CRPL-F40

IONOSPHERIC DATA

ISSUED

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PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
National Bureau of Standards
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CRPL-F 40 CENTRAL RADIO PROPAGATION LABORATORY
NATIONAL BUREAU OF STANDARDS
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CONTENTS

The symbols and terminology used in this report are those adopted by the International Radio Propagation Conference, and given in detail on pages 24 to 26 of the report IRPL-C61, "Report of International Radio Propagation Conference," and in the section on "Terminology" in report IRPL-F5.

Beginning with IRPL-F14 the symbol L, defined as follows, is used in detailed tabulations of hourly values of ionosphere characteristics observed at Washington:

> L or l = critical frequency, muf, or muf factor for F1 layer omitted because no definite and abrupt change in slope of the h'f curve occurs either for the first reflection or for any of the multiples.

In the past, ionospheric conditions were summarized on a monthly basis by using average or mean values for each hour of the day for each month. However, following the recommendations of the International Radio Propagation Conference, held in Washington 17 April to 5 May 1944, beginning with data for 1 January 1945, median values were used by IRPL wherever possible. Thus, median values are given for Washington, for all stations reporting directly to the CRPL, for the Canadian stations, and for all others sending to the CRPL detailed tabulations from which medians can be computed.

Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The monthly median values used here are the values equaled or exceeded on half the days of the month at the given hour. The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in the report referred to above, IRPL-C61.

a. For all ionospheric characteristics:
   Values missing because of A, B, C, or F (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:
   Values of f^oF2 (and f^oE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted 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 f^oF2, as equal to or less than f^oF1.
   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 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 no Es reflections appeared, the equipment functioning normally otherwise, are counted as equal to or less than the median $f^{o}E$, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of hEs 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.

Beginning with CRPL-F33, an additional group of symbols is used in recording the Washington, D. C. data. The list of additional symbols and their meanings follows:

N - unable to make logical interpretation.
P - trace extrapolated to a critical frequency.
Q - the F1 layer not present as a distinct layer.
R - curve becomes incoherent near the F2 critical frequency.
S - no observation obtainable because of interference.
V - forked record (previously denoted by U. This change should also be made in CRPL-7-1).
Z - triple split near critical frequency.

For a more detailed explanation of the meaning and use of these symbols, see the report CRPL-7-1, Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 51 and figures 1 to 101 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:

Australian Council for Scientific and Industrial Research,
Radio Research Board:
- Brisbane, Australia
- Canberra, Australia
- Hobart, Tasmania
- Townsville, Australia

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

British Department of Scientific and Industrial Research,
Radio Research Board:
- Slough, England

Canadian Radio Wave Propagation Committee:
- Churchill, Canada
- Clyde, Baffin I.
- Ottawa, Canada
- Portage la Prairie, Canada
- Prince Rupert, Canada
- St. John's, Newfoundland

New Zealand Radio Research Committee:
- Campbell I.
- Christchurch, New Zealand (Canterbury University College Observatory)
- Fiji Is.
- Kermadec Is.
- Rarotonga I.

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

Scientific Research Institute of Terrestrial Magnetism, Moscow, U.S.S.R.:
- Alma Ata, U.S.S.R.
- Bay Tiksey, U.S.S.R.
- Bukhta Tikhaya, U.S.S.R.
- Chita, U.S.S.R.
- Leningrad, U.S.S.R.
- Moscow, U.S.S.R.
- Sverdlovsk, U.S.S.R.
- Tomsk, U.S.S.R.

United States Army Signal Corps:
Fukaura, Japan
Okinawa I.
Shibata, Japan
Tokyo, Japan
Wakkanai, Japan
Yamakawa, Japan

National Bureau of Standards (Central Radio Propagation Laboratory):
Adak, Alaska
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Fairbanks, Alaska (University of Alaska, College, Alaska)
Guam I.
Huancayo, Peru (Geophysical Institute of Huancayo)
Maui, Hawaii
Palmyra I.
San Francisco, California (Stanford University)
San Juan, Puerto Rico (University of Puerto Rico)
Trinidad, British West Indies
Washington, D. C.
White Sands, New Mexico
Wuchang, China (National Wuhan University)

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

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

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

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

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Bagneux, France

Philippine Republic, Department of National Defense:
Leyte, Philippine Is.

Norwegian Defense Research Establishment, Florida, Bergen, Norway:
Tromso, Norway

Beginning with CRPL-F26, publication of tables of so-called "provisional data" reported to the CRPL by telephone or telegraph was discontinued. The reason for this change in policy is that users of the data hitherto published in this form receive them through established channels sooner than through the F-series. Furthermore, having two sets of data, "provisional" and "final," for the same station for the same month leads to confusion.

It must be emphasized that no change has been made in the methods used for rapid reporting and exchange of data. The change has to do only with the printing of provisional data in the F-series.

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 these errors are due to:

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

b. Omission of values when $f^{o}F2$ is less than or equal to $f^{o}F1$, 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.

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

Month	Predicted Sunspot No.	Month	Predicted Sunspot No.
November 1947	124	November 1946	83
October 1947	119	October 1946	81
September 1947	121	September 1946	79
August 1947	122	August 1946	77
July 1947	116	July 1946	73
June 1947	112	June 1946	67
May 1947	109	May 1946	67
April 1947	107	April 1946	62
March 1947	105	March 1946	51
February 1947	90	February 1946	46
January 1947	88	January 1946	42
December 1946	85	December 1945	38

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

The data given in tables 52 to 63 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 "Terminology and Scaling Practices."

IONOSPHERE DISTURBANCES

Table 64 presents ionosphere character figures for Washington, D.C., during November 1947, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, magnetic K-figures, which are usually covariant with them.

Table 65 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 November 1947.

Table 66 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. from October 25 through November 22, 1947.

Table 67 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, October 1947, 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 for the North Atlantic are prepared from radio traffic and ionospheric data reported to the CRPL, in the manner described in detail in report IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued 1 February 1946.

The radio propagation quality figures for the North Pacific are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner similar to that of IRPL-R31. The master scale of IRPL-R31 was used to formulate conversion scales for the North Pacific reports. Beginning with CRPL-F23, issued July 1946, the North Pacific radio propagation quality figures reported are prepared from these revised conversion scales.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the

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

AMERICAN AND ZURICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 68 presents the daily median values of relative sunspot numbers as reported by American observers for November 1947. The reports are reduced, by appropriate constants, approximately to the Zürich scale of relative sunspot numbers. The monthly relative sunspot number is the mean of the daily median values listed in the table. In addition, table 68 lists the daily provisional Zürich sunspot numbers. The first issue in which these numbers appear is CRPL-F35.

ERRATUM IN CRPL-F39

Delete the phrase "Organized Under Joint U. S. Communications Board" from the heading on page 1.

INDEX OF IONOSPHERIC DATA PUBLISHED IN 1947 (CRPL-F29 THROUGH F40)

The following index of tables and graphs of ionospheric data published in the CRPL-F series in 1947 is divided into two parts. Part I is an index of data observed in 1946 and 1947. Part II is an index of data observed prior to 1946.

For the most part, both table and graph for the given station for a given month appear in the same issue. An underscore indicates the inclusion of a table only, which supersedes, or supplements, a previously published table. In these cases corrections to the graphs in preceding issues should be made for complete accuracy.

Attention is invited to page 11 of IRPL-F17 and page 9 of CRPL-F28 for a description of the reports containing ionospheric data published since April 1941 by IRPL and CRPL.

For corrections of errors in the tables and graphs the "Errata" section of subsequent issues should be consulted.

