CRPL-F55

IONOSPHERIC DATA

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PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
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CRPL-F55 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 predictions 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

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

Japanese Physical Institute for Radio Waves (under supervision of Supreme Commander, Allied Powers):
- Fukaura, Japan
- Shibata, Japan
- Tokyo (Kokobunji), Japan
- Wakkanai, Japan
- Yamakawa, Japan

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

United States Army Signal Corps:
- Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
- Baton Rouge, Louisiana
- Boston, Massachusetts
- Huancayo, Peru
- Maui, Hawaii

National Bureau of Standards (continued):

Palmyra I.
San Francisco, California
San Juan, Puerto Rico
Trinidad, Brit. West Indies
Washington, D. C.
White Sands, New Mexico
Wuchang, China

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		130	109	67	
April		133	107	62	
March		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 February 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 February 1949.

Table 44 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 December 30, 1948, and January 17, 1949.

Table 45 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 January 15, 17, and 18, 1949.

Table 46 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 February 6, 9, 13, 18, and 19, 1949.

Table 47 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., for February 1, 9, 11, 14, 17, and 19, 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, January 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.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 49a and 49b are listed the intensities of green (5303A) line of the emission spectrum of the solar corona as observed during February 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 <u>solar rotation</u> coordinates rather than astronomical coordinates. 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 <u>astronomical</u> coordinates; the present format on <u>solar rotation</u> coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 50a and 50b give similarly the intensities of the first red (6374A) coronal line; tables 51a and 51b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 49, 50, and 51: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

AMERICAN AND ZURICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 52 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 will be published shortly. 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.

Table 1

ashington, D. C. (39.0°N, 77.5°W) February 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	6.1						2.8
01	250	5.8						2.9
02	250	5.6						2.9
03	250	5.4						2.8
04	250	5.2						2.9
05	250	5.0						2.8
06	250	4.8						2.8
07	250	6.2			160	2.1		3.1
08	230	9.3			100	2.7		3.3
09	230	10.8	---	---	100	3.2		3.2
10	220	11.8	220	---	100	3.5		3.1
11	220	12.2	220	---	100	3.8		3.0
12	230	12.4	210	---	100	3.8		3.0
13	230	12.6	210	---	100	3.8		2.9
14	230	12.4	210	---	100	3.8		3.0
15	230	12.1	210	---	100	3.4		3.0
16	230	11.8	---	---	100	3.1		3.0
17	230	11.6			110	2.5		3.0
18	220	10.8						3.1
19	220	9.6						3.0
20	220	8.7						3.0
21	230	7.6						2.9
22	245	7.1						2.9
23	250	6.6						2.9

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

Table 2

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	278	4.7						2.7
01	275	4.3						2.7
02	265	4.4						2.7
03	260	4.2					1.2	2.8
04	250	4.0						2.7
05	250	3.6			---	---		2.8
06	260	3.6			---	---		2.8
07	240	5.5			155	2.0		2.9
08	230	8.8			150	2.8		3.1
09	235	10.4			158	3.4		3.1
10	235	10.8			165	3.5		3.1
11	250	11.0			155	3.3		3.1
12	245	11.0			---	---		3.1
13	250	11.0			---	---		3.1
14	240	10.9			---	---		3.0
15	235	10.7			---	---		3.1
16	230	10.4			175	2.0		3.0
17	235	9.7			---	---		3.0
18	230	8.9			---	---		2.9
19	235	7.1						2.9
20	240	6.5						2.9
21	250	5.6						2.8
22	260	4.8						2.8
23	260	5.0						2.7

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

Table 3

an Francisco, California (37.4°N, 122.2°W) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	3.1					2.4	2.6
01	280	3.1						2.6
02	280	3.1					2.4	2.6
03	260	3.2						2.6
04	270	3.1					2.5	2.7
05	300	3.1					2.4	2.6
06	300	3.0						2.6
07	260	4.3						2.7
08	230	7.6			130	2.3		3.1
09	220	9.3			120	3.0		3.1
10	220	10.2			120	3.3		3.0
11	230	11.4	220		120	3.4		2.9
12	230	12.0	220		120	3.6		2.9
13	230	11.6			120	3.5		2.8
14	225	11.4			120	3.5		2.8
15	220	11.0			120	3.1		2.8
16	230	10.5			120	2.7		2.9
17	220	9.4			140	2.2		2.9
18	220	7.9					2.5	2.9
19	220	6.6					2.5	2.9
20	220	4.7					2.5	3.0
21	260	3.0					2.5	2.8
22	260	2.8					2.6	2.7
23	300	3.1					2.4	2.6

Time: 120.0°W.
Sweep: 1.3 Mc to 18.0 Mc in 4 minutes 30 seconds.

Table 4

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	3.8					2.6	2.1
01	270	3.7					2.9	2.8
02	260	3.7					2.7	2.7
03	260	3.6					2.8	2.7
04	260	3.4					2.8	2.7
05	300	3.1					2.6	2.6
06	280	3.4					2.4	2.7
07	260	5.6			---	---	2.7	2.9
08	240	(9.0)			120	2.5		(3.1)
09	240	10.1			120	2.9	3.9	3.1
10	240	10.8			120	3.3	4.3	3.1
11	230	11.4			120	3.5	4.8	2.9
12	230	12.1			120	3.6	4.8	2.8
13	230	11.8			120	3.6	4.8	2.9
14	240	11.5			120	3.5	4.7	2.8
15	240	11.1			120	3.2	4.0	2.9
16	240	10.6			120	2.7	3.9	2.9
17	240	10.3			120	(2.1)	3.9	2.9
18	220	(8.6)			---	---	3.4	(3.0)
19	230	6.8					3.4	3.0
20	240	5.1					3.4	3.1
21	250	4.2					3.2	3.0
22	260	3.4					2.4	2.7
23	280	3.6					2.6	2.6

Time: 105.0°W.
Sweep: 0.78 Mc to 14.0 Mc in 2 minutes.

Table 5

Wuchang, China (30.6°N, 114.4°E) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	278	4.2					1.6	2.7
01	275	4.1						2.8
02	260	4.2						2.9
03	245	3.8						3.0
04	245	3.7						3.0
05	275	2.9						2.7
06	290	2.8						2.8
07	250	4.2			130	1.4		2.8
08	220	8.7			110	2.1		3.4
09	220	10.0			100	2.9		3.4
10	220	11.2			100	3.2		3.3
11	230	13.1	215	4.8	100	3.4		3.2
12	230	13.0	215	5.2	100	3.5		3.1
13	240	12.7	205	5.6	100	3.5		3.0
14	245	13.1	210	5.9	100	3.5		3.0
15	238	12.7	210	5.6	100	3.3		3.0
16	230	12.8	220	5.6	100	3.0		3.1
17	220	12.2			100	2.5		3.2
18	205	11.2			95		2.2	3.2
19	208	8.6					2.4	3.1
20	215	8.2					2.4	3.2
21	205	7.2					2.2	3.1
22	210	5.4					2.2	3.0
23	250	4.5					2.0	2.8

Time: 120.0°E.
Sweep: 1.2 Mc to 19.0 Mc in 15 minutes, automatic operation.

Table 6

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	3.8						2.9
01	280	3.9						3.0
02	280	3.8						3.0
03	285	3.8						2.9
04	300	3.7						2.9
05	300	3.7						2.8
06	290	3.7						3.0
07	270	6.3						3.1
08	270	9.2	230		130	2.6		3.2
09	280	10.5	240		120	3.1		3.2
10	280	11.2	230		120	3.4		3.0
11	290	11.6	230		120	3.6		3.0
12	300	11.9	230		120	3.6		3.0
13	310	11.8	230		120	3.6		2.9
14	310	11.6	230		120	3.5		2.9
15	300	11.4	240		120	3.4		2.9
16	300	11.2	240		120	2.9		2.9
17	270	10.5			130	2.3		3.0
18	230	8.9						3.0
19	230	7.2						3.1
20	240	6.1						3.0
21	270	4.8						3.0
22	280	4.2						3.0
23	290	3.8						2.9

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

Table 7

Okinawa I. (26.3°N, 127.7°E) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.5						2.8
01		5.3						2.9
02		5.2						3.0
03		5.3						3.1
04		4.3						3.3
05		(3.0)						3.0
06		E						(2.8)
07		4.4						2.9
08		9.2						3.4
09		11.2					3.4	3.3
10		12.1					3.8	3.3
11		12.0					4.2	3.1
12		13.7					4.4	3.0
13		14.2					4.4	2.9
14		15.3					4.4	2.9
15		15.4					4.2	2.9
16		15.9					3.8	3.0
17		15.6					3.2	3.1
18		14.3						3.1
19		12.0						3.1
20		(12.0)						(3.2)
21		(10.7)						(3.2)
22		8.9						3.2
23		6.0						2.9

Time: 135.0°E.
Sweep: 3.2 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 8

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	4.8						(3.0)
01	250	4.6						(3.1)
02	250	4.1						3.1
03	260	3.2						(3.0)
04	300	2.8						2.8
05	300	2.8						2.9
06	290	2.8						(3.0)
07	270	5.0			---	E		(2.9)
08	250	9.3	---		110	2.6		3.1
09	250	12.3	240		100	3.2		3.1
10	250	13.2	230	---	100	3.5		(3.1)
11	250	12.7	210	5.0	105	3.6		(3.0)
12	270	13.1	210	6.2	100	3.7	4.4	(2.8)
13	320	14.0	220	5.8	110	3.7	4.7	(2.8)
14	300	14.4	230	6.1	100	3.8	4.8	2.9
15	290	14.2	230	---	100	3.6	4.6	(2.9)
16	250	13.6	230	---	100	3.2	4.0	(3.0)
17	240	13.6	---		110	2.6	3.4	(3.0)
18	230	12.1			---	E	2.8	(3.1)
19	220	9.4					2.8	(3.2)
20	235	8.1						3.0
21	240	8.5						(3.2)
22	230	7.5						(3.3)
23	245	5.7						3.1

Time: 150.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute; above 16.0 Mc, manual operati

Table 9

an Juan, Puerto Rico (18.4°N, 66.1°W) January 1949

ime	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.9						2.8
01		5.9						2.9
02		5.6						3.0
03		4.8						2.9
04		3.9						2.8
05		4.3						2.7
06		4.5						2.8
07	250	7.2						3.0
08	240	10.4		3.7				3.2
09	250	12.0		(4.3)		6.3		3.1
10	250	12.5		---		3.8		3.2
11	250	11.5		5.5		3.8		3.1
12	280	11.3		5.5		3.9		2.9
13	290	11.4		(5.7)		4.0		2.8
14	290	11.5		5.5		3.8		2.9
15	280	11.3		5.6		3.6		2.8
16	280	11.0		5.0		3.4		2.9
17	260	11.2		3.7				2.9
18	250	11.0						2.9
19	250	9.7						2.9
20		8.2						2.9
21		6.6						3.0
22		6.7						2.8
23		5.8						2.8

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

Table 10

Trinidad, Brit. West Indies (10.6°N, 61.2°W) January 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	6.4						3.0
01	250	5.6						3.0
02	250	5.0						3.2
03	250	4.0						3.0
04	285	3.6						2.8
05	280	4.0					2.1	2.9
06	260	4.4					2.2	3.0
07	250	8.5			120	2.4	3.0	3.2
08	240	11.2			120	2.9	3.8	3.2
09	250	13.2	230	4.5	120	3.4	4.4	3.2
10	250	12.6	220	5.0	120	3.7	4.4	3.2
11	250	11.8	220	5.1	120	3.9	4.5	3.0
12	260	11.6	220	5.2	120	3.9	4.7	2.8
13	280	12.6	220	5.4	120	3.9	4.8	2.8
14	270	12.1	220	5.1	120	3.8	4.8	2.8
15	270	11.5	230	5.1	120	3.8	4.6	2.8
16	260	11.2	230	4.7	120	3.4	4.4	2.8
17	250	11.5			120	2.9	4.1	2.8
18	260	11.5			110	2.0	3.6	3.0
19	240	11.1					3.2	3.1
20	240	9.6					3.0	3.0
21	250	8.8					2.8	2.9
22	250	8.6					2.4	3.0
23	240	7.3						3.0

Time: 60.0°W.
Sweep: 1.2 Mc to 18.0 Mc, manual operation.

Table 11

almyra I. (5.9°N, 162.1°W) January 1949

ime	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	(9.6)					4.0	(3.0)
01	250	8.2					3.8	3.0
02	250	(7.2)					3.5	(3.0)
03	270	(6.8)					3.5	(2.7)
04	260	6.3					3.0	(2.8)
05	250	5.6					2.5	2.9
06	250	5.1					2.8	2.9
07	280	7.8			140	2.1	3.4	2.8
08	250	10.8			120	3.0	4.0	2.7
09	240	12.8	240		120	3.5	4.2	2.6
10	270	13.0	230		120	3.8	4.3	2.4
11	270	12.3	230		120	4.0	4.4	2.3
12	280	11.9	230		120	4.0	4.2	2.3
13	270	11.9	230		120	4.0	4.5	2.2
14	280	12.2	210		120	4.0	4.3	2.2
15	260	13.0	200	4.3	120	3.7	4.3	2.4
16	250	13.4	200	3.7	120	3.5	4.3	2.5
17	260	13.6			120	3.0	4.3	2.5
18	280	13.6			145		4.2	2.6
19	290	13.5					3.9	2.6
20	300	13.4					3.8	2.6
21	290	13.2					4.0	2.6
22	270	12.6					4.1	2.8
23	270	11.6					4.2	2.9

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 12

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	345	(9.2)					5.2	(2.7)
01	315	(9.1)					5.2	(2.8)
02	265	(8.2)					5.2	(2.8)
03	240	6.8					4.9	2.1
04	230	6.1					4.0	3.2
05	240	4.9					5.2	3.1
06	270	7.2				2.2	5.2	2.9
07	240	10.1				2.9	7.0	2.9
08	230	12.0				3.5	9.3	2.7
09	280	12.7	220	5.5		3.9	11.9	2.5
10	280	13.3	210	5.4		4.1	12.3	2.4
11	280	13.0	210	5.4		4.2	12.0	2.3
12	280	12.6	200	5.4		4.2	12.3	2.2
13	280	12.6	200	5.4		4.2	11.9	2.1
14	280	12.2	200	5.4		4.0	11.9	2.1
15	270	12.2	210	4.8		3.8	11.9	2.2
16	230	12.5				3.6	11.9	2.2
17	250	12.8				3.0	11.5	2.2
18	280	12.6				2.1	5.0	2.3
19	330	12.0				(0.8)		2.2
20	395	10.4						2.1
21	420	9.2						2.1
22	390	(10.9)						2.3
23	355	(9.3)						2.6

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

Table 13

Wuchang, China (30.6°N, 114.4°E) December 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	272	3.8						2.7
01	290	3.7						2.7
02	275	3.6						2.8
03	250	3.7						3.0
04	245	3.6						3.1
05	230	3.1						3.2
06	270	3.0						2.9
07	258	5.2				1.5		3.0
08	225	9.2			112	2.2		3.4
09	225	10.6			102	2.9		3.3
10	225	11.2			100	3.2		3.3
11	225	11.4	212	5.4	100	3.4		3.2
12	250	12.0	215	5.2	100	3.5		3.0
13	240	13.0	220	5.1	100	3.5		3.0
14	230	13.0	215	5.0	100	3.4		3.0
15	232	13.0	218	4.7	100	3.1		3.1
16	230	12.0	220		100	2.8		3.1
17	220	11.5			110	2.2		3.2
18	200	9.8			100		2.6	3.2
19	212	8.2					2.6	3.1
20	215	7.8					1.7	3.1
21	210	7.0						3.2
22	215	6.0						3.1
23	240	4.2						2.9

Time: 120.0°E.
Sweep: 1.2 Mc to 19.0 Mc in 15 minutes, automatic operation.

Table 14

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) December 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(280)	7.0					1.9	2.7
01	(270)	6.7					2.0	2.8
02	(260)	6.1					2.7	2.8
03	(260)	5.7					2.9	2.8
04	(270)	5.3					2.5	2.7
05	280	5.2						2.8
06	250	6.8	240		110	2.4	2.5	2.9
07	280	8.1	230		110	3.0		2.8
08	315	9.4	220	5.0	110	3.4	3.6	2.7
09	345	10.0	210	5.6	110	(3.8)	4.0	2.6
10	370	10.4	210	5.7	110	(3.9)	4.1	2.6
11	370	10.9	210	5.8	110	4.0		2.5
12	370	11.1	210	5.8	110	(4.1)		2.5
13	370	11.2	210	5.8	110	(4.1)	4.3	2.5
14	360	11.0	220	5.7	110	(4.0)		2.6
15	350	10.7	220	5.6	110	3.8	4.1	2.6
16	340	10.3	240	5.1	110	3.6	4.0	2.7
17	310	10.0	230	(4.8)	110	3.1	3.6	2.7
18	270	9.5	250		100	2.4	3.0	2.8
19	260	9.1			110	(1.8)	2.0	2.8
20	260	9.3					2.0	2.8
21	250	8.5					2.0	2.8
22	270	7.6					2.1	2.8
23	285	7.3					2.1	2.6

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

Table 15

Capetown, Union of S. Africa (34.2°S, 18.3°E) December 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(290)	5.7					2.6	2.7
01	(300)	5.7					2.2	2.6
02	(300)	5.6					2.8	2.7
03	(270)	5.4					2.6	2.8
04	(280)	5.0					2.6	2.7
05	300	4.9						2.7
06	260	6.1				2.1		2.9
07	280	7.3	240		110	2.8		2.9
08	340	8.7	230	5.1	110	3.2		2.6
09	350	9.7		5.2	110		4.0	2.6
10	370	10.0		5.7	110		4.3	2.6
11	390	10.1		5.8	110		4.1	2.5
12	370	10.8		5.7	110			2.5
13	380	10.6		5.6	110			2.6
14	370	10.7		5.7	110			2.6
15	360	10.4		5.7	110			2.6
16	360	10.0		5.5	110	3.6		2.6
17	340	9.8	230	5.1	110	3.3	3.6	2.7
18	300	9.2	240		110	2.8	3.2	2.8
19	260	9.0	260		100	2.2	2.6	2.8
20	250	8.7					2.0	2.9
21	250	7.9					2.7	2.8
22	260	7.1					2.6	2.8
23	(270)	6.0					2.5	2.7

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

Table 16

Christchurch, New Zealand (43.5°S, 172.7°E) December 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	8.1					3.0	2.5
01	290	7.8					3.4	2.6
02	290	7.1					3.0	2.6
03	280	6.3					2.8	2.6
04	280	6.0				1.2	3.0	2.7
05	270	6.1				1.7	3.2	2.8
06	300	6.9	260	4.3		2.7	4.4	2.8
07	340	7.5	250	4.9		3.0	5.2	2.8
08	340	7.8	235	5.2		3.4	6.2	2.8
09	350	8.2	230	5.3		3.6	6.5	2.7
10	370	8.1		5.7		3.7	6.0	2.6
11	370	8.6	220	5.8		3.7	5.8	2.6
12	400	8.6	230	5.9		3.8	5.5	2.6
13	380	8.5	230	5.7		3.8	6.6	2.6
14	380	8.5	240	5.8		3.7	5.4	2.6
15	385	8.7	235	5.7		3.8	5.0	2.6
16	360	8.6	240	5.6		3.5		2.6
17	345	8.7	250	5.0		3.2	5.0	2.7
18	295	8.8		4.5		2.7	6.2	2.7
19	280	8.8				1.6	5.6	2.6
20	280	8.8					4.9	2.6
21	285	8.8					4.6	2.6
22	300	8.8					4.1	2.5
23	300	8.3					3.4	2.6

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

Table 17

Wakkanai, Japan (45.4°N, 141.7°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.0					2.0	2.7
01	300	3.9					2.2	2.6
02	300	4.0					1.9	2.6
03	300	4.1					2.1	2.7
04	280	4.1					1.9	2.7
05	250	4.0					2.1	2.8
06	245	4.4				1.2	2.1	2.8
07	(220)	(7.8)				2.1	(2.8)	(3.1)
08	210	11.5			100	2.7	2.9	3.2
09	210	(12.2)			100	2.9	3.4	(3.2)
10	210	(12.3)			100	3.1	3.3	(3.3)
11	215	(12.0)			100	3.2		(3.2)
12	220	12.2			100	3.3	3.1	3.2
13	225	(12.4)			100	3.2	3.0	(3.1)
14	230	12.2			100	3.0		3.1
15	220	(12.0)			100	2.5	2.8	(3.2)
16	220	10.0			100	1.9	2.7	3.1
17	200	8.4			100	1.5	2.6	3.2
18	220	6.6					2.5	3.1
19	220	6.0					2.7	3.1
20	230	4.3					2.8	3.0
21	260	4.0					2.0	2.8
22	290	4.0					2.1	2.7
23	300	4.0					2.0	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 18

Fukaura, Japan (40.6°N, 139.9°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	4.0					2.4	2.6
01	315	4.0					2.0	2.6
02	300	3.9					1.8	2.6
03	300	4.2					1.8	2.6
04	300	4.0					1.8	2.8
05	270	3.7					2.0	2.7
06	240	4.6				E	2.0	2.8
07	220	9.0			120	2.0	2.4	3.2
08	(220)	(10.4)			115	2.5	(3.0)	(3.4)
09								
10	(240)				110	3.0	(3.0)	
11	(245)							
12	230	11.8			110	3.2		3.1
13	240	12.0			110	3.0	3.2	3.1
14	230	11.7			110	2.8	3.2	3.1
15	230	11.2			110	2.5	3.2	3.2
16	(220)	(10.6)					(3.4)	(3.2)
17								
18								
19								
20	(230)	(5.0)					(1.8)	(3.2)
21	265	4.2					2.8	2.9
22	300	3.8					2.4	2.7
23	305	3.8					2.3	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 19

Shibata, Japan (37.9°N, 139.3°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	3.9					2.4	2.8
01	290	4.0					2.4	2.8
02	280	4.0					2.5	2.8
03	275	4.1					2.4	2.8
04	250	3.9					2.4	3.0
05	250	3.7					2.6	2.9
06	240	4.3					2.6	3.0
07	200	8.3			100	1.9	2.8	3.5
08	200	10.4			100	2.7	3.4	3.5
09	200	12.2			100	3.0	3.4	3.3
10	210	13.0	200		100	3.3	3.9	3.3
11	210	12.9	210		100	3.4	3.7	3.2
12	230	12.9	210		100	3.4	3.8	3.2
13	220	12.8	210		100	3.3	3.9	3.2
14	220	12.2	210		100	3.2	3.9	3.2
15	205	11.5			100	2.8	3.2	3.3
16	200	11.0				2.3	3.1	3.3
17	200	9.4	200			(1.6)	3.0	3.3
18	215	7.1					2.9	3.2
19	220	6.1					2.9	3.2
20	220	5.2					2.7	3.3
21	240	4.2					2.4	3.0
22	270	4.0					2.4	2.9
23	280	4.0					2.4	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 20

Tokyo, Japan (35.7°N, 139.5°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	4.0						2.8
01	290	4.0					2.0	2.7
02	280	4.2					1.8	2.6
03	270	4.2						2.8
04	250	3.8					1.8	2.9
05	250	3.6					1.8	2.8
06	250	4.5				E	2.2	3.0
07	220	8.6	210		130	2.3	2.5	3.3
08	220	10.8	205		100	2.7	3.2	3.4
09	220	12.1	205		100	3.1	3.5	3.3
10	235	13.3	220		100	3.4	3.5	3.2
11	240	13.5	220		100	3.4	3.6	3.1
12	250	13.0	220		100	3.4	4.0	3.0
13	250	13.1	220		100	3.4	4.2	3.0
14	240	12.8	220		100	3.2	3.8	3.0
15	230	11.9	220		100	2.9	3.6	3.1
16	220	11.4	220		100	2.3	3.0	3.1
17	215	9.2	220				3.0	3.3
18	220	7.5	210			E	2.6	3.2
19	220	6.1					2.4	3.1
20	230	5.6					2.6	3.0
21	245	4.6					2.1	3.0
22	270	4.0					2.4	2.8
23	285	3.9					1.8	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 21

Yamakawa, Japan (31.2°N, 130.6°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	5.0						2.8
01	300	4.8						2.7
02	290	4.6						2.9
03	290	4.4						3.0
04	250	4.6						3.0
05	270	3.4						2.8
06	300	3.6				E		2.8
07	280	7.0	250			1.9		3.1
08	250	10.7	230		110	2.5		3.3
09	290	11.7	220		110	3.0	3.2	3.2
10	290	13.0	220		110	3.5	3.9	3.2
11	290	13.7	220		110	3.6	4.4	3.1
12	290	13.7	230		110	3.6	4.6	3.0
13	290	13.8	220		110		4.8	2.9
14	290	14.2	230		110	3.6	4.8	2.9
15	290	13.8	220		110	3.2	4.1	2.9
16	290	13.0	230		110	2.8	3.4	3.0
17	265	12.1	220			2.2	3.2	3.1
18	230	10.6					3.6	3.1
19	220	8.7					2.6	3.0
20	230	8.1					2.6	3.0
21	230	7.6						3.0
22	240	6.4						2.9
23	270	5.5						2.8

