CRPL-F58

IONOSPHERIC DATA

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PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
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CRPL-F58 CENTRAL RADIO PROPAGATION LABORATORY
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CONTENTS

SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

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

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

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

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

a. For all ionospheric characteristics:

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

b. For critical frequencies and virtual heights:

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

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

Values missing because of G are counted:
1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:
1. For foF2, as equal to or less than the median.
2. For h'F2, as equal to or greater than the median.

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

c. For MUF factors (M-factors):

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

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

d. For sporadic E (Es):

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

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

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

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

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

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

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

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 29 and figures 1 to 58 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:

Australian Council for Scientific and Industrial Research,
Radio Research Board:
Brisbane, Australia
Canberra, Australia

Australian Department of Supply and Shipping, Bureau of
Mineral Resources, Geophysical Section:
Watheroo, W. Australia

British Department of Scientific and Industrial Research,
Radio Research Board:
Lindau/Harz, Germany

Radio Wave Research Laboratory, Central Broadcasting Administration:
Chungking, China
Lanchow, China

French Ministry of Naval Armaments (Section for Scientific Research):
Fribourg, Germany

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

New Zealand Radio Research Committee:
Christchurch, New Zealand
Rarotonga I.

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

National Bureau of Standards (Central Radio Propagation Laboratory):
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
Palmyra I.

National Bureau of Standards (continued):
San Francisco, California (Stanford University)
San Juan, Puerto Rico (University of Puerto Rico)
Trinidad, British West Indies
Washington, D. C.
White Sands, New Mexico

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

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

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

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

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

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

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

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

Month	Predicted Sunspot No.				
	1949	1948	1947	1946	1945
December		114	126	85	38
November		115	124	83	36
October		116	119	81	23
September		117	121	79	22
August		123	122	77	20
July		125	116	73	
June		129	112	67	
May	108	130	109	67	
April	109	133	107	62	
March	111	133	105	51	
February	113	133	90	46	
January	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 30 to 41 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 and Terminology; Conventions for Determining Median Values."

IONOSPHERE DISTURBANCES

Table 42 presents ionosphere character figures for Washington, D. C., during May 1949, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 43 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory during May 1949.

Table 44 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for various days in April and May 1949.

Table 45 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., from May 5 through May 30, 1949.

Table 46 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation for various days in February, March, and April 1949.

Table 47 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for May 7 and 10, 1949.

Table 48 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, April 1949, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

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

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

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 49 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of <u>all</u> observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 50a and 50b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during May 1949 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 51a and 51b give similarly the intensities of the first red (6374A) coronal line; tables 52a and 52b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 50, 51, and 52: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

ERRATA

1. CRPL-F57, p. 13, table 19: First column at 01 should read "460."

2. Graphs of percentage of time occurrence of fEs: In the case of stations for which the lower limit of the recorder is greater than 3.1 Mc, the lowest limiting frequency given below each graph presenting percentage of time occurrence of fEs should be adjusted in accordance with the lower limit of the sweep. These stations are Bagneux, France, beginning with March 1947 (F36), Okinawa I. from October 1948 (F52), and Singapore, British Malaya, for November 1948 (F56).

Table 1

Washington, D. C. (39.0°N, 77.5°W) May 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	6.8						2.7
01	280	6.5						2.6
02	280	6.3						2.7
03	280	5.8					1.5	2.7
04	275	5.4						2.7
05	280	5.4			---	---		2.9
06	250	6.3	---	---	120	2.4	3.4	3.0
07	240	6.6	230	4.3	110	2.9	3.6	2.9
08	315	7.0	220	4.8	100	3.2	3.6	2.8
09	360	7.1	210	5.0	100	3.5	4.0	2.8
10	370	7.6	200	5.3	100	3.6	4.0	2.8
11	380	7.8	200	5.6	100	3.8		2.7
12	380	8.2	210	5.6	100	3.9		2.7
13	380	8.4	215	5.5	100	3.8	3.7	2.7
14	380	8.3	220	5.4	100	3.8		2.7
15	370	8.5	220	5.3	100	3.7		2.7
16	350	8.7	230	5.0	100	3.4	3.5	2.7
17	320	8.7	240	4.6	100	3.1	3.6	2.8
18	270	8.8	240	---	110	2.5	4.0	2.8
19	260	8.8			130	2.0	3.4	2.9
20	250	8.4					1.9	2.8
21	250	7.8					1.9	2.7
22	270	7.2						2.7
23	280	7.0						2.6

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

Table 2

Lindau/Harz, Germany (51.6°N, 10.1°E) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.4						
01	300	6.8						
02	300	6.6						
03	300	6.2					1.8	
04	300	6.2						
05	300	6.0					2.0	
06	280	6.8			110	2.0	2.6	
07	240	7.6			100	2.6	3.2	
08	240	8.8			100	3.0	3.5	
09	240	9.2			100	3.4	4.0	
10	210	10.2			100	3.6	3.9	
11	220	10.4			100	3.6	4.4	
12	210	10.8			100	3.6	4.0	
13	215	10.7			100	3.6	4.2	
14	220	10.8			100	3.6	4.0	
15	240	10.7			100	3.4	3.6	
16	240	10.7			100	3.2	3.9	
17	250	10.6			100	2.8	3.5	
18	260	10.2			100	2.4	2.9	
19	270	10.1			100	1.8	2.5	
20	250	9.5						
21	240	8.4						
22	240	7.8						
23	280	7.5						

Time: 15.0°E.
Sweep: 1.4 Mc to 16.0 Mc in 7 minutes.

Table 3

Boston, Massachusetts (42.4°N, 71.2°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	278	7.3						2.6
01	278	7.0						2.6
02	272	6.3						2.5
03	275	5.8						2.5
04	270	5.6					1.2	2.6
05	265	5.8			135	1.6	1.0	2.7
06	262	7.2	---	---	135	2.1		2.9
07	262	8.4	---	---	---	---		2.9
08	268	9.4	---	---	---	---		2.9
09	305	9.3	---	---	---	---		2.8
10	(322)	(9.4)	---	---	---	---		(2.8)
11	(338)	(7.5)	---	---	---	---		(2.8)
12	(300)	(10.1)	---	---	---	---		(2.7)
13	(308)	(9.7)	---	---	---	---		(2.7)
14	288	(9.4)	---	---	---	---		(2.8)
15	265	(10.4)	---	---	---	---		(2.9)
16	270	10.3	---	---	---	---		2.9
17	265	9.7			130	2.2		2.8
18	262	9.4			---	---		2.8
19	250	9.0			---	---		2.8
20	250	8.2						2.7
21	265	7.5						2.7
22	275	7.6						2.6
23	280	7.4						2.6

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.4						2.4
01	300	6.6						2.4
02	290	6.6						2.4
03	285	6.2						2.4
04	290	6.0						2.4
05	300	5.8						2.4
06	260	6.8	---	---	---	2.2		2.6
07	240	8.6	---	---	120	2.7		2.8
08	240	9.7	---	---	110	(3.4)		2.7
09	240	11.0	215	---	110	(3.6)	3.9	2.6
10	250	11.4	220	---	110	3.8		2.6
11	275	11.7	220	6.4	110	3.9		2.5
12	320	12.2	220	6.3	110	4.0		[illegible]
13	300	12.6	220	6.6	110	3.9		[illegible]
14	320	12.2	220	---	120	[illegible]		2.6
15	240	12.0	225	---	110	3.7		2.6
16	240	11.5	---	---	110	(3.5)		[illegible]
17	240	11.4			120	[illegible]		2.6
18	240	11.2			120	2.4	1.6	[illegible]
19	235	10.2					2.2	[illegible]
20	230	6.7						[illegible]
21	240	7.6					2.6	2.6
22	260	7.0						2.5
23	280	6.8						2.5

Time. 120.0°W.
Sweep: 1.3 Mc to 1[illegible] Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.2						2.5
01	300	7.1						2.6
02	280	7.0						2.6
03	285	6.9						2.6
04	280	6.6						2.6
05	300	6.4						2.5
06	260	7.4			120	2.0	2.5	2.8
07	240	9.6			120	2.7	3.6	2.8
08	240	10.6			120	3.2	4.3	2.8
09	240	11.3	---	---	110	3.5	4.9	2.7
10	225	11.8	220	6.5	120	3.7	4.9	2.6
11	230	12.4	230	6.6	120	4.0		2.6
12	250	12.8	235	6.6	120	4.0		2.6
13	240	13.0	235	6.3	110	4.0	4.8	2.6
14	250	13.0	235	6.6	110	3.9		2.6
15	240	12.6	---	---	110	3.6		2.6
16	240	12.4			110	3.3	4.2	2.6
17	260	11.9			120	2.8	3.8	2.6
18	250	11.6			110	2.1	3.3	2.7
19	240	10.5			---	---	2.6	2.8
20	240	9.0					2.6	2.7
21	260	8.0					2.2	2.6
22	280	7.5					2.5	2.6
23	310	7.4						2.5

Time: 105.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.6						2.8
01	290	7.4						2.8
02	290	7.1						2.8
03	290	7.0						2.8
04	290	6.7						2.8
05	290	6.6						2.8
06	270	7.6			---	2.3		3.0
07	280	9.6	240	---	125	2.8		3.0
08	290	10.6	230	---	120	(3.4)		2.9
09	300	11.4	230	---	(120)	(3.6)		2.8
10	320	12.2	220	---	---	(3.7)		2.8
11	326	12.3	(225)	---	---	(3.7)		2.7
12	325	12.8	(235)	6.4	---	(3.7)		2.7
13	330	13.0	230	---	---	---		2.7
14	330	12.6	230	---	---	---		2.7
16	330	12.4	230	---	(120)	(3.6)		2.7
16	320	12.2	240	---	120	(3.3)		2.8
17	300	12.1	260	---	120	2.9		2.7
18	270	11.1			130	2.3		2.9
19	250	10.0						2.8
20	250	8.6						2.8
21	280	8.1						2.8
22	290	7.7						2.8
23	290	7.6						2.8

Time: 90.0°W.
Sweep: 2.12 Mc to 15.3 Mc in 8 minutes 30 seconds, automatic operation.

Table 7

Maui, Hawaii (20.8°N, 156.5°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	12.1						(2.9)
01	260	11.8						(2.9)
02	260	9.6						2.8
03	280	8.4						2.7
04	295	7.6						2.7
05	300	7.4						2.7
06	280	7.4			---	---		2.8
07	260	9.4			---	2.6		2.9
08	250	10.9	---	---	120	3.2		2.8
09	250	12.0	245	---	110	3.5		2.6
10	305	13.0	240	---	115	---		2.5
11	330	14.2	260	---	110	---		2.5
12	340	15.2	250	(6.6)	---	---		2.6
13	340	15.7	260	---	---	---		2.6
14	350	15.8	260	---	---	---		2.6
15	340	15.6	250	6.6	110	3.6		2.6
16	340	15.4	250	---	110	3.4	3.6	2.6
17	315	14.8	250	---	110	3.0	4.3	2.7
18	280	14.5			---	2.4	4.3	(2.7)
19	270	14.6			---	---	3.3	(2.7)
20	280	14.2					3.1	(2.7)
21	280	13.8						(2.8)
22	280	12.9						(2.7)
23	290	12.5						(2.7)

Time: 150.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute, above 16.0 Mc, manuel operation.

Table 8

San Juan, Puerto Rico (18.4°N, 66.1°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		10.6						2.8
01		10.1						2.8
02		9.0						2.9
03		8.1						2.9
04		7.8						2.8
05		7.5						2.8
06		7.2						2.8
07	240	9.3		3.6				3.0
08	250	11.0		4.0		3.1		2.9
09	270	12.2		---		3.6		2.8
10	300	13.0		---		3.8		2.8
11	310	13.5		---		4.1		2.7
12	320	14.0		---		4.1		2.7
13	(325)	(13.4)		---		4.1		2.7
14	340	13.5		(6.6)		4.0		2.6
16	330	13.0		6.2		3.8		2.7
16	315	13.0		6.0		3.5		2.6
17	280	12.5		---		3.0		2.6
18	270	11.9		---		---		2.7
19	270	11.1						2.7
20		10.9						2.6
21		10.8						2.7
22		10.9						2.7
23		11.0						2.8

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, supplemented by manual operation.

Table 9

Trinided, Brit. West Indies (10.6°N, 61.2°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	11.9						3.0
01	250	10.8						3.0
02	240	9.6						2.9
03	240	8.6						2.9
04	250	7.6						2.8
05	260	6.8						2.8
06	280	7.2			---	---	2.2	2.8
07	240	9.8			120	2.7	3.1	3.1
08	240	11.4	230	4.3	120	3.3	3.8	3.0
09	250	12.5	230	4.9	120	3.6	4.0	2.9
10	260	13.4	220	5.2	120	3.9	4.4	2.8
11	270	13.9	220	5.4	120	4.0	4.6	2.8
12	280	14.2	220	5.4	120	4.1	4.8	2.8
13	280	14.2	230	5.4	120	4.1	4.9	2.7
14	280	13.9	220	5.4	120	4.0	5.1	2.7
15	280	13.4	230	5.2	120	3.8	5.0	2.7
16	270	13.0	240	5.0	120	3.4	4.8	2.7
17	270	12.5	250	5.0	120	2.9	4.4	2.6
18	270	12.0			120	2.2	3.4	2.6
19	300	11.8					3.6	2.6
20	300	12.4					2.8	2.8
21	290	12.4					2.2	2.7
22	280	12.8						2.8
23	260	12.5						2.9

Time: 60.0°W.
Sweep: 1.5 Mc to 18.0 Mc, manual operation.

Table 10

Palmyra I. (5.9°N, 162.1°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	13.8					2.9	2.8
01	240	(12.4)					2.4	(2.7)
02	250	(11.8)						(2.8)
03	250	(11.1)					1.8	(2.8)
04	240	(9.7)					2.1	(2.9)
06	245	8.8					2.2	(3.0)
08	250	7.9					2.0	(3.0)
07	270	10.0			130	2.6	3.5	2.7
08	250	11.1			120	3.3	3.6	2.5
09	250	11.8	240	---	130	3.7	4.0	2.4
10	270	12.4	(240)	---	120	---		2.3
11	270	12.6	235	---	120	---		2.2
12	280	13.0	(240)	---	120	---		2.2
13	270	13.3	(240)	---	125	---		2.1
14	270	14.0	(240)	---	120	---		2.1
15	270	14.4	235	---	130	3.9		2.3
16	250	14.4	240	---	120	3.4	3.9	2.1
17	250	14.4			130	3.0	3.8	2.1
18	290	14.0			140	2.3	2.1	2.1
19	380	12.7					3.3	2.0
20	410	12.4					2.0	(2.0)
21	340	13.6					2.1	(2.2)
22	296	14.7					2.0	(2.4)
23	250	14.6					3.1	(2.7)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic operation; 13.0 Mc to 18.0 Mc, manual operation.

Table 11

Huancayo, Peru (12.0°S, 75.3°W) April 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	8.9					5.0	2.9
01	230	8.0					4.8	2.9
02	240	7.2					4.6	3.0
03	240	6.6					3.2	3.0
04	240	5.7					2.8	3.0
05	235	5.0					2.8	3.1
06	270	6.6				1.7	2.8	3.0
07	250	10.2				2.7		3.0
08	230	12.5				3.4	8.4	2.8
09	---	13.6	230	---		3.8	11.0	2.5
10	270	13.8	220	6.5		4.0	11.0	2.3
11	---	13.0	210	---		4.0	11.9	2.2
12	(270)	12.5	210	5.5		4.1	11.6	2.2
13	(270)	12.6	210	5.5		4.0	10.9	2.2
14	(270)	12.8	210	5.4		3.9	10.8	2.2
15	---	12.8	210	---		3.6	10.8	2.2
16	240	12.4				3.2	10.7	2.1
17	270	12.3				2.5	8.4	2.1
18	330	11.6				1.3	2.8	2.1
19	420	9.8						2.0
20	385	9.2						2.2
21	235	9.9					2.7	2.4
22	240	9.6					3.0	2.6
23	230	8.6					4.8	2.8

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 12

Lindau/Harz, Germany (51.6°N, 10.1°E) March 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	305	6.5						
01	305	6.1						
02	305	5.8						
03	310	5.4						
04	315	5.1						
05	300	4.7						
06	300	4.6						
07	260	6.4			115	2.2		
08	260	8.0			105	2.5	2.3	
09	230	10.1			105	3.0	3.0	
10	230	10.7			105	3.2	3.4	
11	230	11.5			105	3.3	3.4	
12	230	12.0			105	3.4	3.5	
13	230	11.8			105	3.4	3.5	
14	240	12.1			106	3.4	3.4	
15	230	11.5			100	3.3	3.2	
16	250	11.2			105	3.0	2.9	
17	250	11.0			110	2.5	2.6	
18	260	10.6			115	2.0	2.5	
19	230	9.6						
20	230	8.5						
21	260	7.7						
22	290	6.9						
23	300	6.5						

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 12 minutes.

Table 13

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) March 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	255	6.8					1.8	2.8
01	255	6.3					2.0	2.8
02	250	5.8					1.6	2.8
03	240	5.1						2.8
04	260	4.6					1.4	2.8
05	270	4.3					1.6	2.8
06	260	5.6			---	1.6		2.9
07	230	9.0			110	2.5		3.2
08	230	10.8	330	---	110	3.1	3.4	3.1
09	250	12.0	220	---	110	3.6	4.0	3.0
10	280	12.6	210	---	110	3.9	4.2	2.8
11	280	13.0	205	---	110	4.0	4.4	2.8
12	310	13.2	210	---	110	4.1	4.2	2.7
13	320	13.2	210	---	110	4.0		2.6
14	330	13.2	220	---	110	4.0	4.0	2.6
15	320	13.1	230	---	110	3.8		2.7
16	300	13.1	230	---	110	3.5	3.9	2.7
17	280	12.7	240	---	110	3.0	3.6	2.7
18	250	12.3			110	2.0	2.9	2.8
19	240	11.8			---	---	2.2	2.9
20	230	10.7					1.9	2.9
21	240	9.6					1.8	2.9
22	240	8.9					1.8	2.9
23	250	7.5					1.8	2.9

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

Table 14

Watheroo, W. Australia (30.3°S, 115.9°E) March 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	6.9					2.8	2.6
01	295	6.6					3.2	2.6
02	290	6.2					3.0	2.6
03	280	5.9					3.0	2.6
04	290	5.6					3.0	2.6
05	290	5.4					3.0	2.6
06	262	5.8				1.8	2.8	2.8
07	235	8.5	240	4.2		2.5	2.8	3.2
08	248	9.8	230	5.0		3.0	3.3	3.1
09	248	10.4	230	5.1		3.4	3.9	2.9
10	295	10.9	220	5.5		3.7	4.2	2.8
11	300	11.5	220	6.0		3.8	4.2	2.7
12	310	11.9	225	5.8		3.8	4.3	2.7
13	320	11.8	225	6.0		3.9	4.5	2.7
14	320	11.7	230	6.0		3.8	4.3	2.6
15	310	11.7	230	6.0		3.7	4.2	2.7
16	300	11.7	238	5.6		3.3	3.8	2.7
17	250	11.1	235	4.8		2.9	3.8	2.7
18	245	10.7				2.2	3.3	2.8
19	240	10.0					3.0	2.8
20	250	8.8					2.9	2.8
21	260	8.3					3.0	2.7
22	250	7.5					3.0	2.7
23	275	7.2					2.9	2.7

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

Table 15

Capetown, Union of S. Africa (34.2°S, 18.3°E) March 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(255)	6.0						2.9
01	(260)	5.2						2.8
02	(280)	4.9						2.8
03	(270)	4.7						2.8
04	(280)	4.5						2.7
05	(290)	4.4						2.7
06	(280)	4.2						2.7
07	250	7.0			---	3.0		3.1
08	240	9.5	---	---	110	2.7		3.2
09	245	11.0	230	---	110	3.1		3.1
10	250	12.0	220	---	110	---	3.7	2.9
11	290	12.6	220	---	110	---	4.0	2.8
12	300	13.2	---	---	110	---		2.7
13	310	13.1	---	---	110	---		2.7
14	320	13.2	---	---	110	---		2.7
15	320	13.2	230	---	110	---		2.7
16	310	13.1	240	---	100	---		2.7
17	285	12.8	240	---	110	3.1		2.7
18	250	12.4	250	---	110	2.6		2.8
19	240	12.0			100	---		2.9
20	230	10.9			---	---	1.8	2.9
21	230	9.4					1.8	2.9
22	240	8.4						2.9
23	(240)	7.0						3.0

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

Table 16

Chungking, China (29.4°N, 106.8°E) February 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	245	8.0						2.6
01	250	8.0						2.7
02	260	7.6						2.9
03	230	6.9						3.0
04	220	4.9						2.9
05	260	3.7						2.5
06	295	4.0						2.6
07	260	7.6	---	---	---	---	3.0	3.0
08	240	11.4	220	---	110	3.0	3.9	3.0
09	245	12.7	220	---	110	3.2	4.0	2.9
10	260	13.5	210	---	100	3.7	4.4	2.8
11	265	14.8	220	---	100	4.1	4.5	2.8
12	270	15.0	210	---	100	4.2	4.6	2.7
13	280	15.5	220	---	110	4.0	4.7	2.5
14	280	16.3	220	---	110	3.6	4.5	2.6
15	240	16.2	200	---	80	3.4	4.3	2.7
16	280	16.8	200	---	90	3.1	3.8	2.7
17	230	14.8	200	---	95	2.8	3.6	2.8
18	225	14.8			---	---	2.2	2.8
19	230	13.3						2.8
20	230	14.2						2.7
21	240	12.2						2.8
22	240	10.2						2.8
23	240	9.4						2.7

Time: 105.0°E.
Sweep: 1.5 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 17

Delhi, India (28.6°N, 77.1°E) February 1949

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00	420	8.4						2.7
01	420	7.4						
02	---	---						
03	---	---						
04	(420)	(4.9)						2.9
05	400	4.8						
06	400	5.0						
07	360	8.2						
08	340	11.0						3.1
09	360	12.0						
10	380	12.6						
11	390	13.0						
12	400	13.4						2.6
13	440	13.4						
14	440	13.2						
15	440	13.6						
16	470	13.8						2.4
17	410	13.5						
18	420	13.4						
19	(410)	12.1						
20	410	12.2						2.7
21	430	11.4						
22	400	10.0						
23	400	8.6						

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

Table 18

Bombay, India (19.0°N, 73.0°E) February 1949

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	330	9.5						
08	360	11.2						2.9
09	390	12.3						
10	(450)	(13.2)						
11	---	(13.8)						
12		(13.9)						
13		(14.1)						
14		(14.4)						
15		(14.3)						
16		(14.3)						
17		(14.3)						
18	---	(14.0)						
19	480	(14.0)						
20	435	13.5						2.7
21	420	13.2						
22	(345)	(12.6)						2.9
23	---	---						

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

Table 19

Madras, India (13.0°N, 80.2°E) February 1949

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	430	9.6						
08	420	12.4						2.6
09	460	13.3						
10	540	(14.0)						
11	540	(14.0)						
12	540	12.9						2.3
13	540	12.8						
14	540	13.8						
15	540	12.7						
16	510	12.7						2.2
17	540	12.4						
18	540	11.9						
19	[illegible]	(11.0)						
20		(10.1)						
21		(10.0)						
22		(10.0)						
23								

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

Table 20

Tiruchirapalli, India (10.8°N, 78.8°E) February 1949

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
06								
06								
07	(355)	(7.9)						
08	(400)	(11.3)						
09	(480)	(12.1)						
10	---	---						
11	---	---						
12	---	(11.6)						
13	---	(11.2)						
14	(600)	(11.2)						
15	---	(11.1)						
16	---	(10.9)						
17	(580)	(10.3)						
18	(600)	(9.8)						
19	(600)	(9.4)						
20	(720)	(8.8)						
21	---	(8.7)						
22	---	(9.0)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 21

Watheroo, W. Australia (30.3°S, 115.9°E) February 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	7.1					3.0	2.6
01	290	6.7					3.2	2.6
02	280	6.4					3.3	2.6
03	270	6.2					3.0	2.6
04	270	5.7					3.0	2.7
05	280	5.3					3.2	2.6
06	280	6.2				1.8	3.0	2.9
07	260	7.6	230	---		2.7	3.3	3.0
08	270	8.5	230	4.8		3.2	3.6	2.9
09	290	9.2	230	5.3		3.6	4.6	2.8
10	300	9.8	220	5.6		3.8	4.4	2.6
11	300	10.4	220	5.3		3.9	4.4	2.7
12	300	11.0	220	5.3		4.0	4.6	2.6
13	315	10.8	225	5.4		3.8	4.4	2.6
14	340	10.7	230	5.6		3.9	4.1	2.6
15	335	10.6	240	5.6		3.8	4.0	2.6
16	320	10.1	240	5.4		3.6	3.7	2.6
17	290	10.0	250	5.1		3.2	3.3	2.7
18	260	9.4				2.4	3.3	2.7
19	260	9.0					2.8	2.8
20	250	8.6					3.1	2.7
21	270	8.1					2.8	2.6
22	280	7.8					2.9	2.7
23	290	7.4					2.9	2.6

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

Table 22

Christchurch, New Zealand (43.5°S, 172.7°E) February 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.8					2.7	2.4
01	300	7.5					2.7	2.5
02	310	6.7					2.7	2.4
03	300	6.4					2.8	2.5
04	290	6.2					2.9	2.5
05	290	5.6				1.2	3.5	2.7
06	260	6.4				1.6	4.4	2.8
07	250	7.4	---	---		2.7	4.8	2.8
08	250	8.2	235	(5.0)		3.3	5.2	2.8
09	300	8.4	230	(5.6)		3.5	5.0	2.7
10	340	8.7	230	5.7		3.7	6.4	2.7
11	370	8.8	---	5.9		3.7	5.2	2.7
12	375	8.9	230	6.0		3.7	5.4	2.6
13	385	9.0	240	6.0		3.8	5.8	2.6
14	395	9.0	---	6.0		3.7	6.2	2.6
15	350	9.2	250	5.8		3.6	4.7	2.6
16	250	9.0	250	5.6		3.5	4.0	2.6
17	250	9.0	250	(5.0)		3.1	4.3	2.7
18	270	9.1				2.5	4.0	2.7
19	280	9.1				1.5	3.9	2.6
20	270	8.7					3.9	2.5
21	280	8.6					4.2	2.5
22	300	8.2					3.1	2.4
23	300	8.0					2.8	2.4

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc.

