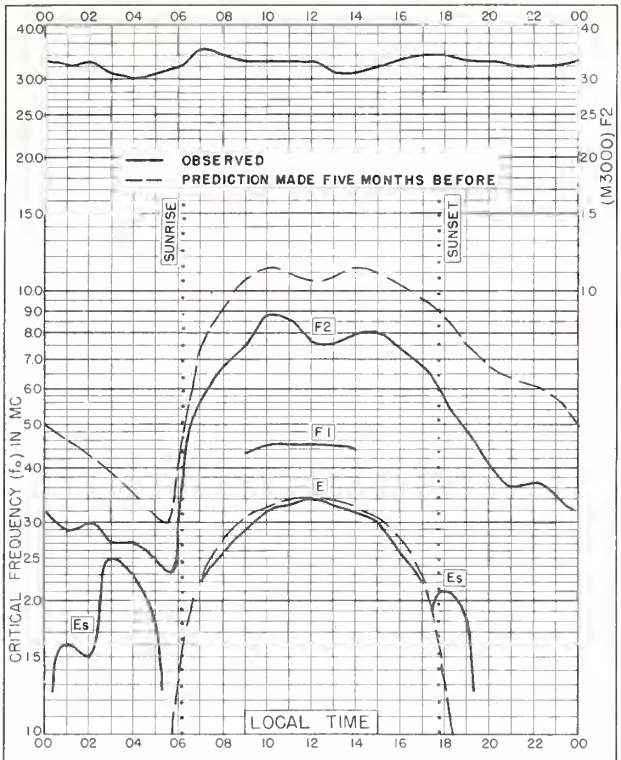


Fig. 141. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E APRIL 1953

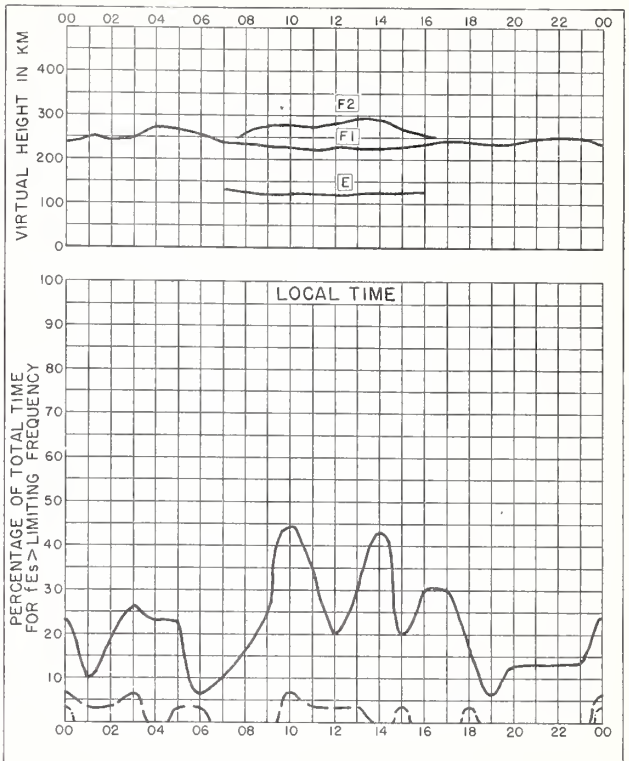


Fig. 142. TANANARIVE, MADAGASCAR APRIL 1953

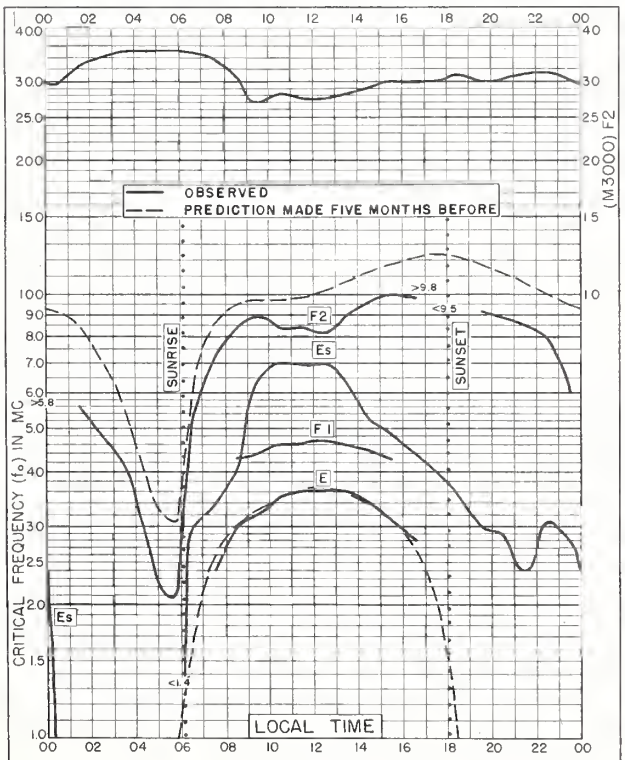