Index of Tables and Graphs of Ionospheric Data Observed in 1946 and 1947

and Published in 1947 (CRPL-F29 through F40)

	1946												1947											
	J	F	M	A	M	J	JY	A	S	O	N	D	J	F	M	A	M	J	JY	A	S	O	N	D
Adak, Alaska										29	29	30	31	32	33	34	35	36	37	38	39	40		
Alma Ata, U.S.S.R.		29	29	34	34	38	38	38	37	37														
Bagneux, France															36	36	38							
Baton Rouge, Louisiana											29	30	31	32	33	34	35	36	37	38	39	40		
Bombay, India								30	31	32	33	34	34	35	37	37	40	40						
Boston, Massachusetts											29	30	31	32	33	34	35	36	37	38	39	40		
Brisbane, Australia								29	29	31	33	33	34	34	35	36	37	38	40	40				
Bukhta Tikhaya, U.S.S.R.		29	29	34	34	38	38	38	37	37														
Burghsad, Scotland							29	30	29	29	30	32												
Calcutta, India							31			34	35	35												
Camobell I.										30	30	31	34	34	34									
Canberra, Australia								29				33	34	34	35	36	37	38	40	40				
Cape York, Australia								29	30	31														
Chita, U.S.S.R.	38	38	29	38	38	38	38	38	38															
Christchurch, New Zealand										32	32	31	33	34	35	36	37	37	38	39	40			
Chungking, China									30	31	31	31	33	33	34	35	36	36	37	39	40			
Churchill, Canada											30	31	33	33	34	35	35	36	38	38	39	40		
Clyde, Baffin I.									30	30	30	30	32	33	34	34	35	36	38	38	39	40		
Delhi, India								30	31	32	33	34	34	35	37	37	40	40						
Fairbanks, Alaska											29	30	31	32	33	34	35	36	37	38	39	40		
Falkland Is.							29	34	31															
Fiji Is.				31	31	31	31	37	37	37	37		37		37	37	39	39	39	40				
Fribourg, Germany							29	35	37															
Fukaura, Japan							35									35	36	38	38	40				
Guam I.															33	34	35	36	37	39	39			
Hobart, Tasmania								29	30	31	33	33	35	35	35	36	37	38	40	40				
Huancayo, Peru											31	33	33	38	38	38	38	38						
Johannesburg, Union of S. Africa										30	30	31	32	33	34	35	36	37	38	39	40			
Kermadec Is.	32	32	32	32	32	32	32	32	32	30	30	31	34	34	34									
Lanchow, China										36	36	36	36											
Leningrad (WETKAS), U.S.S.R.		29	29	34			38	38	37	37			33	34	34	36	36	38	39	40				
Leyte, Philippine Is.									29	30	31	37	37	37	37	37	37	38	38	39				
Loshan, China	29	29	29	29																				
Madras, India								30	31	32	33	34	34	35	37	37	40	40						
Manila, Philippine Is.																	36	37						
Maui, Hawaii										29	29	31	31	32	34	34	35	36	37	38	39	40		
Moscow, U.S.S.R. (Krasnaja Pakhra)	29	29	29	34	34	38	38	38	37	37														
Nanking, China																					40			
Okinawa I.									29	30	31	32	32	33	34	35				39	39			
Ottawa, Canada											29	30	31	32	33	34	35	36	37	38	39	40		
Palmyra I.												31	31	32	33	34	35	36	37	38	39	40		
Peiping, China									30	30	31	31	33	33	34	34	36	36	38	39	40			
Peshawar, India								30	31	32	33	34	34	35	37	37								
Portage la Prairie, Canada									29		30	30	31	33	34	34	35	36	37	38	39			
Prince Rupert, Canada											30	30	37	33	34	35	35	36	37	38	39			
Rarotonga I.			31	31						30	31	31	35	35	35	37		39	39					
St. John's, Newfoundland						32	32			29	30	31	32	33	34	35	36	38	38	38	39	40		
San Francisco, California											29	30	31	32	33	34	35	36	37	38	39	40		
San Juan, Puerto Rico															38	38	38	38	38					
Shibata, Japan											29	31	32	32	33	34	35	36	37	38	39	40		
Slough, England											30	32	38	33	34	35	36	38	38	40	40			
Sverdlovsk, U.S.S.R.	29	29	29	34	34	38	29	31	31	30	31	32	34	34	34	36	37	37	39	40				
Tokyo, Japan							38	38	37	37														
Tomsk, U.S.S.R.		29	29	34	34	38	38	38	37	37														
Townsville, Australia								29	30	31	33	33	35	35	36		37	38	40					
Trinidad, Brit. West Indies											29	30	31	32	33	34	35	36	37	38	39	40		
Tromso, Norway									29	31	32	32	33	33										
U.S.S. Canisteo													35											
Wakkanai, Japan															34	35	36	38	38	40	40			
Washington, D. C.												29	30	31	32	33	34	35	36	37	38	39	40	
Watheroo, Australia					29			31	31	33	33	33	33	38	38	38	40	40	40	40	40			
White Sands, New Mexico						29					29		31	32	33	34	35	36	37	38	39	40		
Wuchang, China								30	31	29	29	32	32	33	34	34	35	36	37	38	39	40		
Yamakawa, Japan												31	32	33	34	35	36	39	39	40	40			

Underscore indicates a table only.

PART II

Index of Tables and Graphs of Ionospheric Data Observed Prior to 1946 and Published in 1947 (CRPL-F29 through F40)

Station	Dates of data	F Issue
Burghead, Scotland	January 1943 through April 1943	38
Canberra, Australia	January 1941 through December 1941	31
	January 1942 through October 1943	30
Christchurch, New Zealand	July 1943 through September 1943	36
Churchill, Canada	August 1943 through October 1943	36
Clyde, Baffin I.	November 1943 and December 1943	39
Delhi, India	January 1943 through May 1943	32
Great Baddow, England	January 1943 through April 1943	39
Huancayo, Peru	July 1940 through March 1941	29
Kermadec Is.	November 1943 and December 1943	36
	December 1945 through September 1946	32
Ottawa, Canada	January 1943 through April 1943	35
	May 1943 through November 1943	36
Pitcairn I.	October 1944 through November 1945	32
San Juan, Puerto Rico	February 1941	29
	January 1942 through December 1942	39
	January 194[illegible] through April 1943	34
Sverdlovsk, U.S.S.R.	May 1944 and June 1944	32
Trinidad, Brit. W. Indies	May 1945	32
Watheroo, W. Australia	July 1940 through December 1941	30
	January 1942 through September 1943	29

ADDITIONS AND CORRECTIONS TO INDEX PUBLISHED IN CRPL-F28

Additions and corrections to Index of Ionospheric Data Since April 1941 published on pages 9 through 14 of CRPL-F28 are given in the two following tables.

In the majority of cases, both in the index in CRPL-F28 and in the following tables of additions and corrections, data for a given station for a given month are listed in the index of graphs only, the corresponding table being found in the same issue as the graph. However, exceptions to this rule make it advisable to consult both the index for the tables and the index for the graphs for complete information about a given station for a given month. In addition, the sections on errata in the various issues should be considered.