Time: 135.0°E.
Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 22

Rarotonga I. (21.3°S, 159.8°W) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	260	10.5	260			3.1	3.2	2.8
07	250	11.2	250		110	2.8	4.0	2.9
08	300	10.9	240	6.2	110	3.3	5.4	2.8
09	300	12.0	250	6.2	110	3.5	5.7	2.7
10	350	12.9	240	6.6	110	3.8	5.4	2.6
11	350	13.9	230	7.4	110	3.8	5.0	2.6
12	360	15.2	250	6.9	110	4.0	5.0	2.6
13	360	15.3	220	6.7	110	3.9	4.8	2.6
14	350	15.5	240	6.6	110	3.8	5.1	2.6
15	350	14.8	250	6.4	110	3.7	5.2	2.6
16	345	14.4	250	6.4	110	3.3	5.2	2.6
17	340	13.6		6.3	110	2.9	4.7	2.6
18	335	12.8				2.2	4.4	2.6
19	300	12.0					4.5	2.6
20	380	12.0					4.2	2.5
21	350	12.0					4.0	2.5
22								
23								

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

Table 23

Brisbane, Australia (27.5°S, 153.0°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	9.0					3.9	2.8
01	260	8.1					3.6	2.6
02	295	7.5					3.2	2.6
03	290	7.2					2.7	2.6
04	280	7.1					2.1	2.7
05	260	7.1			120	1.9	1.7	2.8
06	240	7.6			110	2.7		2.9
07	250	8.1	220	4.9	110	3.2		2.9
08	300	9.0	220	5.7	100	3.6		2.8
09	320	9.5	205	5.5	100	3.8	4.4	2.8
10	320	10.7	210	6.0	100	3.9	5.4	2.7
11	330	11.2	200	6.0	100	(4.0)	4.7	2.7
12	330	11.6	210	6.0	100	4.0	4.2	2.8
13	330	11.8	215	5.8	105	4.0	4.5	2.7
14	325	11.1	215	5.6	100	3.9	3.5	2.7
15	300	10.9	220	5.3	110	3.6		2.8
16	250	10.0	220	5.0	110	3.3		2.9
17	250	9.6			110	2.7		2.9
18	260	9.6					4.3	2.8
19	270	9.0					4.0	2.8
20	290	9.2					3.7	2.6
21	300	9.0					3.6	2.7
22	300	9.0					4.4	2.6
23	290	9.4					3.8	2.8

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

Table 24

Canberra, Australia (35.3°S, 149.0°E) November 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	7.9					3.5	2.6
01	285	7.5					3.8	2.6
02	290	6.8					3.1	2.5
03	300	6.5					2.6	2.5
04	290	6.3					2.5	2.5
05	280	6.4			120	1.8	2.6	2.6
06	250	6.8	250	4.5	100	2.5	3.5	2.7
07	300	7.4	240	4.8	100	3.1	4.3	2.8
08	340	7.7	225	5.0	100	3.5	4.8	2.7
09	340	8.2	220	5.4	100	3.6	5.8	2.7
10	360	8.5	220	5.6	100	3.9	5.8	2.6
11	350	9.0	200	5.7	100	3.8	5.4	2.6
12	360	9.1	210	5.6	100	3.7	6.5	2.6
13	350	9.3	210	5.7	100	3.9		2.6
14	360	9.2	220	5.6	100	3.7		2.6
15	340	9.0	225	5.3	100	3.6	3.5	2.6
16	315	8.7	230	5.0	100	3.4	3.5	2.6
17	250	8.6	240	4.7	100	3.0	4.1	2.6
18	250	8.8			105	2.4	4.0	2.7
19	260	8.5					4.0	2.6
20	280	8.3					4.0	2.6
21	300	8.4					4.2	2.5
22	300	8.3					3.9	2.5
23	300	8.0					4.0	2.5

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

Table 25

Delhi, India (28.6°N, 77.1°E) October 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00	440	7.0						2.5
01	450	6.4						
02	(430)	(5.9)						
03								
04	410	5.2						2.6
05	410	5.9						
06	400	7.1						
07	340	10.5						
08	360	12.2						2.8
09	400	12.8						
10	400	13.3						
11	440	(13.6)						
12		(14.0)						
13		(14.2)						
14		(14.2)						
15		(14.1)						
16		(14.0)						2.6
17		(13.7)						
18								
19								
20	400	11.8						2.5
21	400	9.6						
22	440	8.6						
23	440	7.4						

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 26

Bombay, India (19.0°N, 73.0°E) October 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	330	10.6						
08	390	12.4						2.8
09	465	13.2						
10	480	(14.0)						
11		(14.2)						
12		(14.3)						
13		(14.8)						
14		(14.7)						
15		(14.8)						
16		(15.2)						
17		(15.1)						
18	510	(15.1)						
19	510	14.9						
20	480	14.7						2.6
21	480	14.6						
22	(480)	14.6						2.7
23								

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

Table 27

Madras, India (13.0°N, 80.2°E) October 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	420	10.3						
08	480	12.5						2.7
09	540	13.4						
10	540	13.3						
11	600	12.8						
12	600	13.0						2.4
13	600	13.5						
14	600	13.6						
15	600	13.9						
16	600	(14.0)						2.5
17	600	13.9						
18	600	13.4						
19	600	(12.5)						
20	(600)	(12.0)						
21	(540)	(11.2)						
22		(11.0)						
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 28

Watheroo, W. Australia (30.3°S, 115.9°E) September 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	5.8					2.6	2.7
01	260	5.3					3.0	2.7
02	262	5.0					3.2	2.8
03	245	4.8					3.0	2.7
04	268	4.5					3.0	2.6
05	292	4.6					3.0	2.6
06	280	5.2				1.8	3.2	2.8
07	245	8.2				2.6	3.2	3.2
08	280	9.6	252	4.8		3.1	3.4	3.1
09	280	10.6	248	4.9		3.4	3.2	3.0
10	285	10.8	235	5.0		3.6	3.8	2.9
11	290	11.2	235	5.1		3.7	3.9	2.8
12	295	11.4	230	5.1		3.7	4.0	2.8
13	290	11.2	235	5.0		3.8	4.1	2.8
14	290	10.8	230	5.0		3.6	3.8	2.7
15	285	10.8	240	4.9		3.4	3.6	2.7
16	280	10.7	250	4.9		3.1	3.3	2.7
17	260	10.2		4.7		2.5	3.2	2.8
18	235	9.7				1.8	2.8	2.9
19	230	8.3					3.0	2.9
20	240	7.6					2.6	2.9
21	245	7.0					2.5	2.9
22	250	6.2					3.0	2.8
23	265	5.9					2.6	2.7

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

Table 29

Brisbane, Australia (27.5°S, 153.0°E) August 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	5.7					2.3	2.9
01	250	5.4					2.0	2.9
02	250	5.0					3.0	2.9
03	250	4.3					2.4	2.9
04	265	4.0					2.8	2.7
05	270	4.0					2.0	2.8
06	250	4.8						3.0
07	230	8.4			120	2.6	2.0	3.4
08	235	9.9			110	3.1		3.3
09	250	10.5	220		110	3.4		3.2
10	250	11.0	220	5.0	110	3.7		3.2
11	260	10.7	220	5.0	110	3.8		3.1
12	260	10.0	210	5.0	110	3.8		3.0
13	260	10.0	210	5.0	110	3.7	3.5	2.9
14	260	10.0	220	4.9	110	3.6	3.4	3.0
15	250	9.5	210	4.1	120	3.4	3.0	3.0
16	240	9.2			120	2.9	2.6	3.0
17	250	9.0			120	2.1	2.0	3.1
18	230	8.5					1.8	3.0
19	230	7.4					1.8	2.9
20	250	6.8						2.8
21	250	6.3					2.0	2.9
22	250	6.0					1.8	2.8
23	260	5.6					2.5	2.9

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

TABLE 30

Form adopted June 1946

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

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), February (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. R.E.P., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	250	250	250	260	240	250	260	240	230	210	220	240	240	260	230	220	220	220	200	230	210	230	250	240
2	250	250	250	240	(230)S	250	(270)S	240	230	220	220	230	240	240	230	210	230	230	200	230	220	210	240	250
3	250	260	(270)A	250	270	250	250	250	210	220	220	240	250	210H	230	230	240	240	230	230	250	280	280K	250K
4	300K	300FK	(330)FK	320FK	280FK	330FK	310FK	300FK	260K	300K	310K	(330)BK	BK	BK	BK	(230)BK	230K	230K	230K	220K	220K	230K	250K	260K
5	250FK	260FK	260FK	250FK	250FK	270K	250K	240	230	220	230	230	220	220	230	250	230	230	230	230	220	230	250	250
6	250F	250F	250F	250	230	220	270	270	230	230	230	240	240	230	230	230	230	240	230	230	240	250K	(310)SK	290K
7	300K	320FK	300FK	280K	260K	250	230	240	230	230	220	230	230	210H	230	220H	230	230	220	200	220	230	230	240
8	250F	250F	250F	250F	240F	250	250	240	220	220	230	230H	230	200	230	210	230	220	220	220	220	220	230	240
9	240	210F	200F	250F	250F	250	250	250	220	230	250	220	[230]B	240	230	230H	230	230	220	220	220	220	250	250
10	260	280F	290F	(270)F	260F	250F	(230)S	250	230	220	220	220	210	210	230	230	230	220	220	220	200	(230)S	230	240
11	250	250	250	250	250	230	260	240	230	230	220	220	220	220	230	220	230	230	230	(210)S	(220)S	220	210	230
12	(250)S	(310)S	300	270	250	(270)S	(270)S	250	220	220	230	230	210H	230H	220H	220	230	230	210	220	240	230	240	240
13	250	270F	270F	260F	230F	220	250	250	220	220	210H	200	220	200	220	210	220	220	210	200	220	230	240	230
14	230	230	230	250	250F	240	240	240	230	220	210	(220)B	240	240	230	230	220H	240	230	230	220	230	240	250
15	250	250	250	230	230	250	260	250	220	240	220	220	230	210	200	200	220H	220	220	230	220	230	250	230
16	250	250	250	250	240F	230	230F	240	220	220	230	220	220H	240	220	230	220	230	220	240	230	230	250	250
17	270	250	(260)S	280	280	(270)S	230	250	230	220	230	220	210	230	210	230	230	230	230	220	250	230F	230F	230F
18	250F	250F	300F	280	260	250F	250	250	230	230	230	220	230H	270	300	200	230	230	230	220	210	240	(230)S	250
19	250	250F	250F	250	230	230F	260	250	230	230	220	230	220	230	220	220	220	230	220	220	220	220	(230)S	230
20	250	260	250	250	250	230	(230)S	230	230	230	220H	250	270	220	220	230	220	220	230	(220)S	230	(230)S	260	260
21	280	270	250	250	250	250	260	250	230	220	230	220	210	220	220	220H	230	250	230	230	230	300	350	350F
22	340K	290FK	290FK	330FK	350FK	400FK	290FK	270	230	230	220	220	240	240	250	230	230H	230	230	230	220	250	250	250F
23	250F	250	250F	250	250F	240	230	230	230	230	200H	200	200	240H	230	200	220H	230	200	200	230	250	270	240F
24	250	240	220	250	300	300F	310F	250	230	230	240	220	240	240	230	230	220	220	230	210	200	230	230	250
25	230	250	260	270	250F	250	250	240	230	230	230	210	230	280H	230	230	230	230	220	210	230	230	230	250
26	250	(260)S	(250)S	240	230	230	230	230	230	230	C	C	C	270	250	[230]L	220	230	220	220	230	240	250	270
27	270	250	260	300	300	270	270	250	230	230H	220	220	240	250	240H	250	230	230	210	210	230	230	240F	250F
28	250F	250F	250S	250	260	250	230	220	220	210	230	230	250H	250	230	240	220	230	220	220	230	240	250	250
29																								
30																								
31																								
Median	250	250	250	250	250	250	250	250	230	230	220	220	230	230	230	230	230	230	220	220	220	230	245	250
Count	28	28	28	28	28	28	28	28	28	28	27	27	26	27	27	28	28	28	28	28	28	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 31

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

IONOSPHERIC DATA

foF2 (Characteristic) Mc (Unit) February (Month) 1949

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

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

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

Day	00	01	02	03	04	05	06	07	08	09	10	11
1	4.9	48	43	38^F	37^F	3.3^F	3.4^F	4.8	8.8	9.8	107	118
2	45	4.3	4.5	43	39^F	34^F	3.3^F	4.9	83	9.4	11.7	123
3	4.9	47	48	48	47^F	47^F	47	59	89	106	11.1	122
4	6.3^K	(26)^F_K	(27)^F_K	(29)^F_K	(3.1)^F_K	(3.1)^F_K	(32)^F_K	39^F_K	5.7^F_K	67^K	67^K	67^K
5	^K(45)^J_F	^K(4.9)^J_F	(4.9)^F_K	(4.5)^F_K	3.8^F_K	35^F_K	3.5^F_K	4.7	80	90	10.7	110
6	58	5.6	(54)^J_F	(5.5)^J_S	5.2	39	3.5	45	79	10.2	10.0	11.5
7	2.9^F_K	2.8^F_K	3.1^F_K	^K5.2^F_S	5.1^F_K	5.7^F	5.7	63^F	9.8	12.3	13.4	142
8	5.1^F	49^F	(4.5)^J_F	(4.7)^J_F	(45)^J_F	(4.1)^J_S	3.9^F	5.5^F	9.0	102	122	126
9	5.3^F	(5.1)^J_F	(5.1)^J_F	(49)^J_F	(5.1)^J_F	(47)^J_F	3.9^F	(5.5)^F_S	90	107	(12.1)^S	119
10	56^F	(5.6)^J_S	(5.3)^F_S	(5.5)^J_F	5.3^F	(5.1)^F_S	(45)^J_F	(5.7)^J_F	93	113	119	126
11	5.9	(58)^F_S	(5.5)^F_S	5.4^F	5.5^F	4.9^F	4.5	5.9	97	11.5	12.3	129
12	5.1	49	5.1	(5.3)^F_S	5.0^F	4.9^F	5.0^F	65	9.6	(10.9)^S	122	123
13	6.2	(60)^J_F	5.9^F	(5.9)^F	(58)^F_S	4.9^F	(4.3)^J_F	6.0^F	9.5	108^F	126	13.3
14	6.5^F	(6.3)^J_F	(6.1)^J_F	(5.6)^F	(5.6)^J_F	(56)^J_F	(5.3)^J_F	6.5	(9.7)^P	11.5	(125)^S	13.0
15	5.7	5.5	(57)^J	(54)^J_F	(4.7)^J_F	39^F	33^F	5.3^F	87	11.1	125	12.2
16	6.5	63^F	6.6^F	63^F	63^F	(5.6)^J_F	4.9^F	6.3^F	9.4	10.8	124	126
17	71	6.3	67	6.7	6.5	63^F	5.8	6.7	96	10.4	11.5	108
18	(61)^F_J	5.8^F	5.9^F	5.9	5.9	5.1^F	5.1^F	6.6^F	93	11.8	132	136
19	6.7^F	63^F	6.3^F	(63)^F_S	5.5^F	5.3^F	48^F	65	(98)^J_S	11.5	12.8	128
20	59	6.1	5.9	5.5	5.5	5.0	4.7	63	94	10.8	114	12.0
21	6.9	7.1	7.0	6.5^F	59^F	5.8^F	(56)^F_S	6.7	93	10.7	11.3	118
22	(6.3)^F_K	(25)^F_K	[3.1]^F_K	3.7^F_K	3.7^F_K	40^F_K	37^F_K	6.1^F	89	10.7	11.8	12.0
23	(7.1)^J_S	(64)^J_S	(60)^J_F	(5.9)^J_F	(55)^J_S	5.0^F	48^F	64^F	9.5	11.0	118	118
24	7.5	7.5	6.7^F	5.4^F	(4.7)^J_F	5.0^F	49^F	5.9^F	8.8^F	11.0	10.7	12.1
25	6.1	5.9	5.5	5.4^F	51^F	5.0^F	(4.8)^J_F	69^F	9.5	108	11.6	123
26	65^F	6.3	61^F	(61)^J_F	(5.9)^F	5.5^F	49^F	(7.1)^S	9.7	11.7	C	C
27	71	7.2	6.8	5.9^F	5.4^F	5.5^F	5.5	7.1	9.0	11.0	118	127
28	(68)^J_F	(65)^J_F	(6.4)^J_F	(5.9)^S_F	(5.6)^J_S	5.7	5.7	7.5	10.0	10.8	11.7	118
29												
30												
31												
Median	6.1	5.8	5.6	5.4	5.2	5.0	48	62	93	10.8	118	122
Count	28	28	28	28	28	28	28	28	28	28	27	27

Day	12	13	14	15	16	17	18	19	20	21	22	23
1	12.4	124	104	11.2	110	103	8.8	8.1	69	5.3	5.1	49
2	125	11.8	(110)^S_P	102	107	10.7	9.2	8.7	8.3	63	5.1	5.1
3	(128)^S	122	12.2	11.7	11.5	(112)^S	(114)^S	(94)^S	8.3	(7.3)^S	71^K	59^K
4	68^K	6.9^K	79^K	8.1^K	83^K	8.0^K	7.6^K	6.7^K	^K(5.9)^F_S	5.1^K	(46)^S_K	4.5^F_K
5	120	11.7	11.4	118	11.2	107	(10.1)^J_S	(102)^J_S	7.6	69	63^F	5.7^F
6	(12.8)^J	123	124	11.8	122	117	11.4	96	83	(72)^J_K	^K(49)^F_S	5.9^F_K
7	13.8	138	(130)^S	12.8	12.6	(124)^S	11.6	95	8.1	69^F	61	(58)^F_S
8	122	124	124	12.0	(120)^J	11.7	104	94	87	^J(81)^F_S	6.9^F	(61)^J_F
9	132	126	12.0	11.7	11.7	11.7	(10.7)^J_S	(92)^S	(8.6)^S	6.6	(60)^F_S	(59)^S
10	121	128	125	124	(123)^P_S	11.7	11.0	(99)^J_S	(81)^J_S	(75)^J_S	(6.3)^S_F	59
11	12.4	127	128	(12.7)^S	(123)^S	11.2	107	(104)^S	93	83	(74)^J_S	66
12	12.8	125	125	12.1	11.6	11.3	(107)^J_S	(94)^S	81	76	6.6	6.6
13	13.2	130	125	124	11.8	11.7	(107)^J_S	(102)^S	8.8	69	(69)^J	(72)^J
14	12.7	13.0	(12.3)^P	120	(11.5)^J_S	11.6	(10.6)^J	(9.7)^P	8.7	7.6	7.1	6.3
15	122	127	(126)^P	(126)^S_P	11.8	11.6	(10.8)^J_S	95	89	7.5	(7.5)^J	69
16	13.7	(132)^S	(12.4)^S	(124)^J	11.5	11.5	9.6	87	8.4	7.6	7.5	69
17	108	122	120	11.7	11.3	11.2	(10.9)^J_S	(92)^S	89	(8.5)^J_S	(7.7)^J_F	(7.3)^J_F
18	(123)^P	136	122	(12.4)^P_S	122	116	(11.4)^J_S	98	87	81	71	69
19	130	127	126	121	11.8	(11.3)^J	(11.0)^J_S	(98)^J_S	89	7.6	7.1	6.1
20	130	126	124	12.2	(122)^S_P	(11.7)^S_P	113	(10.0)^J_S	88	7.5	7.3	69
21	11.5	126	126	(12.5)^S_P	11.4	11.4	(11.4)^J_S	(10.2)^S_P	9.0	(77)^J	7.1	7.1^F
22	123	11.9	11.8	11.7	110	(10.7)^S_P	(9.7)^S_P	89	7.8	7.6^F	(7.0)^J_S	(69)^J_F
23	12+	126	12.4	11.8	11.7	11.7	(109)^J_S	(98)^S	9.0	(80)^J_S	7.1	69
24	123	126	(129)^J_S	122	118	11.4	108	9.7	8.7	(76)^J_F	6.8	6.7
25	130	13.4	(12.6)^S_P	12.5	12.0	11.8	114	98	92	82	7.3	6.3
26	C	128	126	(123)^S_P	(122)^S_P	11.8	108	98	89	80	79	(75)^J
27	124	127	124	(124)^S_P	118	11.8	10.7	93	86	7.9	(7.7)^F_S	7.3^F
28	127	126	124	120	11.8	11.7	11.0	9.7	9.3	7.8	(7.6)^J	80
29												
30												
31												
Median	124	126	124	121	11.8	11.6	108	96	8.7	76	7.1	66
Count	27	28	28	28	28	28	28	28	28	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 32