Fig. 143. DJIBOUTI, FRENCH SOMALILAND
11.5°N, 43.1°E MARCH 1953

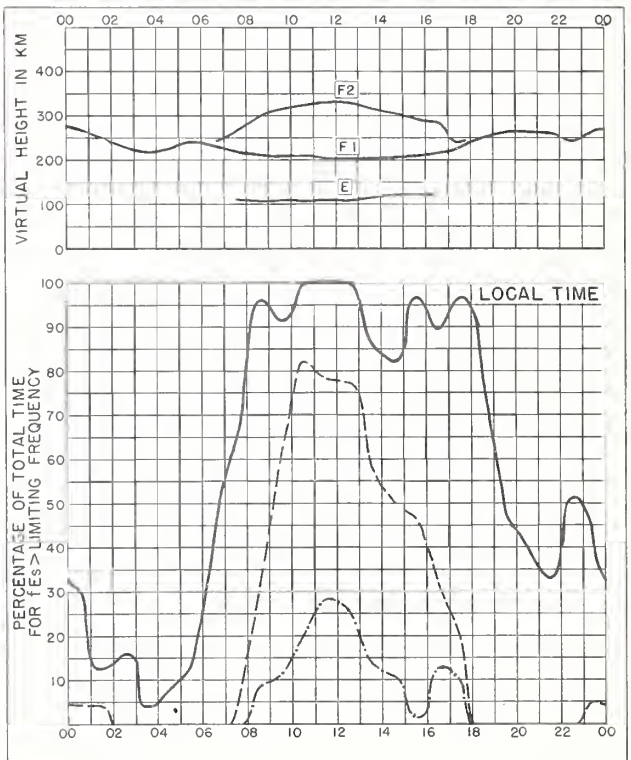


Fig. 144. DJIBOUTI, FRENCH SOMALILAND MARCH 1953

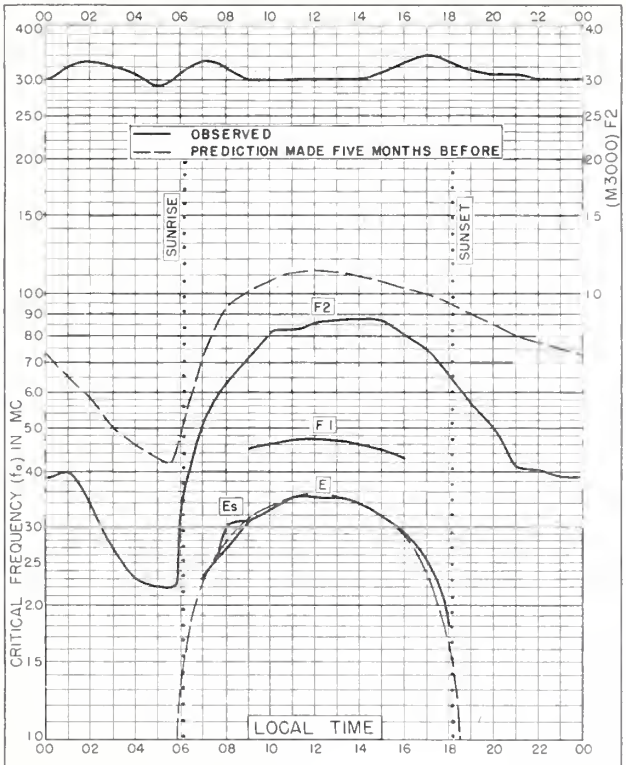
