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IONOSPHERIC DATA

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

IONOSPHERIC DATA

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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 f_{oF2} (and f_{oE} 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 f_{oF2} , as equal to or less than f_{oFl} .
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 (E_s):

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 f_{oM2} is less than or equal to f_{oF1} , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

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

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

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

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

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

The following predicted smoothed 12-month running-average Zurich 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	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 72 and figures 1 to 144 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:

Republica Argentina, Ministerio de Marina:
 Buenos Aires, Argentina
 Deception I.

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

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:

Fort Chimo, Canada
Ottawa, Canada
Prince Rupert, Canada
Resolute Bay, Canada
St. John's, Newfoundland
Winnipeg, Canada

Danish National Committee of URSI:

Godhavn, Greenland

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

Institute for Ionospheric Research, Lindau Über 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

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

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

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

Manila Observatory:
Baguio, P. I.

Research Institute of National Defence, Stockholm, Sweden:
Upsala, Sweden

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

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

National Bureau of Standards (Central Radio Propagation Laboratory):
Maui, Hawaii
Narsarssuak, Greenland
Panama Canal Zone
Point Barrow, Alaska
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 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 85 presents ionosphere character figures for Washington, D. C., during June 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.

RADIO PROPAGATION QUALITY FIGURES

Tables 87a and 87b give for May 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, Q_a, 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 Q_a-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 Q_a-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, Q_a, 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 86 gives for May 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, Q_p , 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, Q_p , 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 Q_p differs from that of Q_a . For Q_p , each reported index is converted into a deviation (usually) from the 3-monthly mean for that index, in units of the standard deviation. These deviations are averaged for all reports for a given 9-hour period. The average is then put on the 1 to 9 Q-scale with an assumed standard deviation of 1.25 and assumed means of 5.33, 5.33, and 6.00, respectively, for the 03-12, 09-18 and 18-03 periods, and 5.67 for the whole day period. (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 88 through 90 give the observations of the solar corona during June 1954, obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. Tables 91 through 93 list the coronal observations obtained at Sacramento Peak, New Mexico, during June 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 88 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 89 gives similarly the intensities of the first red (6374A) coronal line; and table 90, the intensities of the second red (6702A) coronal line; all observed at Climax in June 1954.

Table 91 gives the intensities of the green (5303A) coronal line; table 92, the intensities of the first red (6374A) coronal line; and table 93, the intensities of the second red (6702A) coronal line; all observed at Sacramento Peak in June 1954.

The following symbols are used in tables 88 through 93: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

Tables 94 and 95 give details of the Climax, Colorado, and Sacramento Peak, New Mexico, observations, respectively, from January 1954 through June 1954. The first column lists the Greenwich date of observation; the following columns give the threshold or lowest observable intensity of 5303A for each spectrum plate centered at the astronomical position angle indicated; the last two columns indicate the observer and the person responsible for the intensity estimates of the observation. These tables continue the presentation of coronal data in the manner of table 1 of CRPL-1-4 and appear in the F series regularly at intervals of six months.

RELATIVE SUNSPOT NUMBERS

Table 96 lists the daily provisional Zurich relative sunspot number, R_Z , for June 1954, as communicated by the Swiss Federal Observatory. Table 97 contains the daily American relative sunspot number, R_A' , for May 1954, as compiled by the Solar Division, American Association of Variable Star Observers.

OBSERVATIONS OF SOLAR FLARES

Table 98 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 99 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 $4 \frac{2}{3}$, 5o is $5 \frac{0}{3}$, and 5+ is $5 \frac{1}{3}$. 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).

SUDDEN IONOSPHERE DISTURBANCES

Table 100 shows that no sudden ionosphere disturbances were observed at Ft. Belvoir, Virginia, during the month of June 1954.

TABLES OF IONOSPHERIC DATA

Washington, D. C. (38.7°N, 77.1°W)							June 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	260	(3.0)				3.1	(3.2)	
01	270	2.8				3.8	3.2	
02	270	(2.4)				2.1	(3.2)	
03	280	(2.1)				3.0	(3.3)	
04	280	(2.1)				2.8	(3.3)	
05	250	2.9	230	---		2.6	3.35	
06	340	3.7	220	3.3	110	2.0	3.4	3.2
07	340	4.2	220	3.6	110	2.4	4.6	3.2
08	360	4.4	220	3.8	110	2.7	4.4	3.0
09	350	4.8	210	4.0	100	2.9	4.9	3.1
10	360	4.7	200	4.1	100	3.0	4.4	3.0
11	360	4.6	190	4.2	100	(3.1)	4.8	3.0
12	370	4.9	200	4.2	100	3.2	4.8	3.0
13	390	4.7	200	4.2	100	3.2	4.9	3.0
14	380	4.7	200	4.1	100	3.2	4.3	3.0
15	380	4.7	210	4.0	100	3.0	4.6	3.0
16	370	4.7	220	3.9	110	2.8	4.0	3.0
17	330	4.7	230	3.7	110	2.6	4.6	3.1
18	300	5.0	220	3.3	110	2.2	5.2	3.1
19	260	5.2	---	---			5.1	3.4
20	240	5.5					4.6	3.2
21	240	4.8					4.9	3.4
22	250	3.8					4.0	3.1
23	270	(3.4)					3.9	(3.2)

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

Maui, Hawaii (20.8°N, 156.5°W)							April 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	300	3.6				2.2	2.9	
01	280	3.7				2.2	3.0	
02	260	3.8				2.0	3.3	
03	250	3.2				2.0	3.2	
04	280	2.8				1.8	3.0	
05	270	2.6				1.8	3.1	
06	260	3.2	---	---	---	1.9	3.2	
07	250	5.3	240	---	120	2.0	3.2	3.4
08	280	5.8	230	---	120	2.6	4.8	3.2
09	320	6.1	220	4.3	110	2.9	5.0	3.0
10	370	6.7	220	4.4	110	3.1	5.9	2.7
11	390	8.0	210	4.4	110	3.2	6.7	2.7
12	360	9.3	210	4.4	110	3.3	6.9	2.8
13	330	10.8	220	4.4	110	3.3	5.4	3.0
14	300	11.1	200	4.4	110	3.2	5.0	3.1
15	300	11.2	250	4.3	120	3.1	5.6	3.1
16	280	10.8	250	4.1	120	2.9	5.4	3.15
17	280	10.3	240	3.9	120	2.5	6.9	3.2
18	260	10.0	250	---	130	1.9	6.6	3.3
19	240	9.4					3.8	3.4
20	230	6.0					4.0	3.3
21	260	4.5					3.9	3.0
22	300	4.0					3.0	2.8
23	310	3.6					2.4	2.8

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

Okinawa I. (26.3°N, 127.8°E)							March 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	280	3.6					3.1	
01	250	3.4					3.3	
02	230	3.3					3.4	
03	210	3.2					3.6	
04	210	2.5					(3.6)	
05	(240)	(2.7)					---	
06	<240	3.2					3.4	
07	230	5.2	220	--	110	---	2.5	3.7
08	240	5.8	210	---	100	---	3.1	3.5
09	260	6.5	210	4.2	100	3.0	3.9	3.4
10	290	7.4	210	4.2	100	3.0	4.6	3.2
11	310	8.5	200	4.3	100	3.2	4.5	3.2
12	290	10.1	200	4.4	100	3.3	4.7	3.2
13	260	10.8	200	4.4	100	3.3	4.6	3.4
14	250	10.5	210	4.3	110	3.2	4.5	3.4
15	250	10.0	210	4.1	100	3.0	4.6	3.4
16	240	8.6	210	---	110	2.8	4.0	3.5
17	220	7.6	220	---	110	---	3.7	3.6
18	210	6.2					2.6	3.6
19	220	4.6					3.4	
20	230	3.8					3.3	
21	260	3.5					3.0	
22	280	3.6					3.0	
23	300	3.5					3.0	

Time: 127.5°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Adak, Alaska (51.9°N, 176.5°W)							April 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	270	3.0						3.0
01	270	3.0						3.0
02	280	3.0						3.0
03	280	3.0						3.0
04	270	3.0						3.0
05	270	3.2	240	2.7	120	1.4	1.5	3.05
06	310	3.9	240	3.1	120	1.8		3.15
07	330	4.1	230	3.5	110	2.2		3.2
08	360	4.3	220	3.8	110	2.5		3.0
09	340	4.6	220	3.9	110	2.7		3.1
10	340	4.8	220	4.0	110	2.8		3.1
11	350	4.8	220	4.1	110	2.9	4.3	3.1
12	350	4.7	210	4.1	110	2.9	3.8	3.1
13	320	5.0	210	4.0	110	2.8	3.0	3.2
14	330	5.0	220	4.0	110	2.7	3.7	3.2
15	310	4.8	230	3.9	110	2.6	2.5	3.2
16	290	4.8	240	3.7	110	2.4		3.3
17	270	4.7	240	3.6	120	2.0		3.3
18	250	4.6	240	---	140	1.8		3.3
19	250	4.9						3.2
20	240	5.0						3.1
21	240	4.7						3.1
22	240	3.8						3.2
23	250	3.4						3.1

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

Uppsala, Sweden (59.8°N, 17.6°E)							March 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	(350)	(1.7)						(2.7)
01	350	(1.7)						2.7
02	350	1.9						2.8
03	335	1.7						2.8
04	310	1.7						2.8
05	300	1.8						3.1
06	260	2.4	---	---	---	---	---	3.1
07	240	3.3	230	---	135	1.6		3.3
08	(305)	3.8	225	3.2	120	2.0		3.2
09	330	4.0	220	3.5	115	2.2		3.1
10	320	4.2	220	3.7	110	2.2		3.1
11	305	4.4	215	3.8	110	2.4		3.2
12	305	4.5	210	3.8	110	2.4		3.2
13	295	4.7	210	3.7	110	2.4		3.2
14	285	4.7	220	3.6	110	2.3		3.3
15	265	4.7	225	3.4	115	2.2		3.3
16	245	4.5	235	3.0	115	2.0		3.3
17	240	4.3	245	(2.9)	---	1.7		3.3
18	235	4.1	---	---	---			3.2
19	235	3.6						3.1
20	245	3.0						3.0
21	260	2.1						3.0
22	305	1.8						2.9
23	(315)	(1.8)						(2.8)

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Panama Canal Zone (9.4°N, 79.9°W)							March 1944	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	270	3.3						3.1
01	240	3.5						3.4
02	240	3.0						3.25
03	220	2.6						3.4
04	260	2.2						3.1
05	270	2.1						3.0
06	300	2.4						3.0
07	250	4.5	---	---	130	1.7	3.2	3.4
08	280	5.9	240	(4.0)	110	2.5	3.8	3.3
09	300	6.7	210	4.3	110	2.9	3.7	3.1
10	330	7.4	210	4.3	110	3.1	3.9	3.0
11	340	8.6	200	4.4	110	3.3		

Table 7							
Absolute Bay, Canada (74.7°N , 94.9°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00	260	2.4					3.1
01	250	1.9					3.2
02	280	2.0					3.2
03	250	2.0					3.15
04	270	1.9					3.1
05	280	2.0					3.1
06	270	2.0					3.0
07	260	2.3					3.0
08	250	2.4					3.0
09	250	2.9					1.6
10	250	3.0	---	---	100	1.4	3.2
11	250	3.0	---	---	110	1.4	3.25
12	250	3.1	230	---	100	1.5	3.2
13	250	3.0	250	---	100	1.7	3.3
14	250	3.0	260	---	100	1.5	3.2
15	260	3.0	---	---	110	1.2	3.2
16	250	3.0	---	---	120	1.2	3.2
17	240	3.0	---	---	130	1.0	3.2
18	240	3.0	---	---	---	---	3.15
19	240	3.0					3.1
20	240	2.9					3.2
21	250	2.8					3.1
22	250	2.8					3.1
23	250	2.3					3.2

Time: 90.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 8							
Point Barrow, Alaska (71.3°N , 156.8°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00		300	2.4				7.1
01		(300)	(2.6)				6.8
02		(340)	(2.6)				6.4
03		(320)	(2.3)				4.9
04		(280)	(2.5)				3.7
05		(310)	(2.5)				4.0
06		(340)	(2.6)				4.5
07		---	---				4.6
08		(320)	(3.4)				4.8
09		(310)	(2.8)				4.5
10		(270)	(3.2)				4.0
11		(290)	3.4				3.4
12		280	3.8				1.7
13		280	3.9				3.4
14		260	4.0				3.3
15		260	4.1				3.4
16		260	3.8				1.8
17		290	3.4				2.4
18		300	2.6				2.6
19		300	2.1				3.2
20		(320)	(2.7)				3.6
21		320	3.0				4.4
22		300	2.7				4.8
23		320	(2.5)				6.6

Time: 150.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9							
Reykjavik, Iceland (64.1°N , 21.8°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00	---	---			4.8	---	
01	---	---			4.3	---	
02	---	---			5.4	---	
03	---	---			4.2	---	
04	---	---			4.5	---	
05	---	---			4.0	---	
06	---	---			4.2	---	
07	---	---			3.6	---	
08	---	---			---	---	
09	260	3.1	---	---	3.3		
10	240	3.6	---	---	3.35		
11	250	3.9	230	---	3.45		
12	250	4.0	220	---	3.4		
13	250	4.2	230	---	3.4		
14	260	4.1	230	---	3.4		
15	250	4.0	230	---	3.4		
16	260	3.5			3.3		
17	260	3.2			2.4	3.2	
18	260	(2.9)			4.0	(3.2)	
19	---	---			4.6	---	
20	---	---			5.4	---	
21	---	---			5.0	---	
22	---	---			5.6	---	
23	---	---			5.0	---	

Time: 15.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 10							
Narsarsuaq, Greenland (61.2°N , 45.4°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00							6.3
01							5.4
02							5.2
03							5.3
04							5.0
05							5.2
06							4.5
07							3.1
08		(250)	2.8				---
09		240	3.5	220			---
10		240	3.9	(220)			---
11		270	4.2	220			---
12		300	4.1	230	3.4	120	2.2
13		300	4.2	220	3.4	120	2.2
14		260	4.0	220	3.4	---	
15		260	3.8	(230)	---	---	
16		260	3.6	---	---	---	2.6
17		(270)	(3.4)	---	---	---	4.3
18		(300)	(2.7)		---	---	4.7
19		(270)	(2.2)				6.5
20		---	---				8.2
21		---	---				7.6
22		---	---				7.0
23		---	---				7.2

Time: 45.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 11							
Fort Chimo, Canada (58.1°N , 68.3°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00	---	---			5.4	---	
01	---	---			4.2	---	
02	---	---	100	2.7	3.9	---	
03	---	---	100	3.4	3.6	---	
04	---	---	100	4.0	4.2	---	
05	---	---	100	(4.1)	4.4	---	
06	---	---			4.2	---	
07	---	---			3.4	---	
08	240	(3.3)	---	---	(3.5)		
09	270	3.8	---	---	3.4		
10	300	3.9	200	3.2	3.2	(3.2)	
11	320	4.1	220	3.4	3.3	(3.3)	
12	270	4.4	220	3.4	2.4	3.5	
13	290	4.6	200	3.3	2.5	3.3	
14	290	4.3	210	3.2	2.3	3.3	
15	270	4.0	230	3.0	2.0	2.4	(3.3)
16	260	3.4	---	---	2.0	2.6	(3.2)
17	250	2.8	100	2.6	3.0	---	
18	290	2.6	100	2.6	6.2	---	
19	230	2.8	100	3.0	6.8	---	
20	250	(2.6)	---	---	6.1	---	
21	---	(2.4)	---	---	7.0	---	
22	---	---	---	---	5.9	---	
23	---	---	---	---	6.2	---	

Time: 75.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 12							
Prince Rupert, Canada (54.3°N , 130.3°W)				February 1954			
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs
00	300	1.5					
01	280	1.4					
02	290	1.5					
03	280	1.5					
04	300	1.7					
05	300	1.5					
06	300	1.5					
07	290	1.7					
08	250	2.7			110	1.6	1.8
09	230	3.6	---	---	110	1.8	3.4
10	260	4.0	210	3.3	110	2.2	3.4
11	280	4.6	210	3.6	110	2.4	3.4
12	270	5.3	210	3.7	110	2.5	3.4
13	260	5.2	210	3.6	110	2.6	3.5
14	260	5.2	210	3.6	110	2.6	3.4
15	260	5.2	220	3.4	110	2.4	3.4
16	230	5.0	220	---	110	2.1	3.5
17	230	4.8	---	---	120	1.8	3.5
18	220	4.0	---	---	130	---	3.4
19	230	3.0	---	---	---		3.35
20	230	2.0	---	---	---		3.3
21	250	1.7	---	---	---		---
22	280	1.6	---	---	---		---
23	280	1.3	---	---	---		---

Time: 120.0°W .

Sweep: 1.0 Mc to 10.0 Mc in 15 seconds.

Table 13

De Bilt, Holland (52.1°N, 5.2°E)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	---	2.5					3.0	
01	<280	2.6					3.0	
02	<280	2.6					3.1	
03	270	2.4					3.1	
04	<280	2.0					3.05	
05	<300	1.8					(3.2)	
06	<280	1.9					3.2	
07	240	3.3					3.5	
08	240	4.0	230	2.6	130	1.9	3.6	
09	240	4.4	230	3.2	120	2.2	3.5	
10	250	4.9	230	3.5	120	2.3	3.5	
11	260	5.1	240	3.7	120	2.4	3.6	
12	260	5.0	230	3.7	120	2.5	3.55	
13	265	5.1	230	3.6	125	2.5	3.5	
14	260	5.1	230	3.5	130	2.4	3.6	
15	240	5.0	240	3.2	130	2.1	3.6	
16	240	4.6	240	2.4	---	1.8	3.5	
17	230	4.0	---	---			3.4	
18	250	3.4					3.2	
19	250	3.4					3.3	
20	(240)	2.7					3.2	
21	<270	2.5					3.1	
22	<280	2.4					3.1	
23	<280	2.5					3.05	

Time: 0.0°.

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

Table 15

Winnipeg, Canada (49.9°N, 97.4°W)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	440	2.3					(3.0)	
01	380	(2.1)					3.4	
02	310	(2.4)					3.2	
03	340	(2.5)					3.4	
04	340	(2.6)					3.4	
05	320	(2.2)					3.6	
06	---	---					3.2	
07	300	2.2					2.7	
08	240	3.2	---	---	140	1.8	3.3	
09	240	4.0	220	---	120	2.0	3.4	
10	250	4.4	210	3.4	120	2.3	3.4	
11	300	4.8	220	3.7	120	2.5	3.3	
12	280	5.2	220	3.8	120	2.7	3.3	
13	270	5.2	210	3.8	120	2.7	3.4	
14	280	5.2	220	3.7	120	2.6	3.35	
15	270	5.3	230	3.5	120	2.4	3.3	
16	250	5.1	230	---	130	2.1	3.35	
17	230	4.9	240	---			3.4	
18	230	4.2					3.3	
19	240	3.6					3.3	
20	260	2.4					3.2	
21	290	1.9					3.0	
22	(380)	1.8					(3.0)	
23	400	(2.1)					---	

Time: 90.0°W.

Sweep: 1.0 Mc to 10.0 Mc in 16 seconds.

Table 17

Ottawa, Canada (45.4°N, 75.9°W)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	350	1.9					---	
01	(340)	1.8					2.4	
02	(340)	(2.1)					---	
03	(340)	(2.0)					3.0	
04	320	2.0					3.0	(3.2)
05	300	2.0					2.9	
06	300	2.1					3.0	(3.0)
07	260	2.5					3.3	
08	240	3.8	220	---	120	2.0	3.5	
09	250	4.2	210	3.3	120	2.4	3.5	
10	280	4.5	210	3.7	120	2.6	3.5	
11	300	4.9	200	3.8	120	2.7	3.5	
12	300	5.0	210	3.8	120	2.8	3.4	
13	290	5.0	220	3.9	120	2.8	3.4	
14	280	5.0	210	3.8	120	2.7	3.4	
15	280	5.0	220	3.6	120	2.6	3.4	
16	260	5.0	230	3.3	120	2.2	3.5	
17	240	4.9	240	---	120	E	3.4	
18	240	4.2					3.5	
19	240	3.4					3.3	
20	260	2.6					3.2	
21	300	2.0					3.1	
22	340	2.0					(3.1)	
23	350	1.9					(3.1)	

Time: 75.0°W.

Sweep: 1.0 Mc to 10.0 Mc in 15 seconds.

Table 14

Lindau/Barz, Germany (51.6°N, 10.1°E)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	270	2.7						2.1
01	260	2.6						2.0
02	250	2.6						2.0
03	250	2.5						3.2
04	250	2.4						3.2
05	250	2.0						2.0
06	260	1.8						2.2
07	250	2.2						2.2
08	220	3.8	210					2.2
09	220	4.6	210					3.65
10	240	4.8	210					3.7
11	250	5.7	210					3.6
12	250	5.4	210					3.6
13	240	5.7	210					3.65
14	250	5.2	205					3.6
15	240	5.3	220					3.6
16	230	5.0	220					3.6
17	220	4.6	---					3.6
18	220	4.1						3.5
19	235	3.5						3.3
20	230	3.4						3.4
21	250	2.6						2.0
22	275	2.6						3.2
23	270	2.6						2.0

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 16

St. John's, Newfoundland (47.6°N, 52.7°W)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	380	1.9						2.8
01	370	1.8						2.7
02	(380)	(1.8)						3.0
03	(300)	(1.7)						2.9
04	(300)	1.6						3.0
05	(300)	1.6						2.95
06	300	1.8						3.0
07	240	3.1	230	2.2	120	1.7	2.1	3.3
08	250	3.9	220	2.9	120	2.2		3.4
09	270	4.2	200	3.5	120	2.4		3.5
10	290	4.3	200	3.6	120	2.7		3.4
11	300	4.5	210	3.8	120	2.7		3.4
12	320	4.8	200	3.8	120	2.8		3.25
13	300	4.9	210	3.7	120	2.7		3.35
14	300	4.8	220	3.6	120	2.6		3.35
15	280	4.8	230	3.4	130	2.3		3.4
16	260	4.6	230	2.9	140	1.9		3.45
17	240	3.8	---	---	---	E		3.35
18	240	3.8						3.15
19	250	2.9						3.1
20	270	2.3						3.0
21	300	2.0						3.0
22	320	1.9						2.9
23	340	1.9						2.9

Time: 60.0°W.

Sweep: 0.8 Mc to 10.0 Mc in 18 seconds.

Table 18

Wakkanai, Japan (45.4°N, 141.7°E)							February 1954	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	290	3.4						2.2
01	260	3.2						2.3
02	270	3.0						2.3
03	260	3.0						2.4
04	260	2.8						2.2
05	240	2.8						3.1
06	250	2.7						3.1
07	230	3.8	---	---	---			1.8
08	240	5.0	240	3.3	130	2.2	2.4	3.4
09	250	5.5	220	3.6	120	2.4		3.4
10	260	5.7	230	3.8	120	2.6		3.3
11	270	6.4	240	3.9	120	2.7		3.3
12	260	6.2	230	3.9	120	2.7		3.3
13	260	6.0	230	3.8	120	2.7		3.4
14	260	5.5	230	3.7	120	2.5		3.4
15	250	5.5	230	3.3	120	2.3		3.4
16	240	5.0	230	2				

Table 19

Akita, Japan (39.7°N , 140.1°E)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	280	3.2				2.3	2.9
01	270	3.1				2.3	2.9
02	250	3.0				2.3	3.1
03	250	3.0				2.3	3.0
04	250	2.8				2.2	3.1
05	240	2.5				2.2	3.0
06	250	2.4				1.8	3.1
07	220	4.0	230	--	--	1.6	2.0
08	240	5.1	230	2.8	120	2.2	3.0
09	250	5.6	220	3.6	110	2.5	3.4
10	260	5.6	220	3.9	110	2.7	3.5
11	260	6.6	220	4.0	110	2.8	3.5
12	260	6.8	220	4.0	110	2.9	3.5
13	250	6.1	220	4.0	110	2.8	3.5
14	250	5.7	220	3.7	110	2.7	3.2
15	240	5.5	220	3.5	110	2.5	3.5
16	240	5.4	230	2.7	120	2.1	2.6
17	220	4.7	--	--	--	2.3	3.5
18	220	3.6				2.2	3.2
19	240	3.2				2.2	3.2
20	250	3.2				1.9	3.1
21	250	3.0				2.2	3.0
22	290	3.2				2.2	2.85
23	280	3.2				2.0	2.9

Time: 135.0°E .

Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 21

Izamagawa, Japan (31.2°N , 130.5°E)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	320	2.8					2.9
01	300	3.0					2.9
02	290	2.9					3.0
03	300	2.8					2.9
04	260	2.7					3.1
05	270	2.5					3.1
06	300	2.2					2.9
07	260	3.3					3.2
08	250	5.0	--	--	130	2.0	3.4
09	270	5.9	250	3.7	120	2.4	3.3
10	280	6.4	250	4.0	120	2.6	3.2
11	290	7.4	240	4.1	110	2.8	3.8
12	290	7.3	240	4.2	110	3.0	3.6
13	300	7.5	250	4.2	110	3.0	3.6
14	290	7.0	240	4.2	110	3.0	3.3
15	280	6.6	240	4.0	110	2.8	3.3
16	260	6.2	230	3.7	120	2.5	2.6
17	250	5.6	240	--	120	2.1	3.45
18	240	5.0				2.0	3.4
19	240	3.6					3.3
20	260	3.2					3.05
21	270	3.1					3.05
22	260	2.8					3.0
23	300	2.6					2.9

Time: 135.0°E .

Sweep: 0.8 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 23

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

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	290	3.6				2.7	2.9
01	270	3.5				3.2	3.0
02	270	3.4				3.6	3.1
03	(250)	3.4				3.4	3.2
04	260	3.0				3.2	3.0
05	260	2.8				2.5	3.0
06	(260)	3.4	--	--		1.6	2.8
07	290	4.0	240	3.5	2.3	3.5	3.3
08	(300)	(4.9)	240	3.8	2.6	3.5	(3.3)
09	--	--	220	4.0	2.9	3.8	--
10	--	--	--		3.2	3.9	--
11	--	(6.3)	--		3.3	4.0	--
12	--	(5.8)	200	--	3.3	3.9	--
13	--	(5.6)	--		3.3	4.0	--
14	(330)	(6.4)	--		3.3	4.3	(3.0)
15	(320)	(6.0)	--		3.2	3.8	(3.1)
16	(290)	(6.1)	240	4.0	3.0	3.8	(3.2)
17	280	5.7	230	3.8	2.6	3.9	3.2
18	280	5.2	250	3.3	2.2	3.5	3.3
19	250	(4.3)				2.9	(3.15)
20	(250)	4.1				3.2	3.15
21	260	3.8				2.8	3.1
22	270	3.5				2.4	2.9
23	280	3.5				2.6	2.9

Time: 120.0°E .

Sweep: 1.0 Mc to 16.0 Mc in 2 minutes.

Table 20

Tokyo, Japan (35.7°N , 139.5°E)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	290	3.1					2.5
01	260	3.0					2.0
02	250	3.0					2.3
03	250	2.9					2.0
04	240	2.7					2.0
05	260	2.4					2.4
06	250	2.3					1.9
07	230	4.3	--	--	--	130	1.7
08	240	5.3	230	3.5	120	2.2	3.0
09	250	5.8	230	3.8	110	2.5	3.5
10	260	6.1	220	4.0	110	2.8	3.4
11	260	6.5	210	4.2	110	3.0	3.3
12	260	7.0	220	4.2	110	3.0	3.4
13	260	6.6	220	4.1	110	3.0	3.2
14	250	6.0	220	4.0	110	2.8	3.5
15	250	5.6	220	3.7	120	2.6	3.3
16	230	5.5	220	3.2	120	2.2	3.0
17	220	5.0	220	--	120	1.6	2.5
18	220	3.7					2.5
19	230	3.2					2.3
20	250	3.2					2.3
21	250	3.0					2.0
22	270	3.0					2.0
23	280	3.0					2.0

Time: 135.0°E .

Sweep: 1.0 Mc to 17.2 in 2 minutes.

Table 21

Baguio, P. I. (16.4°N , 120.6°E)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	240	3.8					1.6
01	250	3.4					3.2
02	230	3.5					3.4
03	210	2.9					1.8
04	210	2.1					2.0
05	230	1.7					1.8
06	280	1.9					2.0
07	230	4.8	--	--	--	120	1.8
08	260	6.1	230	--	--	110	2.4
09	300	6.9	210	--	--	110	2.8
10	320	8.1	200	4.1	110	3.0	4.5
11	320	8.8	200	4.2	110	3.1	4.5
12	330	9.1	200	4.2	100	3.2	4.8
13	330	9.0	200	4.2	100	3.1	4.5
14	320	9.0	200	--	100	3.0	4.4
15	300	9.3	200	--	100	2.8	4.0
16	270	9.6	210	--	110	2.6	3.8
17	310	8.6	--	--	--	3.8	3.1
18	300	8.2	200	4.3	--	--	3.5
19	220	(6.9)	--	--	--	--	(3.4)
20	(240)	(6.4)	--	--	--	--	(3.2)
21	260	5.4					3.1
22	280	5.0					3.0
23	300	5.0					3.0

Time: 60.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 24

Buenos Aires, Argentina (34.5°S , 58.5°W)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	300	4.8					2.9
01	300	4.7					3.0
02	280	4.3					3.8
03	280	4.2					3.2
04	270	3.7					2.9
05	270	3.6					3.1
06	230	4.6	--	--	120	2.1	2.9
07	250	5.3	230	--	--	--	3.5
08	270	5.3	220	--	100	2.8	3.8
09	290	5.7	200	4.2	100	3.0	3.8
10	320	5.8	210	4.2	--	--	4.0
11	330	6.7	210	4.4	100	3.3	4.2
12	320	7.7	210	4.4	--	--	4.0
13	300	8.2	200	4.3	--	--	3.5
14	310	8.6	--	--	--	--	3.1
15	300	9.4	210	--	--	--	3.2
16	280	9.7	220	--	--	--	3.4
17	250	9.7	240	--	--	--	3.5
18	240	7.4	230	--	--	--	3.5
19	220	(6.9)	--				

Table 25
Christchurch, New Zealand (43.6°S , 172.8°E)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	280	3.3				2.8	2.9
01	280	2.8				2.8	2.9
02	280	2.8				2.6	3.0
03	270	2.5				2.6	3.0
04	270	2.3				2.4	3.0
05	270	2.6	---	---	1.2	2.4	3.05
06	260	3.5	240	2.6	1.8	3.3	
07	280	3.8	230	3.5	2.2	3.6	3.4
08	360	4.3	230	3.8	2.5	4.2	3.1
09	320	5.1	230	4.0	2.8	4.0	3.3
10	310	5.5	220	4.2	2.9	5.6	3.2
11	320	5.3	200	4.2	3.0	4.8	3.15
12	330	5.4	200	4.3	3.1	4.5	3.2
13	330	5.5	200	4.3	3.1	4.2	3.2
14	320	5.3	220	4.2	3.0	4.8	3.3
15	320	5.2	220	4.2	3.0	4.3	3.2
16	320	5.1	220	3.9	2.7	3.2	
17	290	5.0	240	3.7	2.3	3.2	
18	280	5.2	250	3.2	1.9	3.6	3.2
19	250	5.3	250	---	---	3.4	3.2
20	250	5.6			---	3.0	3.1
21	250	5.2			---	3.8	3.1
22	(260)	4.6			4.3	3.05	
23	270	3.9			3.4	3.0	

Time: 172.5°E .

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

Table 27

Time	January 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	345	(2.4)					
01							
02	295	2.2			2.5		
03							
04	300	2.0			2.1		
05	---	(1.8)					
06							
07							
08	250	2.5					
09							
10	220	4.0			1.7	2.0	
11							
12	220	4.8	---	---	1.9	2.0	
13							
14	215	4.0			1.7		
15							
16	230	2.8					
17							
18	275	---					
19							
20	---	---					
21							
22	300	(2.0)					
23							

Time: 15.0°E .

Sweep: 1.5 Mc to 10.0 Mc in 6 minutes, automatic operation.

Table 29

Time	January 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	---			5.0	---	
01	---	---			4.8	---	
02	---	---			5.2	---	
03	---	---			5.3	---	
04	---	---			5.2	---	
05	---	---			5.0	---	
06	(280)	(2.0)			4.7	(3.3)	
07	(280)	(1.8)			4.4	---	
08	260	2.1	---	---	4.6	3.4	
09	230	3.3	---	---	2.3	3.6	
10	220	4.2	210	---	---	3.7	
11	220	4.6	200	---	120	2.2	3.7
12	220	4.8	210	---	(120)	2.0	3.7
13	230	5.0	210	---	120	1.9	2.2
14	230	4.7	230	---	---	3.6	
15	230	4.4	---	---	---	3.5	
16	230	3.4	---	---	2.2	3.4	
17	(270)	(2.9)	---	---	3.5	(3.2)	
18	(250)	(2.2)	---	---	4.0	(3.3)	
19	---	---			4.4	---	
20	---	---			4.5	---	
21	---	---			5.4	---	
22	---	---			6.6	---	
23	---	---			5.6	---	

Time: 45.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 26

Deception I. (63.0°S , 60.7°W)

Time	February 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	290	4.9	190		3.1		(3.3)
01	290	4.6	220		2.6		(3.1)
02	300	4.5	180		2.6		(3.2)
03	290	4.1	200		2.6		(3.2)
04	280	4.8	200		2.8		(3.2)
05	280	4.8	210		2.8		(3.2)
06	280	4.9	---		---		(3.3)
07	---	(4.8)	---		---		(3.3)
08	(240)	(4.8)	---		---		(3.4)
09	---	---	---		---		
10	---	---	---		---		
11	---	---	---		---		
12	---	---	---		---		
13	---	---	---		---		
14	---	---	---		---		
15	---	---	---		---		
16	(250)	(4.9)	---		---		(3.6)
17	(250)	(4.2)	---		---		(3.5)
18	(260)	(4.8)	---		---		(3.45)
19	280	5.3	---		---		(3.4)
20	270	5.2	---		---		(3.4)
21	280	5.2	200		3.6		(3.3)
22	270	5.1	220		3.6		(3.3)
23	280	5.0	200		3.6		(3.35)

Time: 60.0°W .

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 28

Time	January 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	---				5.0	---
01	---	---				4.5	---
02	(300)	---				4.9	---
03	(310)	---				4.2	---
04	(300)	(2.8)				4.9	(3.0)
05	(300)	(2.5)				3.9	---
06	---	---				3.7	---
07	---	---				(3.8)	---
08	---	---				(4.2)	---
09	250	2.7					3.4
10	230	3.5					3.4
11	220	4.1					3.5
12	230	4.6					3.5
13	220	4.7					3.5
14	230	4.6					3.5
15	220	4.2					3.5
16	220	4.2					3.6
17	225	3.8					3.4
18	240	2.7					3.4
19	275	2.0					3.2
20	300	(1.7)					(3.0)
21	295	(1.7)					(3.1)
22	310	(1.7)					(2.9)
23	295	(1.7)					(3.0)

Time: 15.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 30*

Time	January 1954						
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	285	(1.8)					(2.9)
01	280	(1.7)					(3.0)
02	295	(1.8)					2.9
03	290	(1.7)					2.9
04	300	1.5					3.0
05	285	(1.4)					(3.1)
06	270	(1.5)					3.1
07	295	1.5					2.2
08	270	1.9					3.1
09	220	3.6					2.2
10	220	4.4					3.7
11	220	4.8	220	(2.8)	145	2.0	2.2
12	225	5.1	215	3.1	135	2.1	2.4
13	220	5.4	215	(3.1)	(2.1)	2.3	3.7
14	225	5.0	(215)	145	1.9	2.3	3.7
15	220	4.8	(150)	1.8			3.7
16	210	4.2					3.6
17	225	3.8					3.4
18	240	2.7					3.4
19	275	2.0					3.2
20	300	(1.7)					(3.0)
21	295	(1.7)					(3.1)
22	310	(1.7)					(2.9)
23	295	(1.7)					(3.0)

Time: 0.0° .

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Adak, Alaska (51.9°N , 176.6°W)

Table 31

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	2.7							
01	2.6							
02	2.5							
03	2.5							
04	2.5							
05	2.6							
06	2.5							
07	2.4							
08	4.1							
09	5.1	---	---	---				
10	5.4	---	---	2.2				
11	5.6	---	---	2.3				
12	5.7	---	---	2.3				
13	5.5	---	---	2.3				
14	5.4	---	---	2.1				
15	5.0				1.8			
16	4.3				2.0			
17	3.3							
18	2.3				2.1			
19	2.0							
20	2.1							
21	2.1							
22	2.6							
23	2.6							

Time: 180.0°W .

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 32

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.0				2.5	3.0	
01	260	3.0				2.6	3.0	
02	255	3.0				2.6	3.05	
03	255	3.0				2.6	3.0	
04	255	2.5				2.6	3.05	
05	250	2.4				2.5	3.15	
06	250	2.2				2.4	3.2	
07	255	2.0				2.6	3.15	
08	230	3.7			145	1.5	3.1	3.5
09	220	4.8			130	1.9	3.2	3.65
10	230	5.4	220	3.0	125	2.2	3.4	3.6
11	230	5.5	220	3.3	125	2.3	3.7	3.65
12	230	5.5	215	3.4	125	2.4	3.7	3.65
13	230	5.5	210	3.3	130	2.4	3.7	3.6
14	235	5.3	220	3.2	130	2.2	3.6	3.6
15	225	5.1			130	2.0	3.3	3.65
16	220	4.6			135	1.7	3.1	3.55
17	220	3.9					2.6	3.35
18	235	3.4					2.6	3.3
19	245	2.8					2.6	3.2
20	265	2.9					2.4	3.05
21	265	2.8					2.5	3.05
22	260	2.9					2.4	3.05
23	265	3.0					2.4	3.0

Time: 0.0°E .

Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

*Average values except f0F2 and fEs, which are median values.

Table 33

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.3				2.3	3.0	
01	260	3.3				2.3	3.0	
02	280	3.2				2.3	2.9	
03	250	3.0				2.1	3.0	
04	240	3.0					3.1	
05	220	2.9					3.3	
06	250	2.5					3.2	
07	240	3.2					3.2	
08	230	4.7	---	---	130	2.0	2.8	3.45
09	250	5.6	250	---	130	2.3	3.4	
10	260	6.2	240	3.6	120	2.5	> 2.8	3.4
11	240	6.2	240	3.7	120	2.6		3.5
12	240	5.8	230	3.6	120	2.6		3.5
13	240	5.6	240	3.5	120	2.5		3.5
14	240	5.5	230	3.2	120	2.3	3.4	3.5
15	230	5.0	240	---	130	2.0		3.5
16	220	4.2				1.8		3.5
17	230	3.4					3.3	
18	250	3.2				2.4		3.2
19	250	3.0				2.8		3.3
20	260	2.8				2.3		3.0
21	300	3.1				2.5		2.9
22	290	3.2				2.5		2.9
23	280	3.3				2.4		3.0

Time: 135.0°E .

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Lindau/Hart, Germany (51.6°N , 10.1°E)

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.0						2.3
01	250	3.2						2.2
02	250	3.1						2.3
03	250	3.0						3.2
04	240	2.6						2.3
05	240	2.3						3.2
06	240	2.2						2.3
07	250	2.0						3.4
08	220	3.0						2.2
09	275	4.6						2.5
10	220	5.1						3.7
11	220	5.5						3.7
12	225	5.5						3.7
13	220	5.4						3.7
14	220	5.2						3.7
15	220	5.2						3.7
16	210	4.6						3.7
17	205	4.0						3.6
18	220	3.2						3.5
19	240	2.6						3.45
20	240	2.6						3.3
21	260	2.6						3.3
22	255	2.8						3.3
23	250	2.8						3.3

Time: 150.0°E .

Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 34

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	1.9						2.7
01	360	1.9						3.0
02	320	1.9						3.0
03	300	1.9						2.9
04	290	1.8						3.1
05	280	1.7						3.1
06	300	1.6						3.4
07	240	2.6	---	---	---	---	---	3.4
08	230	4.2	230	---	120	1.9	2.2	3.7
09	230	4.8	220	3.0	120	2.3	2.5	3.7
10	240	5.2	210	3.5	120	2.5		3.7
11	240	5.5	210	3.6	120	2.6		3.7
12	240	5.4	210	3.6	120	2.6		3.8
13	250	5.3	220	3.5	120	2.5		3.6
14	240	5.3	230	3.4	130	2.4	3.0	3.6
15	240	5.1	230	2.9	130	2.0	1.6	3.7
16	230	4.9	240	2.1	---	---	2.7	3.5
17	230	4.0						3.4
18	240	3.2						3.3
19	240	3.1						3.3
20	240	2.8						3.2
21	300	1.9						1.8
22	330	1.9						3.0
23	340	1.8						2.9

Time: 60.0°W .

Sweep: 0.8 Mc to 10.0 Mc in 18 seconds.

Table 35

January 1954

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.0						2.9
01	270	3.0						2.9
02	260	3.0						3.0
03	240	2.9						3.1
04	220	3.0						3.2
05	230	2.6						3.1
06	250	2.4						3.1
07	230	3.4						3.4
08	230	4.6	220	---	120	1.9	2.9	3.5
09	250	5.2	240	---	110	2.4	3.5	3.4
10	270	6.4	240	3.7	110	2.6	3.5	3.4
11	250	6.8	240	3.8	110	2.7	3.9	3.6
12	250	6.0	230	3.8	110	2.8	3.5	3.6
13	240	5.5	230	3.7	110	2.7	3.5	3.6
14	240	5.3	230	3.5	110	2.5	3.5	3.6
15	230	5.2	210	2.9	120	2.3	3.3	3.6
16	220	4.3	---	---	130	1.8	2.8	3.6
17	230	3.4						2.9
18	240	3.2						3.3
19	240	3.1						3.3
20	240	2.8						3.2
21	270	3.0						2.3
22	280	3.0						3.0
23	260	3.0						2.9

Time: 135.0°E .

Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Tokyo, Japan ($35^{\circ}7'N$, $139^{\circ}5'E$)

Table 37

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	270	2.7				2.3	3.0
01	270	2.8				2.5	3.0
02	250	2.9				2.5	3.1
03	220	2.9				2.1	3.25
04	210	2.6				2.0	3.35
05	260	2.3				2.0	3.0
06	260	2.3				1.8	3.1
07	220	3.7	---	---	160	1.7	2.5
08	230	4.9	230	---	120	2.1	2.9
09	250	5.3	230	3.8	120	2.5	3.2
10	270	6.5	220	4.0	110	2.7	3.4
11	250	7.0	220	4.0	110	2.9	3.5
12	250	6.6	220	4.0	110	2.9	3.5
13	250	5.7	220	4.0	110	2.8	3.1
14	250	5.5	220	3.7	110	2.6	3.3
15	240	5.2	220	3.2	120	2.4	3.0
16	220	4.6	220	---	120	1.9	2.9
17	220	3.7				2.8	3.4
18	240	3.4				2.6	3.25
19	230	3.2				2.5	3.3
20	230	2.8				2.5	3.3
21	250	2.6				2.4	3.1
22	270	2.7				2.4	3.0
23	280	2.8				2.4	3.0

Time: $135^{\circ}0'E$.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Baguio, P. I. ($16^{\circ}4'N$, $120^{\circ}6'E$)

Table 39

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	270	3.0					3.1
01	260	3.0					3.2
02	230	2.8					3.4
03	220	2.1					3.5
04	260	1.5					3.45
05	---	E					---
06	---	B					(3.1)
07	240	4.4			120	1.8	3.5
08	(290)	5.8	220	---	110	2.4	3.2
09	300	7.4	210	3.9	110	2.8	3.7
10	300	8.3	200	4.1	110	3.0	4.1
11	330	8.2	190	4.1	110	(3.1)	4.4
12	360	7.6	190	4.1	110	3.1	5.0
13	340	7.8	190	4.1	110	3.1	4.5
14	310	8.1	200	4.1	110	3.0	4.5
15	290	8.0	210	4.0	110	2.8	4.0
16	260	7.9	220	---	110	2.3	3.8
17	230	7.5				3.6	3.4
18	210	6.4				2.8	3.5
19	210	5.2				3.2	3.4
20	230	4.3				2.9	3.2
21	230	4.5				3.0	3.3
22	220	4.1				1.8	3.4
23	240	3.1				3.1	

Time: $120^{\circ}0'E$.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Barotonga I. ($21^{\circ}30'S$, $159^{\circ}30'W$)

Table 41

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	270	5.6				2.8	3.0
01	250	5.1				3.0	3.1
02	260	4.1				2.5	3.1
03	280	3.4				2.5	3.05
04	290	3.4				2.5	3.1
05	300	3.0				2.8	3.1
06	250	3.4	230	---	---	3.0	3.1
07	280	5.4	230	3.5	110	2.2	4.2
08	300	6.0	220	4.0	105	2.6	4.6
09	320	7.3	210	4.2	105	3.0	4.4
10	320	7.9	200	4.3	105	3.2	6.1
11	320	8.9	200	4.4	105	3.3	5.0
12	320	10.0	200	4.4	105	3.4	4.5
13	300	10.5	200	4.4	105	3.4	4.5
14	290	11.0	210	4.3	105	3.3	4.2
15	270	10.2	210	4.2	105	3.2	5.3
16	270	8.4	230	4.1	105	3.0	4.5
17	270	6.8	220	3.9	110	2.7	4.9
18	260	6.5	230	3.1	120	2.1	4.5
19	270	6.0				3.9	3.0
20	300	5.7				3.0	2.9
21	290	5.7				3.5	2.9
22	280	5.7				3.0	2.95
23	290	5.6				3.0	2.9

Time: $159^{\circ}50'W$.

Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 37

Yamagawa, Japan ($31^{\circ}2'N$, $130^{\circ}6'E$)

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	320	2.6					1.8
01	310	2.7					2.0
02	300	2.7					3.0
03	260	2.8					3.2
04	250	2.9					3.4
05	290	2.2					3.0
06	330	2.3					2.9
07	280	2.7					3.1
08	250	4.8				140	1.8
09	260	5.4	250	3.5			3.4
10	300	5.8	250	3.8	120	2.3	3.4
11	290	7.4	240	4.0	120	2.8	3.8
12	270	7.4	240	4.1	110	2.9	3.8
13	270	6.6	240	4.0	120	2.9	3.5
14	270	6.0	240	4.0	110	2.8	3.4
15	260	5.8	240	3.7	120	2.6	3.2
16	250	5.1	240	3.0	120	2.3	3.0
17	250	4.7	---	---	130	1.9	3.5
18	240	3.6					2.3
19	270	3.0					2.4
20	250	3.2					3.2
21	260	2.7					2.0
22	290	2.5					3.0
23	310	2.6					1.8

Time: $135^{\circ}0'E$.