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

IONOSPHERIC DATA

f_oF2 (Characteristic), Mc (Unit), February (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. R.E.P.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.9	4.7	3.9	3.9	3.6	3.4	3.6	(7.2)J	(9.9)J	10.6	11.6	12.4	(12.0)P	11.5	10.6	11.4	(11.0)JS	(9.7)ST	8.1	(7.5)JS	(6.0)S	5.2	[illegible]	4.7
2	4.5	4.5	(4.5)JS	4.3	3.5F	3.3F	3.7F	[6.3]B	9.1	11.3	12.3	12.7	12.1	11.5	10.5	10.3	11.0	(10.5)J	8.7	8.6	7.4	5.5	5.2	5.0
3	4.8	4.8	4.8	4.7	4.3F	4.8	4.9	7.9	10.5	11.0	11.4	12.2	12.0	(12.0)S	(11.5)S	11.5	(11.1)S	(11.7)ST	9.7	9.3	(7.7)J	7.2	6.6K	(6.2)SK
4	(6.3)SK	(2.6)FK	(2.8)FK	(2.9)FK	(3.1)FK	(3.2)FK	(3.3)FK	4.9FK	6.3FK	6.7KF	7.1K	6.8K	7.0K	7.4K	7.9K	8.3K	8.2A	K(7.1)JS	7.5	6.4FK	5.6K	(4.7)SK	K(4.4)FS	K(4.5)JS
5	K(4.9)FS	K(4.7)JF	[4.7]FK	K(4.1)JF	3.7FK	3.5FK	3.6FK	6.7	8.7	00	10.7	(10.8)S	11.5	11.7	11.7	11.4	11.2	(10.5)JS	9.7	8.7	(6.9)JF	(6.6)JF	6.3F	5.8
6	(5.6)JS	(5.6)JS	(5.5)JS	5.4	4.8	3.7F	3.5F	5.1	8.7F	10.0	10.8	12.3	12.0	12.0	11.7	12.2	11.8	11.6	10.7	8.8	7.6	[5.8]FK	K[5.4]FS	K(5.5)FS
7	2.6FK	3.0FK	3.5FK	K(5.2)FS	5.7A	5.8F	(5.5)JF	8.4	11.7	13.2	14.3	13.8	13.8	13.4	13.0	12.7	(1[illegible].5)JS	(11.0)S	10.8	8.6	7.4	6.5F	5.7	(5.4)FS
8	4.9F	4.9F	4.7F	(4.5)JF	(4.3)JF	(3.9)FS	3.9F	7.3	9.4	11.0	12.8	12.4	12.2	12.3	12.5	12.0	12.0	(11.0)	9.8	9.2	8.5	(7.4)FS	6.5F	5.1
9	5.1F	5.1F	(5.2)F	[5.0]JF	(5.0)JF	3.9F	(4.2)JF	7.5	10.0	11.0	11.7	12.6	13.0	12.4	11.7	11.6	11.8	11.3	(9.9)JS	8.8	7.7	(6.2)FS	(5.1)S	(5.5)S
10	(5.7)JS	(5.3)FS	(5.7)JF	(5.3)FS	5.0F	4.9F	(4.6)F	(8.0)S	10.0	11.4	12.2	12.6	12.5	12.5	12.4	12.7	(11.8)ST	11.6	10.5	(9.1)S	(7.[illegible])JS	7.0	(6.[illegible])S	(5.7)JS
11	(5.9)JS	(5.5)F	(5.5)FS	(5.4)FS	5.2F	4.5F	4.9F	8.1	10.8	11.8	12.3	12.7	12.4	12.8	12.3	(12.3)ST	11.6	11.2	(10.7)S	9.8ST	8.1	7.9	(6.8)J	(5.5)JF
12	4.9	5.0	(5.4)ST	5.1F	4.9F	4.9	5.3F	8.5	(10.8)S	11.8	(12.4)T	12.6	12.2	12.3	11.7	(11.8)S	11.5	11.2	(9.7)ST	8.7	7.6	7.0	6.5	(6.2)JS
13	5.9F	(5.9)JF	5.9F	5.8F	5.4F	[4.6]F	4.6F	7.9F	10.3F	11.7	12.4	13.0	13.2	(13.0)S	12.0	(12.2)JS	11.7	11.5	(10.7)JS	(9.8)ST	(7.[illegible])JS	(6.9)FS	6.1	6.7I
14	6.5F	(6.3)JF	(5.7)JF	(5.5)JF	5.7FS	(5.4)JF	(5.1)TS	8.4	10.6	(11.7)ST	(12.7)S	12.5	(12.4)TT	(12.0)SP	12.2	11.7	11.6	(10.0)S	(9.7)ST	8.9	(8.0)J	7.3	6.6	(6.1)
15	(5.6)J	5.6F	(5.5)JF	5.3F	(4.2)JF	3.7F	3.6F	7.4	10.2	11.4	11.8	12.2	1[illegible].3	(12.6)P	(12.2)P	(12.7)ST	12.0	11.2	(10.2)S	9.3	(8.2)J	(7.5)S	7.5	6.9
16	6.5F	6.7	6.5	6.2F	5.9F	(5.2)JF	5.0F	8.1	10.5	11.8	(12.0)SP	12.5	13.2	(12.4)S	12.4	11.5	11.5	(10.7)JS	[illegible]3	9.1	8.0	7.5	7.3	7.0
17	6.7	6.6	6.5	6.3	6.5	6.2F	5.8F	8.3	10.7	11.2	11.7	10.8	11.5	12.0	11.6	11.4	11.4	11.1	10.3	9.1	(8.7)FS	([illegible].5)JF	(7.6)JF	(6.7)JF
18	6.4F	(5.8)S	5.9F	5.4	5.8F	5.2F	5.5F	5.4	10.3	12.8	13.4	(12.2)S	12.0V	12.0	(12.2)S	(12.4)JS	(11.8)S	(11.2)JS	10.3	9.5	8.2	7.4	6.1F	6.7
19	6.4F	6.5F	(6.6)FS	(6.6)JF	(5.8)FS	5.0F	4.9F	5.6	11.0	12.2	12.7	12.8	12.5	12.8	12.4	11.8	(11.5)S	11.4	(10.4)JS	9.3	8.3	(7.5)S	6.6	6.0
20	6.2	(5.9)JS	5.7	(5.4)S	5.3	4.8	5.0	8.1	9.8	11.5	11.8	12.5	12.4	12.4	12.3	12.3	(11.8)S	11.8	(10.7)JS	9.0	8.1	7.5	7.0	6.1
21	(7.1)J	(7.1)J	6.6F	6.3F	5.9	5.7F	5.9F	7.7	(9.9)J	11.2	11.5	11.5	12.2	(13.1)S	12.7	12.0	11.4	11.3	(10.8)ST	9.3	8.2	7.3	7.3	6.4F
22	K(4.9)JF	2.9FK	3.5FK	3.7FK	3.9FK	3.9FK	4.9FK	7.9	9.4	11.6	11.9	12.3	11.8	11.8	11.9	11.6	(10.[illegible])ST	(10.0)ST	9.4	8.6	7.3I	(7.3)FS	(6.8)JF	(6.5)JF
23	(6.8)JS	(5.9)JS	(6.0)JF	(5.8)JF	(5.5)JS	(4.9)JS	4.9F	8.3F	10.0	11.5	11.8	12.3	12.6	12.4	(12.4)S	11.8	(11.8)S	11.6	(10.7)JS	9.3	(8.2)JS	[illegible].1	6.1	7.4
24	7.7	7.2	5.9F	5.0F	5.0F	(5.1)FS	5.1F	7.5F	10.0	10.0F	11.5	12.0	12.4	(13.0)S	(12.9)S	(12.2)S	11.7	11.2	10.4	9.2	8.2	7.3	6.1	6.5
25	5.9F	5.5	5.5	5.1F	4.9F	(4.9)JP	5.0F	8.5F	10.4	12.0	12.3	[12.8]S	12.7	13.2	13.0	(11.8)S	(11.5)S	1.7	10.6	14	5.9	7.7	6.6F	6.5
26	6.4	6.1F	6.1	6.0F	(5.9)JS	(5.1)JF	5.5F	9.0	10.2	C	C	C	C	12.8	12.2	(12.3)S	11.8	11.7	(10.3)SP	9.5	5.4	7.8	7.6	7.2
27	7.2	7.0	6.2F	(5.5)FS	5.5	5.5	6.1	8.2	9.7	11.0	12.0	13.2	12.7	12.4	12.6	12.2	11.8	11.3	(9.8)SP	9.6	8.6	7.[illegible]	(7.5)JF	7.1I
28	(6.6)JF	6.7F	6.3F	(5.7)AS	(5.6)S	(5.7)JS	6.4	5.8	10.3	11.6	11.6	12.6	13.2	12.4	12.0	[11.9]C	11.5	11.5	9.8	9.4	8.7	7.7	8.3	(7.4)J
29																								
30																								
31																								
Median	5.9	5.6	5.6	5.4	5.1	4.9	4.9	5.0	10.1	11.4	11.9	12.5	12.4	12.4	12.2	11.8	11.8	11.2	10.2	9.[illegible]	8.0	7.3	6.5	6.3
Count	28	28	28	28	28	28	28	28	28	27	27	27	27	25	28	28	28	28	25	28	28	26	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 33

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

IONOSPHERIC DATA

h' F1 (Characteristic), Km (Unit), February (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. R.E.P., J.J.S.

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

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 34

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

IONOSPHERIC DATA

f_oF1 (Characteristic), Mc (Unit), February (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., R.E.P.

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	L	L	Q	Q							
2										Q	Q	L	L	L	L	Q	Q							
3										Q	Q	L	L	Q	Q	Q	Q							
4										L K	L K	B K	Q	Q	Q	Q	Q							
5										Q	L	L	Q	Q	L	L	Q							
6										Q	L	L	L	L	Q	Q	Q							
7										Q	Q	L	L	Q	L	Q	Q							
8										Q	Q	Q	Q	Q	L	Q	Q							
9										Q	L	Q	B	L	Q	Q	Q							
10										Q	Q	Q	Q	Q	L	L	Q							
11										Q	Q	Q	Q	Q	Q	Q	Q							
12										Q	L	L	Q	L	Q	Q	L							
13										Q	Q	Q	L	Q	Q	Q	Q							
14										Q	Q	B	L	L	Q	L	Q							
15										L	Q	Q	Q	Q	Q	Q	Q							
16										Q	Q	Q	Q	L	Q	L	Q							
17										Q	Q	Q	Q	Q	Q	L	Q							
18										Q	Q	Q	5.2	L	6.9	Q	Q							
19										Q	L	Q	Q	Q	Q	Q	Q							
20										Q	Q	L	L	Q	Q	Q	Q							
21										Q	Q	Q	Q	Q	Q	Q	Q							
22										Q	Q	Q	L	L	L	L	Q							
23										Q	Q	Q	Q	L	L	Q	Q							
24										Q	L	Q	L	L	L	L	Q							
25										Q	Q	Q	L	L	Q	Q	Q							
26										Q	C	C	C	L	L	L	Q							
27										Q	Q	Q	L	L	L	Q	Q							
28										Q	Q	Q	L	L	L	L	Q							
29																								
30																								
31																								
Median										–	–	–	–	–	–	–	–							
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1948 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), February (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., R.E.P.

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									100	120	110	A	120	100	100	100	A	$(130)^{S}$						
2									B	B	100	$(110)^{A}$	$(120)^{A}$	100	100	100	B							
3									100^{F}	100	100	$(120)^{A}$	100	100	100	100	100	110						
4									110^{K}	100^{K}	100^{K}	B^{K}	B^{K}	B^{K}	B^{K}	B^{K}	130^{K}	130^{K}						
5									100	100	100	100	100	100	100	100	$(110)^{A}$							
6									100	100	100	100	100	100	100	100	110	120						
7									100	A	$(130)^{A}$	100	100	100	100	100	100	120						
8									110	100	$(100)^{A}$	100	100	100	100	100	100	120						
9									$(110)^{S}$	110	100	100	B	100	100	100	100	100						
10									120	100	100	100	100	100	100	100	100	100						
11									100	100	100	100	100	100	100	100	100	100						
12									100	100	100	100	100	100	100	100	100	110						
13									100	100	100	100	100	100	100	100	100	110						
14									100	100	100	B	100	100	100	100	100	$(110)^{S}$						
15									$(130)^{A}$	100	100	100	100	100	100	100	100	110						
16								S	100	100	100	100	100	100	100	100	100	110						
17									110	100	100	100	100	100	100	100	100	120						
18									100	$(100)^{A}$	100	100	100	100	100	100	100	100						
19								S	$(100)^{A}$	$(130)^{A}$	$(100)^{S}$	100	100	100	100	100	100	100						
20									$(130)^{A}$	100	100	100	100	100	100	100	100	110^{F}						
21									100	100	100	$(100)^{A}$	100	100	100	100	100	100						
22								100	100	100	100	100	100	100	100	100	100	$(100)^{S}$						
23									$(100)^{A}$	$(100)^{A}$	$(120)^{A}$	100	100	100	100	100	100	100						
24									$(120)^{A}$	100	$(120)^{A}$	100	100	100	100	100	100	100						
25								180	120	100	100	100	100	100	100	100	100	120						
26								150	100	$(130)^{A}$	C	C	C	$(100)^{A}$	100	100	100	120						
27								180	100	100	100	100	100	100	100	100	100	120						
28								160	100	100	90	90	100	100	120	100	110	120						
29																								
30																								
31																								
Median								160	100	120	100	100	100	100	100	100	100	110						
Count								6	27	26	27	24	25	27	27	27	26	26						

Sweep 10 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 36

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

Form adopted June 1946

IONOSPHERIC DATA

f_oE (Characteristic), Mc (Unit), February (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.S.

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

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									2.5H	(3.0)S	3.3	[3.4]A	3.5	3.6	3.4	3.0	[2.6]A	2.2						
2									B	B	3.3	3.6	3.8	3.7	3.5	3.2	B							
3									2.3F	3.2F	3.4	3.7	3.8	3.8	3.7	3.3	2.9	2.3H						
4									2.3HK	2.8K	3.2K	BK	BK	BK	BK	BK	2.9K	2.3K						
5									2.4F	3.0F	3.3	3.5	3.6	3.7	3.6	3.3	2.9							
6									2.5	2.9	3.3	3.6	3.8	3.7	3.5	3.3	3.0H	2.3						
7									A	2.9H	3.3H	3.7	3.6	3.7	3.5H	3.3	2.9	2.6H						
8									(2.4)H	(3.0)H	[3.3]A	3.6	(3.8)S	3.9	3.7	3.3H	3.1	2.3						
9									2.7H	3.1	3.4	3.7H	[3.7]B	3.7	3.8	3.4H	3.2	2.3H						
10									2.5	3.1	3.6	3.8	3.8	3.9	3.8	3.3	2.9	2.1H						
11									(2.7)S	3.3	3.6F	3.8	3.8	3.8	3.8	3.5	3.0	2.5H						
12									2.7	3.1H	3.5H	A	A	3.6	3.6	3.4	3.0H	2.3						
13									2.5F	3.1	3.5	3.7	3.8	3.8	3.9	3.3H	3.0	2.5						
14									2.7	3.4	3.7	[3.8]B	3.9	3.9	3.7	3.3	3.0	2.5H						
15									2.7	3.2	3.6	3.8	3.9	3.9	3.8	3.4	2.7	2.5H						
16								1.9	2.7	3.3	3.7	3.9	3.9	3.9	3.8	3.5	3.1	2.4H						
17									2.6	3.1H	3.5	3.8	3.9	3.9	3.8	3.4H	3.1	2.4						
18									2.7	3.2H	3.7F	3.9F	3.9	3.9	3.8	3.5F	3.1	2.3						
19								1.9	[2.6]A	3.2	3.6	3.8	4.0	4.0	3.9	3.7	3.1	2.4						
20									2.7	3.2	3.5	3.8	3.8	3.9	3.8	3.5	3.1H	2.5						
21									2.7	3.1	3.5F	[3.7]A	3.9	3.9	3.8	3.5	3.1	2.6						
22								2.1	2.7	3.3	3.5	3.8	3.8	3.8	3.7	3.4	3.2	A						
23									2.9	3.3	3.6	3.8	3.8	3.8	3.8	3.5	3.1	2.5H						
24									2.8H	3.2H	3.5	3.8	3.9F	3.9	3.7	3.4	(3.2)A	2.6						
25								2.0H	2.9	3.5	3.8	3.9	4.1	4.1	3.9	3.7	3.4	2.7H						
26								2.1H	2.7	3.3	C	C	C	3.8	3.8	3.7	3.3	2.7						
27								2.1	2.7	3.1	3.6	3.8H	A	A	A	3.8	3.3	2.7						
28								2.1	2.8	3.3	3.7	3.9	3.9	3.9	3.8	3.6	3.1	2.5A	2.1					
29																								
30																								
31																								
Median								2.1	2.7	3.2	3.5	3.8	3.8	3.8	3.8	3.4	3.1	2.5	—					
Count								7	26	27	27	25	24	26	26	27	27	25	1					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 37

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

IONOSPHERIC DATA

Es (Characteristic), Mc, Km (Unit), February (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. R.E.P. J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	4.2 100	23Y 110	3.3 100	27Y 100	G	G	G	G	25 100	G	58 100	3.0 100	25 90	G	24 90	3.6 100	G	G	G	G	G	G	G
2	G	G	G	G	1.9 100	G	G	G	G	G	G	33 100	32 100	G	G	G	G	G	G	G	G	G	G	G
3	G	20 100	38 100	31Y 100	24Y 100	24F 100	27Y6 100	30Y 100	30 130	G	G	34 100	G	G	G	G	G	G	G	G	G	G	G	G
4	3.0 120	24Y 150	1.3 120	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	3.7Y 130	G	G	G	G	G	G	2.5 100	31Y 100	3.2Y 100	G	23Y 100	22Y 120	G	G
6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	2.3 100	2.7 100	28 100	G	G	G	G	G	G	G	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	37Y 120	3.7 100	G	3.7 100	G	G	G	G	G	(43)Y 130	G	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	(2.5) 140	G	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	3.5 120	3.9 100	G	38 100	3.8 100	3.8 110	G	G	G	G	G	G	G	33Y 90	G	G
13	G	G	G	G	G	G	G	27Y 110	33 110	G	G	G	23 90	G	44 100	G	31 130	3.2 130	G	G	G	G	G	G
14	G	G	G	G	G	2.3 110	G	23 100	G	42 120	G	B	G	G	G	G	39 130	G	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	1.9 100	G	G	G	G	G	G	G	3.1F 120	G	3.2Y 100	G	G	G	G	G
16	G	G	G	G	G	39 90	G	32 100	G	G	G	G	G	G	G	G	G	G	G	20 100	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
18	G	2.9 100	2.5 100	G	G	G	G	19Y 130	G	33 110	G	G	G	G	G	G	39 110	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G	G	3.9 100	3.1 100	G	G	G	G	G	G	G	2.7 120	G	G	G	G	G	G
20	G	G	G	G	G	3.9Y 130	G	G	3.7Y 100	86Y 130	G	G	G	40 120	3.9 110	G	G	25 130	G	G	G	G	G	G
21	G	G	G	G	G	G	G	G	G	G	3.5 100	4.0 100	G	G	G	G	G	G	G	G	G	G	G	G
22	G	20 150	G	G	G	G	G	G	G	58Y 110	G	G	G	G	G	G	G	2.7 130	G	G	G	25Y 100	G	G
23	G	G	G	G	G	G	G	G	2.9Y 100	3.9Y 100	G	G	2.6 90	G	20 90	3.9 120	G	G	G	22 100	2.5 100	G	G	G
24	G	G	G	G	G	25 100	G	G	24 100	G	3.9 100	G	G	G	G	4.5 120	3.8 100	G	G	G	G	G	G	G
25	G	34 100	G	24Y 100	G	G	G	G	2.0 100	G	G	G	G	G	G	G	G	G	G	3.1Y 100	G	G	G	G
26	3.9 100	G	G	G	G	25 100	26 100	G	G	3.0 100	C	C	C	3.9 100	G	G	G	G	1.9 130	27 100	34Y 100	2.4 100	G	2.6 100
27	2.6 100	G	G	G	2.4 100	25 100	25 100	G	G	G	G	3.7 130	41 100	42 100	43 110	G	35 120	G	G	G	2.6 120	G	26 100	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	3.2 100	G	35 120	3.6 100	22 130	25 120	G	G	G	G
29																								
30																								
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	28	28	28	28	28	28	28	28	28	28	27	26	27	28	28	28	28	28	28	28	28	28	28	28

** 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 1946 O - 702319

TABLE 38

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

Form adopted June 1946

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), February (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.

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.0	2.0	2.1	2.0 F	2.1 F	2.0 F	2.1 F	2.1	2.3	2.4	2.2	2.1	2.1	2.2	2.2	2.0	2.1	2.2	2.1	2.1	2.4	2.1	2.1	2.0
2	2.0	2.0	2.0	2.0	2.1 F	1.9 F	1.9 F	2.0	2.4	2.4	2.1	2.2	2.2	2.1	(2.1) SP	2.0	2.1	2.1	2.0	2.1	2.2	2.3	1.9	2.0
3	1.9	2.0	1.9	1.9	1.9 F	1.8 F	1.9	2.1	2.3	2.3	2.2	2.1	(2.1) S	2.0	2.0	2.0	1.9	(2.0) S	(2.1) S	(2.1) S	1.8	(1.6) S	1.8 K	1.9 K
4	1.6 K	2.0 FK	(2.0) FK	(1.9) FK	(2.0) FK	(1.9) FK	(2.1) FK	2.0 FK	1.9 FK	2.1 K	2.1 K	2.0 K	1.9 K	1.9 K	2.0 K	2.0 K	2.1 K	2.1 K	2.0 K	2.0 K	K(2.1) FS	2.0 K	(2.0) KS	2.0 FK
5	K(2.0) JF	K(2.0) JF	(1.9) FK	(2.0) FK	1.9 FK	1.9 FK	2.0 FK	2.1	2.3	2.2	2.2	2.0	2.1	2.0	2.0	2.1	2.1	2.0	(2.1) JS	(2.0) JS	2.1	2.0	2.0 F	1.9 F
6	1.9	2.0	(1.9) JF	(2.0) JS	2.1	2.1	1.8	2.0	2.3	2.3	2.0	2.0	(2.0) J	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	(1.8) JK	K(1.6) FS	1.8 FK
7	1.7 FK	1.8 FK	1.9 FK	K1.7 FS	1.8 FK	1.8 F	1.9 F	2.1 F	2.3	2.2	2.1	2.0	2.0	2.0	(2.0) S	2.0	2.1	(2.0) S	2.1	2.1	2.0	2.1 F	1.9	(1.9) FS
8	1.9 F	2.0 F	(1.9) JF	(1.9) JF	(2.0) JF	(2.0) JS	2.1 F	2.1 F	2.5	2.3	2.1	2.2	2.1	2.0	2.0	2.1	(2.0) J	2.1	2.1	2.0	2.1 F	S(2.1) JF	2.0 F	(2.2) JF
9	1.9 F	(2.0) JF	(2.0) JF	(2.0) JF	(2.0) JF	(2.1) JF	2.1 F	(2.1) FS	2.2	2.2	(2.2) S	2.1	2.0	2.0	2.0	2.0	2.0	2.0	(2.1) JS	(2.0) S	(2.0) S	2.1	(1.9) FS	(1.9) S
10	1.8 F	(1.9) JS	(1.8) FS	(1.8) JF	1.8 F	(1.9) FS	(2.0) JF	(2.1) JF	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.9	(2.0) PS	2.1	2.1	(2.1) JS	(2.0) JS	(2.0) JS	(1.9) SF	1.9
11	1.8	(2.0) FS	(1.9) FS	2.0 FS	1.9 F	2.0 F	1.8 F	2.2	2.3	2.2	2.2	2.0	2.0	2.0	2.0	(2.0) S	(2.0) S	2.1	2.1	(1.9) S	2.0	2.0	(2.0) JS	1.8
12	1.8	1.6	1.8	(1.8) FS	1.8 F	1.7 P	1.8 F	2.0	2.3	(2.3) J	2.1	2.1	2.1	2.1	2.0	1.9	2.0	2.1	(2.0) JS	(2.0) S	2.0	1.9	1.9	1.9
13	2.0	(1.9) JF	1.9 F	(1.9) F	(2.0) FS	(1.9) F	(1.9) JF	2.1 F	2.4	2.3 F	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.1	(2.1) JS	(2.0) S	2.0	1.8	(1.9) J	(2.0) J
14	2.0 F	(1.9) JF	(2.0) JF	(1.8) F	(1.9) JF	(2.0) JF	(2.0) JF	2.2	(2.3) P	2.1	(2.2) S	2.1	2.1	2.0	(2.0) P	2.0	(2.0) JS	2.1	(2.1) J	(2.0) P	2.0	1.9	2.0	1.9
15	2.0	1.9	(1.8) J	(2.0) JF	(2.1) JF	2.1 F	1.8 F	2.1 F	2.2	2.2	2.1	2.0	2.0	1.9	(1.9) P	(2.1) SP	2.1	2.0	(2.0) JS	2.0	2.0	1.9	(2.0) J	2.0
16	1.9	1.9 F	1.8 F	1.9 F	1.9 F	(2.0) JF	2.0 F	2.2 F	2.2	2.2	2.1	2.1	2.0	(1.9) S	(2.0) S	(2.0) J	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.8
17	1.8	1.7	1.8	1.7	1.7	1.8 F	1.9	2.1	2.3	2.2	2.1	2.1	1.9	2.0	2.0	2.0	1.9	1.9	(2.0) JS	(1.9) S	1.8	(1.8) JS	(1.9) JF	(2.0) JF
18	(1.9) JF	1.8 F	1.6 F	1.8	1.8	1.9 F	1.8 F	2.1 F	2.2	2.2	2.1	2.1	(2.2) P	2.0	1.9	(1.9) SP	2.0	2.0	(2.0) JS	1.9	2.0	1.9	1.9	2.0
19	1.9 F	1.8 F	1.8 F	(1.9) FS	2.0 F	1.8 F	1.8 F	2.1	(2.3) JS	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	(2.1) J	(2.0) JS	(2.1) JS	2.0	2.0	2.1	2.0
20	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.2	2.3	2.2	2.1	2.1	2.0	1.9	2.0	2.0	(2.0) SP	(2.0) SP	2.1	(2.0) JS	1.9	1.9	1.8	1.7
21	1.8	1.8	1.8	1.8 F	1.9 F	1.9 F	(1.8) FS	2.1	2.2	2.2	2.2	2.1	2.0	1.9	2.0	(2.0) SP	2.0	2.0	(2.0) JS	(2.0) SP	1.8	(1.5) J	1.5	1.5 F
22	1.5 FK	(1.8) FK	F K	1.7 FK	1.7 FK	1.8 FK	1.8 FK	1.9 F	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	(2.1) SP	(2.1) SP	2.0	1.9	1.8 F	(2.0) JS	(1.9) JF
23	(1.9) JS	(2.0) JS	(2.0) JF	(1.9) JF	(1.9) JS	2.0 F	1.9 F	2.1 F	2.4	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	(2.1) JS	(2.0) S	2.1	(2.0) JS	1.8	1.7
24	1.8	2.0	2.0 F	1.8 F	(1.8) JF	1.7 F	1.7 F	2.0 F	2.2 F	2.3	2.0	2.0	2.0	2.0	(2.0) JS	2.0	2.0	2.0	2.1	2.0	2.0	(2.0) JF	2.1	2.0
25	2.0	2.0	2.0	1.9 F	1.9 F	1.8 F	(1.9) JF	2.1 F	2.4	2.2	2.1	2.0	2.1	2.1	(2.0) SP	2.0	2.1	2.1	2.2	1.9	2.0	2.1	2.0	1.8
26	1.8 F	1.8	1.9 F	(2.1) JF	(2.0) F	2.0 F	2.0 F	(2.3) S	2.3	2.3	C	C	C	2.1	2.0	(2.1) SP	(2.1) SP	2.1	2.1	2.1	2.0	1.9	1.9	(1.9) J
27	1.8	1.9	1.8	1.6 F	1.7 F	1.7 F	1.8	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	(2.1) SP	2.1	2.1	2.1	2.0	2.0	2.0	(2.0) FS	2.0 F
28	(2.0) JF	(2.0) JF	(2.0) JF	(1.9) SF	(1.9) JS	1.9	2.0	2.3	2.3	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.0	1.9	2.0	(2.0) J	2.0
29																								
30																								
31																								
Median	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	1.9	1.9
Count	28	28	27	28	28	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 39