Additions to Index of Tables and Graphs of Ionospheric Data for 1944-1946 in CRPL-F28

Stations	1944			1945						1945										1946	
	J	F	MR	MR	J	JY	A	S	O	J	F	M	A	M	J	JY	A	S	O	N	D	S	N
	Tables			Tables						Graphs												Graphs	
Baton Rouge, Louisiana	*F	Mr	Ap										10	11		13	14	15					
Boston, Massachusetts														11	12	13	14	15					
Brisbane, Australia																15	15						
Burghead, Scotland										8	9	10	11	13	13								
Campbell I.										15		10											
Canberra, Australia																15	15						
Capetown, Union of S. Africa										8		11	11	13		14							
Cape York, Australia																15	15						
Christchurch, New Zealand											9	10			13	14	15	16					
Christmas I.										8		10		11		13	15	16					
Churchill, Canada	Mr	Ap								7	8	9	10	11	12	13	14	15					
Clyde, Baffin I.	F	Mr	Ap							10	10	13	13	13	13	15	15						
Colombo, Ceylon														13	13								
Delhi, India															16	16	16						
Fairbanks, Alaska										7	8	9	10	11	12	13	15	15					
Great Baddow, England										8	8	12	12	12	14	14	15						
Guam I.										7													
Huancayo, Peru	F									7	8	9	10	11	12		14		16				
Kermadec Is.											8												
Leningrad (LDRS), U.S.S.R.																15							
Leyte, Philippine Is.															14	14	15						
Maui, Hawaii										7	8	9	10	11	12	14	15	16					
Ottawa, Canada	Mr	Ap											10	11	12	13	14	15					
Pitcairn I.												10											
Prince Rupert, Canada															12	13	14	15				28	
Raotonga I.				9	12	13	14	15	16			8		10	11								
Reykjavik, Iceland										8	8	10	10	13	13	15							
St. John's, Newfoundland														11	13	13	14	15					
San Francisco, California	F	Mr	Ap							7			10	11	12	13	14	15					
San Juan, Puerto Rico	F	Mr																					
Sverdlovsk, U.S.S.R.																15				26	26		
Tomsk, U.S.S.R.																15							
Trinidad, Brit. W. Indies			Ap							8								15	16				
Washington, D. C.																							28
Watheroo, W. Australia										9	9	12	12	12	14	14	15	16					

*The F's in this column refer to the Feb 25, 1944 issue.

Substitutions and Deletions to be Made in the Index of Tables and Graphs of Ionospheric Data for 1943-1946 in CRPL-F28

Station	Data taken	Substitute		Delete
		In index of tables	In index of graphs	from index of tables
Alma Ata, U.S.S.R.	Oct. 1945			15
Bukhta Tikhaya, U.S.S.R.	Jan. 1946		26 for 27	
Burghead, Scotland	May and June 1943		July and Aug. issues for June and July issues	
Capetown, Union of S. Africa	Feb. 1946			20
Chungking, China	Oct. and Nov. 1945		27 for 17	
Guam I.	Dec. 1944		7 for 6	
Huancayo, Peru	Oct., Nov. and Dec. 1943			28
Kermadec Is.	Nov. 1944	5 for 4		
Leyte, Philippine Is.	Aug. 1946	28 for 27		
Leyte, Philippine Is.	Sept. 1946			28
Sverdlovsk, U.S.S.R.	Nov. and Dec. 1946		26 for 20	
Tomsk, U.S.S.R.	Aug. and Sept. 1945	15 and 20 for 20 and 15		
Trinidad, Brit. W. Indies	July 1945			15

Table 1

Washington, D. C. (39.0°N, 77.5°W) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	6.1						2.8
01	255	6.0						2.8
02	250	5.8						2.8
03	250	5.6						2.8
04	250	5.4						2.8
05	250	4.9						2.8
06	250	4.8						2.8
07	240	6.8			110	(1.9)		3.0
08	230	(10.1)			110	2.5		(3.3)
09	230	12.2	220		110	3.0		3.3
10	230	13.0	210		110	3.3		3.1
11	230	13.4	220		110	3.5		3.0
12	230	13.5	220		110	3.6		3.0
13	230	13.5	230		110	3.6		3.0
14	230	13.2			110	3.3		3.0
15	230	13.0			110	3.0		3.0
16	230	12.6			120	2.3		3.0
17	220	(11.8)			120			(3.0)
18	225	(10.5)						(3.1)
19	230	9.4						3.0
20	230	8.4						3.0
21	240	7.5						2.9
22	240	6.8						2.9
23	250	6.4						2.9

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

Table 2

Clyde, Baffin I. (70.5°N, 68.6°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	5.6						
01	300	5.5						
02	290	5.9						
03	315	5.1						
04	340	4.9						
05	320	4.8						
06	300	5.5						
07	300	6.2						
08	300	6.8						
09	280	7.6						
10	280	7.8						
11	330	7.1						
12	300	7.2						
13	300	7.3						
14	280	7.0						
15	280	7.2						
16	280	7.9						
17	280	7.8						
18	300	7.0						
19	300	6.2						
20	300	6.6						
21	300	6.8						
22	300	6.4						
23	300	5.8						

Time: 75.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute; 1.9 Mc to 13.0 Mc, manual operation.

Table 3

Fairbanks, Alaska (64.9°N, 147.8°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	336	4.8					5.6	2.5
01	375	4.7					5.8	2.4
02	382	4.7					5.6	2.4
03	362	5.0					5.6	2.4
04	345	5.0					5.3	2.4
05	330	5.1				1.1	5.0	2.6
06	305	5.3				1.6	3.2	2.6
07	278	5.8				2.0	3.0	2.7
08	268	7.5				2.3	2.4	2.8
09	260	7.7				2.5		2.8
10	250	8.2				2.8	2.9	2.7
11	270	7.8				2.8		2.8
12	260	8.3	255			2.8	3.0	2.7
13	260	9.3	275	4.4		2.6	2.9	2.7
14	260	9.4				2.5	2.9	2.6
15	265	9.9				2.2	2.8	2.7
16	250	10.0				2.0	3.0	2.7
17	250	10.3				1.6	3.0	2.8
18	255	7.9				1.6	3.0	2.8
19	250	7.5					3.9	2.8
20	260	6.5					5.3	2.8
21	280	5.4					5.0	2.8
22	300	5.2					5.6	2.6
23	310	4.9					5.8	2.6

Time: 150.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes.

Table 4

Churchill, Canada (58.8°N, 94.2°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	330	5.2					3.6	(2.6)
01	(330)	(5.6)					3.4	
02	340	4.6					3.2	(2.5)
03	340	3.4					2.6	2.6
04	365	3.2					2.5	
05	(320)	3.6					2.5	
06	345	5.0					2.4	(2.6)
07	(330)	7.1				2.2	2.6	(2.7)
08	290	8.9					2.6	2.8
09	280	10.0			140	3.0		(2.9)
10	285	10.8				3.0		2.8
11	290	10.4				3.2		2.6
12	300	10.6						2.7
13	290	11.4						2.8
14	290	12.2			140	2.9		2.6
15	290	11.8			140	2.7		2.6
16	295	11.1			E	2.4		2.7
17	295	10.2			E			2.7
18	320	6.4					2.6	2.7
19	335	6.9					3.2	(2.6)
20	335	6.6					3.2	(2.6)
21	330	6.1					3.4	(2.6)
22	340	(6.4)					3.4	(2.4)
23	340	(6.8)					4.4	

Time: 90.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.

Table 5

Adak, Alaska (51.9°N, 176.6°W) October 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	340	3.9						2.4
01	350	4.0						2.4
02	350	3.7						2.4
03	355	3.6						2.3
04	380	3.8						2.3
05	390	3.6						2.3
06	300	4.5						2.6
07	250	7.4			120	2.2		3.0
08	240	9.4			120	2.7		3.0
09	240	11.2	240	4.1	110	3.2		3.0
10	240	12.8	220	(4.4)	110	3.3	3.6	2.9
11	230	13.6	225	(4.5)	110	3.4	3.6	2.8
12	230	14.0	230	(4.5)	110	3.4		2.8
13	230	13.8	225	4.3	110	3.4		2.8
14	240	13.2			110	3.2		2.8
15	240	12.6			110	2.8		2.9
16	230	11.8			120	2.4		2.9
17	230	10.9			130	2.2		2.9
18	220	9.0						2.9
19	230	7.5						2.9
20	240	6.0						3.0
21	250	5.1						2.8
22	300	4.4						2.6
23	310	4.1						2.5

Time: 180.0°W.
Sweep: 1.2 Mc to 15.5 Mc in 12 minutes, manual operation.