Sweep: 0.8 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 39

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	240	3.0					2.7
01	255	2.5					3.0
02	270	2.4					3.1
03	270	2.1					1.9
04	270	2.0					2.8
05	265	2.0					3.2
06	250	2.4					(3.2)
07	245	5.0				120	2.0
08	305	6.0	220	4.0	115	2.6	5.0
09	370	6.9	215	4.2	115	2.9	5.4
10	405	7.2	205	4.3	110	3.2	5.4
11	460	7.2	205	4.3	110	3.3	6.5
12	485	7.4	200	4.3	110	3.4	6.4
13	420	7.5	200	4.3	110	3.3	5.7
14	385	7.7	200	4.3	110	3.2	5.3
15	390	7.7	205	4.2	110	3.0	5.9
16	360	7.6	220	4.1	115	2.8	4.2
17	(300)	7.6	235		120	2.3	4.0
18	260	7.5			(145)	1.5	3.2
19	270	7.1					2.8
20	285	6.0					3.2
21	275	5.7					3.1
22	260	6.4					3.1
23	210	4.4					3.0

Time: $105.5^{\circ}E$.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 41

Time	January 1954						
	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs (M3000)F2
00	270	3.8					3.8
01	270	3.7					3.0
02	250	3.4					3.0
03	260	3.3					3.1
04	260	2.8					3.1
05	260	2.8					3.1
06	250	3.6	250	2.9		1.8	3.3
07	(290)	3.5	250	3.0		2.2	—
08	(49)	250	3.9			2.7	(3.2)
09	(350)	5.3	220	4.0		3.0	6.0
10	---	6.0	220	4.2		3.1	5.9
11	(360)	5.9	200	4.2		3.2	6.4
12	(370)	6.2	200	4.4		3.3	5.9
13	340	6.6	210	4.4		3.3	5.7
14	340	6.0	200	4.3		3.3	5.0
15	330	6.0	230	4.2		3.2	3.8
16	320	6.0	240	4.0		3.1	4.0
17	300	5.5	250	3.9		2.7	4.0
18	280	5.0	240	3.4		2.2	4.0
19	250	4.3	---	---		1.6	4.0
20	260	4.2					3.9
21	260	4.0					3

Table 43							January 1954	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M5000)F2
00	260	4.2				3.4	3.1	
01	270	3.5				3.4	3.1	
02	270	3.1				2.4	3.1	
03	270	2.7				3.2	3.0	
04	280	2.6				E 2.8	3.1	
05	260	3.4	250	---		1.5	2.6	3.3
06	320	4.3	280	3.4		2.1	4.4	3.2
07	320	4.7	280	3.8		2.4	4.8	3.3
08	330	5.0	230	4.1		2.7	5.1	3.15
09	320	5.3	220	4.2		3.0	5.8	3.2
10	320	5.5	220	4.3		3.1	6.0	3.3
11	320	5.5	210	4.3		3.2	5.9	3.2
12	350	5.4	230	4.3		3.2	5.0	3.1
13	330	5.4	220	4.3		3.2	4.3	3.1
14	350	5.3	230	4.3		3.1	4.3	3.1
15	330	5.4	230	4.2		3.0	4.8	3.1
16	320	5.4	230	4.1		2.8	3.2	3.2
17	320	5.5	240	3.8		2.6	4.2	3.1
18	280	5.7	230	3.4		2.2	3.7	3.2
19	260	5.8	250	2.7		1.5	3.2	3.2
20	250	5.7				—	3.8	3.1
21	260	5.5					3.6	3.0
22	260	5.1					3.7	3.1
23	270	4.6					3.2	3.1

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 44							December 1953	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M5000)F2
00		280				2.8		3.4
01		280				2.6		3.25
02		270				2.6		3.3
03								
04		260				2.8		3.35
05		240				2.4		3.4
06		260				2.6		3.6
07		220				4.4		3.65
08		230				5.6		3.55
09		240				6.1		3.55
10		240				6.2		3.55
11		240				6.3		3.45
12		240				6.4		3.6
13		240				6.4		3.4
14		240				6.0		3.45
15		230				5.8		3.55
16		230				5.6		3.55
17		220				5.5		3.6
18		220				4.2		3.55
19		230				3.6		3.6
20		240				3.2		3.55
21		240				3.1		3.6
22		240				2.7		3.5
23		280				2.9		3.35

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 45							December 1953	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M5000)F2
00								
01								
02								
03								
04								
05								
06								
07	270	5.7				3.25		
08	300	6.8				3.05		
09	330	7.2				2.9		
10	360	7.9				2.8		
11	390	9.2				2.75		
12	390	10.4				2.65		
13	390	10.8				2.6		
14	420	11.6				2.6		
15	420	11.9				2.55		
16	420	12.3				2.55		
17	390	11.7				2.6		
18	390	11.1				2.7		
19	360	10.2				2.8		
20	330	8.6				2.85		
21	300	7.3				3.05		
22	300	5.7				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.

Table 47							December 1953	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M5000)F2
00								
01								
02								
03								
04								
05								
06	330	>5.0				2.9		
07	360	6.2				2.85		
08	390	7.3				2.65		
09	420	7.7				2.55		
10	420	7.8				2.5		
11	450	7.5				2.45		
12	450	7.6				2.4		
13	450	7.7				2.4		
14	450	8.4				2.45		
15	450	8.4				2.45		
16	450	8.4				2.45		
17	420	8.2				2.55		
18	420	7.6				2.6		
19	390	7.0				2.7		
20	360	6.3				2.75		
21	360	5.9				2.8		
22	---	>5.6				2.85		
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.

Table 48							December 1953	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M5000)F2
00								
01								
02								
03								
04								
05								
06								
07	330	>4.2						3.0
08	420	7.2						2.45
09	480	7.3						2.35
10	480	7.1						2.3
11	510	7.0						2.25
12	510	7.1						2.2
13	540	7.2						2.2
14	510	>7.5						2.2
15	510	7.8						2.25
16	510	8.0						2.3
17	480	7.8						2.35
18	450	>7.6						2.4
19	420	6.8						2.5
20	>420	6.6						2.5
21	400	6.0						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.

Table 49
Christchurch, New Zealand (43.6° S, 172.8° E)

Time	December 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	270	4.7			4.0	3.0
01	260	4.4			3.7	3.1
02	260	3.9			4.0	3.05
03	260	3.6			3.5	3.1
04	270	3.5			---	2.8
05	260	4.1	250	2.8	1.7	3.3
06	290	4.7	250	3.6	2.3	3.3
07	320	5.0	250	3.9	2.6	4.6
08	320	5.3	---	4.1	2.9	5.8
09	320	5.5	---	4.3	3.1	6.0
10	340	5.7	225	4.3	3.2	5.8
11	320	6.0	210	4.3	3.2	5.4
12	330	6.0	230	4.4	3.3	5.6
13	330	5.8	220	4.3	3.2	5.4
14	340	5.7	220	4.3	3.2	5.1
15	330	5.7	230	4.3	3.0	4.3
16	320	5.7	240	4.1	2.8	3.1
17	320	5.5	250	3.9	2.6	3.1
18	290	5.8	255	3.4	2.2	3.1
19	270	6.0	270	2.8	1.6	3.1
20	260	6.3				3.5
21	260	6.0				3.1
22	270	5.6				4.2
23	270	5.2				4.3

Time: 172.5° E.

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

Table 50*
Falkland Is. (51.7° S, 57.8° W)

Time	December 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	280	5.9				
01	270	5.8				
02	270	5.5				
03	270	5.2				
04	255	5.5	(235)		140	1.5
05	305	5.9	(240)	3.5	125	1.9
06	310	5.8	240	3.7	110	2.4
07	325	6.0	240	4.0	110	2.5
08	315	6.1	225	4.1	105	2.9
09	(340)	6.0	225	4.2	105	3.1
10	(350)	5.8	215	4.3	100	3.1
11	(355)	6.0	215	4.3	105	3.2
12	(350)	5.6	220	4.3	105	3.2
13	(360)	5.7	225	4.3	105	3.2
14	320	5.5	225	4.2	105	3.1
15	320	5.6	225	4.1	105	3.0
16	315	5.8	225	4.0	105	2.8
17	300	5.8	235	3.9	110	2.6
18	285	6.1	(225)	3.5	120	2.2
19	290	6.7	(240)		140	1.8
20	265	6.7				
21	275	6.8				
22	275	6.6				
23	280	6.1				

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 51*

Time	December 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	265	7.0			1.4	2.9
01	265	7.0			1.5	2.9
02	265	7.0	(150)	(1.4)	1.4	2.9
03	275	7.0			1.3	2.8
04	275	7.0	250	3.0	1.8	2.8
05	275	7.0	240	3.3	2.1	2.9
06	290	6.5	230	3.6	2.3	4.5
07	310	5.8	230	3.8	100	2.5
08	310	5.3	230	3.9	100	2.7
09	325	5.0	(230)	4.0	100	2.9
10	330	4.9	(215)	4.1	100	2.9
11	360	4.9	(215)	4.1	100	3.0
12	385	4.9	(220)	4.2	100	3.0
13	325	5.0	210	4.2	100	3.0
14	(335)	4.8	(235)	(4.1)	100	3.0
15	355	4.8	225	4.1	100	3.0
16	325	5.0	225	4.0	100	2.8
17	325	5.2	(235)	(3.9)	100	2.6
18	(310)	5.2	(220)	4.0	100	2.5
19	280	5.6	(235)		105	2.1
20	260	6.1			110	1.8
21	265	6.4			(115)	1.4
22	270	6.8				3.0
23	265	7.0				1.4

Time: 60.0° W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes, automatic operation.

*Average values except foF2 and fEs, which are median values.

Table 52

Time	November 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	280	4.4				
01	280	4.0				
02	270	3.6				
03	270	3.2				
04	280	3.0				
05	270	3.7	260	---		
06	280	4.3	240	3.3		
07	330	4.7	240	3.8		
08	330	5.2	230	4.1		
09	320	5.7	220	4.2		
10	320	5.8	220	4.3		
11	320	5.8	220	4.4		
12	320	6.1	230	4.4		
13	310	5.9	220	4.4		
14	320	5.8	220	4.3		
15	320	5.8	230	4.2		
16	300	5.8	230	4.0		
17	280	5.8	250	3.7		
18	280	6.0	270	3.2		
19	250	6.5			1.4	3.2
20	260	6.4				3.6
21	260	5.9				3.3
22	270	5.4				3.1
23	280	4.9				2.9

Time: 172.5° E.

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

Table 53

Time	October 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	250	(2.4)			> 4.3	(3.1)
01	250	(2.5)			3.7	(3.1)
02	(270)	(2.6)			> 4.1	(3.0)
03	(280)	(2.5)			3.5	(3.0)
04	(270)	(2.4)			3.9	(3.1)
05	(270)	(2.5)			4.0	(3.0)
06	(255)	(2.6)			4.1	(3.0)
07	(290)	(3.0)			4.2	(2.9)
08	(275)	(3.5)	(240)	---	4.5	(3.1)
09	(260)	(4.1)	(240)	---	3.0	(3.3)
10	(260)	(4.3)	< 250	(3.0)	2.9	(3.3)
11	(280)	(4.5)	(240)	(3.3)		3.3
12	(280)	(4.3)	(230)	(3.4)	110	(2.2)
13	(260)	(4.6)	(230)	(3.4)	110	(2.2)
14	(260)	(4.6)	240	---	(120)	2.8
15	(240)	(4.6)	230	---		3.4
16	240	(4.0)	220	---		5.2
17	240	(3.8)	---	---	5.6	(3.3)
18	230	(3.5)			5.8	(3.2)
19	230	(3.6)			6.0	(3.2)
20	(230)	(3.3)			6.6	(3.2)
21	(230)	(3.0)			5.6	(3.2)
22	< 250	(2.8)			4.5	(3.1)
23	255	(2.7)			5.4	3.1

Time: 45.0° W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 54

Time	September 1953					
	h'F2	foF2	h'Fl	foFl	h'E	foE
00	230	3.8				
01	230	3.3				
02	230	2.7				
03	240	2.4				
04	260	2.4				
05	280	2.3				
06	250	3.6				
07	240	5.3	240	---	120	2.1
08	280	6.3	230	4.2	120	2.6
09	290	7.3	220	4.4	120	3.0
10	280	8.1	220	4.5	120	3.2
11	270	8.4	210	4.5	110	3.3
12	270	7.5	210	4.6	110	3.3
13	290	6.6	210	4.6	110	3.3
14	300	6.6	210	4.4	120	3.2
15	270	7.0	220	4.3	120	3.0
16	250	6.4	220	---	120	2.7
17	240	5.9	240	---	120	2.2
18	230	5.7				2.0
19	240	5.0				3.15
20	230	4.3				3.25
21	< 250	4.0				3.15
22	260	3.8				3.05
23	260	3.9				3.15

Time: Local.

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

Table 55						
Calcutta, India (22.6°N, 88.4°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	(270)	5.2				3.0
01	255	(4.8)			2.6	
02	250	4.3				
03	(255)	(4.5)			2.8	3.0
04	240	3.8			2.6	
05	(240)	(3.2)			2.8	
06	240	4.4			2.5	3.1
07	240	6.6			2.3	3.2
08	240	6.6			2.7	3.5
09	240	7.4			3.0	3.4
10	270	8.3			3.3	
11	270	9.2			3.4	
12	270	10.7			3.8	4.1
13	270	10.4			3.6	
14	270	11.0			3.5	
15	270	11.0			3.4	
16	255	11.0			3.2	3.7
17	240	11.0			3.8	
18	240	11.0			3.5	3.1
19	210	10.6				
20	225	9.2				
21	240	7.7			3.4	3.1
22	(240)	(6.4)				
23	(270)	(5.0)			3.1	

Time: 90.0°E.

Sweep: 0.5 Mc to 18.0 Mc in 10 minutes, semi-automatic operation.

Table 56						
Tananarive, Madagascar (18.8°S, 47.8°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	235	2.8				
01	245	2.7				
02	230	2.5				
03	220	2.3				
04	250	1.9				
05	280	1.9				
06	260	2.3				
07	235	4.8				
08	250	5.6	230		120	2.4
09	285	6.0	230	4.3	120	1.8
10	280	7.2	220	4.4	120	3.1
11	270	7.6	220	4.4	120	3.2
12	270	7.0	220	4.4	120	3.3
13	270	6.4	220	4.4	120	3.2
14	265	5.8	210	4.3	120	3.1
15	265	5.6	210	4.2	120	3.0
16	250	5.8	230		120	2.6
17	230	5.4	230		120	3.0
18	220	4.8				
19	225	4.4				
20	225	3.1				
21	250	2.9				
22	250	3.1				
23	240	3.0				

Time: Local.

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

Table 57						
Townsville, Australia (19.3°S, 146.8°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	250	3.4			2.0	3.1
01	240	3.2			1.9	3.2
02	220	(3.2)				
03	215	(3.0)			2.4	(3.2)
04	220	(2.4)			2.4	(3.2)
05	240	2.2			2.2	3.0
06	250	2.5			2.5	3.1
07	240	4.8	130	1.8	3.3	
08	255	5.5	225	3.8	120	(2.4)
09	280	6.0	235	4.0	120	2.8
10	260	6.8	230	4.2	120	3.7
11	280	6.1	220	4.2	120	3.1
12	300	6.1	205	4.2	125	3.1
13	295	5.9	215	4.2	120	5.4
14	290	6.2	220	4.0	130	3.0
15	280	5.8	210	4.0	130	2.7
16	250	5.5	225	3.6	130	2.3
17	240	5.4			125	2.1
18	230	4.6				3.3
19	230	3.9			2.1	3.3
20	245	3.0				3.0
21	270	(3.1)				(3.1)
22	270	(2.8)			2.1	(3.1)
23	260	(3.4)				(3.1)

Time: 150.0°E.

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

Table 58						
Brisbane, Australia (27.5°S, 153.0°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	250	3.6				2.8
01	250	3.8				3.6
02	250	3.8				3.3
03	230	3.7				3.5
04	240	3.4				3.4
05	230	2.6				2.0
06	240	3.0				2.0
07	230	4.7				3.6
08	260	5.2	230	4.0	110	2.4
09	280	5.4	230	4.1	100	2.8
10	285	5.5	220	4.3	100	3.0
11	285	5.8	210	4.3	100	
12	280	5.8	210	4.3	100	
13	280	5.8	200	4.2	100	3.1
14	270	5.9	220	4.2	100	3.5
15	260	5.7	210	4.0	105	2.9
16	250	5.4	210	3.5	110	2.4
17	230	5.0			140	1.9
18	220	4.3				2.8
19	220	3.6				3.2
20	260	3.5				3.1
21	250	3.8				3.1
22	250	3.6				1.9
23	260	3.6				3.1

Time: 150.0°E.

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

Table 60						
Hobart, Tasmania (42.9°S, 147.3°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	300	2.0				2.9
01	300	2.0				2.9
02	300	1.8				2.9
03	300	1.6				2.9
04	300	1.5				(3.0)
05	---	E				(3.1)
06	---	E				
07	250	2.6				3.1
08	245	3.5				3.1
09	220	4.0				3.1
10	220	4.2				3.0
11	285	4.5				3.0
12	300	4.8				2.7
13	280	5.0				3.0
14	230	5.0				3.0
15	220	5.0				3.1
16	220	4.7				3.1
17	220	4.0			130	1.4
18	250	3.4				3.0
19	250	2.8				3.0
20	270	2.5				3.0
21	280	2.3				3.0
22	285	2.0				3.0
23	290	2.0				3.0

Time: 150.0°E.

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

Table 61						
Wellington, New Zealand (37.5°S, 174.7°E)						
Time	h'F2	foF2	h'Fl	foFl	h'E	foE
00	300	2.0				2.9
01	300	2.0				2.9
02	300	1.8				2.9
03	300	1.6				2.9
04	300	1.5				(3.0)
05	---	E				(3.1)
06	---	E				
07	250	2.6				3.1
08	245	3.5				3.1
09	220	4.0				3.1
10	220	4.2				3.0
11	285	4.5				3.0
12	300	4.8				2.7
13	280	5.0				3.0
14	230	5.0				3.0
15	220	5.0				3.1
16	220	4.7				3.1
17	220	4.0				3.1
18	250	3.4				3.0
19	250	2.8				3.0
20	270	2.5				3.0
21	280	2.3				3.0
22	285	2.0				3.0
23	290	2.0				3.0

Delhi, India (28.6°N , 77.1°E)

Table 61

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04	(300)	(3.7)						
05	300	4.0						
06	280	4.5						
07	280	5.1						
08	280	5.6						
09	300	6.3						
10	320	6.5						
11	330	6.7						
12	300	7.5						
13	320	7.9						
14	300	8.0						
15	300	8.0						
16	300	7.6						
17	280	6.9						
18	(290)	6.2						
19	---	5.8						
20	---	---						
21	---	---						
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.

Madras, India (13.0°N , 80.2°E)

Table 62

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	330	5.3						
07	360	6.5						
08	390	6.8						
09	420	6.8						
10	420	6.8						
11	450	6.6						
12	460	6.5						
13	450	6.7						
14	460	7.0						
15	450	7.3						
16	420	7.5						
17	400	8.2						
18	390	8.0						
19	360	7.2						
20	360	6.0						
21	330	5.2						
22	---	4.8						
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.

Table 63

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	230	5.3						
07	360	6.5						
08	390	6.8						
09	420	6.8						
10	420	6.8						
11	450	6.6						
12	460	6.5						
13	450	6.7						
14	460	7.0						
15	450	7.3						
16	420	7.5						
17	400	8.2						
18	390	8.0						
19	360	7.2						
20	360	6.0						
21	330	5.2						
22	---	4.8						
23								

Time: 150.0°E .

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

Bombay, India (19.0°N , 73.0°E)

Table 62

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	270	4.7						
07	300	5.4						
08	330	6.3						
09	360	6.8						
10	390	7.2						
11	420	8.2						
12	420	9.0						
13	420	9.2						
14	450	9.4						
15	420	9.7						
16	420	9.9						
17	390	9.4						
18	360	8.7						
19	330	8.2						
20	330	7.1						
21	300	6.2						
22	300	4.8						
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 64

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	4.8						
07	420	6.4						
08	420	6.6						
09	480	6.6						
10	480	6.5						
11	480	6.4						
12	510	6.3						
13	510	6.6						
14	510	6.6						
15	510	7.0						
16	500	7.4						
17	480	7.7						
18	480	7.5						
19	450	7.0						
20	590	6.4						
21	360	5.0						
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.

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

Table 66

July 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2
00	245	3.5						
01	250	3.6						
02	240	3.6						
03	240	3.5						
04	230	3.4						
05	240	3.0						
06	230	3.0						
07	220	4.5						
08	240	5.0	230	3.5	110	2.3		
09	255	5.2	220	3.9	110	2.7		
10	260	5.6	230	4.1	110	2.9		
11	255	5.5	210	4.2	100	3.0		
12	280	5.5	210	4.3	100	3.2		
13	280	5.5	200	4.2	100	3.1		
14	270	5.6	220	4.1	105	2.9	4.0	3.35
15	250	5.8	210	3.8	110	2.7	4.1	3.5
16	240	5.4	230	3.2	120	2.3	4.0	3.6
17	220	4.9						
18	220	4.1						
19	230	3.7						
20	240	3.6						
21	250	3.6						
22	240	3.8						
23	240	3.8						

Time: 150.0°E .

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

Table 67								July 1953	
Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	
00	---	(3.0)				3.1	(3.1)		
01	---	3.1				3.0	(3.2)		
02	240	(3.0)				3.1	3.1		
03	---	(3.0)				3.1	(3.1)		
04	---	(3.0)				3.1	(3.2)		
05	---	(3.0)				3.2	---		
06	---	(2.4)				3.2	---		
07	205	3.0				3.1	3.5		
08	220	4.1				(1.7)	3.4	3.7	
09	240	4.6	220	3.6	100	(2.0)	3.5	3.6	
10	260	5.0	220	3.9	100	2.6	3.5	3.6	
11	270	5.1	210	4.0	100	2.7	3.7	3.6	
12	255	5.4	200	4.0	100	2.8	3.7	3.6	
13	280	5.5	200	4.0	100	2.8	3.7	3.5	
14	260	5.4	200	3.8	100	2.7	3.7	3.5	
15	240	5.5	210	3.6	100	2.5	3.8	3.5	
16	230	5.0	200	---	(105)	(1.8)	3.5	3.6	
17	210	4.5				3.3	3.5		
18	210	3.6				3.4	3.4		
19	---	2.9				3.1	(3.4)		
20	---	(3.0)				3.0	(3.1)		
21	---	(3.1)				2.9	(3.2)		
22	---	3.0				3.0	(3.2)		
23	---	(3.1)				3.0	(3.1)		

Time: 150.0°E.

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

Table 69
Delhi, India (28.6°N, 77.1°E)

Table 69

June 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	**
00	---	> 3.6					3.2		
01	---	> 3.4					3.2		
02	---	---							
03									
04	290	> 3.8					3.2		
05	280	4.4					3.2		
06	280	4.8					3.2		
07	280	5.5					3.2		
08	280	6.3					3.2		
09	280	7.0					3.2		
10	280	7.2					3.2		
11	300	7.6					3.1		
12	300	8.1					3.1		
13	300	8.5					3.1		
14	300	8.5					3.2		
15	300	8.6					3.2		
16	280	8.5					3.2		
17	280	7.8					3.2		
18	280	7.5					3.2		
19	280	> 6.8					3.2		
20	(280)	(5.2)					3.2		
21	(280)	5.0					3.2		
22	(300)	4.2					3.2		
23	(300)	(4.0)					3.1		

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 71

June 1953

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	**
00									
01									
02									
03									
04									
05									
06	330	5.5					3.1		
07	360	6.6					2.9		
08	390	7.0					2.7		
09	420	7.2					2.6		
10	450	> 7.2					2.5		
11	450	> 7.2					2.4		
12	460	7.2					2.5		
13	450	7.4					2.5		
14	420	8.0					2.6		
15	450	8.2					2.6		
16	420	8.6					2.6		
17	390	8.9					2.6		
18	390	> 9.0					2.8		
19	390	> 8.0					2.8		
20	360	6.8					2.9		
21	360	5.7					2.8		
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.

Table 68

Time	h'F2	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	July 1953
00	---	---	E						(3.05)
01	---	---	E						(3.0)
02	300		1.8						3.0
03	300		2.0						2.9
04	---	---	1.7						3.05
05	---	---	E						(3.0)
06	---	---	E						(3.0)
07	---	---	E						---
08	250		3.2						3.2
09	230		4.0						3.1
10	220		4.2						3.1
11	210		4.8						3.0
12	220		5.0						3.1
13	200		5.0						3.05
14	200		4.9						3.1
15	220		4.7						3.1
16	220		4.7						3.1
17	230		4.0						3.1
18	250		3.2						3.0
19	265		2.5						3.0
20	280		2.0						3.0
21	300		2.0						3.1
22	---	---	1.9						3.0
23	---	---	E						(3.0)

Time: 150.0°E.

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

Table 70

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	June 1953
00									
01									
02									
03									
04									
05									
06	300	5.0							3.2
07	300	5.7							3.1
0830	330	6.4							2.9
09	360	6.6							2.8
10	400	7.2							2.7
11	450	7.9							2.6
12	450	8.6							2.5
13	450	9.1							2.5
14	450	9.5							2.6
15	420	9.7							2.6
16	400	9.7							2.7
17	360	9.1							2.8
18	360	8.4							2.9
19	330	7.8							3.0
20	330	6.9							3.0
21	330	6.0							3.0
22	330	5.0							3.0
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.

Table 72

Time	*	foF2	h'Fl	foFl	h'E	foE	fEs	(M3000)F2	June 1953
00									
01									
02									
03									
04									
05									
06	360	5.0							2.0
07	390	6.6							2.7
08	420	7.0							2.6
09	450	6.8							2.5
10	480	6.5							2.4
11	480	6.5							2.4
12	510	6.5							2.4
13	510	6.7							2.4
14	510	7.2							2.4
15	510	7.4							2.4
16	510	7.8							2.4
17	480	7.8							2.4
18	480	8.0							2.4
19	450	7.6							2.5
20	420	7.0							2.6
21	420	6.1							2.6
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.

TABLE 73
IONOSPHERIC DATA

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

$h^{\prime}F2$ Km
(Characteristic) (June)
Observed at Washington, D. C.

Lat. 38°7'N, long. 77°10'W

75°W Mean Time

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)S (300)S	S	S	S	(320)S	250	390	350	360H	390	360	400S	390	380	350	410	330	300	240	220	220	(280)A	300	
2	(300)A (300)S	S	S	S	240	310	340	410	310	380	340	(380)A (390)A	410H	380H	340	320	290	260	220	210	(250)A	A		
3	A 270 [270]A	280	300	220H	270H	360	410H	1400A	380	370H	370	410H	380	390	340	320	290	240	220	230	230	280		
4	[200]A (310)A	280	A	S	240	300	320	360	380	430	370	400	400	330	330	310	290	260	240	230	240	240		
5	260 270	260	260S	250	230	350	270	280	290	390	360	390	450	360	330	340	300	290	260	250	240	250		
6	260 270	270	270	290H	260	270	340H	350H	450	320	360H	400	370H	390	350	320	270	260	220	240	(250)A (310)A			
7	[200]A (280)A	270	(280)S	280	230H	(260)L	270	400H	410H	330	330	[330]A	330	330	330	350	300	A	220	250	(260)A (270)A			
8	270 280	(270)S (250)S	[250]S	[290]A	(330)S	A	A	A	A	730	410	420	470	520	440	(310)A	280	260	A	270	(310)A			
9	290 250	260	270	250S	250	330	320	410H	[50d]A	390	370	320	370	370	320	320	300	[210]A	240	240	250	230		
10	250 240	310	(270)S	(280)S	(280)S	240	460	340	300H	A	A	A	G	630	440	420H	320	[290]A	(260)A (230)S	A	S			
11	S S	A	S	A	A	A	A	A	A	310	[320]A	300	[300]S	420	[420]S	410	[410]A	410	320	340	[240]A	220	(270)A A	
12	A A	A	A	270)S	240	310	A	A	A	370	350	A	A	320	360	350H	270	290	280	230	250	(280)S		
13	250 A	A	A	280	(300)S	400	S	S	S	490	[46d]S	(430)S	S	S	A	(310)S	[330]A	2.90	250	230	280	240	290 A	
14	(300)S S	A	(300)S	A	A	240	A	A	390	(350)A	500	390	320H	400	330	460H	420	340	[300]A	270	(250)A	230	280 (290)A	
15	(280)S 270	270	270	(290)S	290	250	310	320	410	300	290	360	370	350	C	C	A	(210)A	250	(240)A	240	250	270	
16	[280]A 280	270	A	A	250	(320)4	370	380	370	320	320H	340	280	[280]A	290	340	300	(300)A	260	240	(250)S	260	260	
17	230 270	S	S	(250)S	(330)H	330	320	330	A	A	A	420	[40d]A	380	410	410	[260]A	(270)A	270	[260]A (290)S				
18	240 250	270	(280)S	(280)S	(270)B	350	290	310	280	270	[340]A	380H	A	A	380	350H	300	300	300	240	250	260	290	
19	270 (290)S	250	(280)S	260	250	310	320	410	300	290	360	370	350	C	C	A	(210)A	250	(240)S	(270)A				
20	250 260	240	220	270	470	350	410	(380)A	330	320H	360	410	440	350H	500	350H	320	270	250	250	250	240		
21	240 270	(270)S	(270)S	280	240	350	440	380	280	[320]S	360	310	[340]A	360	410	350	370H	310	290	280	(280)A	(250)S		
22	[260]A 260	270	(280)S	(280)S	(310)S	S	S	350	420	420	320	360	480	(580)S	450	350	300	(150)A	(240)A	(240)S	(240)A			
23	(280)S (280)S	(270)S	(270)S	(230)S	5790	380H	420	400	[36d]S	490	340	490	[1440]A	380	370	350	270	250	240	220	220	270 (300)A		
24	S S	S	S	280	270	380	330	420	450S	330	390	320	370	420	380	390	380	320	280	220	220	270		
25	S (260)S	260	300	(300)S	250	330H	280	350	390	470	380	300	340	280	290	400	380	(320)A	(270)A	220	A	A		
26	A A A	A	A	250	[330]A	350	A	A	A	A	A	A	A	A	360	300	C	C	C	240	230	280 (280)A		
27	240 (270)S	270	280	260	260	L	410	A	300	340	360	340	360	400	350	350	300	260	250	250	220	270		
28	280 (280)S	(280)S	280	(410)S	400H	460	G	340	A ^K	A	A	A	A	A	A	A	A	(300)S						
29	(290)S S	S	A	(330)S	(360)S	330	300	350	470	420	A	A	360	340	370	300	[280]A	270	270	250	250	240		
30	250 240	270	280	(240)S	250	280	250H	320H	340	600	350H	350	[36d]S	370	[370]A	370	330	310	290	250	230	240		
31																								
Median	260	270	270	280	280	250	340	380	350	360	370	390	380	380	370	330	300	260	240	240	250	270		
Count	24	23	21	21	22	22	28	26	26	25	25	26	27	24	27	27	27	28	27	27	27	27		

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual □ Automatic ☒

National Bureau of Standards

(Institution)

Scaled by: E. J. W.

Calculated by: E. J. W.

J. W. P. J. J. S.

TABLE 74
 Central Radio Propagation Laboratory, National Bureau of Standards
IONOSPHERIC DATA

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

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National Bureau of Standards
(Institution) 1111
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TABLE 75

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

foF₂, Mc (Characteristic) June, 1954

Observed at Washington, D.C. (Month)

IONOSPHERIC DATA

Lat 38°79'N, Long 77°10'W

National Bureau of Standards
(Institution) J.W.P., J.J.S.

Scaled by E.J.W.

Calculated by E.J.W.

J.W.P., J.J.S.

Doy	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	(2.3) ^J	(2.1) ^J	(2.0) ^J	[2.1] ^J	[2.1] ^J	(2.1) ^J	3.1	3.9	4.6	5.4	4.7	[4.8] ^A	5.0	4.8	4.8	4.9	4.9	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
2	A	A	[1.7] ^A	A ^S	1.9	3.2	4.0	4.2	(4.5) ^J	[4.8] ^A	[5.0] ^J	(5.1) ^A	4.9	4.8	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1		
3	A	A	(2.5) ^J	(2.1) ^J	1.9	2.3	(3.1) ^J	3.6	4.2	4.7	[4.8] ^A	4.8	4.9	4.7	4.7	4.7	4.8	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1		
4	[2.9] ^A	[2.9] ^J	2.3	[2.9] ^J	[2.9] ^J	3.4	(4.2) ^J	4.6	4.5	4.8	4.5	5.0	4.6	4.9	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1		
5	(3.0) ^J	(3.7) ^J	(3.8) ^J	(2.6) ^J	(2.7) ^J	3.9	4.1 ^F	4.5	4.7	4.4	4.8	4.8	4.7	4.8	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
6	(3.1) ^J	(2.8) ^J	2.4	2.4 ^F	2.3 ^F	2.5	2.5	4.0	4.6	4.7	5.0	5.0	4.7	4.9	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
7	2.8	(3.6) ^J	2.3 ^F	1.9 ^J	1.9 ^J	4.3	4.4	4.7	5.1	(4.9) ^J	[5.1] ^J																
8	[2.9] ^A	(2.5) ^J	2.4 ^F	(2.6) ^J	(2.3) ^J	A	[4.9] ^A	A	4.7	4.8	4.7	5.0	4.8	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	
9	3.2	(2.7) ^J	2.4	2.3 ^F	2.5 ^F	3.5	4.5	4.6 ^H	4.6 ^H	4.9	(4.8) ^A	4.9	[5.2] ^J	4.9	4.8	4.7	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	
10	(3.0) ^J	1.9	(1.9) ^J	(1.9) ^J	2.4	3.3	(4.0) ^J	(3.7) ^H	A	A	A	A	<4.1 ^G	(4.3) ^P	[4.4] ^C	(4.3) ^H	[4.3] ^H										
11	S	S	A	A	A	A	(4.2) ^A	(4.9) ^J	5.0	[4.8] ^S	(4.5) ^J	[4.5] ^J															
12	A	A	(2.8) ^J	(2.1) ^J	2.8	A	A	4.7	[4.8] ^A	5.4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
13	A	A	(2.3) ^J	(2.0) ^J	2.3	[3.0] ^J	3.3	(3.9) ^J	(4.2) ^J	(4.5) ^J	(4.4) ^J	[4.4] ^J	(4.4) ^J														
14	(2.1) ^J	A	S	A	S	(2.1) ^J	3.2	3.7	(4.0) ^J	4.4	5.2	(4.7) ^J	5.0	5.2	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
15	(2.6) ^J	(2.4) ^J	(2.2) ^J	2.2 ^H	(2.4) ^J	3.5	4.1	(4.5) ^J	5.0	[4.5] ^J																	
16	[2.6] ^A	(2.2) ^J	A	A	A	3.7	3.8	4.3	4.7	[4.9] ^C	5.4	[4.9] ^A	4.8	[4.5] ^C													
17	(2.5) ^J	(1.9) ^J	(1.7) ^J	(1.7) ^J	2.3	3.3 ^H	4.0	4.4	4.3	[4.8] ^A																	
18	3.2 ^F	3.0	(2.4) ^J	2.4	2.4	3.3	3.9	4.3	4.5	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
19	(2.7) ^J	3.1	(2.4) ^J	(2.4) ^J	2.3	2.3	[3.2] ^J	3.7	4.2	[4.4] ^J	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	
20	(2.3) ^J	(3.3) ^J	2.7	(2.0) ^J	2.3	2.4	2.4	(2.6) ^J	3.7	4.2	5.1	(4.6) ^J	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	
21	2.9 ^H	(2.4) ^J	2.4	2.4	2.4	2.4	(3.4) ^J	3.7	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
22	(3.3) ^J	(3.2) ^J	(2.2) ^J	(2.2) ^J	1.8	(2.2) ^J	3.2 ^H	3.7 ^H	4.2	4.2	(4.3) ^J	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
23	(2.3) ^J	(1.9) ^J	(1.9) ^J	2.2	3.2	3.8	4.1	4.3	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	
24	(2.4) ^J	(2.2) ^J	(2.1) ^J	(2.1) ^J	2.3	3.4	4.0	[4.4] ^J	4.9	4.5	4.6	[4.5] ^J	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	
25	(2.7) ^J	2.4	(2.1) ^J	(1.9) ^J	2.2 ^H	3.7 ^H	4.5	4.6	4.8 ^H	5.0	5.4	[5.3] ^C	5.3	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
26	A	A	A	A	2.3	3.7	4.3	4.7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
27	3.1	(2.7) ^J	(2.5) ^J	(2.5) ^J	2.4	3.5	3.9	<38.0	(4.7) ^A	5.1	5.5	5.2	4.7	4.6	4.7	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
28	3.7	(3.3) ^J	3.2	(2.4) ^J	2.3	(3.0) ^J	3.7	3.9	<38.0	4.5	4.1 ^G	<4.1 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K		
29	[2.2] ^J	2.0 ^J	A	2.0	2.9	<35.6	4.2	4.5	(4.3) ^J	4.4	4.6	4.6	[4.6] ^J	4.7	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
30	(3.1) ^J	(2.2) ^J	(2.2) ^J	(2.2) ^J	4.2	4.3	4.6	(4.5) ^J	4.7	5.0	5.0	4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	
31																											

Sweep 10 Mc to 25.0 Mc in 0.25 min

Manual □ Automatic ■

3/1

3/1

3/1

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TABLE 76
IONOSPHERIC DATA
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.
Observed at Washington, D.C.
Lat. 38°27'N., Long. 77°10'W.

Day	75°W Mean Time												National Bureau of Standards (Institution)	J.W.P., J.J.S.										
	00	01	02	03	04	05	06	07	08	09	10	11												
1																								
2																								
3																								
4																								
5																								
6																								
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28																								
29																								
30																								
31																								
Median	2.30	2.20	2.20	2.20	2.10	2.00	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
COUNT	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

Sweep 1.0 Mc in 25 min
Manual □ Automatic □

TABLE 77
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.
IONOSPHERIC DATA

f_{EF} , Mc June, 1954
(Characteristic) (Unit) (Month)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

Day	75°W Mean Time												National Bureau of Standards Scaled by E.J.W., J.W.P. (Institution), J.U.W., J.U.S., J.W.P.											
	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																								
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3																								
4																								
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27																								
28																								
29																								
30																								
31																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min
Manual Automatic

Manuscript

Automatic

TABLE 78
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form 3088 June 1946
National Bureau of Standards
(Institution) J.W.P. & J.J.S.
Scaled by E.J.W.

Observed at Washington, D.C.
Lat. 38.7°N Long. 77.1°W
June, 1954
(Month)

h^*E Km
(Characteristic)
Observed at Washington, D.C.
Lat. 38.7°N Long. 77.1°W

75°W Mean Time

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
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29																								
30																								
31																								

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.
IONOSPHERIC DATA

$f_0 E$ — MC
(Characteristic) (Month)
June, 1954

Observed at Washington, D.C.
Lat 38.7°N, Long 77.1°W

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

National Bureau of Standards
(Institution)

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

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

Sweep 1.0 Mc to 25.0 Mc in 0.85 min
Manual Automatic

National Bureau of Standards
 (Institution) **J.W.P., J.J.S.**

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

TABLE 80
IONOSPHERIC DATA

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

Mc-Km **June**, 1954

(Unit)

(Month)

D.C.

Observed at **Washington**, D.C.

Lat **38°7'N**, Long **77°W**

75°W Mean Time

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	E	E	E	224°/30	3.8°/20	40°/10	56°/100	54°/100	G	G	44°/10	44°/10	58°/120	7°/110	(93)5°	3.2°/110	3.3°/110	3.4°/110	E		
2	3.0/100	4.0/100	3.7/100	3.2/100	3.1/100	4.0/100	4.0/100	3.0/100	4.0/100	8.6/100	13.0/100	9.6/110	10.5/100	47°/110	41°/130	41°/120	3.0/120	3.1/120	4.0/5°	5.9°/110	3.7/120	3.9/110	E			
3	6.2/100	4.2/110	4.1/110	4.1/110	E	2.7/100	2.6/100	4.5/110	4.3/110	3.9/100	6.2/120	3.1/100	5.2/100	5.2/100	3.9/100	4.9/120	4.2/120	G	3.8/120	3.8/110	2.1/110	2.9/110	3.3/110	E		
4	6.2/100	5.0/100	3.9/110	7.2/110	H	3.9/120	E	3.9/130	4.7/110	4.0/100	4.9/110	3.2/110	G	G	3.7/140	3.5°/120	2.9/110	4.1/110	4.1/110	3.2/110	E	3.0/100				
5	3.7/100	3.2/110	E	2.4/110	3.8/100	3.4/100	1.9/110	3.8/120	3.1/120	3.9/120	4.9/120	4.6/120	3.9/120	4.6/120	4.6/120	3.2/120	4.0/120	5.4/110	3.7/110	5.8/110	5.6/110	3.9/110	E			
6	3.0/100	5.4/130	4.0/120	4.5/110	4.5/110	1.3/100	1.3/100	3.9/130	4.3/120	4.3/120	4.8/120	4.3/110	4.7/110	4.7/110	3.5/120	3.4/120	4.5/120	4.7/120	3.5/120	2.9/110	3.3/110	4.0/110	2.4/110	E		
7	4.7/110	4.2/110	1.7/110	3.0/110	2.6/110	E	3.1/120	4.7/110	4.5/110	5.8/110	5.2/110	7.8/110	7.8/110	5.2/110	4.9/130	10°/120	7.6/120	6.0/120	8.4/110	9.0/110	8.0/110	7.4/110	5.9/100	3.4/100	3.4/100	E
8	3.8/100	3.8/100	3.7/100	5.0/100	5.0/100	E	3.5/110	7.2/110	10.2/110	10.5/100	9.9/100	9.0/100	5.0/100	4.3/100	3.0/100	3.0/100	3.0/100	3.0/100	5.2/120	5.2/110	7.6/110	5.6/110	3.9/110	4.8/100	E	
9	4.7/110	4.0/110	2.5/110	3.1/110	E	3.4/120	4.0/120	4.9/120	5.0/110	4.9/110	4.8/110	10.5/100	8.0/100	4.9/100	3.4/90	G	G	G	G	5.9/110	6.4/110	3.6/110	4.2/110	2.6/100	E	
10	E	E	E	E	E	E	E	2.8/120	3.1/120	G	2.9/120	4.6/110	10.2/100	5.4/110	4.3/110	4.7/110	4.7/110	4.7/110	3.2/120	3.7/120	3.7/120	3.7/120	3.7/120	3.7/120	E	
11	(29)5	4.0/120	3.0/120	E	4.9/110	3.8/110	3.0/110	3.0/110	3.0/110	3.0/110	7.5/110	3.1/100	4.0/100	4.0/120	21°/90	9.8/110	4.5/110	4.5/110	5.2/110	7.1/110	12.0/100	5.9/100	8.4/110	6.8/110	E	
12	6.8/110	6.5/110	5.0/110	4.0/110	4.8/100	3.6/110	4.2/110	4.2/110	4.2/110	4.0/110	6.0/110	9.0/110	5.4/110	8.0/100	5.6/110	G	G	G	G	5.0/110	4.2/100	6.0/100	4.5/100	6.4/110	4.4/110	E
13	4.4/110	5.2/110	6.7/110	6.7/110	E	4.0/110	4.7/120	4.0/110	4.7/110	4.8/110	4.0/110	4.3/110	4.3/110	4.0/110	4.9/110	9.0/110	9.0/110	5.6/120	7.2/110	7.5/110	7.0/110	5.4/110	3.4/110	E		
14	E	5.6/120	8.0/120	5.6/110	3.9/110	3.0/100	4.4/100	6.0/100	4.4/100	4.1/100	4.0/100	4.2/100	4.2/100	G	4.3/130	5.2/120	5.2/110	5.0/110	8.9/110	5.2/110	4.2/110	4.2/110	3.9/110	E		
15	3.0/110	E	E	E	E	E	E	4.0/110	3.3/110	4.0/110	4.2/110	4.2/110	4.2/110	G	3.3/110	G	G	G	5.6/120	6.4/110	4.5/110	4.5/110	3.7/110	3.6/110	E	
16	3.2/110	4.8/100	3.1/110	4.2/110	4.8/100	3.6/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	4.2/110	E			
17	3.2/110	2.4/110	E	4.0/110	E	2.7/110	E	2.3/110	3.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	7.0/120	7.0/120	4.8/120	5.8/120	4.3/110	E		
18	3.0/100	E	3.0/100	E	4.9/100	E	3.5/110	4.5/110	4.6/110	5.0/110	5.0/110	7.2/110	5.0/110	6.0/110	7.4/110	G	G	G	G	4.0/20	5.4/110	6.8/110	7.8/110	4.9/110	E	
19	3.0/100	3.3/100	3.3/100	3.3/100	3.8/100	G	3.3/120	6.4/120	4.5/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	E		
20	3.9/110	3.4/100	E	2.2/120	E	2.7/120	E	2.7/120	4.5/110	4.6/110	4.6/110	4.6/110	4.6/110	4.6/110	4.6/110	4.6/110	4.6/110	4.6/110	3.8/110	3.8/110	3.6/120	3.5/120	3.3/110	8.5/110	4.1/110	4.4/110
21	2.8/110	E	E	2.7/120	E	4.6/110	4.2/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	4.1/110	E		
22	5.0/110	3.0/110	E	4.6/110	4.2/110	7.0/100	4.3/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E		
23	E	E	E	4.0/120	E	E	3.4/120	E	G	3.1/110	3.1/110	4.7/110	4.7/110	4.7/110	G	3.3/110	G	G	G	5.6/120	6.4/110	4.5/110	4.5/110	3.7/110	3.7/110	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	4.9/120	E	
25	4.2/100	3.9/100	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	5.4/120	5.4/120	5.4/120	5.4/120	5.5/120	5.5/120	E	
26	8.0/100	5.6/100	4.3/100	4.0/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	3.7/100	E			
27	2.9/110	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	3.9/110	3.7/120	3.7/120	3.7/120	3.7/120	3.7/120	E	
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
29	(32)10	5.4/110	3.9/110	4.5/110	5.0/120	7.4/120	3.8/120	4.1/120	4.8/110	4.8/110	5.8/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	6.0/110	E			
30	2.2/100	1.9/110	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
31																			C	C	C	C	C	C	E	
32																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
33																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
34																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
35																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
36																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
37																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
38																			4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	4.7/120	E	
39	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Median	3.1	3.8	2.1	3.0	2.8	2.6	3.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.9	
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	

Sweep 1.0 Mc to 25.0 Mc in 0.25 min
 Manual □ Automatic ■

TABLE 81
IONOSPHERIC DATA
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

National Bureau of Standards
(Institution) J.W.P., J.J.S.

Scaled by: E.J.W. Calculated by: E.J.W.

(M1500) F2 June 1954
(Characteristic) (Unit) (Month)

Observed at Washington, D.C.