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

IONOSPHERIC DATA

(M3000)F2 (Characteristic), ____ (Unit), February (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. R.E.P., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.0	3.0	3.1	2.9F	3.1F	3.0F	3.1F	3.1	3.4	3.5	3.3	3.1	3.1	3.1	3.1	3.0	3.2	3.2	3.1	3.1	3.4	3.0	3.1	3.0
2	3.0	3.0	3.1	3.0	3.1F	2.9F	2.8F	3.1	3.4	3.4	3.1	3.2	3.1	3.1	(3.1)SP	3.0	3.0	3.1	3.0	3.1	3.3	3.2	2.9	3.0
3	2.9	2.9	2.9	2.9	2.9F	2.7F	2.8	3.1	3.4	3.3	3.2	3.2	(3.0)S	3.0	3.0	3.0	2.9	(2.9)S	(3.1)S	(3.2)S	2.8	(2.6)S	2.7K	2.8K
4	2.4K	(3.0)FK	(3.0)FK	(2.9)FK	(3.0)FK	(2.8)FK	(3.1)FK	3.0FK	2.8FK	3.0K	3.0K	3.0K	2.8K	2.9K	3.0K	2.9K	3.0K	3.1K	3.0K	3.0K	K(3.1)FS	2.9K	(2.9)SK	2.9FK
5	K(3.0)JF	K(2.9)JF	(2.8)FK	(2.9)FK	2.9FK	2.8FK	2.9FK	3.1	3.4	3.2	3.3	3.1	3.0	2.9	2.9	3.1	3.0	3.0	(3.1)JS	(3.0)JS	3.1	2.9	2.9F	2.9F
6	2.8	2.9	(2.8)JF	(2.9)JS	3.1	3.0	2.8	2.9	3.4	3.3	3.0	3.0	(2.9)J	2.8	2.8	2.9	2.9	3.0	2.9	2.9	2.9	(2.2)JK	K(2.5)FS	2.7FK
7	2.6KF	2.6FK	2.8FK	K2.7FS	2.8FK	2.7F	2.8	3.0F	3.3	3.2	3.0	2.9	2.9	2.9	(3.0)S	2.9	3.0	(3.0)S	3.1	3.2	3.0	3.0F	2.9	(2.9)FS
8	2.8F	3.0F	(2.9)JF	(2.9)JF	(2.9)JF	(2.9)JS	3.7F	3.1F	3.4	3.3	3.1	3.2	3.1	3.0	3.0	3.0	(3.0)J	3.0	3.1	3.0	3.1F	S(3.1)JF	3.0F	(3.2)JF
9	2.9F	(3.0)JF	(2.9)JF	(2.9)JF	(2.9)JF	(3.1)JF	3.1F	(3.1)FS	3.3	3.3	(3.2)S	3.0	2.9	2.9	2.9	3.0	3.0	3.0	(3.1)JS	(3.0)S	(3.0)S	3.1	(2.8)FS	(2.9)S
10	2.8F	(2.9)JS	(2.8)FS	(2.7)JF	2.8F	(2.9)FS	(3.0)JF	(3.1)JF	3.2	3.2	3.1	3.1	3.0	2.9	2.9	2.8	(2.9)PS	3.2	3.1	(3.1)JS	(3.0)JS	(2.9)JS	(2.9)SF	2.9
11	2.7	(2.9)FS	(2.9)FS	3.0FS	2.9F	3.1F	2.7F	3.2	3.3	3.2	3.2	3.0	3.0	2.9	2.9	(2.9)S	(2.9)S	3.0	3.0	(2.9)S	3.0	3.0	(3.0)JS	2.8
12	2.6	2.5	2.7	(2.8)FS	2.8F	2.7F	2.8F	3.0	3.3	(3.2)J	3.1	3.0	3.0	3.1	3.0	2.9	3.0	3.1	(2.9)JS	(2.9)S	3.0	2.9	2.8	2.8
13	3.0	(2.8)JF	2.9F	(2.9)F	(2.9)FS	(2.9)F	(2.8)JF	3.1F	3.4	3.2F	3.2	3.0	2.9	3.0	2.9	3.0	3.0	3.0	(3.1)JS	(2.9)S	3.0	2.7	(2.9)J	(2.9)J
14	2.9F	(2.8)JF	(2.9)JF	(2.7)F	(2.9)JF	(2.9)JF	(3.0)JF	3.1	(3.3)P	3.1	(3.2)S	3.0	3.1	2.9	(3.0)P	2.9	(2.9)JS	3.0	(3.1)J	(3.0)P	2.9	2.9	3.0	2.9
15	2.9	2.8	(2.8)J	(3.0)JF	(3.0)JF	3.0F	2.7F	3.0F	3.2	3.0	3.1	3.0	3.0	2.8	(2.8)P	(3.0)SP	3.1	3.0	(3.0)JS	3.1	3.0	2.9	(2.9)J	2.9
16	2.8	2.8F	2.8F	2.9F	2.9F	(3.0)JF	2.9F	3.1F	3.2	3.2	3.0	3.0	2.9	(2.9)S	(2.9)S	(2.9)J	3.0	3.0	3.0	3.0	2.9	2.9	2.8	2.7
17	2.7	2.7	2.7	2.6	2.5	2.7F	2.9	3.0	3.3	3.1	3.0	3.1	2.9	3.0	2.9	2.9	2.8	2.8	(2.9)JS	(2.8)S	2.7	(2.8)JS	(2.8)JF	(2.9)JF
18	(2.9)JF	2.8F	2.5F	2.7	2.7	2.8F	2.8F	3.0F	3.2	3.2	3.0	2.9	(3.2)P	2.9	2.9	(2.8)SP	(2.9)JS	3.0	(2.9)JS	3.0	2.9	2.9	2.8	2.9
19	2.8F	2.8F	2.7F	(2.8)FS	2.9F	2.8F	2.7F	3.1	(3.3)JS	3.2	3.1	3.0	2.9	2.9	2.9	3.0	2.9	(3.0)J	(3.0)JS	(3.1)JS	2.9	3.0	3.0	2.9
20	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.2	3.3	3.2	3.1	3.0	3.0	2.9	3.0	3.0	(3.0)SP	(3.0)SP	3.1	(3.0)JS	2.8	2.8	2.7	2.6
21	2.8	2.7	2.7	2.7F	2.7F	2.7F	(2.8)FS	3.1	3.2	3.2	3.1	3.1	2.9	2.9	3.0	(3.0)SP	3.0	3.0	(3.0)JS	(2.9)SP	2.8	(2.3)J	2.3	2.3F
22	2.4FK	(3.0)FK	FK	2.5FK	2.5FK	2.6FK	2.6FK	2.9F	2.6	3.0	3.0	3.1	3.0	2.9	3.0	3.0	3.0	(3.2)SP	(3.1)SP	2.8	2.9	2.6F	(3.0)JS	(2.9)JF
23	(2.9)JS	(2.9)JS	(2.9)JF	(2.8)JF	(2.9)JS	3.0F	2.9F	3.1F	3.4	3.2	3.2	3.1	3.1	3.0	3.0	3.0	3.0	3.1	(3.1)JS	(3.0)S	3.1	(3.0)JS	2.7	2.6
24	2.7	3.0	3.0F	2.7F	(2.7)JF	2.6F	2.7F	3.0F	3.3F	3.3	3.0	3.0	3.0	2.9	(2.9)JS	2.9	3.0	3.1	3.1	3.1	3.1	(3.0)JF	3.0	2.9
25	2.9	2.9	2.9	2.8F	2.9F	2.8F	(2.9)JF	3.2F	3.3	3.2	3.1	3.0	3.1	3.0	(3.0)SP	2.9	3.0	3.0	3.1	2.9	3.0	3.0	3.0	2.7
26	2.8F	2.8	2.8F	(3.1)FJ	(3.0)F	3.0F	3.0F	(3.4)S	3.3	3.2	C	C	C	3.0	3.0	(3.0)SP	(3.0)SP	3.1	3.1	3.1	3.0	2.9	2.9	(2.8)J
27	2.7	2.8	2.6	2.5F	2.6F	2.6F	2.8	3.1	3.2	3.2	3.1	3.1	3.0	3.0	3.0	(3.0)SP	3.0	3.0	3.0	2.9	2.9	3.0	(2.9)FS	2.9F
28	(3.0)JF	(2.9)JF	(2.9)JF	(2.8)FS	(2.8)JS	2.8	3.0	3.3	3.3	3.2	3.2	3.3	3.1	3.1	3.1	3.0	3.1	3.1	3.1	2.9	2.9	2.9	(3.0)J	3.1
29																								
30																								
31																								
Median	2.8	2.9	2.9	2.8	2.9	2.8	2.8	3.1	3.3	3.2	3.1	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.1	3.0	3.0	2.9	2.9	2.9
Count	28	28	27	28	28	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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TABLE 40

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

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1, ______ (Characteristic), (Unit), February (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.

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										Q	Q	Q	L	L	L	Q	Q							
2										Q	Q	L	L	L	L	Q	Q							
3										Q	Q	L	L	Q	Q	Q	Q							
4										L K	L K	B K	Q	Q	Q	Q	Q							
5										Q	L	L	Q	Q	L	L	Q							
6										Q	L	L	L	L	Q	Q	Q							
7										Q	Q	L	L	Q	L	Q	Q							
8										Q	Q	Q	Q	Q	L	Q	Q							
9										Q	L	Q	B	L	Q	Q	Q							
10										Q	Q	Q	Q	Q	L	L	Q							
11										Q	Q	Q	Q	Q	Q	Q	Q							
12										Q	L	L	Q	L	Q	Q	L							
13										Q	Q	Q	L	Q	Q	Q	Q							
14										Q	Q	B	L	L	Q	L	Q							
15										L	Q	Q	Q	Q	Q	Q	Q							
16										Q	Q	Q	Q	L	Q	L	Q							
17										Q	Q	Q	Q	Q	Q	L	Q							
18										Q	Q	Q	3.9	L	3.6	Q	Q							
19										Q	L	Q	Q	Q	Q	Q	Q							
20										Q	Q	L	L	Q	Q	Q	Q							
21										Q	Q	Q	Q	Q	Q	Q	Q							
22										Q	Q	Q	L	L	L	L	Q							
23										Q	Q		Q	L	L	Q	Q							
24										Q	L	Q	L	L	L	L	Q							
25										Q	Q	Q	L	L	Q	Q	Q							
26										Q	C	C	C	L	L	L	Q							
27										Q	Q	Q	L	L	L	Q	Q							
28										Q	Q	Q	L	L	L	L	Q							
29																								
30																								
31																								
Median										–	–	–	–	–	–	–	–							
Count													1		1									

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 41

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

IONOSPHERIC DATA

(M1500)E (Characteristic), ____ (Unit), February (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.

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									3.8 H	(3.7) S	4.2	A	4.3	4.2	4.4	4.3	A	4.0						
2									B	B	4.2	4.3	4.3	4.3	4.3	4.2	B							
3									3.9 F	4.3 F	4.4	4.3	4.4	4.4	4.3	4.5	4.0	3.0 H						
4									3.9 HK	4.1 K	4.2 K	B K	B K	B K	B K	B K	4.4 K	4.0 K						
5									3.8 F	4.0 F	4.2	4.2	4.2	4.2	4.4	3.9	4.1							
6									3.9	4.1	4.2	4.1	4.0	4.1	4.2	4.2	4.0 H	3.9						
7									A	4.0 H	4.0 H	4.1	4.2	4.2	4.3 N	4.2	4.4	3.7 H						
8									(4.2) H	(4.3) H	A	4.3	(4.4) S	4.4	4.6	4.2 H	3.9	4.3						
9									3.7 H	4.3	4.4	4.3 H	B	4.5	4.0	4.1 H	4.3	4.0 H						
10									3.9	4.2	4.2	4.1	4.2	4.1	4.2	4.5	4.3	4.2 H						
11									(3.9) S	4.2	4.4 F	4.5	4.4	4.3	4.2	4.3	4.4	3.8 H						
12									4.4	4.5 H	4.3 H	A	A	4.4	4.4	4.4	4.3 H	4.3						
13									4.0 F	4.2	4.5	4.3	4.5	4.5	4.2	4.5 H	4.1	3.9						
14									4.1	4.4	4.2	B	4.4	4.1	4.3	4.3	4.3	3.7 H						
15									3.6	4.0	4.2	4.2	4.2	4.3	4.5	4.6	4.7	3.9 H						
16								3.6	3.6	3.9	4.1	4.1	4.2	4.2	4.2	4.3	4.2	4.0 H						
17									3.9	4.1 H	4.2	4.1	4.2	4.4	4.5	4.6 H	4.2	4.0						
18									3.7	4.1 H	4.1 F	4.2 F	4.1	4.4	4.3	4.3 F	4.3	4.3						
19								3.4	A	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.4	4.1						
20									4.1	4.4	4.3	4.1	4.2	4.1	4.2	4.3	4.1 H	3.8						
21									3.8	4.2	4.3 F	A	4.4	4.3	4.4	4.1	4.2	3.8						
22								4.3	4.1	4.2	4.3	4.2	4.3	4.2	4.2	4.4	4.1	A						
23									3.4	4.1	4.2	4.2	4.5	4.4	4.4	4.3	4.5	4.0 H						
24									3.8 H	4.3 H	4.0	4.5	4.4	4.0	4.2	4.3	(4.4) A	3.9						
25								3.3 H	4.2	4.0	4.2	4.0	4.0	4.1	4.1	4.1	4.1	4.1 H						
26								3.2 H	4.2	4.2	C	C	C	4.1	4.0	4.1	4.2	4.2						
27								3.2	4.1	4.5	4.1	4.1 H	A	A	A	4.2	4.2	4.1						
28								3.6	3.9	4.2	4.3	4.4	4.4	4.5	4.5	4.4	4.4	4.1 A	4.6					
29																								
30																								
31																								
Median								3.4	3.9	4.2	4.2	4.2	4.3	4.2	4.3	4.3	4.2	4.0						
Count								7	25	27	26	22	23	26	26	27	26	25						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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Table 42

Ionospheric Storminess at Washington, D. C.

February 1949

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	2	2			1	1
2	2	2			1	2
3	2	1			2	3
4	4	6	0300	----	5	2
5	4	2	----	1200	1	2
6	2	1			2	3
7	4	1	0100	1000	4	1
8	2	1			0	1
9	1	1			1	1
10	2	1			1	1
11	2	1			3	3
12	3	1			3	3
13	2	1			3	2
14	1	1			3	2
15	1	1			2	2
16	1	1			2	2
17	2	2			3	4
18	2	2			4	3
19	2	1			2	1
20	2	2			0	2
21	2	2			3	4
22	5	2	0500	1200	5	3
23	2	2			2	2
24	2	2			4	3
25	2	1			1	1
26	2	3			1	2
27	2	2			4	2
28	2	2			2	2

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

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

----Dashes indicate continuing storm.

Table 43

Sudden Ionosphere Disturbances Observed at Washington, D. C.

February 1949

1949 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
February 1	1220	1305	England	0.01	
1	1426	1500	England	0.2	
3	1340	1420	D.C., England	0.1	
3	1920	1955	Ohio, D.C.	0.2	
9	1651	1810	Ohio, D.C., England, New Brunswick	0.0	Terr.mag.pulse** 1650-1720
11	1100	1135	England	0.02	Solar flare*** 1100
12	1510	1525	D.C., England	0.03	
13	2040	2100	Ohio, D.C., England	0.0	Terr.mag.pulse** 2040-2050
14	1550	1615	Ohio, D.C., England, New Brunswick	0.0	Terr.mag.pulse** 1553-1610
17	1704	1730	Ohio, D.C., England, New Brunswick	0.0	
19	1500	1515	Ohio, D.C., England	0.2	
20	1842	2040	Ohio, D.C., England	0.05	
22	2035	2100	Ohio, D.C.	0.1	
24	1300	1330	England	0.05	
27	1749	2000	Ohio, D.C., England	0.0	

*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 February 1, on February 3 at 1340, on February 11, on February 12, and on February 24.

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

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

Table 44

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

1948 Day	GCT Beginning	GCT End	Location of transmitters
December 30	1600	1650	Bolivia, Brazil, Chile, Colombia, Denmark, France, Germany, Netherlands, New York, Peru, Spain, Venezuela
1949 January 17	1300	1630	Bolivia, Brazil, England, Germany, Italy, Netherlands, New York

Table 45

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
January 15	0854	0925	Brentwood	Austria, Bahrein I., Belgian Congo, India, Iran, Kenya, Madagascar, Palestine, Southern Rhodesia, Spain, Syria, Trans-Jordan, Zanzibar	
15	0850	0945	Somerton	Aden, Ceylon, India, Union of S. Africa	
17	1225	1245	Brentwood	Bulgaria, Canary Is., Greece, Kenya, Palestine, Southern Rhodesia, Spain, Surinam, Switzerland, Turkey, U.S.S.R., Zanzibar	
18	0938	1015	Brentwood	Austria, Bahrein I., Belgian Congo, Bulgaria, Greece, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Yugoslavia, Zanzibar	
18	0936	1020	Somerton	Aden, Argentina, Ceylon, Gold Coast, India, Union of S. Africa	
February 1	1223	1300	Brentwood	Afghanistan, Austria, Bahrein I., Belgian Congo, Bulgaria, Canary Is., Chile, Cyprus, Greece, India, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Surinam, Switzerland, Syria, Trans-Jordan, Turkey, Uruguay, U.S.S.R., Yugoslavia, Zanzibar	
1	1220	1255	Somerton	Aden, Argentina, Ascension I., Barbados, Brazil, Canada, Ceylon, China, Egypt, Gold Coast, India, New York, Union of S. Africa	
9	1650	1745	Brentwood	Chile, Colombia, Uruguay, Venezuela	
9	1655	1715	Somerton	Argentina, Barbados, Brazil, Canada, New York	
February 11	1058	1200	Brentwood	Afghanistan, Austria, Bahrein I., Belgian Congo, Bulgaria, Chile, Colombia, Greece, India, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, Uruguay, U.S.S.R., Yugoslavia, Zanzibar	Solar flare* 1100
11	1058	1145	Somerton	Aden, Argentina, Ascension I., Australia, Brazil, Canada, Ceylon, China, Egypt, Gold Coast, India, New York, Union of S. Africa	
12	1510	1600	Brentwood	Canary Is., Chile, Colombia, French Equatorial Africa, Portugal, Spain, Uruguay, Venezuela	
12	1510	1530	Somerton	Argentina, Barbados, Brazil, Union of S. Africa	
13	1005	1035	Brentwood	Austria, Belgian Congo, Greece, India, Iran, Palestine, Spain, Syria, Turkey, Zanzibar	
14	1035	1045	Brentwood	Belgian Congo, Bulgaria, Canary Is., Greece, India, Iran, Kenya, Madagascar, Palestine, Southern Rhodesia, Spain, Switzerland, Syria, Yugoslavia, Zanzibar	
14	1040	1050	Somerton	Ceylon, Gold Coast, India, Union of S. Africa	
14	1555	1630	Brentwood	Chile, Colombia, Portugal, Uruguay, Venezuela	
14	1556	1605	Somerton	Argentina, Ascension I., Barbados, Brazil, Canada, Gold Coast, New York, Union of S. Africa	

*Time of observation at Meudon Observatory, France.

Table 46

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

1949 Day	GCT Beginning	GCT End	Location of transmitters
February			
6	0005	0100	Australia, Hawaii, Japan, Philippine Is.
9	0230	0310	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.
13	0125	0150	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.
18	0223	0310	Australia, China, Japan, Philippine Is.
19	2350	2400	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.

Table 47

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
February				
1	1223	1250	Argentina, England, Italy, Morocco	
9	1655	1715	Argentina, Canada, England, Italy, Morocco	
11	1102	1135	Argentina, England, Italy, Morocco	Solar flare* 1100
14	1600	1630	Argentina, Brazil, Canada, England, Italy, Mexico, Morocco, Panama	
17	1605	1645	England, Italy	
19	1505	1515	Argentina, Canada, England, Italy, Panama	

*Time of observation at Meudon Observatory, France.

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)
January 1949

Day	North Atlantic							North Pacific						
	Quality figure		CRPL* Warning		CRPL Forecast of probable disturbed periods	Geo-magnetic K_{Ch}		Quality figure		CRPL* Warning		CRPL Forecast of probable disturbed periods	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	5	6				3	2	6	6				3	2
2	(4)	6		X		5	3	5	6		X		5	3
3	5	7	X			1	1	5	5	X			1	1
4	7	7				0	1	6	5				0	1
5	7	7				1	1	6	6				1	1
6	6	6				2	1	8	7				2	1
7	6	6				3	2	6	5				3	2
8	6	6				2	3	6	6				2	3
9	6	6				3	3	7	6				3	3
10	6	6				2	2	7	6				2	2
11	5	6				3	3	5	(4)				3	3
12	6	6				2	3	5	5				2	3
13	6	6				3	2	5	7				3	2
14	6	6				2	1	7	7				2	1
15	6	6				1	2	6	8				1	2
16	7	7				2	2	6	6				2	2
17	6	7				2	2	6	6				2	2
18	7	6				3	3	6	5				3	3
19	6	6				3	2	6	6				3	2
20	5	7				2	2	6	6				2	2
21	6	7				3	2	5	(4)				3	2
22	6	7			X	3	1	6	5			X	3	1
23	6	6			X	1	2	5	(4)			X	1	2
24	(4)	5				2	4	(4)	(4)				2	4
25	(2)	(2)	X	X		6	7	5	(4)	X	X		6	7
26	(2)	(2)	X	X	X	7	3	5	5	X	X	X	7	3
27	(3)	(3)	X	X	X	4	2	5	5	X	X	X	4	2
28	(4)	5	X	X	X	2	2	5	6	X	X	X	2	2
29	5	6	X		X	2	2	6	7	X		X	2	2
30	6	6				1	1	6	7				1	1
31	6	5				1	2	6	7				1	2
Score:														
H			4		3					1		1		
M			2		3					4		4		
G			23		22					20		21		
(S)			2		1					4		4		
S			0		2					2		1		

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

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 49a

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

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Feb. 1.7	-	-	-	2	3	3	2	4	5	9	10	5	10	13	18	28	20	15	12	19	15	14	13	15	14	9	5	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	4	5	7	9	10	13	16	28	34	16	15	17	18	26	25	23	9	3	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	2	3	13	12	13	13	18	39	39	20	18	16	16	20	25	32	40	23	11	8	7	5	3	-	-	-	-	-	-	-
10.7	X	-	-	-	-	-	-	-	4	6	8	10	11	13	14	14	12	16	35	38	25	14	9	5	3	3	2	-	-	-	-	-	-	-	-	-	-
11.7	-	-	-	-	-	-	-	3	5	9	10	11	15	22	20	18	18	17	10	13	30	20	17	14	12	10	8	6	5	-	-	-	-	-	-	-	-
17.8	-	-	-	-	-	-	-	-	-	-	3	7	17	17	17	19	20	25	13	13	12	12	11	10	9	9	7	5	3	X	X	X	X	X	X	X	X
18.7	-	-	-	-	-	-	-	-	-	-	-	5	12	13	15	16	22	28	15	15	14	12	12	11	9	9	9	5	3	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	2	3	3	2	2	3	9	10	15	22	30	30	20	5	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.9	X	X	X	X	X	X	X	X	X	X	X	5	10	14	16	16	20	22	21	27	23	20	13	12	10	10	6	5	3	3	2	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	3	4	6	9	13	14	17	20	24	24	30	30	20	10	10	10	10	6	4	2	-	-	-	-	-	-	-	-
23.9	-	-	-	3	5	7	8	8	9	9	9	10	14	15	17	23	22	21	23	22	21	23	20	16	14	13	12	8	5	2	-	-	-	-	-	-	-
25.7	X	2	2	2	3	4	4	5	5	3	3	10	4	3	10	8	11	12	16	14	15	20	27	20	14	12	6	-	-	-	-	-	-	-	-	-	-
27.6	-	-	-	3	4	5	5	3	3	4	5	9	4	10	14	16	16	15	20	34	33	34	22	18	13	10	8	3	2	-	-	-	-	-	-	-	-
28.8	X	-	-	3	4	4	4	3	3	2	2	9	10	13	13	14	17	19	33	31	28	30	17	15	12	8	5	3	-	-	-	-	-	-	-	-	-