Table 6

St. John's, Newfoundland (47.6°N, 52.7°W) October 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	260	3.6						2.6
01	250	4.0					1.5	2.6
02	255	3.6					1.3	2.6
03	250	3.5					1.6	2.6
04	250	3.4					1.6	2.6
05	250	3.8						2.6
06	240	5.4					1.7	3.0
07	220	7.6			100	1.9	1.9	3.2
08	215	10.0			100	2.6		3.3
09	210	11.3			100	3.0		3.3
10	210	(12.4)	210	5.6	100	3.2	3.3	3.2
11	210	(12.5)	210	5.6	100	3.4	3.3	3.2
12	210	12.7	210	6.4	100	3.4		3.1
13	220	(12.6)	220	6.2	100	3.4		3.0
14	220	13.3	210	6.4	100	3.3		3.1
15	220	13.2			100	3.0		3.1
16	220	12.3			95	2.5	2.6	3.2
17	220	11.6			95	2.1	2.1	3.2
18	210	11.3					1.7	3.2
19	220	9.4					1.7	3.0
20	220	8.4						3.0
21	230	7.6						2.8
22	250	5.8						2.7
23	250	3.8						2.6

Time: 52.5°W.
Sweep: 1.2 Mc to 20.0 Mc, manual operation.

Table 7

Ottawa, Canada (45.5°N, 75.8°W) October 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	290	4.5						2.8
01	300	4.8						2.8
02	300	4.5						2.7
03	310	4.0						2.8
04	300	4.5						2.8
05	295	4.5						2.8
06	280	4.9						2.8
07	250	7.5			115	2.2		2.9
08	240	8.6			120	2.5		2.9
09	230	10.4	230	4.5	110	3.1		2.8
10	230	11.6	220	5.0	110	3.3		2.8
11	240	12.5	220	4.7	110	3.4		2.7
12	240	12.8	220		110	3.5		2.7
13	240	12.9	225		110	3.5		2.6
14	240	12.6	225		110	3.3		2.6
15	240	12.8			110	3.0		2.7
16	240	12.6			110	2.6		2.7
17	245	12.3			120	2.4		2.7
18	240	11.4						2.7
19	250	9.6						2.7
20	250	8.8						2.7
21	270	7.4						2.8
22	260	7.2						2.7
23	280	5.8						2.8

Time: 75.0°W.
Sweep: 1.7 Mc to 18.0 Mc, manual operation.

Table 8

Boston, Massachusetts (42.4°N, 71.2°W) October 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	305	7.0						2.6
01	300	6.8						2.6
02	280	6.7						2.8
03	270	6.2						2.8
04	280	6.0						2.6
05	280	5.8			120	1.4		2.7
06	300	8.4			115	2.0		2.8
07	260	9.0			115	2.6		3.0
08	250	10.0						3.0
09	250	11.0						2.9
10	250	11.5						2.8
11	250	12.0						2.8
12	250	12.5						2.8
13	250	11.8						2.8
14	250	11.5						2.8
15	250	10.8						2.8
16	250	11.0						2.8
17	260	10.4						2.8
18	265	10.0						2.8
19	270	9.6						2.7
20	280	9.0						2.7
21	290	8.2						2.7
22	300	7.7						2.7
23	300	7.4						2.6

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

Table 9

San Francisco, California (37.4°N, 122.2°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	5.0						2.5
01	300	4.9						2.5
02	300	4.8						2.4
03	300	4.9						2.4
04	300	4.8						2.4
05	300	4.6						2.5
06	280	5.4						2.5
07	240	8.0			120	2.4		3.0
08	230	10.5			110	2.9		3.2
09	220	11.5	240		110	3.3		3.1
10	220	12.1	210	4.4	110	3.5		3.0
11	220	12.8	220	4.5	110	3.6		2.9
12	240	13.0	220	5.5	110	3.7		2.8
13	230	12.8			110	3.7		2.8
14	240	12.8	240		110	3.5		2.8
15	240	12.5	240		110	3.3		2.8
16	240	12.2			110	2.9		2.8
17	240	11.6			120	2.3		3.0
18	220	10.4					2.4	3.0
19	220	8.8						3.0
20	230	7.8						3.0
21	240	6.6						2.8
22	260	5.6						2.7
23	260	5.2						2.6

Time: 120.0°W.
Sweep: 1.4 Mc to 18.5 Mc in 4 minutes 30 seconds, automatic operation.

Table 10

White Sands, New Mexico (32.6°N, 106.5°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	285	5.7					2.3	2.6
01	300	5.6					2.5	2.6
02	300	5.4					2.6	2.5
03	280	5.3						2.5
04	300	5.2					2.4	2.5
05	300	5.3					2.7	2.5
06	280	6.2					3.0	2.7
07	240	9.6			120	2.7	3.3	3.0
08	240	11.5			120	3.2	3.8	3.0
09	230	12.5			120	3.5	3.8	2.9
10	220	12.6			120	3.8		2.8
11	220	12.8			120	3.8		2.8
12	230	13.0			120	3.8		2.7
13	240	13.0			120	3.9		2.6
14	240	12.9	230		120	3.7		2.6
15	240	12.8			120	3.4	3.4	2.7
16	240	12.5			120	3.0	3.4	2.7
17	240	11.8			120	2.3	3.4	2.8
18	230	11.0					2.9	2.8
19	240	9.4					2.7	2.7
20	240	7.5					2.5	2.8
21	260	6.8						2.7
22	270	6.2					2.5	2.7
23	280	5.9					2.5	2.7

Time: 105.0°W.
Sweep: 0.79 Mc to 14.0 Mc in 2 minutes.

Table 11

Wuchang, China (30.6°N, 114.4°E) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	9.5					2.2	2.9
01	240	8.4					2.4	2.9
02	240	7.3					2.4	2.9
03	240	6.8						2.9
04	230	5.8						2.8
05	260	5.2						2.7
06	260	6.9						2.8
07	230	10.2			120	2.1		3.1
08	220	12.9			100	2.9		3.1
09	220	13.6	220	7.4	100	3.3		3.0
10	220	14.2	220	7.2	100	3.6		3.0
11	260	15.0	215	7.6	100	3.8		2.9
12	310	15.2	210	8.0	90	3.8		2.8
13	320	16.1	210	7.3	100	3.7		2.8
14	300	16.0	220	7.0	100	3.6		2.8
15	280	15.4	220	7.0	100	3.5		2.8
16	250	15.5	230	6.2	100	3.2		2.8
17	240	15.2			100	2.5		2.9
18	230	13.5			100	2.0	3.0	3.1
19	230	12.5					2.9	2.9
20	230	12.4					2.8	3.0
21	230	12.5					1.7	3.0
22	230	11.0					2.0	3.0
23	240	10.5					2.8	3.0

Time: 120.0°E.
Sweep: 1.2 Mc to 19.2 Mc, manual operation.

Table 12

Baton Rouge, Louisiana (30.5°N, 91.2°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.3						2.7
01	300	6.0						2.7
02	300	5.8						2.7
03	300	5.7						2.6
04	305	5.5						2.6
05	310	5.5						2.7
06	290	7.3						3.0
07	280	10.5	240		120	2.4		3.0
08	280	11.8	240	(5.0)	120	3.2		3.0
09	290	12.5	240	(5.5)	120	3.6		2.9
10	290	12.6	230	(5.3)	120	3.8		2.9
11	300	13.0	240	5.2	120	3.9		2.8
12	310	13.1	250	(5.6)	120	3.9		2.8
13	315	13.0	250	(5.5)	120	3.9		2.7
14	320	12.8	250		120	3.8		2.7
15	320	12.7	250		120	3.5		2.7
16	300	12.0	260		120	2.5		2.7
17	290	11.7			130	2.2		2.8
18	260	10.3						2.7
19	270	9.0						2.8
20	280	8.1						2.8
21	290	7.0						2.7
22	290	7.0						2.8
23	290	6.5						2.7

Time: 90.0°W.
Sweep: 2.0 Mc to 15.0 Mc in 5 minutes, automatic operation.