Lat 38°7'N, Long 77°10'W

Day	75°W Mean Time											
	00	01	02	03	04	05	06	07	08	09	10	11
1	(2.1) ²	(2.0) ⁵	J 5	J 5	(3.0) ^P	2.3	1.9	2.1	1.9 ^H	2.1	2.0	2.1
2	2.1	A ⁵	(2.0) ⁵	J 5	A 5	2.4	2.3	2.2	1.9	2.3	2.0	2.1
3	A	2.2	A ⁵	(2.3) ⁵	(2.3) ⁵	(2.0) ⁵	(2.0) ⁵	2.1	1.9 ^H	A	2.1	2.1
4	A	2.1 ^F	J 2	A	(2.0) ⁵	(2.0) ⁵	(2.0) ⁵	2.3	2.1	(2.1) ⁵	1.9	2.1
5	(2.0) ⁵	F 5	(2.2) ⁵	(2.3) ⁵	(2.3) ⁵	(2.4) ⁵	(2.4) ⁵	2.4 ^F	2.0	2.0	2.2	2.2
6	2.3 ^F	(2.3) ⁵	(2.3) ⁵	2.2 ^F	2.3 ^F	2.2	2.1 ^H	A	1.9	2.2	2.1	2.0
7	(2.2) ^A	A	(2.3) ⁵	2.2 ^F	2.2 ^F	2.4 ^H	2.5	2.0 ^H	1.9	2.1	A	1.9
B	2.1	(2.3) ^F	2.3 ^F	(2.3) ^F	S	2.3	A	2.2	1.9	2.1	1.7	1.7
9	2.2 ^F	2.3	2.3	2.1 ^F	2.3 ^F	2.3 ^H	(2.2) ^H	2.2	1.9 ^H	A	2.0	2.0
10	2.2 ^F	2.3	(1.9) ⁵	2.1	2.0	2.3	(2.2) ^P	1.8	(2.1) ⁵	A	1.5	(1.9) ^H
11	S	S	A	(2.1) ^P	A	2.3	A	(2.1) ^P	(2.0) ⁵	J 5	1.9	A
12	A	A	A	(2.2) ^P	(2.3) ⁵	(2.4) ⁵	A	A	2.0	2.0	2.0	2.1
13	(2.3) ⁵	A	A ⁵	(2.3) ⁵	(2.3) ⁵	2.3	J 5	J 5	(1.8) ⁵	1.7	S	A
14	(2.1) ⁵	A ⁵	A ⁵	(2.2) ⁵	A 5	(2.4) ⁵	A	2.0 ⁵	2.1	1.7	2.0	2.1
15	(2.1) ⁵	2.3 ^F	2.1 ^F	(2.3) ⁵	2.3	2.2	2.2 ^H	(1.9) ⁵	2.2	2.2	1.8 ^H	(1.9) ^P
16	A	2.2	(1.9) ⁵	A	A	2.3	2.1 ^H	2.0	1.9 ^H	A	2.2	2.2
17	(2.3) ⁵	2.3	J 5	S	J 5	2.3 ^H	2.2	2.2	2.2	(2.0) ⁵	S	A
18	2.3 ^F	(2.2) ⁵	2.2	2.3	2.2	2.1	2.4	2.4	2.0	2.2	1.9	A
19	(2.2) ^F	2.1	(2.2) ⁵	(2.3) ⁵	(2.3) ⁵	2.2	2.0 ^F	2.4 ^H	2.0	2.1	2.0	2.1
20	(2.3) ⁵	(2.3) ⁵	(2.3) ⁵	2.6	(2.3) ⁵	1.8	(2.1) ⁵	2.0	1.9 ^H	A	2.1	2.1
21	(2.3) ⁵	(2.1) ⁵	2.2	(2.2) ⁵	(2.3) ⁵	2.4	(2.2) ^H	1.9 ^H	2.0	G	1.9	2.0 ^H
22	J 5	A	(2.2) ⁵	(2.0) ⁵	(2.1) ⁵	2.2	J 5	2.1	1.9	A	2.0	1.9 ^H
23	(2.2) ⁵	2.2	(2.2) ⁵	(2.1) ⁵	2.3	1.6	2.1 ^H	1.9	1.9 ^H	A	2.0	1.8
24	J 5	J 5	J 5	J 5	J 5	2.2	2.0	(1.9) ⁵	1.8	2.2	2.3	2.0
25	J 5	(2.3) ⁵	(2.1) ⁵	2.1	(2.1) ⁵	2.3	2.2 ^H	2.4	2.1	2.3	2.2	2.1
26	J 4	A	A	A	A	2.2	A	A	A	A	2.1	2.1
27	(2.1) ²	(2.1) ²	(2.1) ²	J 5	2.4	2.3	2.0	2.1	1.6	2.0	(1.9) ⁵	2.1
28	2.0	(2.0) ⁴	(2.2) ⁵	(2.4) ⁵	(2.2) ⁵	1.9 ^H	1.8	G	J 5	A ^K	A ^K	1.8 ^K
29	(2.2) ⁵	S	(2.3) ⁵	A ⁵	A ⁵	(2.4) ⁵	(2.2) ⁵	2.2	2.4	1.9	A	2.1
30	(2.2) ⁵	2.2	2.2 ^F	2.3	(2.3) ⁵	2.2	2.3	2.5 ^H	2.2 ^H	(2.1) ⁵	2.0	1.9
31												

Sweep L.O. 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.
IONOSPHERIC DATA

(M 3000) F1, June 1954

(Characteristic) (Unit)
Observed at Washington, D.C.

Lot 38°7'N, Long 77°19'W

(Month)

D.G.

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

National Bureau of Standards												National Bureau of Standards												
Scaled by: E.J.W., J.W.P., J.J.S.												Calculated by: E.J.W., J.W.P., J.J.S.												

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.

(M1500) E, June, 1954

(Characteristic)

(Unit)

Observed at Washington, D.C.

(Month)

Form adopted June 1946

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

 National Bureau of Standards
 (Institution) J.W.P., J.J.S.
 Scaled by: E.J.W. Calculated by: E.J.W.

Day	75°W Mean Time											
	00	01	02	03	04	05	06	07	08	09	10	11
1					(4.3)A	4.4	4.5	4.6	4.5	A	A	4.4
2					4.5	4.5	4.4	4.4	4.4	A	A	4.4H
3					4.6	4.6	4.5	4.5	A	A	A	4.4H
4					4.5H	4.5	4.6	4.5	A	4.4	4.4H	4.4H
5					A	4.4H	4.5	4.4H	4.4	(4.4)P	A	4.4
6					4.5H	4.3H	4.4H	4.3H	4.4H	4.5	4.5	4.4H
7					4.4H	4.3H	4.4	4.5H	4.4H	(4.5)A	4.5H	4.5
8					4.5	4.5	A	4.6	A	A	A	4.5H
9					S	4.5H	5	4.4	(4.4)A	4.5	A	4.5
10					4.4	4.3	(4.4)H	4.5	(4.5)P	A	A	4.5
11					A	A	4.4H	4.4	A	4.4	(4.4)P	4.4
12					4.5	4.5H	4.5	4.4H	4.4	A	4.4	4.4H
13					S	(4.4)S	4.4	4.4	A	B	A	4.4H
14					S	4.5	4.5	A	4.5	4.5	(4.4)P	4.5H
15					S	4.3H	(4.4)P	4.5	4.5	A	(4.5)P	A
16					A	4.4	4.4	4.4	B	4.5	A	4.4
17					S	4.4H	4.4	4.4	4.4	(4.4)P	A	4.4
18					S	4.4	(4.5)S	4.5H	4.4H	(4.4)P	A	4.4H
19					S	4.4	4.4	4.4	4.5	4.5	A	4.4H
20					S	(4.4)P	4.5S	4.5	4.4H	4.5	(4.5)S	B
21					S	A	4.5	4.5	4.4H	4.5	(4.5)A	4.5
22					S	4.4H	4.5	A	4.5H	4.5	(4.5)P	A
23					S	4.3	4.3H	(4.3)P	4.4	(4.4)P	(4.4)P	(4.2)P
24					S	4.4	4.4S	4.4	4.3	4.4	(4.4)P	4.4
25					S	4.4	A	(4.4)S	4.5	4.5	4.4	4.4
26					S	4.3	(4.5)A	4.4	4.4H	(4.4)P	A	4.4
27					S	4.3H	(4.3)S	4.4H	4.5	(4.4)P	(4.4)P	4.4
28					S	(4.4)A	(4.3)S	4.3	4.5	(4.4)P	4.4	4.4
29					S	4.4H	4.5	(4.3)S	4.4H	A	A	4.4
30					S	4.4	4.4	(4.5)A	A	A	A	4.3
31												S
Median					4.4	4.4	4.5	4.5	4.4	4.4	4.4	4.4
Count					27	27	27	22	17	15	16	22
					29	27	22	22	17	15	16	22
											25	27
												10

 Sweep 1.0 Mc in 0.25-min
 Manual Automatic

Table 85

Ionospheric Storminess at Washington, D. C.June 1954

Day	Ionospheric character*		Principal storms		Geomagnetic character**	
	00-12 GCT	12-24 GCT	Beginning GCT	End GCT	00-12 GCT	12-24 GCT
1	3	2			2	1
2	3	1			3	1
3	1	1			2	2
4	2	1			3	2
5	1	1			0	2
6	1	1			2	2
7	2	2			2	3
8	1	3			2	1
9	2	1			2	2
10	1	3			4	2
11	2	3			1	1
12	2	2			1	2
13	1	2			2	3
14	3	1			3	2
15	2	1			2	2
16	3	2			2	1
17	1	2			1	2
18	2	1			1	2
19	3	2			2	2
20	3	3			2	1
21	0	2			1	2
22	2	2			3	2
23	3	3			2	3
24	3	2			1	2
25	3	2			2	2
26	3	1			2	2
27	2	1			2	3
28	2	4	1100	1800	3	2
29	3	2			2	1
30	0	1			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.

Table 86

Radio Propagation Quality Figures
 (Including Comparisons with Short-Term and Advance Forecasts)

May 1954

Day	North Pacific 9 - hourly quality figures			Short-term fore- casts 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 03	02	09	18		1-4 days	4-7 days	8-25 days
1	6	6	6	6	6	7	6	6	6	6
2	6	6	7	6	6	7	6	6	7	
3	7	6	6	6	6	7	7	7	7	
4	7	6	6	7	5	7	7	7	7	
5	6	6	6	6	6	7	6	6	6	
6	6	6	6	7	6	7	6	6	6	
7	6	6	6	6	6	7	6	6	5	
8	5	6	6	6	6	6	6	5	5	
9	5	5	6	6	5	6	5	(4)	(4)	X
10	6	7	7	5	5	7	7	(4)	(4)	X
11	6	6	6	6	6	6	7	5	5	
12	6	6	6	6	6	6	6	6	6	
13	6	6	6	7	6	6	6	6	6	
14	6	6	6	6	6	6	6	6	6	
15	5	6	6	6	6	7	6	6	6	
16	5	6	7	6	6	7	6	6	6	
17	6	6	6	6	6	7	6	6	6	
18	6	6	7	7	6	6	6	6	6	
19	6	5	6	6	6	7	6	6	6	
20	5	6	6	6	5	7	6	6	7	
21	5	6	6	6	6	6	6	7	7	
22	6	6	6	6	6	6	6	6	7	
23	6	6	6	6	6	6	6	6	6	
24	6	6	7	6	6	7	6	6	6	
25	6	6	6	6	6	7	6	6	6	
26	6	6	5	7	6	7	6	6	6	
27	6	6	6	6	6	7	6	6	6	
28	6	6	6	7	7	7	6	7	7	
29	6	6	6	7	6	7	6	7	7	
30	7	7	6	7	7	7	7	7	7	
31	6	7	6	7	7	7	7	7	7	
Score:										
Quiet Periods										
P	16	26	13				24	20		
S	15	4	17				5	9		
U	0	1	1				1	1		
F	0	0	0				1	1		
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 87a

Radio Propagation Quality Figures

(Including Comparisons with Short-Term and Advance Forecasts)

May 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:			Geomag- netic K _{Ch}	
	00	06	12	18	00	06	12	18		1-4	4-7	8-25	Half day	
	to 06	to 12	to 18	to 24						days	days	days	(1) (2)	
1	6	(4)	7	7	6	5	7	6	6	6	6	6	2	1
2	6	5	7	7	6	5	6	6	6	7	6	7	3	2
3	7	6	7	7	6	6	6	7	7	7	6	7	2	1
4	7	6	7	7	7	6	7	6	7	7	7	7	3	3
5	7	6	7	7	(4)	5	7	7	7	7	7	6	2	2
6	7	6	7	7	6	6	7	7	7	6	6	6	1	1
7	7	7	7	7	6	6	7	7	7	7	6	6	1	2
8	7	6	7	7	6	6	7	7	7	(4)	(4)	X	2	3
9	7	5	7	7	5	5	6	6	6	(4)	(4)	X	3	2
10	7	6	6	7	5	5	6	6	6	(4)	(4)	X	2	3
11	6	5	6	6	6	5	6	6	6	6	5	(4)	3	
12	7	6	6	7	6	6	7	6	6	6	5	6	2	2
13	7	6	6	7	6	6	7	6	7	6	6	6	2	3
14	7	6	7	7	6	5	7	6	7	6	7	7	3	2
15	7	6	7	7	6	6	6	6	7	6	7	7	2	3
16	6	5	7	7	6	(4)	6	6	6	6	7	7	3	1
17	7	6	7	7	6	6	7	7	7	6	6	6	1	1
18	7	5	7	7	6	5	7	7	7	7	6	6	3	3
19	7	6	7	7	6	6	7	7	7	7	6	6	3	3
20	7	6	7	7	6	6	7	6	7	7	6	6	2	3
21	7	5	6	7	7	6	7	7	6	6	6	6	3	3
22	7	6	7	7	7	5	7	7	7	6	6	6	2	2
23	7	6	7	7	6	6	6	6	7	5	5	5	2	1
24	7	6	6	7	6	6	7	7	7	5	5	5	2	2
25	7	7	7	7	7	6	7	7	7	7	6	6	2	1
26	7	6	7	7	7	6	7	7	7	7	6	6	2	2
27	7	6	7	7	7	6	7	7	7	7	6	6	2	1
28	7	6	7	7	7	7	7	7	7	7	7	7	1	2
29	7	6	7	7	6	6	7	7	7	7	7	7	3	2
30	7	6	7	7	7	6	7	7	7	7	7	7	2	1
31	7	7	7	7	7	6	7	7	7	7	7	7	1	2

Score:

Quiet periods	P	13	20	21	19	19	10
	S	15	10	10	12	7	16
	U	2	0	0	0	2	2
	F	1	0	0	0	3	3

Disturbed periods	P	0	0	0	0	0	0
	S	0	1	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

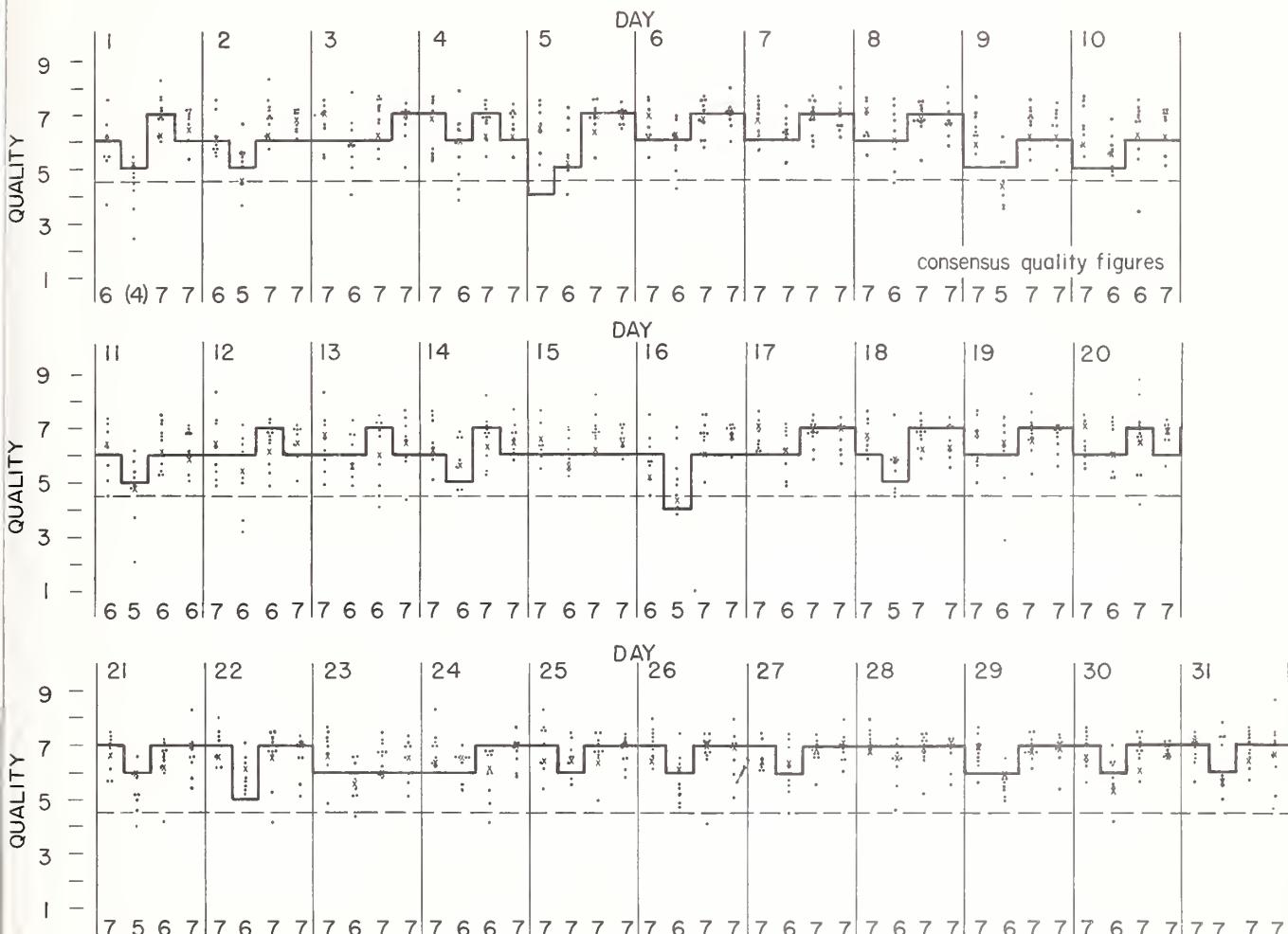
Note: All times are UT (Universal Time or GCT)

Table 87b

Short-Term Forecasts---May 1954

— forecast
 × CRPL observation (not in consensus)

• individual reports of quality
 (adjusted to CRPL scale)



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

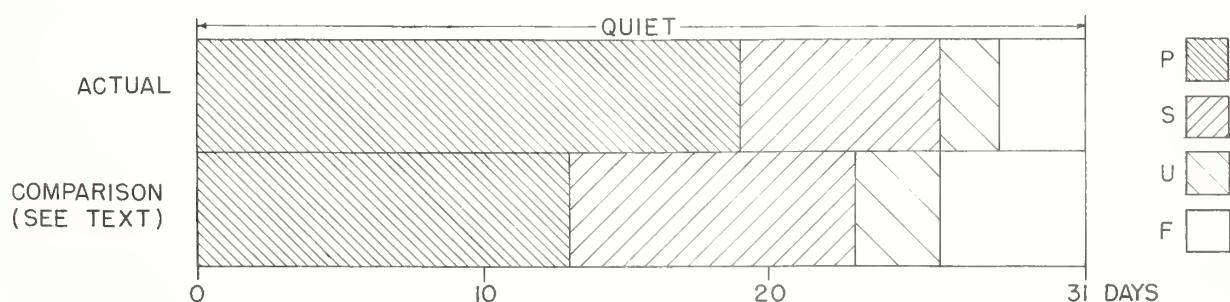


Table 88a

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

Table 89a

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

Table 90a

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

The 6702Å coronal line was not visible on any of the observation dates in June at the position angles indicated for the 6374Å line.

Table 88b

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

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
1954	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Jun 1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	
2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.6a	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7.9a	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
11.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
14.7a	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	X	X	X	X		
15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
19.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
21.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
24.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
25.7a	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	X	X	X	X		
26.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
27.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
28.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 89b

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

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
1954	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Jun 1.9	2	2	1	1	1	1	1	1	1	1	2	3	3	3	3	4	4	4	4	4	3	3	2	2	1	1	1	1	1	1	X	X	2			
2.6	2	2	3	2	2	2	1	1	2	3	4	4	3	4	5	5	5	5	5	5	5	5	5	5	3	2	1	1	1	1	1	1	1	2		
3.6	2	2	2	2	1	1	1	2	2	2	3	4	4	4	5	6	6	5	4	4	4	4	4	3	2	1	1	1	1	1	3	3	3			
4.6a	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6.7a	1	2	1	1	1	1	1	1	2	2	2	3	4	3	4	3	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	2	2			
7.9a	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8.6	2	2	2	2	1	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	5	5	4	4	3	2	2	2	2	1	1	1	1			
9.5	1	1	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	1	1			
10.6	3	3	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	1	1			
11.7a	2	2	2	2	2	1	1	1	1	2	4	5	5	5	5	4	3	4	4	4	5	6	5	6	5	8	6	4	2	1	1	1	2	2		
12.6	2	2	3	2	2	1	1	1	1	3	3	3	3	3	3	3	3	4	4	5	6	7	6	5	5	5	3	3	2	1	1	1	1			
14.7a	2	2	2	1	1	1	1	1	1	2	3	4	4	4	5	5	6	6	6	6	5	5	5	5	5	3	3	3	3	1	1	1	2			
15.8	Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16.9a	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	2	3	4	4	4	5	5	5	5	5	5	5	3	2	2	2	2			
17.6	2	2	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	4	4	4	5	5	5	4	4	3	3	2	2	2	2	2	2			
18.6	2	2	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	4	4	4	5	5	4	4	4	4	3	2	2	2	2	2				
19.6a	2	2	2	2	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	4	4	4	4	3	2	2	2	2				
21.6a	2	2	2	2	2	2	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	5	5	4	4	4	4	3	2	2	2	2				
24.6a	2	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	3	2	2	2				
25.7a	2	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	4	4	4	4	5	5	5	5	5	4	4	2	1	1	1				
26.6a	2	2	1	1	2	2	2	2	2	3	3	3	4	4	4	5	6	6	6	5	5	5	5	4	3	3	2	2	2	2	2	2				
27.9a	2	2	2	2	1	1	1	1	3	2	3	5	6	5	4	4																				

Table 91a

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

Table 92a

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

Date GCT	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Jun 1.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	4	4	6	8	7	6	6	7	6	5	4	5	3	2	2	2	2	3	3	2	-	-
2.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
6.7a	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
7.6	4	2	2	3	3	2	-	2	2	3	4	5	6	7	8	7	8	9	8	8	7	8	7	6	5	3	3	2	2	2	2	3	3	3	2	-	-	-	-	-	-	-	-	-	-	
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
9.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
11.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
12.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
14.7	-	-	3	2	3	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
15.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
16.7	2	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3							
17.7a	3	2	2	3	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
20.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
23.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
28.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
29.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
30.7	3	3	3	3	4	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3							

Table 93a

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

The 6702Å coronal line was not visible on any of the observation dates in June at the position angles indicated for the 6374Å line.

Table 91b

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

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
1954	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Jun 1.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
11.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
12.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
14.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
17.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
20.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
23.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
28.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
29.7a	-	-	-	-	-	-	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		
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 92b

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

Date GCT	Degrees south of the solar equator															Degrees north of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
1954	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Jun 1.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7.6	2	3	3	2	3	2	2	3	2	3	2	4	2	4	5	7	8	9	9	7	8	7	8	8	7	6	4	-	2	4	4	3	3			
8.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
11.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
12.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
14.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.7	3	2	2	2	3	2	2	2	2	2	2	2	2	2	7	6	7	7	8	8	7	8	9	8	7	6	5	2	3	2	2	2	3	3		
17.7a	3	2	2	2	-	-	2	2	3	2	3	4	5	4	3	4	6	5	8	7	7	7	5	6	4	-	2	3	2	3	3	3	3	2		
20.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
23.8a	2	2	2	2	3	2	3	2	2	3	2	3	3	4	4	4	3	4	5	6	5	5	4	4	3	5	4	4	2	-	-	-	-			
28.6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
29.7a	-	-	-	-	-	-	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		
30.7	3	3	3	4	3	2	2	3	3	3	4	5	10	11	10	9	8	8	12	11	8	9	10	6	10	9	8	7	5	3	2	2	2	3	2	

Table 93b

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

The 6702A coronal line was not visible on any of the observation dates in June at the position angles indicated for the 6374A line.

Feb 19 94

Molecular Observations, Billings, Colo. 80219

January - June 1954

Date GCT	Green line threshold intensity at							Obs.	Meas.	Date GCT	Green line threshold intensity at							Obs.	Meas.	
	45° 90° 135° 225° 270° 315°										45° 90° 135° 225° 270° 315°									
1954																				
Jan. 1.7	4	3	-	5	3	2		W	B	1954	4	4	5	4	4	3		W	B	
2.8	2	2	2	3	3	2		H	B		18.8	5	6	7	6	6	5	H	B	
3.7	-	4	4	4	4	4		H	B		19.7	7	9	8	9	10	10	H	B	
5.7	2	3	3	3	3	3		H	B		20.6	9	9	8	11	11	-	H	B	
6.7	3	4	3	4	5	5		H	B		21.6	9	7	3	12	7	6	H	B	
7.7	1	1	1	1	1	1		H	B		22.7	7	9	8	7	8	6	H	B	
8.9	-	-	6	-	-	-		H	B		23.6	5	5	4	5	5	5	H	B	
10.8	1	2	2	2	2	2		H	B		24.6	1	>15	15	>15	6	12	W	B	
14.9	4	4	8	14	4	7		H	B		26.8	9	6	6	5	5	4	W	B	
21.9	3	3	5	2	1	1		H	B		27.8	7	7	10	-	-	-	H	B	
22.7	2	2	1	2	2	2		H	B		28.6	6	5	4	5	6	5	W	B	
23.7	1	1	1	2	2	1		H	B		29.6	7	6	6	6	7	7	H	B	
27.8	-	4	-	-	-	-		W	B		30.6	4	5	4	4	4	4	W	B	
28.9	3	4	2	-	4	3		H	B		May 2.9	6	5	-	-	-	-	W	B	
30.9	3	3	3	3	3	3		H	B		3.7	3	4	-	4	5	5	H	B	
31.7	3	3	3	3	3	4		H	B		5.6	6	7	7	7	7	7	H	B	
Feb. 1.7	4	4	5	4	4	3		H	B		6.6	6	6	6	6	6	6	W	B	
2.7	4	5	4	4	5	4		W	B		7.6	6	7	7	5	6	6	V	B	
3.8	6	-	-	-	-	-		H	B		8.7	10	9	15	-	-	-	W	B	
4.7	3	4	4	5	5	5		W	B		9.7	8	11	10	9	8	7	H	B	
5.7	1	2	2	2	2	2		W	B		11.7	12	15	10	6	7	-	H	B	
6.8	1	1	1	2	2	2		W	B		12.7	7	7	8	7	7	8	P	B	
7.7	5	2	2	2	2	1		H	B		14.6	8	12	9	15	12	11	W	B	
8.7	1	1	2	2	2	2		W	B		17.0	6	5	5	5	6	6	H	B	
9.7	1	2	1	2	2	2		H	B		18.7	5	6	-	5	5	-	W	B	
10.8	3	3	3	4	5	4		H	B		20.7	9	8	8	7	9	9	H	B	
11.7	7	5	4	3	3	2		H	B		21.6	10	10	6	9	10	9	W	B	
12.8	4	4	4	5	7	5		W	B		24.6	5	5	4	4	7	6	W	B	
15.9	11	5	4	4	4	12		H	B		25.6	6	6	6	7	7	7	B	B	
17.7	3	4	4	3	3	3		H	B		26.6	9	9	9	10	12	11	W	B	
18.7	4	4	4	5	5	-		W	B		27.7	10	9	11	11	11	10	H	B	
21.8	3	4	2	5	5	5		H	B		28.6	6	6	5	5	6	5	W	B	
24.8	4	4	3	5	4	5		W	B		30.7	8	10	7	9	9	8	E	B	
25.8	5	4	4	5	3	-		H	B		31.7	4	3	3	5	4	4	B	B	
28.7	4	2	5	3	5	3		W	B		June 1.9	7	9	-	5	5	-	W	B	
Mar. 3.7	4	5	5	3	5	4		H	B		2.6	4	4	3	5	6	5	H	B	
4.7	4	4	4	4	4	4		W	B		3.6	4	3	2	4	4	4	V	B	
5.8	3	3	3	3	3	3		W	B		4.6	9	-	-	-	-	-	W	B	
6.8	3	3	3	3	3	3		W	B		5.7	7	9	8	7	8	8	W	B	
7.9	4	5	-	7	6	6		H	B		6.7	6	7	9	7	8	7	W	B	
11.0	6	7	6	-	-	-		H	B		7.9	7	-	-	-	-	-	W	B	
13.9	5	5	5	7	7	6		H	B		8.6	6	6	7	7	8	7	B	B	
14.7	4	5	5	4	5	4		W	B		9.5	5	5	5	6	5	5	I	B	
15.7	5	4	4	5	6	6		H	B		10.6	8	7	8	7	7	8	E	B	
17.7	8	8	7	6	6	6		H	B		11.7	6	6	6	7	7	6	W	B	
23.7	3	-	-	6	-	-		H	B		12.6	6	6	6	6	6	5	W	B	
28.7	5	5	5	5	6	6		W	B		14.7	10	9	14	6	5	5	B	B	
31.8	6	6	8	10	7	8		W	B		15.8	8	-	-	-	-	-	W	B	
Apr. 1.7	4	4	3	5	5	5		H	B		16.9	8	8	8	12	13	-	H	B	
3.7	4	4	3	5	5	5		W	B		17.6	7	9	9	9	10	9	R	B	
5.7	6	6	5	6	6	6		H	B		18.6	5	-	7	8	7	7	B	B	
6.7	6	6	8	7	7	6		W	B		19.6	8	8	10	9	9	8	H	B	
7.8	9	9	7	9	9	8		H	B		21.6	7	9	8	10	10	10	H	B	
8.9	10	11	11	11	-	-		H	B		24.6	14	15	15	15	13	12	H	B	
9.6	14	10	11	10	8	9		H	B		25.7	13	15	15	12	13	12	H	B	
10.6	14	14	13	-	13	13		H	B		26.6	12	12	12	12	11	11	H	B	
12.7	6	6	6	7	7	7		H	B		27.9	5	7	6	8	10	8	H	B	
13.7	9	8	6	9	11	7		W	B		28.6	6	7	12	10	-	9	H	B	
15.6	7	7	6	7	7	8		W	B		29.6	10	10	9	8	8	7	H	B	
16.7	4	5	5	4	5	5		H	B		30.7	9	9	8	9	9	8	H	B	

- No observation taken at position angle indicated.

B = Billings

H = Hanson

W = Weber

Table 95

Particulars of Observations, Sacramento Peak, New Mexico

January - June 1954

Date GCT	Greenline threshold intensity at								Obs.	Meas.	Date GCT	Greenline threshold intensity at								Obs.	Meas.
	0°	45°	90°	135°	180°	225°	270°	315°				0°	45°	90°	135°	180°	225°	270°	315°		
1954																					
Jan. 1.7	7	6	6	7	7	7	7	7	B	Y	Apr. 1.7	7	5	5	5	5	6	6	6	S	Y
2.7	7	7	7	8	9	9	8	8	B	Y	2.7	5	5	5	6	6	7	7	7	S	Y
3.8	8	8	8	9	8	9	9	9	S	Y	3.7	8	8	8	7	8	8	7	7	S	Y
4.7	8	7	7	8	11	9	8	8	S	Y	4.8	5	5	5	5	0	7	7	6	R	Y
5.7	4	3	4	5	4	4	4	5	R	Y	6.7	4	4	4	4	4	4	4	4	R	Y
6.7	3	3	2	3	3	3	3	3	R	Y	7.7	3	3	4	3	3	3	3	3	S	Y
7.9	5	4	5	5	4	5	5	4	B	Y	15.8	12	13	14	15	>15	>15	15	13	S	Y
10.7	10	7	7	8	11	9	9	7	S	Y	18.7	11	10	11	11	10	9	14	11	R	Y
11.7	4	4	4	4	5	4	4	4	R	Y	19.8	13	14	14	14	>15	>15	>15	>15	S	Y
16.7	5	3	3	4	5	4	4	5	B	Y	20.7	11	10	10	11	11	10	1	-	S	Y
21.8	15	8	13	9	9	8	6	5	S	Y	23.8	>15	>15	>15	>15	>15	>15	>15	>15	R	Y
22.9	5	3	4	4	5	5	5	7	S	Y	27.8	8	10	11	12	14	12	13	9	S	Y
23.7	4	3	4	4	4	4	4	4	R	Y	28.7	5	6	5	6	6	5	5	5	R	Y
26.7	6	5	5	5	5	5	5	5	B	Y	May 2.6	3	3	3	3	5	4	3	3	S	Y
31.7	6	5	5	5	6	5	6	5	R/B	Y	3.7	8	9	8	8	8	8	8	8	Y	Y
Feb. 2.7	5	5	5	5	5	5	5	4	S	Y	4.7	9	9	9	9	10	9	9	9	R	Y
3.7	4	3	4	4	4	4	4	4	S	Y	5.7	9	9	10	10	10	8	7	9	R	Y
4.7	4	4	4	4	4	4	6	5	R	Y	6.7	11	10	9	10	11	11	10	9	R	Y
5.7	5	6	5	5	6	5	6	5	R	Y	8.7	12	13	12	13	13	11	11	11	S	Y
6.9	8	8	8	9	10	10	10	11	B	Y	10.7	13	12	12	12	12	12	11	11	S	Y
7.7	6	5	6	6	7	6	6	7	B	Y	11.8	10	10	12	14	14	13	13	14	R	Y
8.7	4	4	4	5	5	4	4	4	S	Y	12.8	8	8	8	9	9	8	8	8	R	Y
9.9	5	5	5	5	6	8	5	6	S	Y	19.7	8	8	8	8	7	8	7	7	R	Y
10.6	10	11	10	11	12	11	11	11	R	Y	23.6	7	7	7	6	7	7	6	6	R	Y
11.7	4	3	3	3	4	4	4	4	R	Y	25.6	8	8	8	8	8	7	7	8	R	Y
13.7	7	6	6	6	6	6	6	6	B	Y	26.7	9	9	9	9	9	10	10	10	S	Y
14.7	5	5	5	5	5	5	5	5	S	Y	28.7	7	7	7	8	8	8	8	8	S	Y
16.7	8	7	5	7	7	7	8	9	B	Y	30.7	10	10	10	10	10	10	9	9	S	Y
17.8	8	7	9	8	10	9	7	9	R	Y	31.7	6	6	7	7	7	6	6	5	S	Y
18.7	7	7	7	7	7	7	7	7	B	Y	May 1.7	10	10	10	9	10	10	9	9	S	Y
19.8	10	3	10	10	14	15	14	>15	R	Y	2.7	10	10	10	9	10	9	9	10	S	Y
20.7	5	5	5	5	5	5	5	5	S	Y	5.7	8	7	8	8	7	7	6	9	S	Y
21.7	4	5	5	5	4	5	5	5	S	Y	7.6	4	4	5	5	4	5	5	4	S	Y
22.8	4	5	5	4	5	5	5	5	R	Y	8.7	12	12	12	12	12	12	12	12	S	Y
24.7	9	7	6	8	8	7	8	7	D	Y	9.7	8	8	8	8	9	8	8	7	S	Y
25.7	4	4	3	4	5	5	5	4	B	Y	11.7	13	11	11	10	12	11	12	15	M	Y
26.7	7	8	8	8	9	9	9	9	S	Y	12.7	15	13	12	13	13	11	12	14	M	Y
28.7	4	4	4	4	4	4	4	4	R	Y	14.7	5	5	5	7	6	6	6	5	M	Y
Mar. 1.7	3	3	3	3	3	3	4	4	R	Y	15.7	9	8	8	8	10	10	9	8	S	Y
4.9	5	4	3	4	-	-	-	-	S	Y	16.7	7	8	7	7	7	7	7	8	S	Y
5.8	5	5	5	5	5	5	5	6	R	Y	17.7	9	8	9	9	10	9	9	8	S	Y
6.7	4	4	4	4	6	7	5	>15	R	Y	20.7	9	9	9	11	15	11	9	9	M	Y
7.7	6	6	6	6	6	6	6	6	R	Y	23.8	9	8	7	6	5	6	7	7	S	Y
14.8	11	11	12	14	14	14	14	14	S	Y	28.6	7	7	6	7	6	6	6	6	M	Y
17.8	8	8	8	6	7	7	7	7	R	Y	29.7	10	10	11	11	15	-	-	-	M	Y
25.8	12	11	14	13	12	12	11	11	R	Y	30.7	5	6	5	5	6	6	6	6	M	Y
26.7	4	4	4	4	4	5	5	4	R	Y											
27.7	4	4	4	5	4	4	4	4	S	Y											
31.7	5	4	4	4	5	4	3	5	R	Y											

- No observation taken at position angle indicated.

B = Bergstrom

M = Mitchell

R = Ramsey

S = Schneble

Y = Yu

Table 96Zurich Provisional Relative Sunspot NumbersJune 1954

Date	R _Z *	Date	R _Z *
1	0	17	0
2	0	18	0
3	0	19	0
4	0	20	0
5	0	21	0
6	0	22	0
7	0	23	0
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	Mean:	0.2
16	0		

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

Table 97
American Relative Sunspot Numbers
May 1954

Date	$R_{\frac{1}{2}}$	Date	$R_{\frac{1}{2}}$
1	0	17	0
2	0	18	0
3	0	19	0
4	0	20	0
5	1	21	0
6	0	22	0
7	0	23	0
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	1	30	0
15	1	31	0
16	0	Mean:	0.2

Table 98Solar Flares, June 1954

No solar flares were reported for the month of June.

Table 99

Indices of Geomagnetic Activity for May 1954

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

Table 100Sudden Ionosphere Disturbances Observed at Washington, D. C.June 1954

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

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.

GRAPHS OF IONOSPHERIC DATA

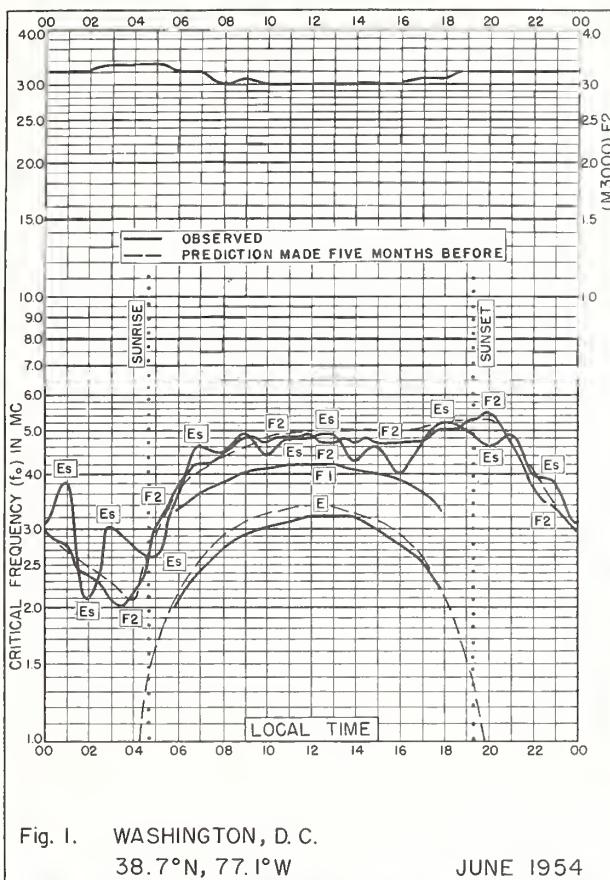


Fig. 1. WASHINGTON, D.C.

38.7°N, 77.1°W

JUNE 1954

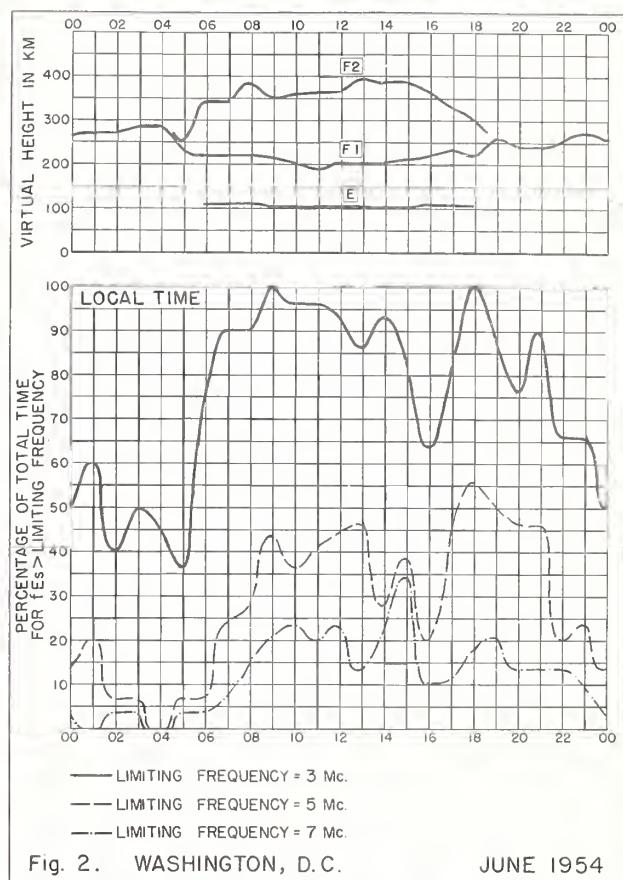


Fig. 2. WASHINGTON, D.C.