Table 50a

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

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Feb. 1.7	-	-	-	-	-	-	-	-	1	1	-	-	-	-	2	5	13	3	-	2	4	4	10	5	1	-	1	1	1	-	-	-	-	-	-	-	-
3.8	1	-	-	-	-	-	-	-	-	1	1	1	2	3	2	5	14	14	13	12	10	8	13	10	5	5	1	1	1	1	1	-	-	-	-	-	-
6.7	1	1	1	1	1	1	1	-	-	-	-	-	-	8	8	10	9	1	2	8	12	15	18	18	17	6	5	3	1	1	1	1	1	1	1	1	1
10.7	X	-	-	-	-	-	-	-	-	-	-	-	2	2	2	6	7	5	3	2	20	9	8	6	4	1	1	1	-	-	-	-	-	-	-	-	-
11.7	-	-	-	-	1	2	3	2	4	2	1	1	8	8	10	11	11	3	2	17	18	5	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-
17.8	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	3	12	10	1	-	2	1	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X
18.7	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	9	10	2	5	7	7	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	7	2	10	10	10	3	1	1	-	-	-	-	1	1	1	1	-	-	-	-
21.9	X	X	X	X	X	X	X	X	X	X	X	-	-	-	5	10	8	14	16	10	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	11	11	3	14	3	9	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	12	8	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	3	3	2	2	1	-	1	1	1	1	1	1	-	-	-	-	-	-
27.6	2	2	1	-	-	-	-	-	-	-	-	-	-	-	1	4	13	8	1	10	10	18	15	13	1	1	2	3	2	1	1	1	1	1	1	-	-
28.8	X	-	-	-	-	-	-	-	-	-	-	-	1	2	3	5	8	13	10	10	10	5	4	2	2	2	4	3	1	-	-	-	-	-	-	-	-

Table 51a

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

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Feb. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4	4	2	1	1	1	1	2	4	3	1	1	-	-	-	-	-	-	-	-	-	-	-
10.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
11.7	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.9	X	X	X	X	X	X	X	X	X	X	X	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
25.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	2	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
28.8	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 49b

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

Date	Degrees south of the solar equator																		0°	Degrees north 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																																					
Feb. 1.7	-	-	-	-	-	-	-	-	-	2	5	10	12	15	18	18	24	24	20	12	10	11	13	16	14	14	14	7	4	2	-	-	-	-	-	-	-
3.8	-	-	-	2	2	3	3	3	4	6	8	10	15	16	16	16	16	16	14	10	11	15	16	14	15	10	4	2	-	-	-	-	-	-	-	-	-
6.7	-	-	-	3	4	5	5	5	5	9	10	10	10	12	14	18	20	25	27	23	24	28	28	18	10	6	5	4	5	8	8	8	3	-	-	-	-
10.7	-	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
11.7	-	-	-	-	-	-	-	-	-	-	3	10	14	13	18	20	23	22	22	25	17	16	15	14	10	12	13	11	8	9	5	3	-	-	-	-	-
17.8	X	-	-	-	-	-	-	-	-	-	-	4	8	15	18	19	17	15	15	17	20	18	16	14	13	12	8	4	2	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	3	5	12	15	19	28	25	20	18	17	13	10	12	14	14	12	10	10	6	5	2	2	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	4	6	9	15	23	23	22	13	14	13	13	14	16	19	19	15	14	11	6	3	-	-	-	-	-	-	-
21.9	-	-	-	-	-	-	-	-	-	-	-	3	10	18	19	18	17	16	16	15	14	17	23	22	20	18	10	9	7	4	-	-	-	-	-	-	X
22.8	-	-	-	-	-	-	-	-	-	-	-	5	13	19	29	28	16	15	15	15	19	24	23	22	20	17	10	8	7	4	-	-	-	-	-	-	-
23.9	-	-	-	-	-	-	2	5	4	4	9	11	14	19	29	25	21	20	18	16	17	20	18	20	18	12	8	8	8	6	3	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	6	8	9	12	13	13	13	10	10	11	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.6	-	-	-	-	3	5	4	5	6	8	8	11	14	20	23	20	23	20	16	16	18	23	25	20	17	15	17	12	10	3	-	-	-	-	-	-	-
28.8	-	-	-	-	-	-	-	-	-	-	-	-	5	11	17	14	12	12	11	10	10	12	13	12	10	11	11	8	5	-	-	-	X	X	X	X	X

Table 50b

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

Date	Degrees south of the solar equator																		0°	Degrees north 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																																					
Feb. 1.7	-	-	-	-	1	1	-	1	1	1	1	1	-	-	1	5	4	3	3	-	1	5	7	7	6	1	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	1	-	-	-	-	-	1	3	1	4	2	-	-	-	-	-	-	-	1	1	1	1
6.7	-	1	1	1	1	1	-	-	-	-	-	-	1	1	1	2	3	9	9	5	1	1	-	-	1	-	-	-	-	-	-	1	1	1	1	1	1
10.7	-	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
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	12	16	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.8	X	-	-	-	-	-	-	-	-	1	1	-	-	-	3	9	8	4	7	8	5	1	10	1	1	1	1	1	1	1	-	-	-	-	-	-	-
18.7	-	-	-	1	1	1	1	1	1	3	5	4	1	1	8	11	10	10	1	3	-	1	6	5	2	1	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	2	3	2	-	12	11	11	11	9	2	1	1	3	4	4	2	1	1	1	1	-	-	-	-	1	1	2	2
21.9	-	-	-	-	-	-	-	-	1	2	2	3	2	9	10	10	1	7	8	8	9	12	18	2	4	1	1	-	-	-	-	-	-	-	-	-	X
22.8	-	-	-	-	-	-	1	4	4	3	2	2	1	1	5	1	1	9	12	5	10	17	1	11	5	1	1	-	-	-	1	1	2	3	1	1	1
23.9	-	-	-	-	-	1	1	1	1	1	-	-	3	-	-	7	10	13	14	8	7	5	9	11	8	-	-	-	-	-	1	1	1	1	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	2	-	9	5	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	6	6	1	1	1	8	2	12	12	11	11	1	1	1	1	1	1	1	1	1	2	2
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	1	3	8	4	5	1	-	-	-	-	-	X	X	X	X	X

Table 51b

Coronal observations at Cl'max, Colorado (6704A), west limb

Date	Degrees south of the solar equator																		0°	Degrees north 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																																					
Feb. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
10.7	-	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
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
17.8	X	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
21.9	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	2	1	1	1	1	1	1	1	-	-	-	-	-	-		-	-	-	-	X
22.8	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	-	-	-		-	-	-	-	-	-
23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X

Table 52

American and Zürich Provisional Relative Sunspot Numbers

February 1949

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	198	127	16	259	228
2	232	146	17	253	218
3	229	179	18	256	225
4	244	199	19	264	220
5	287	206	20	223	201
6	279	218	21	187	168
7	275	220	22	171	133
8	274	193	23	151	135
9	255	190	24	148	148
10	243	176	25	151	143
11	245	186	26	150	126
12	238	200	27	157	140
13	243	222	28	194	152
14	281	212			
15	297	221	Mean:	228.0	183.3