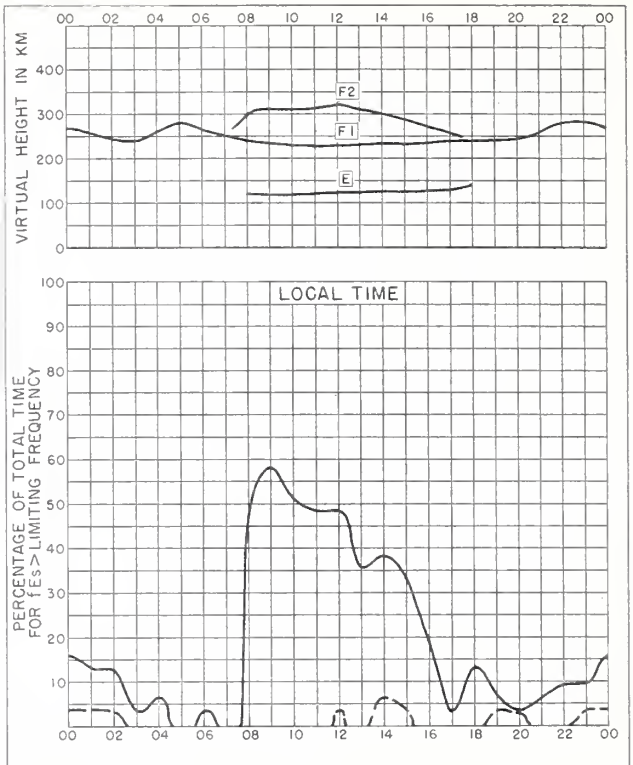


Fig. 145. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E MARCH 1953



MARCH 1953
Fig. 146. TANANARIVE, MADAGASCAR

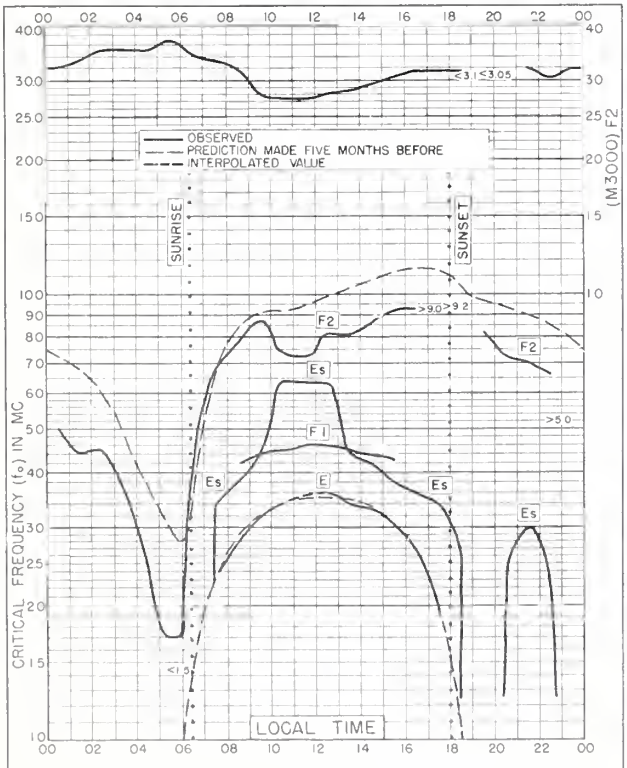
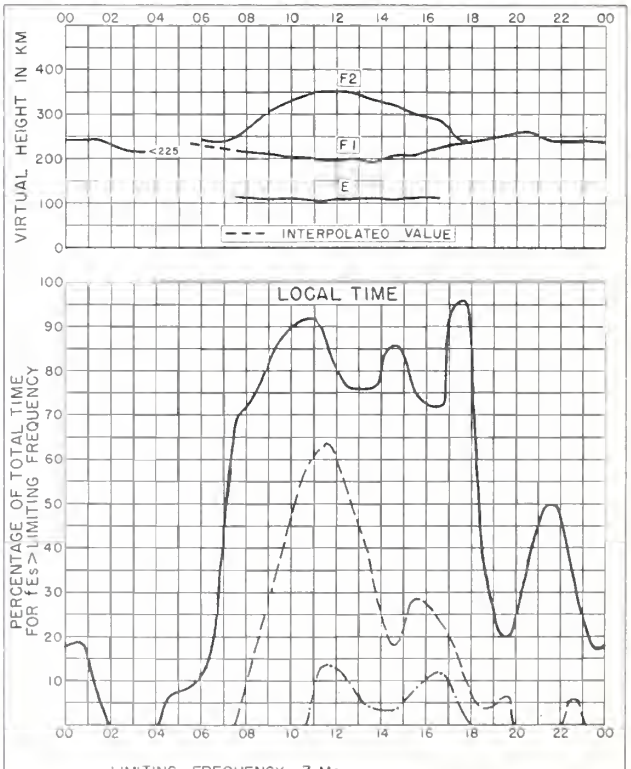