JUNE 1954

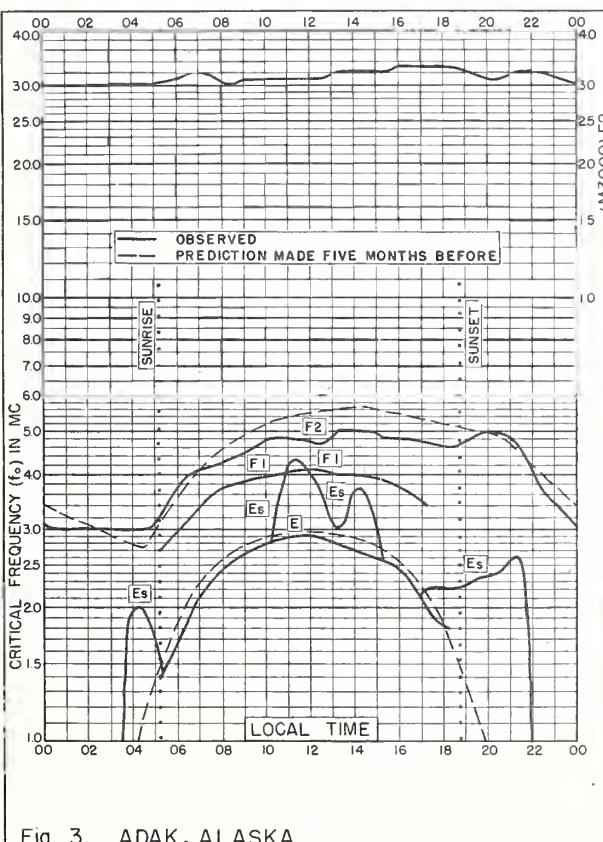


Fig. 3. ADAK, ALASKA

51.9°N, 176.6°W

APRIL 1954

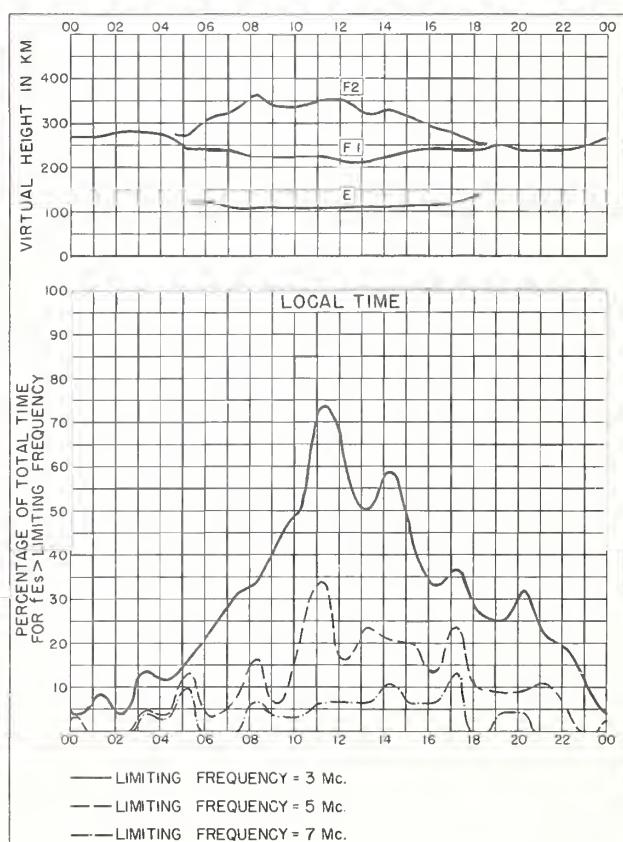
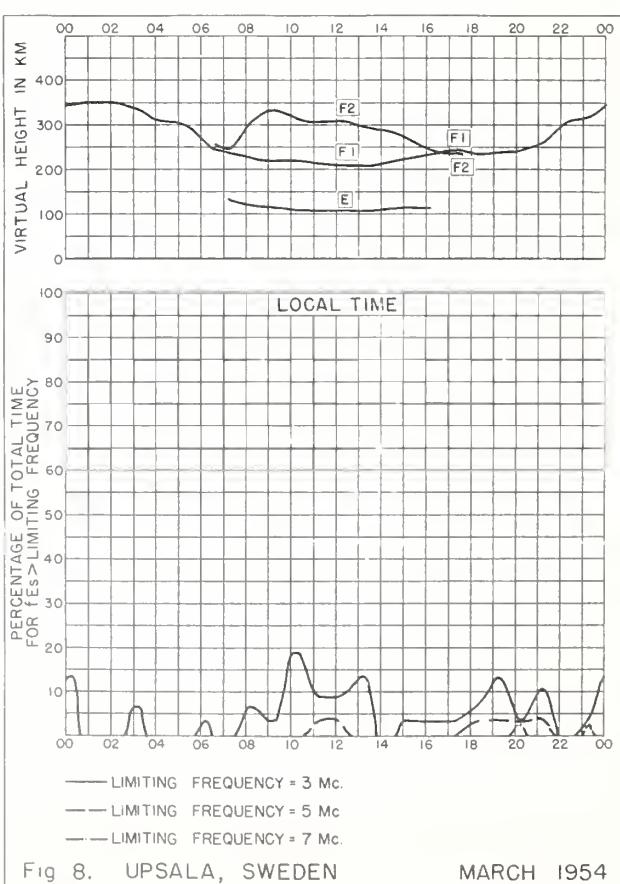
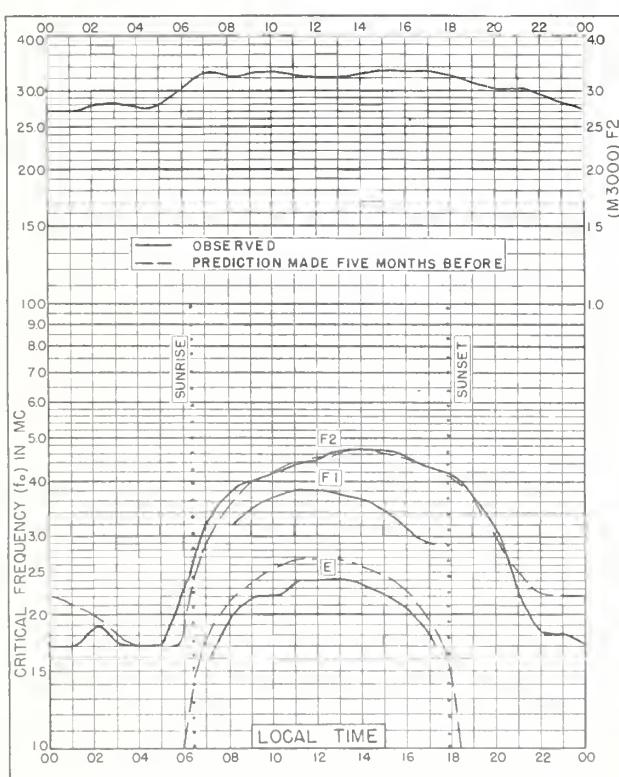
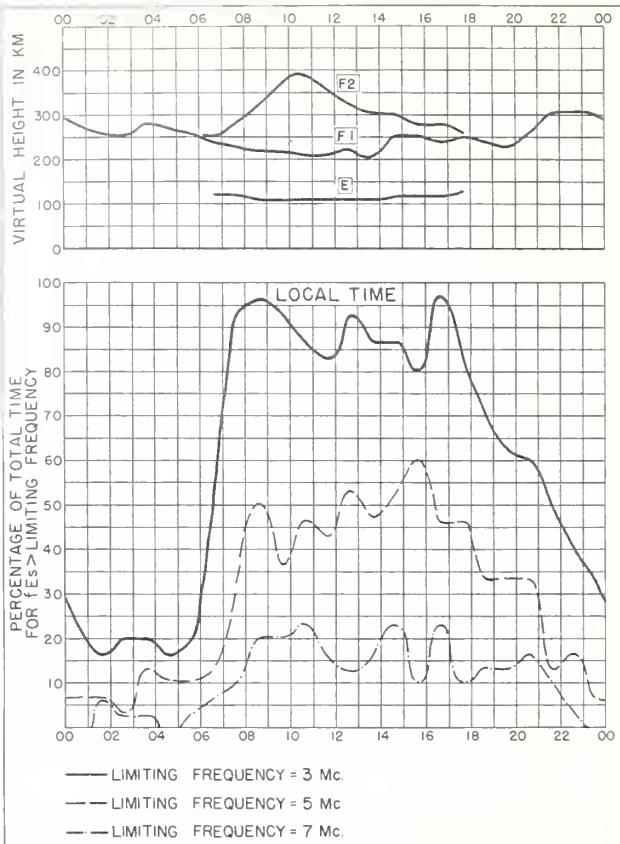
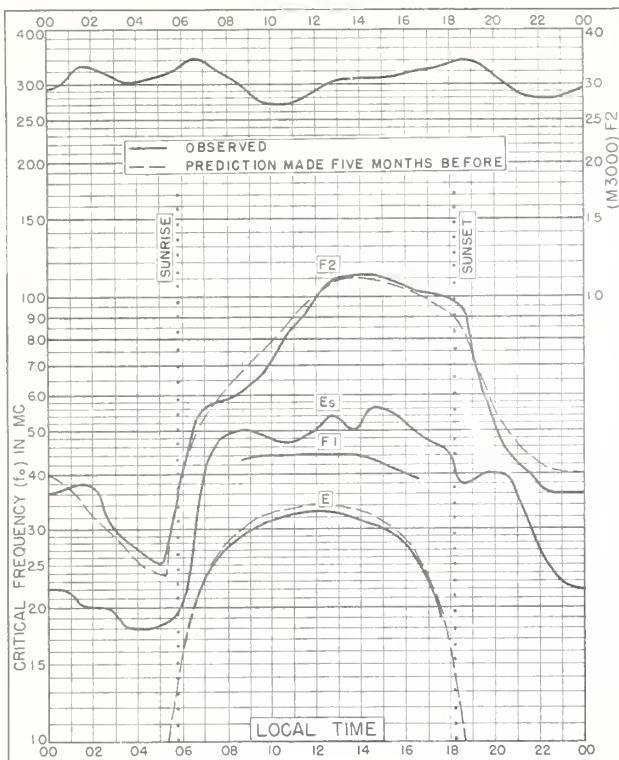
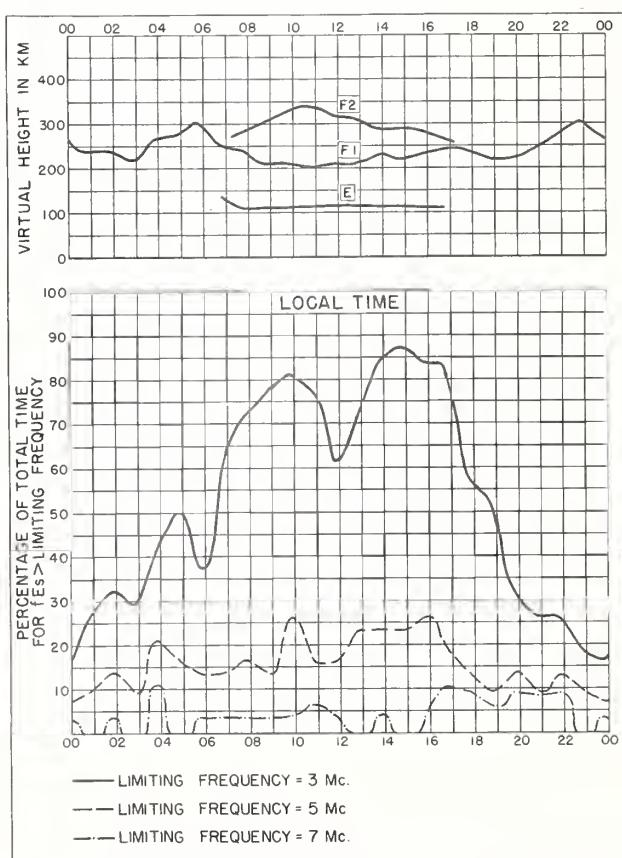
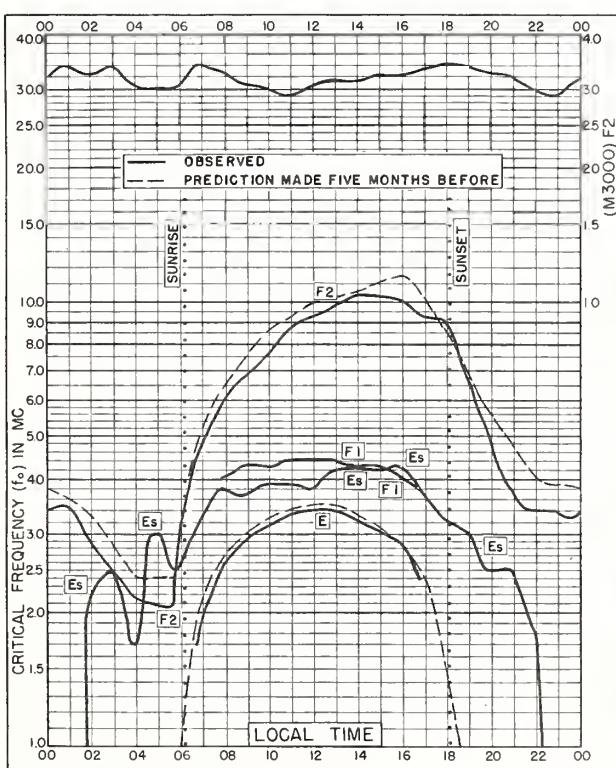
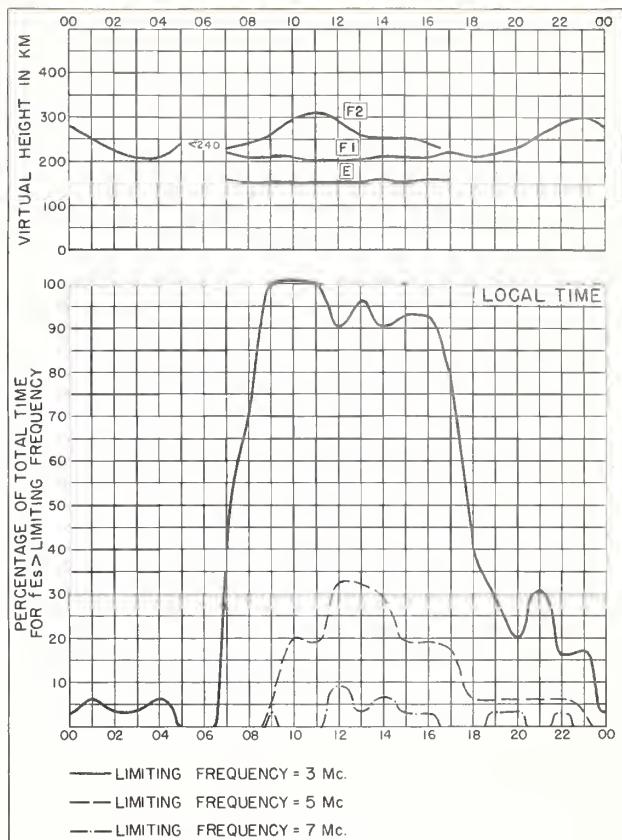
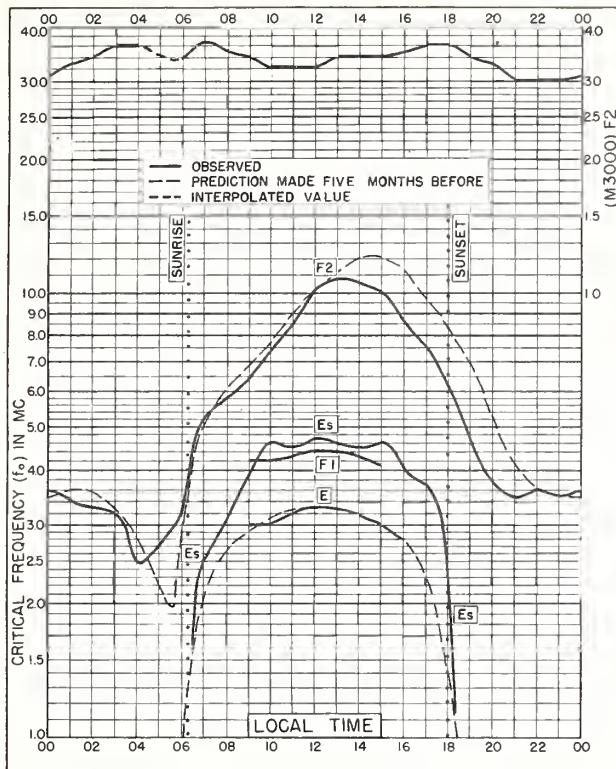


Fig. 4. ADAK, ALASKA

APRIL 1954





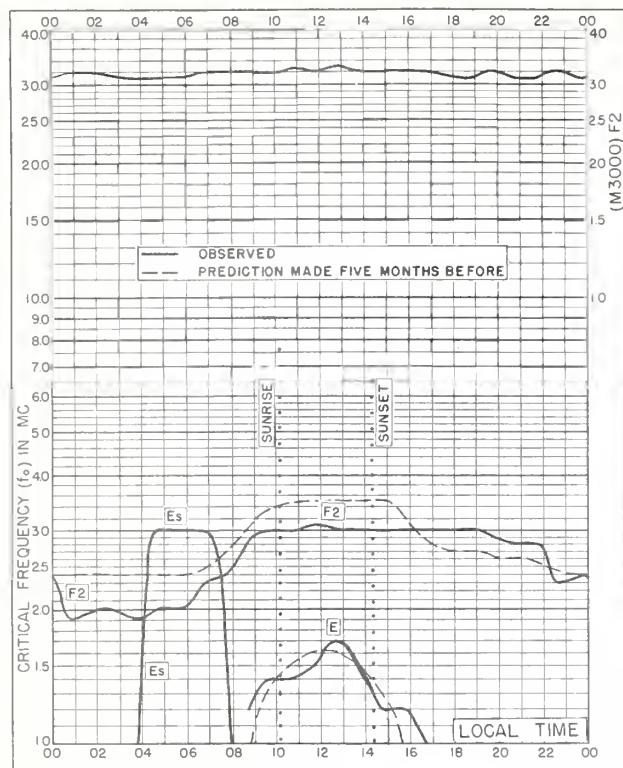


Fig. 13. RESOLUTE BAY, CANADA
74.7°N, 94.9°W FEBRUARY 1954

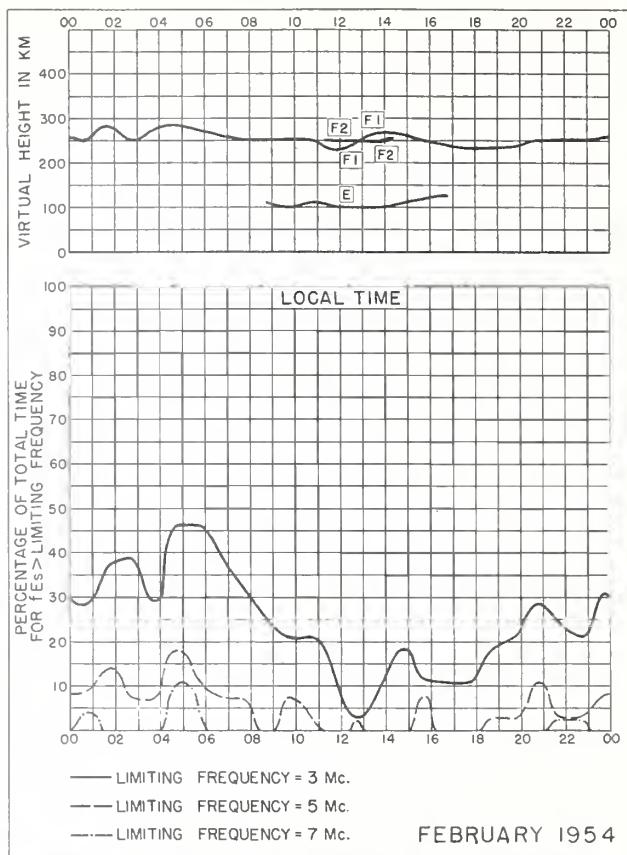


Fig. 14. RESOLUTE BAY, CANADA FEBRUARY 1954

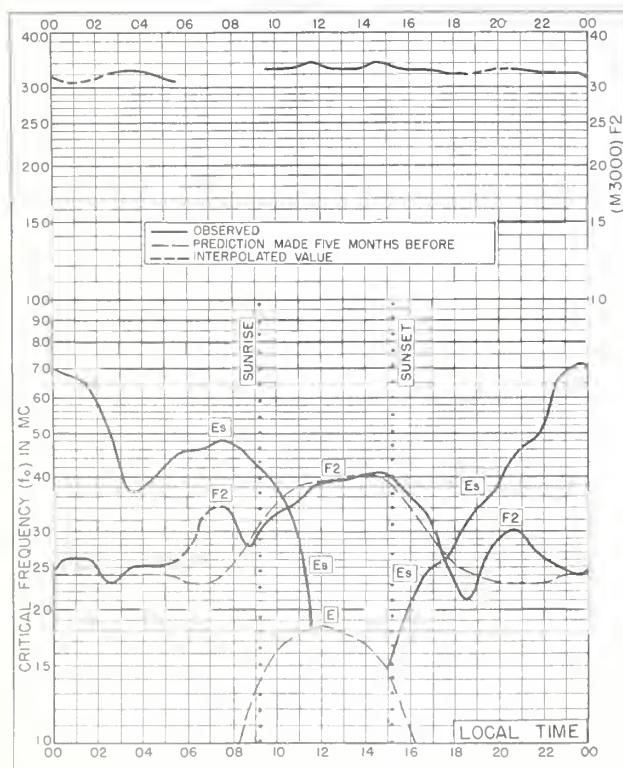


Fig. 15. POINT BARROW, ALASKA
71.3°N, 156.8°W FEBRUARY 1954

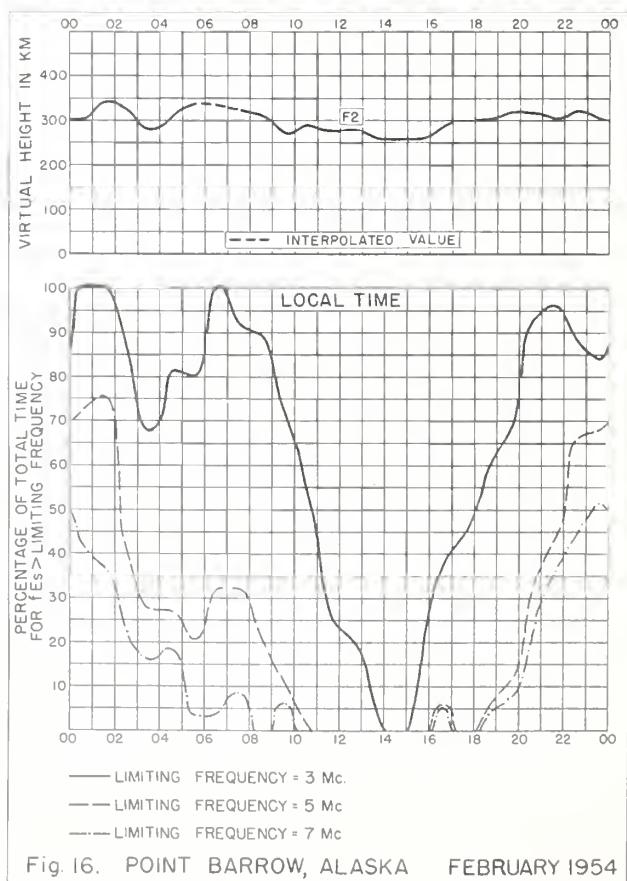
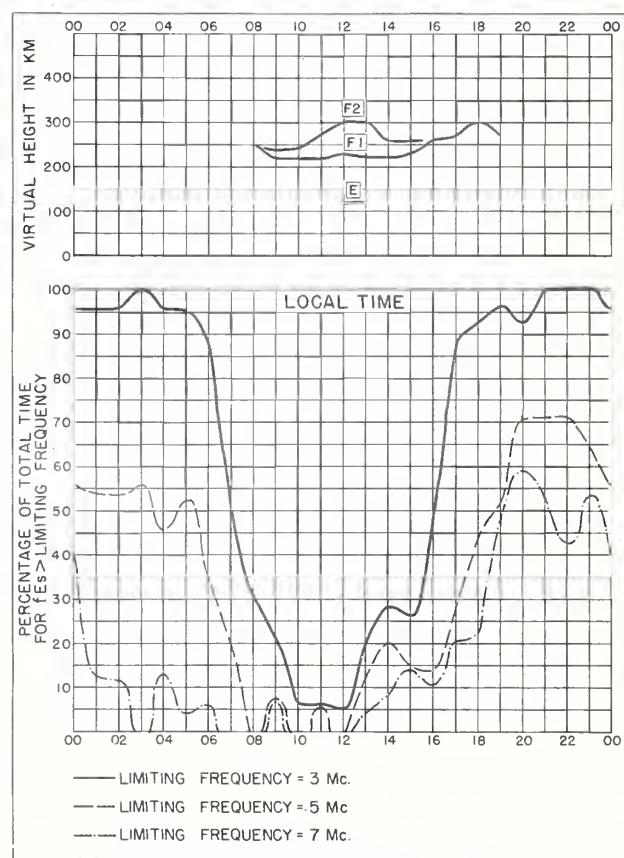
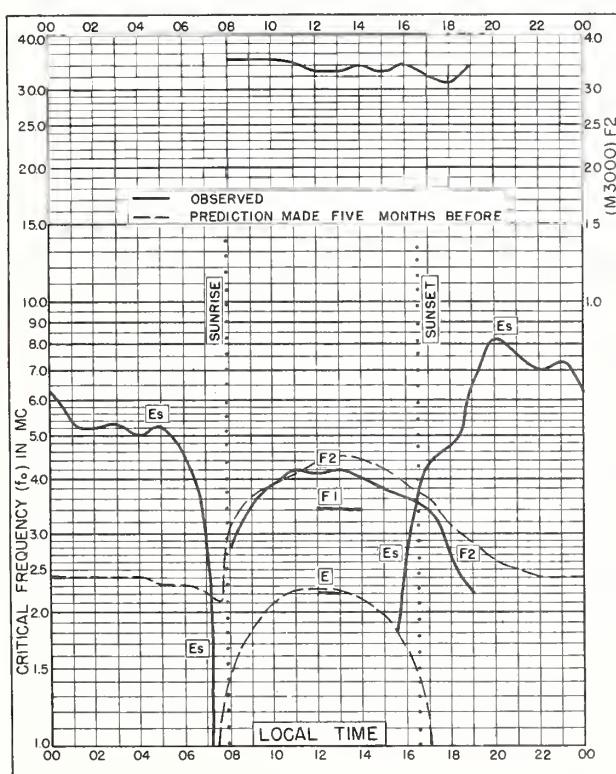
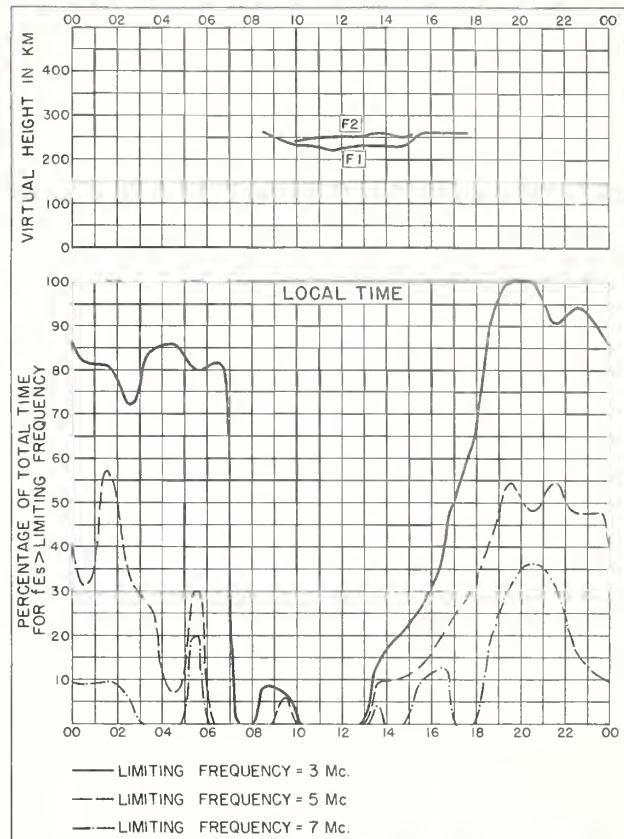
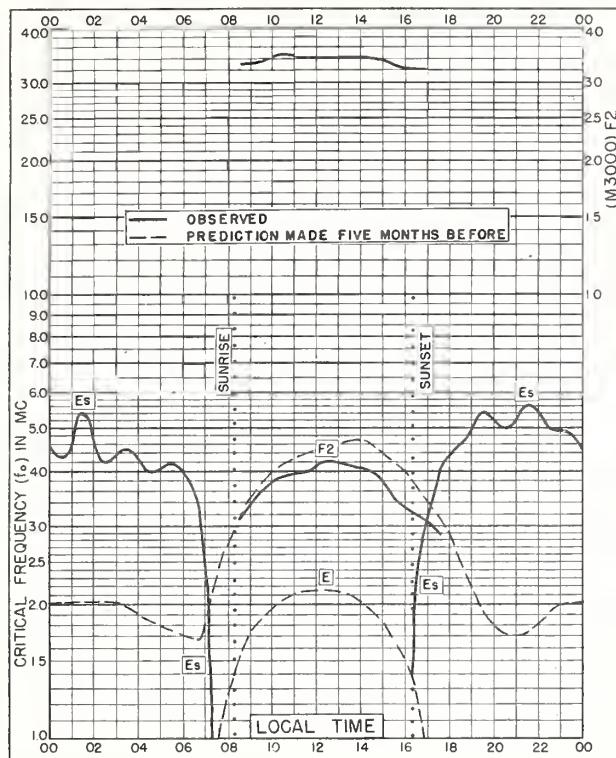


Fig. 16. POINT BARROW, ALASKA FEBRUARY 1954



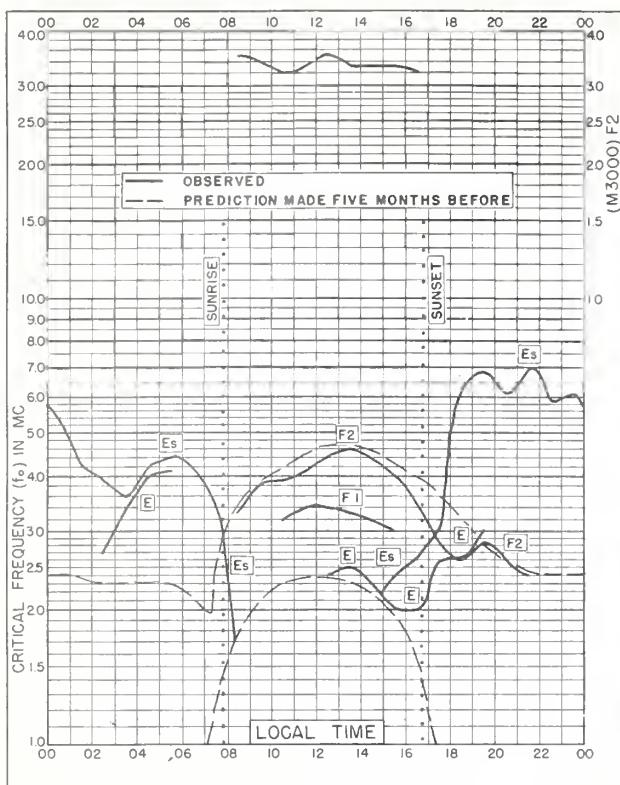


Fig. 21. FORT CHIMO, CANADA
58.1°N, 68.3°W FEBRUARY 1954

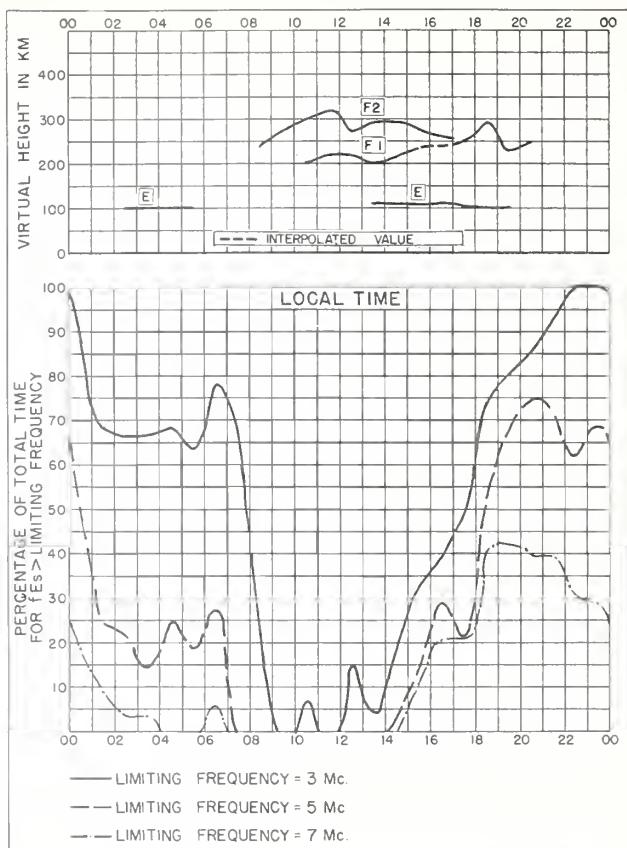


Fig. 22. FORT CHIMO, CANADA FEBRUARY 1954

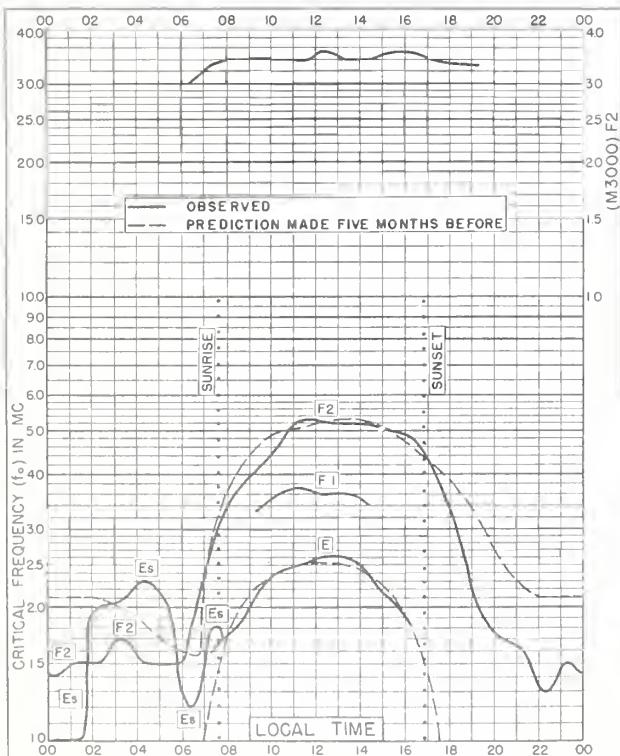
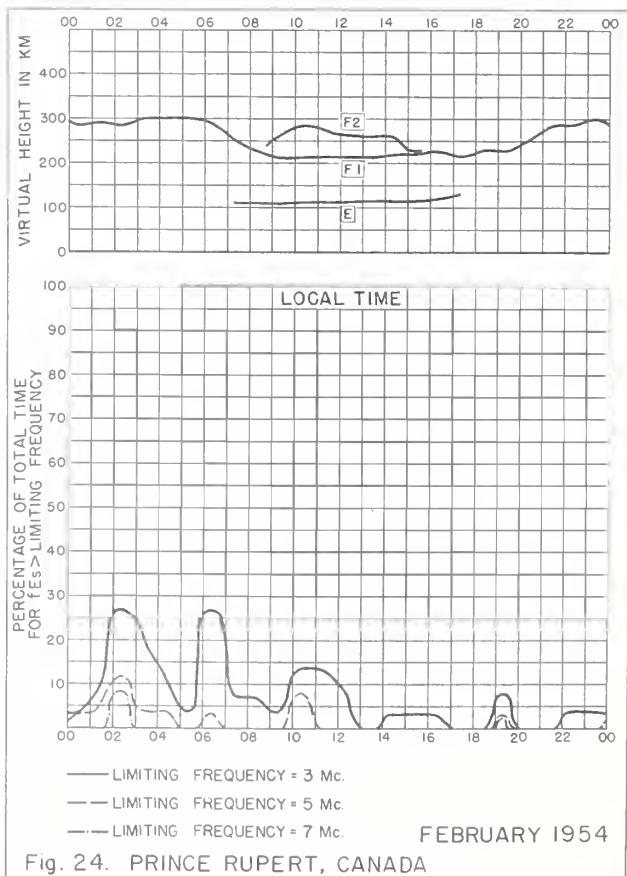