Table 13

Maui, Hawaii (20.8°N, 156.5°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	12.0						2.8
01	260	9.4						2.7
02	260	8.6						2.7
03	260	5.9						2.7
04	300	5.3						2.6
05	300	4.9						2.4
06	345	5.6						2.5
07	270	9.6			130	2.4		2.9
08	250	12.2			140	3.1		3.0
09	250	13.8	250		130	3.4		2.8
10	305	15.3	240	7.0	135	3.8		2.7
11	340	15.8	240	7.4	130	4.0		2.7
12	360	16.0	240	7.4	130	4.2		2.7
13	380	16.3	240	7.3	130	4.0		2.7
14	370	16.9	250	7.4	130	3.9		2.7
15	370	16.5	250	7.2	130	3.6		2.6
16	340	15.6	250	6.6	130	3.2	4.1	2.6
17	260	15.3	250	6.0	120	2.8	4.0	2.7
18	260	14.6					4.0	2.7
19	270	14.7					3.1	2.7
20	280	14.8						2.7
21	270	14.4						2.7
22	260	14.5						2.8
23	260	13.0						2.7

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

Table 14

San Juan, Puerto Rico (18.4°N, 66.1°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		9.0						2.8
01		8.4						3.0
02		7.4						2.9
03		5.6						2.8
04		5.1						2.6
05		5.2						2.5
06		6.5						2.8
07	250	11.3		2.7				3.0
08	250	12.8				3.1		3.0
09	260	13.5				3.4		3.0
10	280	14.0				3.9		2.8
11	290	14.0						2.7
12	300	14.3						2.6
13	320	13.7		(7.0)		4.0		(2.6)
14	310	13.8				(4.0)		2.6
15	320	12.9				(3.6)	4.8	2.6
16	300	12.4				3.4		2.7
17	300	11.9						2.7
18	290	11.8						2.8
19	290	11.5						2.8
20		10.8						2.8
21		10.6						2.8
22		10.7						2.8
23		10.2						2.9

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 8 minutes, supplemented by manual operation.

Table 15

Trinidad, Brit. West Indies (10.6°N, 61.2°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	9.8						2.9
01	250	8.7						3.0
02	240	6.8						2.8
03	270	5.2						2.8
04	280	4.8						2.7
05	300	5.3						2.6
06	280	7.4						2.9
07	250	11.4			120	2.8	3.2	3.0
08	250	13.4			120	3.4	3.8	2.9
09	250	14.4	240		120	3.8	4.4	2.8
10	260	14.6	240	(5.3)	120	4.1	4.6	2.8
11	270	14.2	230	5.4	120	4.1	4.8	2.6
12	280	14.4	230	5.6	120	4.3	5.1	2.6
13	280	14.4	240	5.3	120	4.2	5.0	2.5
14	280	14.0	240	5.6	120	4.0	5.2	2.5
15	280	13.6	240	5.4	120	3.8	5.0	2.4
16	270	13.5	250		120	3.2	4.5	2.5
17	270	13.2			120	2.6	4.2	2.5
18	290	13.6					3.6	2.6
19	290	13.0					3.4	2.6
20	280	12.4					2.6	2.6
21	260	11.6					2.2	2.6
22	270	11.4						2.7
23	270	11.4						2.8

Time: 60.0°W.
Sweep: 1.2 Mc to 15.5 Mc, manual operation.

Table 16

Palmyra I. (5.9°N, 162.1°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	12.5					2.9	2.7
01	250	(11.5)					3.1	(2.8)
02	250	(10.8)					3.5	(2.8)
03	250	(10.3)					3.5	(2.7)
04	250	9.8					4.0	2.8
05	250	9.2					3.7	2.8
06	280	8.8			190		4.2	2.8
07	270	11.5			125	2.7	4.6	2.8
08	250	13.5			120	3.4	4.4	2.7
09	240	14.5			120	3.8	4.2	2.6
10	240	13.9	230		110	4.2		2.4
11	270	13.6	230		110	4.3		2.3
12	280	13.7	230		120	4.2		2.4
13	270	14.0	230	7.3	120	4.3		2.3
14	270	14.4	230	6.7	110	4.0		2.3
15	270	14.9	230	5.2	120	3.8		2.3
16	250	15.2	250		120	3.4		2.3
17	270	15.2			120	2.8	4.3	2.3
18	300	14.8			150	1.9	3.6	2.3
19	380	13.6					2.2	2.2
20	380	13.2					2.1	(2.2)
21	350	13.5					2.4	(2.4)
22	300	(13.5)					3.3	(2.4)
23	280	(13.5)					3.7	(2.6)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds; 11.0 Mc to 18.5 Mc, manual operation.

Table 17

Wakkanai, Japan (45.4°N, 141.7°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.0						2.5
01	300	6.9					2.7	2.5
02	300	6.8						2.5
03	300	6.4						2.6
04	300	6.5						2.5
05	300	5.7						2.6
06	290	7.3				E		2.8
07	300	8.6					3.6	2.7
08	300	8.3	205				4.1	(2.6)
09	300	9.9					4.0	
10	300	10.0	200				4.1	(2.6)
11	300	9.2	220				4.6	(2.7)
12	300	9.2	200				(4.4)	(2.8)
13	300	9.7	215				4.8	2.8
14	305	9.4	210				4.6	(2.5)
15	310	9.7	220				4.0	(2.7)
16	280	9.2	240				4.2	(2.6)
17	295	9.4					3.2	(2.7)
18	300	9.2				E	3.6	(2.8)
19	270	8.2				E	2.9	2.8
20	250	7.9						(2.7)
21	270	8.0					2.8	2.7
22	295	7.8						2.6
23	300	7.4						2.5

Time: 135.0°E.
Sweep: 2.0 Mc to 17.0 Mc, manual operation.

Table 18

Peiping, China (39.9°N, 116.4°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		8.3						3.1
01		7.8						3.0
02		7.9						3.0
03		7.2						3.0
04		7.2						3.0
05		7.4						3.0
06		8.0						3.2
07		9.3						3.2
08		10.4						3.4
09		10.5						3.4
10		11.4						3.6
11		(11.4)						3.4
12		11.6						3.5
13		11.6						3.5
14		11.3						3.5
15		11.5						3.5
16		11.2						3.4
17		11.0						3.4
18		11.2						3.4
19		10.5						3.5
20		(9.6)						(3.1)
21		9.2						3.3
22		8.9						3.2
23		8.8						3.0

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

Table 19

Shibata, Japan (37.9°N, 139.3°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	315	6.6					2.6	2.6
01	325	6.4					2.1	2.5
02	315	6.4					2.4	2.6
03	315	6.2					2.4	2.6
04	325	6.1					2.6	2.5
05	320	6.0						2.6
06	280	8.3	255		120	2.0	2.7	2.8
07	265	9.6	245		120	2.1	3.4	3.0
08	270	10.9	250		120	2.8	4.5	3.0
09	280	11.5	230		120	3.0	4.4	2.9
10	300	11.6	235		120	3.3	4.3	2.7
11	300	11.4	250		115	3.5	5.5	2.7
12	305	11.5	240		115	3.7	4.3	2.7
13	310	11.0	250		115		4.0	2.6
14	320	11.0	255		110	3.7	3.8	2.7
15	290	10.5	250		110	3.5	3.4	2.7
16	280	10.0	250		120	3.2	3.5	2.7
17	280	10.0	260		130	2.4	3.5	2.9
18	270	9.8	250				3.2	2.9
19	250	8.7					3.3	2.9
20	285	7.4					3.1	2.6
21	300	7.4					3.6	2.6
22	315	7.3					3.0	2.6
23	300	6.8					2.6	2.7