Table 23

Lanchow, China (36.1°N, 103.8°E) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	440	3.6						2.3
01	460	3.9						2.2
02	440	3.8						2.2
03	400	3.8						2.3
04	380	3.8						2.4
05	400	3.6						2.3
06	400	3.6						2.4
07	360	4.5	345	---				2.4
08	315	8.5	280	---	150	---	3.0	2.7
09	320	10.0	300	---	---	---	3.2	2.6
10	320	11.5	300	---	140	3.5	4.0	2.6
11	340	13.0	300	---	140	3.7	4.1	2.6
12	340	13.5	300	---	---	---	4.4	2.5
13	320	13.0	300	---	---	---	4.3	2.5
14	320	13.0	300	---	---	---	4.2	2.5
15	320	12.6	300	---	---	---	4.2	2.4
16	310	11.5	300	---	---	---	3.3	2.5
17	315	10.5	285	---			2.6	2.5
18	315	8.2	280	---				2.6
19	300	7.8						2.5
20	300	7.4						2.5
21	310	5.3						2.4
22	400	4.0						2.3
23	440	3.5						2.2

Time: 105.0°E.
Sweep: 2.4 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 24

Rarotonga I. (21.3°S, 159.8°W) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	280	8.8	---	---	---	1.8	3.2	2.7
07	250	9.7	---	---	115	2.7	4.2	3.0
08	245	9.6	---	---	110	3.3	5.2	2.7
09	265	10.3	230	5.8	110	3.6	4.8	2.6
10	360	12.1	230	6.0	110	3.8	5.7	2.6
11	370	12.9	255	5.9	110	3.9	5.2	2.5
12	380	13.4	240	6.6	110	4.0		2.6
13	380	14.3	250	6.4	110	4.0	5.3	2.6
14	370	14.4	250	6.3	110	4.0		2.6
15	350	14.1	240	5.9	110	3.9	5.6	2.6
16	340	13.3	250	5.6	110	3.6	5.3	2.7
17	330	11.9	250	5.9	110	3.2	5.6	2.7
18	270	10.9	---	---	120	2.7	5.2	2.6
19	290	10.4			---	1.8	4.0	2.4
20	350	10.0			---	---	5.4	2.4
21	350	10.2					3.9	2.4
22								
23								

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

Table 25

Brisbane, Australia (27.5°S, 153.0°E) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	9.0					5.0	2.6
01	290	8.4					4.6	2.6
02	300	8.0					4.5	2.6
03	290	7.8					3.7	2.7
04	280	7.4					3.4	2.6
05	260	7.1			---	1.7	3.0	2.8
06	250	7.5	---	---	110	2.6	4.0	2.9
07	250	7.5	235	5.0	100	3.1		2.8
08	360	8.0	240	5.4	100	3.5		2.7
09	350	9.4	220	5.8	100	3.8		2.7
10	360	10.0	230	6.0	100	4.0	5.1	2.6
11	360	10.2	220	6.0	---	---	7.2	2.6
12	375	10.6	230	6.0	---	(4.1)	6.4	2.5
13	365	10.4	230	5.8	100	4.2	5.5	2.5
14	350	10.3	230	5.8	105	4.0	3.4	2.6
15	340	10.4	240	6.5	110	3.8	3.9	2.7
16	310	10.0	220	5.2	100	3.5	3.8	2.7
17	280	9.2	240	5.0	100	3.1		2.7
18	265	8.8	---	---	---	---	4.5	2.7
19	270	8.1			---	---	4.0	2.6
20	300	8.5					4.0	2.6
21	310	9.0					3.5	2.6
22	310	9.2					3.7	2.6
23	300	9.6					5.5	2.6

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

Table 26

Canberra, Australia (35.3°S, 149.0°E) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	275	7.8					3.9	2.8
01	270	7.4					3.0	2.7
02	270	6.9					3.4	2.7
03	290	6.4					3.3	2.7
04	270	5.9					2.9	2.7
05	260	5.6			105	1.4	2.7	2.8
06	240	6.4	---	---	100	2.4	3.1	3.0
07	250	7.1	218	4.5	100	3.0	3.8	3.0
08	295	7.3	240	5.1	100	3.4	5.0	3.0
09	350	7.8	210	5.4	100	3.6	6.4	2.8
10	350	8.3	200	5.5	100	3.9	6.6	2.8
11	350	8.3	200	5.8	100	4.0	6.6	2.8
12	360	8.2	210	5.7	100	4.0	6.6	2.7
13	380	8.3	210	5.7	100	4.0	6.7	2.7
14	380	8.3	200	5.6	100	3.9	6.5	2.7
15	350	8.2	210	5.4	100	3.8	5.6	2.7
16	350	8.3	230	5.3	100	3.6	5.0	2.8
17	300	8.1	230	4.9	100	3.3	3.9	2.8
18	240	8.0			100	2.7	3.9	2.8
19	250	7.9			100	1.8	3.5	2.8
20	250	7.9					3.4	2.7
21	290	7.9					3.3	2.6
22	300	7.9					3.9	2.6
23	290	8.0					3.4	2.7

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

Table 27

Fribourg, Germany (48.1°N, 7.8°E) December 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	3.6						(2.6)
01	320	3.4						2.6
02	310	3.6						2.6
03	302	3.4						2.8
04	270	3.0						2.8
05	280	3.0						2.7
06	250	2.9						2.8
07	260	3.9						2.8
08	220	7.2				1.7	2.5	3.3
09	220	9.7			120	2.3	2.9	(3.2)
10	220	11.2			115	2.7	3.0	(3.2)
11	230	(11.4)			110	2.9		(3.2)
12	230	(11.7)			110	3.0	3.2	(3.1)
13	225	(11.4)			120	2.9	3.2	(3.2)
14	225	(11.2)			120	2.6	3.2	(3.2)
15	220	10.6			120	2.2	3.2	(3.0)
16	210	8.9				E	3.2	(3.2)
17	215	7.2					2.6	(3.0)
18	220	6.0					2.0	(3.0)
19	230	4.8					2.7	3.0
20	240	3.7					2.7	3.0
21	275	3.3					2.3	2.8
22	310	3.3						(2.6)
23	315	3.4					2.1	2.6

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 28

Fribourg, Germany (48.1°N, 7.8°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	4.2						(2.6)
01	310	4.0						2.7
02	305	4.1						2.6
03	298	3.9						2.7
04	268	3.4						2.9
05	260	3.0						2.9
06	265	3.1						2.7
07	240	6.0				E		(2.8)
08	220	8.9			120	2.1	2.3	3.1
09	225	10.8			115	2.7	2.8	(3.2)
10	220	11.6			110	2.9	3.6	(3.1)
11	225	(12.0)	230		110	3.1	3.4	(3.0)
12	225	(12.1)			110	3.2		(3.0)
13	230	(11.9)	225		105	3.1		3.0
14	230	(12.0)			110	2.9	1.9	3.0
15	230	(11.7)			120	2.5	3.2	3.0
16	220	(10.8)			130	1.8	3.2	(3.1)
17	220	(9.4)					2.6	(3.0)
18	220	7.8					1.9	3.1
19	220	(6.7)						(3.1)
20	240	4.8						2.9
21	270	4.3					2.1	2.6
22	290	4.4						2.6
23	310	4.2						(2.6)

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 29

Fribourg, Germany (48.1°N, 7.8°E) October 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	5.0						2.5
01	310	4.8						(2.5)
02	310	4.7						2.5
03	320	4.6						2.5
04	300	4.2						2.7
05	290	4.2						2.6
06	275	4.4						2.8
07	242	(7.0)			130	2.0	2.3	(3.0)
08	240	(8.7)	250		115	2.6	2.9	3.0
09	240	(10.2)	230		110	2.9	4.0	(3.0)
10	230	(11.0)	230		110	3.2	4.2	(3.0)
11	250	(11.6)	220		110	3.2	4.0	(2.9)
12	240	(11.4)	230		110	3.3	4.2	(2.9)
13	235	11.4	230		110	3.3	3.7	2.8
14	245	(11.5)	235		110	3.1	3.6	(2.8)
15	250	(11.7)	240		110	2.9	3.6	2.9
16	240	(11.2)			110	2.4	3.2	(2.9)
17	240	10.8				E	3.2	(3.0)
18	230	(9.4)					2.8	(3.2)
19	230	(8.0)					2.8	(3.0)
20	240	6.0					2.6	2.8
21	255	5.4						2.6
22	290	(5.3)						(2.6)
23	310	4.9						(2.5)

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Form adopted June 1946

TABLE 30

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

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), May (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

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	280	280	260	250	260	250	250	230	230	230	300	250	350	350	360	240	300	240	250	250	240	260	280	300
2	300	280	260	280	300	310	280K	230K	420K	480K	490K	GK	500K	480K	460K	460K	430K	370K	270K	280K	250K	280K	300K	280
3	300	300	280	270	(230)S	270	250	250	300	400	440	460	420	[410]A	400	400	380	230	390	340	300	280	250	300
4	300K	290K	350K	350K	290K	280K	260K	380K	GK	630K	GK	500K	BK	BK	430K	390K	380K	330K	AK	AK	250K	300K	280	280
5	280	280	280	280	280	270	230	260	230	320	330	370	380	380	370	370	340	340	260	250	230	270	280	320
6	300	290	(270)S	(260)S	280	310	260	[340]L	410	450	380	330	390	350H	370	330	330	250H	250	270	250	250	260	310
7	(320)A	250	280	250	250	270	250	230	220	220H	300	280	310	300	330	300	240	220H	260	250	(280)A	260	260	260
8	280	300	300	230	260	280	240	220	230H	350	380	410	410	390	400	390	360	250	280	280	260	240	280	300
9	300	300	300K	300K	330K	320K	250K	230K	400K	360K	400K	420K	(430)SK	400K	390K	410K	380K	340K	280HK	280K	(280)AK	290K	270	270F
10	300	280	270F	290	280	280	240	240	250	280	[320]C	350	350	330	320	330	310	320	280	250	240	250	280	310
11	240	280	280	280K	280K	300K	530FK	GK	480FK	560K	430K	430K	390K	500K	420K	390K	330K	300HK	(250)AK	230K	270K	250K	270K	270K
12	260FK	270K	250K	280K	420K	320FK	(430)FK	GK	GK	GK	GK	GK	GK	GK	GK	620K	530K	GK	580FK	310FK	380FK	300K	430FK	(500)SK
13	200K	370K	310K	300K	300K	300K	250K	250	300	280	[320]L	350	360H	340	370	370	300	280	270	250	240	250	280	(280)S
14	300	280	280K	280FK	230FK	250FK	230K	220K	390K	480K	450K	420K	500K	400K	400K	380K	370K	340K	280	260	260	250	270	300
15	300	280	280	270	250	280	280	220	[260]L	390	340	380	360	320	(350)A	330	310	[280]A	260	250	260	270	220	(270)S
16	280	330	310	300	280	280	250	230	220	400	450	[410]A	380	400	370	370	380	350	330	270	260	280	260	270
17	270	230	300	310	310	280	250	320	380	[380]S	320	460	370	400	380	300	300	300	250	250	250	250	250	270
18	280	280	280	270	260	260	240	(240)A	280	270	320	360	370	370	350	330	330	240	280	250	240	280	260	270
19	270	260	250	260	250	260	240	230	290	320	320	370	370	380	350	350	330	300	(260)A	250	240	250	250	280
20	290	280	250	250	250	260	230	230	240	200	300	360	350	320	330	330	320	240	240	260	230	250	270	270
21	270	220	280	280	260	270	(200)A	(240)A	280	300	330	300	350H	350	330	330	340	300	(300)A	260	M	M	M	300
22	320	300	300	300	280	320	(250)A	(240)A	330	340	340	380	380	340	380	350	360	330	[280]A	260	[290]A	330	270	(340)A
23	280	280F	(300)AK	(330)AK	320K	290K	[320]AK	400K	[450]AK	500K	520K	510K	500K	450K	480K	440K	400K	350K	[310]AK	280K	(320)AK	(330)A	[300]A	280
24	300	310	300	C	C	C	C	C	C	310	300	340	380	370	370	340	340	310	240	260	260	[250]A	270	280
25	280	300	260	250	280	(280)A	280	370	430	400	400	430	410	400	420	380	380	330	250	280	250	250	270	270
26	270	270	280	280	250	310	(260)A	320	340	360	400	390	400	400	400	380	350	340	300	260	250	260	270	270
27	270	280	260	250	270	220	250	300	260	280	330	330	330	350	330	350	330	300	280	260	240	270	290	300
28	280	270	250	250	(230)S	280	230K	230K	350K	380K	430K	(420)SK	450K	520K	470K	450K	400K	370K	330K	260K	250K	250K	270K	(270)SK
29	280	280	280	270	240	270	270	(240)A	210	270	330	340	360	360	380	360	360	320	230H	260	240	A	A	A
30	(310)A	300	280	270	250	270	250	350	330	350	330	350	370	380	380	380	400H	350	260K	300K	280K	250K	260K	350K
31	350K	350K	360K	310FK	310K	300K	230FK	(450)FK	500K	570K	GK	570K	450K	510K	450K	440K	390K	380K	250K	270K	220K	250K	270K	290K
Median	290	280	280	280	275	280	250	240	315	360	370	380	380	380	380	370	350	320	270	260	250	250	270	280
Count	31	31	31	30	30	30	30	30	30	31	31	31	30	30	30	31	31	31	30	30	30	29	29	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 31

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

Form adopted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), May (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J. W., J. J. S., J. M. C.

Calculated by: E. J. W., J. J. S., L. A. L.

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	(7.7)S	7.5	7.1	6.6	6.2	6.1	7.2	8.6	9.4	(9.4)P	10.0	10.1	10.3	10.3	10.3	10.3	10.1	(10.2)SP	9.9	9.2	9.0	8.0	7.1	7.2
2	(7.6)P	(7.5)P	6.8	6.3	5.7	5.4	5.7K	5.8K	5.9K	6.0K	6.2K	<5.1GK	(6.3)SK	6.8K	6.6K	6.9K	6.9K	7.0K	7.0K	6.9K	6.9K	6.9K	6.7K	6.7
3	6.5	6.5	6.5	6.6	6.0	6.4	(7.5)S	8.0	8.2	8.0	7.7	7.8	7.9	[8.1]A	8.3	8.3	8.5	8.4	7.7	7.9	(8.3)PS	[8.2]S	(8.0)JS	7.1
4	7.1	5.8K	4.8K	4.9K	4.9K	(4.5)SK	4.9K	5.3K	<4.8GK	5.5K	<5.1GK	6.4K	BK	BK	7.6K	7.5K	7.7K	7.4K	AK	AK	7.1K	6.9K	6.7	6.5
5	6.3	6.2F	6.0F	5.8F	5.5F	5.9F	(7.3)JS	7.6	8.0F	8.6	8.8	9.4	9.5	9.9	9.9	10.2	9.9	(9.9)S	(9.8)JS	(10.2)JS	8.5	(7.9)JS	7.3	(7.1)S
6	7.1	6.7	6.2	5.8	5.2	4.9	5.7	6.3	6.4	(6.5)S	(7.3)S	7.6	8.2	8.9	8.7	9.0	9.2	9.4	8.9	8.8	8.7	8.0	7.1	6.9
7	6.8	6.8	6.9	6.6	5.9	5.3	6.5	7.9	9.1	9.6	9.7	9.9	10.5	10.4	10.2	10.4	10.4	10.3	9.9	10.0	9.5	8.8	8.3	7.5
8	7.3	6.4	6.3	6.4	6.2	6.1	6.7	7.1	7.5	7.7	7.8	8.0	8.0	7.9	7.7	7.4	7.7	7.5	7.7	8.3	8.3	7.6	6.4	6.4
9	6.2	5.8	5.6F	4.7FK	4.1K	K(4.4)J	5.4K	K(5.9)JS	6.3K	6.3K	7.1K	7.2K	7.3K	7.5	7.3K	7.2K	7.3K	7.4K	7.2	7.3K	7.4K	7.0K	6.7	6.3F
10	6.2F	6.1F	5.5F	5.3F	4.9F	5.0F	6.3	7.2H	8.0	8.1F	[8.2]C	9.3	9.6	9.9	9.8	9.8	10.0	9.8	(9.8)JS	9.8	9.1	8.6	7.8F	(7.5)JS
11	8.2	7.6	7.0	6.5K	4.9FK	4.2K	4.3FK	<4.2GK	5.4FK	5.6FK	6.5K	6.8K	6.9K	6.7K	7.1K	7.1K	7.2K	7.2K	7.3K	7.2K	K(6.8)JS	6.9K	6.3FK	6.2FK
12	5.8FK	5.6FK	5.8FK	4.3FK	(2.3)SK	3.8FK	4.8FK	<4.1GK	<4.3GK	<4.4GK	<4.3GK	<4.3GK	<4.5GK	<4.8GK	<4.7GK	5.5FK	5.6FK	<5.1GK	4.7FK	(4.7)SK	3.9FK	3.5FK	3.1FK	2.7FK
13	3.1FK	3.3FK	3.5FK	3.2FK	3.0FK	3.9FK	5.3K	6.5	7.3	7.1	6.9	7.3	7.5	7.9	8.1	8.3	8.7	8.7	8.8	8.9	8.4	7.2	6.9	6.7
14	6.6F	6.3F	5.8FK	3.8FK	3.7FK	4.1FK	5.2FK	5.5K	6.0K	5.9K	6.3K	6.4K	6.6K	7.1	7.2K	7.6K	7.7K	7.8K	8.2	8.6	8.6	8.1	7.3	7.0
15	7.1	7.0	6.9	6.4	5.6F	5.4	5.5	6.2F	6.3	7.0	7.6	8.1	8.5	8.6	8.9	9.0	9.0	9.3	9.3	9.1	8.6	7.6	7.2	7.0
16	6.7	5.8F	5.8F	5.7F	4.9F	5.8F	6.3F	6.6	(6.4)S	7.0	7.0	7.7	8.3	7.8	8.2	8.1	7.8	7.2	7.3	7.2	(7.4)P	7.8	(7.7)S	7.0
17	6.4F	5.6F	6.5F	(4.3)FS	4.2F	4.7	5.4	6.0	6.2	(6.0)S	6.3	6.5	7.2	7.4	8.1	8.5	8.7	8.7	8.8	8.3	7.9	7.5	6.9F	6.5F
18	6.3F	6.2F	5.9F	5.7F	5.4F	5.7	6.9	7.7	8.3F	8.6F	8.9	8.8	8.8	9.0	9.3	9.1	9.5	9.3	(9.5)S	(9.5)S	9.1	8.0	7.4	7.1
19	(7.1)S	6.7	6.3	6.0	5.6	5.8	7.0	7.8V	8.5	8.3	8.1	8.4	9.0	8.9	8.9	9.0	9.0	9.1	9.3	9.2	9.0	8.1	7.5	7.1
20	7.0	6.9	7.0	6.2	5.8	6.1	7.3	9.2	10.1	10.0	10.0	10.1	10.3	10.2	10.0	9.8	10.0	9.9	9.7	9.7	9.3	8.6	8.2	7.9
21	7.3	7.0	6.4	6.5	6.4	6.5	7.8	8.4V	9.5	9.6	9.5	9.6	9.6	9.2	9.2	9.4	8.9	9.1	9.3	9.4	8.9	7.9	7.3	6.6
22	6.6	6.3	6.0	5.9	5.4	5.4	6.4	6.7V	8.0	8.1	8.6	8.7	8.9	8.9	8.3	9.0	8.7	9.2	9.6	9.5	(9.3)S	8.2	(7.2)JS	6.8
23	6.3	5.8K	4.9K	5.0K	4.3K	4.3K	5.3K	6.0K	6.0K	6.0K	6.0K	6.4K	6.5K	6.8K	6.5K	6.7K	6.8K	7.0K	7.0K	7.3K	7.3K	7.7	7.5	7.8
24	7.1	6.8F	5.9F	C	C	C	C	C	C	8.3	9.0	9.3	9.2	9.3	8.9	9.0	8.9	9.4	9.4	9.4	9.0	[8.2]A	7.8F	7.3
25	7.1	6.6	6.3	5.4	4.9	4.9	5.8	5.8H	(6.2)S	7.0	7.0	7.2	7.3	7.1	7.3	7.3	7.4	7.6	7.9	8.0	8.2	7.6	7.0	7.0
26	6.8	6.7	6.4	6.3	(5.9)S	5.7	6.3	6.3	6.8F	6.6	(7.3)J	7.4	7.7	8.0	8.0	7.8	8.0	8.0	8.2	8.2	8.2	7.7	7.4	7.2
27	7.0	6.8	6.5	5.8	(5.8)J	(5.7)S	6.7	8.6	9.2	9.3	10.3	9.8	10.0	9.8	9.7	9.2	9.5	9.4	9.4	9.3	8.8	7.8	7.3	(7.1)JS
28	7.1	7.0	6.7	6.0	5.3	5.2	5.8VK	6.3K	6.4K	6.7K	6.5K	6.4K	6.5K	6.3K	6.3K	6.4K	6.5K	6.6K	6.8K	7.0K	7.0	6.7K	6.5K	6.4K
29	6.3	6.1	5.8	5.8F	5.1F	5.7F	6.8	8.0	8.6	8.5	8.9	9.5	9.0	8.8	8.6	8.7	8.7	8.9	8.9	8.8	8.4	7.8	7.2	7.3
30	6.9	6.7	6.6	6.6	5.9	5.9	6.6	7.6	8.3	8.7	8.7	(8.6)J	8.5	8.9	9.2	9.3	9.4	9.9	10.4K	8.9K	F(10.9)FS	9.2K	6.6FK	5.9FK
31	5.6K	5.0FK	K(3.5)FS	3.1FK	3.1FK	3.9K	4.4FK	4.8FK	5.1HK	5.4K	<5.0GK	5.6K	6.1K	6.0K	6.3K	6.4K	6.6K	6.5K	6.9F	7.7FK	7.8FK	7.1FK	(7.4)SK	6.5K
Median	6.8	6.5	6.3	5.8	5.4	5.4	6.3	6.6	7.0	7.1	7.6	7.8	8.2	8.4	8.3	8.5	8.7	8.7	8.8	8.8	8.4	7.8	7.2	7.0
Count	31	31	31	30	30	30	30	30	30	31	31	31	30	30	31	31	31	31	30	30	31	31	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1948 O - 702319

Form adopted June 1946

TABLE 32

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

IONOSPHERIC DATA

foF2 (Characteristic) Mc (Unit) May (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Scaled by: E. J.W., J. J. S., J.M.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