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

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

GRAPHS OF IONOSPHERIC DATA

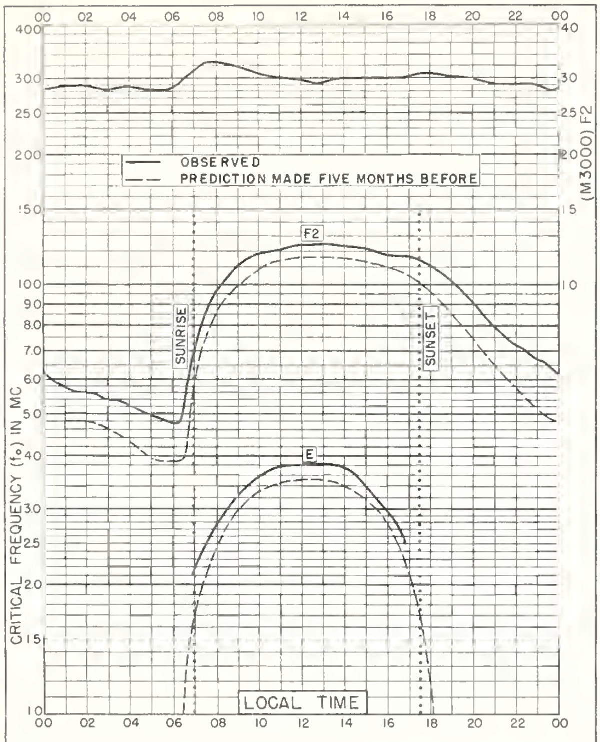

Fig. 1. WASHINGTON, D. C.
39. 0°N, 77. 5°W FEBRUARY 1949

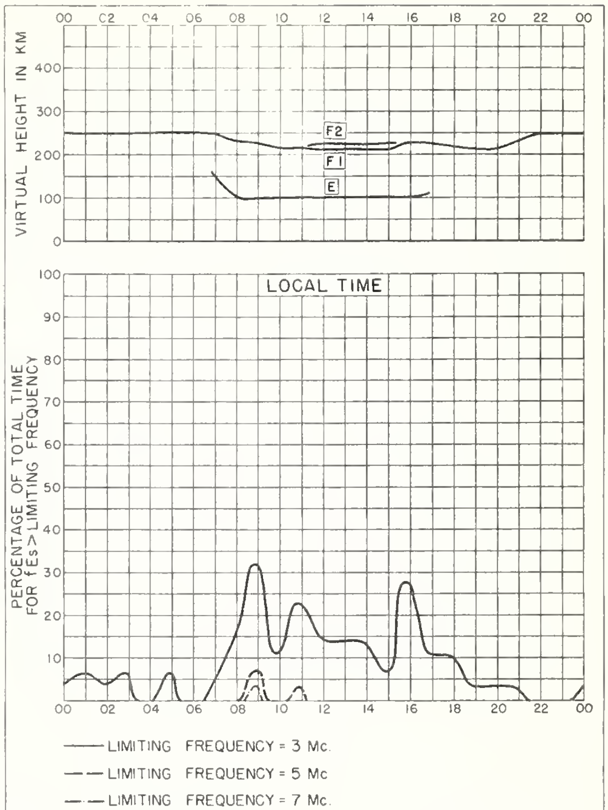

Fig. 2. WASHINGTON, D. C. FEBRUARY 1949

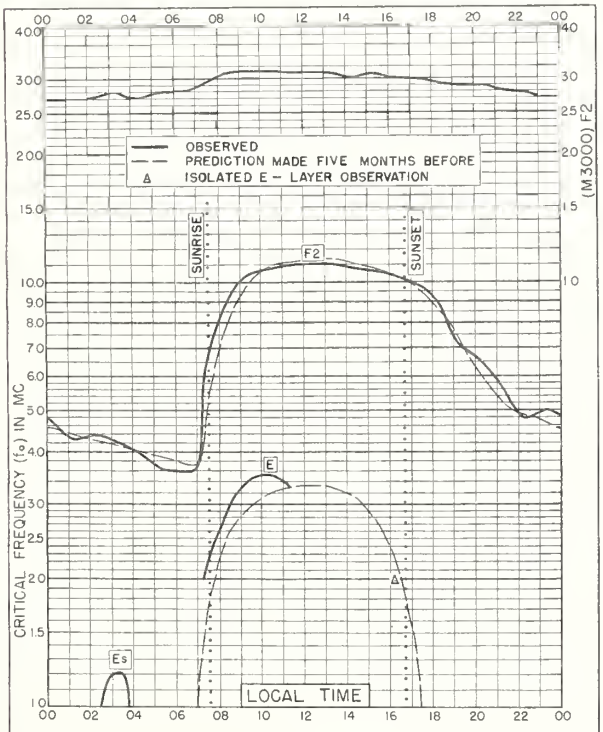

Fig. 3. BOSTON, MASSACHUSETTS
42. 4°N, 71. 2°W JANUARY 1949

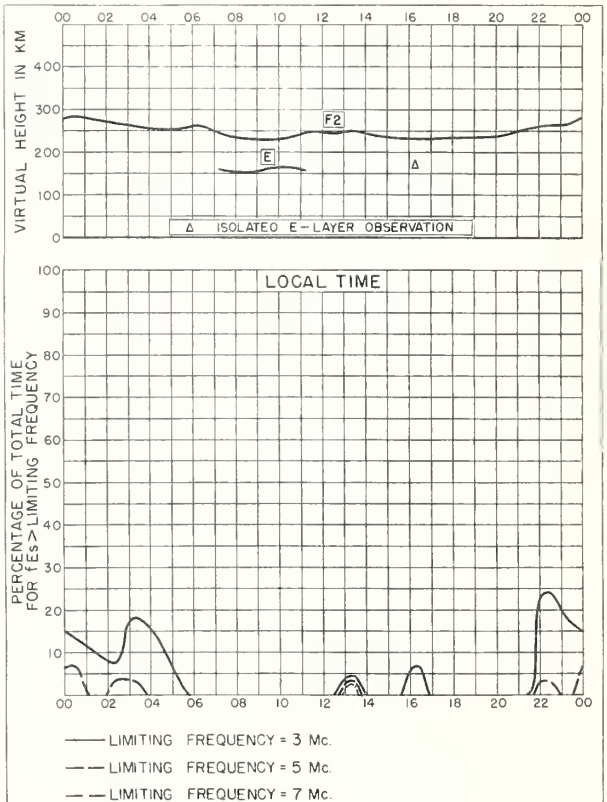

Fig. 4. BOSTON, MASSACHUSETTS JANUARY 1949

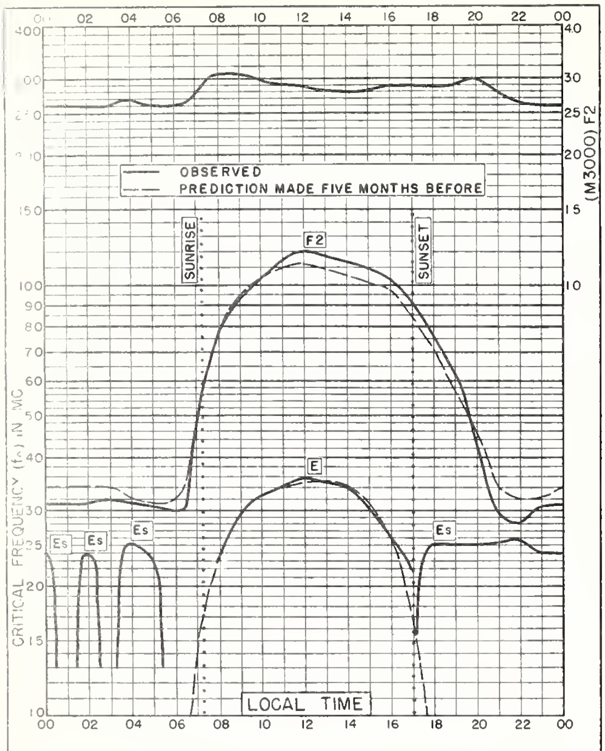

Fig. 5. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JANUARY 1949

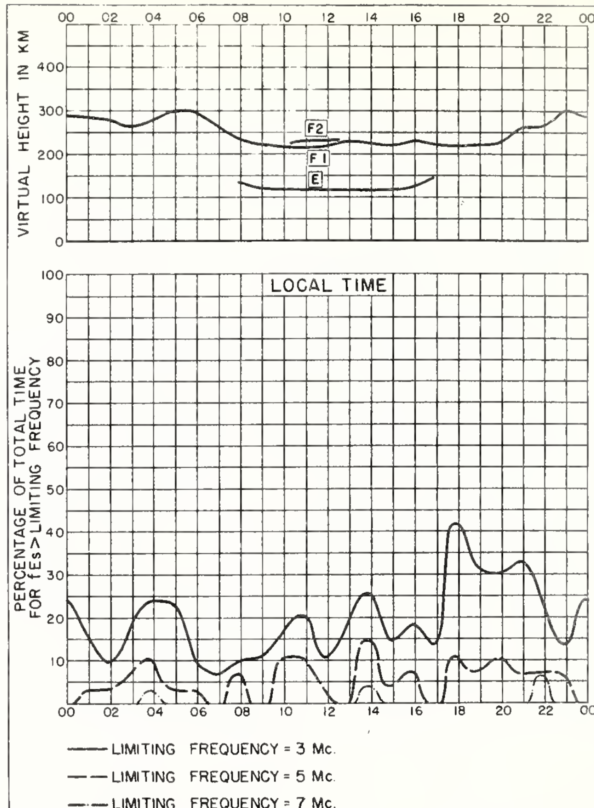

Fig. 6. SAN FRANCISCO, CALIFORNIA JANUARY 1949

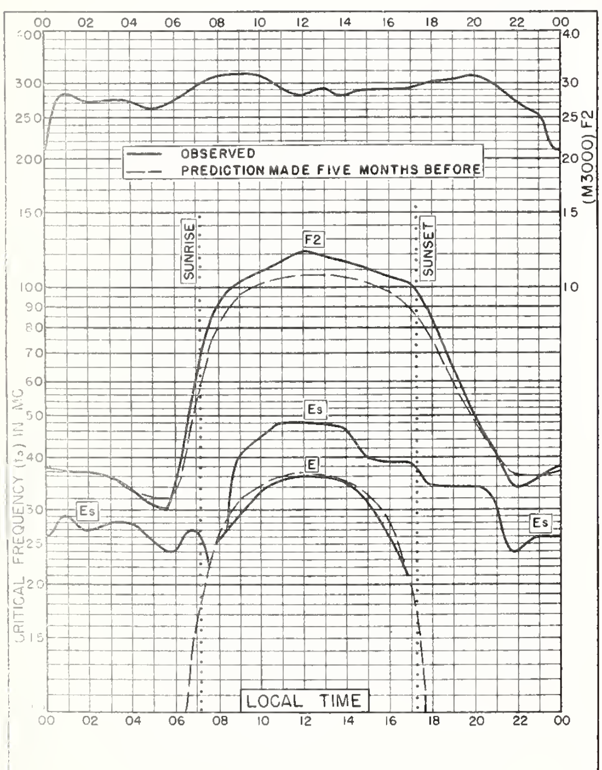

Fig. 7. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JANUARY 1949

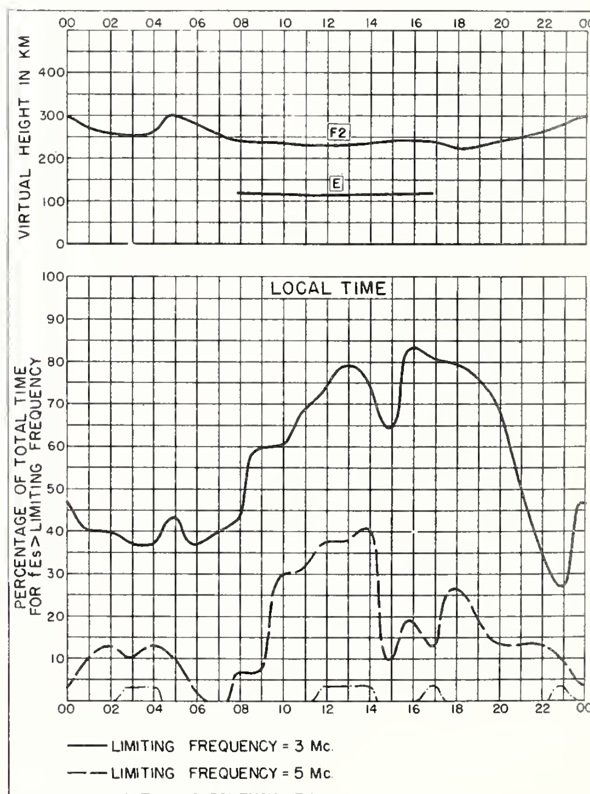

Fig. 8. WHITE SANDS, NEW MEXICO JANUARY 1949

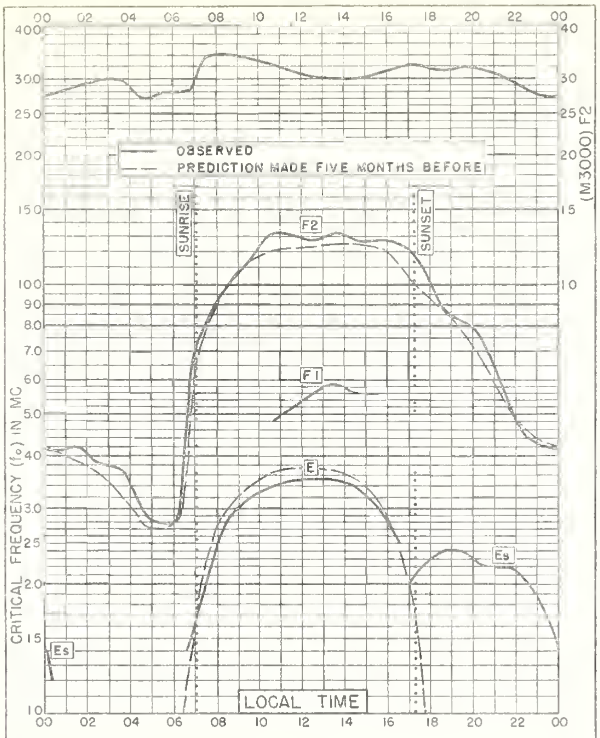

Fig. 9. WUCHANG, CHINA
30.6°N, 114.4°E JANUARY 1949

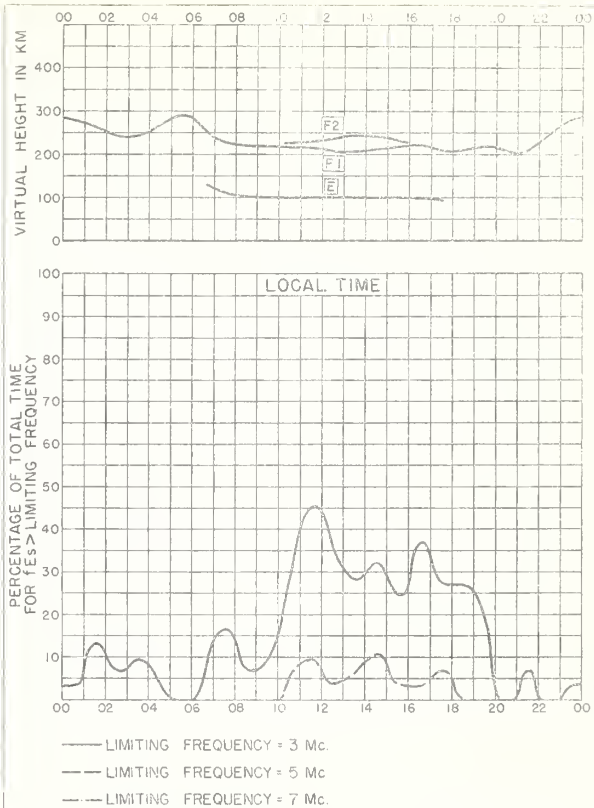

Fig. 10. WUCHANG, CHINA JANUARY 1949

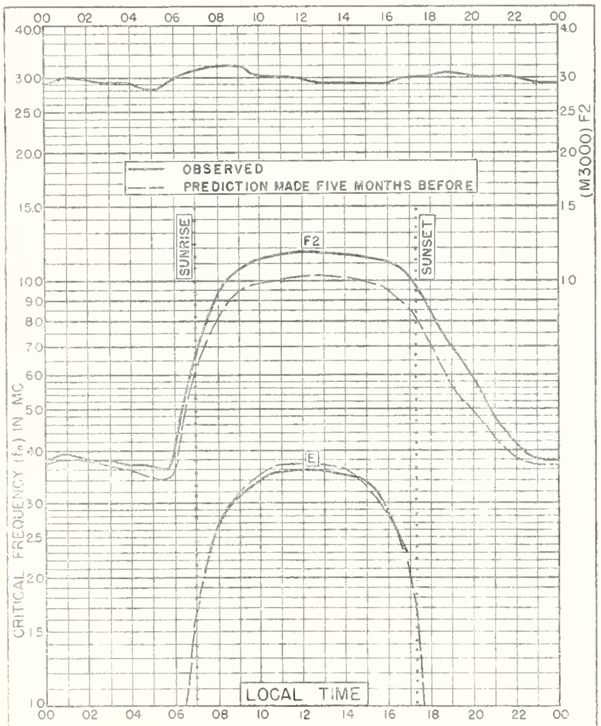

Fig 11 BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JANUARY 1949

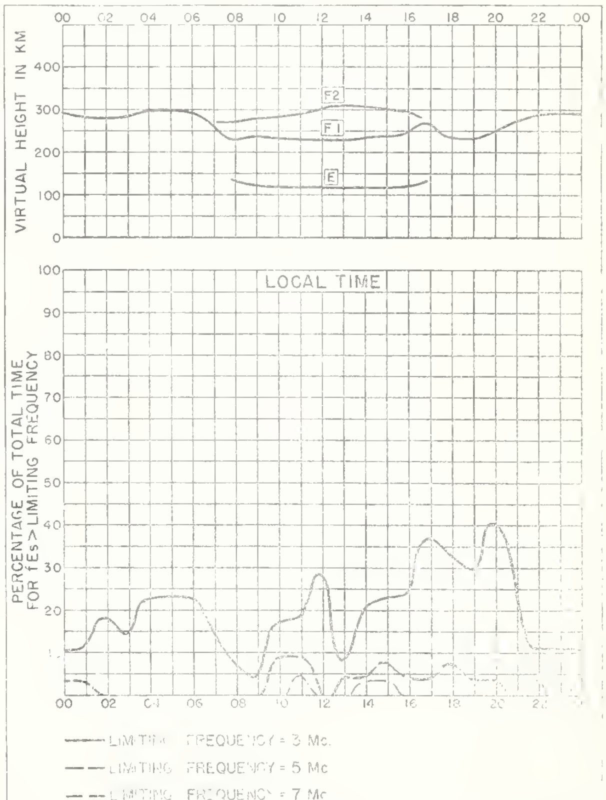

Fig. 12. BATON ROUGE, LOUISIANA JANUARY

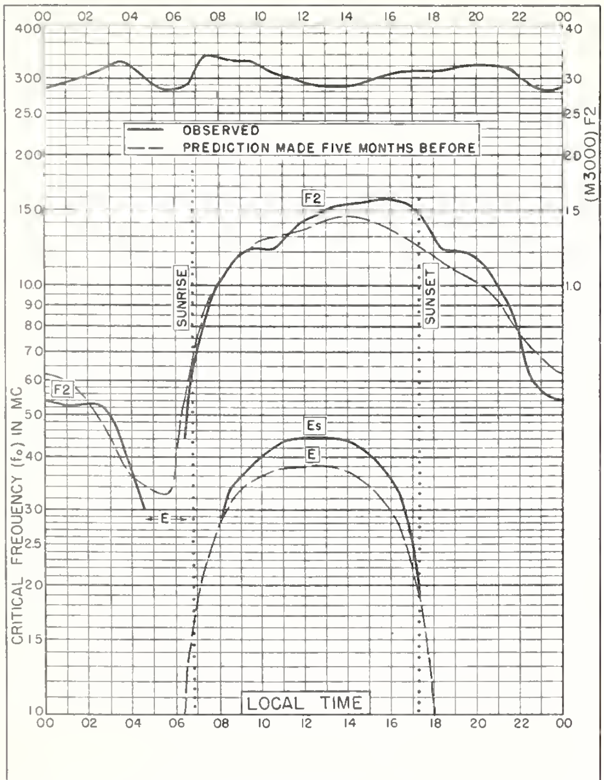

Fig. 13. OKINAWA I.
26.3°N, 127.7°E JANUARY 1949

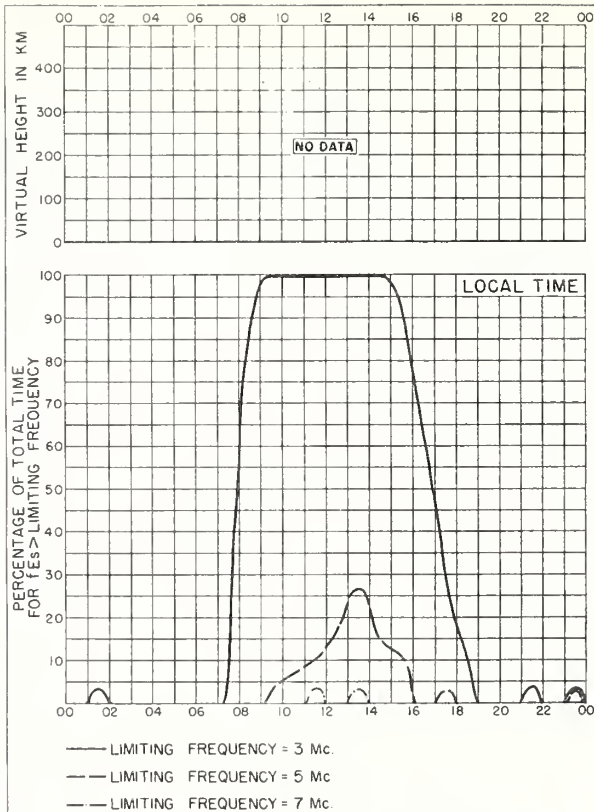

Fig. 14. OKINAWA I. JANUARY 1949

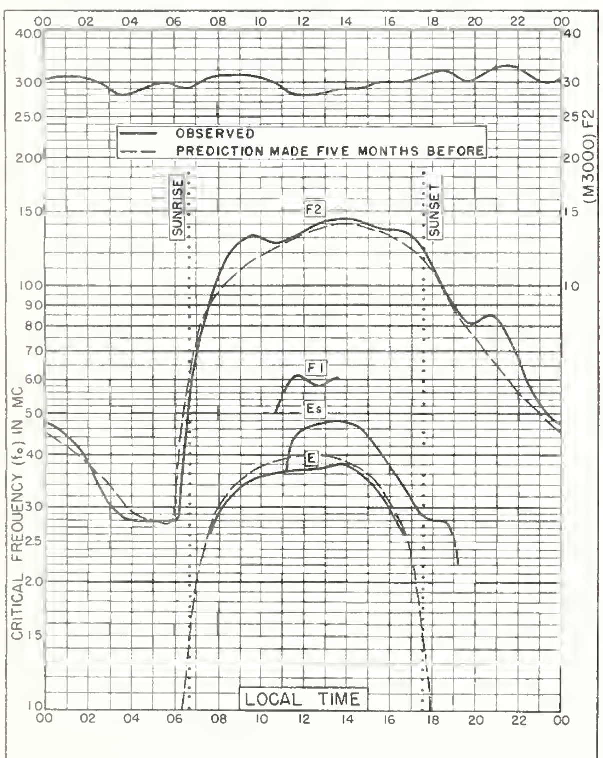

Fig. 15. MAUI, HAWAII
20.8°N, 156.5°W JANUARY 1949

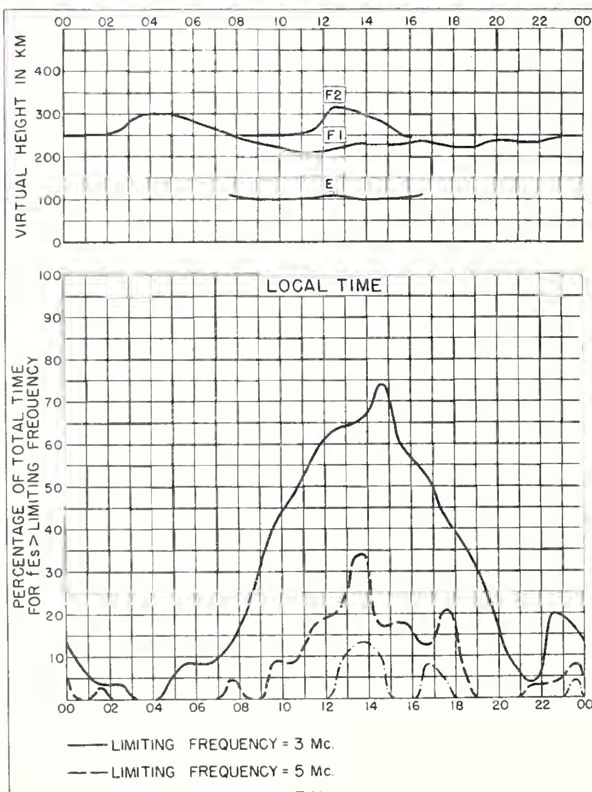

Fig. 16. MAUI, HAWAII JANUARY 1949

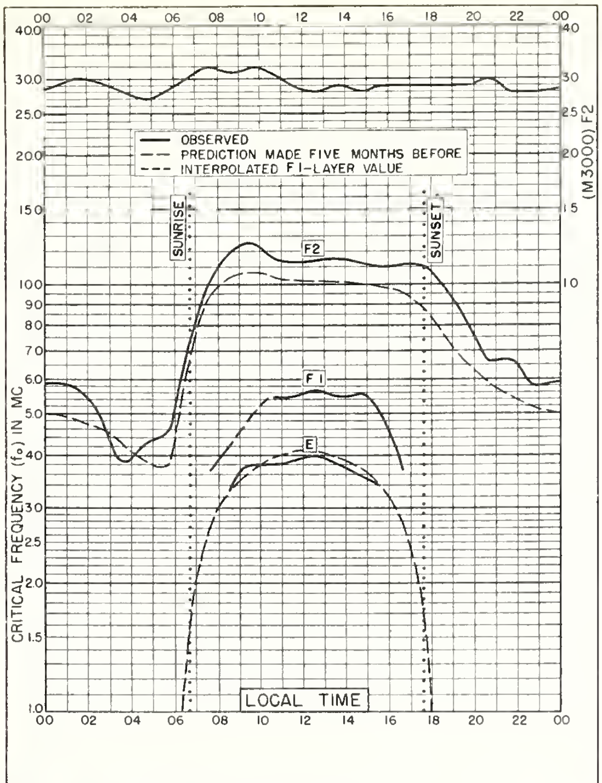

Fig. 17. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W JANUARY 1949

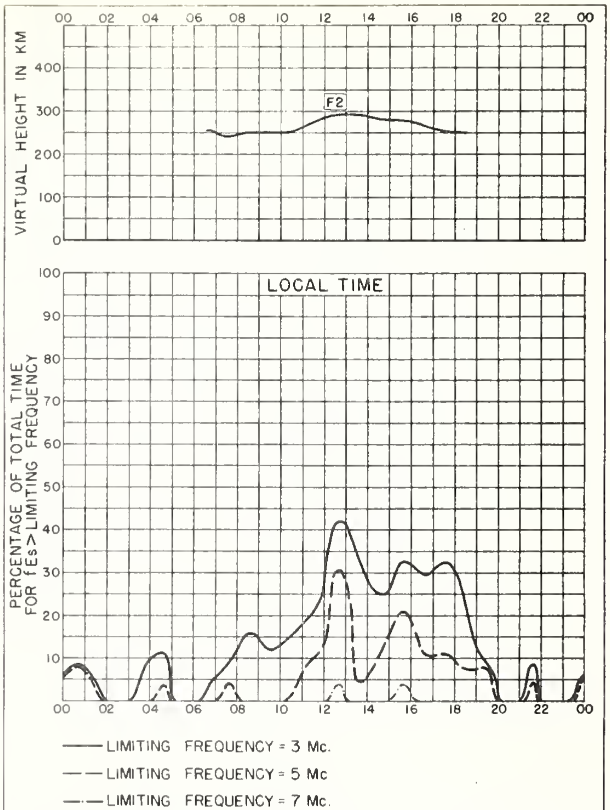

Fig. 18. SAN JUAN, PUERTO RICO JANUARY 1949

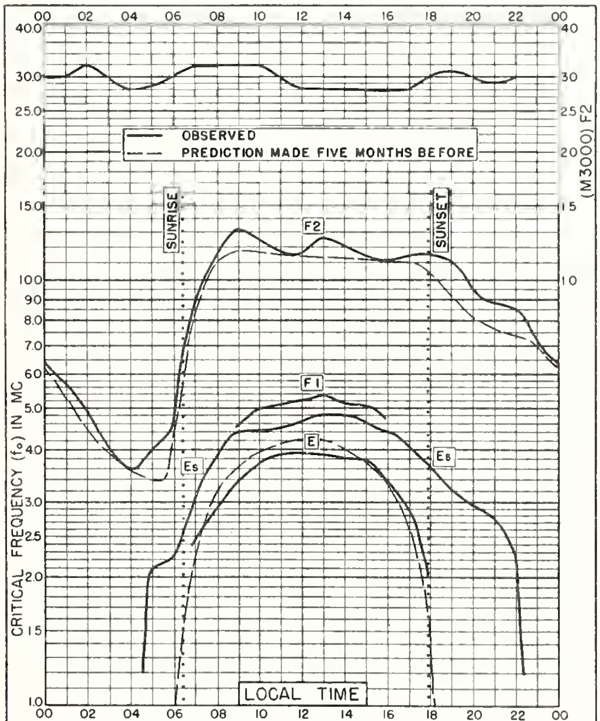

Fig. 19. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W JANUARY 1949

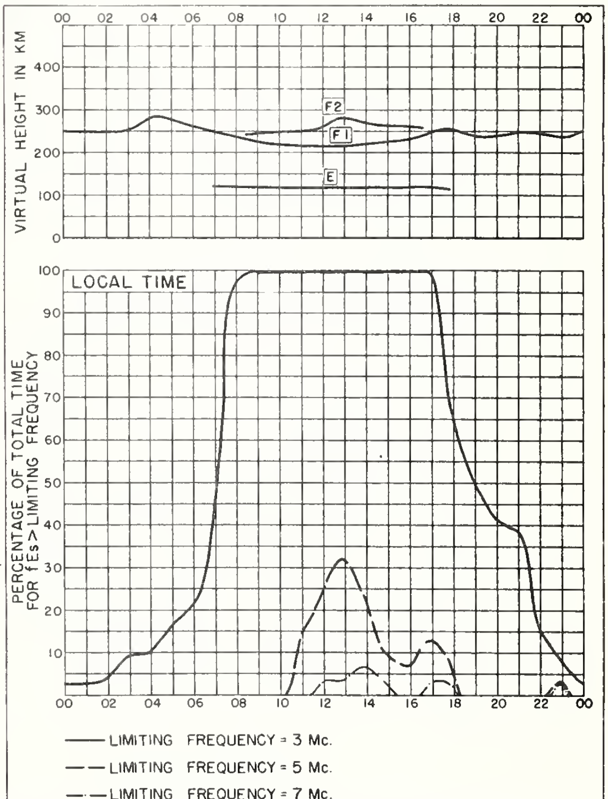

Fig. 20. TRINIDAD, BRIT. WEST INDIES JANUARY 1949

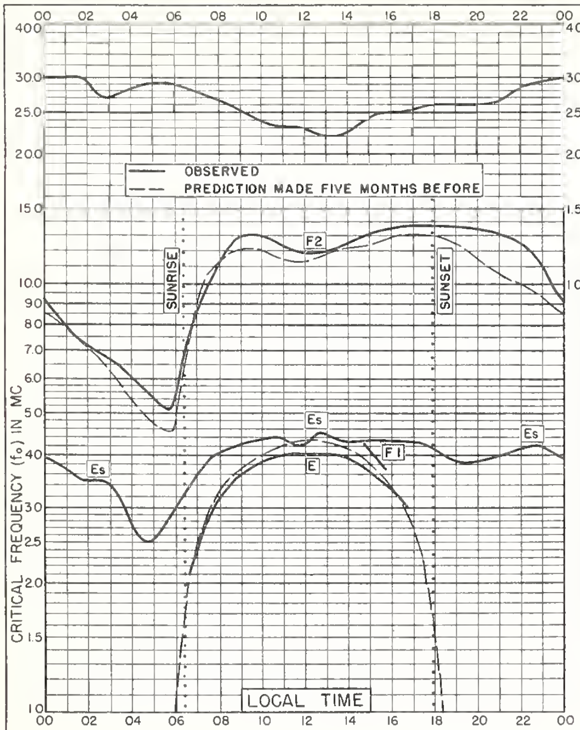