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) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.4					2.6	2.5
01	310	6.9					2.3	2.5
02	295	6.9					2.6	2.5
03	300	6.5					2.2	2.5
04	315	6.1					2.3	2.4
05	300	6.2					2.2	2.5
06	250	8.4	250		100	2.2	3.0	2.9
07	250	10.1	250		110	3.0	3.8	3.0
08	260	11.3	240		100	3.4	4.1	2.9
09	280	11.6	240		100	3.5	4.0	2.9
10	290	11.7	240				4.4	2.8
11	300	12.0	245				4.4	2.7
12	320	12.1	235		100		4.5	2.6
13	330	11.7	240				4.4	2.7
14	320	11.6	250		100	3.8	4.2	2.7
15	305	11.2	240		100	3.5	4.0	2.8
16	290	10.8	250		100	3.2	4.2	2.8
17	280	10.4	260		100	2.4	3.6	2.8
18	260	10.1					3.6	2.8
19	260	8.8					3.6	2.7
20	300	8.2					3.7	2.6
21	300	7.7					3.2	2.5
22	320	8.0					3.7	2.5
23	305	7.9					3.0	2.6

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

Table 21

Nanking, China (32.1°N, 119.0°E) September 1947*

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	310	7.0					2.0	2.7
07	280	10.5				2.5	3.6	2.9
08	250	11.7	210		120		3.9	2.9
09	300	12.8	220			3.6	4.6	(2.8)
10	300	13.5	(240)	6.6			6.4	(2.7)
11	360	13.5	240				4.2	2.8
12	(330)	(14.0)	270				(5.2)	(2.7)
13	345	14.0	255	7.2	90	4.2		(2.5)
14	360	13.9	(260)	6.8	80	4.2	3.8	(2.4)
15	350	13.8	240				(4.5)	(2.6)
16	360	13.0	240				(4.5)	2.6
17	320	12.8	260				3.9	2.8
18	275	12.0					4.2	(2.7)
19	280	10.8					3.1	2.8
20	270	8.7					3.1	2.4
21	280	8.4					3.0	2.5
22	295	8.3					2.8	2.7
23								

Time: 120.0°E.
Sweep: 1.7 Mc to 16.0 Mc in 20 minutes, manual operation.
*Measurements started September 13, 1947 (1800).

Table 22

Yamakawa, Japan (31.2°N, 130.6°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	295	8.1					3.0	2.6
01	300	7.8					2.5	2.6
02	290	6.4					2.2	2.6
03	300	6.4						2.5
04	300	6.1						2.5
05	300	5.9						2.8
06	290	6.4	260		E	E		2.7
07	280	9.2	250		110	2.5	3.0	3.0
08	280	11.1	230		110	3.0	4.2	2.9
09	280	11.4	220		110	3.6	5.0	2.8
10	300	12.5	220		110	3.6	5.4	2.7
11	300	13.2	220		110	4.0	5.4	2.7
12	300	13.3	230	5.4			4.8	2.6
13	330	13.4	230				5.2	2.8
14	330	13.3	230	5.4			5.1	2.7
15	320	12.9	225				4.8	2.7
16	300	12.5	240		110	3.6	4.4	2.7
17	290	12.0	240		110	2.9	4.1	2.7
18	280	11.2	240			2.2	3.6	2.8
19	270	10.5					3.7	2.8
20	290	9.2					4.2	2.6
21	300	9.3					3.5	2.5
22	300	9.0					3.1	2.6
23	300	8.9					3.2	2.6

Time: 135.0°E.
Sweep: 0.6 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 23

Chungking, China (29.4°N, 106.8°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	9.8					3.6	2.7
01	270	9.1					3.4	2.7
02	260	7.6					3.4	2.8
03	260	8.5					3.0	2.7
04	280	6.0					3.0	2.6
05	300	5.6					3.3	2.5
06	260	8.4					3.5	2.8
07	240	11.1			100	3.1	4.9	3.0
08	240	12.0	240		100	3.4	5.8	2.8
09	265	13.0	230		100	3.4	8.0	2.6
10	300	14.0	220				6.6	2.6
11	300	15.0	210	7.0			7.0	2.6
12	320	15.7	220	7.2	100	4.1	6.2	2.6
13	340	15.8	220	7.2			6.6	2.6
14	320	16.4	225	6.9			5.6	2.6
15	320	18.0	240	8.8	100	3.6	5.0	2.6
16	300	15.5	245	8.4	100	3.5	4.8	2.6
17	280	16.0	250		100	3.0	4.8	2.7
18	260	15.0	255				4.4	2.7
19	260	15.0					4.4	2.7
20	255	13.0					4.0	2.7
21	270	12.4					3.7	2.7
22	260	11.5					3.6	2.8
23	265	11.0					3.6	2.7

Time: 105.0°E.
Sweep: 1.7 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 24

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	5.8						3.0
01	(260)	5.3						3.0
02	(265)	4.9						3.0
03	(280)	4.6						3.0
04	(290)	4.4						3.0
05	(320)	4.2						2.7
06	260	5.8						3.0
07	230	9.6			100	3.6		3.2
08	230	11.4			100	3.2		3.2
09	250	12.2	230		100	3.6		3.0
10	260	13.0	210		100	3.9		3.0
11	270	13.0	200		100	(3.9)		2.9
12	300	13.0	200	6.5	100	4.0		3.0
13	310	13.0	210	7.1	100	4.0		2.9
14	320	12.9	210	(8.6)	100	3.9		2.7
15	(320)	12.7	220	(7.0)	100	3.7	4.0	2.7
16	(310)	12.5	230		110	3.2	3.8	2.7
17	240	12.2	240		110	2.6		2.8
18	240	12.0						2.9
19	230	11.2						2.9
20	230	10.0						3.0
21	240	(8.8)						3.0
22	240	7.6						3.0
23	250	6.6						3.0

Time: 30.0°E.
Sweep: 2.0 Mc to 15.0 Mc in 8 seconds.

Table 25

Watheroo W. Australia (30.3°S, 115.9°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	6.5					2.8	2.6
01	268	6.2					2.8	2.6
02	265	6.0					2.8	2.6
03	270	5.6					2.8	2.5
04	270	5.2					2.8	2.6
05	280	5.3					2.9	2.6
06	275	5.9				1.4	2.8	2.8
07	250	8.5				2.3	3.0	3.2
08	242	10.7	238			3.0	3.2	3.1
09	245	11.8	230	4.7		3.4		3.0
10	255	12.4	225	4.9		3.7		2.9
11	270	12.5	225	5.4		3.8	3.8	2.9
12	270	12.6	220	5.2		3.8	4.1	2.8
13	262	12.6	220	5.2		3.8		2.8
14	260	12.2	230	4.8		3.8	3.8	2.7
15	258	11.9	230	4.6		3.5	3.8	2.7
16	245	11.8	240	3.4		3.2	3.8	2.7
17	250	11.6				2.5	3.0	2.8
18	240	11.2					2.8	2.8
19	230	10.0					2.8	2.8
20	235	8.9					2.6	2.8
21	240	8.0					2.7	2.8
22	245	7.8					2.8	2.7
23	268	6.8					2.8	2.6