Calculated by: E. J.W., J.J.S., L.A.L.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	77	73	69	64	60	(66)J	78	9.0	99	9.9	9.7	10.3	(102)SP	(101)P	104	(96)SP	(98)SP	(100)SP	98	9.3	86	75	(70)SP	(74)JP
2	(72)P	(73)JP	65	61	56	57	58K	59K	60K	[60]CK	61K	<51GK	65K	71K	66K	68K	68K	69K	70K	70K	6.8K	70K	69K	67
3	65	65	6.5	6.5	59	70	7.8	79	(81)J	78	76	78	8.0	[8.2]S	83	83	86	84	78	(83)S	[84]S	(85)SP	(77)JS	72
4	67K	52K	K(46)JS	K5.0JS	(43)SK	4.7K	4.9K	54K	54K	59K	[6.1]SK	(63)SK	[68]BK	7.4K	7.4K	78K	(76)JK	AK	AK	7.1K	70K	69K	67	65
5	63F	61F	57F	54F	56F	66F	73F	(77)S	85	88	90	93	95	98	98	100	(9.6)S	94	101	(93)S	(76)JF	(76)JS	(71)JS	7.1
6	71	6.6	61	53	49	5.3	59	64	65	(70)S	(7.3)JS	8.0	87	8.9	8.9	90	9.5	92	89	89	8.3	78	68	6.9
7	69	67	6.9	63	55	59	7.1	84	94	94	98	103	10.3	10.1	104	103	(10.4)JS	97	(9.7)SP	(97)SP	89	85	77	72
8	6.7	64	6.4	64	59	64	6.9	7.3	7.7	7.4	79	78	78	7.7	7.5	7.5	76	7.5	82	83	80	67	64	6.2
9	60	(58)S	5.1K	39FK	38K	49K	56K	63K	K(65)JS	K(6.5)JS	7.0K	74K	73K	7.6K	7.3K	73K	72K	73K	72K	76K	K(70)JS	70K	64	63F
10	61F	58F	53F	50F	49F	58F	(70)J	(75)JS	8.4	[8.4]C	9.0	93	98	10.2	9.6	10.0	98	(98)JS	10.0	95	89	82F	(76)JS	7.8
11	8.0	70	70	5.9K	4.6K	43K	4.6K	5.1K	5.3K	6.5K	6.9K	70K	69K	7.1K	71K	7.3K	73K	71K	72K	68K	68K	65K	65FK	62FK
12	58FK	58FK	5.2FK	(33)FK	36FK	4.1FK	4.8FK	<41GK	<4.3GK	<4.5GK	<45GK	<<43OK	<46GK	<47GK	<4.7GK	5.8FK	<53GK	<4.2GK	K(47)FS	3.0FK	30FK	33FK	3.1FK	32FK
13	29K	3.5FK	3.3FK	3.1FK	31FK	45K	6.1K	69	7.3	7.7	7.5	7.5	79	78	85	[85]C	89	87	88	87	7.6	71	68	65
14	63F	(60)FS	•4.9FK	(38)FK	33FK	52K	5.4K	58K	61K	6.1K	6.3K	65K	6.9K	7.1K	72K	75K	7.7K	8.2K	8.6	86	8.4	7.7	7.4	68
15	7.0	68F	66	(5.9)JS	5.4	54F	5.8	6.1	6.7	7.1	7.7	84	8.6	8.6	90	90	90	9.1	93	90	8.1	75	7.1	69
16	63	58F	5.7	5.0F	(54)F	59F	6.4	66	7.1	7.1	7.5	8.1	83	82	82	7.8	73	7.4	72	73	7.1F	8.0	74	69
17	60	52F	43	4.3F	4.1F	5.3	5.7	61	6.0	6.2	[64]S	69	7.4	79	8.3	8.7	88	8.9	8.5	81	7.7	7.0	66F	63F
18	62F	61F	57F	56F	53F	65	73	81	8.6	85	87	86	91	9.0	90	92	93	93	(9.5)SP	(93)SP	8.4	7.6	73	71
19	70	66	62	5.8	55	66	7.7	85	8.5	8.2	8.2	87	89	8.9	91	90	91	9.1	9.5	9.1	85	79	7.1	7.1
20	69	7.1	66	59	(56)S	7.1	8.4	9.7	10.2	100	101	10.4	10.3	10.3	[10.0]C	98	100	99	9.5	97	88	85	7.9	7.7
21	72	67	65	65	6.3	69	79	9.0	99	9.4	9.6	9.4	9.3	93	90	91	90	9.1	9.6	91	85	74	69	65
22	65	60	59	5.7	5.4	5.9	6.6H	(71)JS	8.0	83	85	89	90	8.8	8.9	87	87	93	97	(95)SP	(88)JS	7.5	67	6.7
23	61	53K	52K	48K	K(41)JS	49K	5.6K	62K	53K	6.2K	6.0K	65K	6.5K	6.7K	6.4K	68K	68K	7.1K	72K	73K	76K	7.9	8.3	74
24	66	63F	C	C	C	C	C	C	79	85	9.5	92	9.5	90	90	88	92	9.4	9.4	(94)SP	86	7.9	7.6	73
25	68	65	60	51	47	53	58H	(5.7)SP	6.8	6.8	7.2	73	7.2	7.3	7.4	7.6	7.5	79	78	8.8	7.8	7.2	69	7.0
26	68	66	64	62	56	65	6.6	66F	66F	6.9F	78	7.3	8.0	7.8	79	80	80	80	84	82	80	7.6	73	7.1
27	67	66	(62)J	(59)J	56	66	(7.6)S	90	9.0	9.7	10.0	98	99	98	9.2	9.3	93	95	95	(97)SP	82	73	7.2	7.1
28	71	6.8	6.1	5.8	53	6.7	6.4K	63K	6.3K	63K	6.4K	6.7K	(6.4)SK	63K	6.5K	6.4K	66K	6.7K	7.0K	6.9K	6.8K	6.8K	6.5K	6.3K
29	61	59	59	(56)S	4.9F	65F	7.4	84	8.7	8.8	90	9.2	90	86	87	86	87	8.9	8.8	85	8.1	7.3	(6.8)JS	7.1
30	64	67F	6.6	60	5.8	63	7.2	7.5Y	85	8.7	9.0	85	87	85	9.2	9.5	96	100	10.5K	92K	10.5K	8.5K	6.7FK	5.8FK
31	50FK	[44]AK	33FK	27FK	33FK	K(43)JF	4.5FK	4.8FK	[53]SK	54K	5.7K	57K	5.8K	6.1K	65K	66K	66K	66K	73FK	7.6K	71FK	K(76)JF	(6.5)SK	6.6K
Median	66	64	6.0	5.6	54	58	6.5	6.8	7.3	7.4	7.7	80	83	8.2	85	8.6	87	89	88	87	81	7.5	6.9	69
Count	31	31	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 703518

TABLE 33

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

IONOSPHERIC DATA

Form adopted June 1946

h'F1 (Characteristic), Km (Unit), May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., L.A.L., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	Q	220	Q	210	220	250	Q	230	Q						
2								QK	200HK	190K	230K	210K	250K	220K	230K	230K	240K	(240)SK						
3								Q	230	230	230	230	250	A	A	250	A	Q	270					
4								230K	230K	200K	(240)SK	230K	BK	BK	(270)AK	AK	AK	AK						
5								Q	Q	200	230	230	200	230	220	230	210	220	Q					
6								250	230	220	200	200	200	200	200	220H	230	Q	Q					
7								Q	Q	Q	210	200	200	200	S	210	Q	Q	Q					
8								Q	Q	210	200	B	(220)B	B	220	220	240	Q	Q					
9								QK	220K	200K	210K	210K	230K	220K	220K	220K	220K	230K	QK					
10								Q	220	210	C	200	200	200	A	220	S	240						
11							270HK	250K	230K	200K	200K	210K	200K	240K	230K	200	200K	230K						
12							230K	210K	230K	240K	230K	200K	200K	250K	250K	240K	250K	250K	260K					
13								220	230	A	200	200	210	200	220	210	230	230	230					
14								QK	200K	210K	200K	200K	200K	230K	210K	210K	230	(260)SK						
15							Q	Q	200	200	230	210	(230)S	S	A	A	A	A						
16								Q	Q	200	200	A	(230)S	220	240	(230)A	240	A	A					
17								230	210	240	200	200H	(250)A	200	220	220	230	240	Q					
18								Q	220	210	200	190	200H	B	210	230	220	Q	230					
19								Q	200H	200H	200	200	(200)S	200	230	240	220	230	Q					
20								Q	200	Q	200	190	230	220	220	230	230	Q	Q					
21								Q	A	230	230	210	220	200	230	230	(240)A	A						
22								M	M	M	M	M	M	220	210	(230)S	230	A	A					
23								AK	AK	220K	200K	200K	200K	(230)SK	220K	210K	230K	240K	AK					
24								C	C	A	A	(230)S	200	270	230	210	240	240	Q					
25								230	(210)A	230H	(220)S	230	200	200	210	200	230	210	Q					
26							Q	230	230	200	200	A	200	220	200	230	230	220	A					
27								240	240	220	210	200	210	210	(230)A	210	230	230	240					
28								Q	210K	200K	210K	200K	200K	200K	220K	230K	230K	250K	240K					
29								Q	Q	220	200	200	250	200	230	220	230	230	Q					
30							Q	230	230	220	200	250	230	200	B	220	240	250	QK					
31								230K	220K	(220)SK	200K	190K	220K	210K	220K	240K	220K	(240)AK	QK					
Median							—	230	220	210	200	200	210	215	220	220	230	240	240					
Count							2	11	21	25	28	26	29	26	26	28	26	19	6					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 34

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

IONOSPHERIC DATA

Form adopted June 1946

foFl (Characteristic), Mc (Unit), May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., L.A.L., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	Q	L	Q	L	5.6	L	Q	L	Q						
2								Q K	4.9 K	4.8 K H	5.1 K	5.1 K	5.1 K	5.3 K	5.3 K	5.1 K	4.8 K	4.6 K						
3								Q	L	5.6	5.6	5.6	5.6	A	A	L	A	Q	(4.0) P					
4								4.3 K	(4.8) K S	4.9 K	5.1 K	(4.9) K S	B K	B K	5.6 K	5.3 K	5.3 K	A K						
5								Q	Q	L	5.5	5.7	5.9	5.5	5.3	(5.7) P	L	L	Q					
6								L	5.0	5.3	5.4	5.5	(6.3) S	6.0	[5.8] L	5.5	L	Q	Q					
7								Q	Q	Q	5.9	L	L	(5.5) S	[5.6] L	5.8	Q	Q	Q					
8								Q	Q	5.5	5.5	[5.6] B	5.8	[5.6] B	5.5	L	5.3	Q	Q					
9								Q K	5.3 K	5.3 K	5.4 K	5.6 K	5.8 K	5.5 K	5.4 K	5.6 K	5.0 K	L K	Q K					
10								Q	L	L	C	6.2	L	L	L	L	L	L						
11							3.6 K	4.2 K	4.5 K F	4.9 K	5.2 K	5.3 K	5.5 K	5.7 K	5.6 K	5.3 K	5.1 K	L K						
12							3.8 K F	4.1 K F	4.3 K F	4.4 K F	4.3 K F	4.3 K F	4.5 K F	4.8 K F	4.7 K	4.6 K F	4.9 K	5.1 K	4.1 K F					
13								L	L	L	L	6.5	5.4 H	5.5	L	L	4.8	L	L					
14								Q K	4.9 K H	5.1 K H	4.9 K	5.3 K	5.5 K	5.4 K	5.4 K	5.3 K	L K	L K						
15							Q	Q	L	5.2	5.1	5.7	5.9	5.9	A	A	L	A						
16								Q	Q	5.5	5.6	[5.6] A	5.5	5.5	5.5	5.3	5.4	4.8	L					
17								4.5	4.9 H	5.0	5.5	5.8	5.6	5.8	5.6	5.6	4.7	L	Q					
18								Q	L	5.0	5.3	[5.6] L	5.8	[5.6] L	5.4	5.3	L	Q	L					
19								Q	L	L	L	(5.7) S	5.9	5.8	5.4 H	5.3	4.9	L	Q					
20								Q	4.0	Q	L	L	5.9	L	L	5.6	L	Q	Q					
21								Q	L	L	5.8	5.7	6.0	5.7	5.4	L	L	A						
22								M	M	L	5.4	5.7	5.8	5.5	5.7	L	L	L	A					
23								4.5 K	[4.8] K A	5.0 K	5.1 K	5.0 K	5.3 K	5.5 K	5.3 K	5.0 K	5.0 K	4.5 K	A K					
24								C	C	A	L	6.7	5.9	6.0	L	L	L	L	Q					
25								L	4.9	5.3	5.5	6.5	5.5	5.5	5.5	[5.4] L	5.4	L	Q					
26							Q	L	4.9	5.3	5.3	5.5	(5.4) S	5.7	5.6 H	5.0	4.9	L	L					
27								L	L	5.2	5.7	5.3 H	5.6	[5.7] L	5.8	5.9	5.4	L	L					
28								Q K	(4.5) K P	4.9 K	5.2 K	5.3 K H	5.3 K	5.3 K	5.1 K	5.2 K	4.9 K	4.6 K	L K					
29								Q	Q	5.0	5.3	5.7	5.9	6.1	5.9	5.4	5.4	L	Q					
30							Q	L	L	L	5.3 H	5.3 H	5.4	5.2 H	[5.2] B	5.1	L	L	Q K					
31								4.3 K F	4.5 K	4.7 K	5.0 K	5.1 K	4.9 K	5.3 K	(4.9) K S	4.9 K	4.9 K	4.7 K	Q K					
Median							—	4.3	4.8	5.0	5.3	5.6	5.6	5.5	5.4	5.3	5.0	4.6	—					
Count							2	6	14	20	25	28	27	27	24	22	17	6	2					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 35

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

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., L.A.L., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							120	110	110	100	100	100	100	100	100	110	100	100	110					
2							120K	110K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K	120K					
3							130	100	100	100	100	100	100	100	100	100	100	110	120					
4							120K	100K	100K	100K	100K	100K	BK	BK	100K	110K	100K	100K	AK					
5							120	B	110	100	100	100	110	110	100	100	100	100	110					
6							120	100	100	100	100	100	110	100	100	100	100	100	100					
7							120	110	100	100	100	100	100	100	100	100	100	100	120					
8							110	100	100	100	100	B	B	110	100	B	110	110	120					
9						130K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K	120K					
10						130	120	100	100	100	C	100	100	100	100	110	(120)S	100	120					
11							120K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K					
12							110K	100K	110K	100K	100K	100K	110K	110K	110K	110K	110K	110K	120K	150FK				
13						120K	110K	110	110	100	100	100	110	100	100	100	110	110	110	120				
14							110K	110K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K	110					
15							120	110	110	100	100	100	110	110	100	100	(100)S	(100)S	120					
16							130	110	(100)A	(100)A	(100)A	(100)A	100	100	100	110	110	110	120					
17							A	110	110	100	100	100	100	100	100	100	100	100	120					
18							100	100	100	100	100	100	100	B	100	100	100	110	110					
19							120	110	100	100	100	(100)A	100	100	100	110	100	110	120					
20							120	110	100	100	100	100	100	100	(120)A	(120)A	100	110	110	120				
21							120	110	100	100	100	100	100	100	100	100	100	110	110					
22							110	110	100	100	100	100	100	100	100	120	100	100	110					
23						130K	110K	100K	100K	100K	100K	100K	AK	100K	100K	(100)AK	100K	100K	110K					
24							C	C	C	100	100	110	100	100	100	100	100	100	(110)A					
25							120	110	100	100	100	100	100	100	110	100	100	110	120					
26							120	110	100	100	100	100	100	100	110	100	A	110	110					
27							110	110	110	100	100	110	100	100	100	100	100	100	110					
28							120K	100K	100K	100K	100K	100K	100K	100K	100K	110K	100K	100K	110K					
29							110	100	100	100	100	100	100	100	100	100	100	110	110	130				
30							120	100	100	100	100	100	100	100	B	100	100	100	110K	130K				
31							120K	100K	100K	100K	100K	100K	AK	100K	110K	100K	100K	100K	110K	130K				
Median						—	120	110	100	100	100	100	100	100	100	100	100	100	110	130				
Count						4	29	29	30	31	30	30	27	29	30	30	30	31	30	6				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 36

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

IONOSPHERIC DATA

foE (Characteristic), Mc (Unit), May (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., E.J.W., J.M.C.

Calculated by: E.J.W., L.A.L., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							2.3H	2.9	3.2	3.3	3.5	3.9	3.9	3.7H	3.9	3.7	3.3	3.1	2.3					
2							2.0K	2.9K	3.2HK	3.3K	[3.6]AK	3.9K	3.8K	3.7K	3.7K	3.4K	3.3K	2.9K	2.3K					
3							2.3H	2.9H	3.1	3.5	(3.6)S	3.7	3.7	(3.5)A	3.7	3.6	3.4	3.0	2.3					
4							2.3K	2.8K	3.1K	3.4K	(3.4)SK	(3.8)SK	BK	BK	3.8K	3.7K	3.5K	3.1K	AK					
5							2.3H	[2.8]B	3.4	3.5	(3.5)S	(3.6)S	(3.7)S	(3.9)P	3.8	3.7	3.4	3.0	2.4					
6							2.3	2.8	(3.1)A	3.4	3.8	3.8	3.9	3.9	3.8	3.7	3.4	(3.1)A	(2.5)S					
7							(2.2)A	2.9	3.3	3.5	3.7	[3.8]A	(3.9)S	(3.9)S	(4.0)S	(3.7)S	[3.4]S	3.1H	2.5					
8							A	2.8	3.5	3.5	3.9	B	B	A	3.9	[3.7]B	3.5	3.1	2.5H					
9						1.9K	2.4K	2.8K	3.1K	3.4K	3.5K	3.9HK	3.9HK	3.9K	3.7K	3.7K	3.3K	(2.9)SK	2.2K					
10						1.7	2.2	2.9	3.2	(3.5)P	[3.6]C	3.8	3.9	3.7	3.7	3.7	3.7	3.2	(2.4)A					
11							AK	2.7K	3.1K	3.4K	[3.6]AK	3.9K	3.9K	3.8K	3.8K	3.7K	3.3K	3.0K	2.3K					
12							2.3K	2.9K	3.2K	3.4K	3.5K	3.5K	(3.7)SK	3.7K	3.7K	3.5K	3.3K	2.9K	2.3HK	FK				
13							2.5K	(2.7)A	(3.1)A	A	A	3.6	A	A	A	(3.4)P	3.4	2.9H	2.5	1.8				
14							2.4HK	2.9K	(3.2)AK	(3.5)AK	3.6K	3.9K	3.9HK	(3.8)AK	(3.5)AK	AK	AK	2.9K	2.3					
15							2.1	2.8H	3.1	3.3	3.5	(3.6)P	3.8	(3.8)P	(3.6)S	3.6	3.3	2.8	2.3					
16							2.3H	3.0	3.2	3.5	3.6	(3.7)A	3.7	3.9	3.9	3.7	3.6	3.0	2.5					
17							2.5	3.1	3.2	3.6	3.5	3.7	3.9	(3.8)P	3.8	3.7	3.2	3.1	2.4					
18							2.3	3.0	3.2	3.3	(3.9)S	3.7	4.1	[4.0]B	3.9	[3.7]A	3.5	3.0	2.2					
19							(2.3)A	A	A	3.5	(3.7)S	[3.9]A	4.1	3.9	(3.7)S	3.7	3.4	3.1	2.5					
20							2.3	A	A	3.8	3.8	4.0	(4.0)S	4.0	3.9	3.8H	3.4	3.1	2.3	1.9				
21							(2.4)A	3.0	(3.3)A	3.6	3.7	(4.0)S	(4.0)S	(3.8)S	4.0	3.5	A	A	2.5					
22							2.4	3.0	3.3	3.5	3.6	3.7	[3.8]A	4.0	3.9	4.0	(3.6)A	(3.0)S	2.5					
23						1.9K	(2.4)AK	3.0K	3.3K	3.5K	3.5K	3.9K	3.9K	AK	AK	3.9K	3.5K	3.1K	(2.5)AK					
24							C	C	C	3.2	[3.5]A	3.8	3.6	(3.6)P	3.9	3.7	3.5	A	A					
25							2.5	2.9	[3.3]A	3.7	3.7	4.0	(4.0)P	(3.9)P	(3.7)S	3.7	3.5	3.1	2.5					
26							2.4	3.1	3.3	3.6	[3.6]A	3.7	A	A	A	3.8	(3.7)A	3.2	2.7					
27							2.5	3.1H	3.2	3.6	3.7	3.7	3.9	3.9H	[3.8]A	3.7	3.5	3.1	2.5					
28							2.4K	3.0K	3.2K	[3.4]AK	3.7HK	3.9K	3.9K	3.9K	3.8K	3.7K	3.4K	3.1K	2.5K					
29							(2.5)A	3.0	3.3	3.5	3.6	3.7	(3.8)A	(3.9)S	3.8	3.7	3.4	3.1	2.6	2.0				
30							2.4	[2.9]A	3.4	(3.4)A	[3.6]	3.8	3.9	(3.5)A	[3.5]B	(3.5)A	(3.4)A	3.2	2.7HK	2.0K				
31							(2.4)AK	2.8K	3.1K	3.2K	3.5K	[3.7]AK	3.9K	3.7K	(3.7)PK	(3.6)PK	3.5K	3.1K	[2.6]AK	2.0K				
Median						–	2.4	2.9	3.2	3.5	3.6	3.8	3.9	3.8	3.8	3.7	3.4	3.1	2.5	2.0				
Count						4	28	28	28	30	30	30	27	26	28	30	29	29	29	5				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703319

TABLE 37

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit), May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

Day	00	01	02	03	04	05	06	07	08	09	10	11
1	G	G	G	G	G	G	G	G	G	3.7 110	G	G
2	G	G	G	22 130	G	22 140	G	G	G	3.7 120	40 110	G
3	G	G	G	G	G	G	G	G	38 130	40 100	G	G
4	G	G	G	G	G	G	G	G	3.4 120	38 130	35 120	G
5	G	G	G	G	G	G	G	38 120	G	G	G	G
6	G	G	G	4.0Y 100	2.7Y 130	G	G	5.8Y 110	4.3 120	G	G	G
7	4.2 100	43 100	2.5 100	32Y 100	G	G	3.5 120	G	G	42 120	G	58Y 110
8	G	G	G	23 150	2.4 120	19 120	32Y 110	G	G	38 120	G	B
9	G	G	G	2.5 100	G	2.7 140	54 100	G	G	G	G	G
10	2.6 100	4.2 100	G	35 130	G	G	G	G	G	68 120	C	41 130
11	G	G	24 120	31 100	3.3 130	G	9.3 100	G	35 120	40 100	59 110	3.9 120
12	G	G	G	16 110	G	1.7 130	G	28 120	G	G	G	G
13	1.8 140	G	G	G	G	G	3.7 130	38 100	4.0 130	54 110	3.9 110	38 110
14	G	G	G	G	2.1 150	1.7 130	3.1 140	29 110	3.1 100	41 130	4.1 130	G
15	G	G	G	G	G	G	24 130	1.4Y 100	G	G	37 110	G
16	G	G	G	G	G	G	G	G	3.7Y 100	3.7Y 100	40Y 100	86 110
17	G	G	G	30 110	2.8 120	18 120	2.7 120	G	G	43 120	40 120	4.3 130
18	G	G	G	G	G	G	37 130	47 120	37 120	4.5Y 110	4.5 120	G
19	G	G	G	G	G	G	40 100	36 120	4.1 120	G	G	36 120
20	G	G	4.0 130	G	G	G	42Y 100	43 120	44 110	42 110	G	G
21	G	G	G	1.4 130	35 120	24Y 120	43 120	53 120	5.6Y 120	57Y 120	G	G
22	G	G	G	G	G	1.7 130	G	4.9 120	6.9 120	70Y 120	45 120	44 120
23	3.8Y 100	3.2 100	36 100	43 100	G	G	6.1 120	58 120	65 110	58 110	4.2 110	44 110
24	40 100	46 100	4.8 100	C	C	C	C	C	C	68 110	80 110	5.7Y 110
25	3.8 110	40 100	24 110	28Y 130	24Y 120	49 120	50 130	4.3 120	5.1 110	38 120	40 110	G
26	G	G	22 130	G	G	3.5 130	40 130	4.2 130	G	56 130	52 110	60 110
27	G	G	G	38 110	31 100	18 120	4.0 130	37 120	4.1 120	68 130	G	G
28	G	G	G	G	G	G	43Y 100	66 110	4.7 120	3.9 120	4.0 120	46 120
29	G	G	24 130	3.0 130	3.0 120	38 120	5.8 110	7.2 110	36 120	50 110	50 110	3.9 120
30	68 100	58 100	5.3 100	42 110	3.4 120	30 130	3.9 100	44 120	8.8Y 120	3.9 110	41 100	G
31	G	66 120	4.8 100	2.7 110	G	19 120	3.3 130	36Y 120	3.4 110	48 100	4.9Y 110	4.0 100
Median	**	**	**	1.5	**	**	34	36	36	40	40	**
Count	31	31	31	30	30	30	30	30	30	31	30	30

Day	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	38 120	G	G	G	G	G	G	G
2	G	G	G	G	G	G	3.7Y 120	27Y 130	1.7 130	G	G	G
3	4.0 120	116 100	70 120	G	6.3 130	G	G	G	G	G	G	G
4	G	7.2 120	64 120	6.3 120	5.7 120	6.3 120	9.4 110	7.7 110	56 110	40 110	2.2 130	G
5	G	G	G	G	4.1 120	G	G	G	G	G	G	G
6	G	G	G	G	G	5.1Y 100	49 130	44 130	4.9Y 120	2.0 120	3.1 110	43 100
7	G	G	G	G	G	3.3 110	G	3.1 130	6.6 120	3.8 100	36 100	25 120
8	G	4.1 110	G	B	G	G	4.2 120	32 120	1.9 120	G	G	G
9	G	G	G	G	G	G	42 130	50 120	4.9 120	4.2 120	4.3 110	G
10	G	41 130	5.8 110	41 120	42 120	G	4.3 130	35 120	4.0 120	3.6 120	G	G
11	G	3.7 110	G	G	G	G	4.2 120	4.3 110	6.8 100	G	G	G
12	G	3.6 120	G	G	G	42 130	43 160	G	G	G	G	G
13	40 110	42 110	4.1 110	3.6 120	G	G	G	38 130	G	G	G	G
14	G	4.2 130	3.8 110	42 100	3.7 120	7.9 130	4.9 130	4.9 130	2.3 130	G	G	G
15	46 130	5.0 130	84 120	66 130	G	55 120	44 120	47 120	49 120	55 120	3.1 150	G
16	43 120	44 130	42 120	46 120	42 120	53 120	40Y 110	19 120	G	G	G	G
17	4.3 130	50 130	G	G	G	31 110	3.6 130	39 120	19 100	3.2 100	3.7 120	G
18	G	G	G	G	G	3.7Y 130	3.7 130	3.5 120	3.2Y 100	G	G	G
19	43 130	3.9 120	G	G	35 130	36 130	4.2Y 120	43 110	1.7 120	G	G	G
20	G	G	43Y 100	3.6 100	4.8 130	45 130	3.5 120	G	G	19 100	3.5Y 100	2.5Y 110
21	G	60Y 120	G	39 120	52 110	56 120	78 130	47 120	53 110	37 110	G	G
22	4.1 110	G	G	G	42 130	5.6 120	10.7Y 110	49 110	10.5 100	2.6 110	4.6 100	69 100
23	3.9 100	55 100	46 100	3.9 100	39 130	47 130	6.7 110	3.8 130	5.2 120	44 110	90 110	40 100
24	5.5Y 120	3.9 110	43 130	4.1 130	4.7 130	4.1 110	36 120	4.1 110	4.7 110	11.6 400	5.6Y 100	3.9 100
25	4.0 100	G	G	G	G	36 110	5.7Y 130	34 120	G	3.8 110	G	G
26	3.7 100	56 110	46 110	42Y 110	36 110	G	43 110	3.3 110	3.6Y 110	4.2 100	3.5 110	25Y 110
27	G	G	5.8 100	G	G	G	G	3.1 120	3.8 110	4.1 110	G	G
28	41 130	45 120	5.9 130	41 130	G	4.6 140	38 140	33 120	G	G	G	G
29	40 120	G	4.1 130	G	35 130	38 120	G	G	G	74 110	88 110	63 110
30	G	3.6 110	G	39 110	35 120	G	G	G	G	G	G	G
31	35 100	G	G	G	G	45 130	36 120	G	G	G	G	G
Median	**	3.7	**	**	3.5	3.6	4.0	3.4	1.9	1.9	**	**
Count	31	31	31	30	31	31	31	31	31	31	31	31