Fig. 147. DJIBOUTI, FRENCH SOMALILAND
11.5°N, 43.1°E FEBRUARY 1953



FEBRUARY 1953
Fig 148. DJIBOUTI, FRENCH SOMALILAND

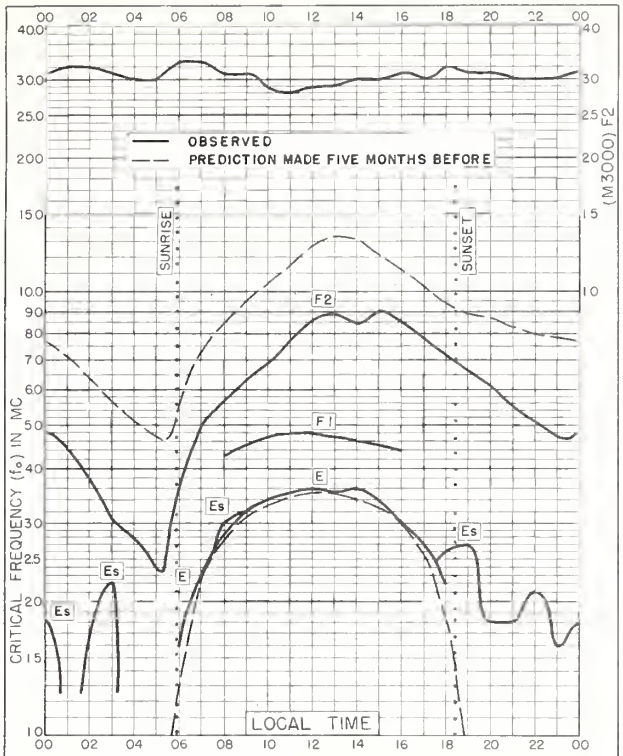
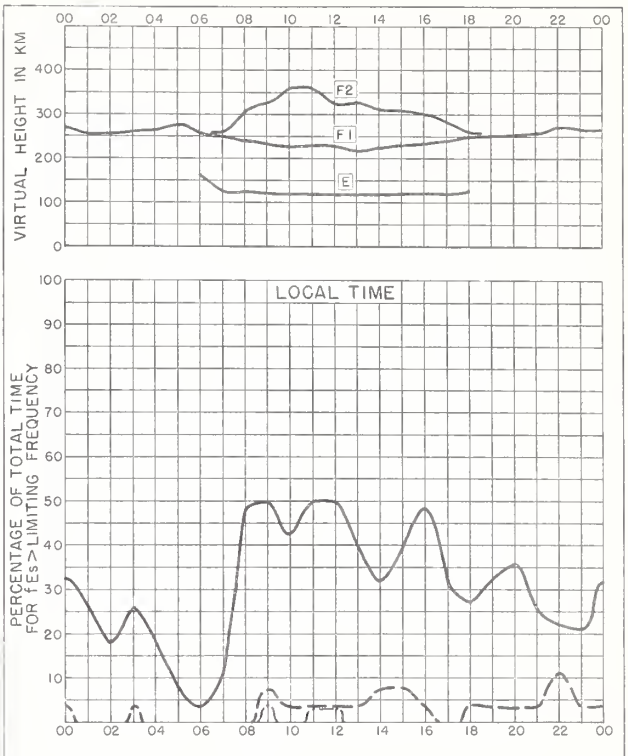