Fig. 21. PALMYRA I.
5.9°N, 162.1°W JANUARY 1949

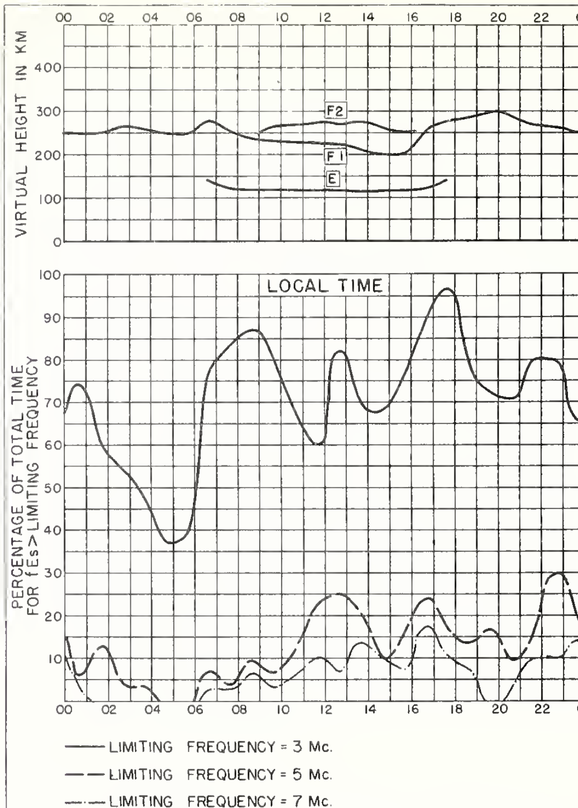

Fig. 22. PALMYRA I. JANUARY 1949

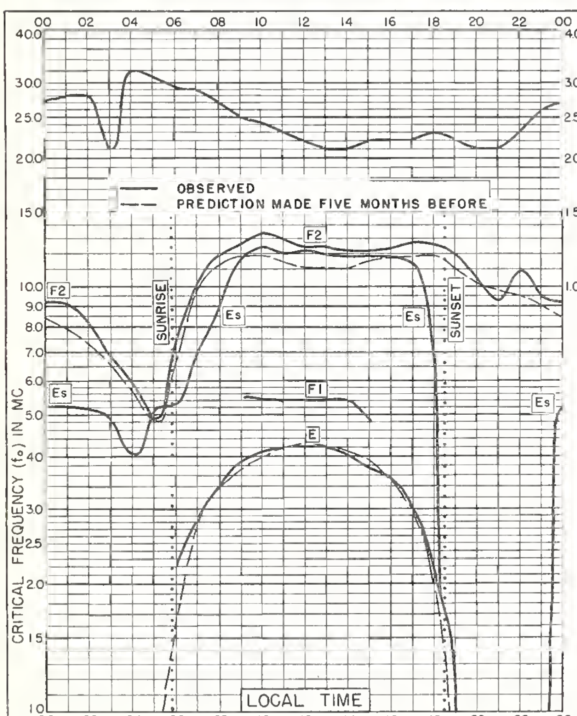

Fig. 23. HUANCAYO, PERU
12.0°S, 75.3°W JANUARY 1949

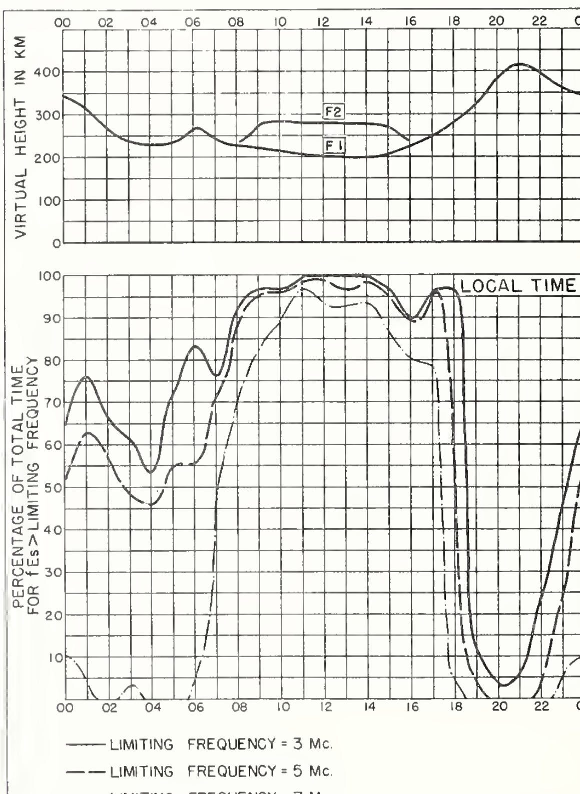

Fig. 24. HUANCAYO, PERU JANUARY 1949

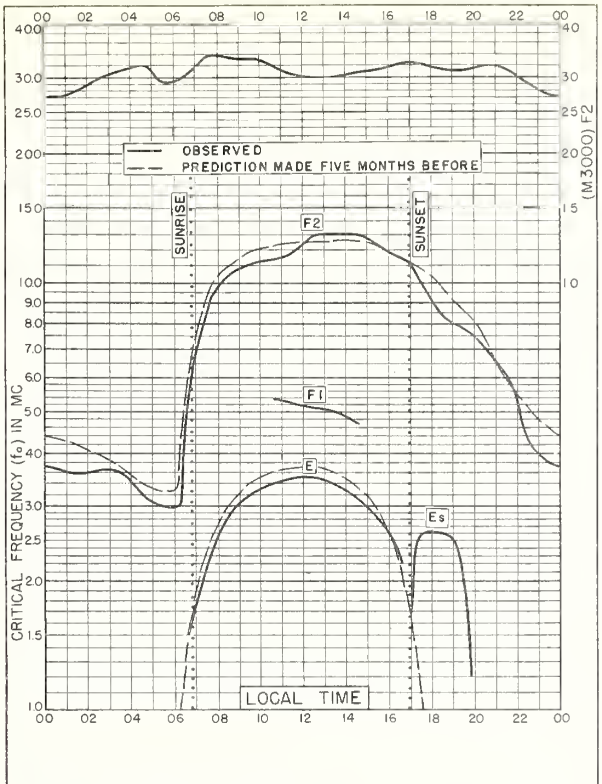

Fig. 25. WUCHANG, CHINA
30. 6°N, 114. 4°E DECEMBER 1948

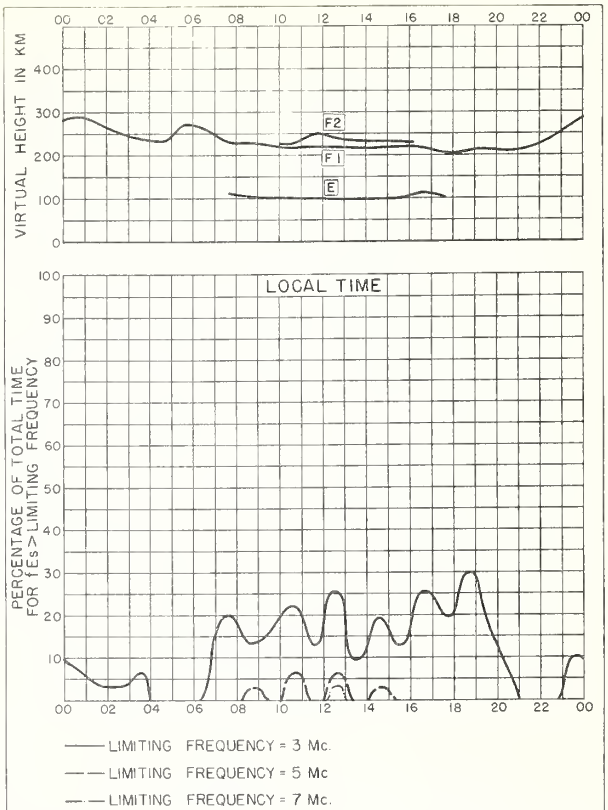

Fig. 26. WUCHANG, CHINA DECEMBER 1948

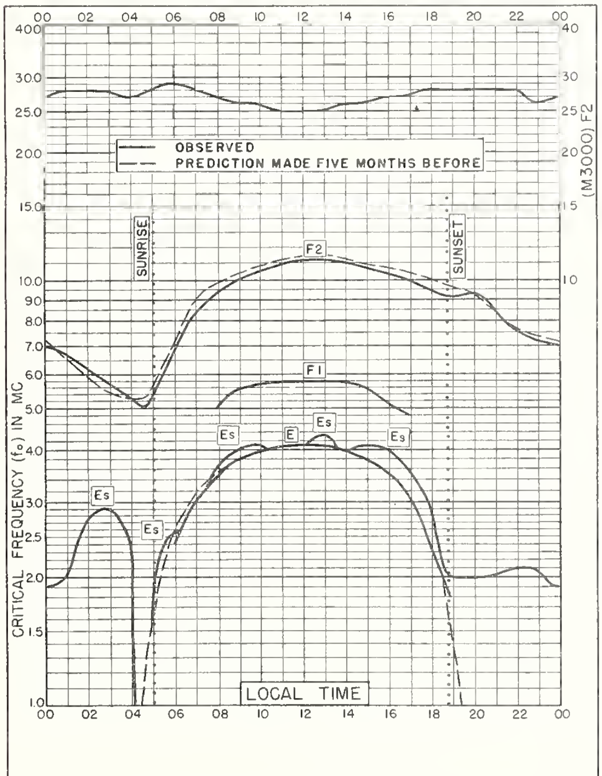

Fig. 27. JOHANNESBURG, U. OF S. AFRICA
26. 2°S, 28. 0°E DECEMBER 1948

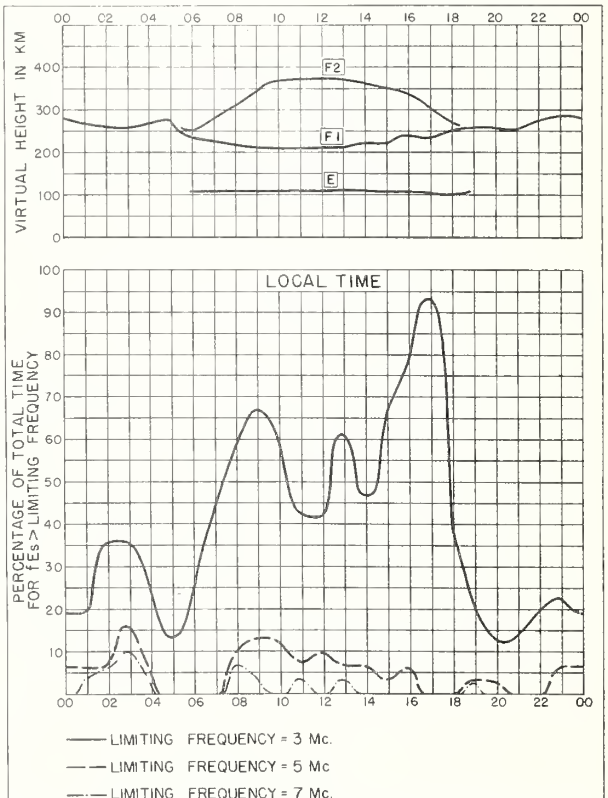

Fig. 28. JOHANNESBURG, U. OF S. AFRICA DECEMBER 1948

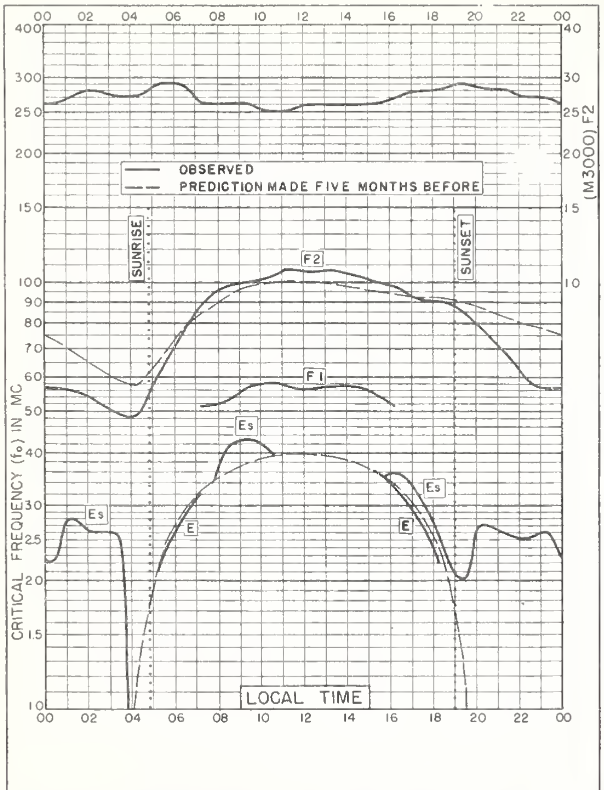

Fig. 29. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E DECEMBER 1948

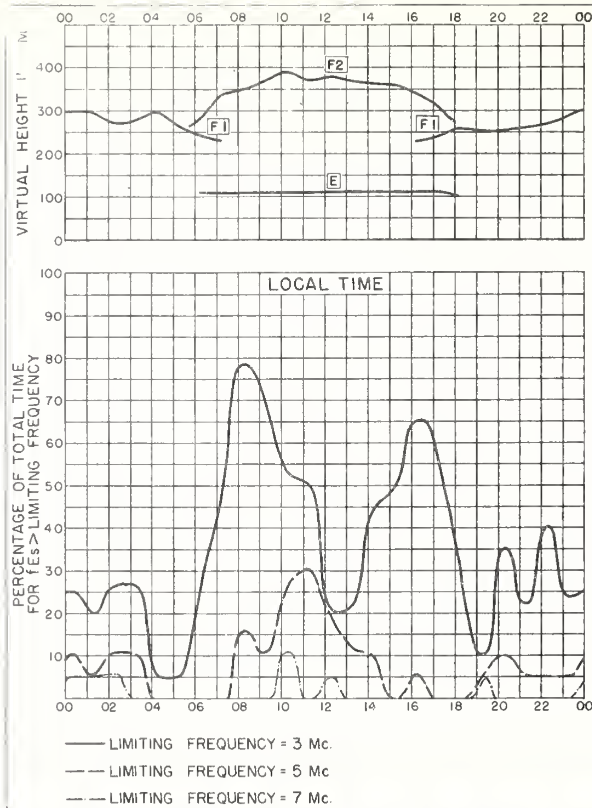

Fig. 30. CAPETOWN, U. OF S. AFRICA DECEMBER 1948

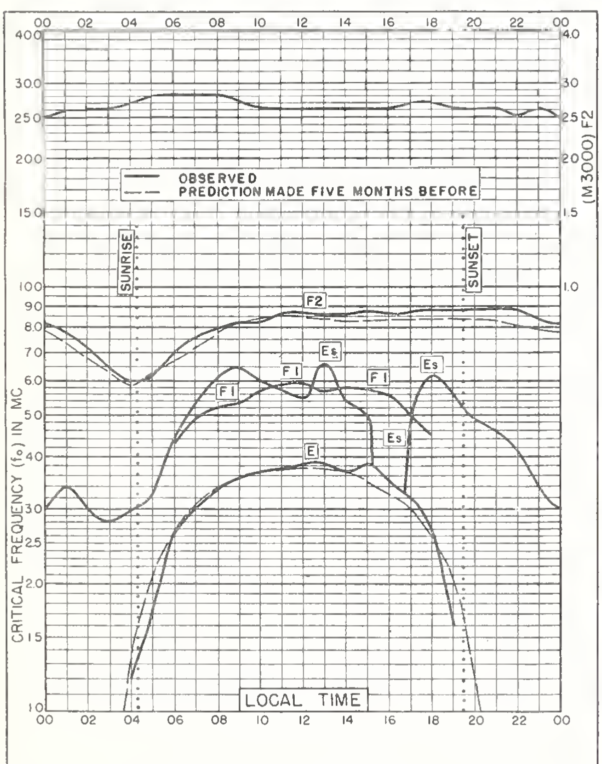

Fig. 31. CHRISTCHURCH, N. Z.
43.5°S, 172. 7°E DECEMBER 1948

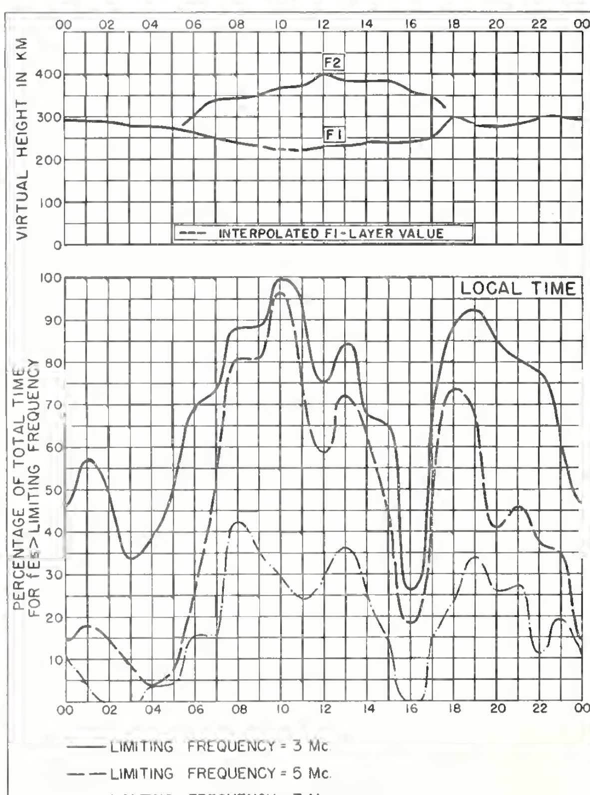

Fig. 32. CHRISTCHURCH, N. Z. DECEMBER 1948

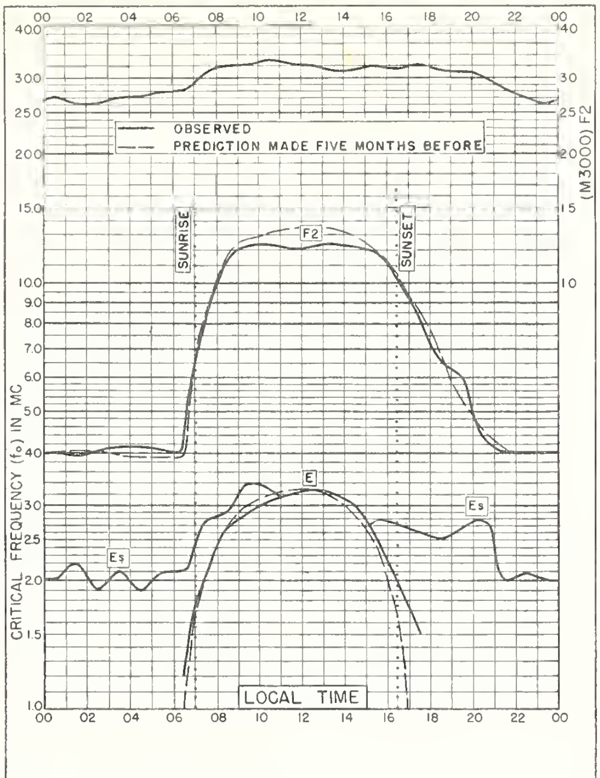

Fig. 33. WAKKANAI, JAPAN
45.4°N, 141.7°E NOVEMBER 1948

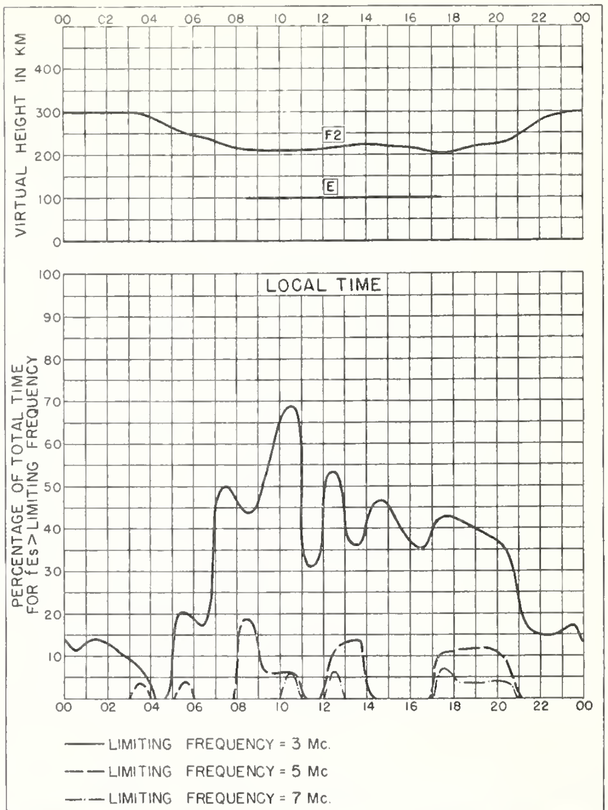

Fig. 34. WAKKANAI, JAPAN NOVEMBER 1948

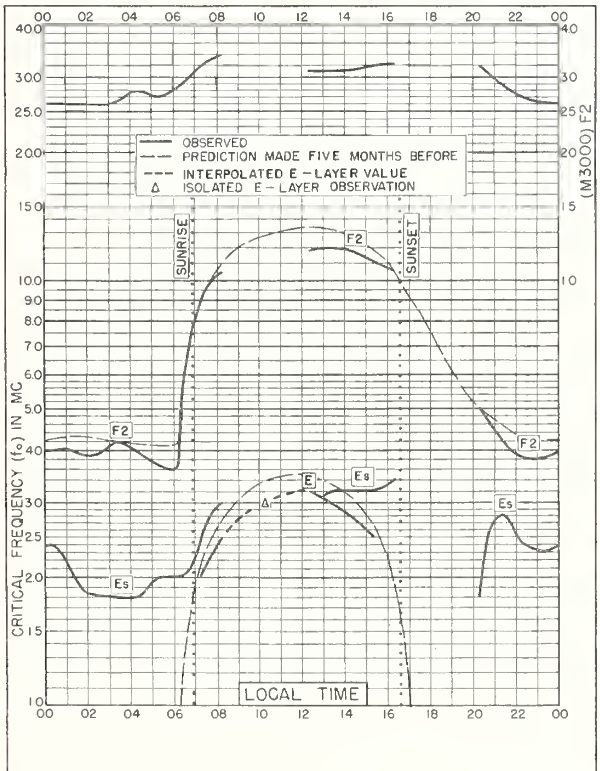

Fig. 35. FUKAURA, JAPAN
40.6°N, 139.9°E NOVEMBER 1948

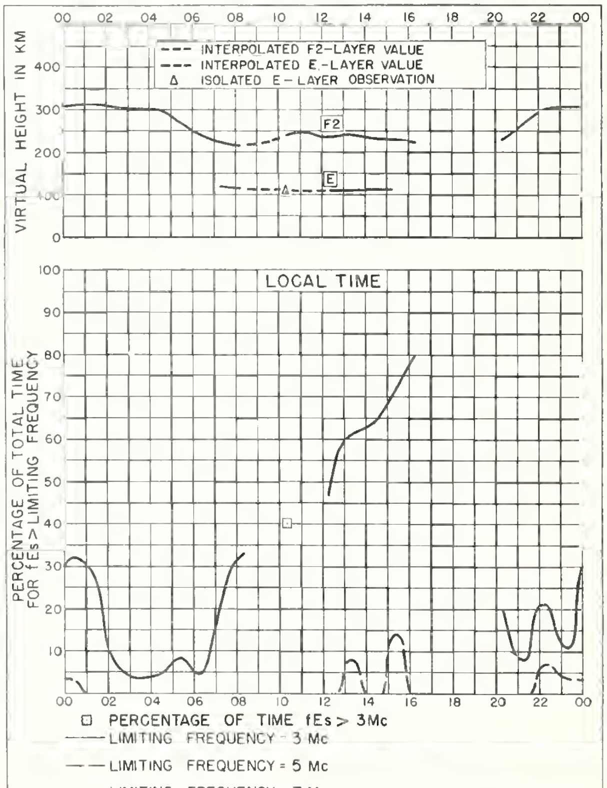

Fig. 36. FUKAURA, JAPAN NOVEMBER 1948

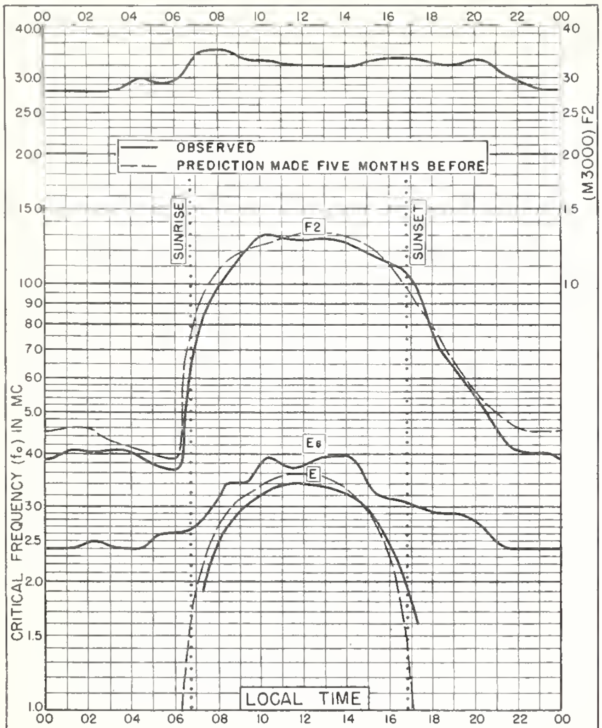

Fig. 37. SHIBATA, JAPAN
37.9°N, 139.3°E NOVEMBER 1948

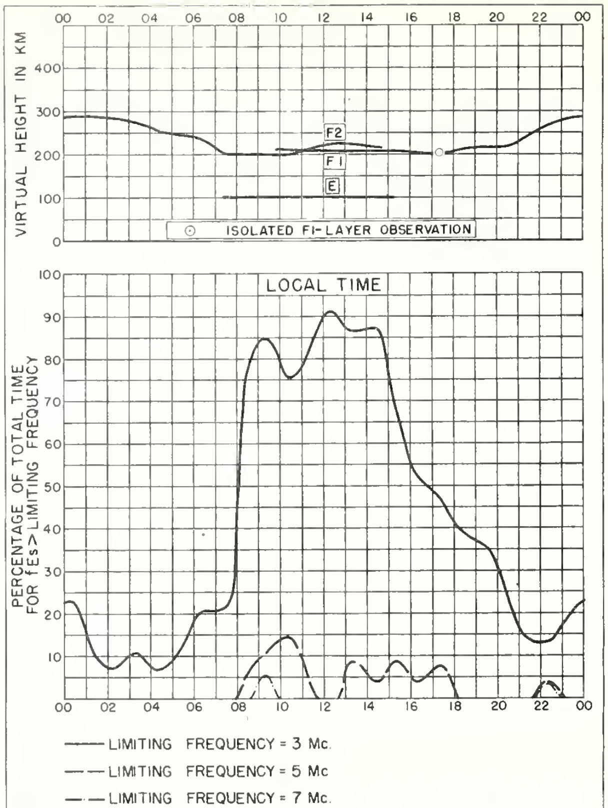

Fig. 38. SHIBATA, JAPAN NOVEMBER 1948

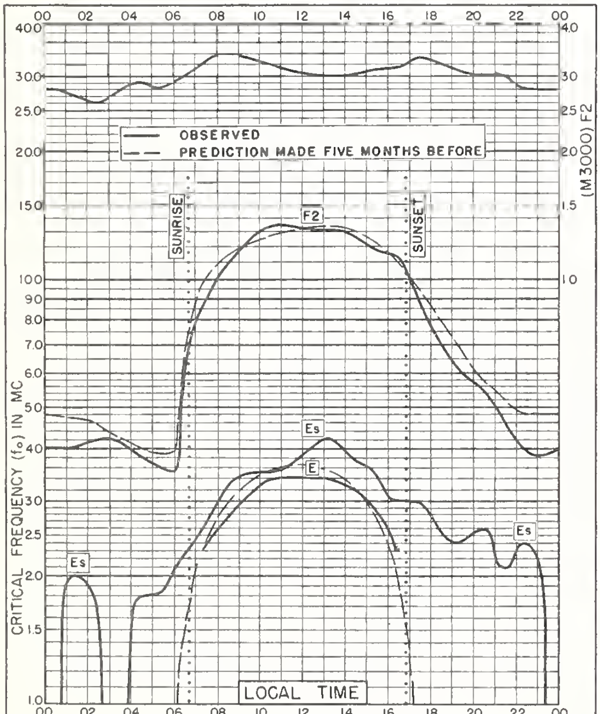

Fig. 39. TOKYO, JAPAN
35.7°N, 139.5°E NOVEMBER 1948

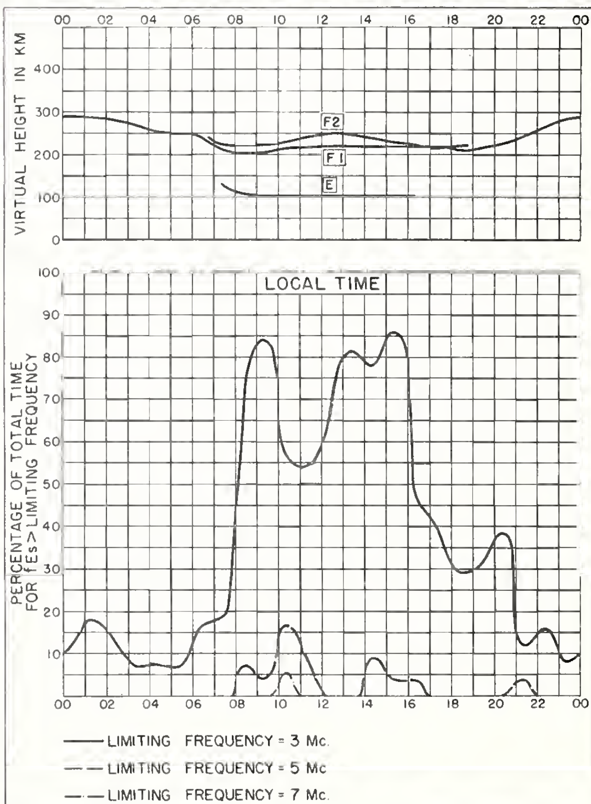

Fig. 40. TOKYO, JAPAN NOVEMBER 1948

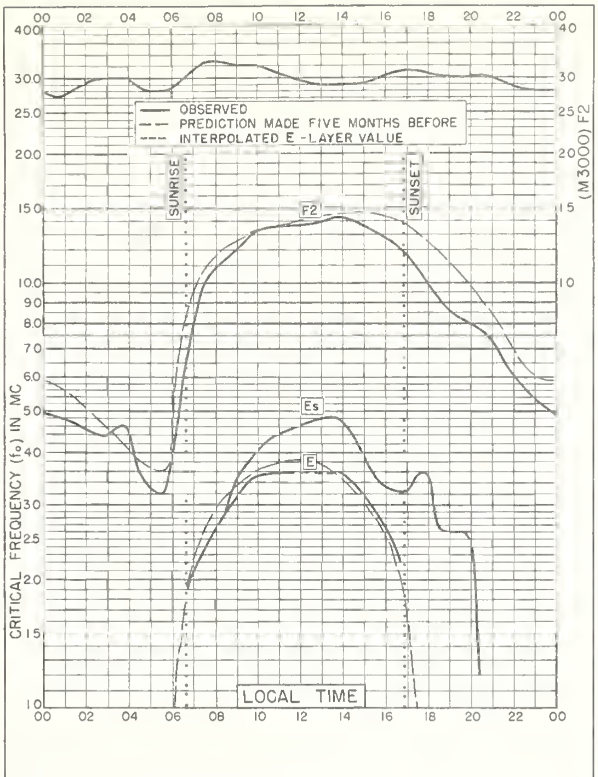

Fig. 41. YAMAKAWA, JAPAN
31.2°N, 130.6°E NOVEMBER 1948

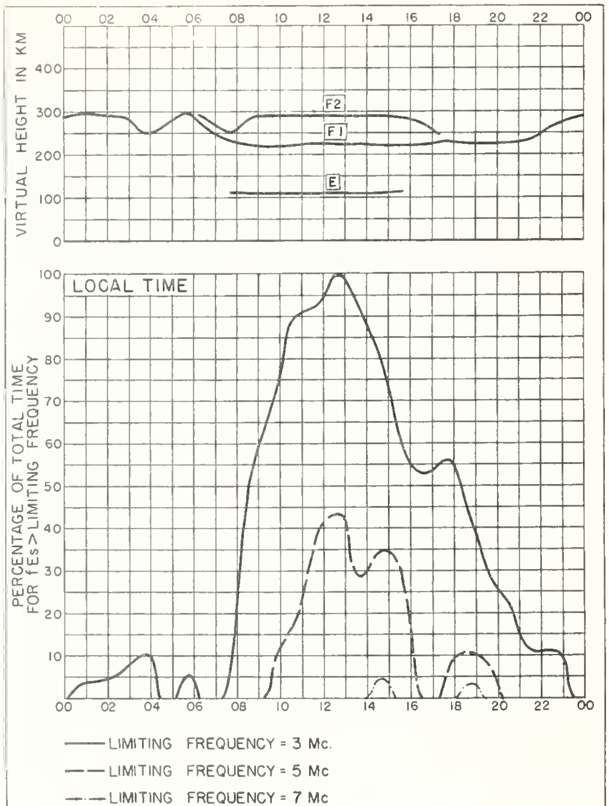

Fig. 42. YAMAKAWA, JAPAN NOVEMBER 1948

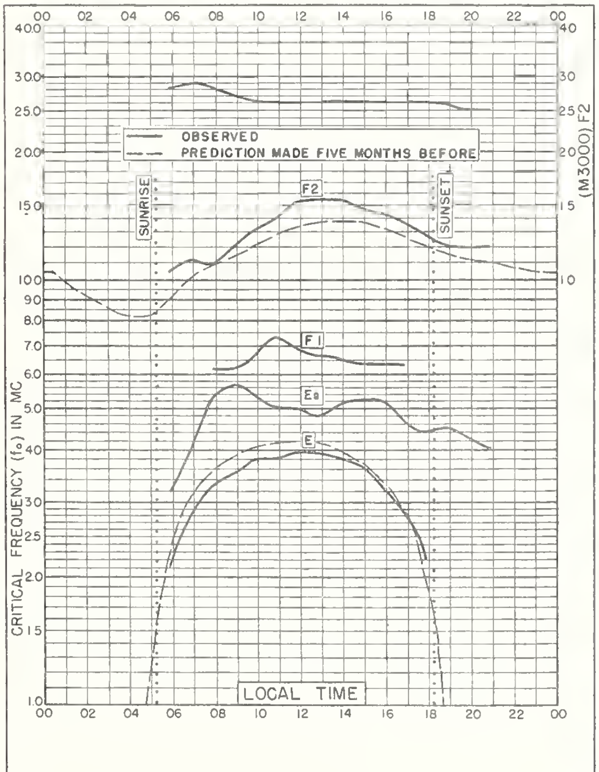

Fig. 43. RAROTONGA I.