Fig. 23. PRINCE RUPERT, CANADA
54.3°N, 130.3°W FEBRUARY 1954



FEBRUARY 1954
Fig. 24. PRINCE RUPERT, CANADA

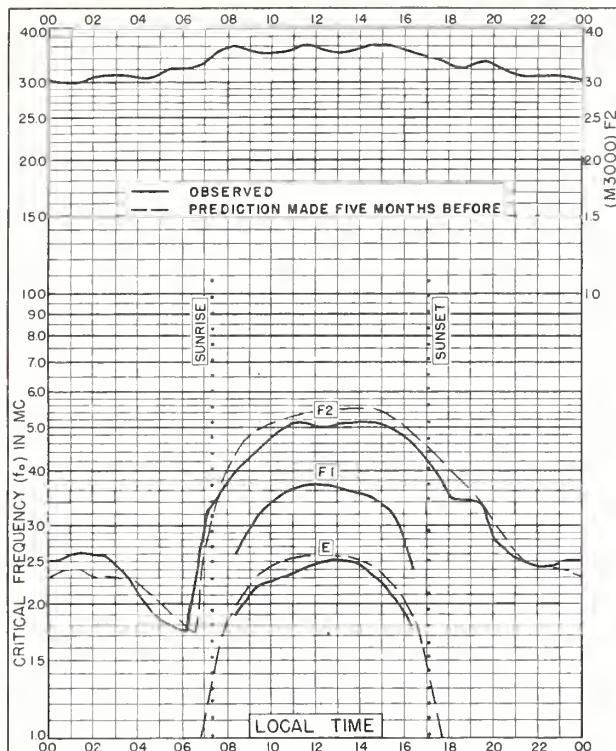


Fig. 25. De BILT, HOLLAND
 52.1°N, 5.2°E FEBRUARY 1954

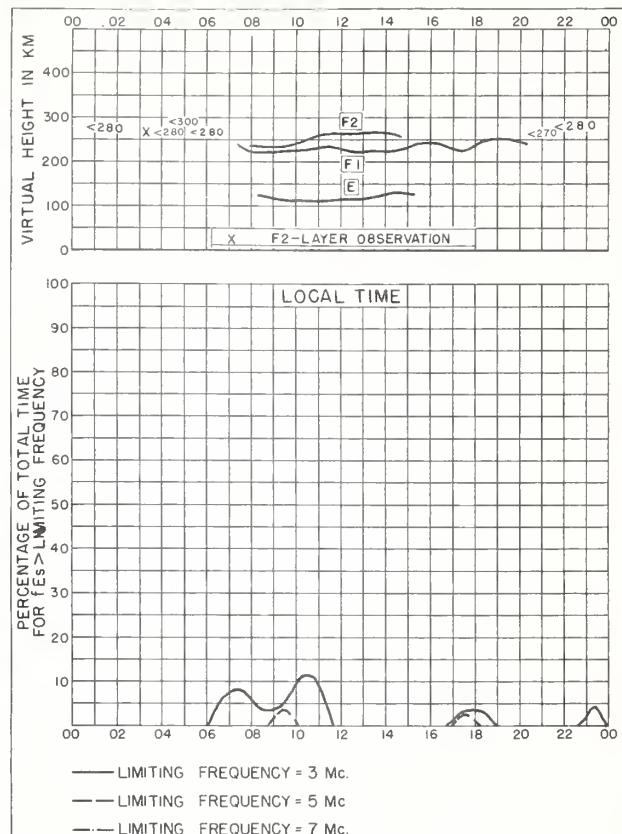


Fig. 26. De BILT, HOLLAND FEBRUARY 1954

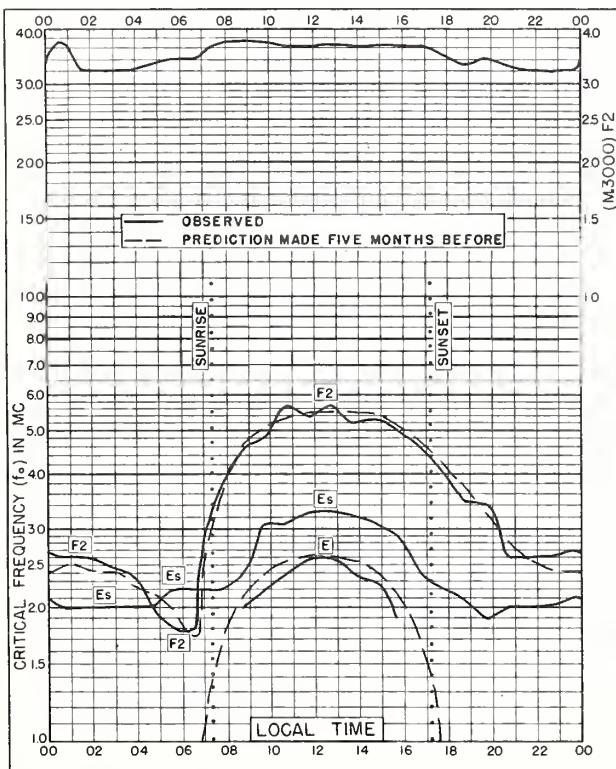


Fig. 27. LINDAU/HARZ, GERMANY
 51.6°N, 10.1°E FEBRUARY 1954

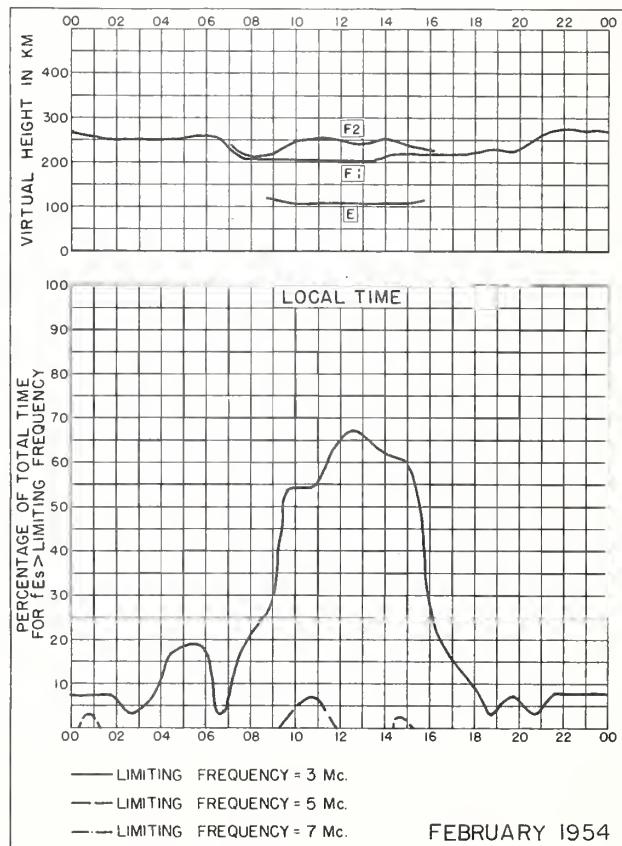


Fig. 28. LINDAU/HARZ, GERMANY

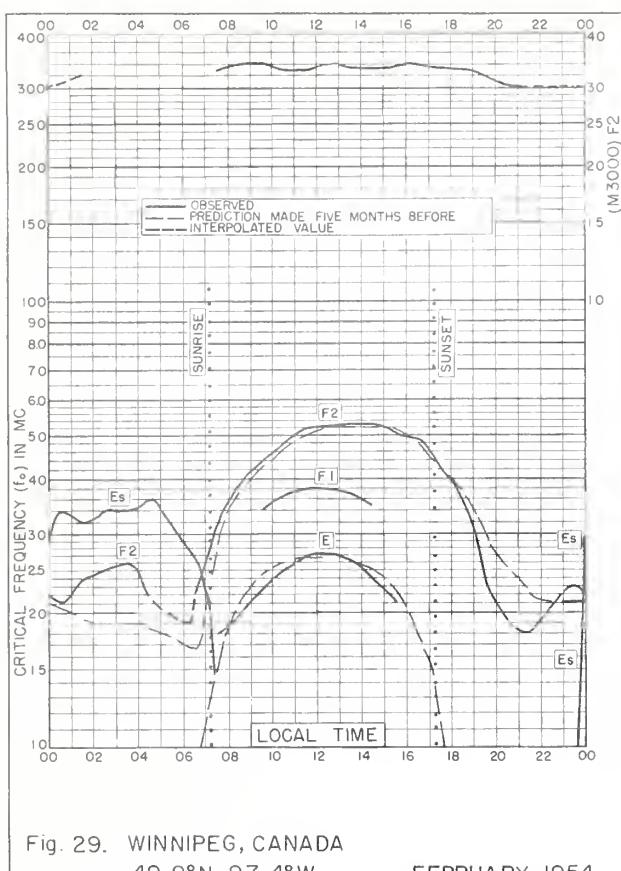


Fig. 29. WINNIPEG, CANADA
49.9°N, 97.4°W FEBRUARY 1954

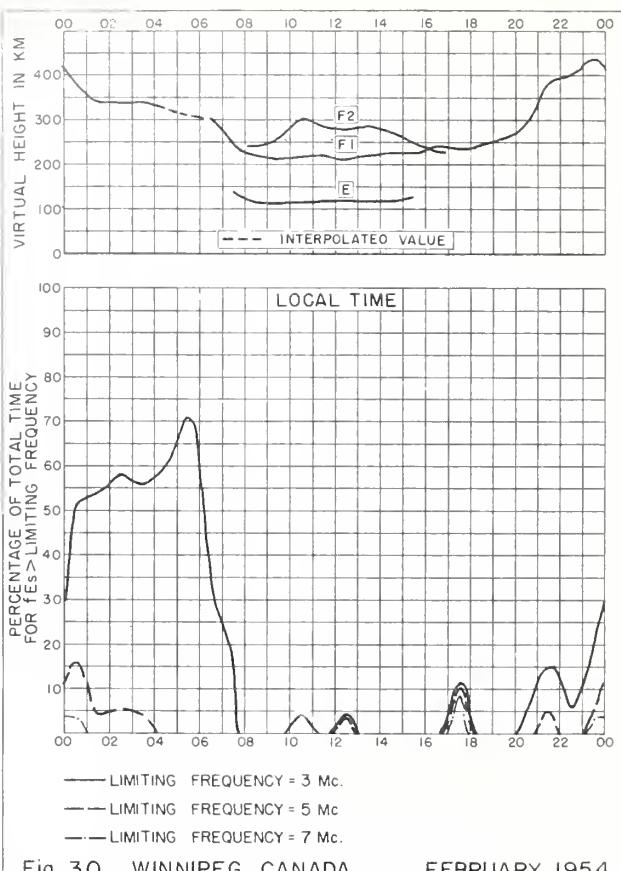


Fig. 30. WINNIPEG, CANADA FEBRUARY 1954

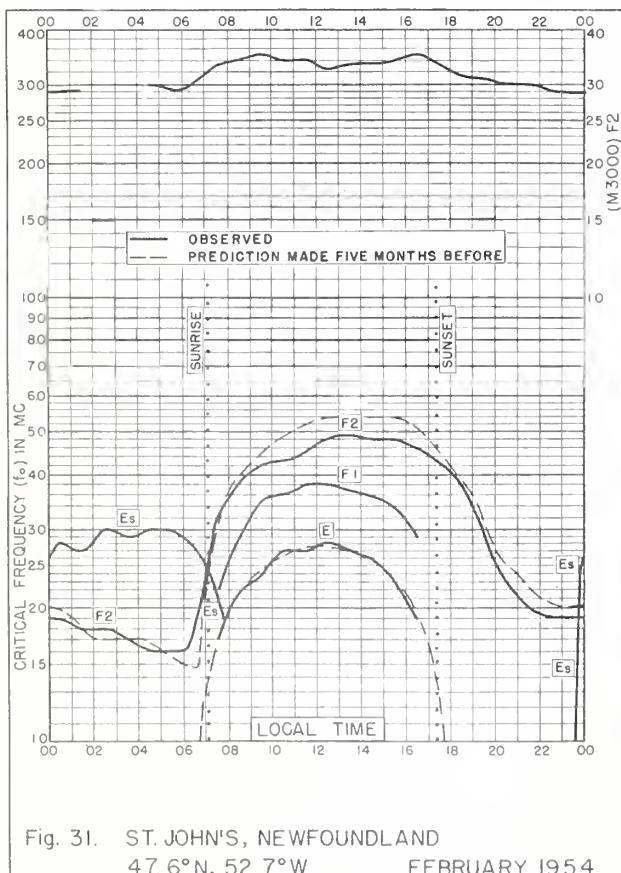


Fig. 31. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W FEBRUARY 1954

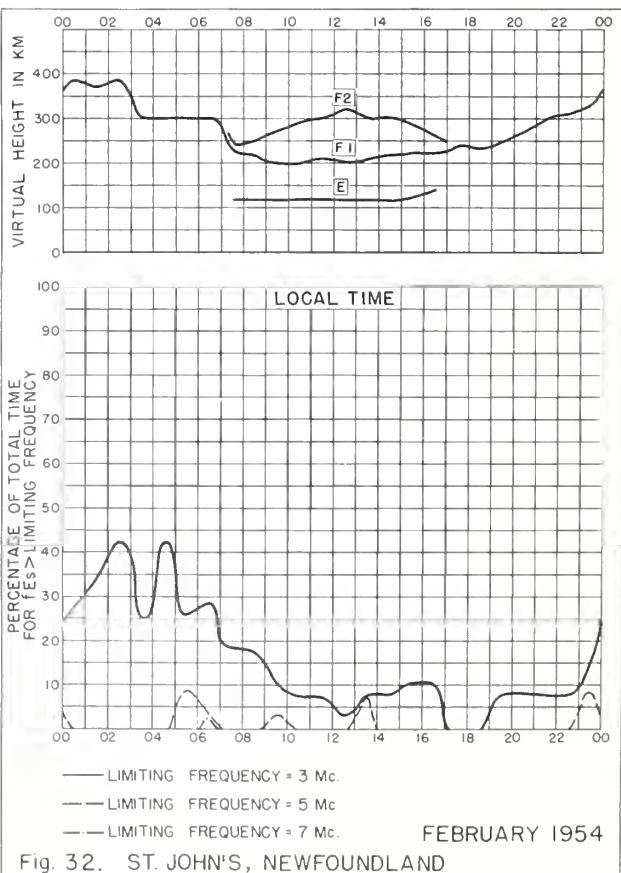


Fig. 32. ST. JOHN'S, NEWFOUNDLAND

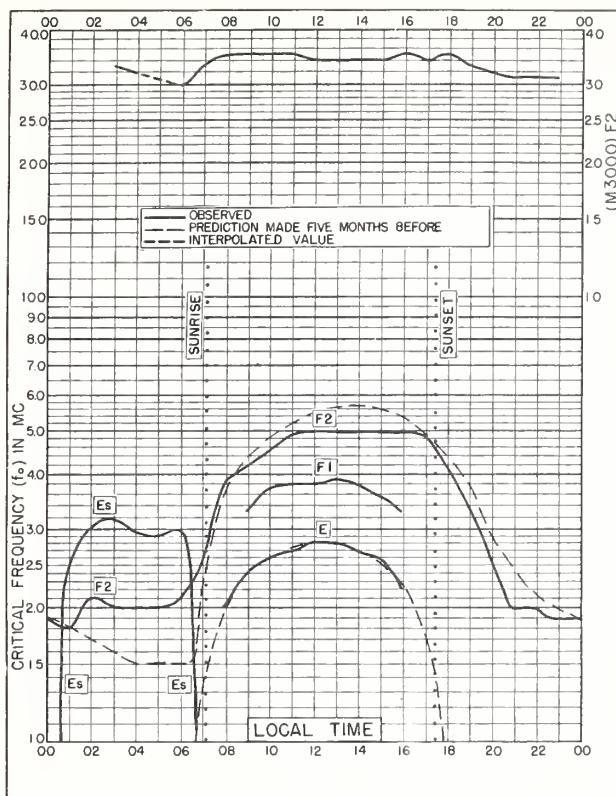


Fig. 33. OTTAWA, CANADA
45.4°N, 75.9°W FEBRUARY 1954

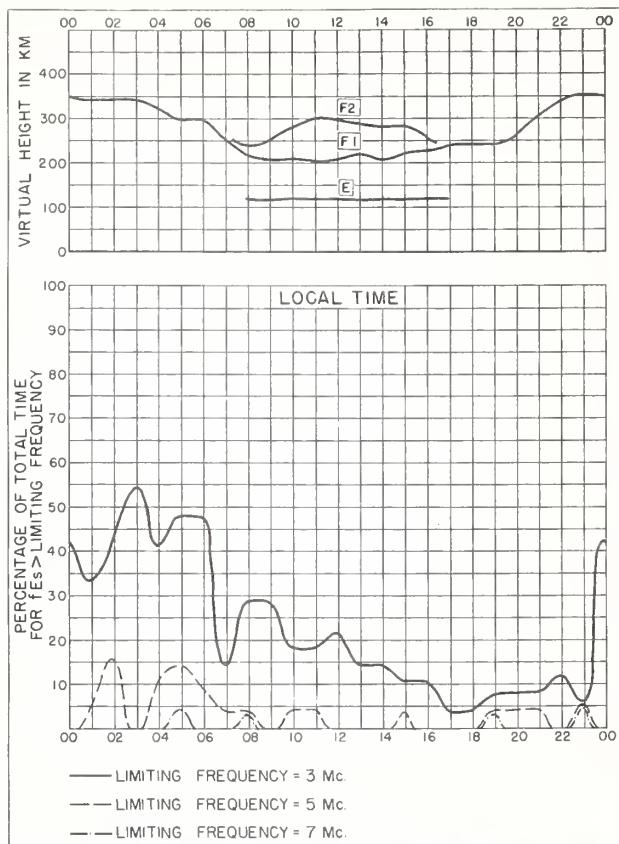


Fig. 34. OTTAWA, CANADA FEBRUARY 1954

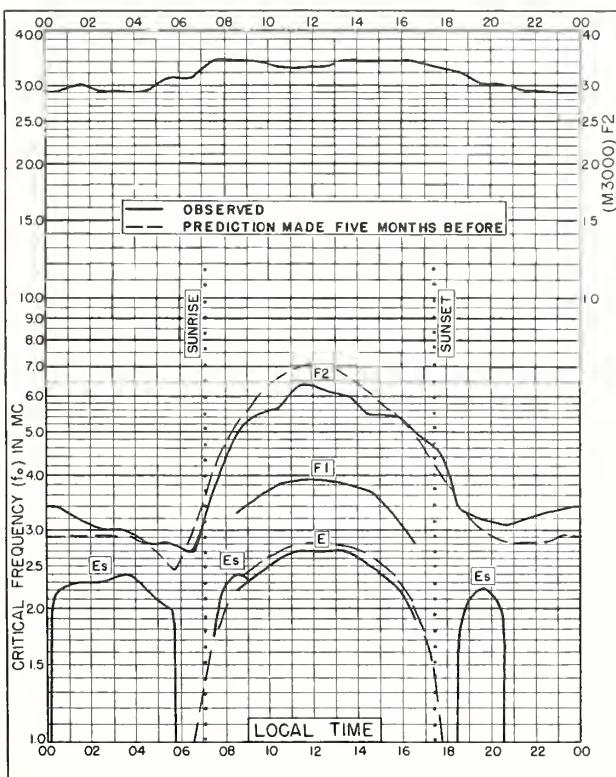


Fig. 35. WAKKANAI, JAPAN
45.4°N, 141.7°E FEBRUARY 1954

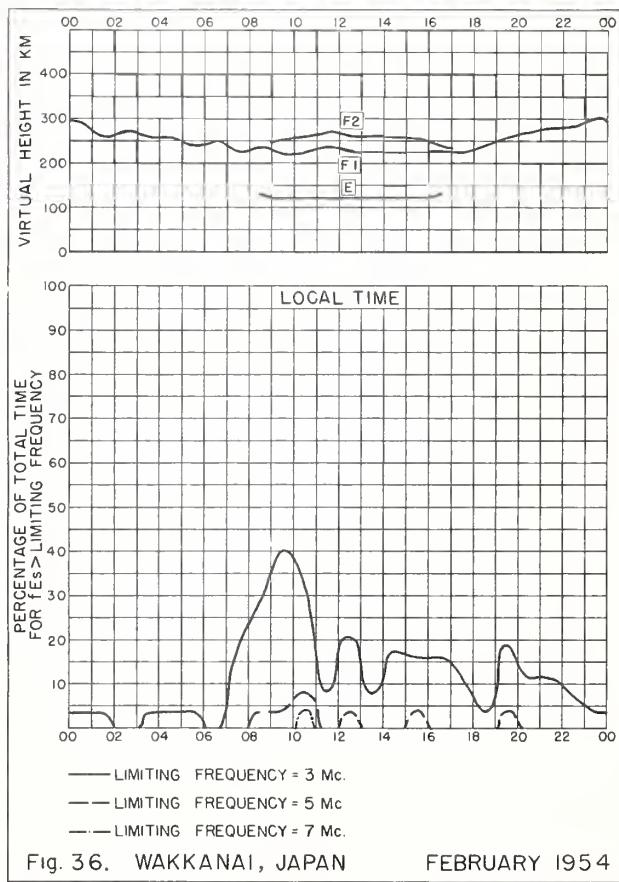


Fig. 36. WAKKANAI, JAPAN FEBRUARY 1954

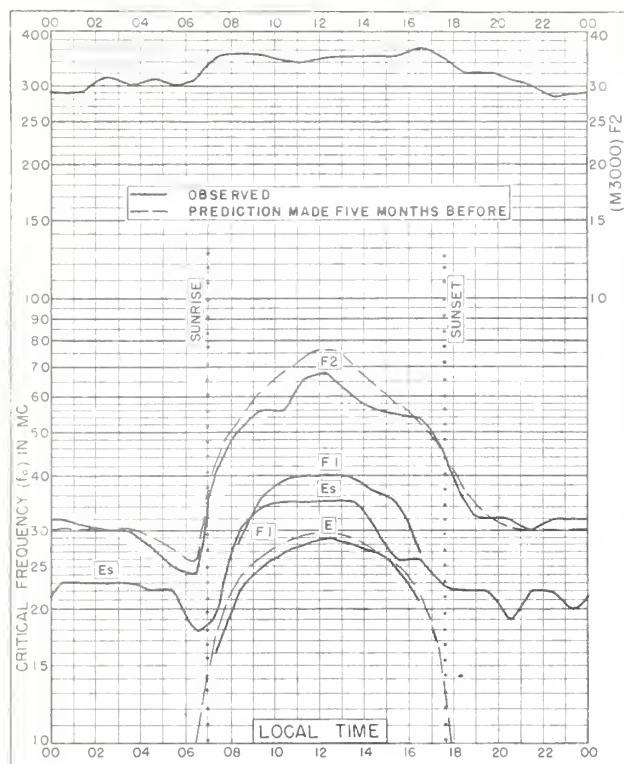


Fig. 37. AKITA, JAPAN
39.7°N, 140.1°E FEBRUARY 1954

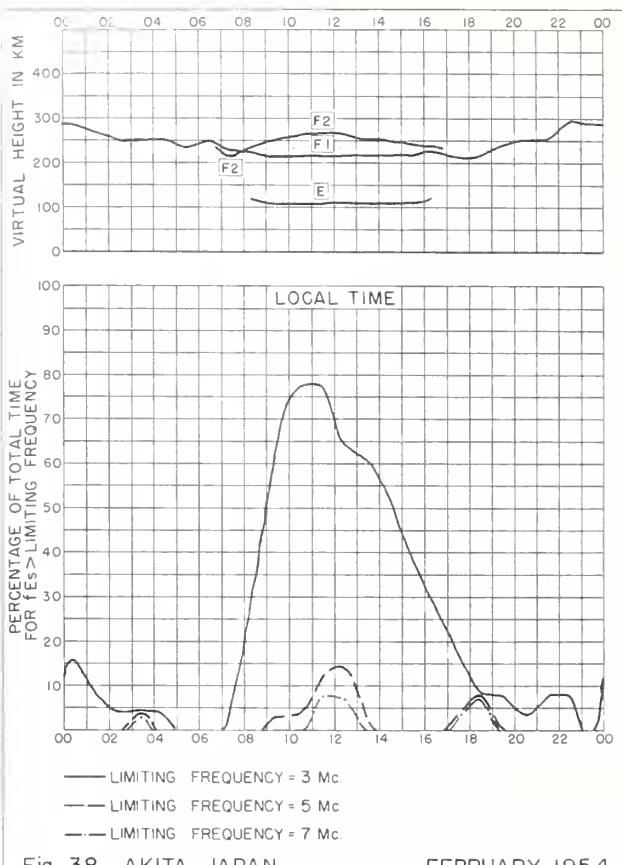


Fig. 38. AKITA, JAPAN FEBRUARY 1954

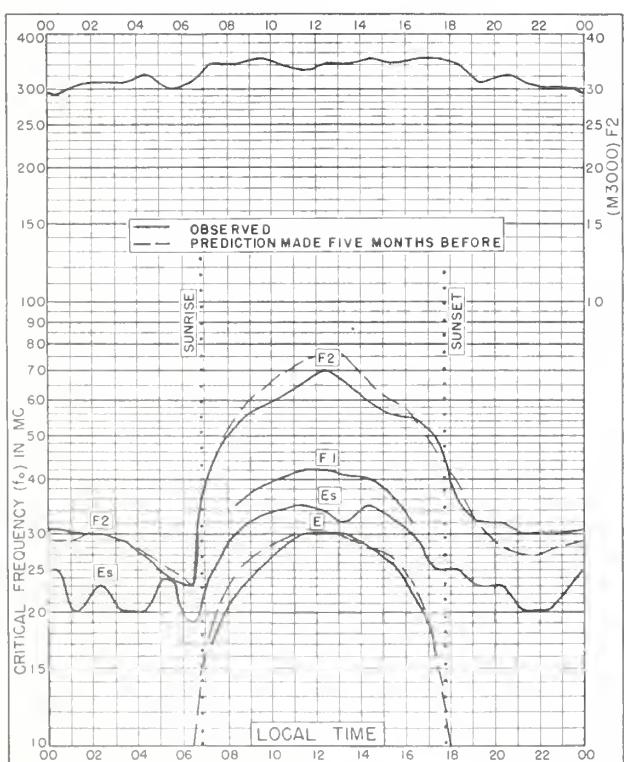


Fig. 39. TOKYO, JAPAN
35.7°N, 139.5°E FEBRUARY 1954

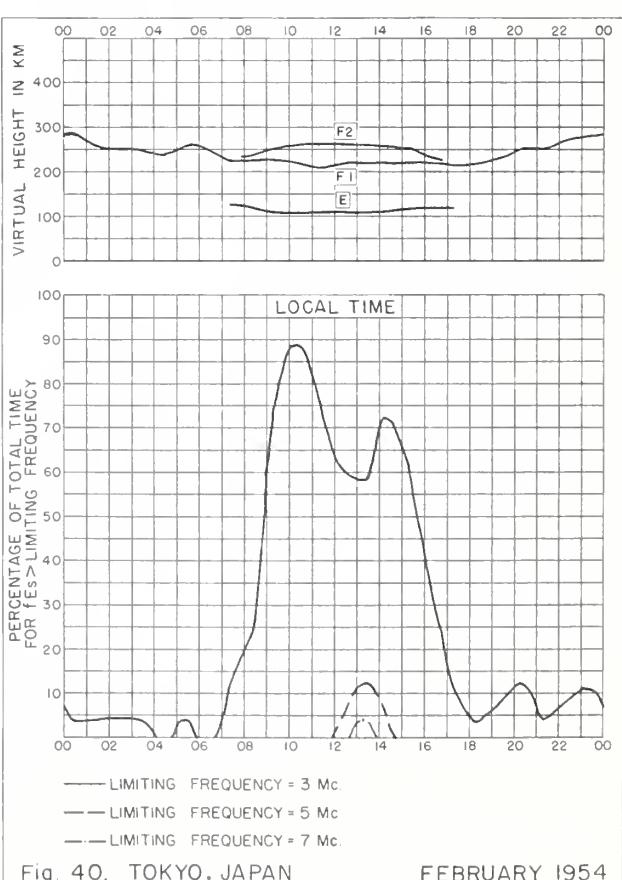
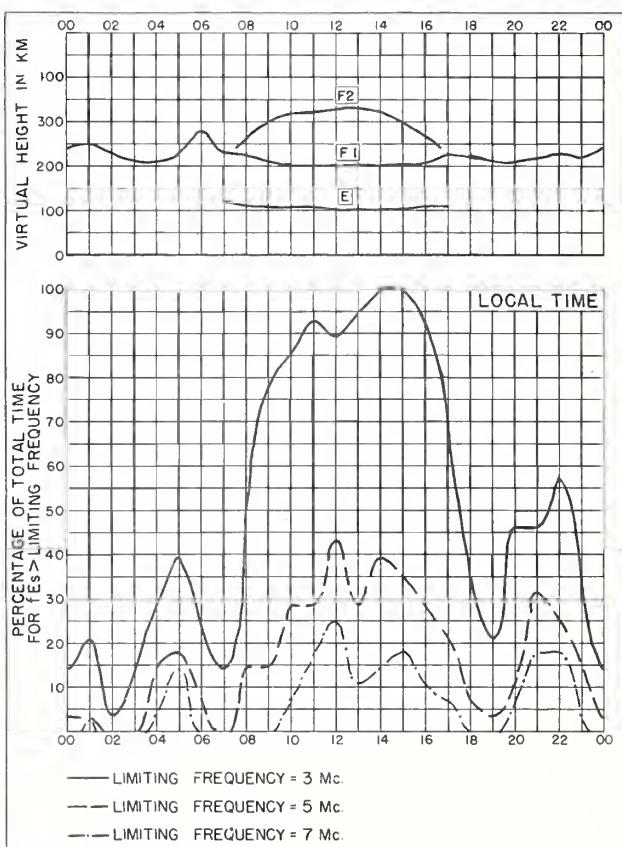
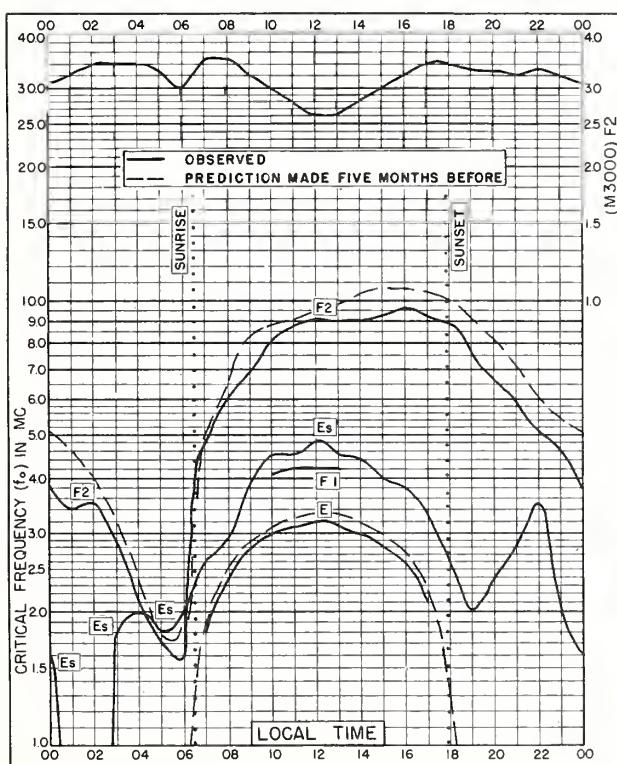
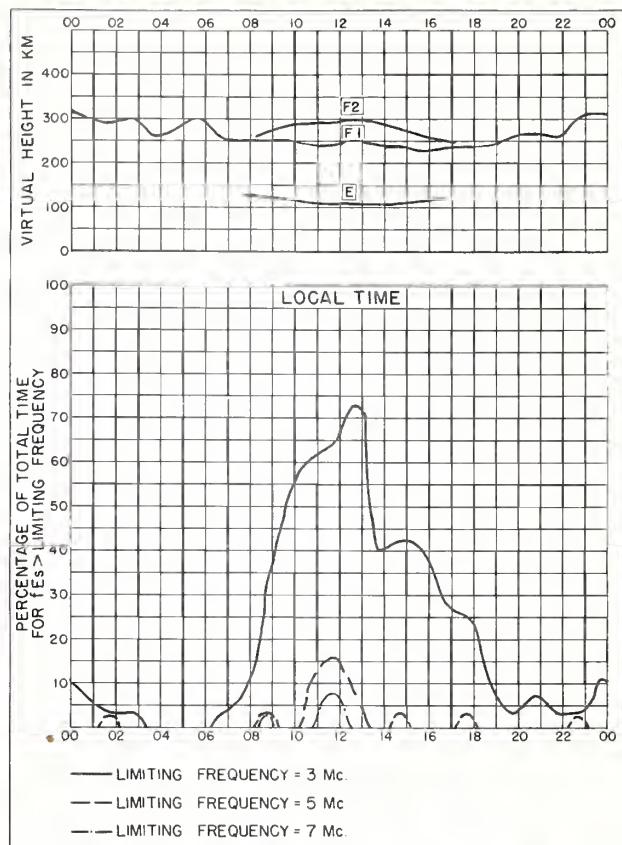
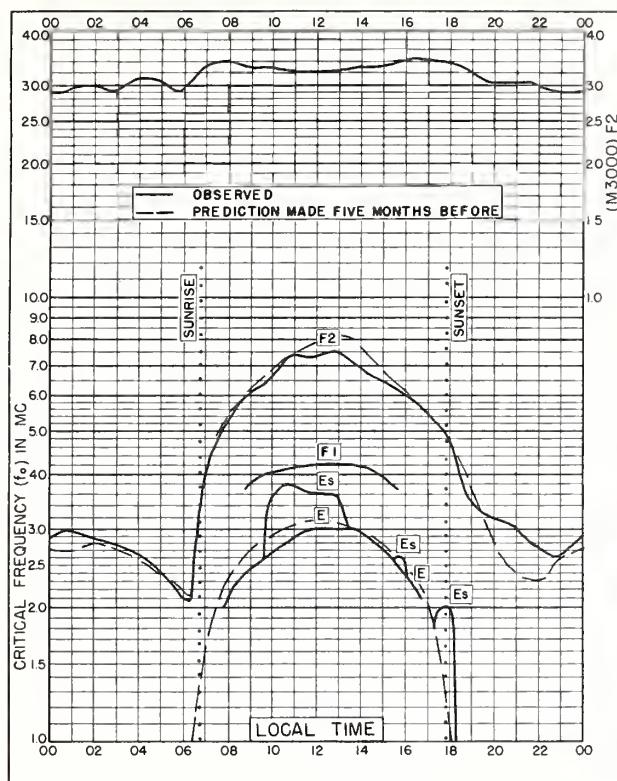


Fig. 40. TOKYO, JAPAN FEBRUARY 1954



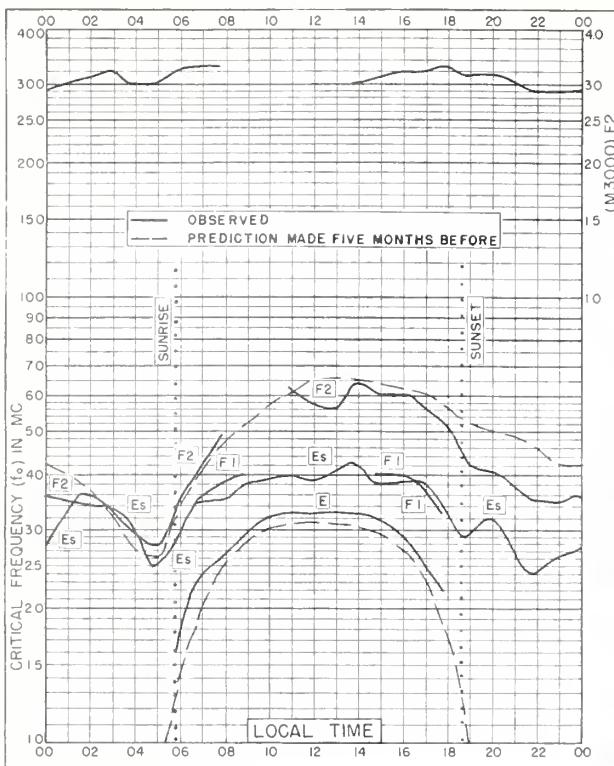
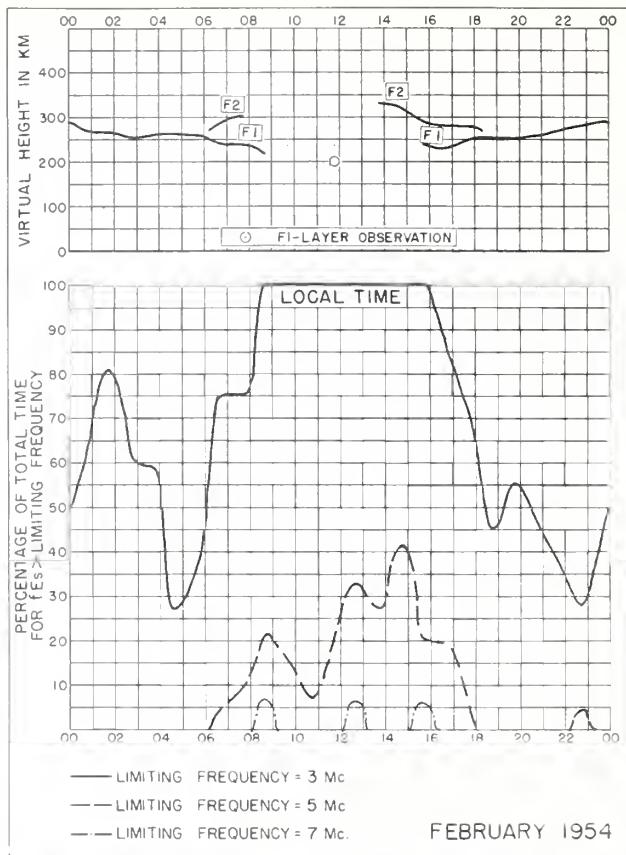


Fig. 45. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E FEBRUARY 1954



FEBRUARY 1954
Fig. 46. WATHEROO, W. AUSTRALIA

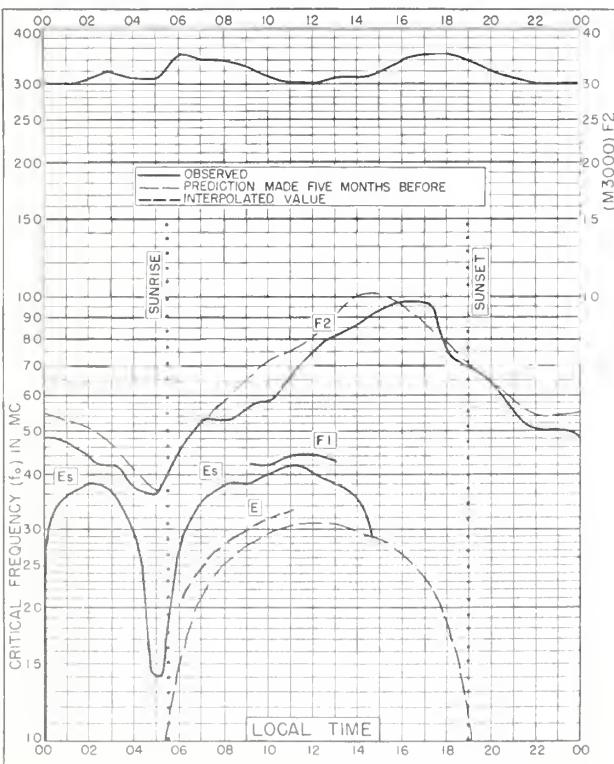
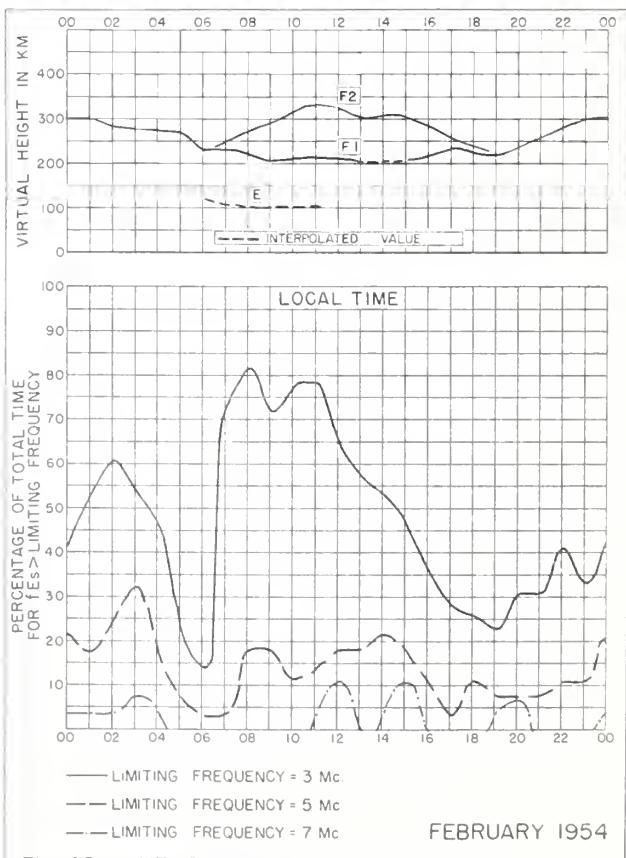
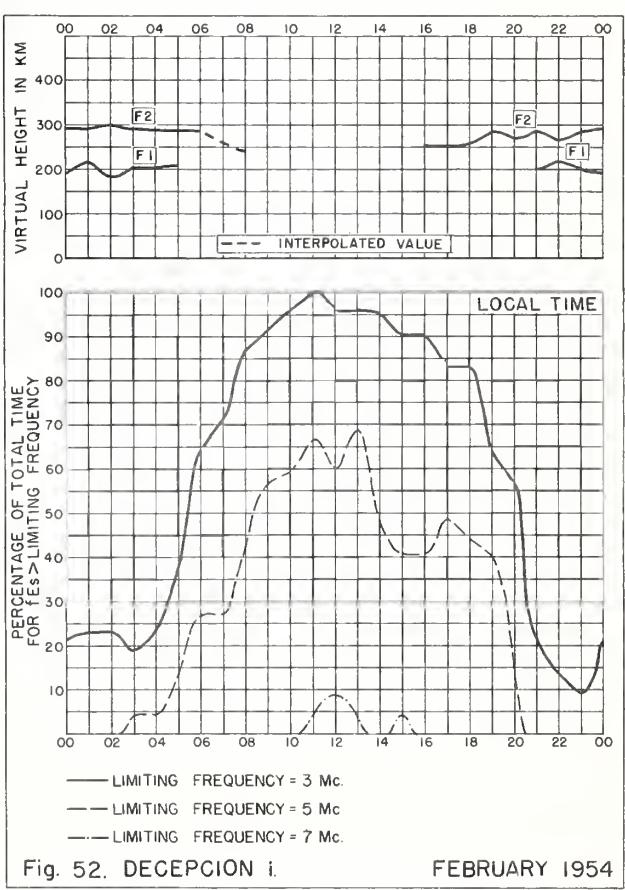
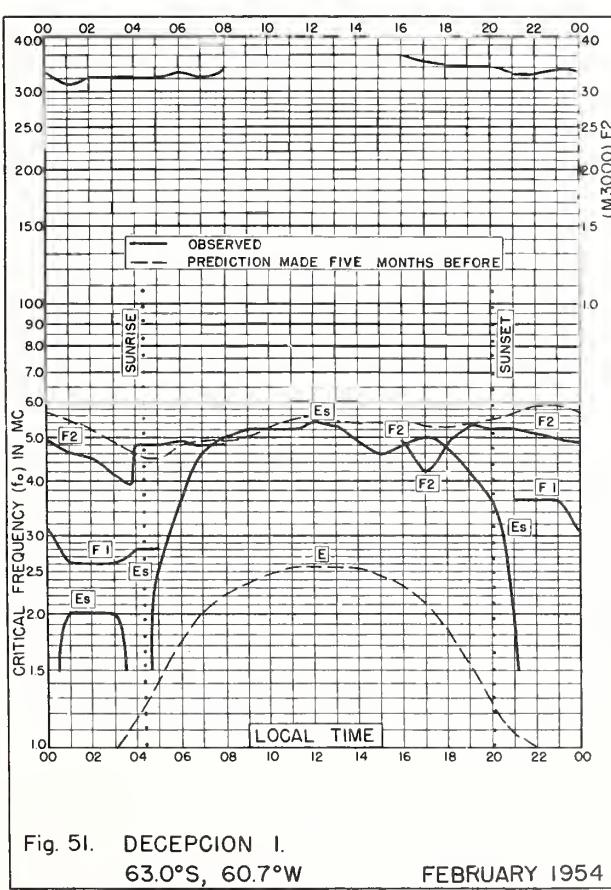
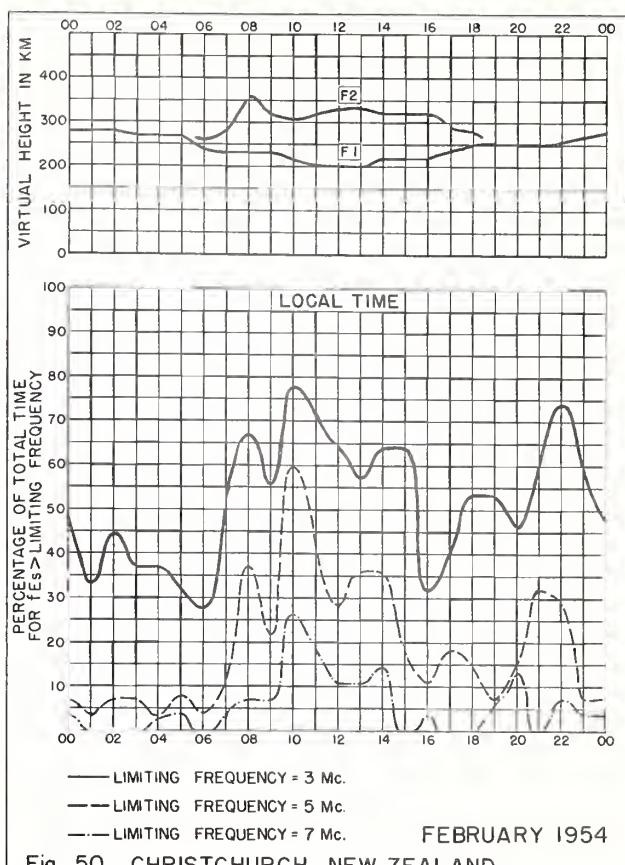
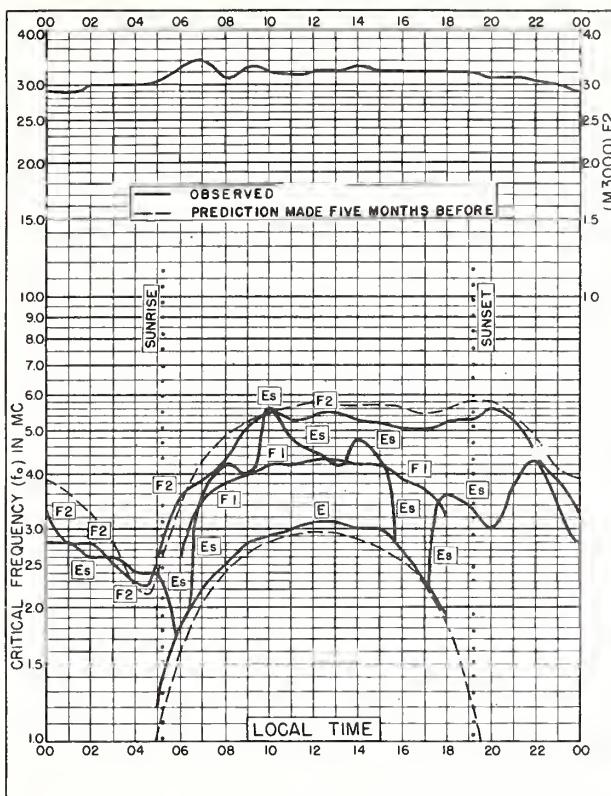


Fig. 47. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W FEBRUARY 1954



FEBRUARY 1954
Fig. 48. BUENOS AIRES, ARGENTINA



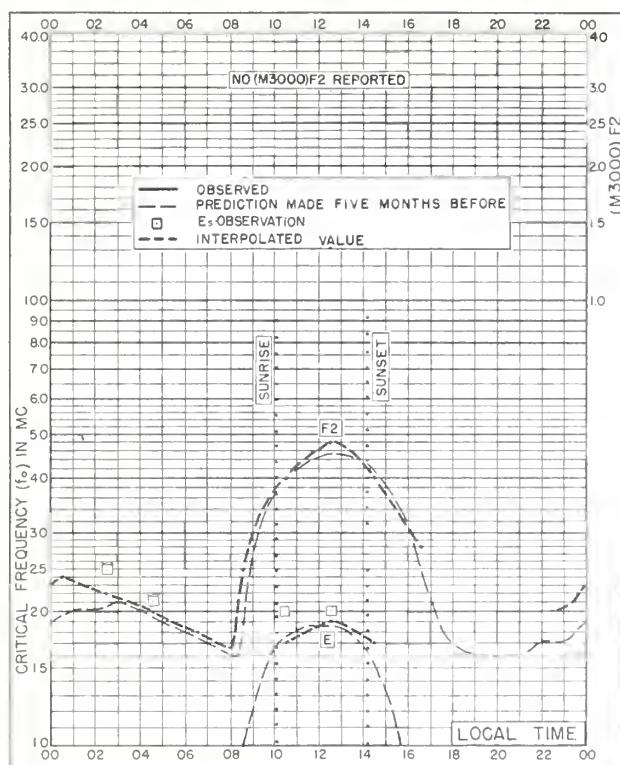


Fig. 53. LULEA, SWEDEN
65.6°N, 22.1°E
JANUARY 1954

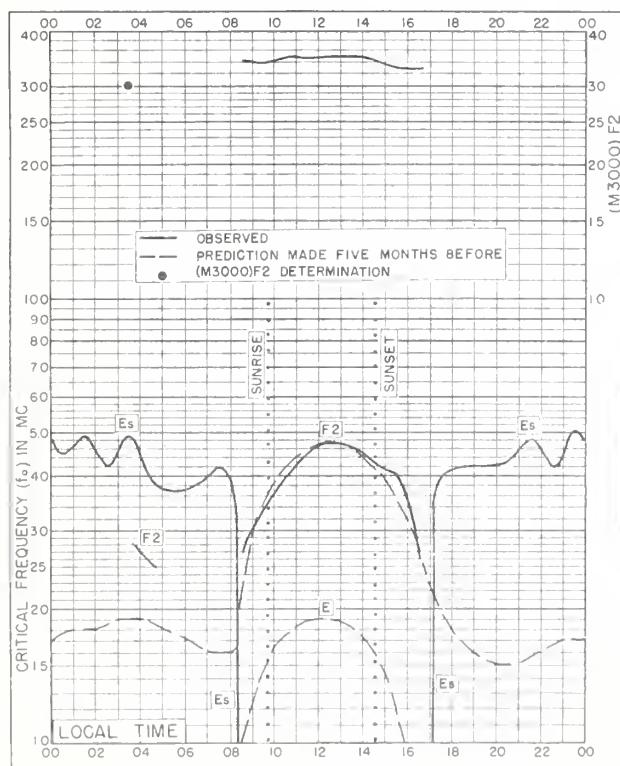
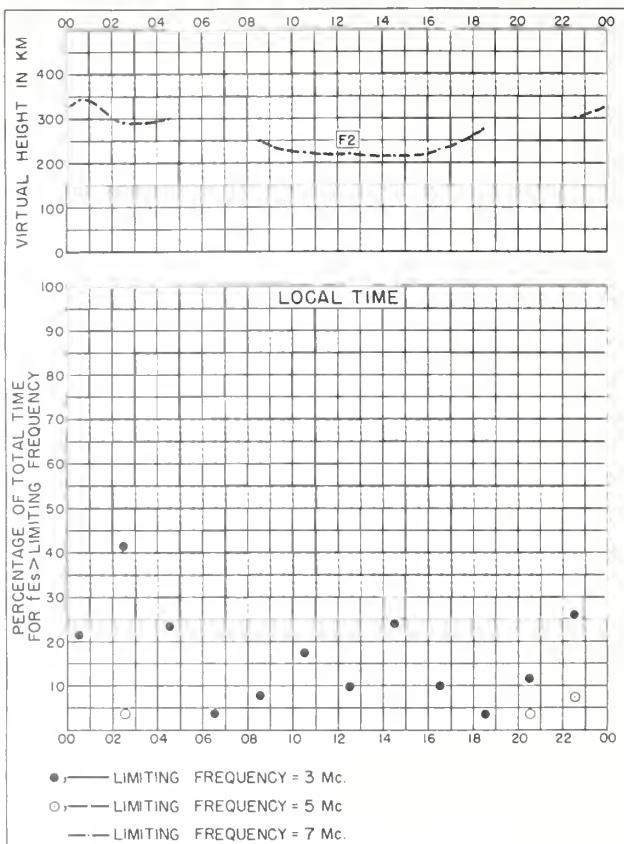
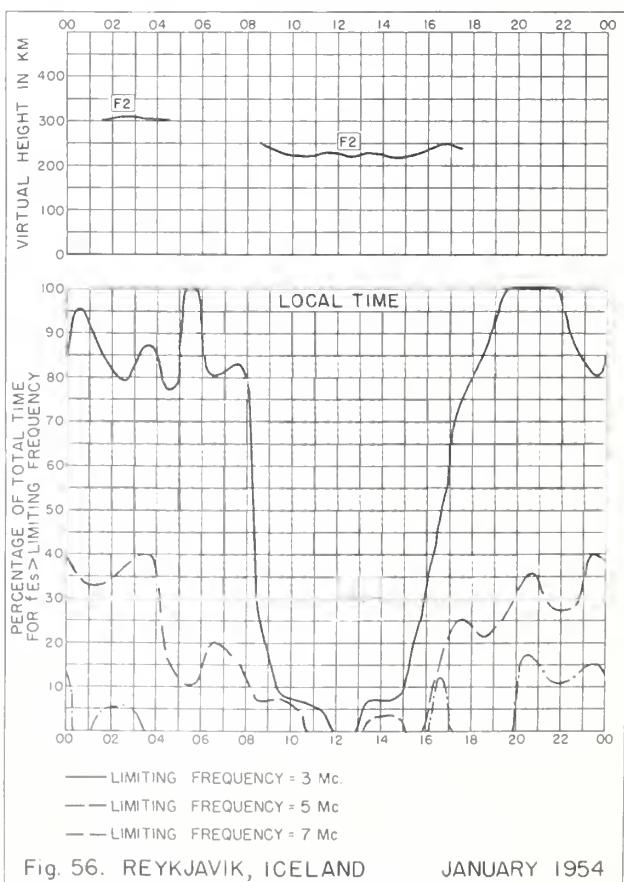
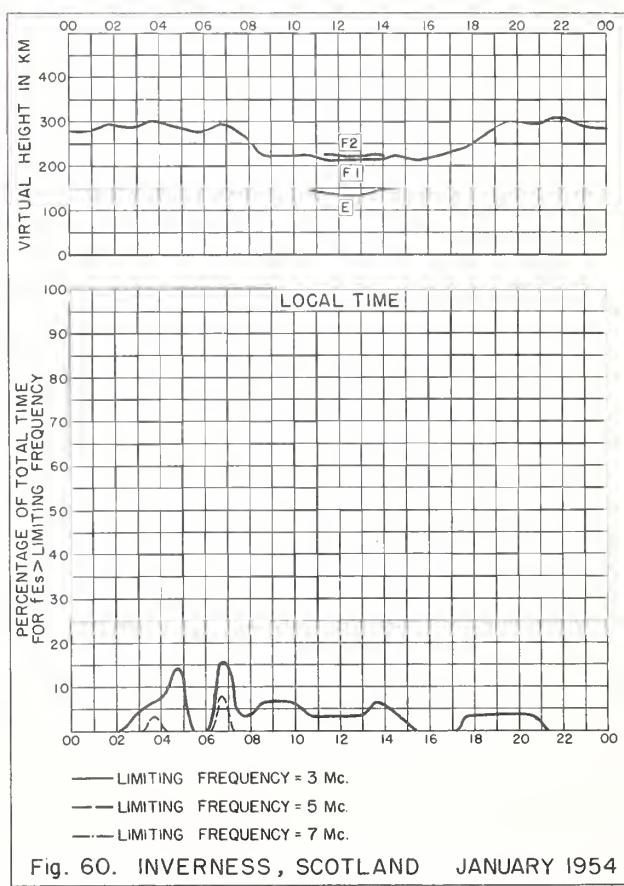
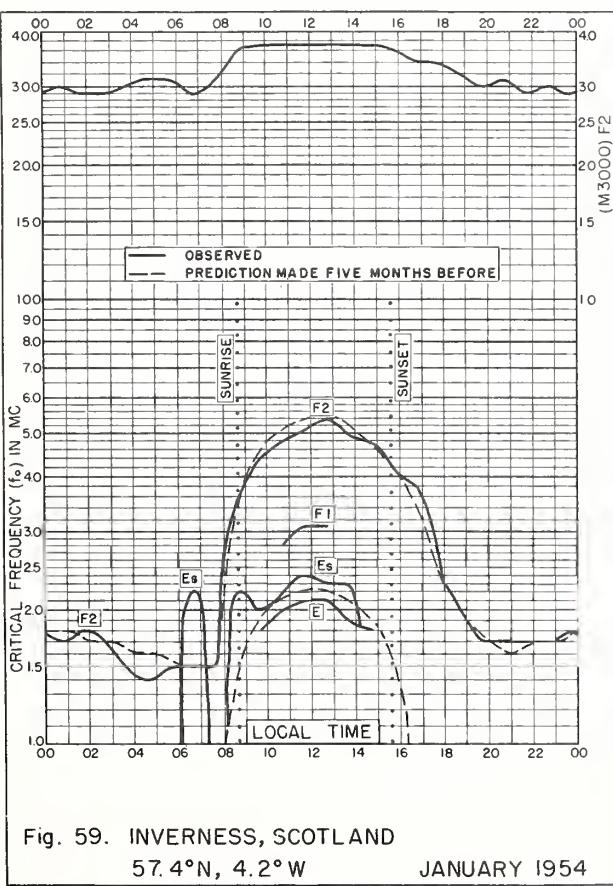
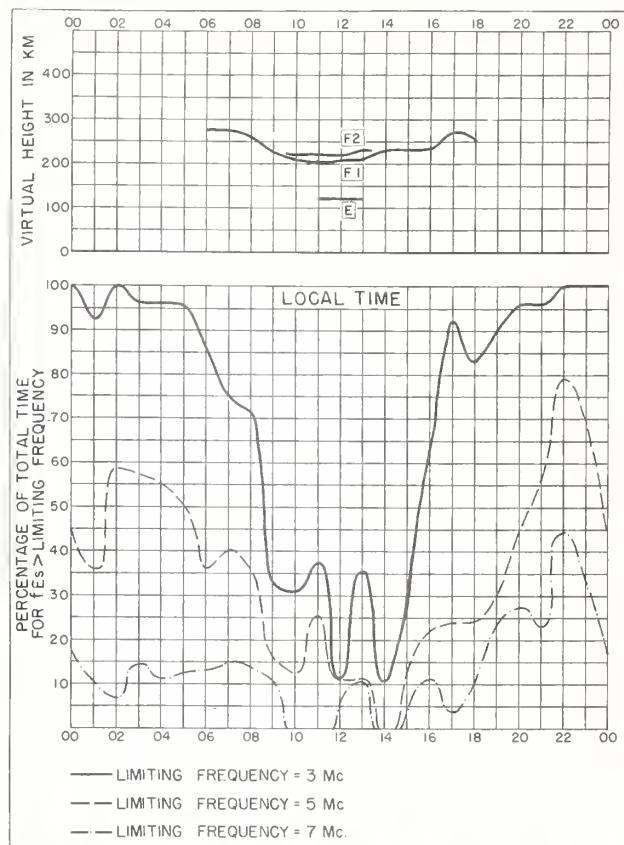
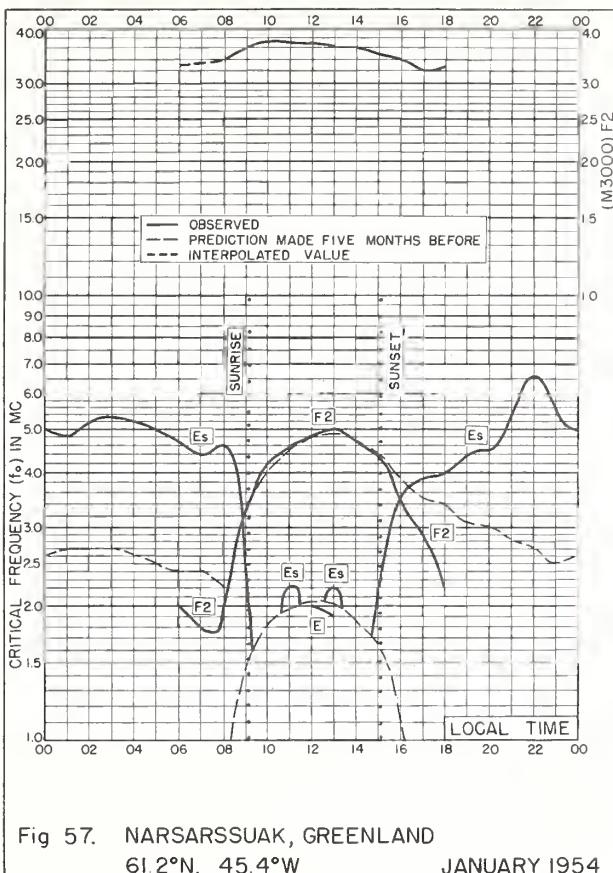