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1948 O - 703519

Form adopted June 1946

TABLE 38

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

IONOSPHERIC DATA

(M1500)F2 (Characteristic) . ____ (Unit) May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(1.8)J	1.8	1.9	1.8	1.8	2.0	2.2	2.1	1.9	(2.0)P	1.9	1.8	1.8	1.7	1.7	1.7	1.8	(1.9)SP	1.9	2.0	1.9	1.8	1.9	(1.7)SP
2	(1.7)P	(1.9)P	1.8	1.7	1.8	1.7	1.9K	1.8K	1.7K	1.7K	1.7K	GK	(1.7)SK	1.6K	1.8K	1.7K	1.7K	1.7K	1.8K	1.8K	1.7K	1.7K	1.7K	1.7
3	1.7	1.7	1.7	1.8	1.8	1.9	(2.0)S	2.0	2.0	1.8	1.6	1.6	1.7	A	1.7	1.6	1.6	1.7	1.6	1.6	(1.7)SP	S	(2.0)JS	1.7
4	1.7K	1.6K	1.5K	1.5K	1.6K	(1.8)SK	2.1K	1.9K	GK	1.5K	GK	1.6K	BK	BK	1.7K	1.8K	1.8K	1.8K	AK	AK	1.8K	1.8K	1.8	1.7
5	1.7	1.8F	1.8F	1.8F	1.8F	2.0F	(2.2)JS	2.0	1.9F	1.9	1.8	1.7	1.7	1.7	1.7	1.7	1.6	(1.7)S	(1.8)JS	(1.9)JS	1.8	(1.7)JS	1.7	(1.6)S
6	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.8	1.7	(1.7)S	(1.8)S	1.8	1.7	1.8	1.7	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.7
7	1.7	1.7	1.7	1.9	1.9	1.9	2.0	2.0	1.9	1.9	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	(1.7)JS
8	1.8	1.7	1.7	1.7	1.8	2.0	2.1	2.1	1.9	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.8	1.7	1.7
9	1.6	1.6	1.6FK	1.6FK	1.7K	J(1.9)ZK	1.9K	J(1.9)SK	1.7K	1.9K	1.6K	1.8K	1.7K	1.8K	1.8K	1.8K	1.8K	1.9K	1.8K	1.8K	1.9K	1.7K	1.8	1.8F
10	1.7F	1.8F	1.8F	1.7F	1.8F	1.9F	2.0	2.0H	1.9	1.9F	C	1.8	1.8	1.8	1.8	1.8	1.9	1.8	(1.9)JS	1.9	1.9	1.8	1.7F	(1.7)JS
11	1.8	1.7	1.7	1.8K	1.8FK	1.5K	1.6FK	GK	1.7FK	1.6FK	1.7K	1.7K	1.8K	1.6K	1.7K	1.9K	2.0K	2.2K	2.1K	2.2K	J(2.1)SK	2.0K	2.0FK	2.0FK
12	2.0FK	2.0FK	1.9FK	1.9FK	(1.7)FK	1.5FK	1.6FK	GK	GK	GK	GK	GK	GK	GK	GK	1.5FK	1.5FK	GK	1.5FK	(1.7)SK	1.6FK	1.7FK	1.5FK	1.6FK
13	1.5FK	1.6FK	1.7FK	1.8FK	1.7FK	1.8FK	1.9K	1.9	2.1	2.0	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.8	1.7	1.7
14	1.7F	1.7F	1.8FK	1.9FK	1.7FK	2.0FK	2.3FK	2.0K	1.8	1.7	1.7K	1.7K	1.6K	1.8K	1.8K	1.8K	1.8K	1.8K	1.8	1.9	1.9	(2.0)J	1.8	1.7F
15	1.7	1.8	1.8	1.8	1.9F	1.9	2.1	1.8F	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.9	2.0	1.9	1.8	1.9	1.8
16	1.8	1.6F	1.6F	1.7F	1.9F	1.9F	2.1F	2.0	(2.0)S	1.8	1.7	1.7	1.8	1.7	1.7	1.8	1.8	1.8	1.9	1.8	(1.8)P	1.8	(1.9)S	1.8
17	1.9F	1.9F	1.8F	(1.7)SF	1.7F	1.7	2.0	1.9	1.9	S	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.9	1.8F	1.8F
18	1.8F	1.8F	1.8F	1.9F	1.9F	2.0	2.1	2.0	2.0F	1.9F	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.8	(1.9)S	(2.0)PS	1.9	1.8	1.8	1.8
19	(1.8)S	1.8	1.9	1.9	1.9	2.0	2.1	2.0V	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	1.9	1.8	1.9	1.7
20	1.7	1.7	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8
21	1.8	1.8	1.7	1.8	1.8	1.8	2.2	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.8	1.9	1.9	2.0	1.9	1.8	1.8	1.7
22	1.7	1.7	1.7	1.8	1.7	1.9	2.2	1.9V	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.8	1.7	1.8	1.9	1.9	(1.9)S	1.9	(1.8)JS	1.8
23	1.7	1.7K	1.7K	1.7K	1.7FK	1.7K	1.7	1.8K	1.8K	1.7K	1.6K	1.6K	1.6K	1.7K	1.7K	1.7K	1.8K	1.7K	1.8K	1.8K	1.7K	1.7	1.7	1.8
24	1.8	1.8F	1.7F	C	C	C	C	C	C	1.8	1.9	1.9	1.9	1.8	1.8	1.9	1.8	1.9	1.9	1.9	1.9	A	1.8F	1.8
25	1.8	1.8	1.8	1.8	1.8	2.0	1.8	1.9H	(1.9)J	1.7	1.8	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	(1.8)JS	1.8	1.8
26	1.8	1.8	1.7	1.7	(1.9)S	1.9	2.0	1.9	1.9F	1.8	(1.9)J	1.8	1.8	1.7	1.7	1.8	1.8	1.8	2.0	1.9	1.9	1.9	1.8	1.8
27	1.8	1.7	1.8	1.8	(1.7)J	(1.8)S	2.2	2.0	2.1	1.9	1.8	1.9	1.8	1.8	1.9	1.8	1.9	1.9	2.0	2.0	2.0	1.8	1.7	(1.8)JS
28	1.8	1.9	1.9	1.9	1.9	1.9	2.0VK	2.1K	1.9K	1.9K	1.7K	1.7K	1.7K	1.6K	1.7K	1.7K	1.8K	1.8K	1.8K	1.8K	1.9K	1.8K	1.8K	1.8K
29	1.8	1.8	1.8	1.9F	1.9F	2.1F	2.1	2.0	2.0	1.7	1.8	1.9	1.8	1.8	1.7	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.8
30	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.8	(2.1)J	1.8	1.8	1.7	1.7	1.6	1.7	1.8K	1.7K	P(1.7)SK	1.9K	1.9FK	1.6FK
31	1.6K	1.6FK	S(1.7)FK	1.6FK	1.7FK	1.9K	1.9FK	1.8FK	1.7HK	1.6K	GK	1.5K	1.7K	1.6K	1.8K	1.7K	1.8K	1.8K	1.8FK	1.9K	1.8FK	1.7FK	(1.8)JK	1.6K
Median	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.7
Count	31	31	31	30	30	30	30	30	30	30	30	31	30	29	31	31	31	31	30	30	31	29	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 39

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

IONOSPHERIC DATA

(M3000)F2 (Characteristic), ______ (Unit), May (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(2.8)J	2.7	2.8	2.7	2.7	2.9	3.2	3.0	2.9	(3.0)P	2.9	2.8	2.7	2.6	2.7	2.6	2.7	(2.8)SP	2.9	29	2.9	2.7	2.6	(2.6)SP
2	(26)P	(2.7)P	28	27	2.6	2.7	2.8K	2.8K	2.6K	26K	2.5K	GK	(2.6)SK	2.5K	2.6K	2.5K	2.6K	2.6K	27K	2.8K	2.6K	25K	2.6K	26
3	26	26	26	2.8	2.7	29	(3.1)S	3.0	2.9	2.7	2.5	2.5	2.6	A	2.6	2.5	2.5	2.6	2.5	24	(2.5)SP	S	(2.9)JS	2.5
4	2.6K	24K	2.3K	22K	24K	(2.7)SK	31K	2.8K	GK	2.2K	GK	2.5K	BK	BK	2.5K	2.7K	2.7K	2.7K	AK	AK	2.7K	2.6K	27	2.6
5	2.6	27F	2.7F	26F	2.7F	3.0F	(3.3)JS	3.0	2.8F	28	2.7	2.6	26	2.5	25	2.6	2.5	(2.6)S	(2.8)JS	(2.8)JS	2.7	(2.6)JS	2.5	(2.5)S
6	2.5	26	2.5	27	2.7	2.7	2.9	2.7	2.6	(26)S	(2.9)S	2.7	27	2.7	26	2.7	27	2.8	2.8	28	2.7	27	28	26
7	26	26	2.6	2.8	2.7	28	29	30	29	28	2.9	2.9	2.8	2.8	2.7	2.8	2.8	28	2.8	2.9	2.9	2.7	28	(2.7)JS
8	2.7	25	2.6	26	27	3.0	31	3.0	2.8	2.7	2.7	2.7	2.6	2.7	2.7	2.7	2.7	2.7	27	28	2.8	28	25	2.6
9	24	2.5	25FK	24FK	25K	K(28)JZ	29K	K(2.8)JS	28K	29K	2.5K	2.6K	2.5K	2.7K	27K	26K	27K	2.7K	28K	2.7K	2.8K	2.7K	27	2.7F
10	26F	2.6F	2.7F	26F	28F	2.9F	3.0	29H	2.8	28F	C	2.7	2.7	2.7	27	27	2.8	28	(29)JS	29	2.8	27	26F	(2.5)JS
11	2.7	2.6	2.6	2.7K	2.7FK	2.4K	24FK	GK	2.5FK	24FK	26K	26K	2.8K	2.5K	2.6K	2.8K	3.0K	3.2K	3.2K	33K	K(3.2)JS	29K	30FK	3.0FK
12	29FK	30FK	29FK	2.9FK	(2.5)PK	2.3FK	25FK	GK	GK	GK	GK	GK	GK	GK	GK	22FK	24FK	GK	23FK	(2.6)SK	2.4FK	26FK	25FK	23FK
13	23FK	24FK	2.6FK	27FK	26FK	28FK	28K	2.9	30	30	28	29	27	29	28	2.7	2.9	29	2.8	29	28	28	2.6	26
14	2.7F	27F	2.7FK	30FK	26FK	2.9FK	30FK	29K	2.8K	25K	2.7K	26K	24K	27K	26K	2.8K	2.7K	27K	2.8	2.8	2.8	2.9	2.7	26
15	2.6	27	2.7	28	27F	29	3.1	27F	2.7	2.7	29	28	2.8	2.7	2.7	2.8	2.8	2.8	29	3.0	2.9	2.8	2.7	2.7
16	2.7	2.5F	2.5F	2.5F	28F	2.9F	3.0F	30	(30)S	2.7	26	2.5	2.7	28	27	2.7	27	2.8	29	28	(2.7)P	27	(2.8)S	2.6
17	2.8F	2.7	26F	(2.6)FS	2.6F	2.9	3.0	2.8	27	S	29	2.6	27	27	27	2.7	2.8	2.9	2.9	29	2.8	28	2.7F	2.9F
18	2.7F	26F	2.7F	2.8F	2.8F	2.9	31	30	30F	28F	28	28	28	28	28	2.7	28	2.8	(29)S	(3.0)SP	29	2.8	27	2.8
19	(2.8)S	2.8	28	2.8	28	3.0	30	29V	2.9	28	2.8	2.7	2.7	2.7	2.7	2.8	2.8	27	2.8	29	2.8	2.8	28	2.6
20	26	2.6	2.9	29	29	30	29	3.0	29	29	2.8	27	2.8	2.8	2.8	2.8	2.8	2.8	28	2.9	2.9	28	28	2.8
21	2.7	27	2.6	2.7	2.7	2.7	3.2	2.7V	2.9	28	28	2.8	2.8	2.8	2.8	2.8	28	2.8	2.9	3.0	2.8	2.7	27	2.6
22	2.6	25	2.6	2.7	2.6	2.9	3.3	29V	3.0	2.8	28	2.8	27	2.8	2.7	2.8	2.7	27	29	29	(2.8)S	29	(2.8)JS	26
23	2.6	2.6K	2.5K	2.6K	26FK	26K	26K	2.7K	27K	2.5K	2.5K	2.4K	2.5K	26K	2.5K	26K	2.6K	2.6K	2.7K	28K	2.6K	26	2.7	2.8
24	2.7	27F	2.6F	C	C	C	C	C	C	2.8	2.8	2.8	2.7	27	2.7	2.8	2.7	2.8	29	2.9	28	A	28F	27
25	2.7	27	27	2.7	28	3.0	2.7	29H	(29)J	2.7	27	26	26	27	27	2.6	2.7	2.8	2.8	29	(2.8)JS	2.8	27	27
26	2.7	2.7	2.7	27	(2.8)S	28	29	29	2.3F	27	(30)J	3.0	27	2.7	28	28	2.8	28	29	3.0	29	31	28	27
27	2.7	26	28	2.8	(2.7)J	(28)S	3.3	3.0	26	2.8	2.8	2.8	28	2.8	28	2.7	2.8	2.9	2.9	29	30	27	26	(2.8)JS
28	27	2.9	29	2.8	28	29	30VK	30K	29K	2.8K	2.6K	2.7K	26K	25K	26K	2.6K	2.6K	2.7K	28K	2.7K	28K	27K	27K	27K
29	27	2.7	2.7	2.8F	29F	31F	30	30	29	2.6	2.8	28	28	2.7	2.7	2.6	2.8	28	28	28	2.9	2.8	2.8	2.8
30	2.7	2.7	27	2.8	2.8	28	30	3.0	29	28	27	(29)J	27	27	26	26	2.4	25	2.8K	25K	K(2.6)SP	28K	2.7FK	2.4FK
31	2.4K	2.4FK	K(2.6)FS	25FK	25FK	28K	28FK	27FK	26HK	2.4K	GK	2.4K	27K	25K	2.7K	26K	2.7K	27K	2.7FK	29FK	2.8FK	26FK	(2.8)JK	2.5K
Median	2.7	2.6	2.7	2.7	2.7	29	30	2.9	2.8	28	2.8	2.7	2.7	2.7	2.7	2.7	27	28	2.8	29	28	2.7	2.7	26
Count	31	31	31	30	30	30	30	30	30	30	30	31	30	29	31	31	31	31	30	30	31	29	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O 703519

Form adopted June 1946

TABLE 40

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

IONOSPHERIC DATA

(M3000)F1 (Characteristic), ____ (Unit), May (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								Q	Q	Q	L	Q	L	3.6	L	Q	L	Q						
2								QK	3.4K	3.3HK	3.5K	3.7K	3.5K	3.4K	3.4K	3.3K	3.5K	3.3K						
3								Q	L	3.4	3.4	3.4	3.4	A	A	L	A	Q	(3.2)P					
4								3.3K	(3.3)SK	3.7K	3.4K	(3.1)SK	BK	BK	3.2K	3.1K	3.2K	AK						
5								Q	Q	L	3.5	3.5	3.4	3.3	3.5	(3.2)P	L	L	Q					
6								L	3.2	3.4	3.5	3.5	(3.2)S	3.3	L	3.5	L	Q	Q					
7								Q	Q	Q	3.4	L	L	(3.6)S	L	3.4	Q	Q	Q					
8								Q	Q	3.3	3.5	B	3.3	B	3.5	L	3.2	Q	Q					
9								QK	3.1K	3.4K	3.3K	3.4K	3.3K	3.3K	3.4K	3.2K	3.4K	LK	QK					
10								Q	L	L	C	3.2	L	L	L	L	L	L						
11							3.0HK	3.1K	3.5FK	3.7K	3.4K	3.6K	3.3K	3.3K	3.4K	3.5K	3.4K	LK						
12							3.2FK	3.7FK	3.4FK	3.3FK	3.7FK	3.9FK	3.6FK	3.5FK	3.5K	3.5FK	3.1K	3.1K	3.1FK					
13								L	L	L	L	3.6	3.6H	3.5	L	L	3.5	L	L					
14								QK	3.5HK	3.5HK	3.9K	3.5K	3.4K	3.5K	3.3K	3.4K	LK	LK						
15							Q	Q	L	3.6	3.6	3.4	3.2	3.2	A	A	L	A						
16								Q	Q	3.3	3.3	A	3.3	3.4	3.4	3.4	3.2	3.1	L					
17								3.4	3.3H	3.4	3.5	3.1	3.9	3.2	3.3	3.4	3.6	L	Q					
18								Q	L	3.8	3.8	L	3.4	L	3.5	3.5	L	Q	L					
19								Q	L	L	L	(3.4)S	3.2	3.3	3.6H	3.4	3.5	L	Q					
20								Q	4.0	Q	L	L	3.4	L	L	3.4	L	Q	Q					
21								Q	L	L	3.4	3.5	3.7	3.4	3.6	L	L	A						
22								M	M	L	3.3	3.4	3.3	3.5	3.3	L	L	L	A					
23								3.2K	AK	3.7K	3.8K	3.8K	3.5K	3.4K	3.5K	3.6K	3.4K	3.4K	AK					
24								C	C	A	L	3.5	3.5	3.3	L	L	L	L	Q					
25								L	3.3	3.4	3.4	3.5	3.6	3.4	3.4	L	3.2	L	Q					
26							Q	L	3.4	3.4	3.6	3.2	(3.7)S	3.5	3.4H	3.8	3.5	L	L					
27								L	L	3.7	3.5	3.6H	3.5	L	3.3	3.2	3.3	L	L					
28								QK	(3.8)PK	3.6K	3.5K	3.8HK	3.8K	3.7K	3.6K	3.4K	3.5K	3.5K	LK					
29								Q	Q	3.8	3.8	3.3	3.4	3.2	3.2	3.3	3.3	L	Q					
30							Q	L	L	L	3.7H	3.8H	3.7	3.7H	B	3.3	L	L	QK					
31								3.4FK	3.3K	3.6K	3.4K	3.3K	3.6K	3.6K	(3.9)SK	3.5K	3.3K	3.2K	QK					
Median							—	3.4	3.4	3.4	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.2	—					
Count							2	6	13	20	25	25	27	24	21	21	17	6	2					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1946 O - 703319

Form adopted June 1946

TABLE 41

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

IONOSPHERIC DATA

(M1500)E , ____ , May , 1949
(Characteristic) (Unit) (Month)

Observed at Washington, D. C.

Lat 39.0°N , Long 77.5°W

75°W Mean Time

National Bureau of Standards
(Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: E.J.W., J.J.S., L.A.L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							3.9H	4.1	4.4	4.5	4.2	4.3	4.3	4.1H	3.8	4.1	4.2	3.9	4.4					
2							4.5K	4.1K	4.4HK	4.2K	AK	4.3K	4.1K	4.3K	4.1K	4.3K	4.5K	4.1K	4.3K					
3							3.9H	3.8H	4.2	4.1	(4.2)S	4.3	4.3	(4.5)A	4.1	3.9	3.8	4.0	3.9					
4							3.7K	3.9K	4.2K	4.4K	(4.4)SK	(4.1)SK	BK	BK	4.2K	4.3K	4.3K	4.1K	AK					
5							4.3H	B	4.4	4.3	(4.3)S	(4.2)S	(4.2)S	(3.8)P	4.0	4.1	4.2	4.2	4.1					
6							4.4	4.3	(4.1)A	4.2	4.1	4.2	4.2	4.4	4.2	3.9	4.0	(4.2)A	(4.3)S					
7							(4.4)A	4.1	4.2	4.4	4.5	A	(4.3)S	(4.4)S	(4.3)S	(4.1)S	S	3.8H	4.0					
8							A	4.3	4.3	4.3	4.3	B	B	A	4.0	B	4.3	3.9	4.0H					
9						4.2K	3.8K	4.2K	4.1K	4.4K	4.3K	4.2HK	4.1HK	4.0K	4.1K	4.1K	4.2K	(4.1)SK	4.2K					
10						4.6	4.1	4.0	4.3	(4.0)P	C	4.2	4.4	4.2	4.1	4.1	(4.3)S	4.1	(4.2)A					
11							AK	4.1K	4.1K	4.4K	AK	4.2K	4.3K	4.2K	4.2K	4.3K	4.2K	4.0K	3.9R					
12							4.0K	4.2K	4.0K	4.1K	4.3K	4.3K	(4.3)SK	4.1K	4.1K	4.3K	4.2K	4.2K	3.9HK	FK				
13						4.1K	4.3K	(4.3)A	(4.5)A	A	A	4.2	A	A	A	(4.4)P	4.1	4.1H	4.0	4.3				
14							4.2HK	4.1K	(4.6)AK	(4.3)AK	4.2K	4.0K	4.3HK	(4.5)AK	(4.6)AK	AK	AK	4.1K	4.2					
15							4.2	4.2H	4.1	4.2	4.3	(4.2)P	4.1	(4.2)P	(4.2)S	3.9	4.2	4.3	4.4					
16							3.9H	3.7	4.1	4.0	4.2	(4.2)A	4.1	4.1	3.8	4.1	4.2	4.0	4.3					
17							3.7	3.9	4.4	4.2	4.5	4.3	4.1	(4.0)P	4.0	3.8	3.8	3.9	4.3					
18							4.3	4.0	4.4	4.5	(4.3)S	4.2	4.1	B	4.1	A	4.3	4.0	4.5					
19							(4.4)A	A	A	4.0	(4.1)G	A	3.9	4.2	(4.3)S	4.1	4.0	3.9	4.3					
20							4.4	A	A	4.5	4.2	4.3	(4.3)S	4.0	4.1	4.1H	4.1	3.9	4.3	4.6				
21							(4.3)A	4.1	(4.2)A	4.3	4.4	(4.3)S	(4.3)S	(4.3)S	4.2	4.3	A	A	4.3					
22							4.3	4.3	4.2	4.3	4.4	4.4	A	4.0	4.1	4.2	(4.2)A	(4.1)S	4.2					
23						4.4K	(4.2)AK	4.0K	4.2K	4.3K	4.2K	4.1K	4.1K	AK	AK	4.2K	4.3K	4.0K	(4.4)AK					
24							C	C	C	4.5	A	3.9	4.2	(4.2)P	3.9	4.1	4.0	A	A					
25							4.2	4.2	A	4.1	4.3	4.2	(4.2)P	(4.1)P	(4.2)S	4.1	4.0	4.0	4.1					
26							4.3	3.9	4.2	4.2	A	4.3	A	A	A	4.3	(3.8)A	4.1	4.4					
27							4.4	3.9H	4.4	4.3	4.3	4.3	4.4	4.4H	A	4.2	4.3	4.1	4.2					
28							4.3K	4.1K	4.4K	AK	4.2HK	4.1K	4.1K	4.1K	4.0K	4.1K	4.1K	3.9K	4.0K					
29							(4.2)A	4.1	4.2	4.3	4.2	4.2	(4.2)A	(4.2)S	4.2	4.3	4.2	4.2	4.0	3.9				
30							4.2	A	4.1	(4.4)A	A	4.4	4.4	(4.4)A	B	(4.3)A	(4.4)A	3.8	4.0HK	3.8K				
31							(4.4)AK	4.3K	4.2K	4.3K	4.3K	AK	4.1K	4.3K	(4.3)PK	(4.2)PK	3.9K	3.9K	AK	4.0K				
Median						—	4.2	4.1	4.2	4.3	4.3	4.2	4.2	4.2	4.1	4.1	4.2	4.0	4.2	4.0				
Count						4	28	26	27	29	24	27	26	25	26	28	28	29	28	5				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 42

Ionospheric Storminess at Washington, D. C.

May 1949

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	1	2			0	1
2	2	5	1100	----	2	3
3	2	3	----	0400	2	2
4	4	4	0500	----	4	2
5	1	1	----	0300	1	3
6	2	2			3	2
7	2	3			2	2
8	1	3			2	2
9	4	5	0700	----	3	3
10	2	1	----	0300	2	3
11	2	4	0800	----	4	2
12	4	7	----	----	5	8
13	6	2	----	1200	5	2
14	3	4	0700	2300	3	3
15	2	1			3	2
16	2	1			3	3
17	3	2			2	2
18	1	1			1	2
19	0	1			1	2
20	1	3			1	1
21	1	3			2	2
22	2	2			2	2
23	3	4	0600	----	2	3
24	2	3	----	0200	2	1
25	1	2			1	2
26	1	1			1	2
27	1	3			1	2
28	1	4	1100	----	2	1
29	1	3	----	0500	1	1
30	2	3	2300	----	1	5
31	5	4	----	----	4	4

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

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

----Dashes indicate continuing storm.

Table 43

Sudden Ionosphere Disturbances Observed at Washington, D. C.