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

Table 26

Christchurch, New Zealand (43.5°S, 172.7°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.8					2.3	2.5
01	300	6.2					2.4	2.5
02	300	6.0					2.7	2.5
03	300	5.7					2.6	2.5
04	300	5.2					2.7	2.5
05	300	4.6					2.8	2.6
06	290	5.2				1.5	2.8	2.8
07	260	7.1				2.4		3.0
08	250	8.6				2.8		2.9
09	250	9.4	245	4.8		3.2		2.9
10	270	10.7	230	5.2		3.5		2.8
11	250	11.5	235	5.1		3.6		2.8
12	260	11.3	230	5.3		3.7		2.8
13	270	11.3	240	5.3		3.7		2.7
14	250	11.0	230	4.8		3.5		2.7
15	240	11.2	240	5.8		3.3		2.7
16	250	10.8				2.8		2.7
17	260	10.5				2.2		2.8
18	260	10.3				1.4	2.6	2.7
19	260	9.3					2.3	2.6
20	270	8.4					2.2	2.6
21	280	7.9					2.6	2.6
22	290	7.2					2.6	2.5
23	300	6.8					2.6	2.5

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

Table 27*

Slough, England (51.5°N, 0.6°W) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	299	6.0					3.3	2.3
01	304	5.6					3.2	
02	303	5.6					2.4	2.3
03	289	5.2					3.2	
04	290	5.0					3.0	2.4
05	262	5.4	275	3.2**	103	2.1	3.3	2.6
06	265	6.3	215	4.6	100	2.6	3.6	2.6
07	310	7.0	208	4.9	100	3.1	4.6	
08	325	7.4	202	5.1	100	3.4	4.2	2.6
09	326	8.0	216	5.3	101	3.6	5.5	
10	347	8.3	215	5.7	103	3.8	5.4	2.5
11	386	8.3	216	5.9	102	3.9	5.0	
12	376	8.4	205	5.9	103	3.9	5.9	2.5
13	389	8.2	209	5.9	100	4.0	4.6	
14	366	8.3	208	5.6	101	3.9	3.7	2.5
15	363	8.1	218	5.7	101	3.8		
16	334	8.0	222	5.4	101	3.4		2.5
17	287	8.2	227	5.3	102	3.1	3.7	
18	253	8.2	235	5.0	101	2.6	3.3	2.6
19	244	8.4				1.9**	3.4	
20	246	8.0					3.6	2.6
21	257	7.3					3.3	
22	268	6.8					3.3	2.4
23	286	6.4					3.0	

Time: Local.
Sweep: 0.5 Mc to 16.0 Mc in 4 minutes.
*Average values except f°F2 and fEs, which are median values.
**Less than 3 observations.

Table 28

Wakkanai, Japan (45.4°N, 141.7°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	7.7					3.5	2.6
01	300	7.4					3.4	2.6
02	300	7.2					3.0	2.5
03	300	6.9					2.8	2.6
04	300	6.9					3.0	2.6
05	290	7.4			E	E	3.5	2.7
06	300	7.8	240		E	E	4.0	2.7
07	300	8.3	200		100	3.0	4.3	2.8
08	305	8.5	230		100	3.2	4.6	2.9
09	320	8.6	220	5.2			5.2	(2.7)
10	350	8.6	220	5.6			5.2	2.6
11	350	9.0	200	5.8			5.0	2.7
12	350	9.1	260	6.0			5.7	2.7
13	385	8.8	220	5.6			5.1	2.6
14	340	8.7	225	5.1			5.2	2.7
15	350	8.6	210				5.1	2.8
16	310	8.6	230				4.6	2.9
17	300	8.3	235				4.8	2.8
18	290	8.2	220			E	4.0	2.8
19	280	8.0					3.2	2.8
20	260	8.1					3.4	2.6
21	300	8.0					3.7	2.6
22	300	7.8					4.0	2.6
23	300	7.6					4.2	2.6

Time: 135.0°E.
Sweep: 2.0 Mc to 17.0 Mc, manual operation.

Table 29

Fukuura, Japan (40.6°N, 139.9°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	7.5					3.6	2.6
01	315	7.3					3.6	2.6
02	310	7.2					3.2	2.5
03	310	7.0					3.3	2.5
04	320	6.8					3.0	2.5
05	300	7.3			120	1.8	3.2	2.6
06	280	7.6			110	2.6	3.5	2.7
07	285	8.2			100	3.2	4.2	2.8
08	280	8.6					4.6	(3.0)
09	(300)						(6.0)	
10	(310)	(8.2)					(5.4)	(2.8)
11	(375)							
12	(380)	(8.2)					(5.1)	(2.7)
13	(385)	(8.2)					(6.8)	
14	(390)	(8.6)					(5.0)	
15	(370)	(8.6)					(5.4)	
16	350	(8.2)					(4.8)	
17	300	8.4					4.6	2.8
18	300	8.6					4.4	2.7
19	300	8.0					4.4	2.8
20	300	7.9					3.7	2.6
21	310	7.9					4.2	2.6
22	320	7.8					4.4	2.5
23	315	7.6					3.3	2.5

Time: 138.0°E.
Sweep: 1.0 Mc to 17.0 Mc, manual operation.

Table 30

Shibata, Japan (37.9°N, 139.3°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	325	7.1					3.0	2.5
01	320	7.5					3.3	2.5
02	310	7.3					3.1	2.6
03	300	7.0					2.8	2.6
04	300	7.0					2.6	2.5
05	310	6.8	280		130	1.8	2.6	2.6
06	280	8.6	270		120	2.4	3.6	2.9
07	275	10.0	240		110	3.0	4.5	3.0
08	300	9.6	230		115	3.4	5.1	2.9
09	320	10.0	230		115	3.6	5.6	2.8
10	340	9.8	230	5.6	120	3.7	5.8	2.7
11	350	10.0	220	5.6	120	3.8	5.5	2.8
12	350	10.2	240	5.7	110	3.9	5.8	2.7
13	365	10.0	235	5.9	115	3.9	5.6	2.7
14	350	9.8	240	5.6	110	3.8	5.2	2.8
15	340	9.5	240	5.5	120	3.7	5.0	2.8
16	330	9.4	230		115	3.4	4.9	2.9
17	300	9.2	250		120	3.0	5.1	2.8
18	300	9.1	240				5.2	2.9
19	285	8.6					4.8	2.9
20	300	7.3					4.1	2.7
21	320	7.4					4.0	2.7
22	330	7.4					3.8	2.6
23	325	7.8					3.0	2.6

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

Table 31

Lanchow, China (36.1°N, 103.8°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	365	8.0					4.0	2.3
01	380	7.6					3.5	2.3
02	360	7.6					3.6	2.3
03	360	7.0					3.2	2.3
04	370	6.8					3.0	2.3
05	380	6.6						2.3
06	320	8.1					3.4	2.5
07	315	9.8			150		4.2	2.5
08	330	10.0	280		140		5.0	2.5
09	345	10.5	280		140		5.4	2.4
10	360	10.8	280		140		5.6	2.4
11	380	11.0	300	6.9	140		5.4	2.4
12	420	10.5	320	6.6	140		5.4	2.3
13	420	11.0	300	6.6	140		5.0	2.4
14	420	11.5	280	6.6	140		5.0	2.4
15	400	11.6	300	6.4	150		5.0	2.3
16	380	11.4	280	6.2	140		5.0	2.4
17	360	11.0	300		140		4.7	2.4
18	360	11.0	300		140		4.3	2.4
19	350	10.0					4.2	2.4
20	340	(9.8)						
21	340	9.2					3.5	2.3
22	360	8.8					3.8	2.2
23	360	8.4					3.5	2.2