Fig. 55. REYKJAVIK, ICELAND
64.1°N, 21.8°W
JANUARY 1954





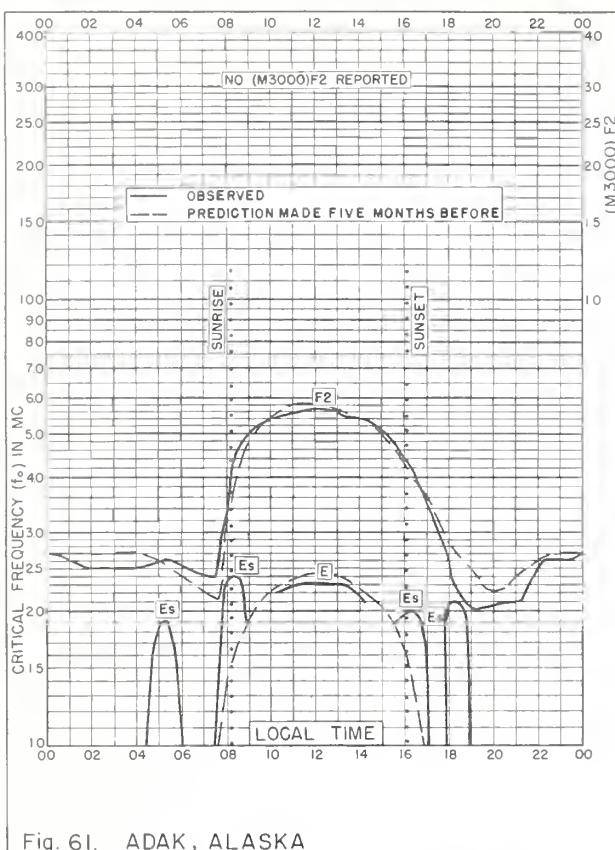


Fig. 61. ADAK, ALASKA
 51.9°N, 176.6°W JANUARY 1954

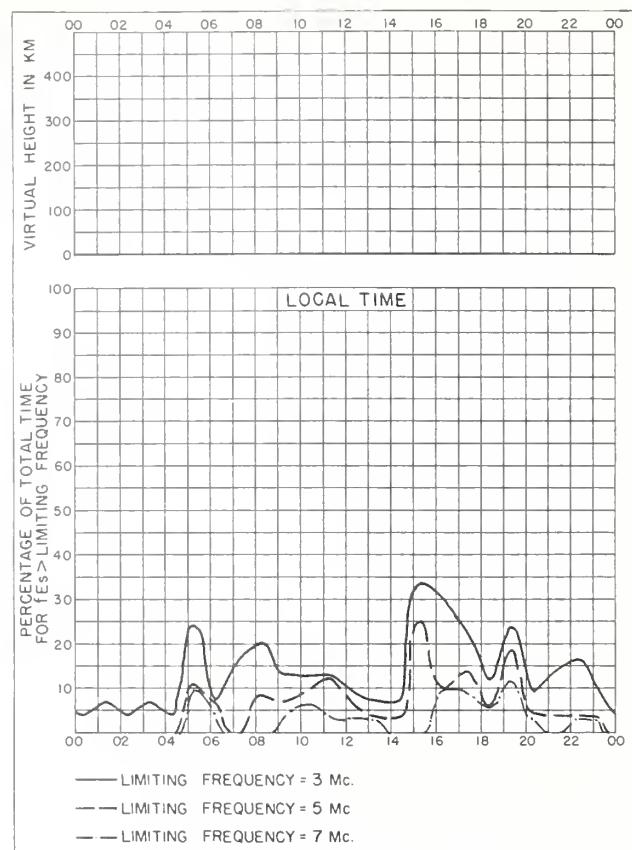


Fig. 62. ADAK, ALASKA JANUARY 1954

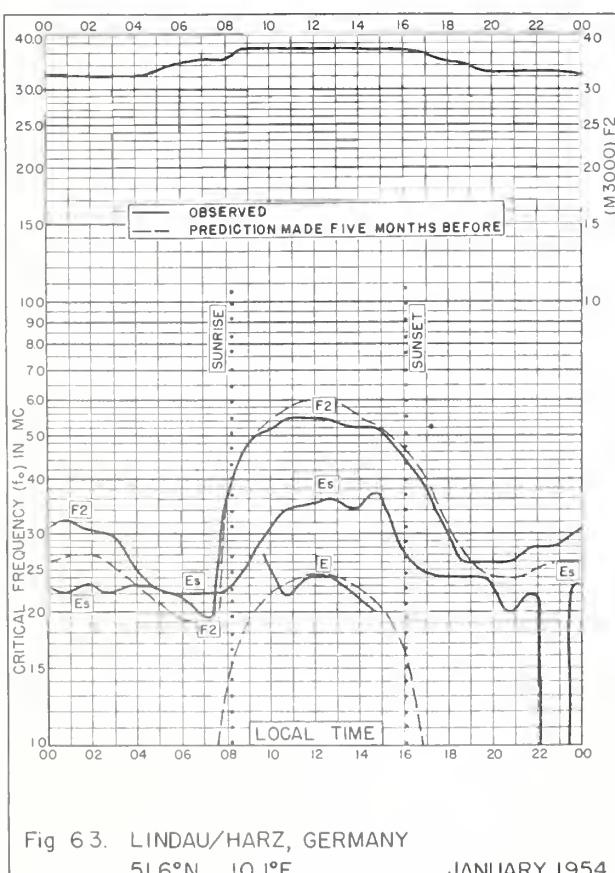


Fig 63. LINDAU/HARZ, GERMANY
 51.6°N, 10.1°E JANUARY 1954

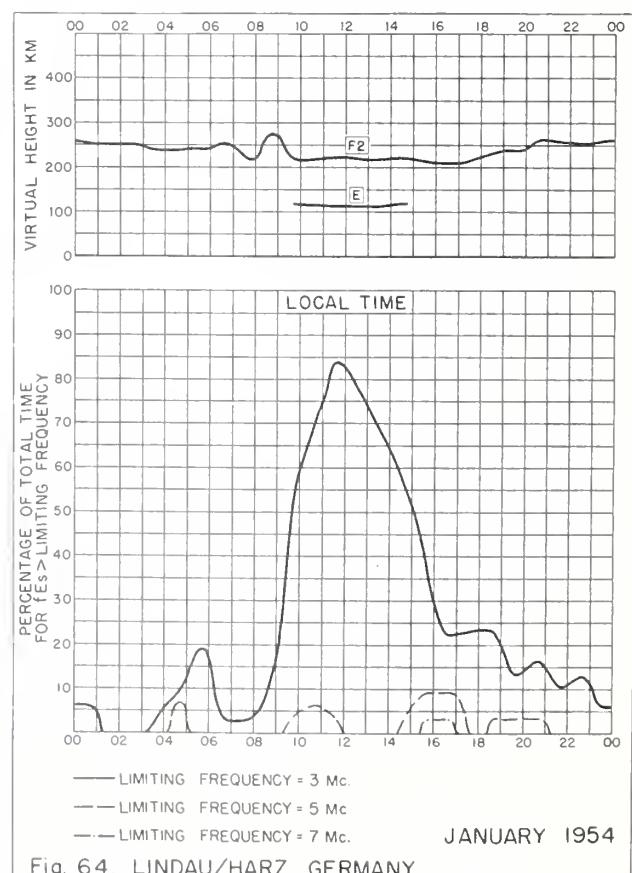


Fig. 64. LINDAU/HARZ, GERMANY

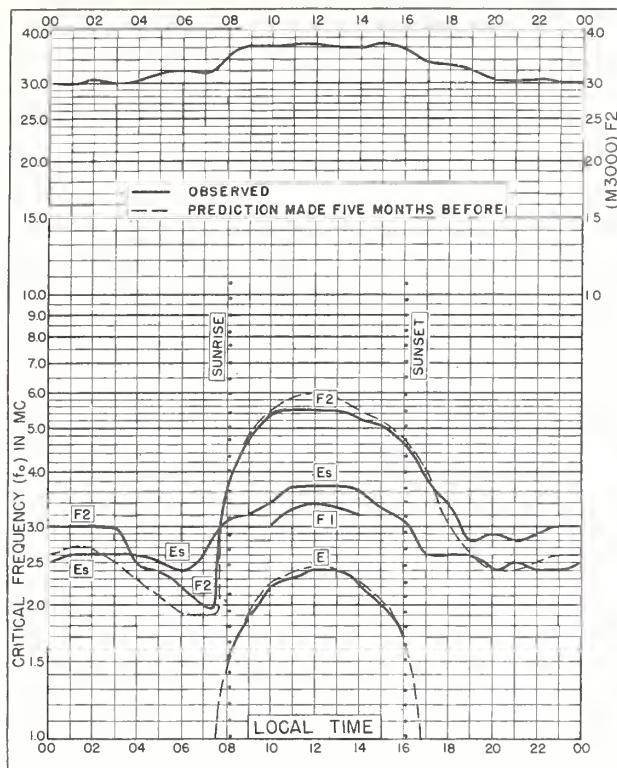


Fig. 65. SLOUGH, ENGLAND

51.5°N, 0.6°W

JANUARY 1954

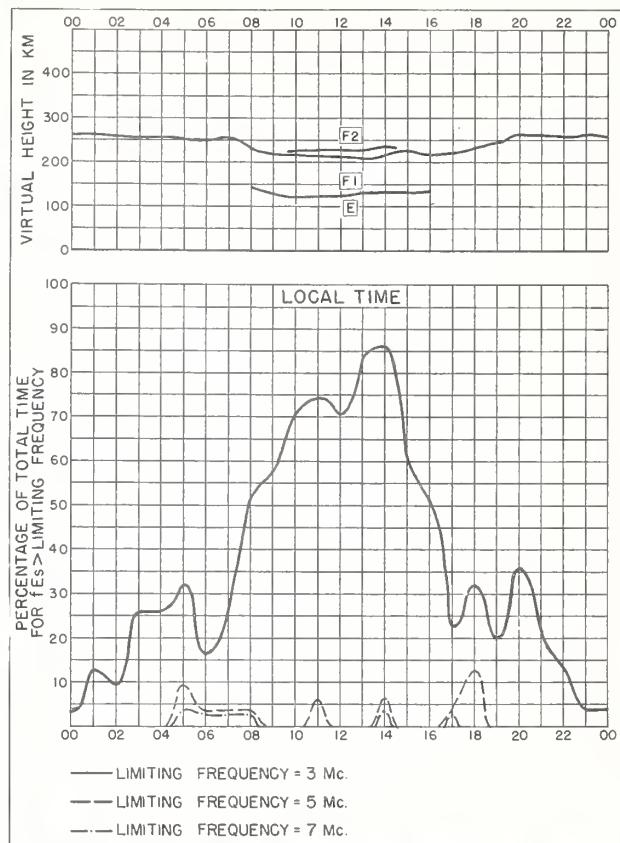


Fig. 66. SLOUGH, ENGLAND

JANUARY 1954

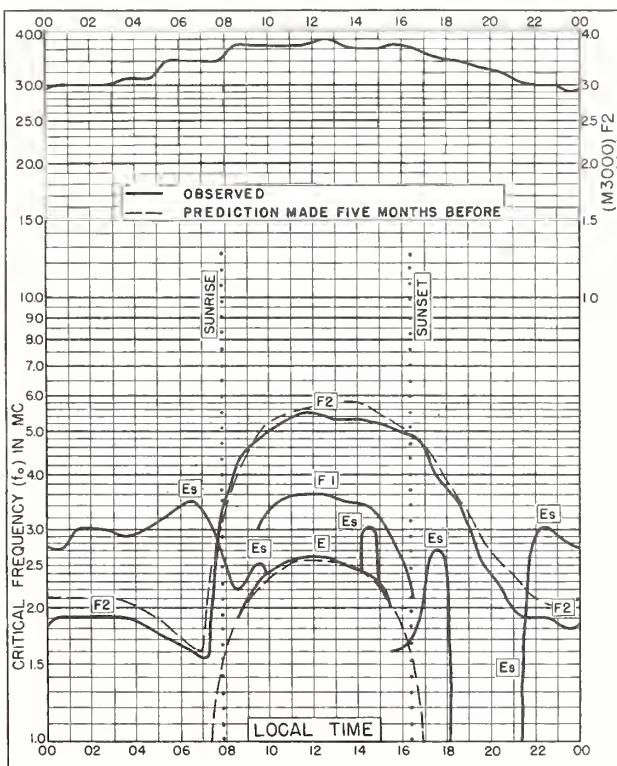


Fig. 67. ST. JOHN'S, NEWFOUNDLAND

47.6°N, 52.7°W

JANUARY 1954

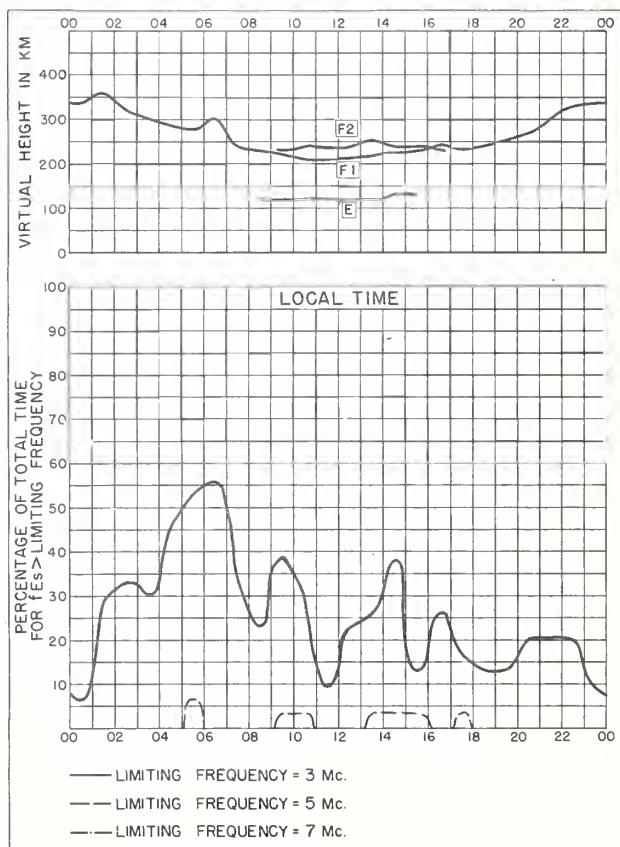
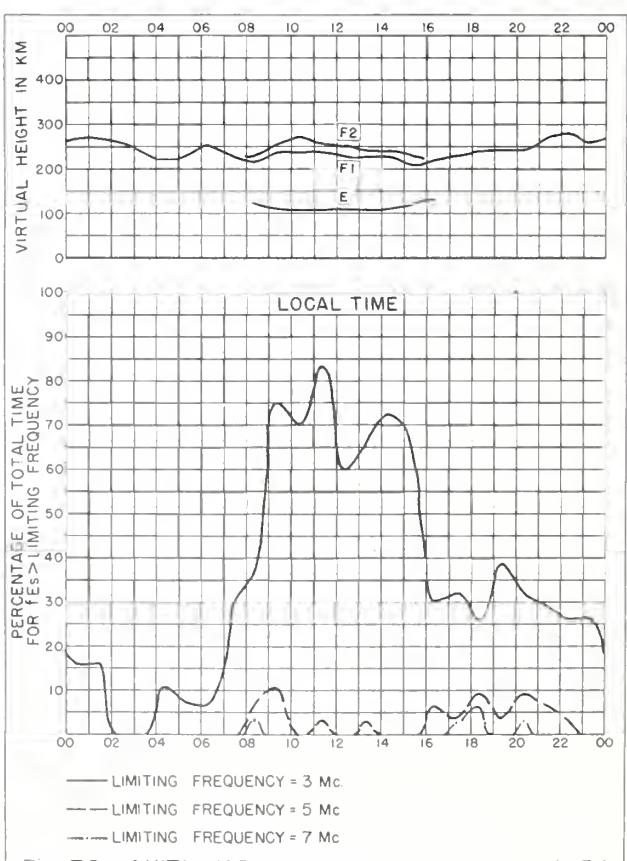
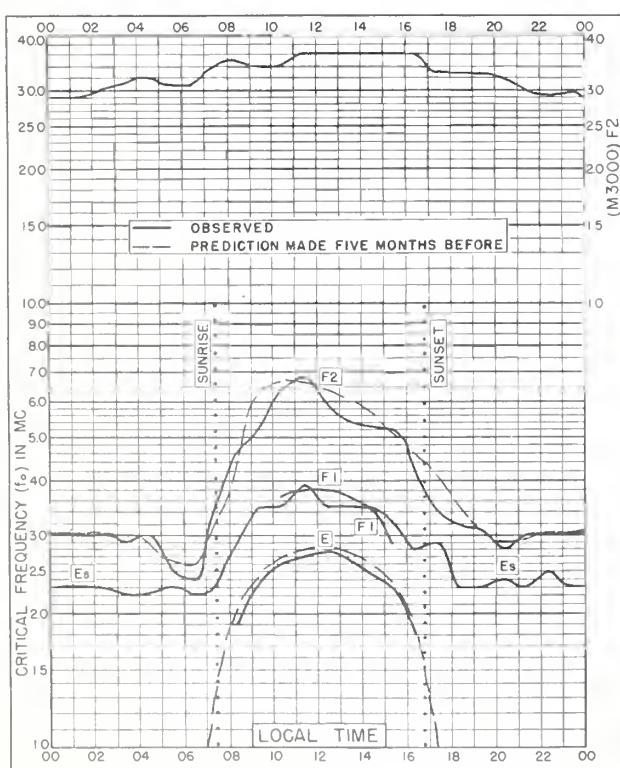
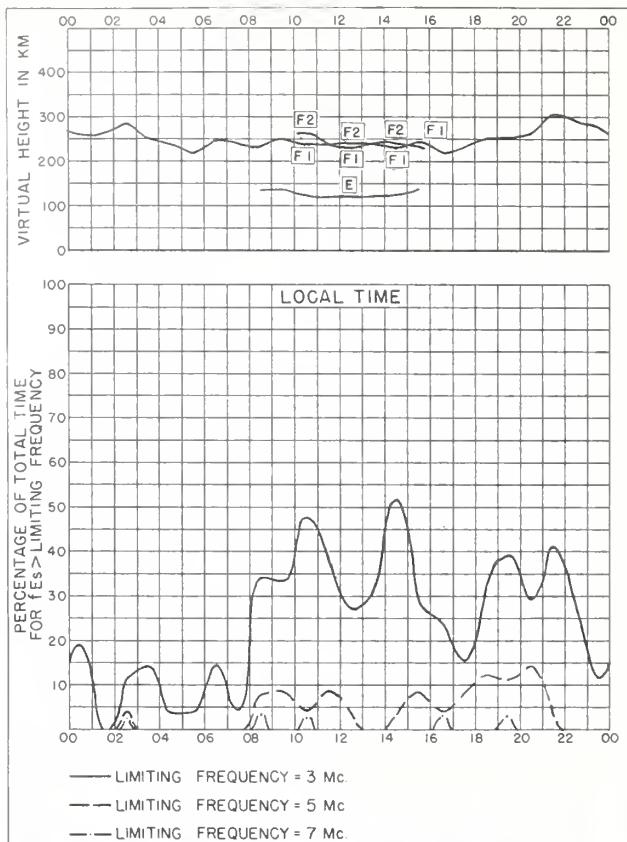
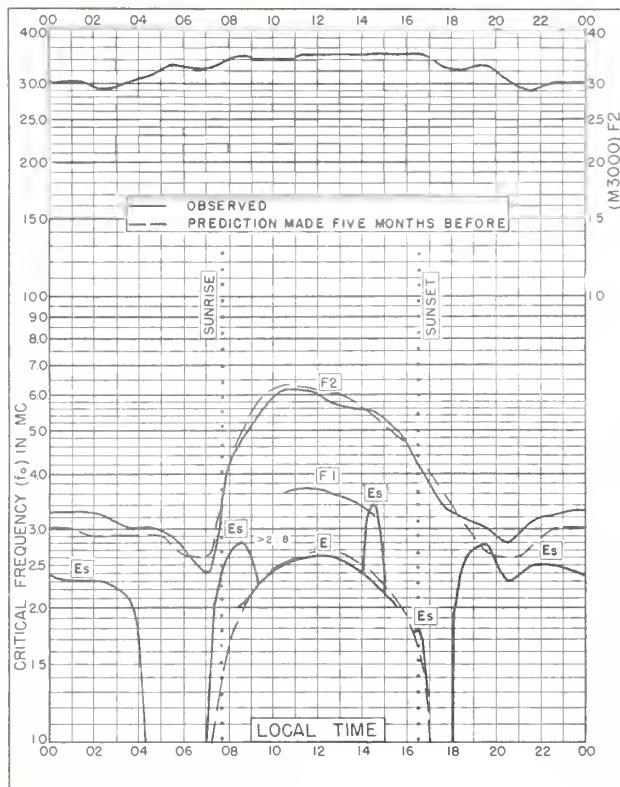


Fig. 68. ST. JOHN'S, NEWFOUNDLAND JANUARY 1954



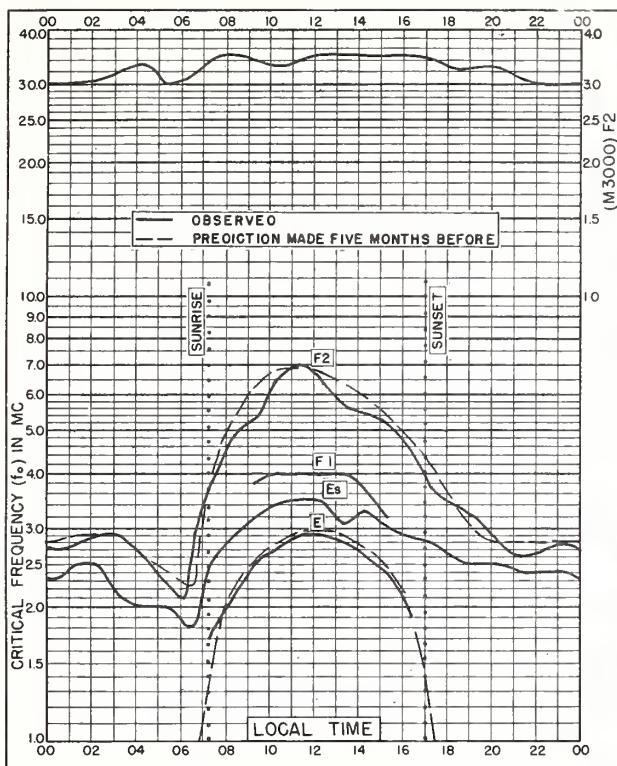


Fig. 73. TOKYO, JAPAN

35.7°N, 139.5°E

JANUARY 1954

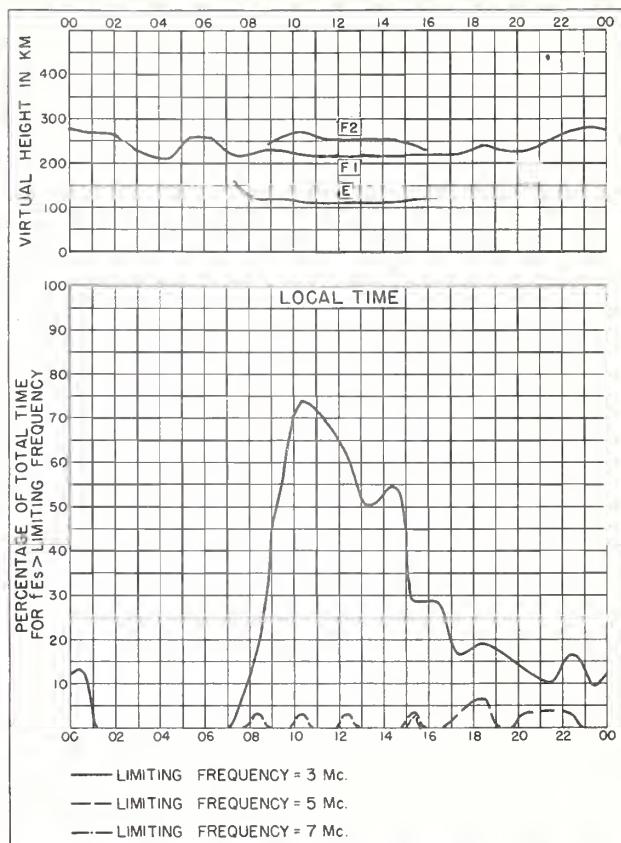


Fig. 74. TOKYO, JAPAN

JANUARY 1954

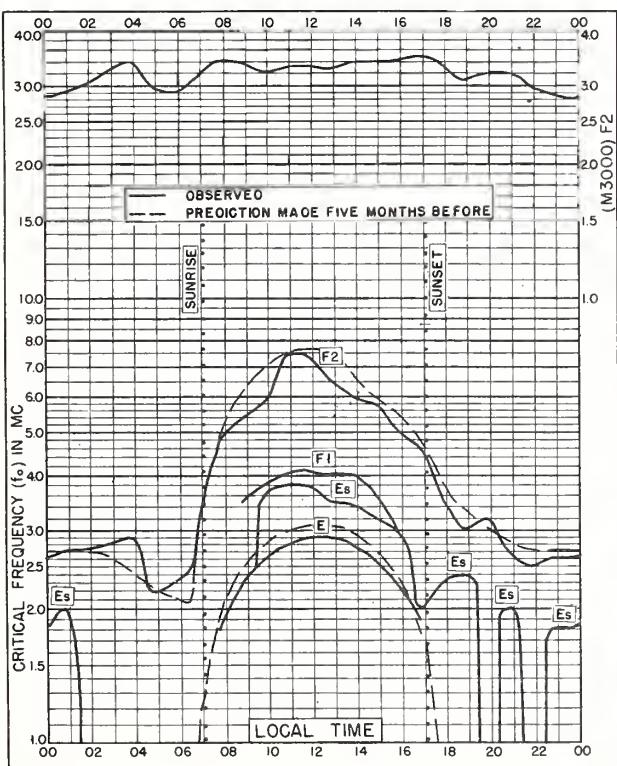


Fig. 75. YAMAGAWA, JAPAN

31.2°N, 130.6°E

JANUARY 1954

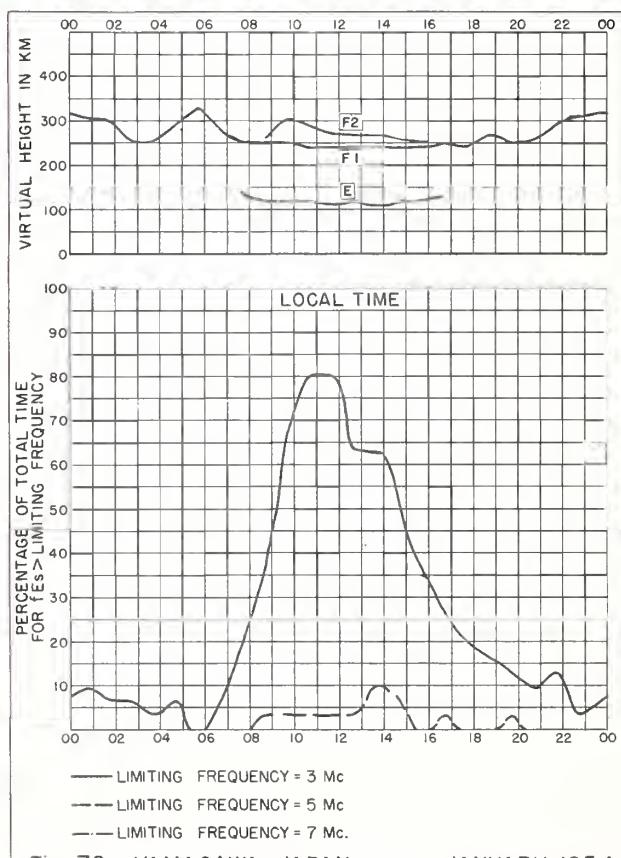


Fig. 76. YAMAGAWA, JAPAN

JANUARY 1954

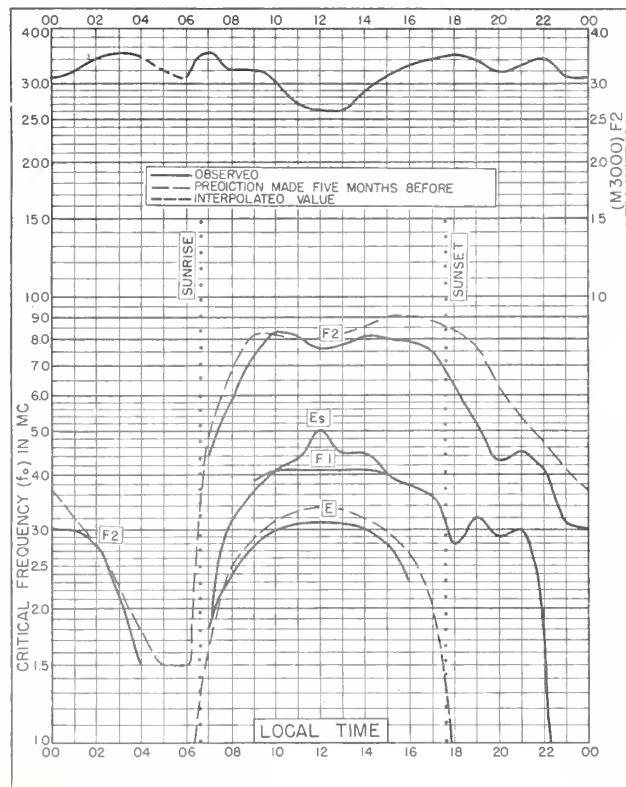


Fig. 77. BAGUIO, P.I.

16.4°N, 120.6°E

JANUARY 1954

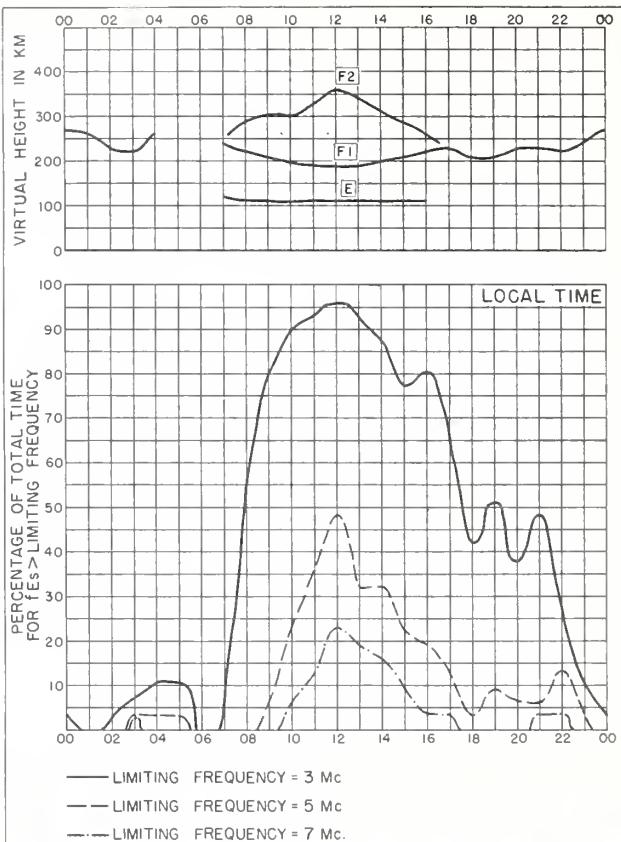


Fig. 78. BAGUIO, P.I.