May 1949

1949 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
May 5	1128	1240	Ohio, D.C., England	0.02	
7	1044	1055	England	0.03	
7	1308	1335	D.C., England	0.03	
7	2040	2105	Ohio, D.C., Canal Zone, England	0.1	Terr.mag.pulse** 2041-2050
8	1529	1900	Ohio, D.C., Canal Zone, England	0.0	Solar flare*** 1528
8	1955	2010	Ohio, D.C., England	0.03	Terr.mag.pulse** 1953-2000
9	1209	1240	Ohio, D.C., England	0.05	
10	2002	2200	Ohio, D.C., England	0.01	Terr.mag.pulse** 2003-2045 Solar flare*** 2002
18	1758	1835	Ohio, D.C., Canal Zone, England	0.0	Solar flare*** 1800
29	1236	1255	Ohio, D.C., England	0.1	
30	1841	1920	Ohio, D.C.	0.0	
30	2113	2125	Ohio, D.C.	0.01	
31	1858	1920	Ohio, D.C.	0.03	

*Ratio of received field intensity during SID to average field intensity before and after, for station W8XAL, 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GLH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on May 7 at 1044 and at 1308.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

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

Table 44

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

1949 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters	Other phenomena
April 26	1310	1320	Somerton	Gold Coast, New York, Union of S. Africa	
May 5	1120	1300	Brentwood	Afghanistan, Austria, Bahrein I., Barbados, Belgian Congo, Bulgaria, Canary Is., Chile, Colombia, France, Greece, India, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Turkey, Uruguay, U.S.S.R., Yugoslavia, Zanzibar	
5	1124	1240	Somerton	Aden, Argentina, Australia, Barbados, Brazil, Canada, Ceylon, China, Egypt, Gold Coast, India, New York, Nigeria, Union of S. Africa	
7	1045	1100	Brentwood	Austria, Bahrein I., Barbados, Belgian Congo, Bulgaria, Canary Is., Chile, Greece, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, U.S.S.R., Yugoslavia, Zanzibar	
7	1046	1100	Somerton	Aden, Argentina, Australia, Brazil, Ceylon, India, Nigeria, Union of S. Africa	
8	1543	1625	Somerton	New York	Solar flare* 1528
9	1208	1225	Brentwood	Austria, Bahrein I., Belgian Congo, Canary Is., Chile, Greece, India, Iran, Kenya, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, U.S.S.R., Yugoslavia, Zanzibar	

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

Table 45

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc., as Observed at Riverhead, New York

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
May 5	1129	1250	Argentina, Canada, England, Italy, Morocco	
8	1525	1645	Argentina, Canada, Cuba, England, Italy, Morocco, Panama	Solar flare* 1528
9	1210	1300	Argentina, Canada, England, Italy, Morocco, Panama	
10	2015	2055	Argentina, California, Canada, England, Italy, Morocco, Panama	Solar flare* 2002
30	1844	1900	Argentina, Brazil, Canada, Cuba, England, Italy Morocco, Panama	

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

Table 46

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

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
February 1	1224	1355	Brazil, Chile, Denmark, Germany, Italy, Netherlands, New York, Venezuela	
3	1350	1430	Bolivia, Brazil, Cuba, Denmark, England, Germany, Italy, New York, Peru, Switzerland, Venezuela	
7	1412	1455	Bolivia, Brazil, Colombia, Cuba, Denmark, England, Germany, New York, Peru, Venezuela	
12	1511	1540	Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, New York, Peru, Switzerland, Venezuela	
14	1554	1625	Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, Netherlands, New York, Peru, Venezuela	
17	1707	1730	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, New York, Peru, Spain, Venezuela	
March 26	1424	1515	Bolivia, Brazil, Cuba, Denmark, England, Germany, New York, Peru, Switzerland, Venezuela	Solar flare* 1424 Solar flare** 1427
31	1740	1805	Bolivia, Brazil, Chile, Cuba, Denmark, England, France, Germany, Netherlands, New York, Spain	
April 5	1638	1700	Bolivia, Brazil, Chile, Cuba, Denmark, Germany, Netherlands, New York, Peru, Spain, Venezuela	

*Time of observation at Prague Observatory, Czechoslovakia.
**Time of observation at Meudon Observatory, France.

Table 47

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc., as Observed at Point Reyes, California

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
May 7	2045	2105	Australia, China, Hawaii, Japan, Philippine Is.	
10	2008	2140	Australia, China, Hawaii, Japan, New York, Philippine Is.	Solar flare* [illegible]

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

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

Table 48

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
April 1949

Day	North Atlantic: Quality figure		North Atlantic: CRPL* Warning		North Atlantic: CRPL** Forecast of probable disturbed periods	North Atlantic: Geo-magnetic K_{Ch}		North Pacific: Quality figure		North Pacific: CRPL* Warning		North Pacific: CRPL** Forecast of probable disturbed periods	North Pacific: Geo-magnetic K_{Ch}	
	01-12 GCT	13-24 GCT	01-12 GCT	13-24 GCT		01-12 GCT	13-24 GCT	01-12 GCT	13-24 GCT	01-12 GCT	13-24 GCT		01-12 GCT	13-24 GCT
1	7	7				1	2	6	6				1	2
2	7	6				1	1	5	6				1	1
3	7	6				2	2	6	7				2	2
4	6	7				2	1	5	7				2	1
5	6	6			X	1	2	(4)	5			X	1	2
6	7	7			X	2	1	5	8			X	2	1
7	7	7				1	4	6	6				1	4
8	(2)	(4)	X	X		6	4	(4)	5	X	X		6	4
9	5	6	X		X	2	2	(4)	6	X		X	2	2
10	5	5				4	4	5	(4)				4	4
11	(4)	6		X		4	4	(4)	6		X		4	4
12	5	5	X	X		3	4	(4)	(4)	X	X		3	4
13	(3)	5	X	X		4	3	(4)	(4)	X	X		4	3
14	(4)	5				4	2	5	6				4	2
15	5	6				3	2	6	6				3	2
16	5	6				3	3	5	6				3	3
17	6	7				3	2	5	6				3	2
18	5	5			X	2	1	5	5			X	2	1
19	5	6			X	2	1	6	7			X	2	1
20	7	7				1	1	6	6				1	1
21	7	7				2	2	6	7				2	2
22	6	6				1	1	6	7				1	1
23	6	6				1	1	6	7				1	1
24	7	6				2	2	6	7				2	2
25	7	6				2	1	6	7				2	1
26	7	6				2	2	5	6				2	2
27	5	6				3	1	5	6				3	1
28	7	6				2	2	5	6				2	2
29	6	6				1	2	5	5				1	2
30	6	7				1	1	5	5				1	1
Score:														
H			2		0					4		2		
M			2		4					3		5		
G			24		21					23		20		
(S)			2		3					0		2		
S			0		2					0		1		

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

**In addition to dates marked X, the following were designated as probable disturbed days on forecasts more than eight days in advance of said dates: April 10 and 11.

Quality Figure Scale:
1 - Useless
2 - Very poor
3 - Poor
4 - Poor to fair
5 - Fair
6 - Fair to good
7 - Good
8 - Very good
9 - Excellent

Symbols:

X Warning given or probable disturbed date

H Quality 4 or worse on day or half day of warning

M Quality 4 or worse on day or half day of no warning

G Quality 5 or better on day of no warning

(S) Quality 5 on day of warning

S Quality 6 or better on day of warning

( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance.

Table 49

American and Zürich Provisional Relative Sunspot Numbers

May 1949

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	156	77	17	153	111
2	160	74	18	136	111
3	164	121	19	142	110
4	181	122	20	138	105
5	207	139	21	152	100
6	200	140	22	151	111
7	161	132	23	166	119
8	164	118	24	189	140
9	141	114	25	152	120
10	127	100	26	146	103
11	108	106	27	146	114
12	109	62	28	149	98
13	85	60	29	167	119
14	85	56	30	168	120
15	90	69	31	165	95
16	112	80	Mean	147.4	104.7

*Combination of reports from 49 observers; see page 8.

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

Table 50a

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

Date	Degrees north of the solar equator																	0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	X	-	-	-	-	-	-	-	-	5	5	4	5	8	13	20	13	13	9	10	13	13	11	9	8	6	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	4	6	6	8	8	10	11	12	15	15	14	14	12	14	16	15	13	12	11	8	7	5	5	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	3	3	4	4	8	11	12	14	15	13	11	13	15	13	11	10	9	8	6	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	4	4	4	5	5	6	6	8	14	18	20	27	20	10	9	12	18	11	10	10	11	11	10	9	4	-	-	-	-	-	-	-
7.8	X	-	-	-	-	-	-	-	-	-	8	9	10	10	16	13	14	16	5	9	11	11	12	13	13	11	10	8	5	3	-	-	-	-	X	X	X
9.7	X	-	-	-	-	-	-	-	3	4	6	9	12	13	16	13	12	10	8	9	10	11	15	16	15	13	12	7	-	-	-	-	-	-	X	X	X
14.6	-	-	-	-	-	-	-	-	-	3	8	9	3	10	11	15	18	20	19	20	20	18	11	10	10	8	7	5	4	3	2	-	-	-	-	-	-
15.7	X	X	X	X	-	-	-	-	-	-	-	-	-	5	8	10	11	11	11	13	14	12	10	8	7	5	-	-	-	-	-	-	-	-	X	X	X
16.6	-	-	-	-	-	-	-	-	-	3	3	3	5	9	10	13	14	14	15	15	15	14	13	13	12	6	3	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	4	6	7	5	6	8	12	13	13	10	9	9	9	9	9	9	10	9	3	-	-	-	-	-	-	-	-	-
22.9	X	-	-	-	-	-	-	-	3	3	4	5	5	14	20	13	22	16	13	10	7	9	10	11	13	12	10	5	-	-	-	-	-	-	-	-	X
23.7	X	-	-	-	-	-	-	2	3	3	3	2	10	14	13	13	13	12	12	11	10	9	9	9	10	11	11	5	2	-	-	-	-	-	-	-	-
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	7	7	9	10	10	10	11	12	10	9	5	-	-	-	-	-	-	-	-	X	X	X
25.6	-	-	-	-	-	-	-	-	-	-	-	3	4	11	13	13	14	15	13	9	5	7	8	8	8	9	9	3	-	-	-	-	-	-	-	-	-
26.6	X	-	-	-	-	-	-	-	-	-	2	3	10	12	18	17	15	14	13	13	10	10	9	8	7	6	5	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	10	10	9	7	5	5	8	9	10	9	5	3	-	-	-	-	-	-	-	-	-	-
31.6	X	-	-	-	-	-	-	-	-	-	-	-	-	3	4	7	8	8	5	4	4	8	11	12	12	7	3	-	-	-	-	-	-	-	-	-	-

Table 51a

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

Date	Degrees north of the solar equator																	0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	X	-	-	-	-	-	-	-	-	-	-	-	-	2	10	12	1	1	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	-	-	-	-	1	2	10	9	3	2	1	5	1	1	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	2	5	1	-	-	2	1	1	2	4	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	14	-	-	11	11	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.8	X	-	-	-	-	-	-	-	-	-	-	-	2	1	1	-	1	3	5	2	2	1	1	8	1	1	-	-	-	-	-	-	-	-	X	X	X
9.7	X	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	1	2	1	-	1	2	1	-	-	-	-	-	-	-	-	X	X	X
14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	3	1	12	10	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	11	1	4	1	1	1	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	X	-	-	-	-	-	-	-	-	-	-	-	-	1	2	5	4	4	7	8	1	-	-	1	3	1	1	-	-	-	-	-	-	-	-	X	X
23.7	X	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	4	4	4	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	1	1	2	2	3	3	1	-	-	-	-	-	-	-	-	X	X	X
25.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	8	4	1	3	4	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	X	-	-	-	-	-	-	-	-	-	-	1	5	9	12	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.6	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 52a

Coronal observations at Climax, Colorado (6704A), east limb

Date	Degrees north of the solar equator																	0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.8	X	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
9.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
16.6	·	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	X	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X
23.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	X	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.6	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 50b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	8	10	11	10	9	9	8	-	-	-	-	-	-	-	-	-	-	X	X	X
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	17	20	25	18	20	21	23	20	20	14	12	9	7	5	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	3	3	4	10	22	22	21	19	20	26	23	20	13	12	10	8	5	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	3	4	4	3	4	4	5	9	11	14	22	27	25	20	24	25	20	14	13	12	12	11	9	7	3	-	-	-	-	-	-
7.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14.6	-	-	-	-	-	-	-	-	2	4	4	5	5	10	12	14	16	19	17	10	14	16	22	25	18	7	3	-	3	3	3	-	-	-	-	-	-
15.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16.6	-	-	-	-	-	-	-	-	-	3	3	4	4	5	5	9	10	11	10	10	14	13	12	11	5	3	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	3	3	4	5	9	10	9	9	10	7	5	6	12	13	13	12	9	3	-	-	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	4	6	9	10	11	11	12	10	5	7	8	13	14	15	16	13	9	7	5	3	-	-	-	X	X	X	X
23.7	-	-	-	-	-	-	-	4	4	3	9	12	13	14	14	14	12	11	11	12	13	15	17	19	16	15	11	9	4	4	-	-	-	X	X	X	X
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25.6	-	-	-	-	-	-	-	3	3	4	5	8	9	10	10	11	12	11	14	14	13	13	14	17	19	12	9	3	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	4	6	7	9	10	10	12	11	12	18	18	18	17	15	13	12	10	9	4	-	-	-	-	-	X	X	X	X
30.6	-	-	-	-	-	-	-	-	-	-	-	-	6	11	12	12	13	13	10	13	14	13	12	10	9	3	-	-	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	-	-	-	-	-	5	7	10	10	10	8	7	7	6	6	8	8	5	-	-	-	-	-	-	-	-	X	X	X	X

Table 51b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	1	-	-	-	-	-	-	-	-	X	X	X	X
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	10	2	1	1	1	9	6	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	4	4	4	3	-	1	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	5	9	11	-	3	5	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-
7.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	-	14	5	3	-	5	11	10	1	-	-	-	-	-	-	-	-	-	-	-
15.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	-	-	-	-	1	1	3	2	2	1	1	1	1	1	4	-	-	-	-	-	-	-	-	X	X	X	X
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	3	2	1	-	-	-	-	-	-	-	X	X	X	X
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	2	10	9	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	3	3	4	4	3	2	2	6	-	-	-	-	-	-	-	-	X	X	X	X
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	2	-	8	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X

Table 52b

Coronal observations at Climax, Colorado (6704A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
May 2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	3	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
7.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.9	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X
24.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	X	X	X	X
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X