21.3°S, 159.8°W NOVEMBER 1948

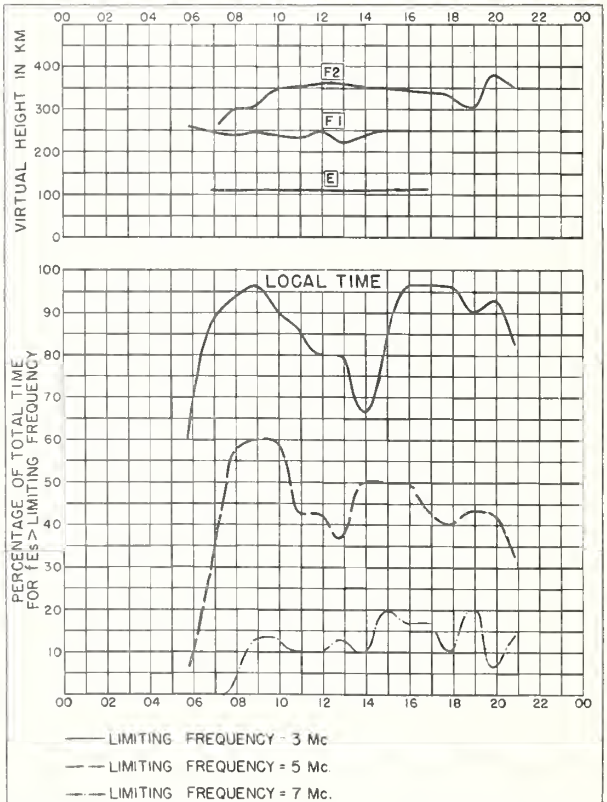

Fig. 44. RAROTONGA I. NOVEMBER 1948

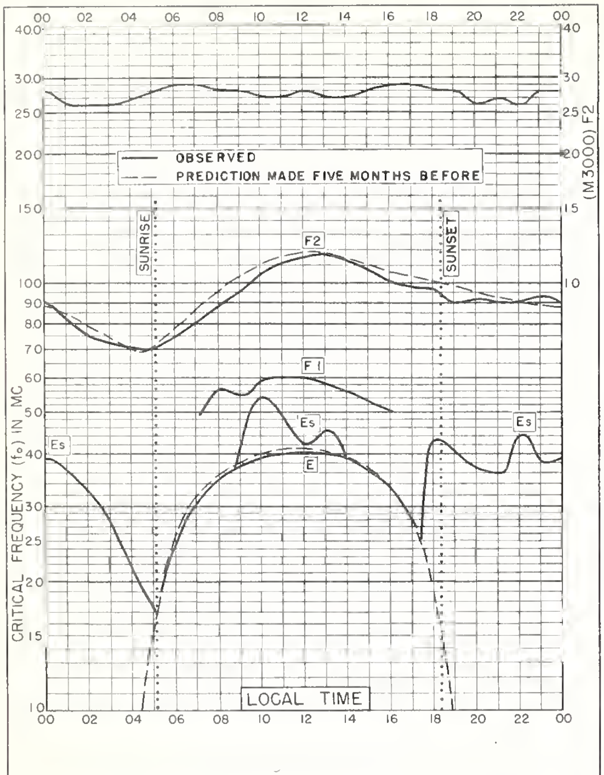

Fig. 45. BRISBANE, AUSTRALIA
27.5° S, 153. 0°E NOVEMBER 1948

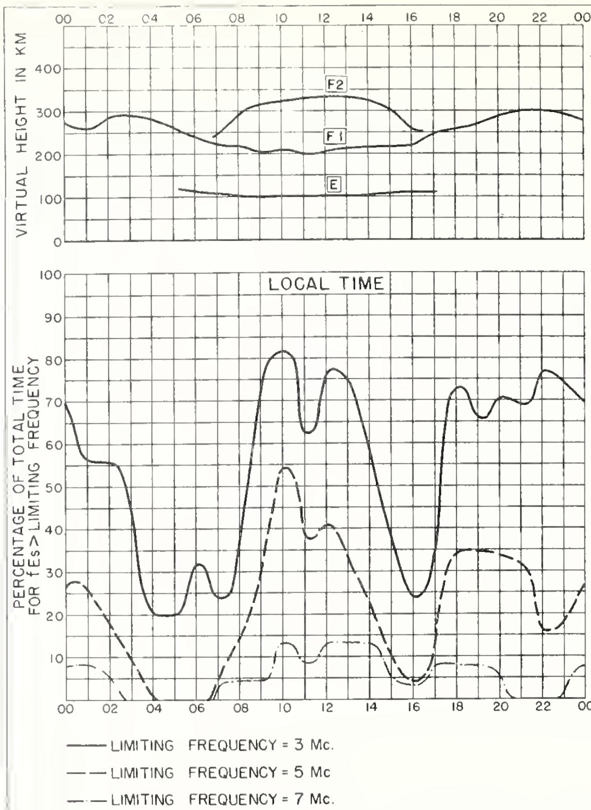

Fig. 46. BRISBANE, AUSTRALIA NOVEMBER 1948

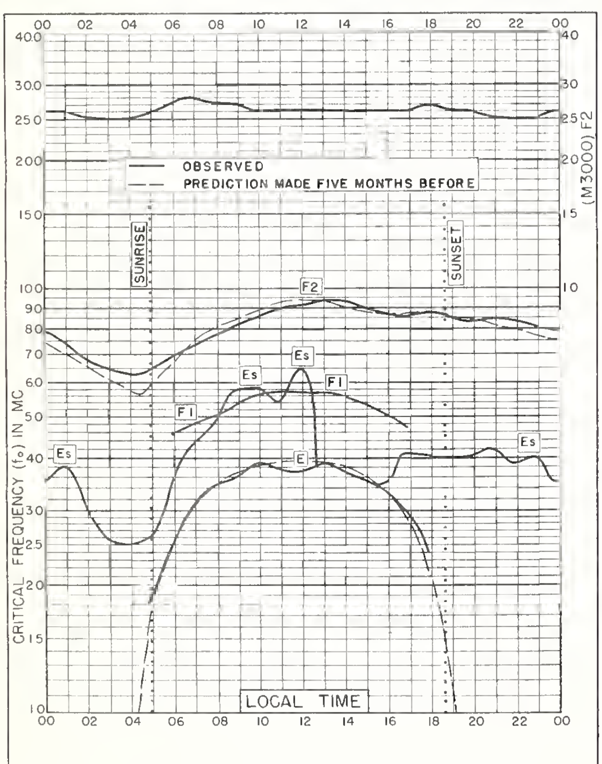

Fig. 47. CANBERRA, AUSTRALIA
35.3°S, 149.0°E NOVEMBER 1948

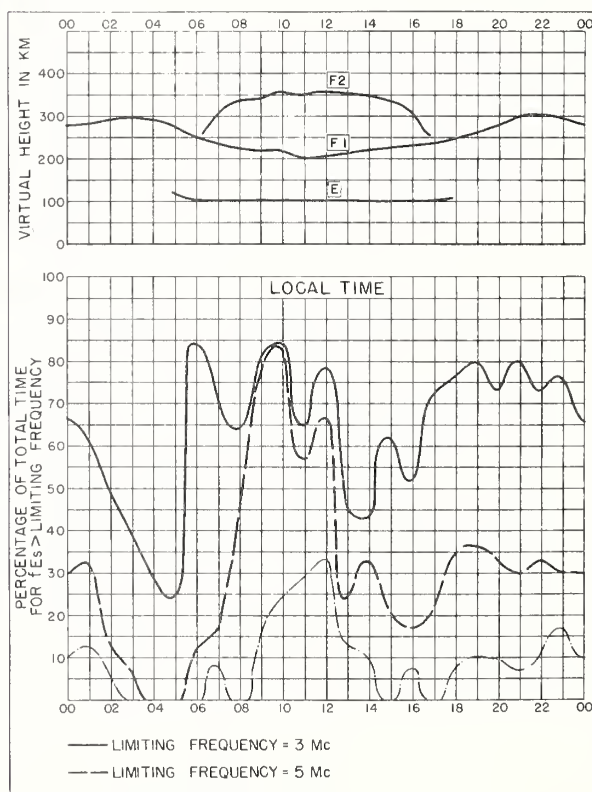

Fig. 48. CANBERRA, AUSTRALIA NOVEMBER 1948

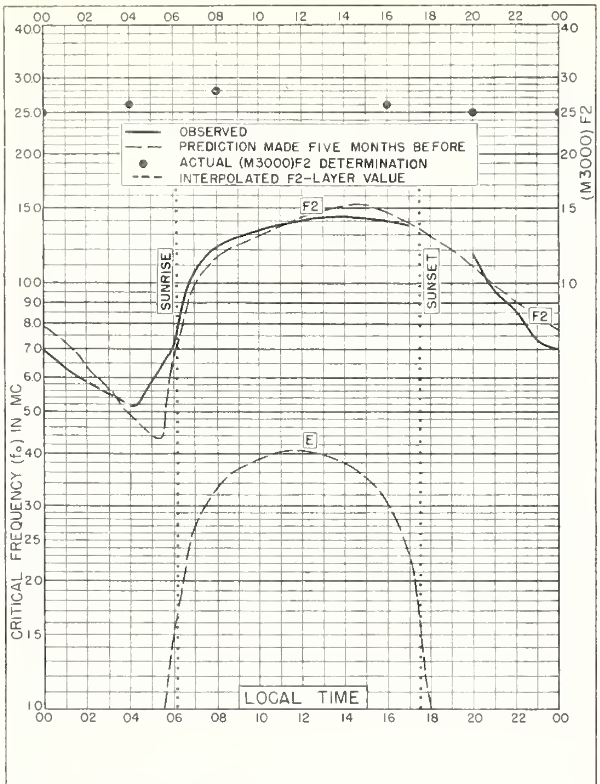

Fig. 49. DELHI, INDIA
28.6°N, 77.1°E OCTOBER 1948

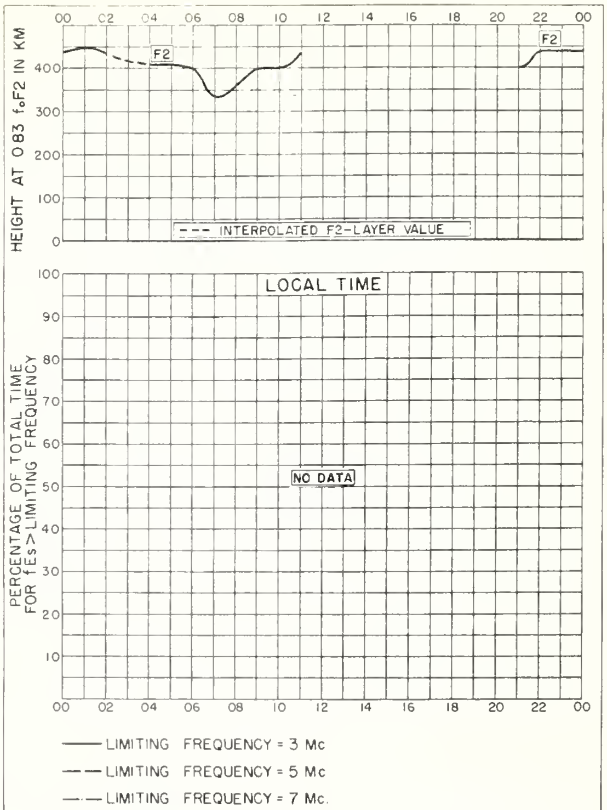

Fig. 50. DELHI, INDIA OCTOBER 1948

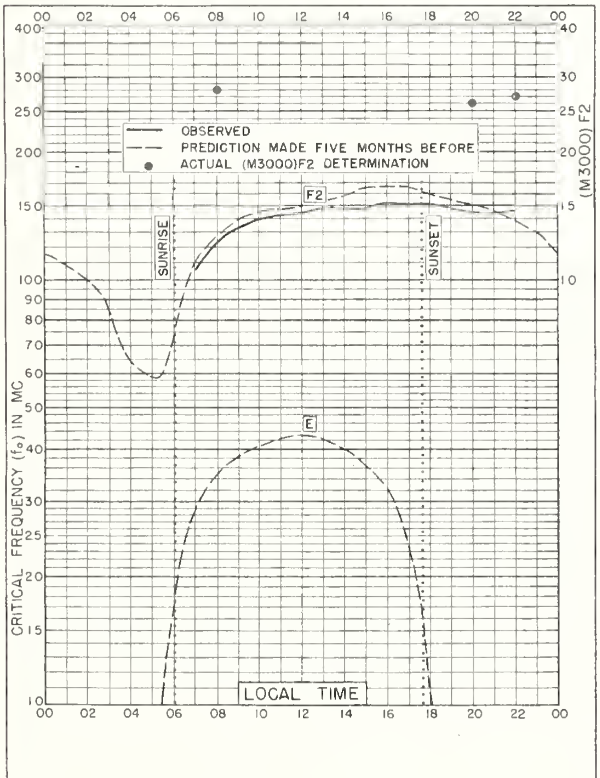

Fig. 51. BOMBAY, INDIA
19.0°N, 73.0°E OCTOBER 1948

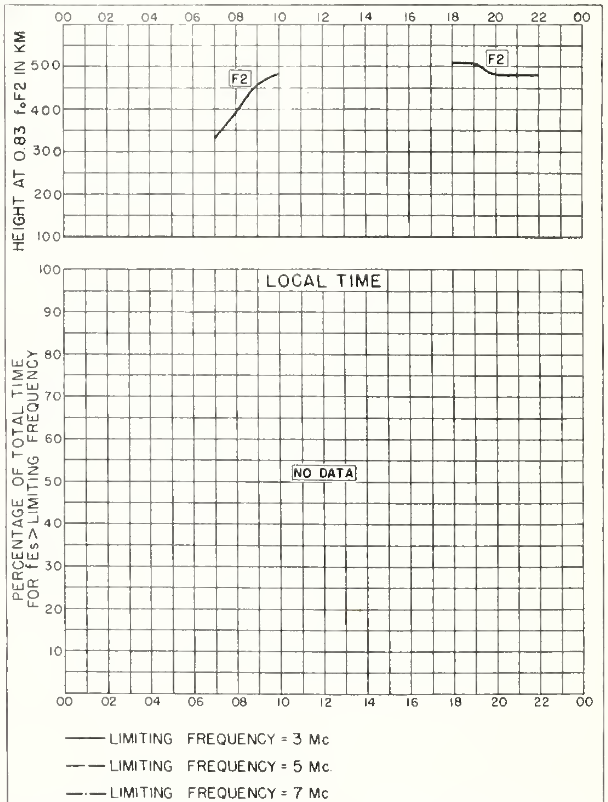

Fig. 52. BOMBAY, INDIA OCTOBER 1948

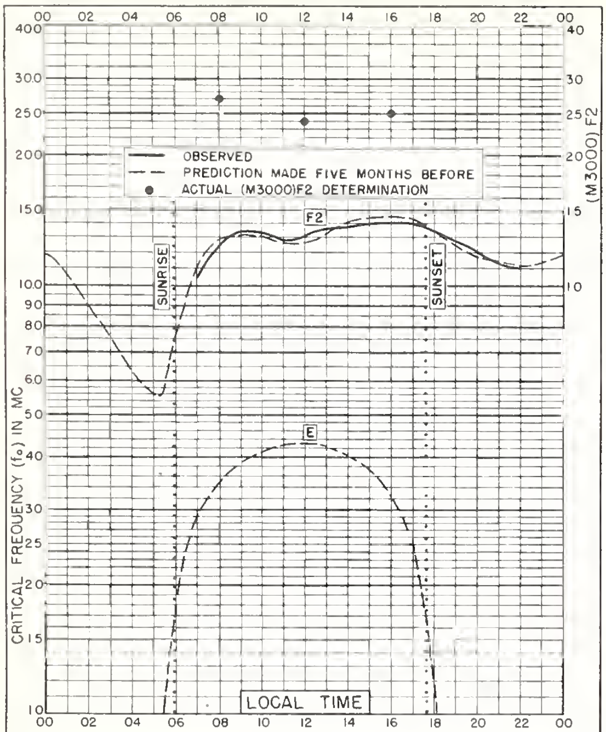

Fig. 53. MADRAS, INDIA
13.0°N, 80.2°E OCTOBER 1948

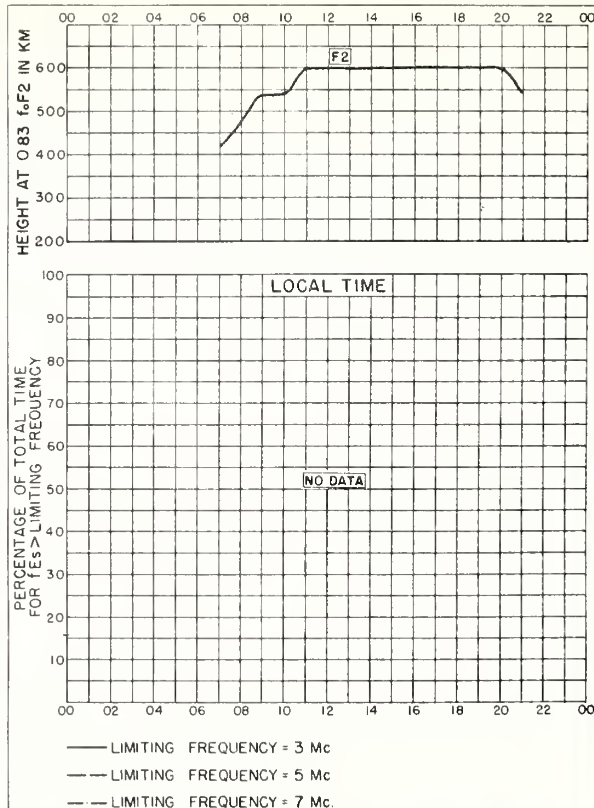

Fig. 54. MADRAS, INDIA OCTOBER 1948

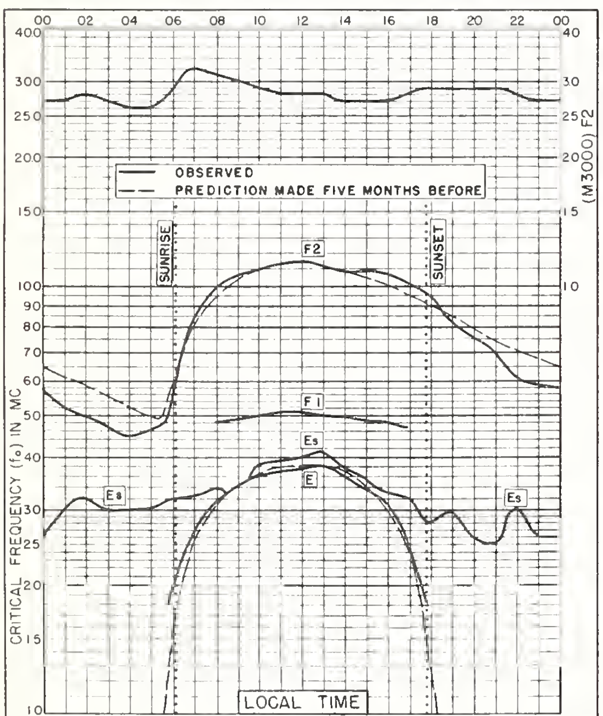

Fig. 55. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E SEPTEMBER 1948

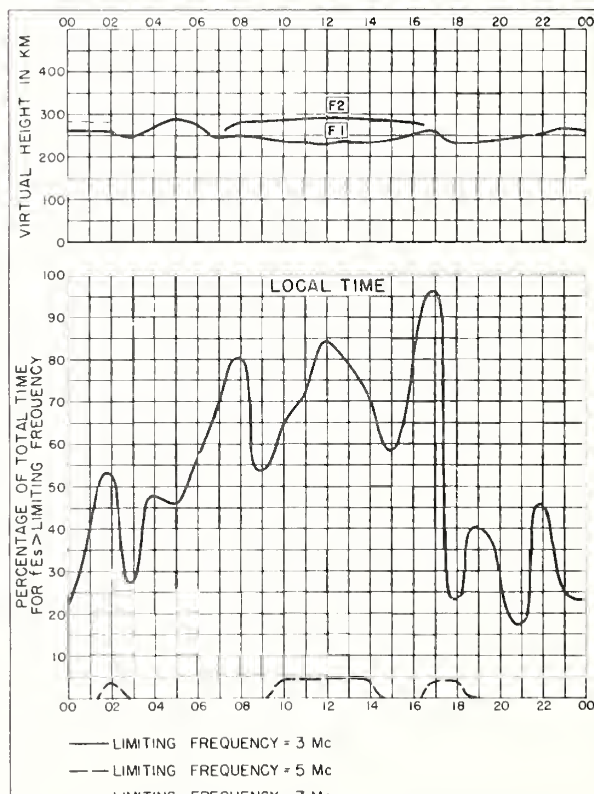

Fig. 56. WATHEROO, W. AUSTRALIA SEPTEMBER 1948

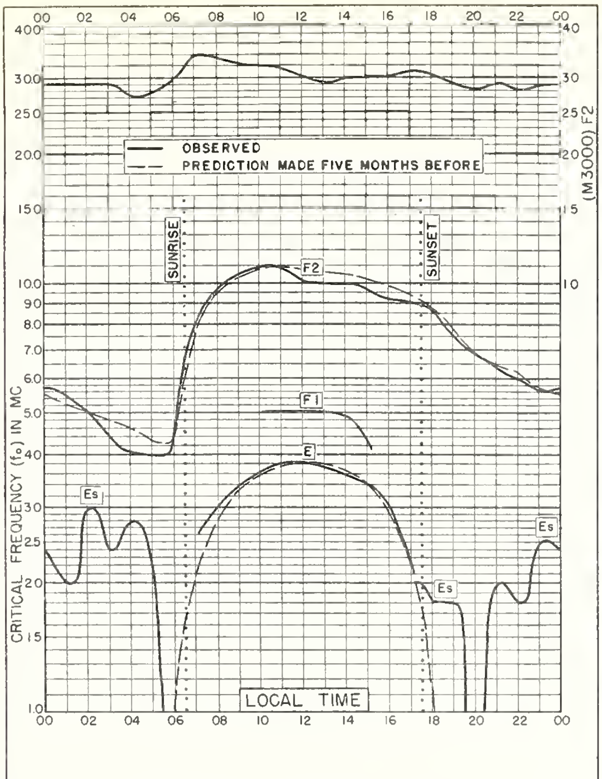

Fig. 57. BRISBANE, AUSTRALIA
27. 5°S, 153. 0°E AUGUST 1948

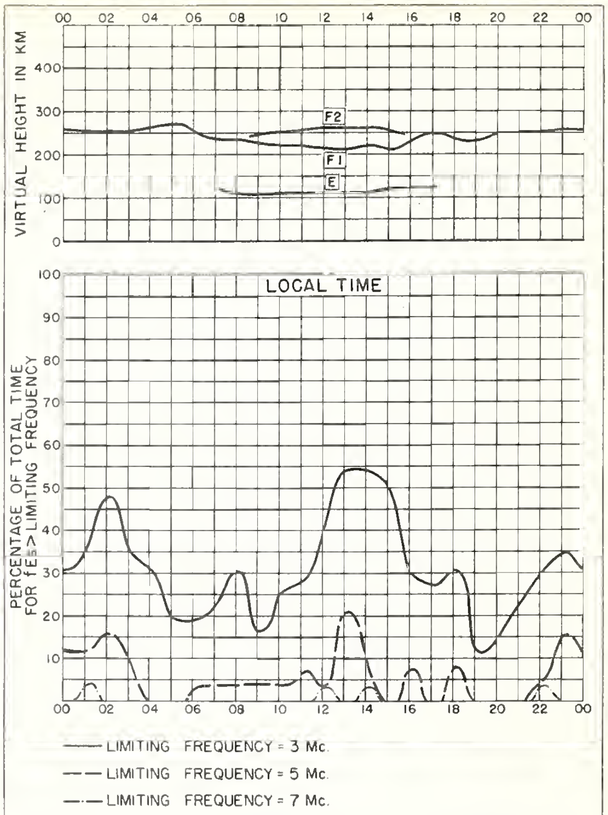

Fig 58. BRISBANE, AUSTRALIA AUGUST 1948

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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.

Nonscheduled reports:

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CRPL–1–2, 3–1. High Frequency Radio Propagation Charts for Sunspot Minimum and Sunspot Maximum.
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CRPL–1–4. Observations of the Solar Corona at Climax, 1944–46.
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CRPL–7–1. Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records.
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.
- R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
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