JANUARY 1954

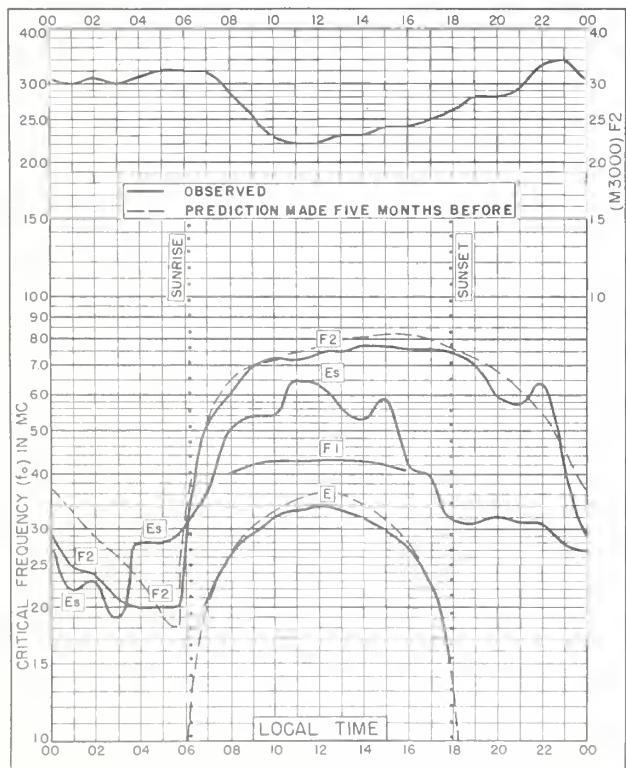


Fig. 79. SINGAPORE, BRITISH MALAYA

1.3°N, 103.8°E

JANUARY 1954

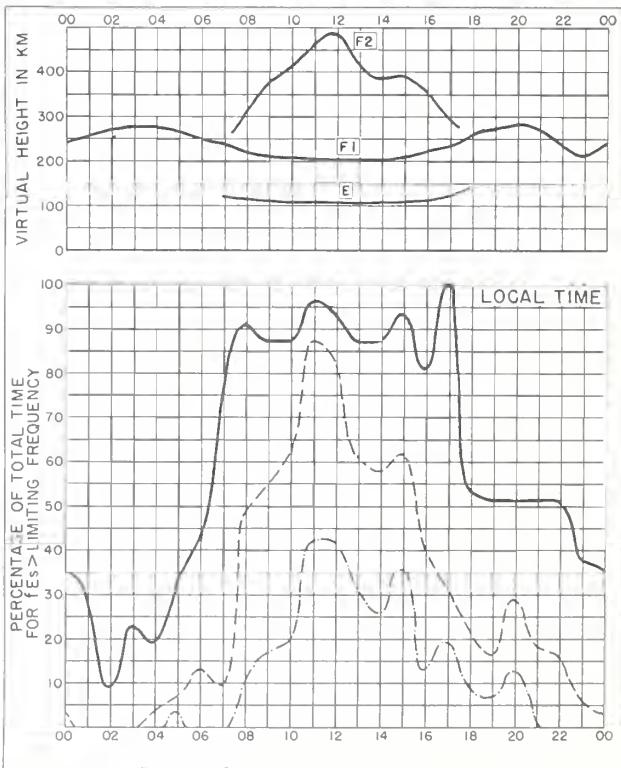


Fig. 80. SINGAPORE, BRITISH MALAYA

JANUARY 1954

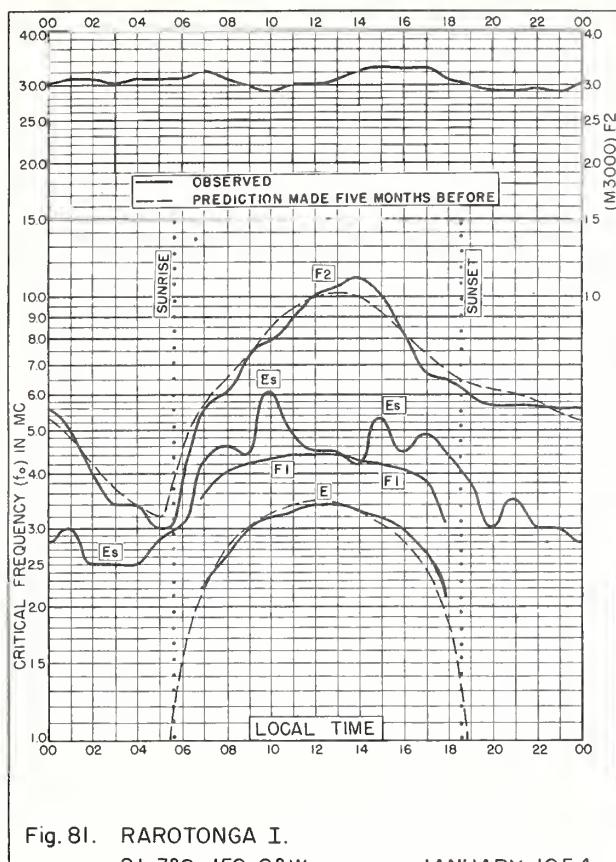


Fig. 81. RAROTONGA I.
21.3°S, 159.8°W JANUARY 1954

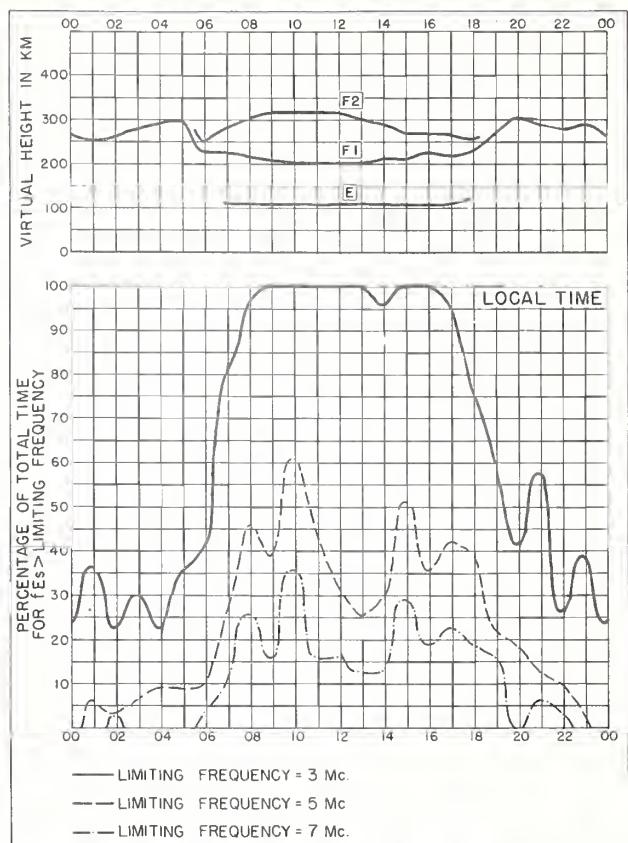


Fig. 82. RAROTONGA I. JANUARY 1954

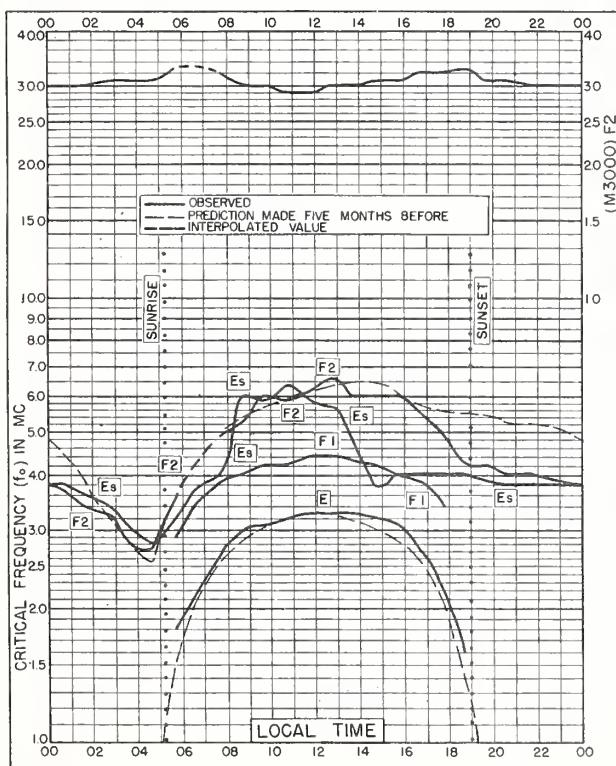


Fig. 83. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E JANUARY 1954

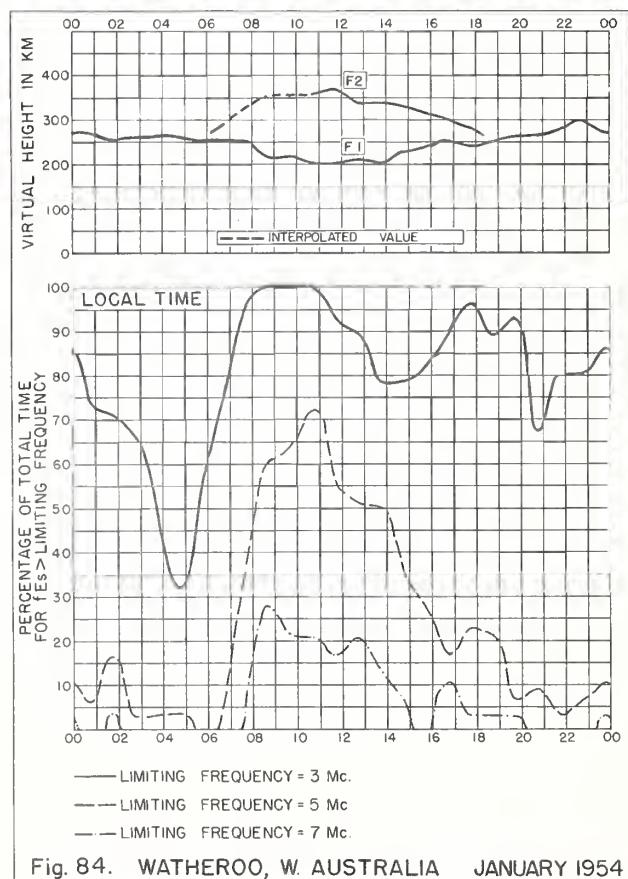


Fig. 84. WATHEROO, W. AUSTRALIA JANUARY 1954

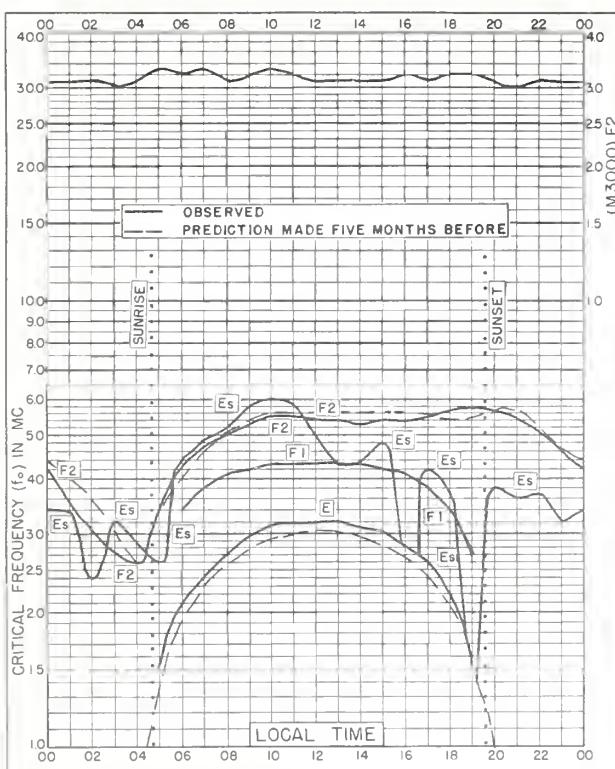


Fig. 85. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E JANUARY 1954

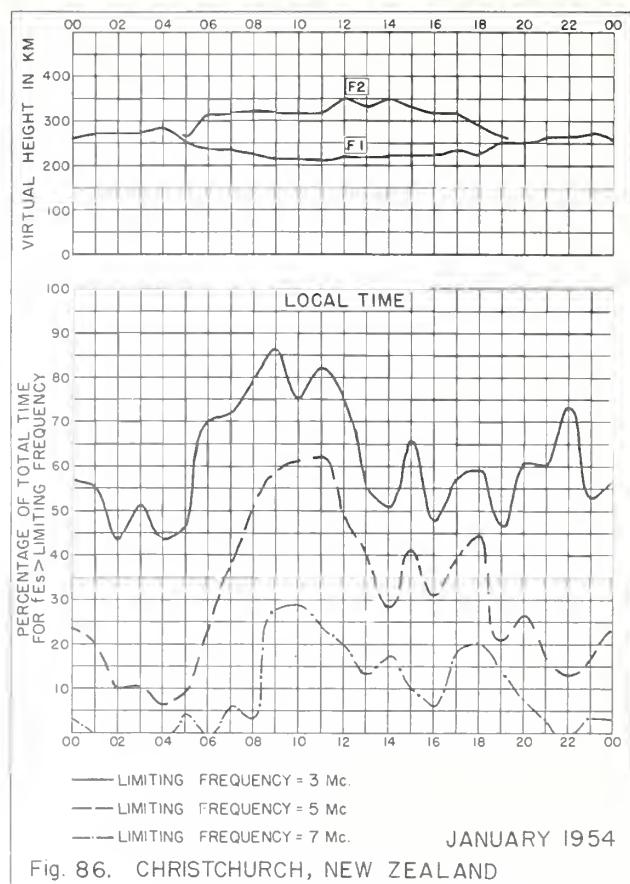


Fig. 86. CHRISTCHURCH, NEW ZEALAND JANUARY 1954

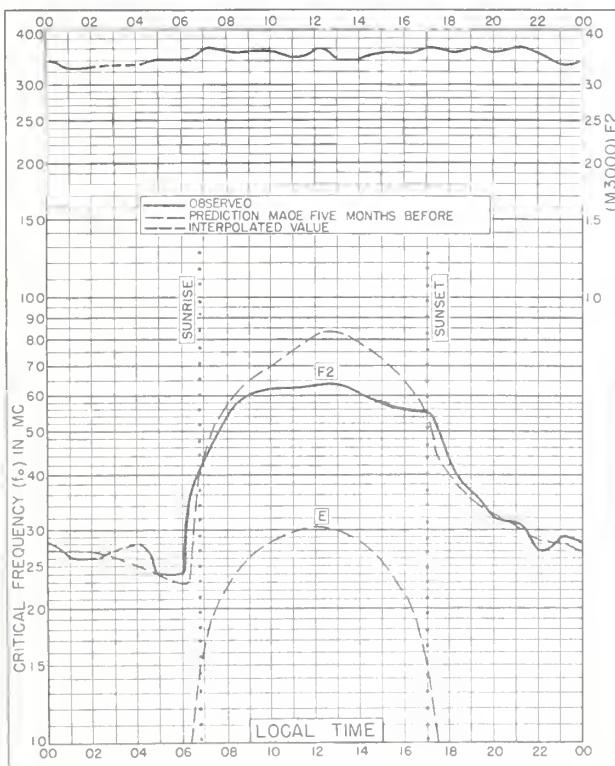


Fig. 87. DELHI, INDIA
28.6°N, 77.1°E DECEMBER 1953

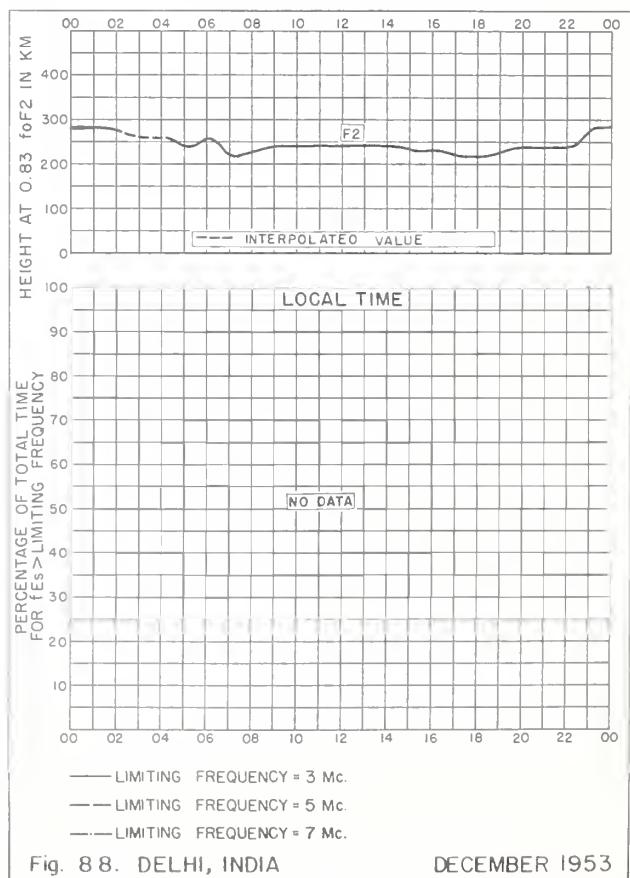


Fig. 88. DELHI, INDIA DECEMBER 1953

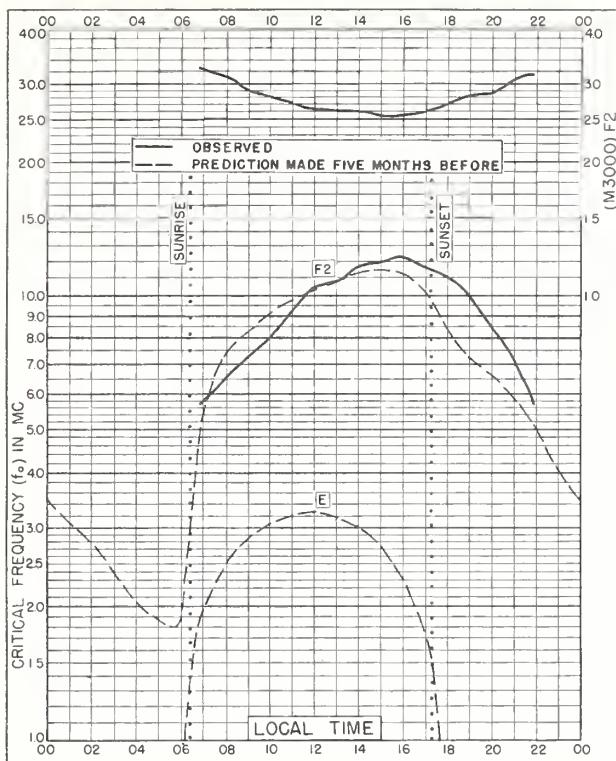


Fig. 89. BOMBAY, INDIA
19.0°N, 73.0°E DECEMBER 1953

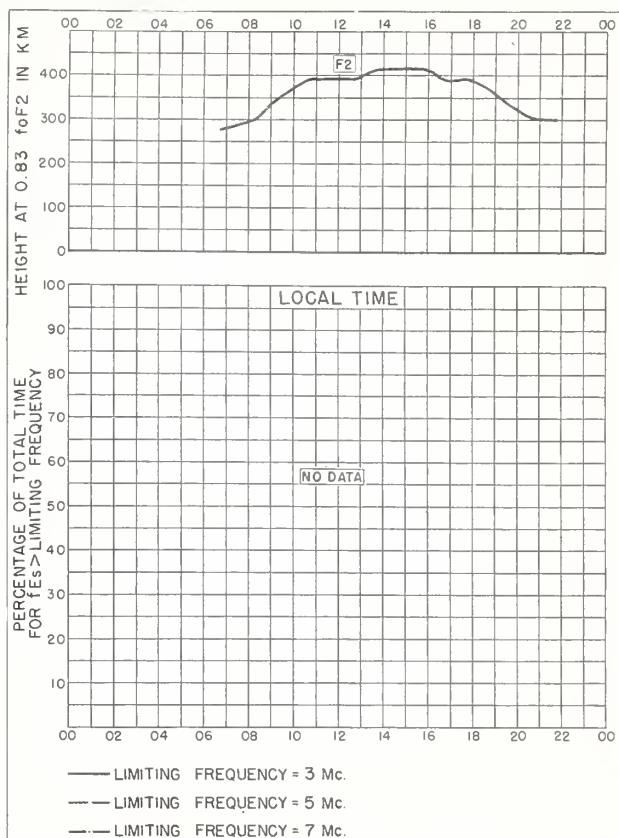


Fig. 90. BOMBAY, INDIA DECEMBER 1953

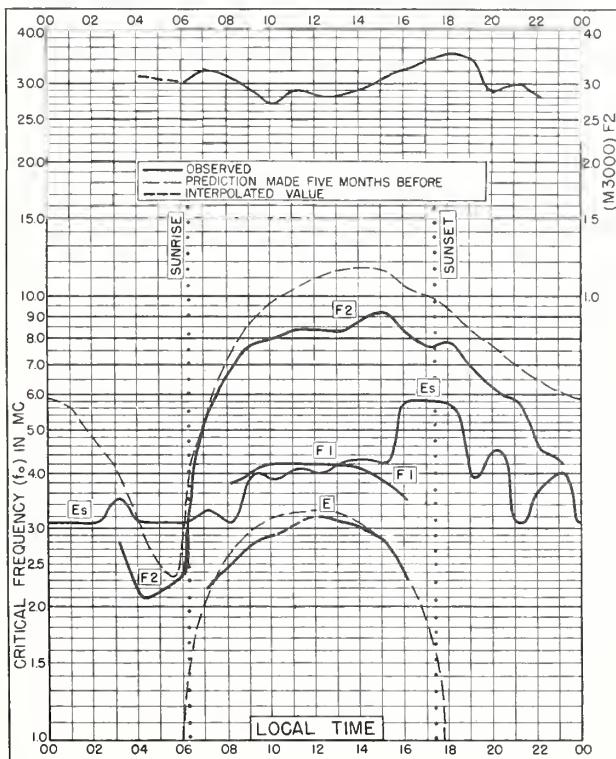


Fig. 91. KHARTOUM, SUDAN
15.6°N, 32.6°E DECEMBER 1953

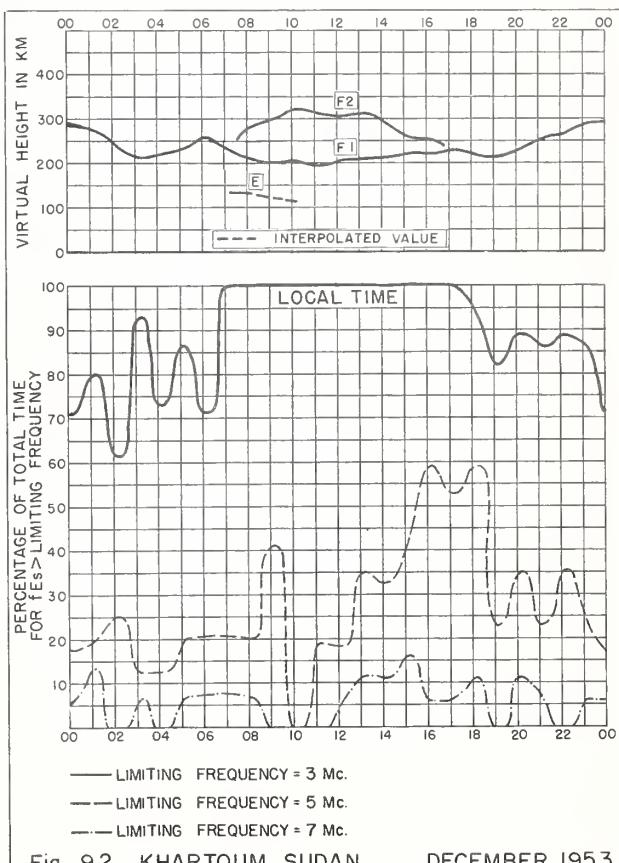


Fig. 92. KHARTOUM, SUDAN DECEMBER 1953

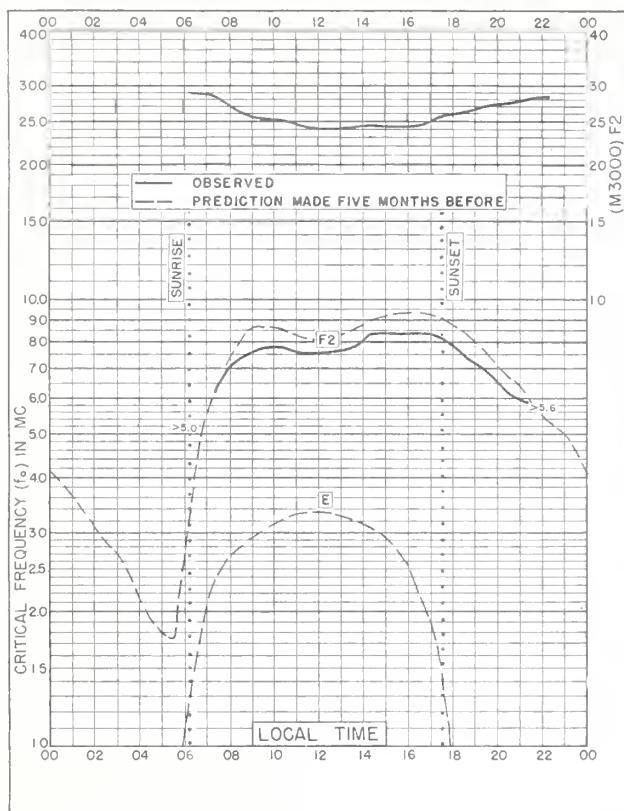


Fig. 93. MADRAS, INDIA
13.0°N, 80.2°E DECEMBER 1953

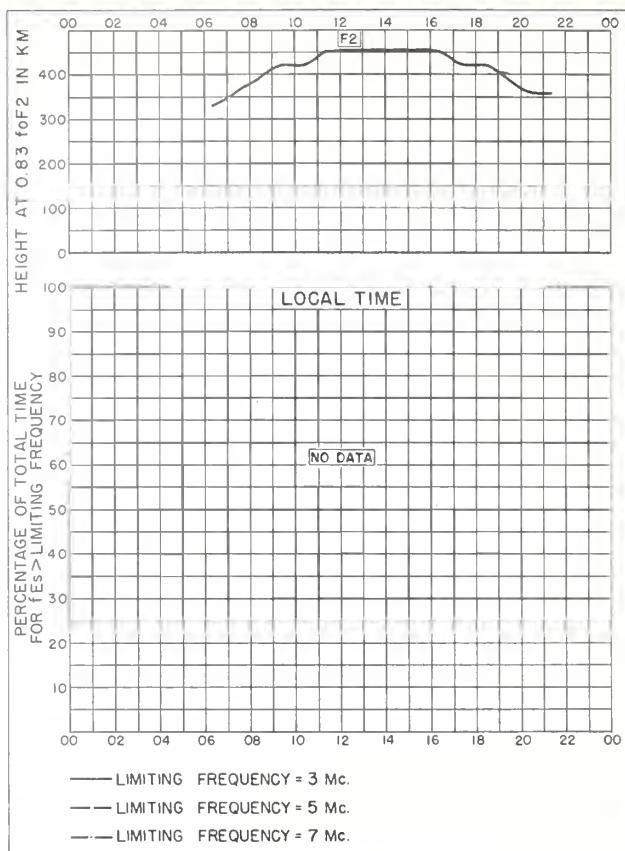


Fig. 94. MADRAS, INDIA DECEMBER 1953

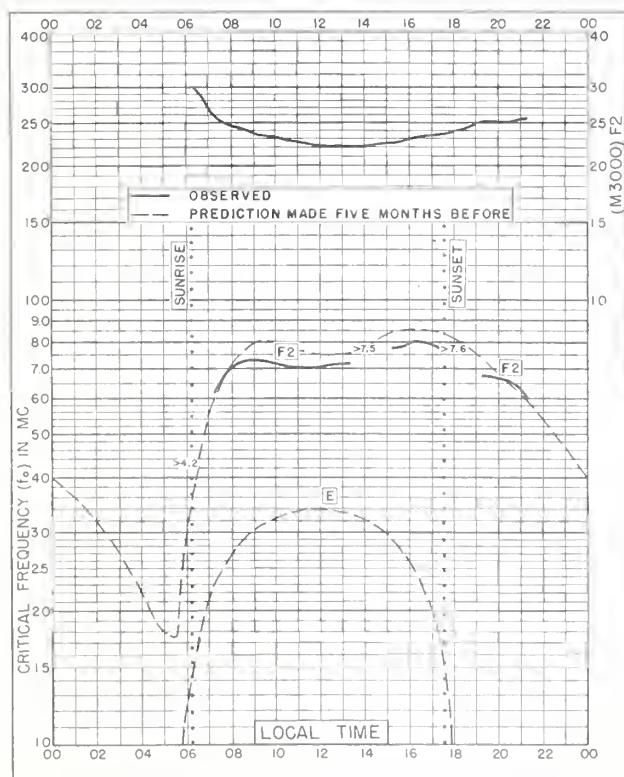


Fig. 95. TIRUCHY, INDIA
10.8°N, 78.8°E DECEMBER 1953

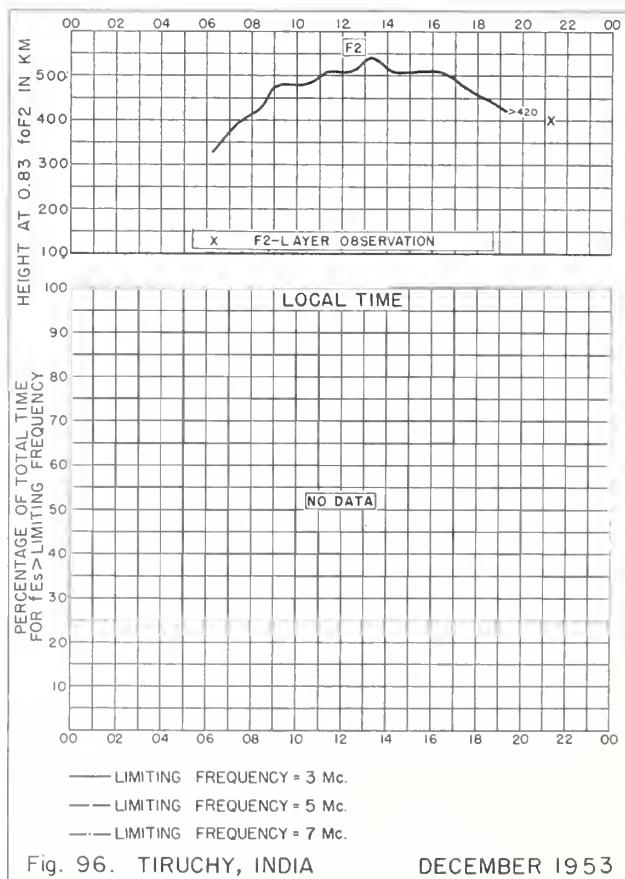


Fig. 96. TIRUCHY, INDIA DECEMBER 1953

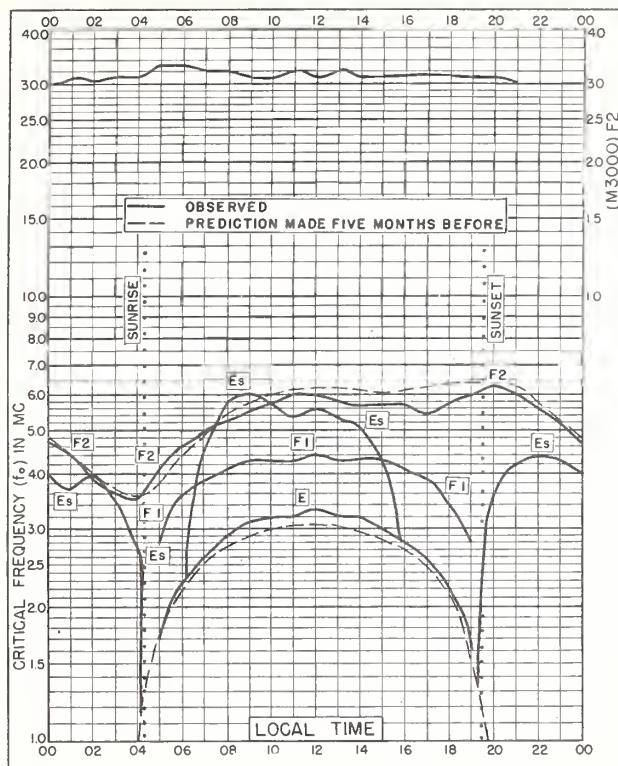


Fig. 97. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E DECEMBER 1953

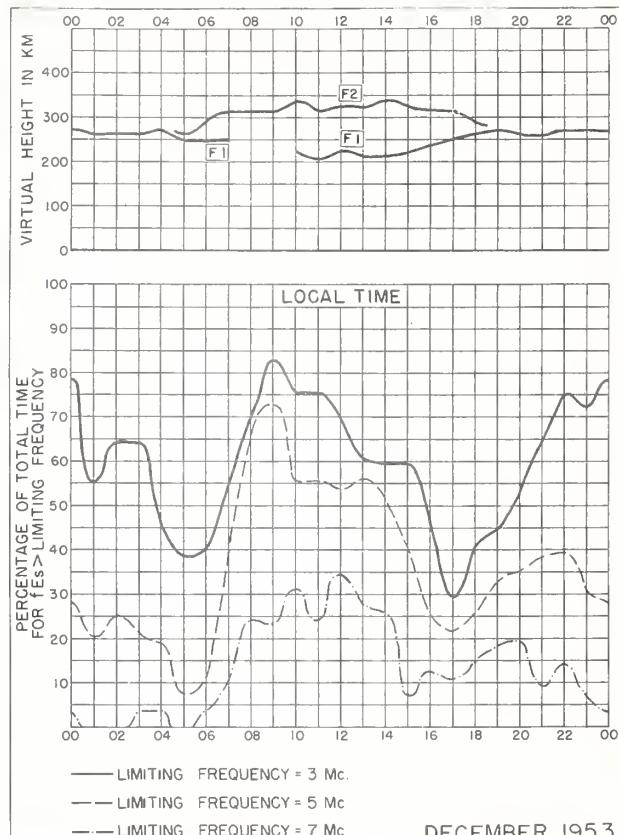


Fig. 98. CHRISTCHURCH, NEW ZEALAND

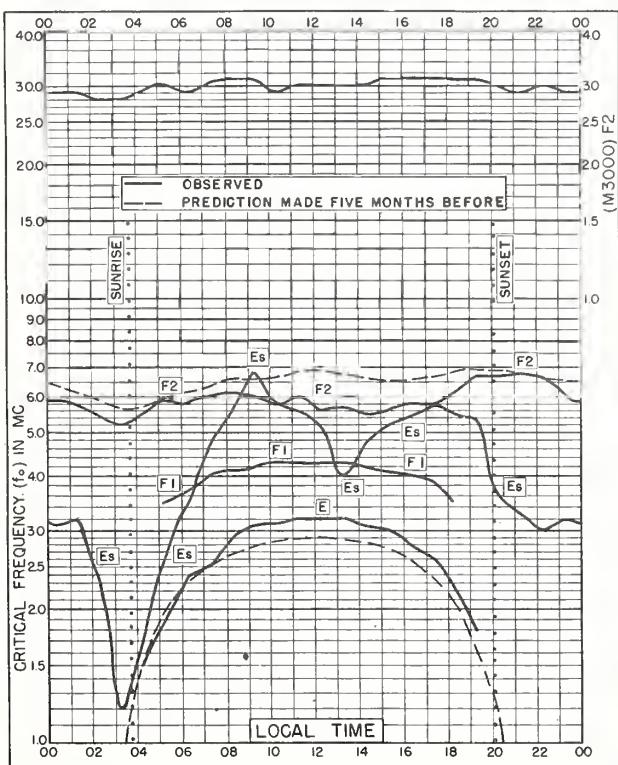


Fig. 99. FALKLAND IS.
51.7°S, 57.8°W DECEMBER 1953

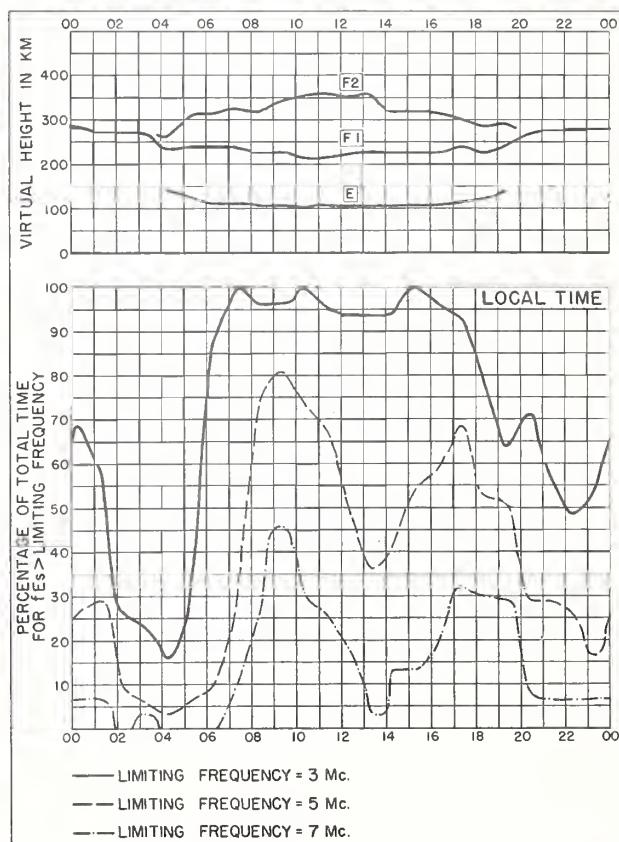


Fig. 100. FALKLAND IS.

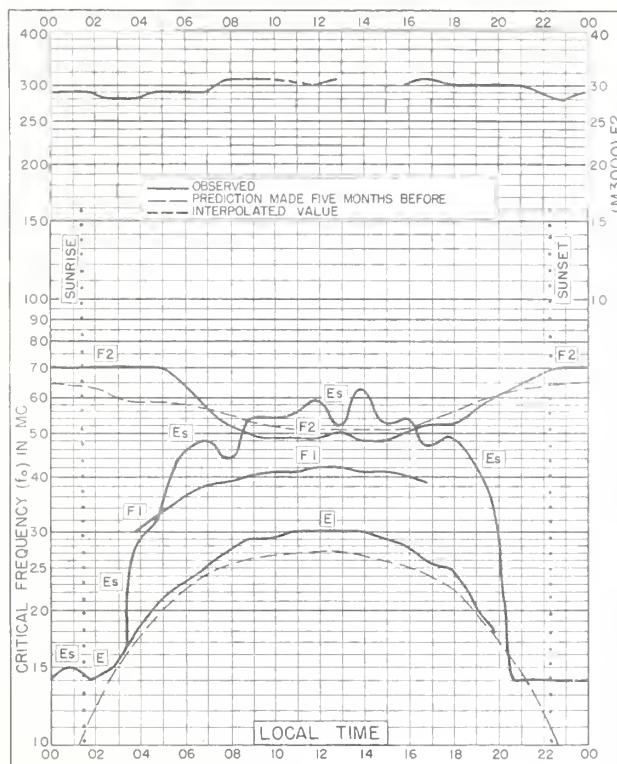


Fig. 101. PORT LOCKROY
64.8°S, 63.5°W DECEMBER 1953

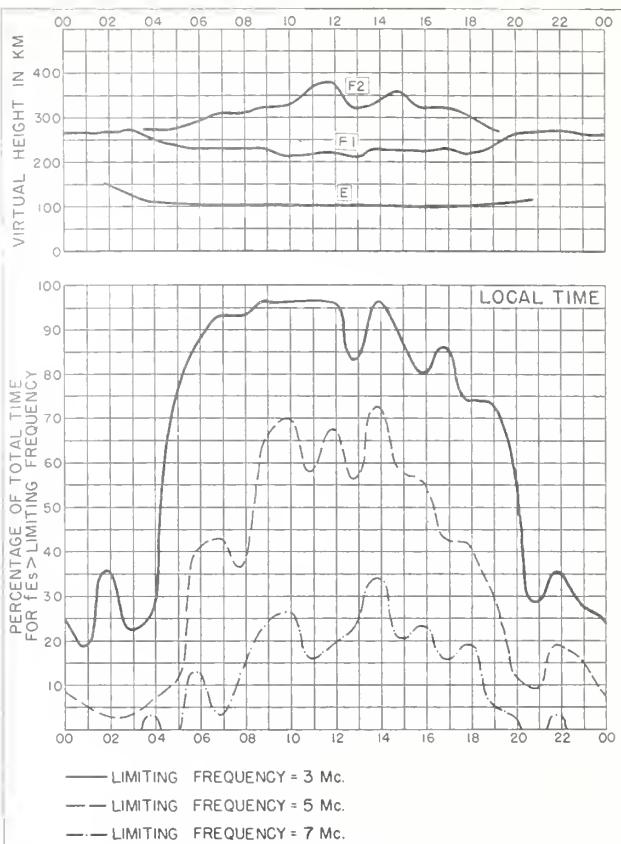


Fig. 102. PORT LOCKROY DECEMBER 1953

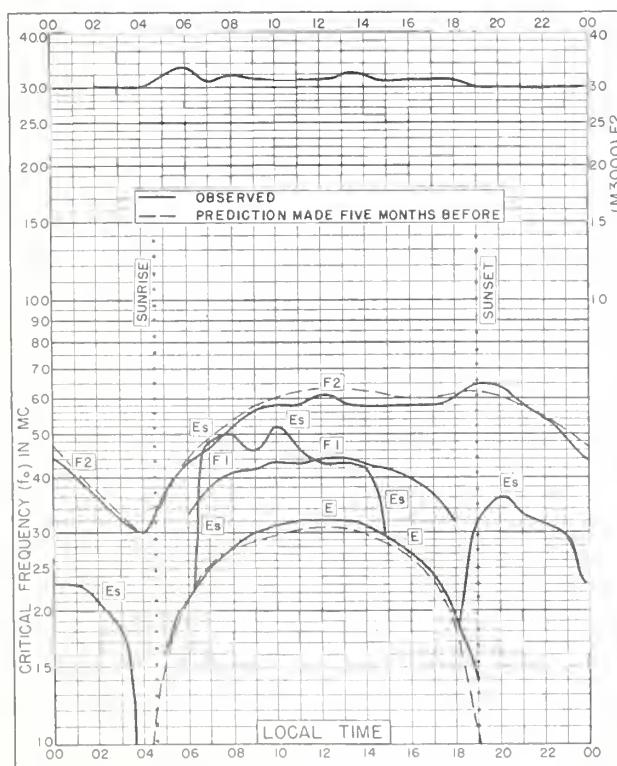
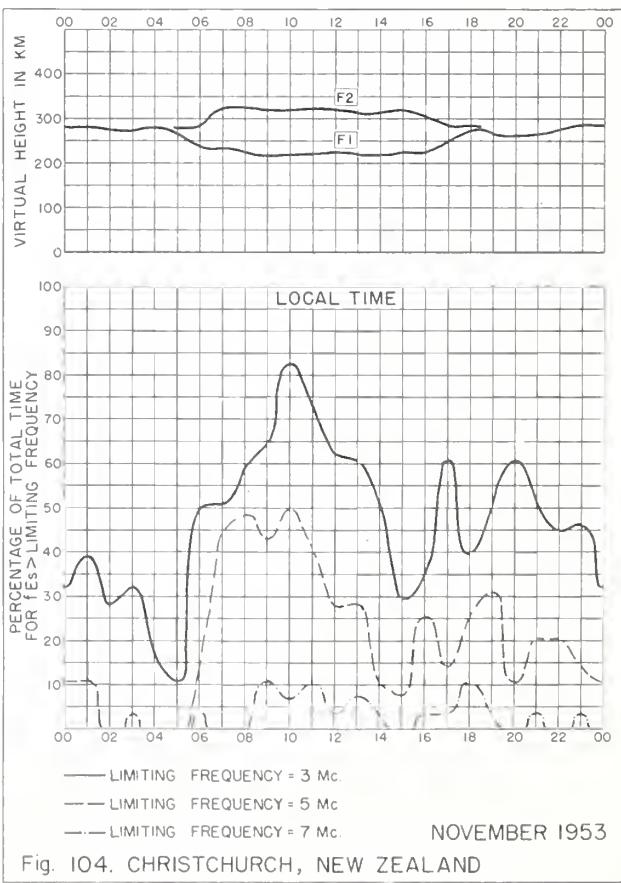
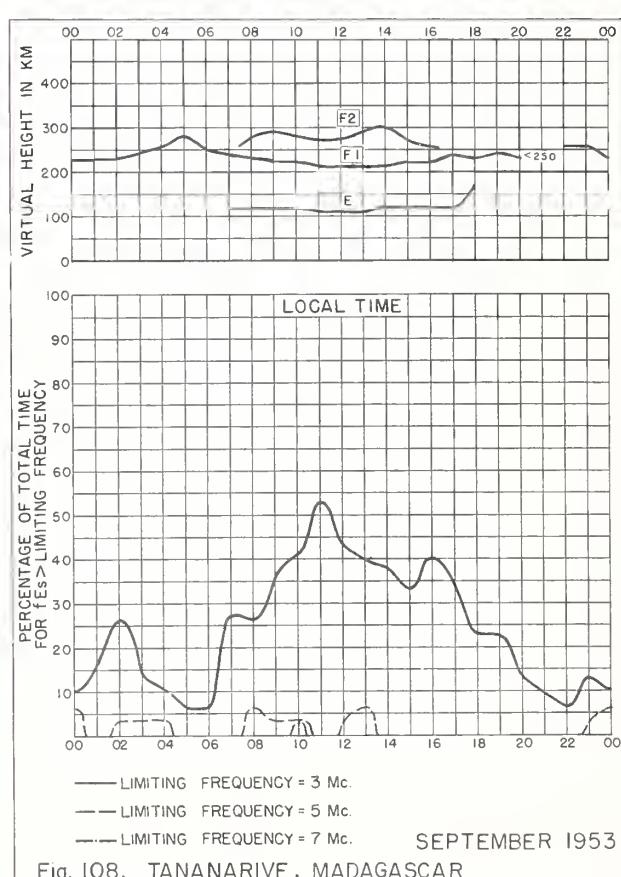
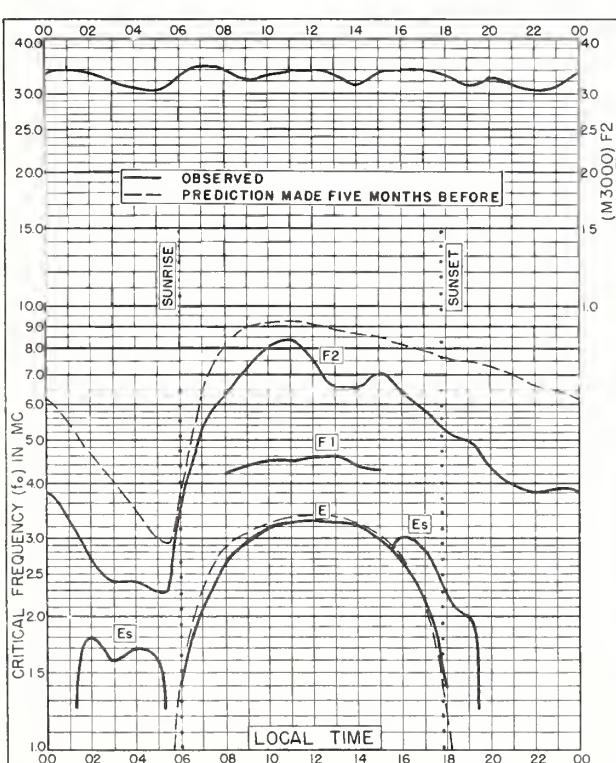
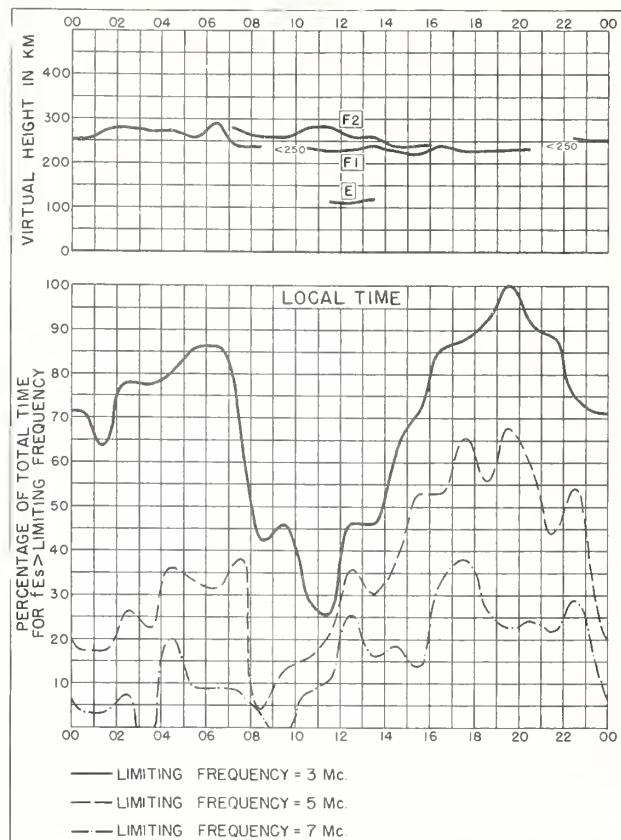
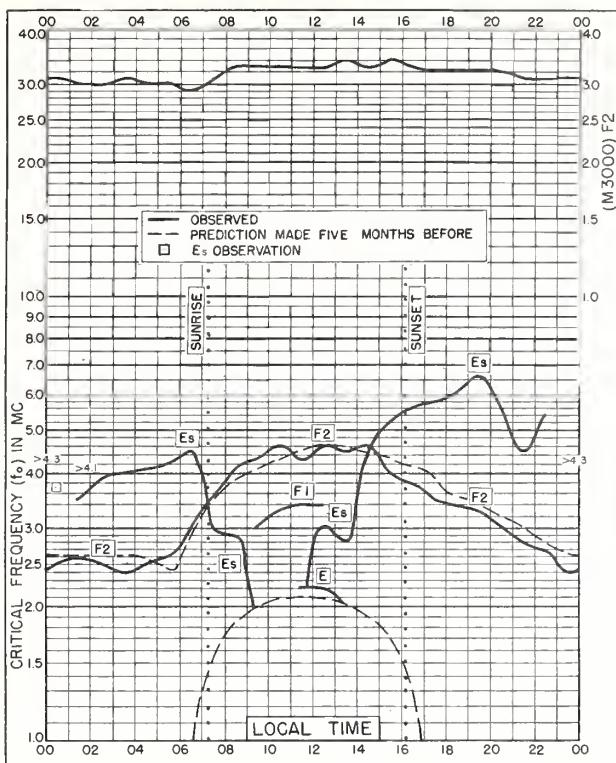


Fig. 103. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.7°E NOVEMBER 1953



NOVEMBER 1953
Fig. 104. CHRISTCHURCH, NEW ZEALAND



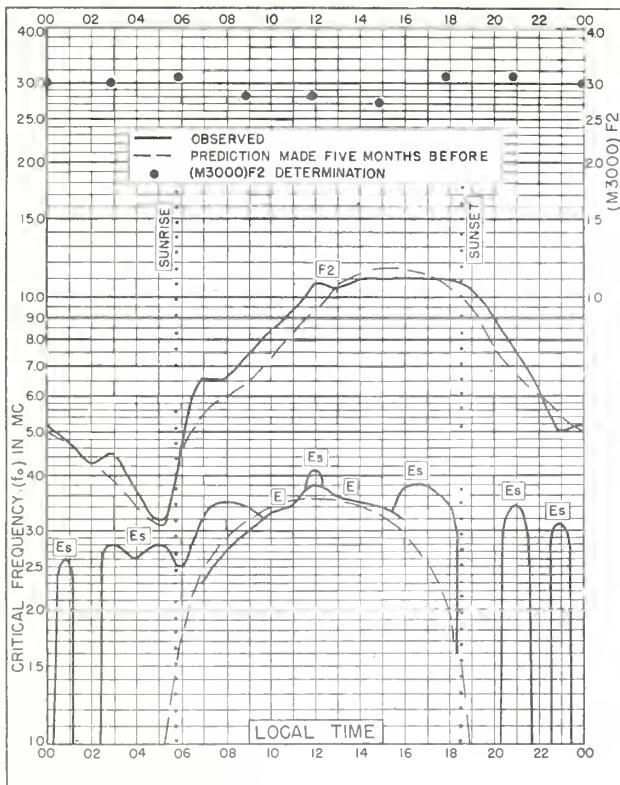


Fig. 109. CALCUTTA, INDIA
22.6°N, 88.4°E AUGUST 1953

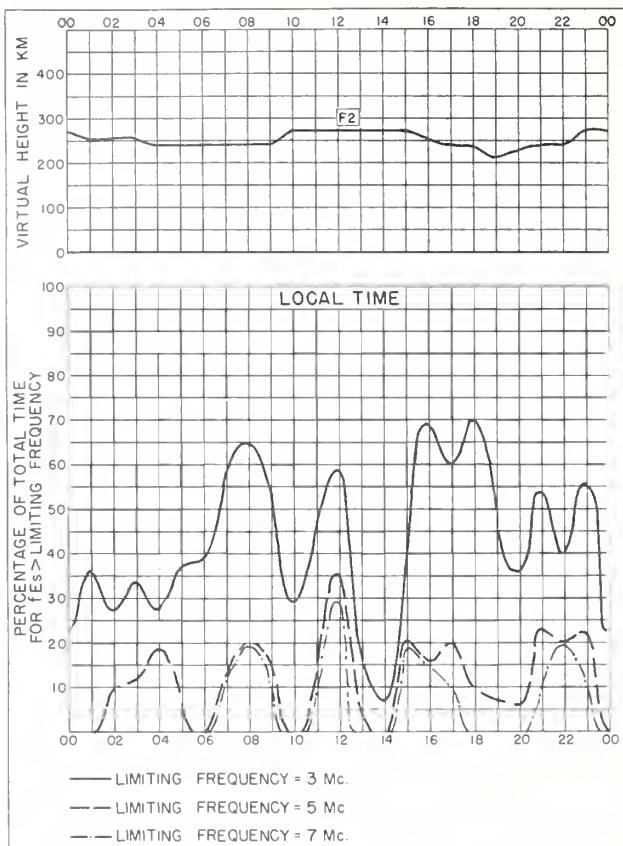


Fig. 110. CALCUTTA, INDIA AUGUST 1953

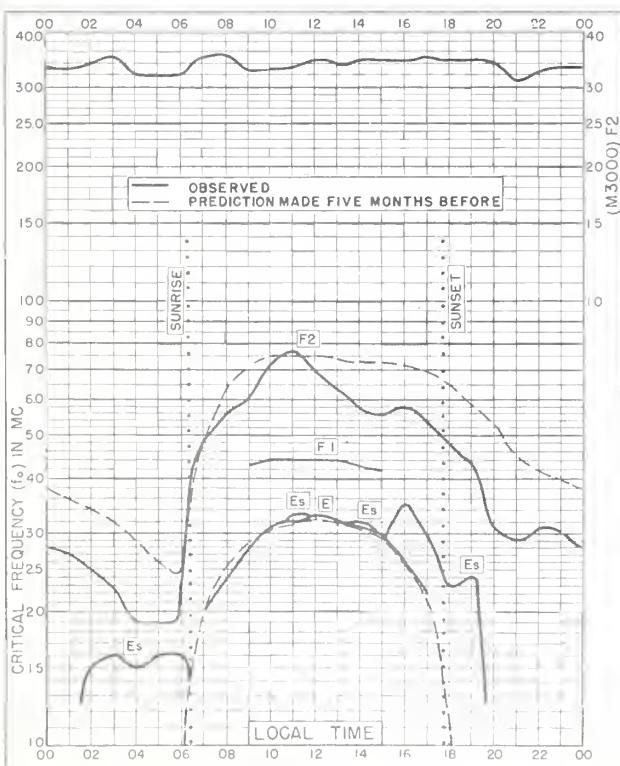
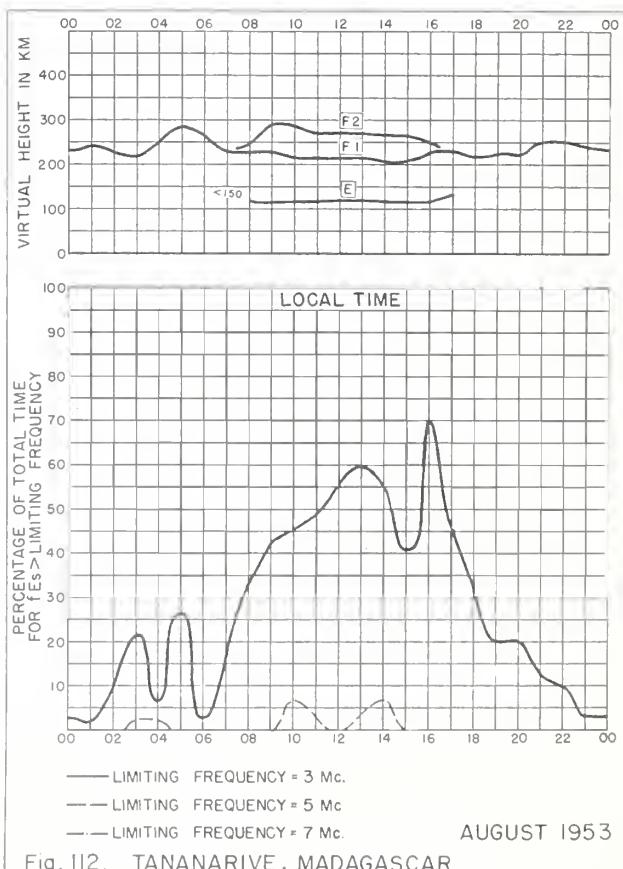


Fig. III. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E AUGUST 1953



AUGUST 1953
Fig. II2. TANANARIVE, MADAGASCAR

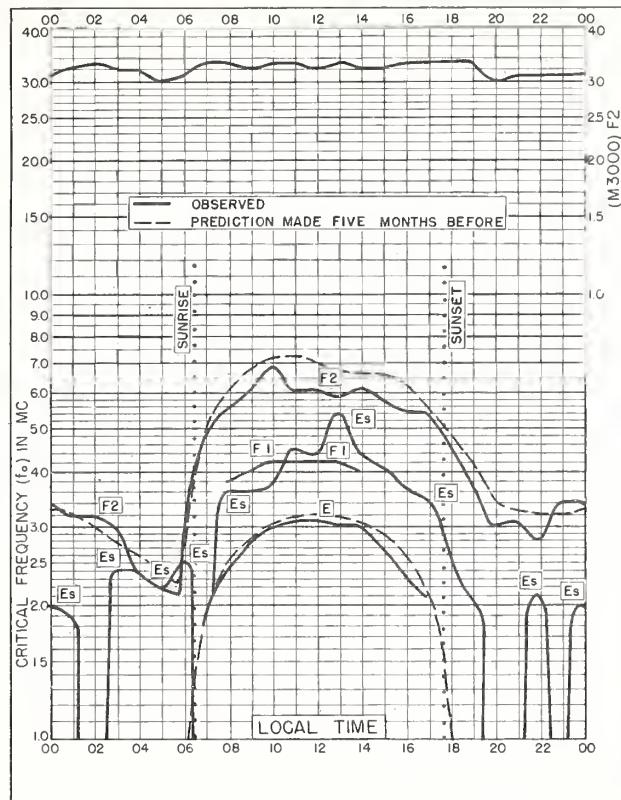


Fig. 113. TOWNSVILLE, AUSTRALIA

19.3°S, 146.8°E

AUGUST 1953

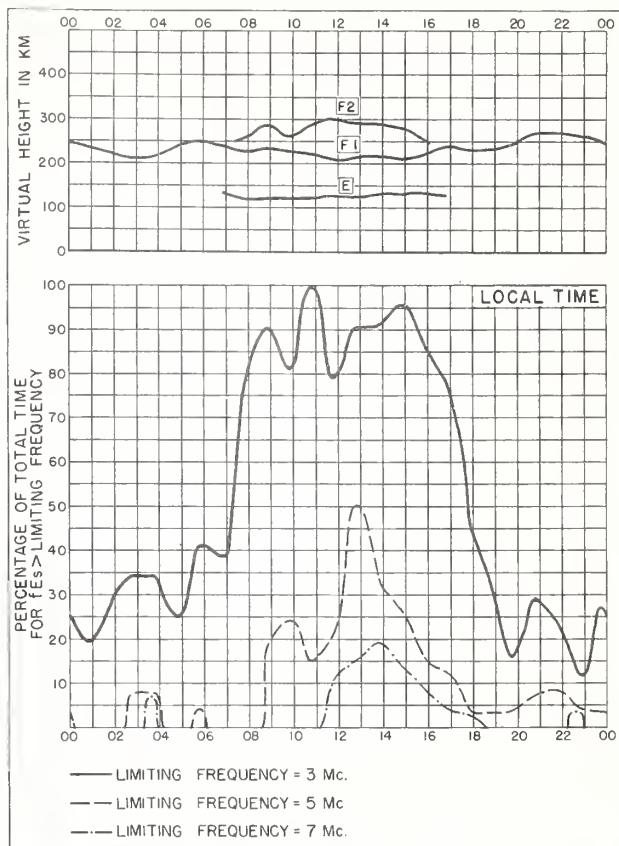


Fig. 114. TOWNSVILLE, AUSTRALIA

AUGUST 1953

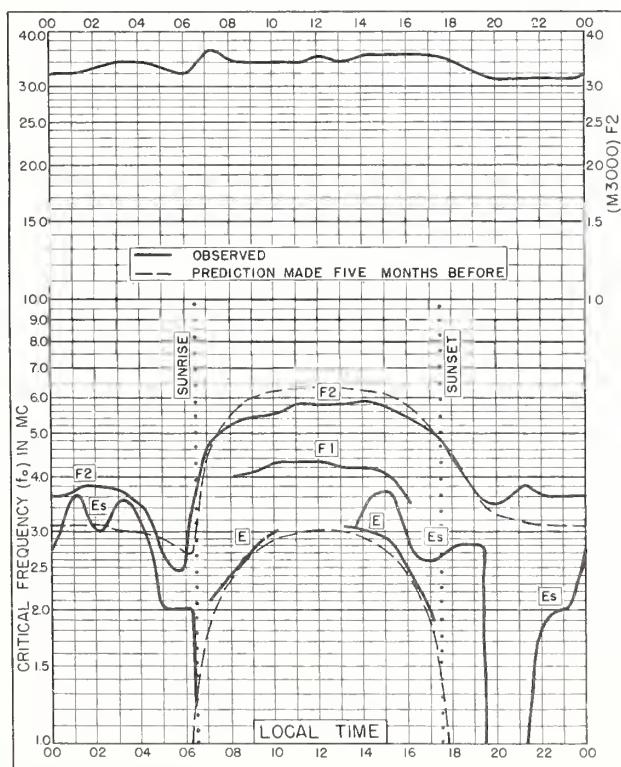


Fig. 115. BRISBANE, AUSTRALIA

27.5°S, 153.0°E

AUGUST 1953

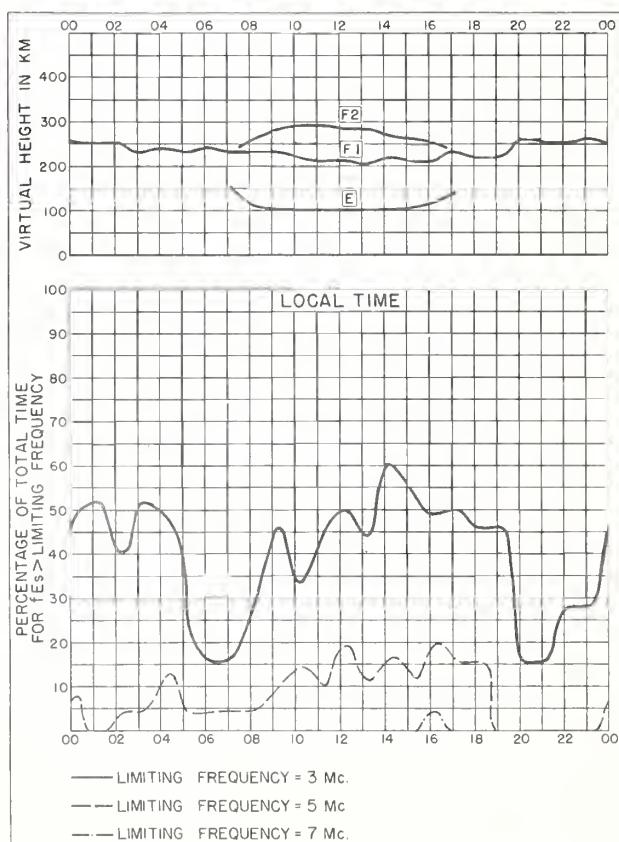
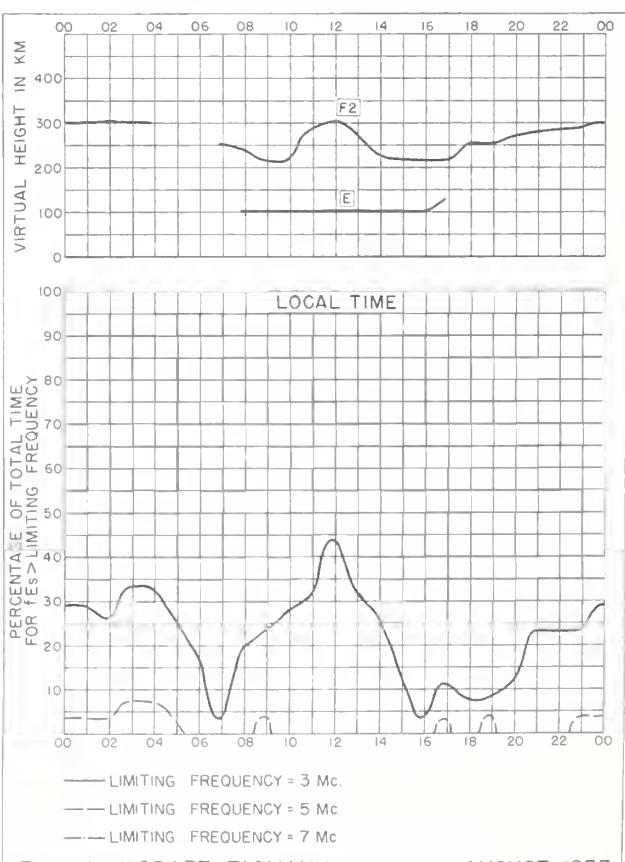
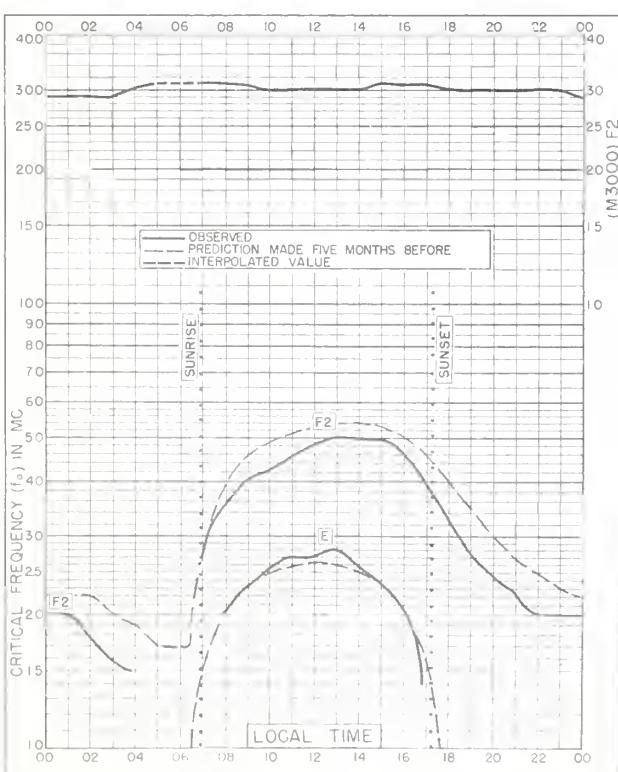
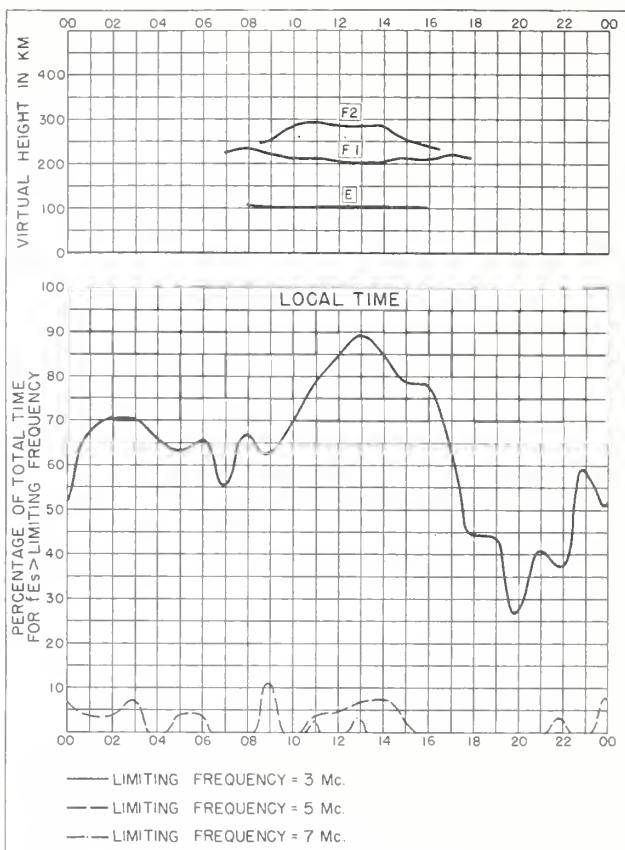
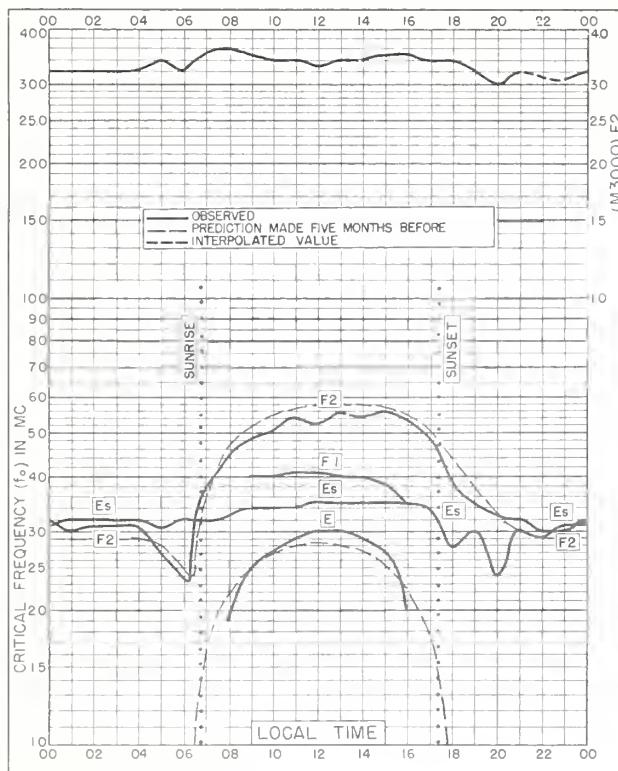