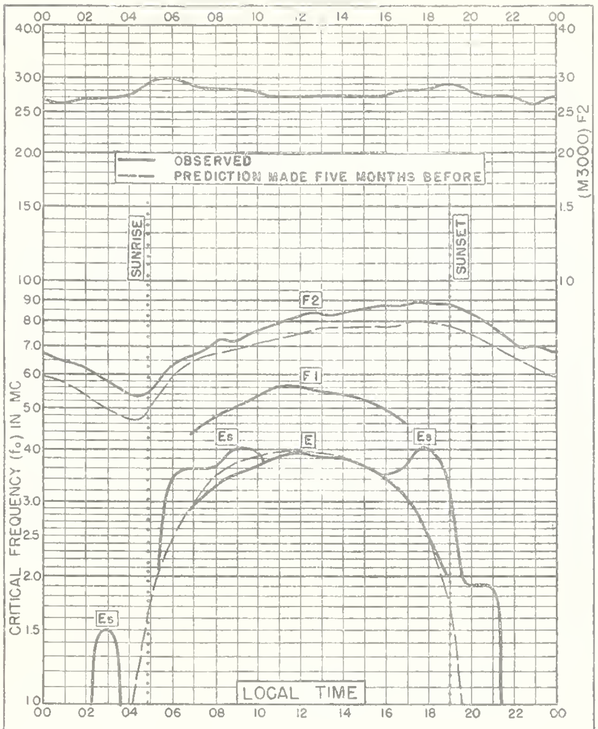


Fig. 1. WASHINGTON, D. C. 39.0°N, 77.5°W MAY 1949

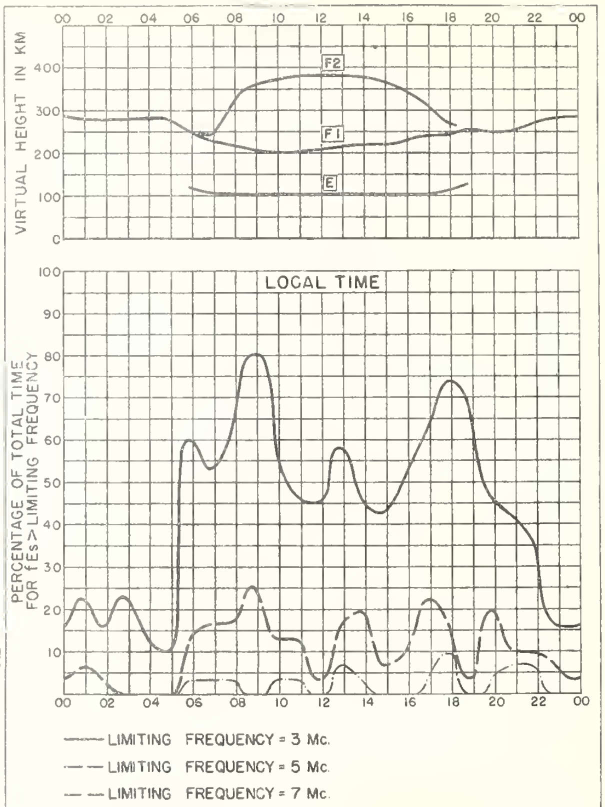


Fig. 2. WASHINGTON, D. C. MAY 1949

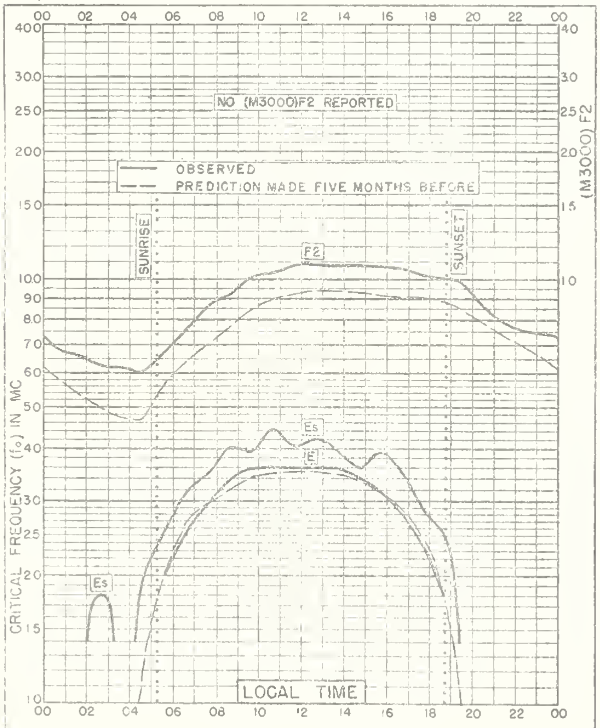


Fig. 3. LINDAU/HARZ, GERMANY 51.6°N, 10.1°E APRIL 1949

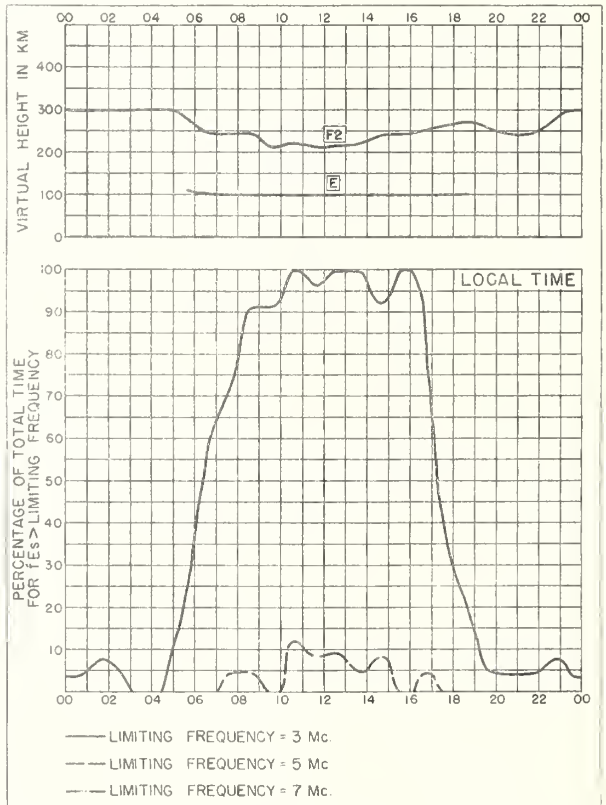


Fig. 4. LINDAU/HARZ, GERMANY APRIL 1949

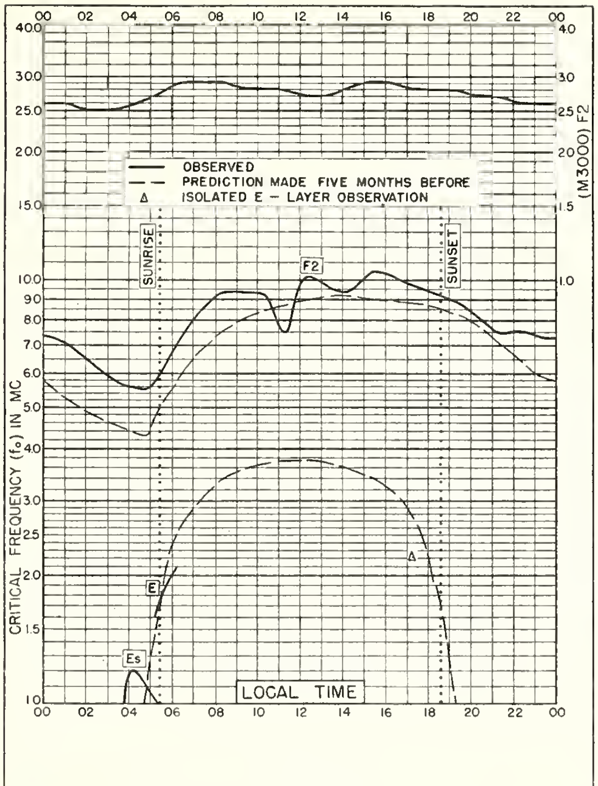


Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W APRIL 1949

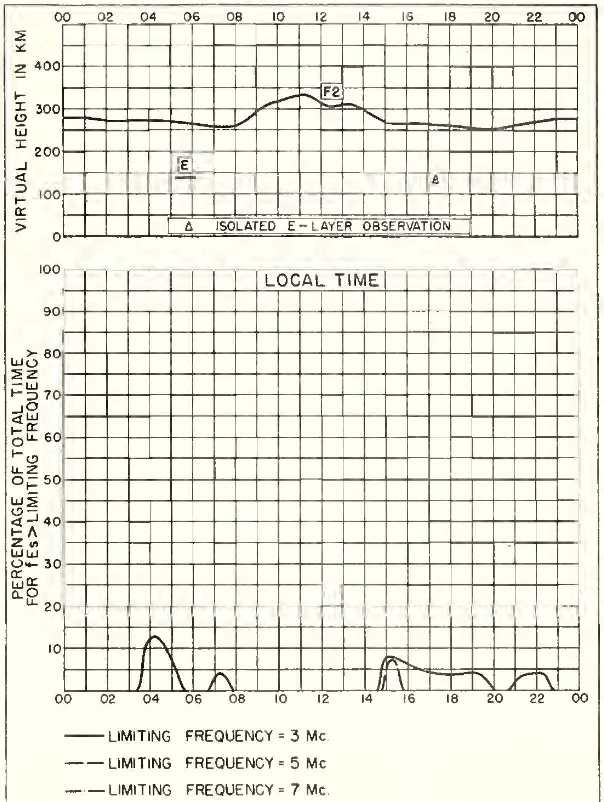


Fig. 6. BOSTON, MASSACHUSETTS APRIL 1949

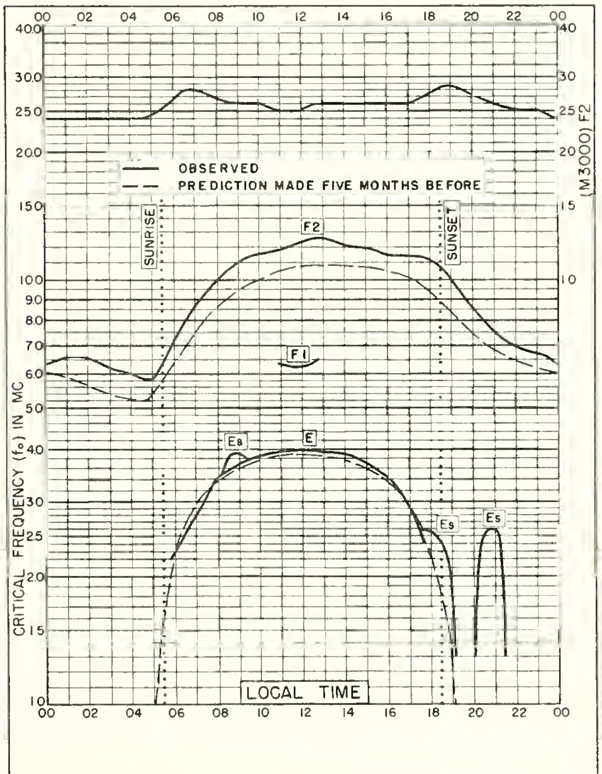


Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W APRIL 1949

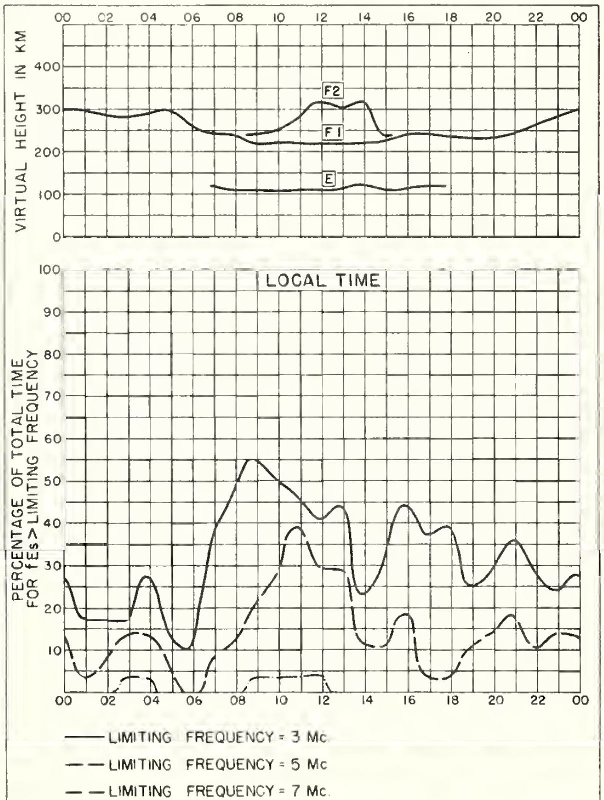


Fig. 8. SAN FRANCISCO, CALIFORNIA APRIL 1949

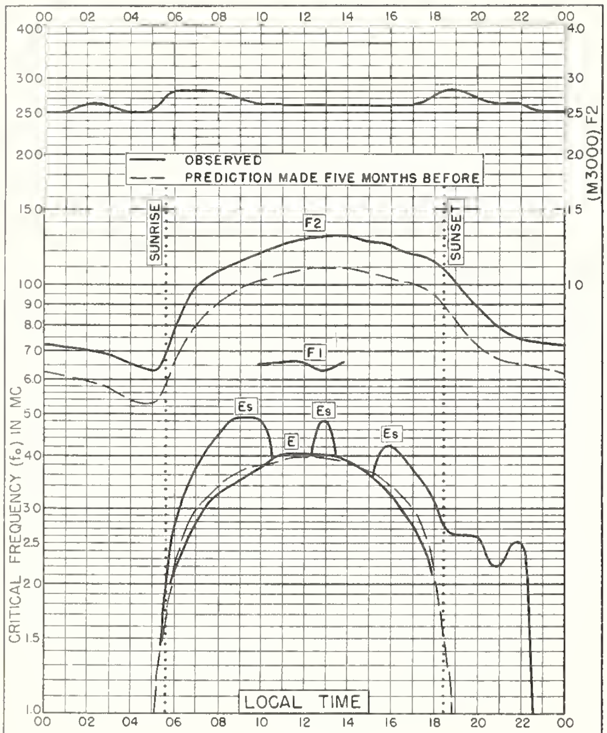


Fig. 9. WHITE SANDS, NEW MEXICO
32. 3°N, 106. 5°W APRIL 1949

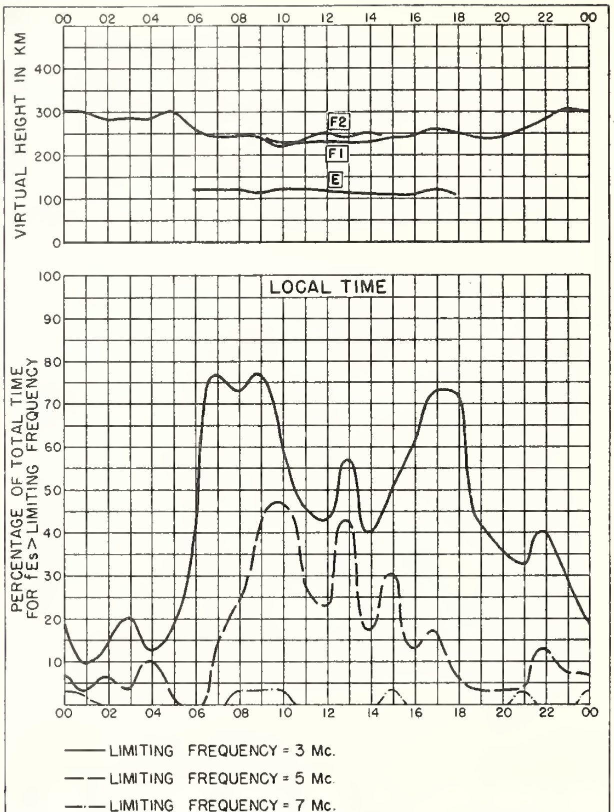


Fig. 10. WHITE SANDS, NEW MEXICO APRIL 1949

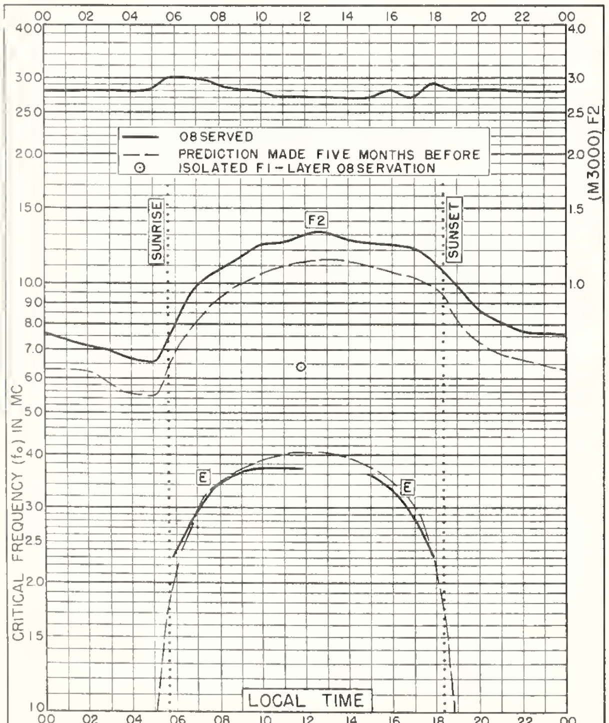
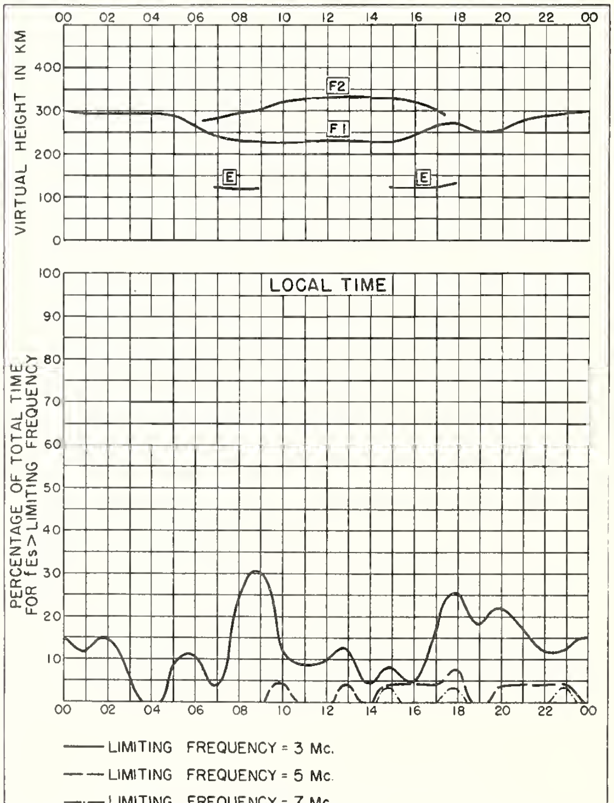


Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W APRIL 1949



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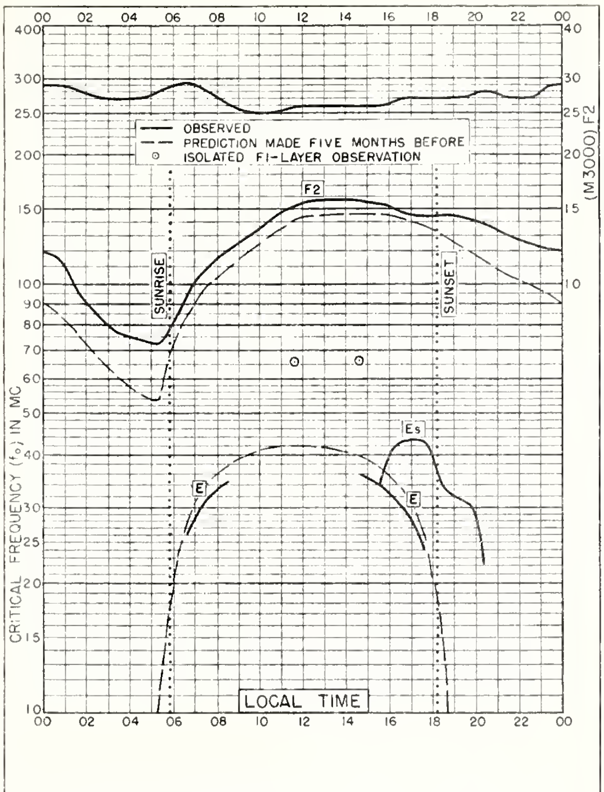
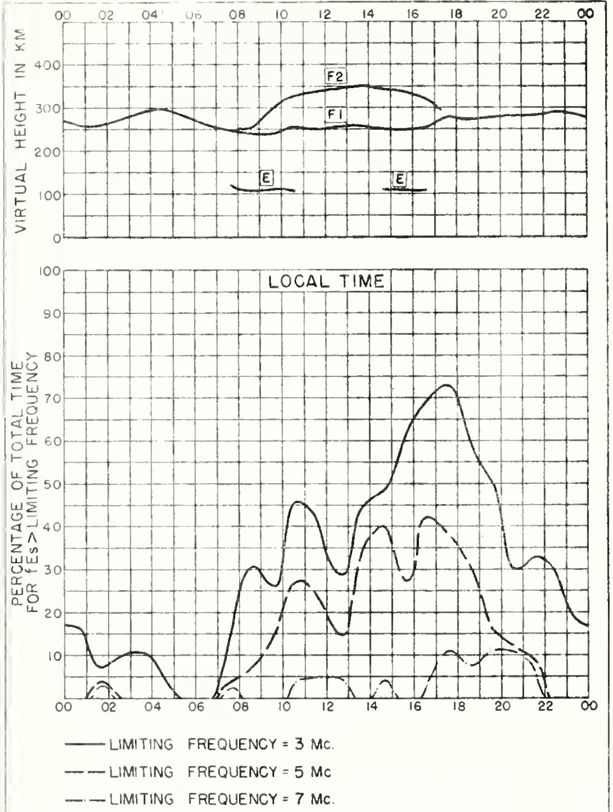


Fig. 13. MAUI, HAWAII
20.8°N, 156.5°W APRIL 1949



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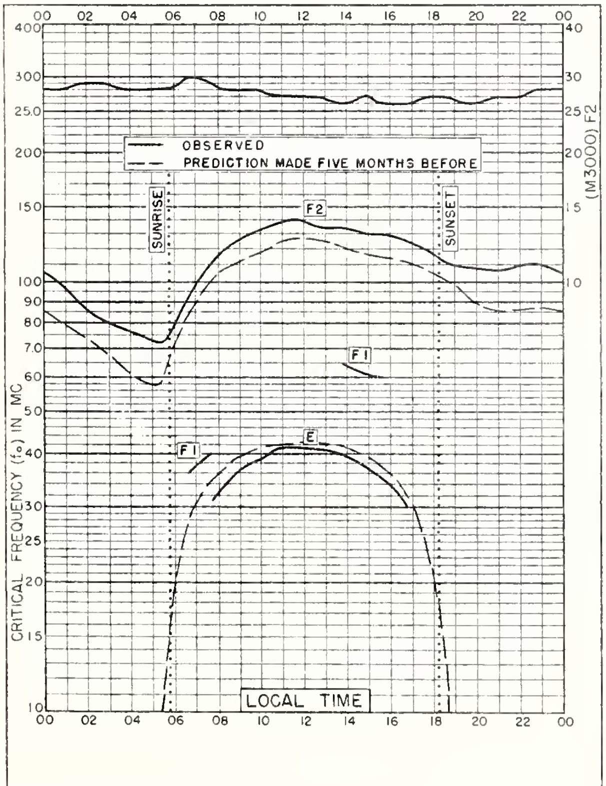

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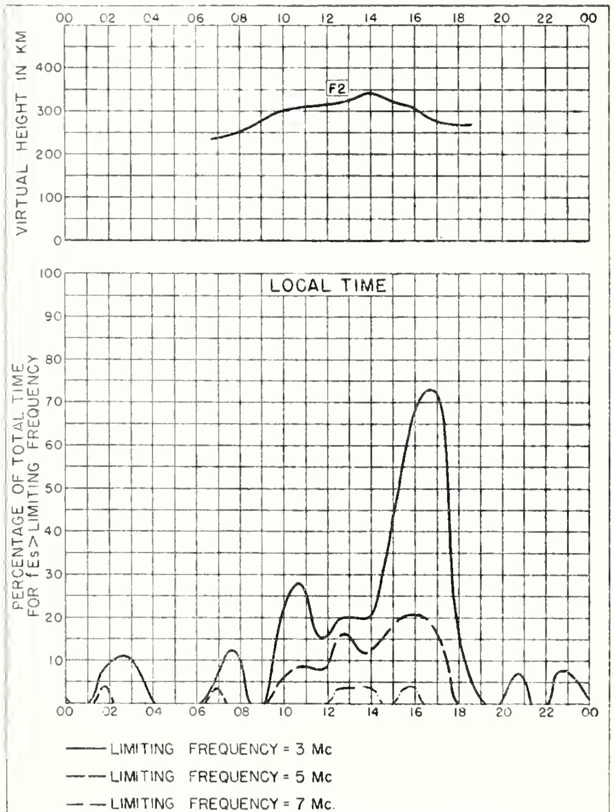

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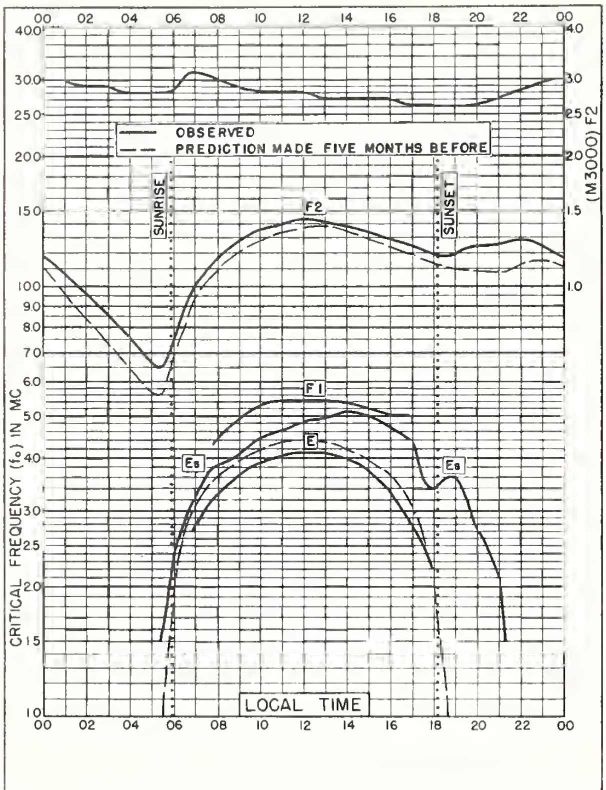

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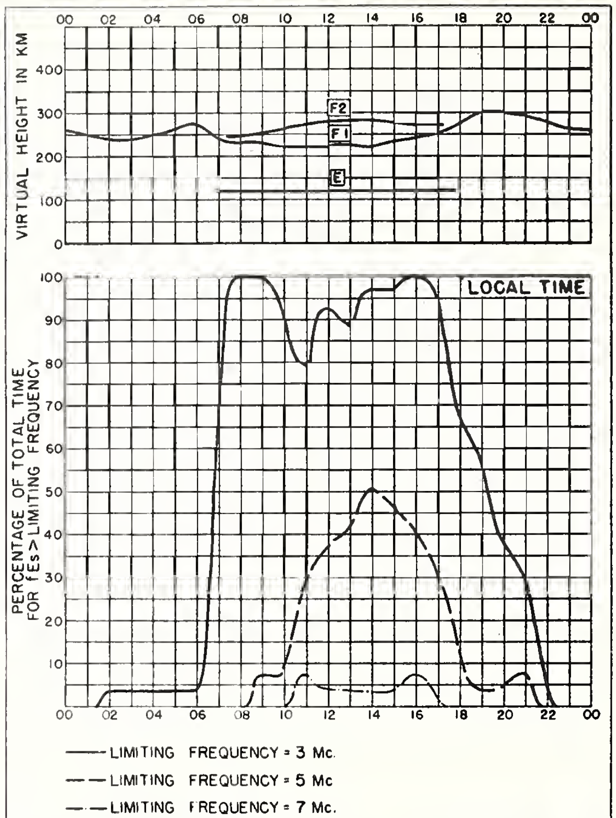
10. 6°N, 61. 2°W APRIL 1949



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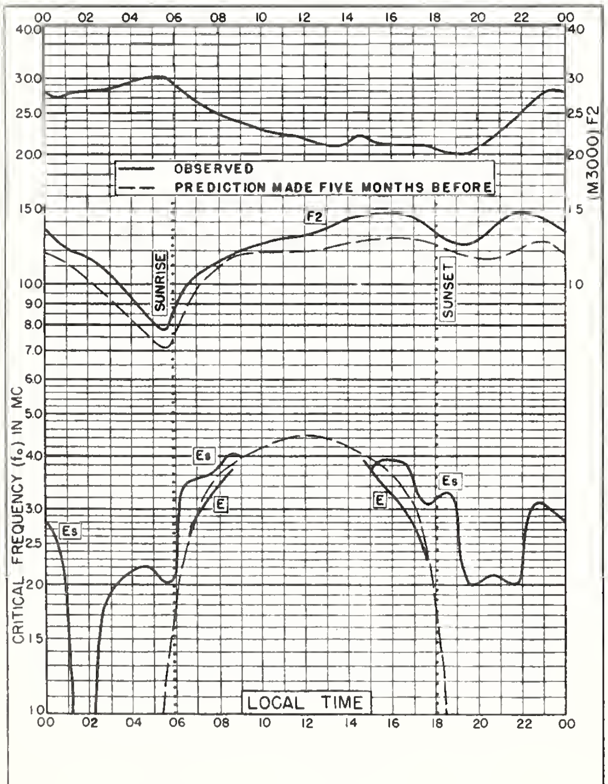

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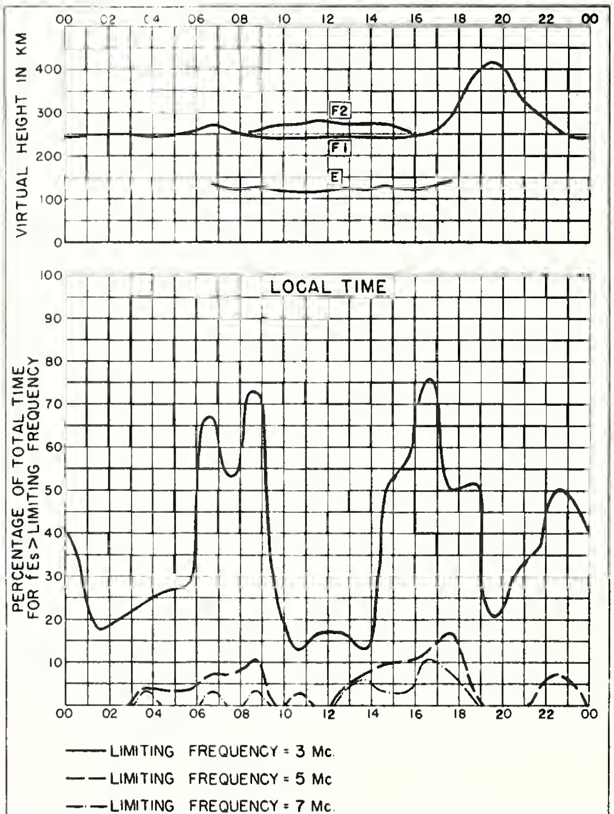
5. 9°N, 162. 1°W APRIL 1949



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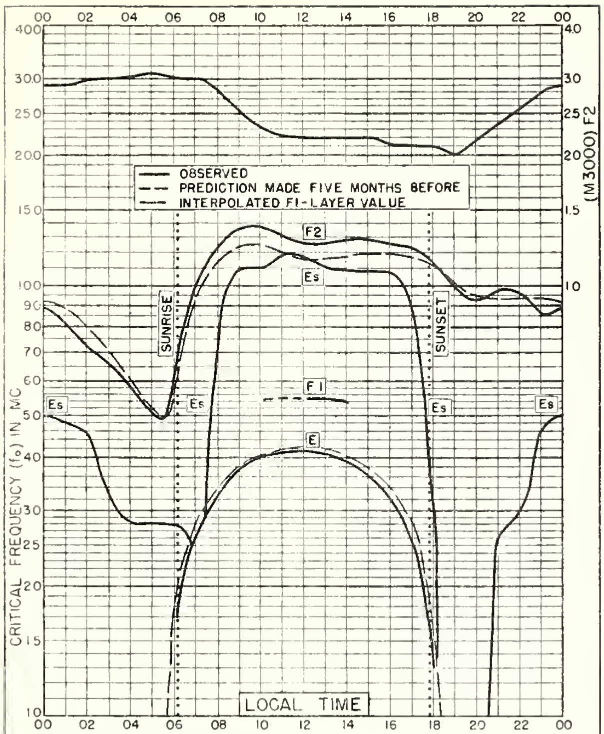

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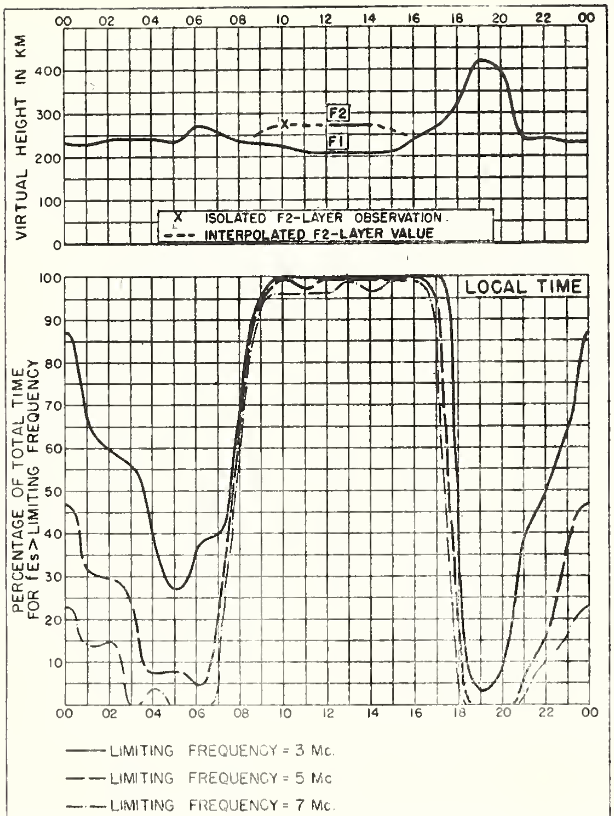

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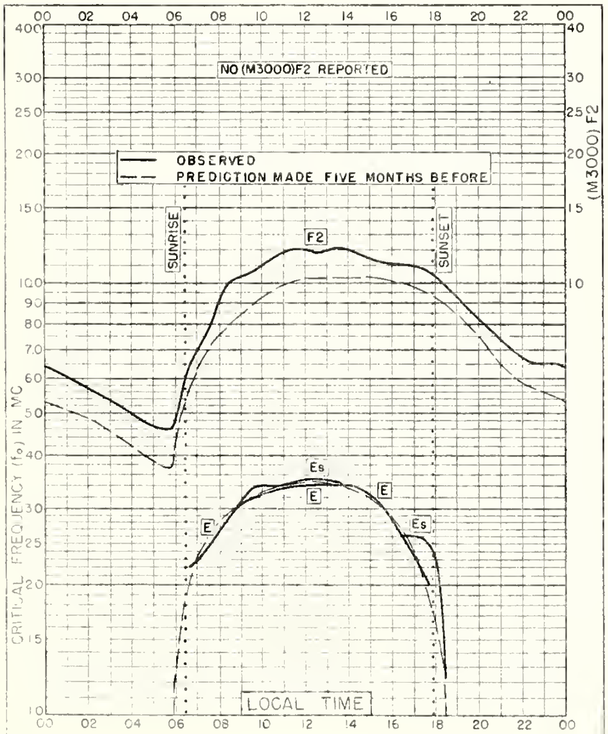

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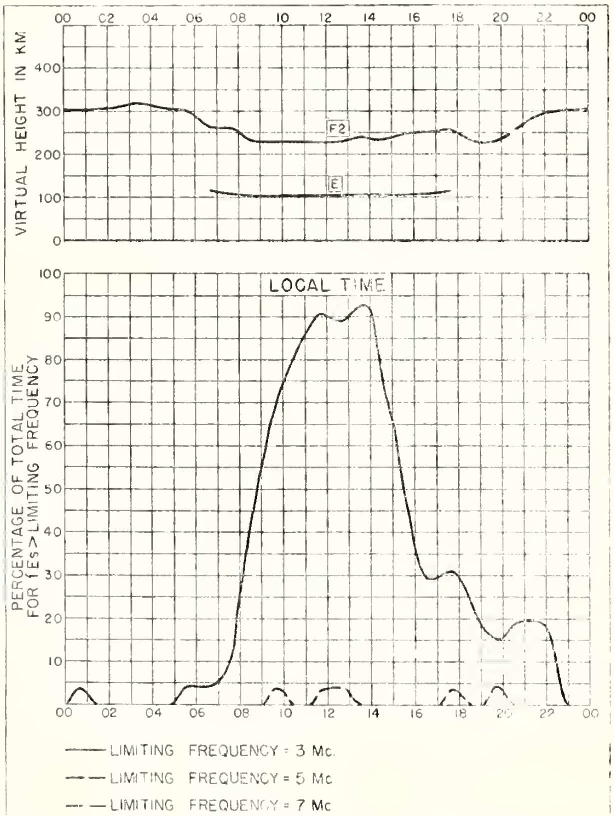

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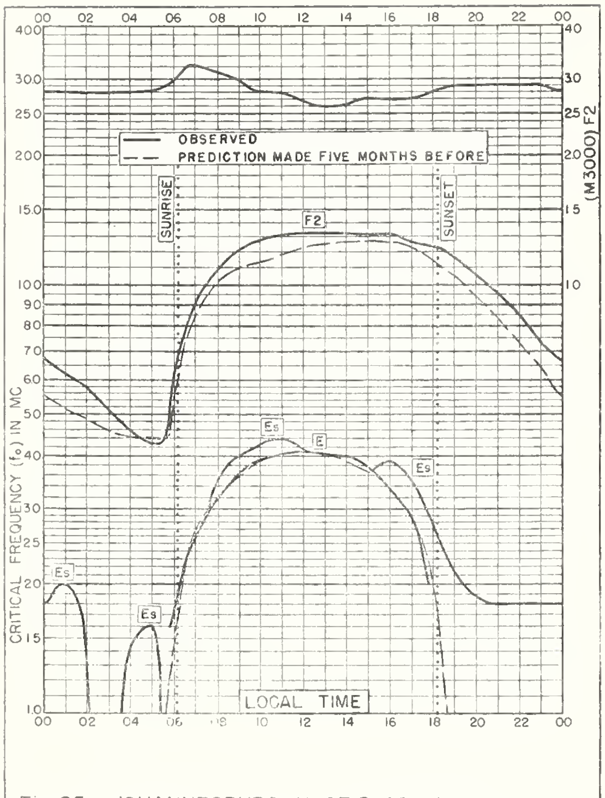