Fig. 149. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E FEBRUARY 1953



FEBRUARY 1953

Fig. 150. TANANARIVE, MADAGASCAR

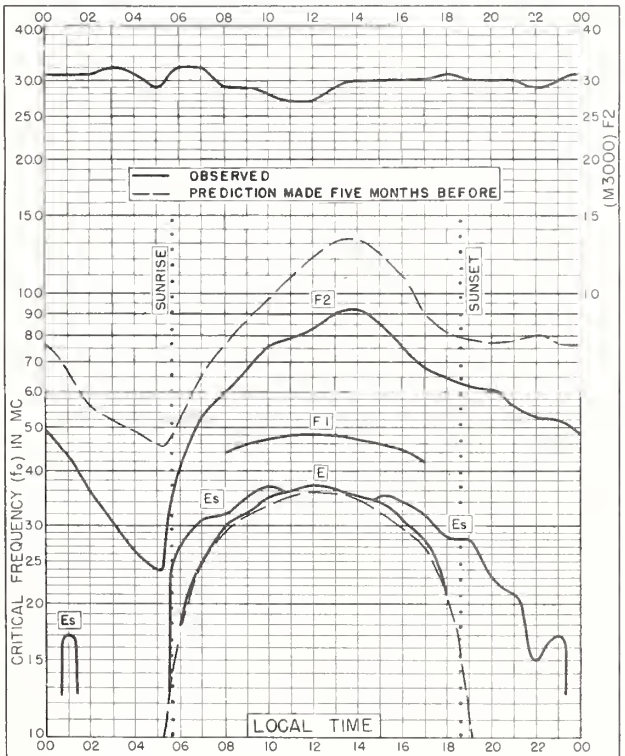
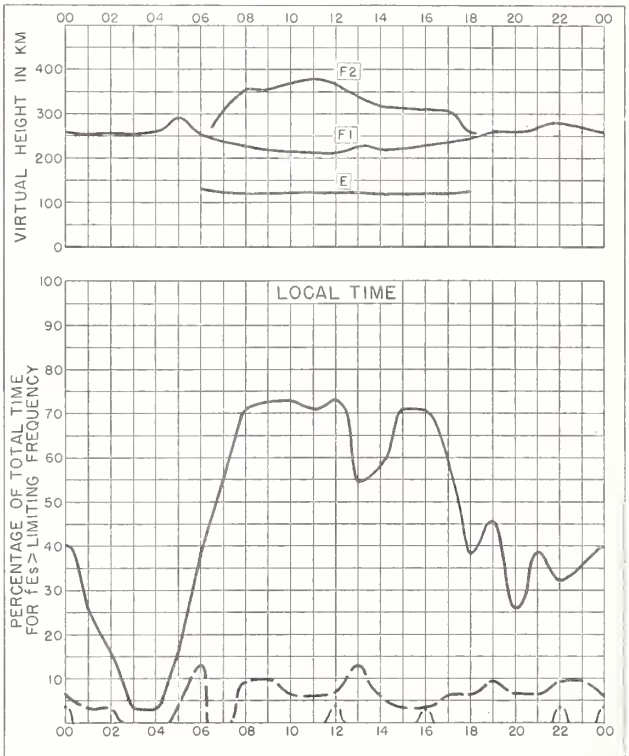