Fig. 116. BRISBANE, AUSTRALIA

AUGUST 1953



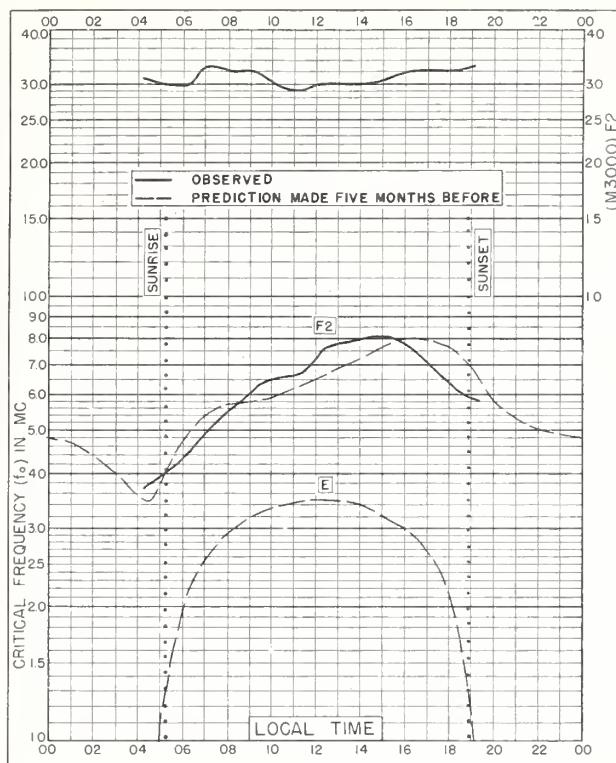


Fig. I21. DELHI, INDIA
28.6° N, 77.1° E JULY 1953

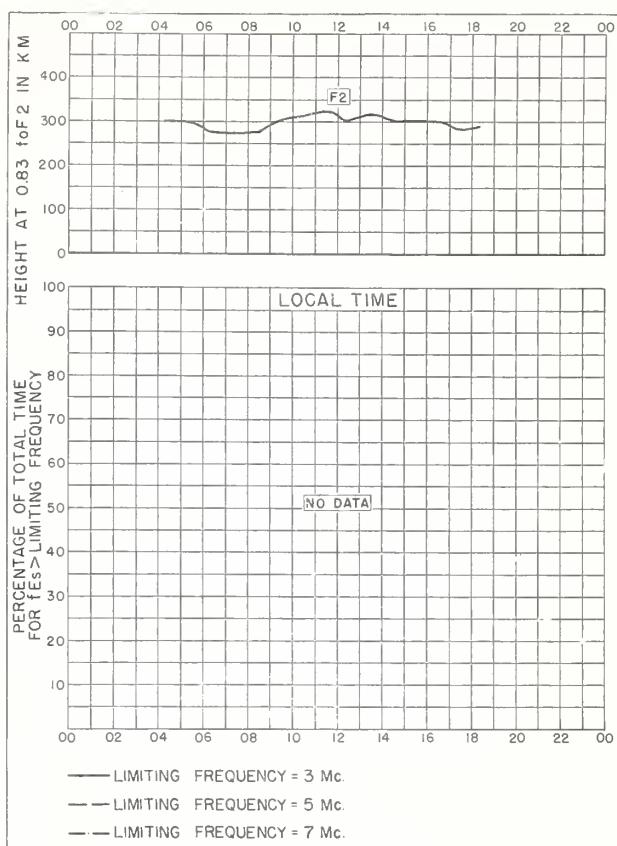


Fig. I22. DELHI, INDIA JULY 1953

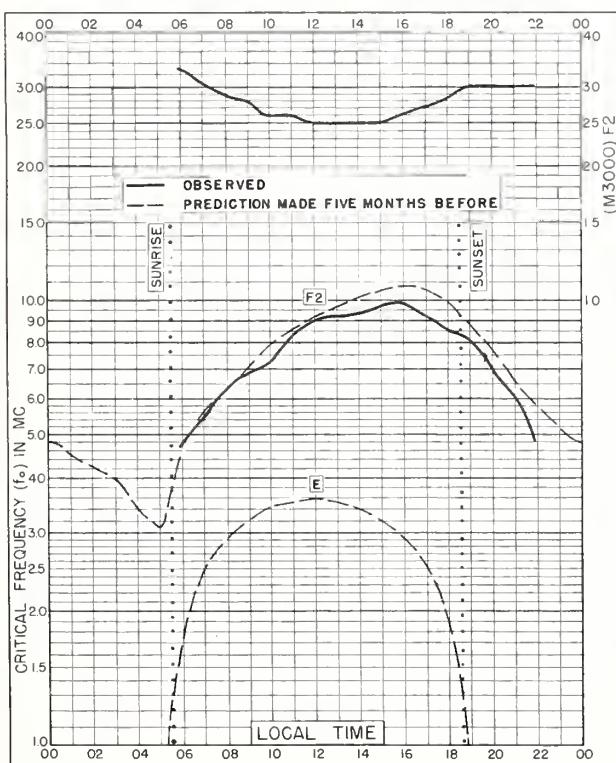


Fig. I23. BOMBAY, INDIA
19.0° N, 73.0° E JULY 1953

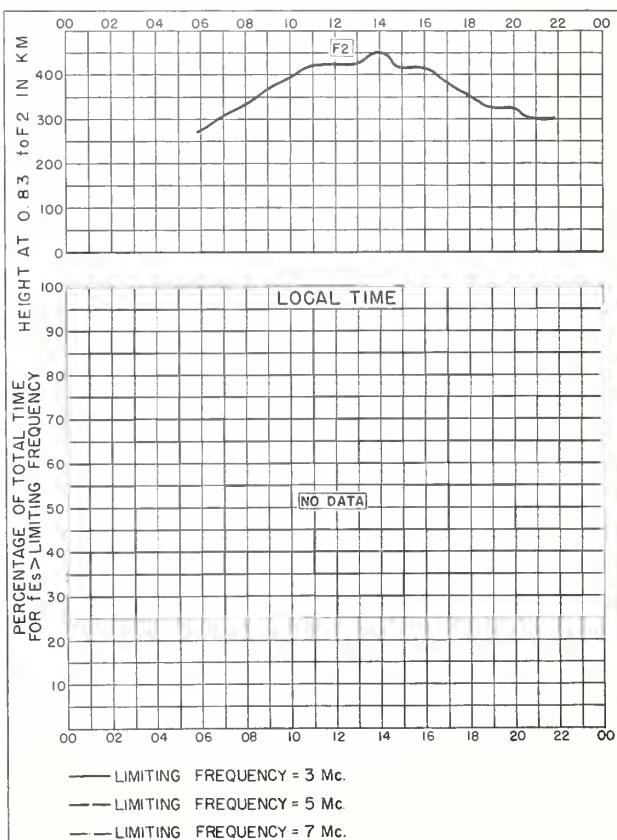


Fig. I24. BOMBAY, INDIA JULY 1953

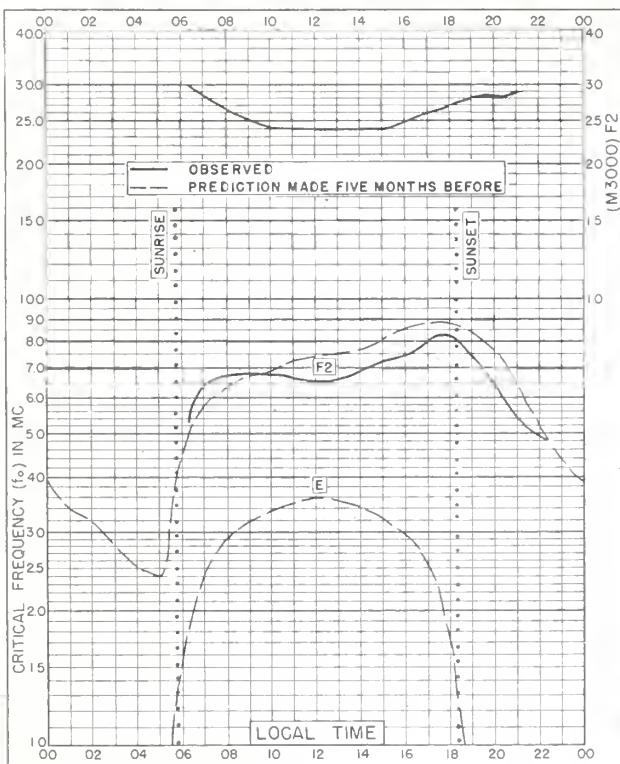


Fig. 125. MADRAS, INDIA

13.0°N, 80.2°E

JULY 1953

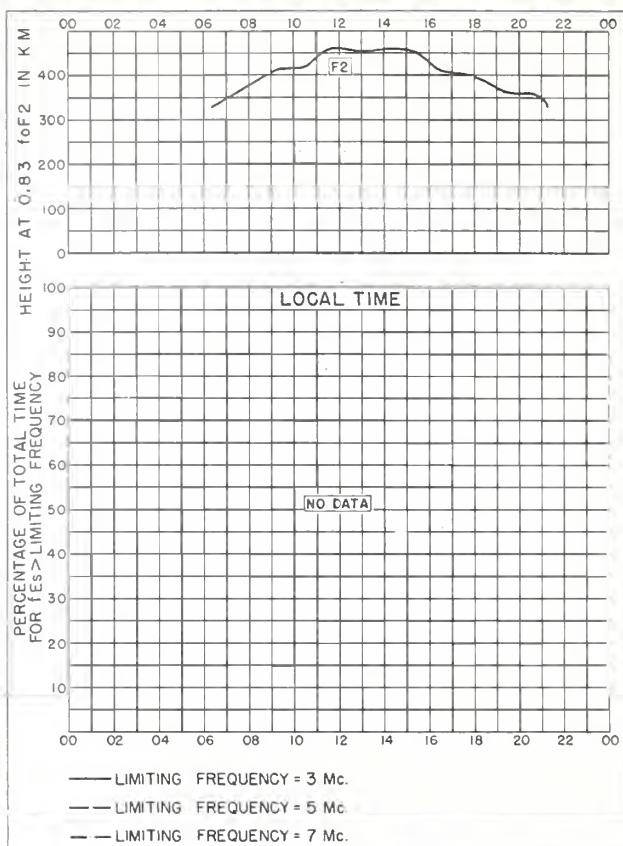


Fig. 126. MADRAS, INDIA

JULY 1953

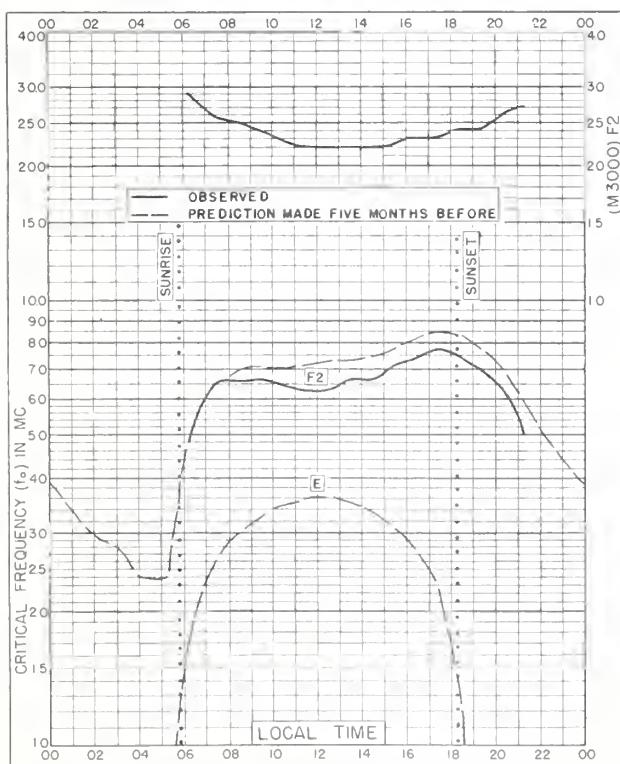


Fig. 127. TIRUCHY, INDIA

10.8°N, 78.8°E

JULY 1953

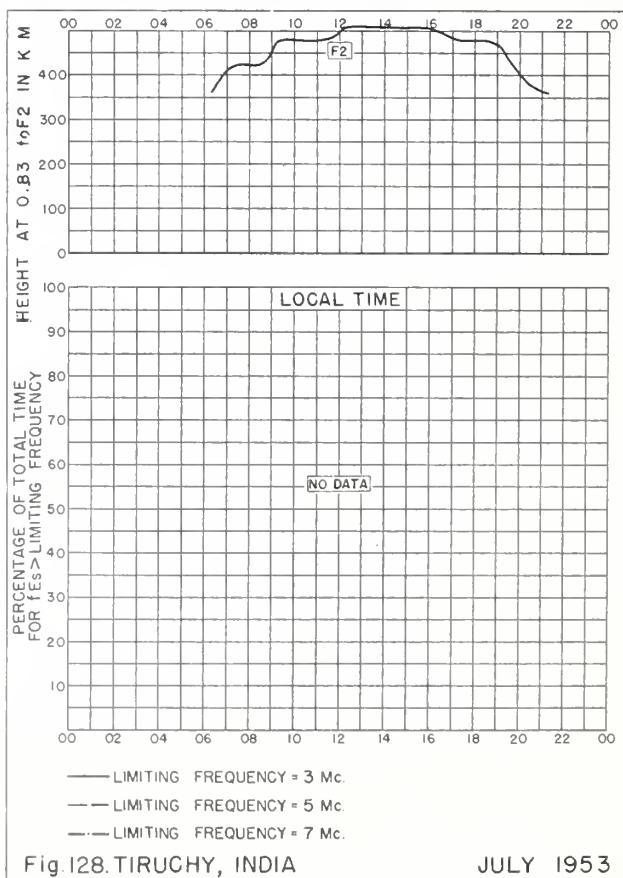


Fig. 128. TIRUCHY, INDIA

JULY 1953

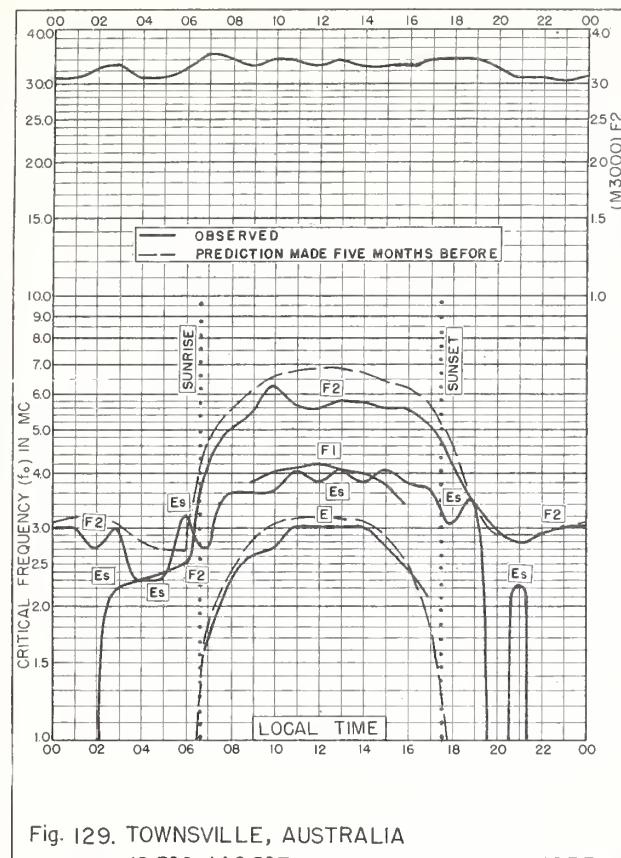


Fig. 129. TOWNSVILLE, AUSTRALIA
19.3°S, 146.8°E JULY 1953

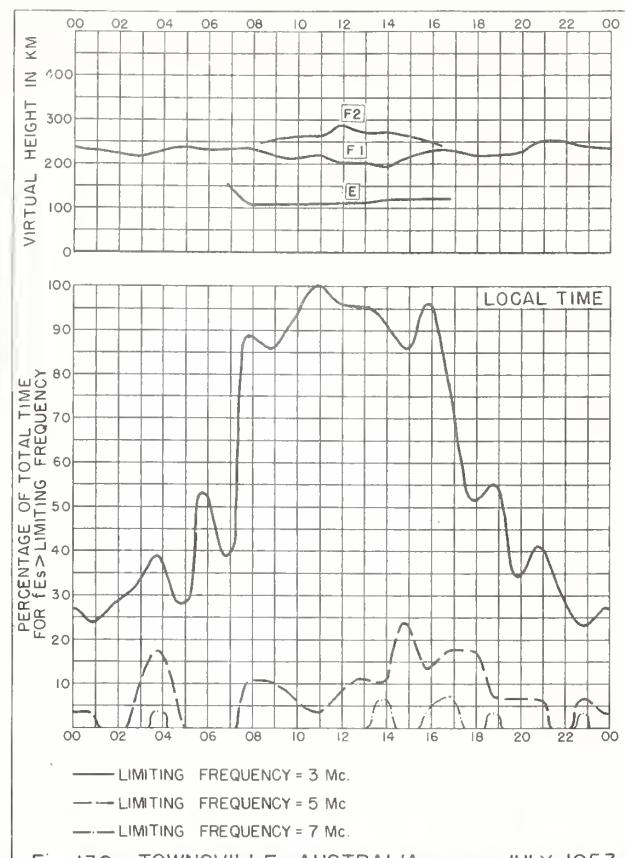


Fig. 130. TOWNSVILLE, AUSTRALIA JULY 1953

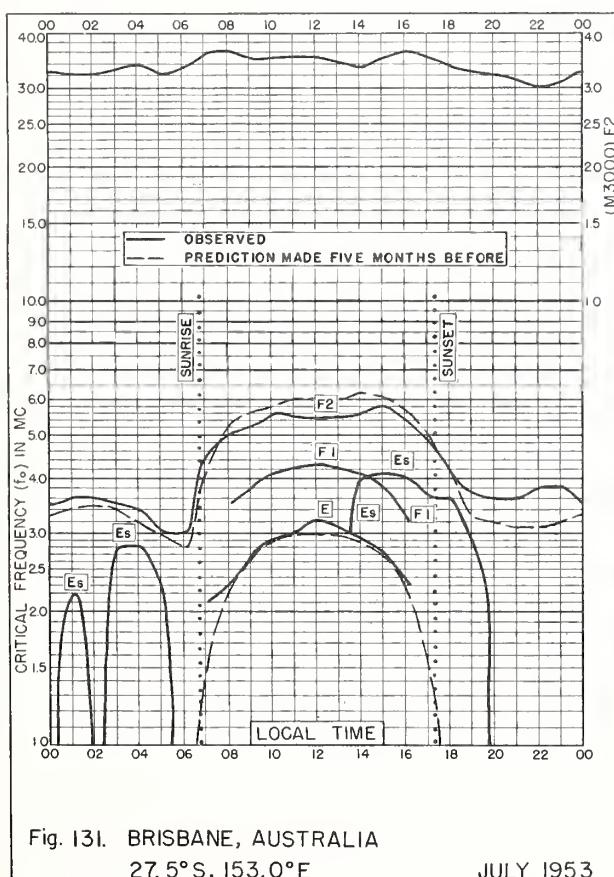


Fig. 131. BRISBANE, AUSTRALIA
27.5°S, 153.0°E JULY 1953

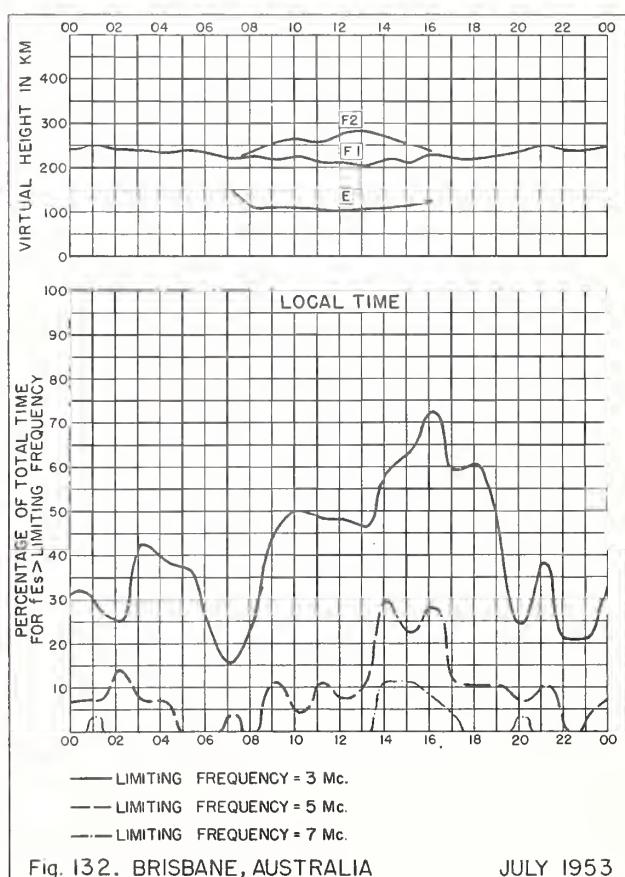
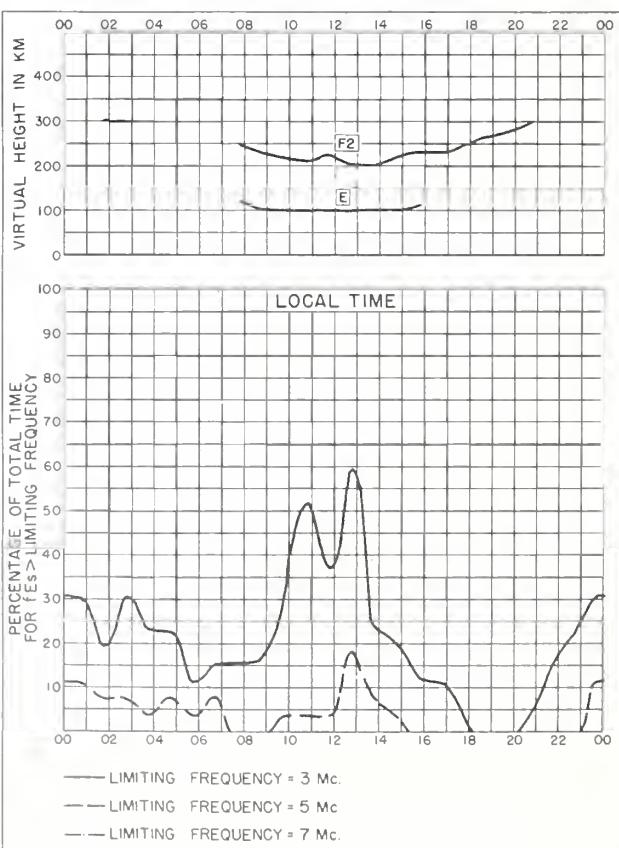
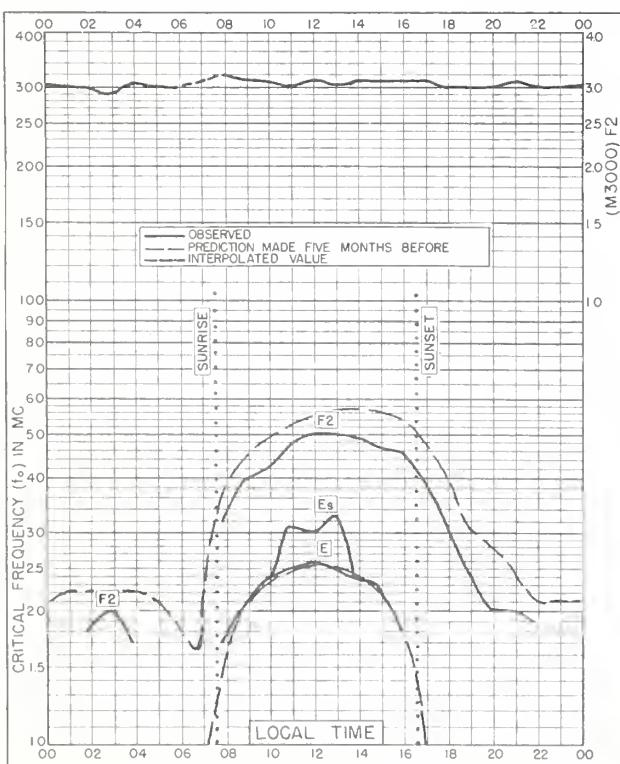
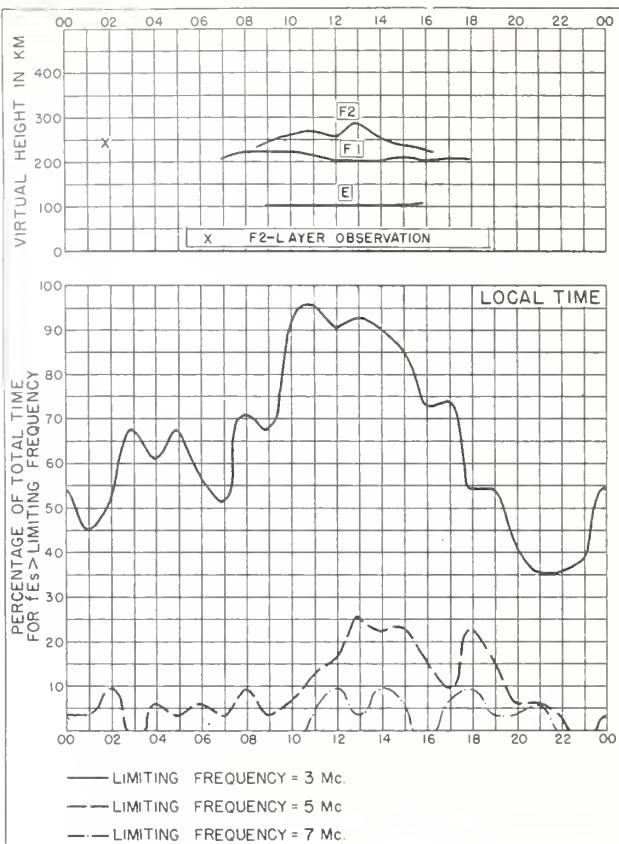
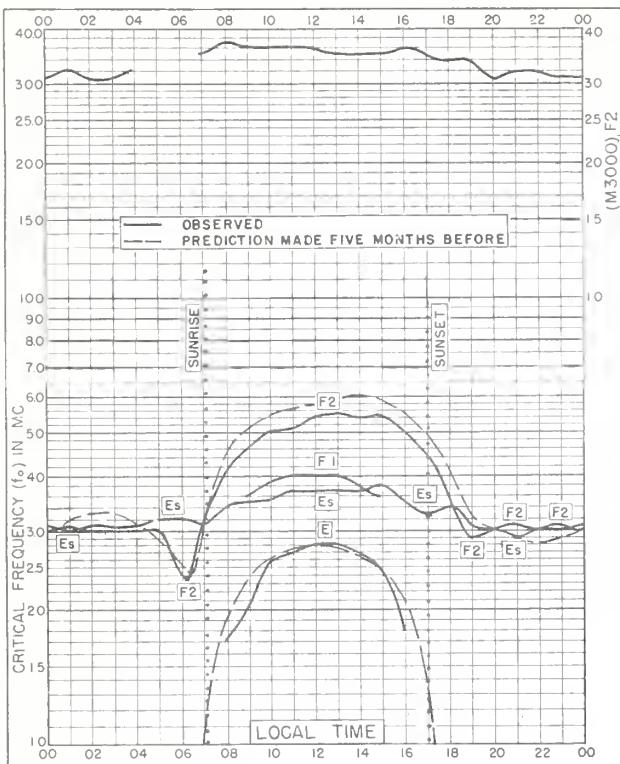


Fig. 132. BRISBANE, AUSTRALIA JULY 1953



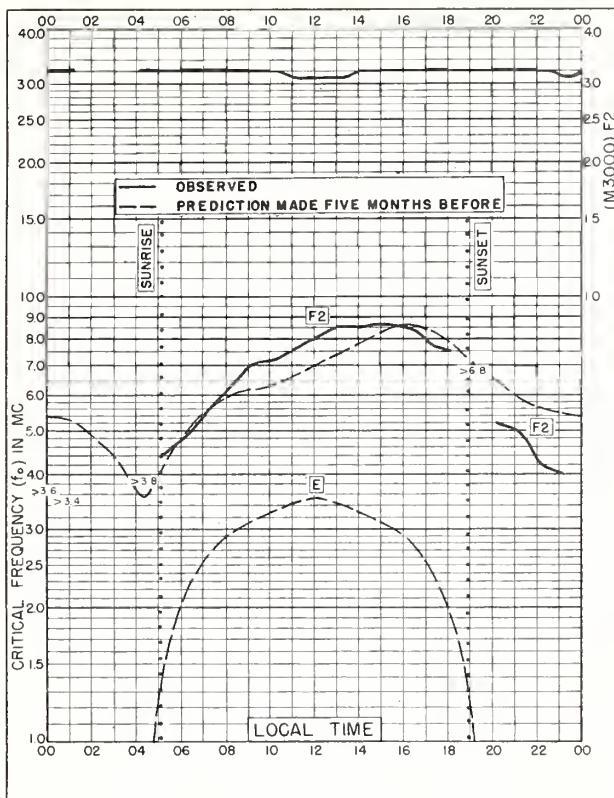


Fig. 137. DELHI, INDIA

28.6°N, 77.1°E

JUNE 1953

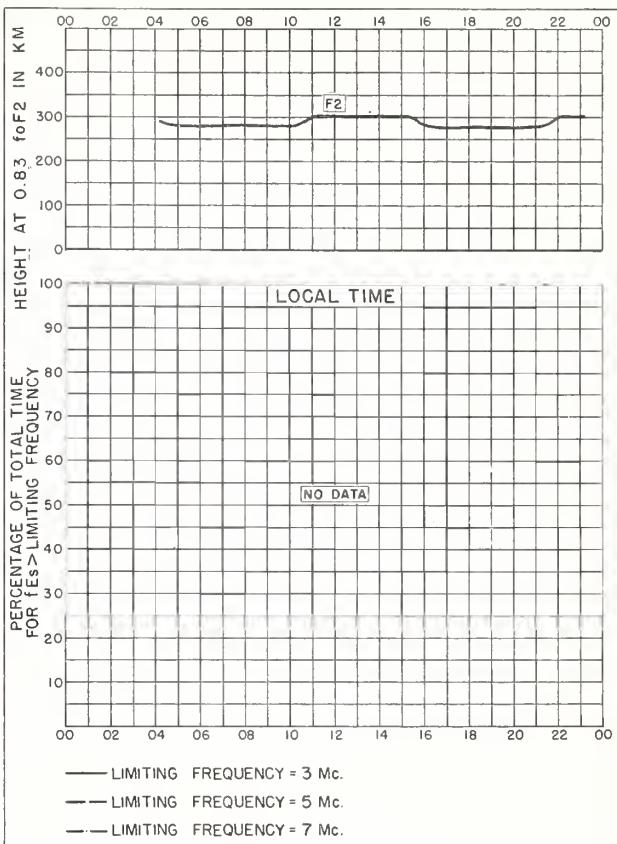


Fig. 138. DELHI, INDIA

JUNE 1953

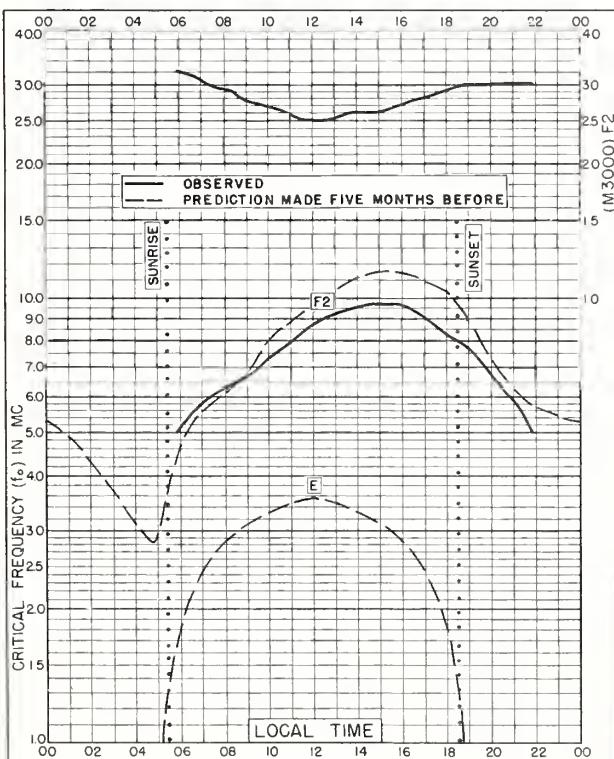


Fig. 139. BOMBAY, INDIA

19.0°N, 73.0°E

JUNE 1953

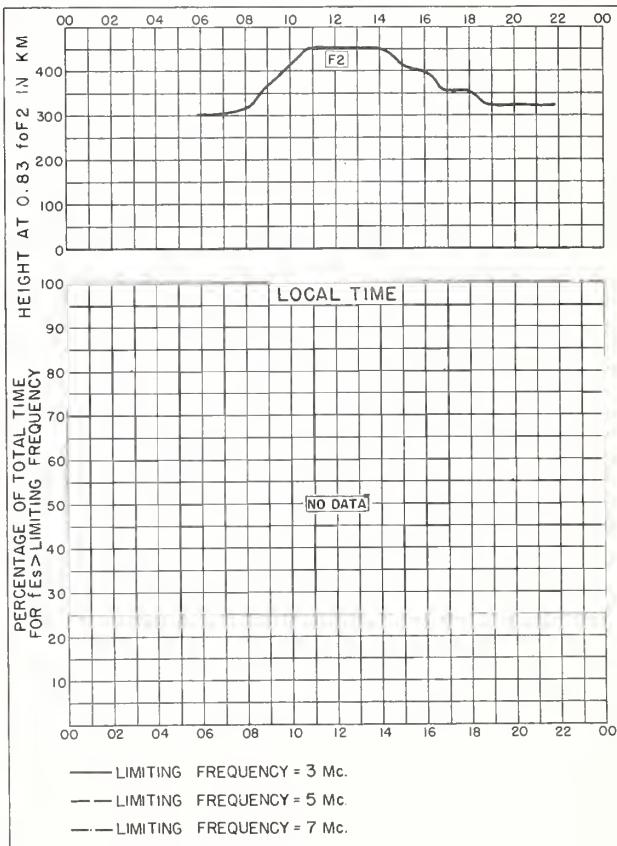
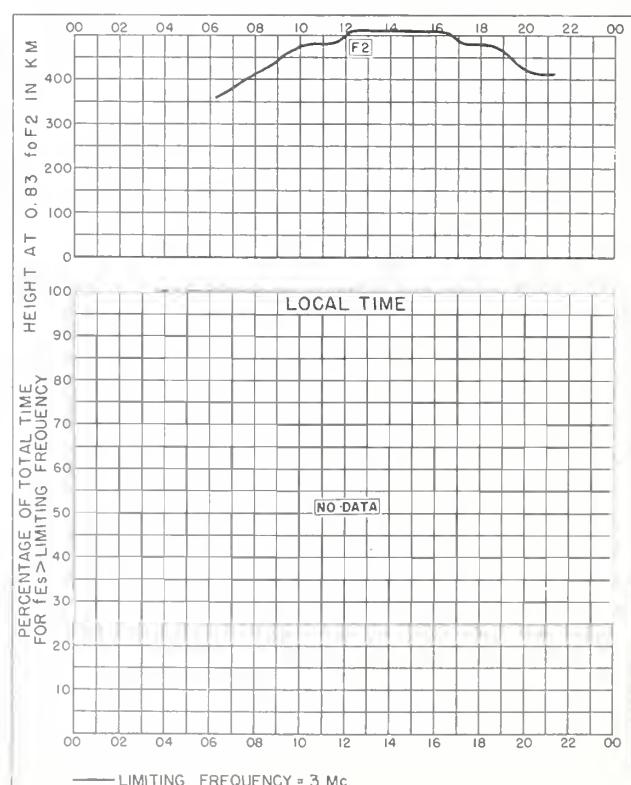
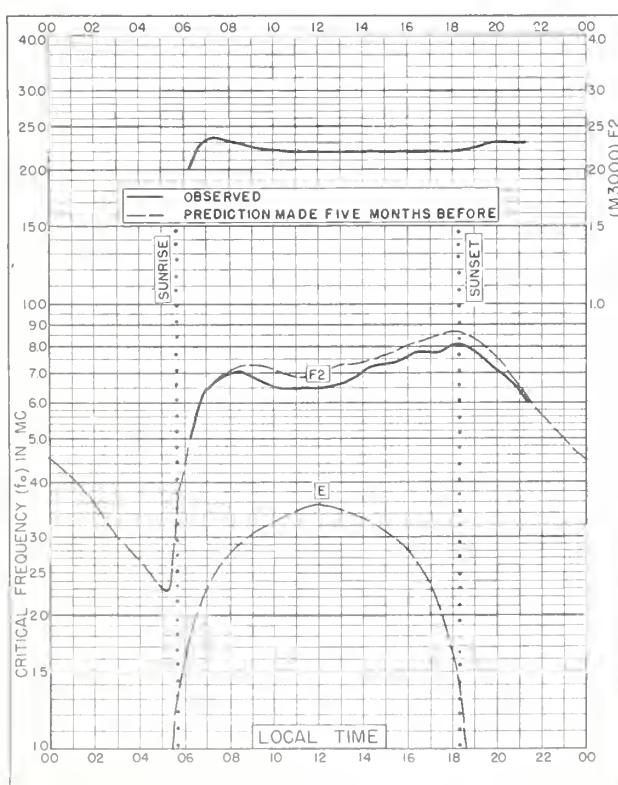
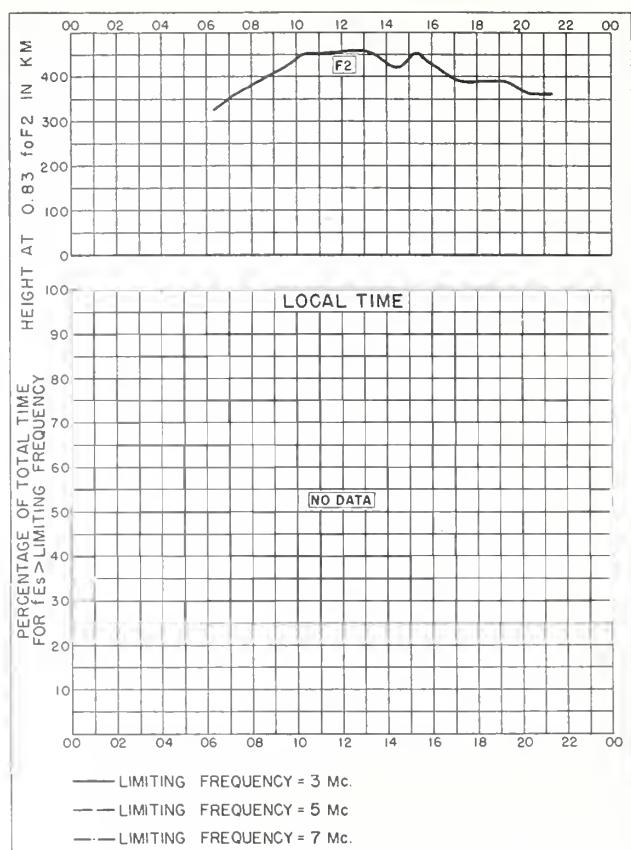
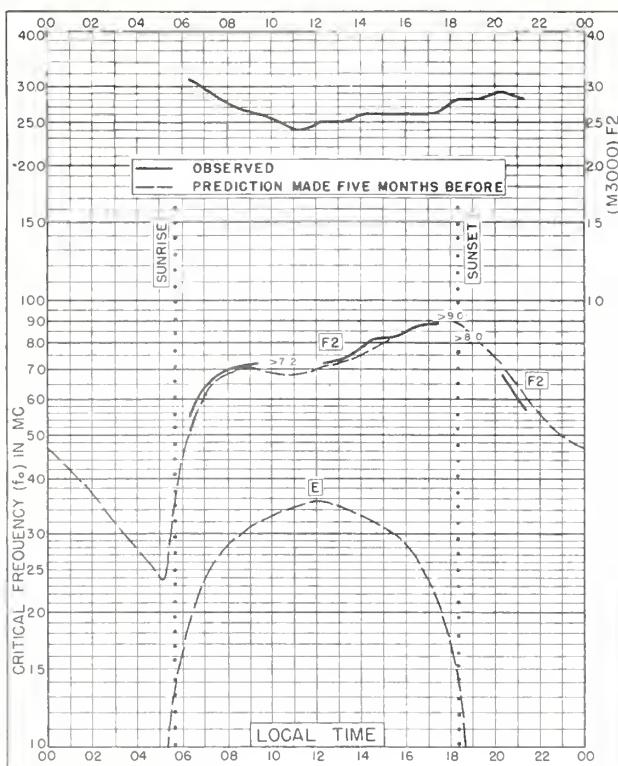


Fig. 140. BOMBAY, INDIA

JUNE 1953



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