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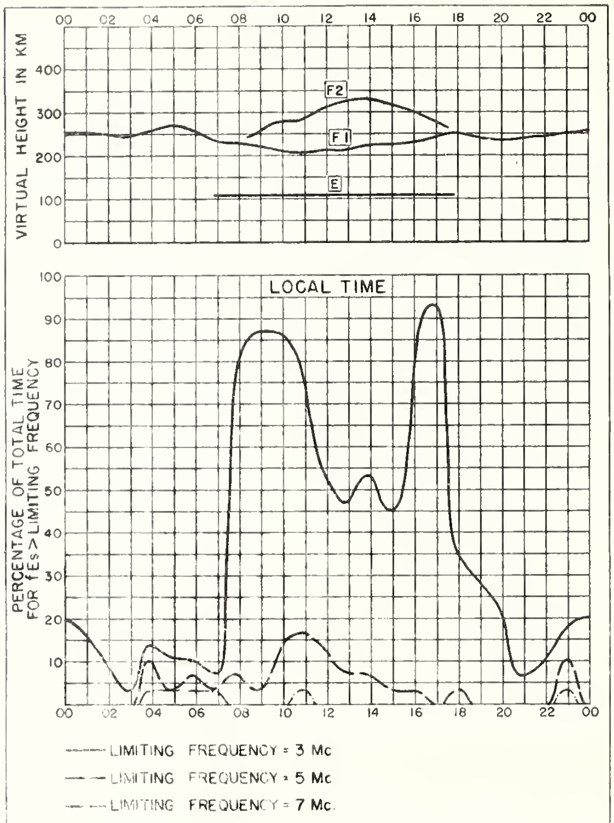

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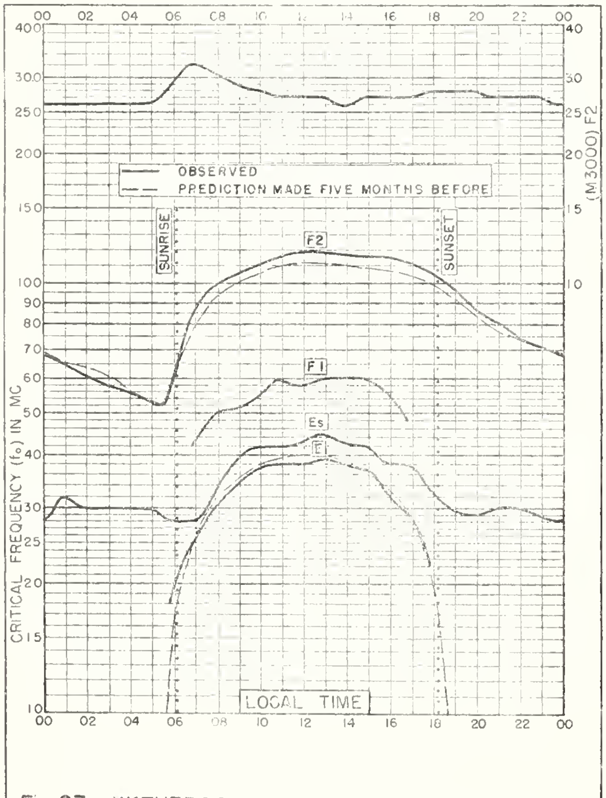

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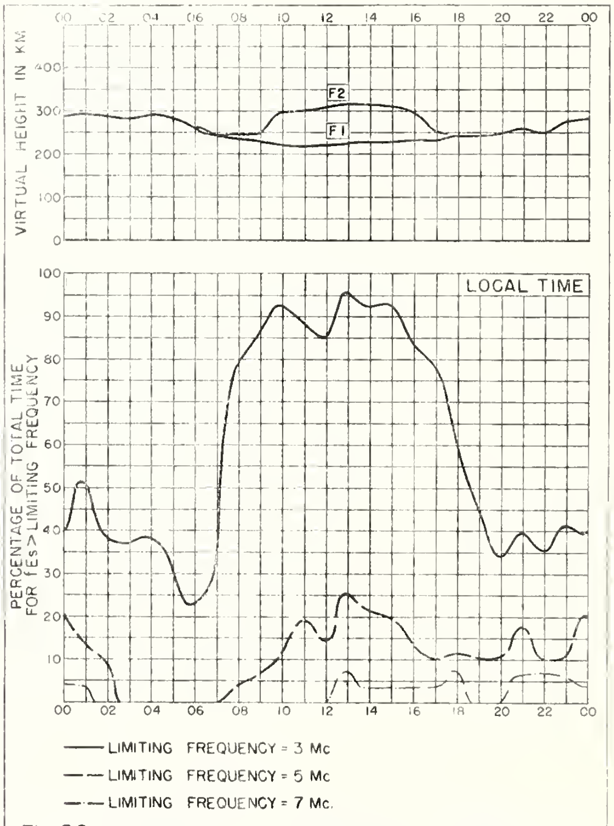

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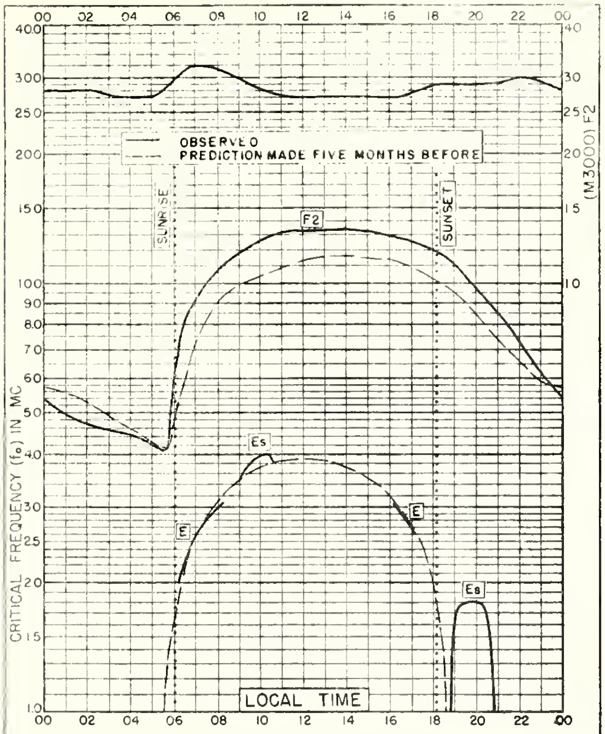

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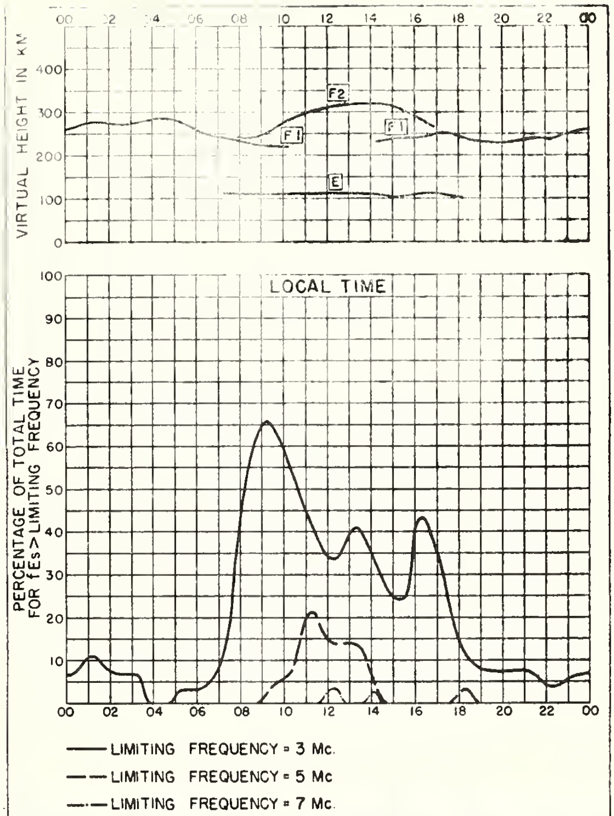

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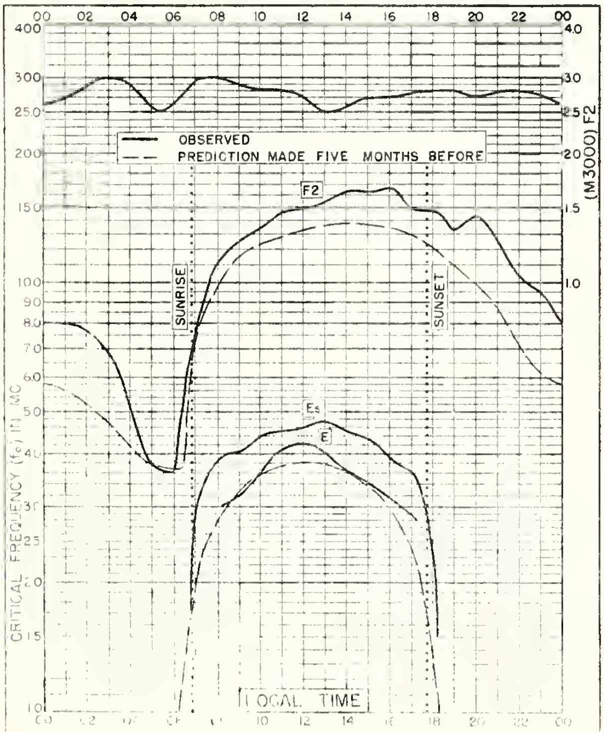

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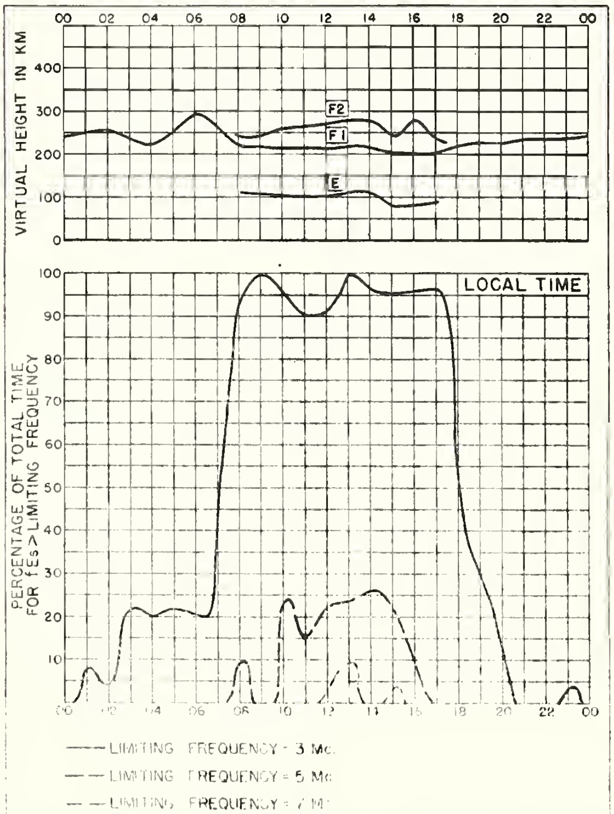

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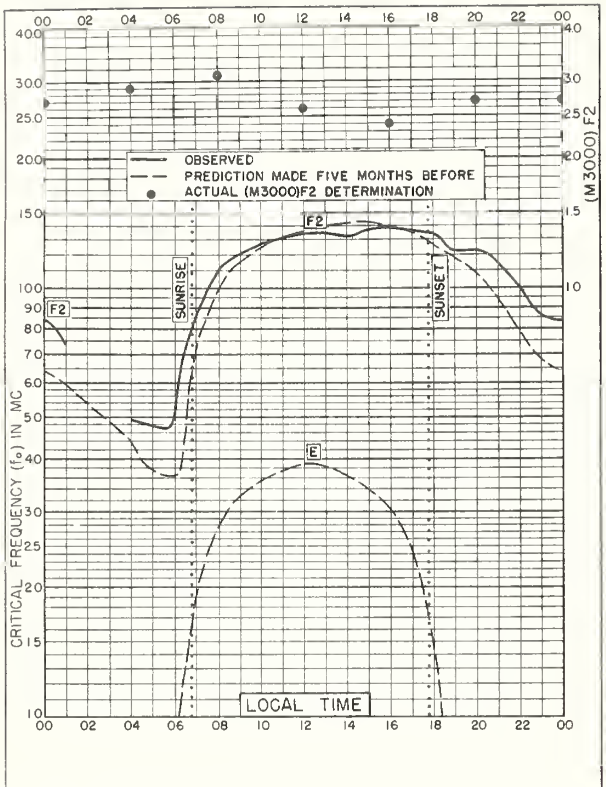

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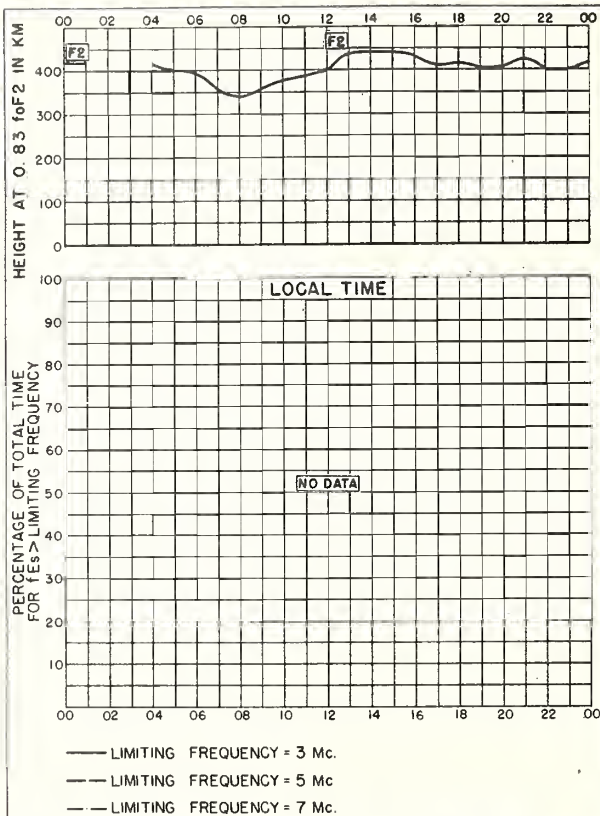

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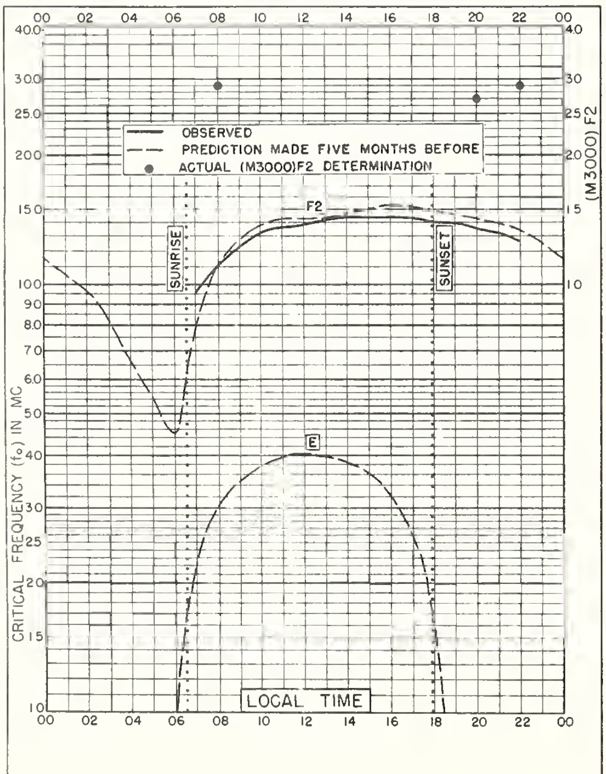

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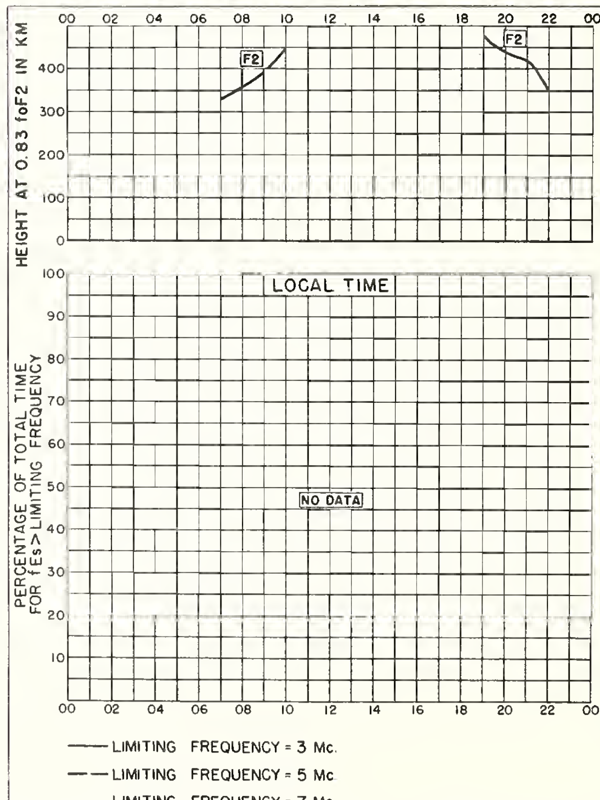

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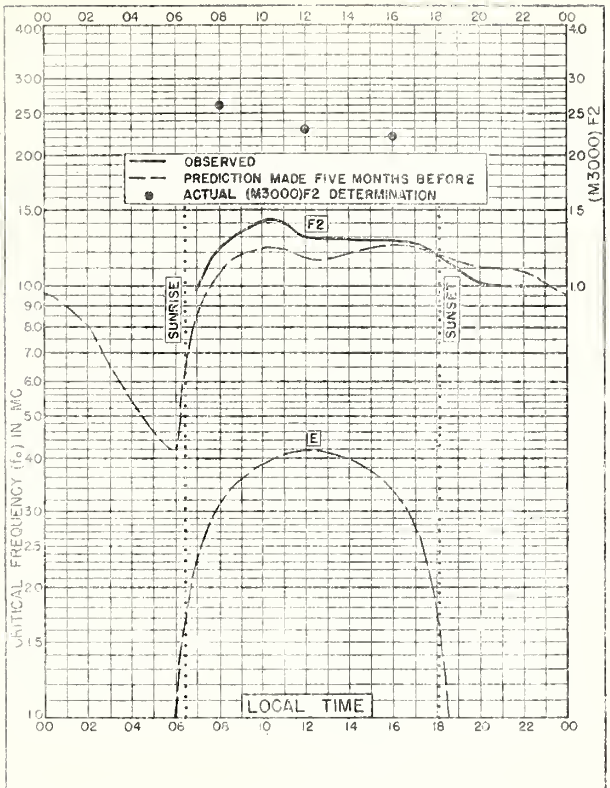

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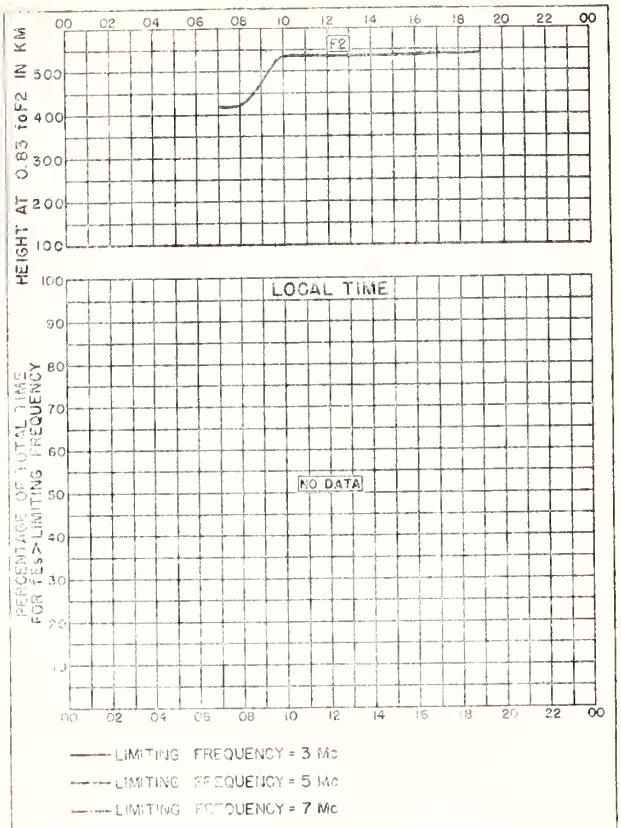

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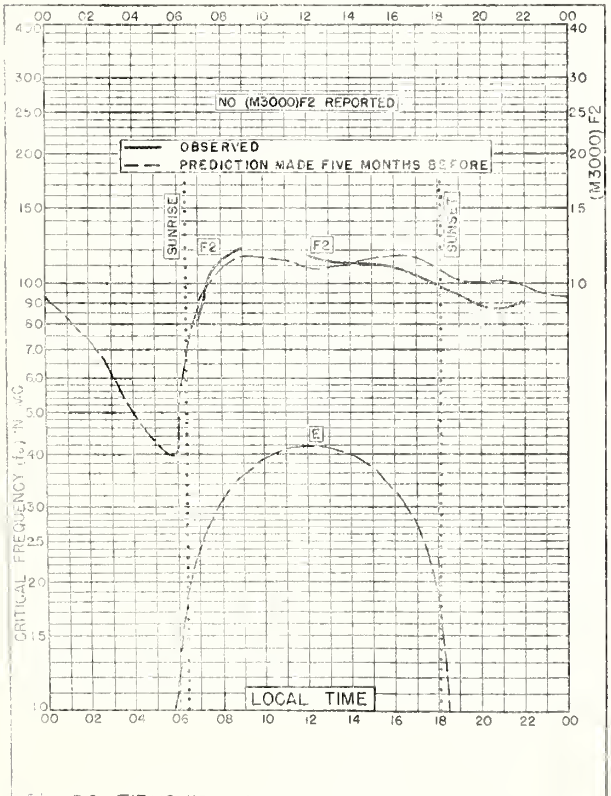

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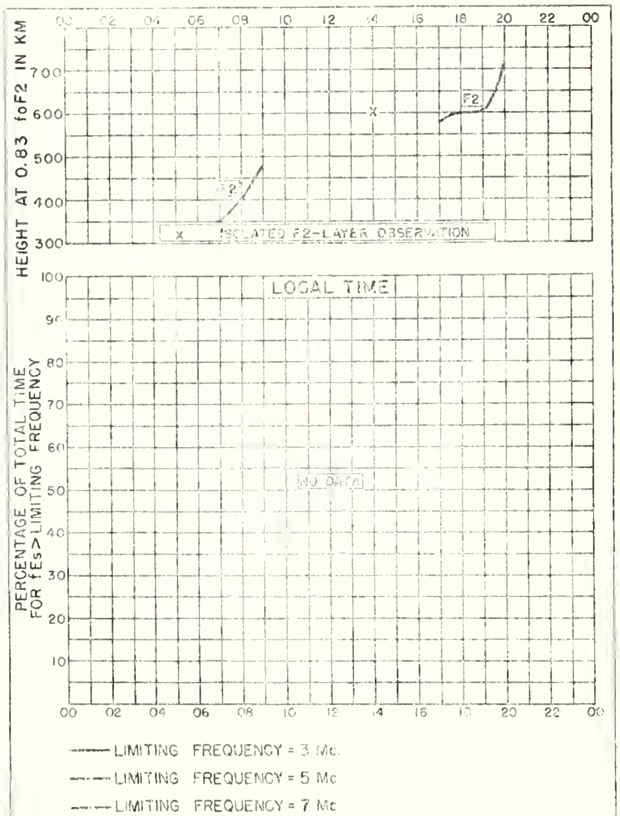

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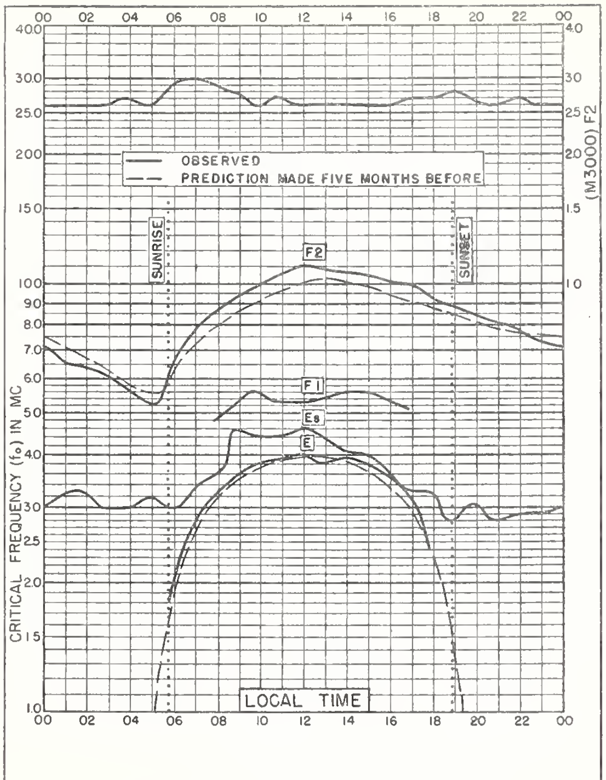