Fig. 151. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E JANUARY 1953



JANUARY 1953

Fig. 152. TANANARIVE, MADAGASCAR

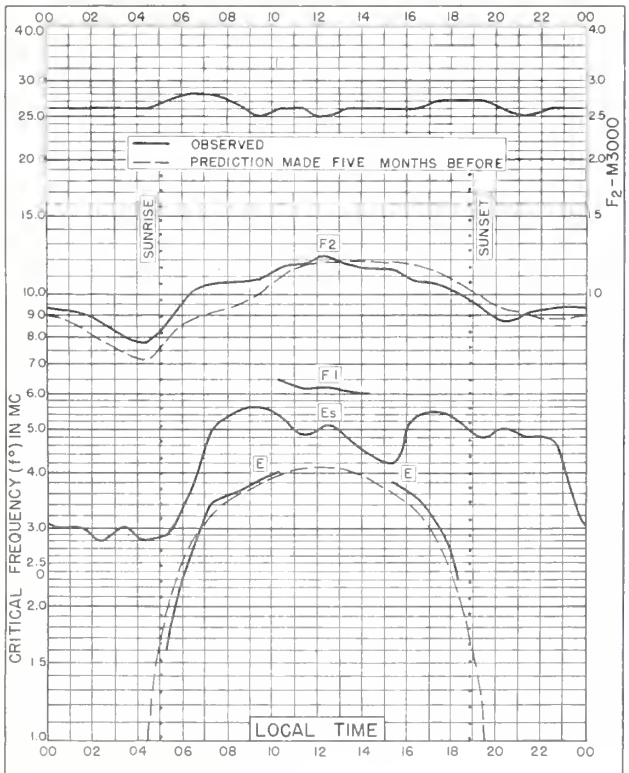


Fig. 153. TOKYO, JAPAN
35.7°N, 139.5°E MAY 1947

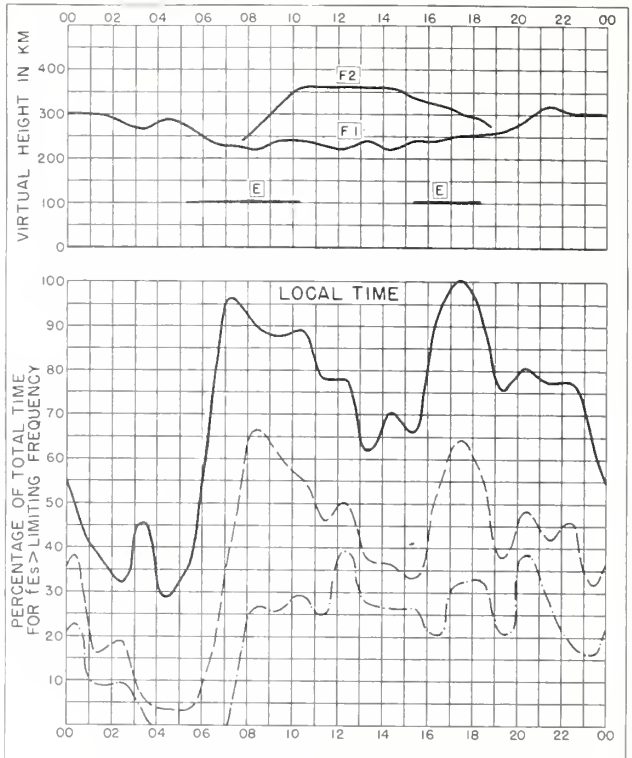


Fig 154. TOKYO, JAPAN MAY 1947

Index of Tables and Graphs of Ionospheric Data

in CRPL-F120

Index (CRPL-F120, continued)

Index (CRPL-F120, concluded)

GPO 833890

CRPL Reports

[A detailed list of CRPL publications is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance forecasts, every half hour from broadcast stations WWV and WWVH of the National Bureau of Standards.

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

Semiweekly:

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

CRPL—Jp. North Pacific Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL—Ja. Semimonthly Frequency Revision Factors For CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL—D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499-, monthly supplements to TM 11-499; Dept. of the Navy, DNC 13 ( ) series; Dept. of the Air Force, TO 16-1B-2 series.) On sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address cognizant military office.

CRPL—F. Ionospheric Data. Limited distribution. This publication is in general disseminated only to those individuals or scientific organizations which collaborate in the exchange of ionospheric, solar, geomagnetic or other radio propagation data or in exchange for copies of publications on radio, physics and geophysics for the CRPL library.

Circulars of the National Bureau of Standards pertaining to Radio Sky Wave Transmission:

NBS Circular 462. Ionospheric Radio Propagation.

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

These circulars are on sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address the respective military office having cognizance of radio wave propagation.

The publications listed above may be obtained without charge from the Central Radio Propagation Laboratory, unless otherwise indicated.