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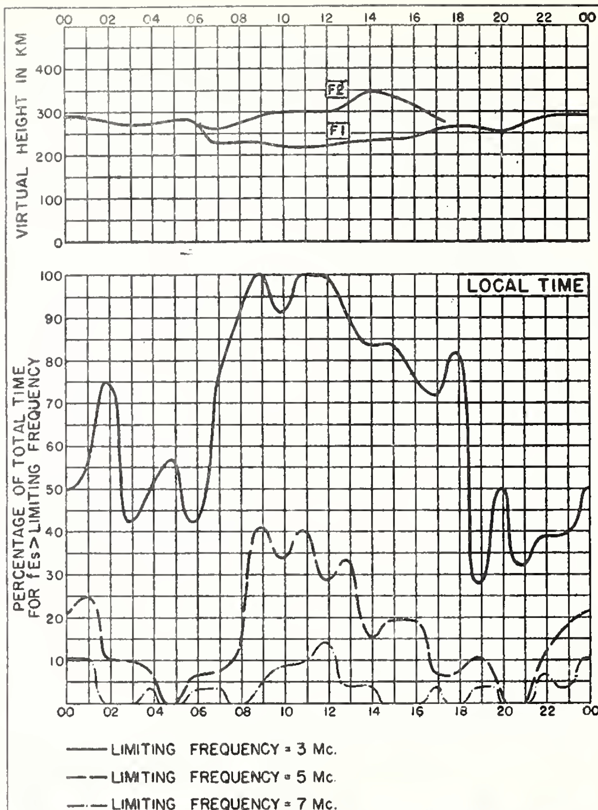

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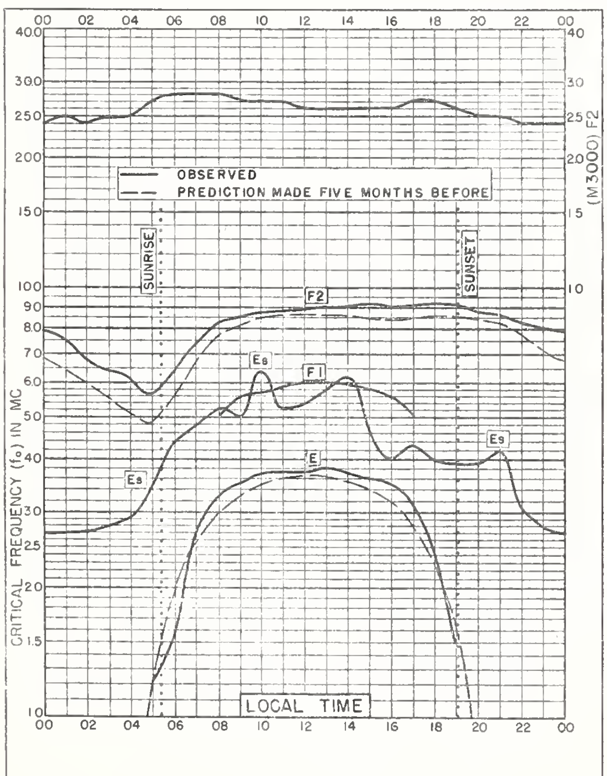

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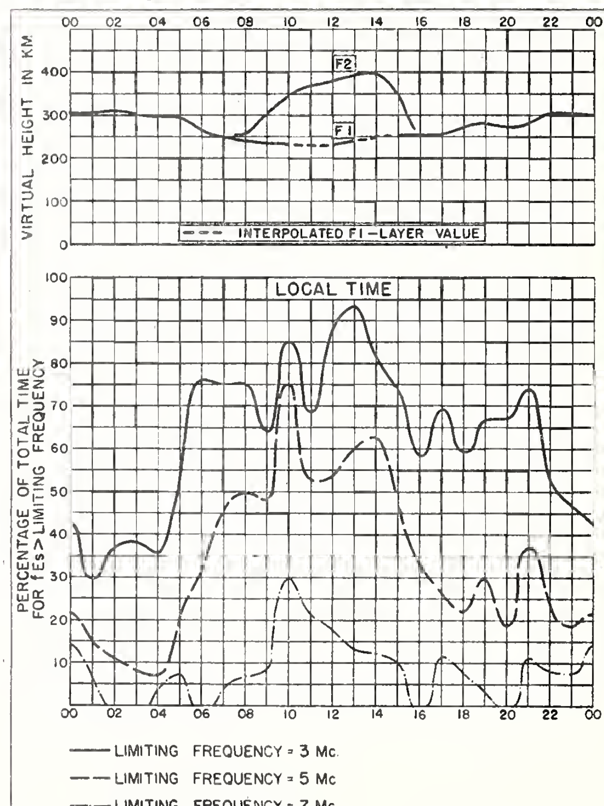

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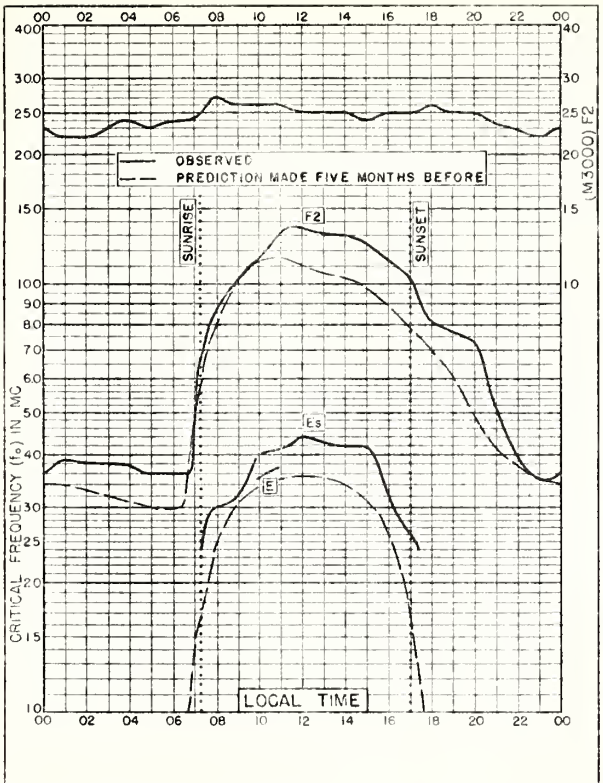

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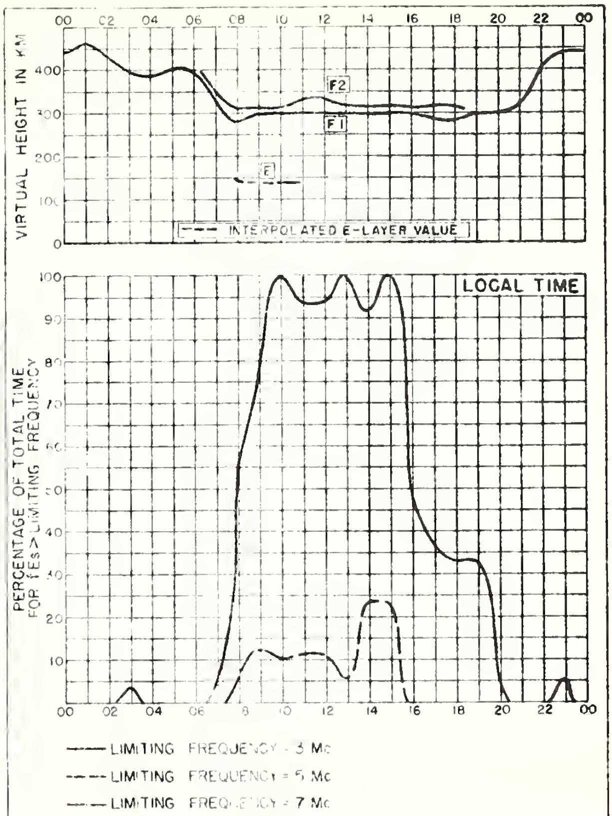

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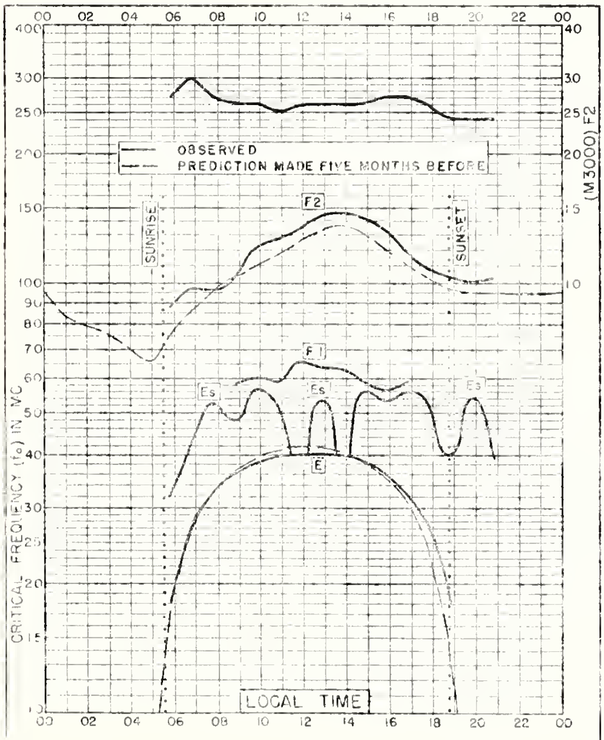

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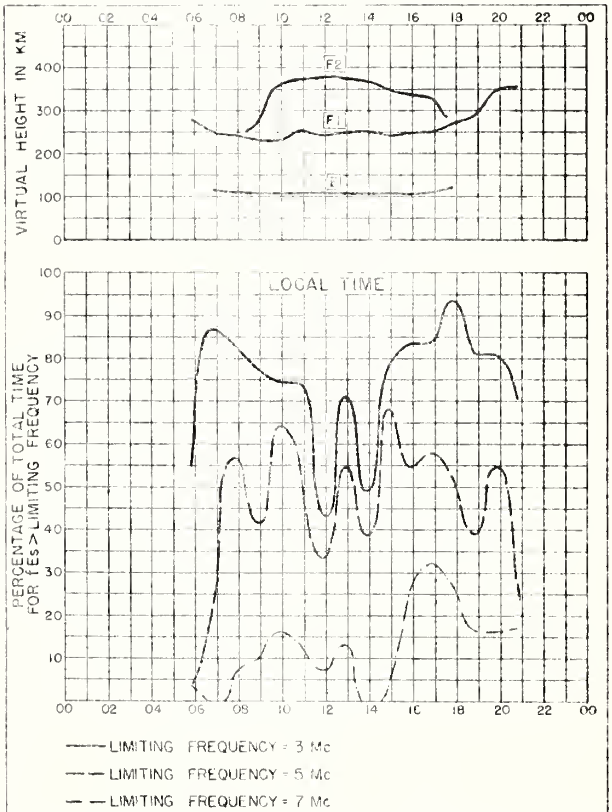

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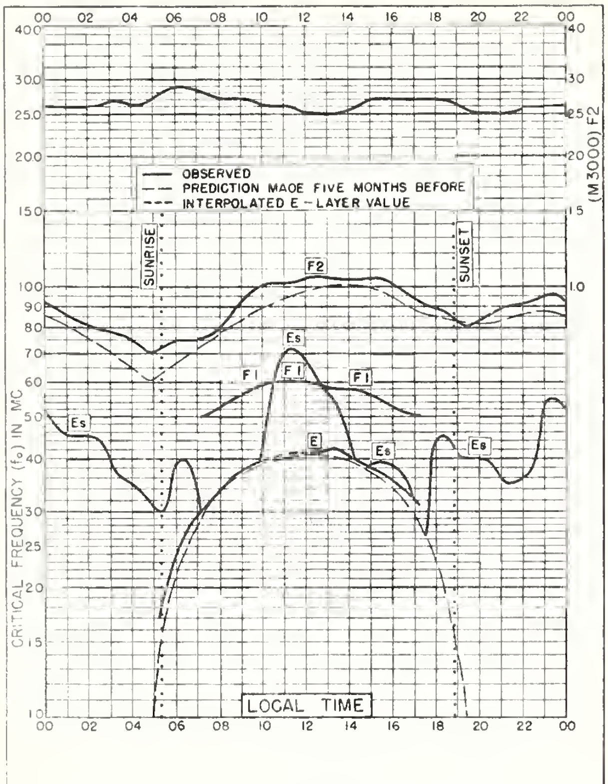

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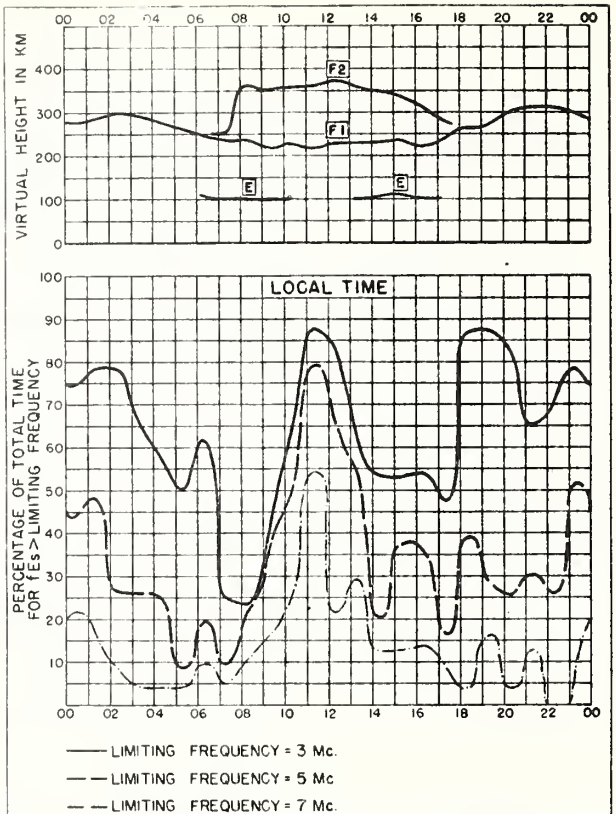

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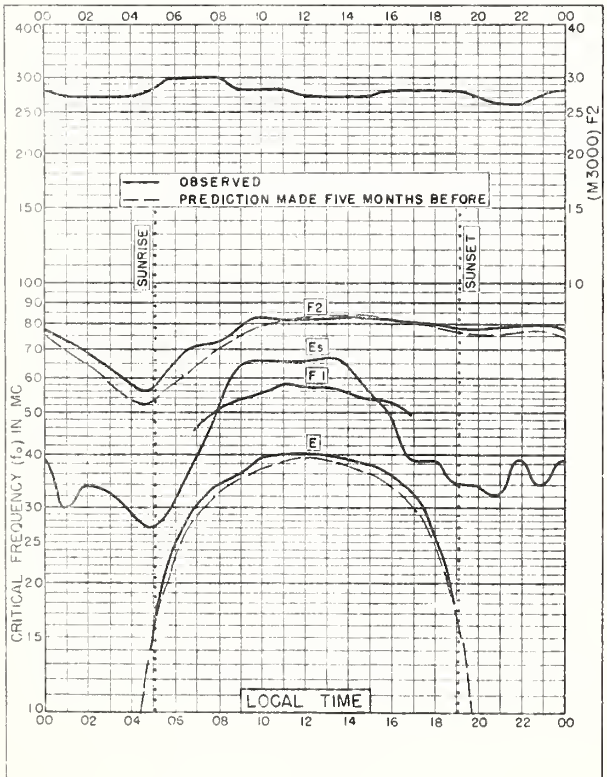

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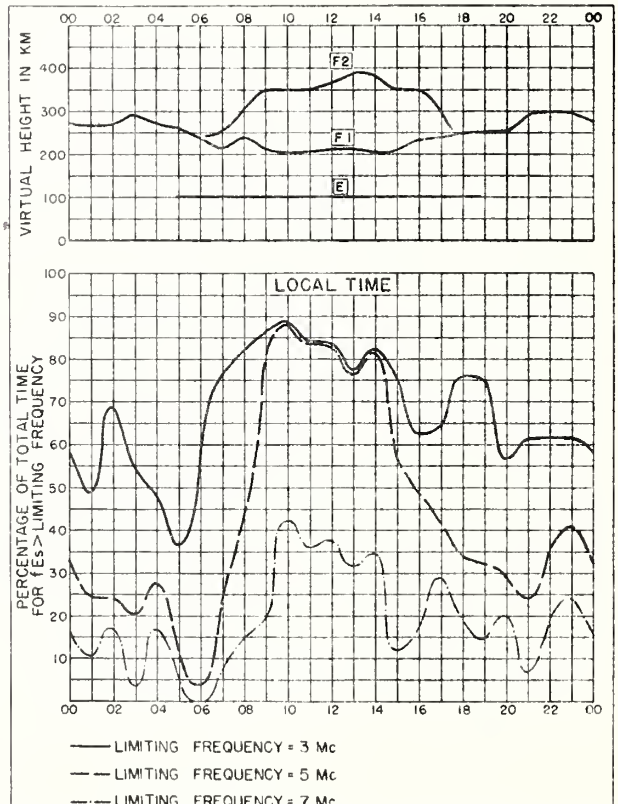

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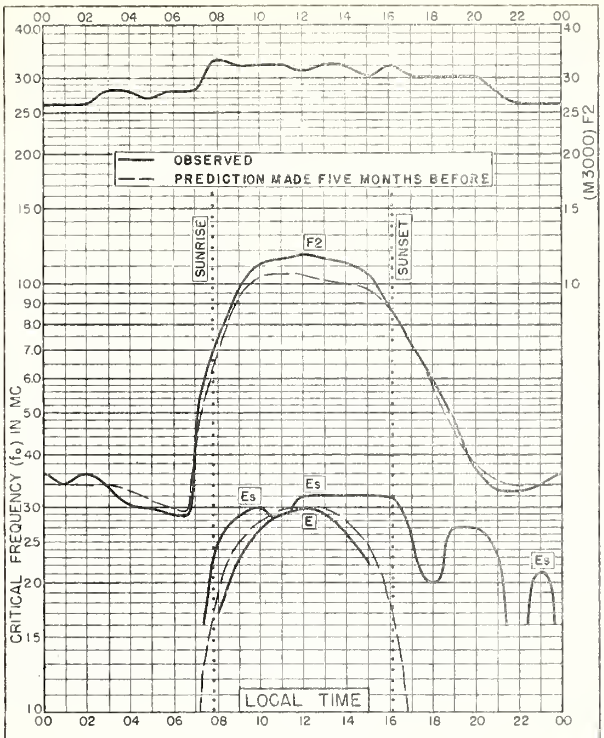

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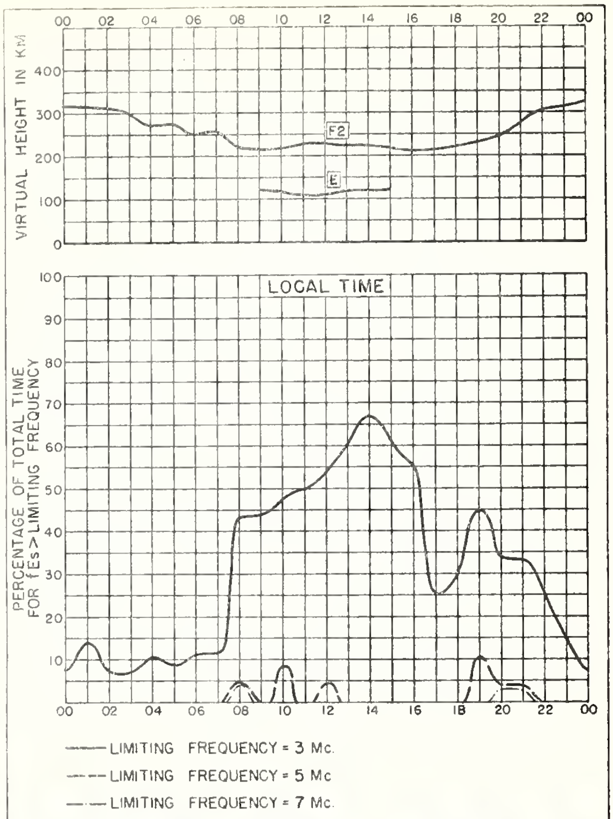

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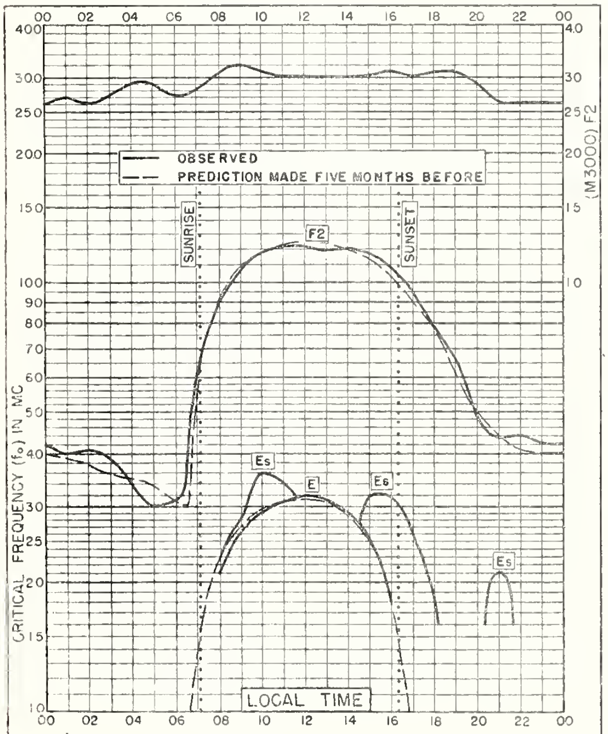

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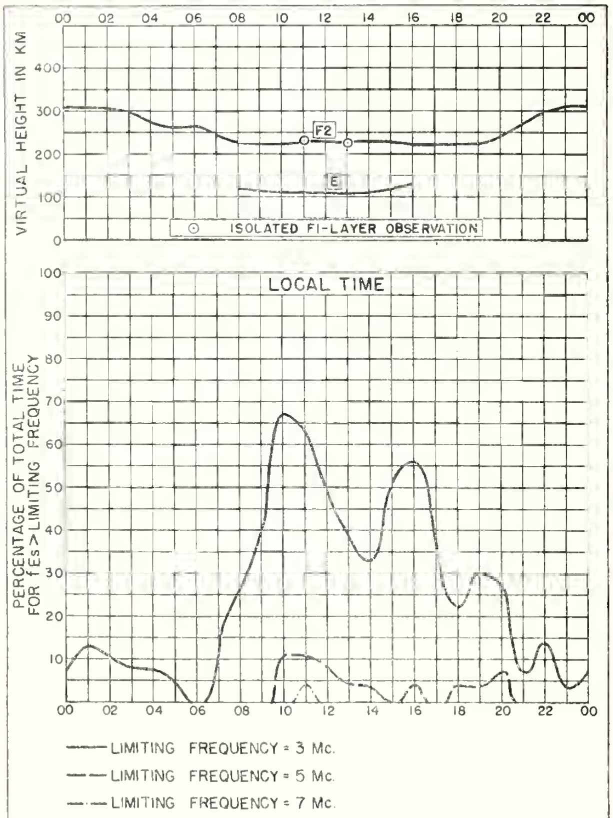

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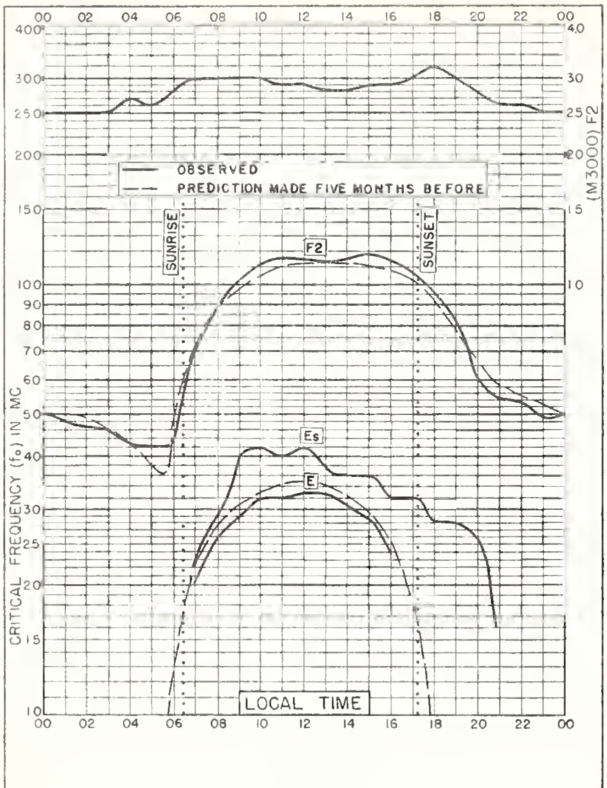

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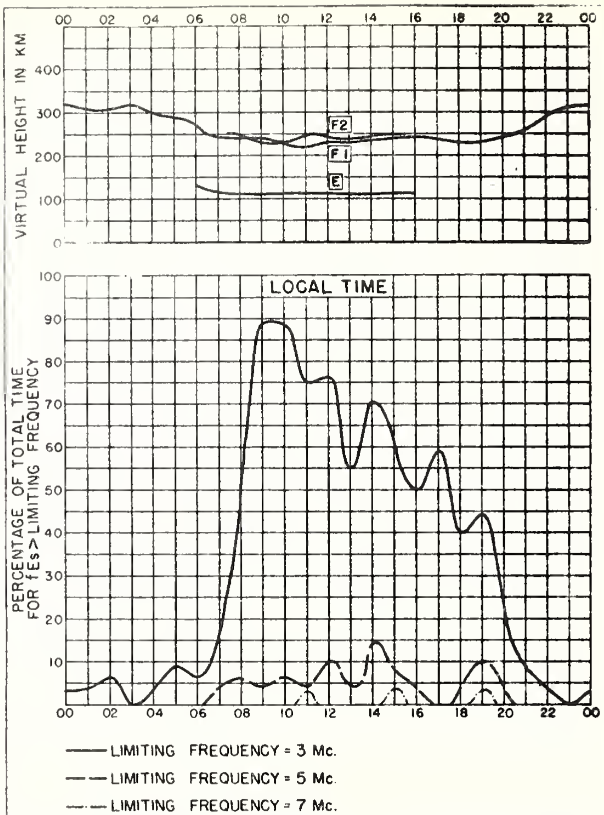

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CRPL and IRPL Reports

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Daily:
Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards.
Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

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

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

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

Quarterly:
*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:
NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:
IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL–R. Nonscheduled reports:
- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
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IRPL–T. Reports on tropospheric propagation:
- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

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

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