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

Table 32

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	8.1					4.0	2.6
01	300	7.8					3.6	2.6
02	290	7.5					3.2	2.6
03	295	7.3					3.0	2.6
04	290	7.0					3.0	2.6
05	285	7.1				E	3.0	2.6
06	260	9.0	240		100	2.6	3.5	2.9
07	255	9.8	235		100	3.2	4.4	2.9
08	260	9.8	220		100	3.5	4.4	2.9
09	300	10.4	220		100	3.8	5.1	2.8
10	330	10.6	225		110		6.4	2.7
11	355	10.7					6.6	2.7
12	350	10.8	250	6.5			6.6	2.6
13	360	10.6	230	5.8			4.8	2.6
14	355	10.5		6.0			5.4	2.8
15	340	10.3	250	6.0	100	3.9	4.4	2.8
16	325	9.9	240		100	3.8	5.4	2.8
17	310	9.3	250		110	3.3	4.8	2.8
18	290	9.3	260				4.4	2.8
19	270	8.8					4.6	2.8
20	280	8.4					4.0	2.6
21	290	8.5					3.6	2.6
22	300	8.5					3.6	2.5
23	300	8.4					4.2	2.6

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

Table 33

Yamakawa, Japan (31.2°N, 130.6°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	8.4					3.0	2.6
01	305	8.5					2.8	2.6
02	300	7.8					2.7	2.6
03	295	7.6					2.7	2.6
04	300	7.0					2.4	2.5
05	300	7.0					2.4	2.5
06	300	7.8	260		E	2.1	2.4	2.8
07	270	9.0	230		110	2.8	3.8	3.1
08	285	8.7	220		110	3.4	4.6	3.0
09	295	9.3	215		110	3.6	5.0	2.7
10	330	10.1	215	5.2	110	3.9	5.4	2.6
11	380	10.7	220	5.4	110	4.2	5.2	2.6
12	390	11.1	220	5.6			5.4	2.6
13	395	11.2	220	5.5	110	4.2	5.5	2.6
14	390	11.7	210	5.4	105	4.0	5.4	2.6
15	350	11.7	220		110	3.8	5.4	2.7
16	350	11.4	225		110	3.8	5.2	2.7
17	325	10.9	230		110	3.3	5.2	2.7
18	300	10.8	255		110	2.8	4.4	2.8
19	280	10.3			E	E	3.8	2.7
20	280	9.5					4.1	2.7
21	300	8.8					3.2	2.6
22	310	8.8					3.0	2.5
23	310	8.7					3.0	2.6

Time: 135.0°E.
Sweep: 0.6 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 34

Fiji Is. (180.0°S, 178.2°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	8.0					2.6	
01	250	7.0					2.6	
02	250	6.6					2.6	
03	230	5.7					2.5	
04	260	4.8					2.6	
05	280	4.6					2.6	
06	270	5.4					2.6	
07	240	9.4			100	2.1	2.8	
08	230	12.3			100	3.0		
09	230	D	220	4.8	100	3.5		
10	250	D	220	5.6	100	3.8		
11	250	12.8	215	5.4	100	4.1		
12	300	12.6	210	6.6	100	4.1		
13	360	12.8	210	6.8	100	4.2	4.2	
14	360	13.0	230	6.5	100	3.8	4.7	
15	350	D	235	6.4	100	3.6	4.8	
16	270	D	240	6.4	100	3.3	4.3	
17	250	12.8			100	2.6	4.9	
18	250	12.8				1.6	3.4	
19	250	12.6					3.3	
20	240	11.3					3.1	
21	250	10.2					3.0	
22	240	9.6					2.6	
23	250	8.6					2.5	

Time: 180.0°E.
Sweep: Upper limit, 13.0 Mc.

Table 35

Brisbane, Australia (27.5°S, 153.0°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	6.4					1.7	2.7
01	260	6.0					1.4	2.8
02	270	5.9					2.1	2.8
03	250	5.5					2.8	2.8
04	280	5.2					2.3	2.7
05	280	5.0					2.6	2.7
06	260	5.8						3.0
07	240	9.3			115	2.4		3.2
08	240	11.0			112	3.2		3.2
09	230	12.0			110	3.5		3.1
10	230	11.7			110	3.8		3.0
11	240	11.5	220		110	4.0		2.9
12	250	11.5	220		110	4.0		2.8
13	250	11.3	225		110	4.0		2.8
14	260	10.9	220	6.3	115	3.8	2.0	2.7
15	240	10.6			115	3.5		2.7
16	250	10.3			120	3.1	3.2	2.8
17	250	10.4				2.3		2.9
18	240	9.5					2.8	2.9
19	240	8.5						2.8
20	250	8.0						2.8
21	250	7.5						2.8
22	250	7.0						2.9
23	260	6.8						2.8

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

Table 36

Watheroo W. Australia (30.3°S, 115.9°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	5.3					2.9	2.7
01	278	5.0					2.9	2.6
02	280	4.8					3.0	2.6
03	265	4.9					2.9	2.7
04	260	4.6					3.0	2.7
05	270	4.4					3.0	2.7
06	268	4.1					3.0	2.8
07	250	7.0				1.8	2.9	3.2
08	250	9.8				2.8	3.6	3.2
09	255	11.3	245	4.6		3.2	3.4	3.1
10	260	11.7	245	5.0		3.5	3.7	3.0
11	265	12.2	240	5.0		3.7	3.7	2.9
12	270	12.0	235	5.0		3.8	4.1	2.8
13	270	12.0	240	5.0		3.8	4.1	2.7
14	275	11.9	245	5.0		3.7	4.0	2.7
15	260	11.7	245	4.8		3.5	3.6	2.7
16	250	11.6	245	4.0		3.1	3.1	2.7
17	255	11.3				2.2	3.0	2.8
18	240	10.8				1.1	3.0	2.8
19	230	8.8					2.9	2.9
20	255	7.7					2.8	2.8
21	245	6.9					2.8	2.8
22	255	6.0					2.9	2.7
23	270	5.6					3.0	2.7

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

Table 37

Canberra, Australia (35.3°S, 149.0°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(250)	5.8					2.4	(2.9)
01	270	5.7						(2.8)
02	265	5.4					2.0	(2.8)
03	(270)	5.2					2.8	(2.8)
04	(250)	(5.1)					(2.8)	(2.8)
05	(270)	(4.6)					(1.3)	(2.8)
06	(260)	(4.7)						(2.9)
07	(240)	(7.1)						(3.2)
08	(240)	(10.4)			100	2.8		(3.4)
09	(240)	(11.5)			100	3.2		(3.3)
10	(240)	(11.2)						(3.3)
11	(250)	(11.8)			110	3.6		(3.2)
12	(250)	(12.0)			100	3.8		(3.1)
13	(250)	(11.8)			110	3.7		(3.0)
14	(245)	(10.8)	220	4.2	110	3.6		(3.0)
15	(245)	(11.0)			105	3.4		(2.9)
16	(240)	(11.0)			105	3.0		(3.0)
17	240	10.3			110	2.2		(3.1)
18	228	9.0						(3.1)
19	(240)	(8.4)						(3.0)
20	250	7.9						(3.0)
21	250	7.4						(3.0)
22	(250)	6.6						(2.9)
23	260	6.1						(2.9)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.
No record 5 to 23 August.

Table 38

Hobart, Tasmania (42.8°S, 147.4°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	265	(5.3)						(2.7)
01	275	(5.2)						(2.6)
02	285	(5.0)						(2.7)
03	280	4.6						2.7
04	275	(4.4)						(2.8)
05	260	4.3						2.7
06	250	(4.3)						(2.8)
07	255	5.4					1.6	2.9
08	250	7.5			100	2.4	2.0	3.2
09	245	9.5			100	3.0		3.2
10	250	10.0	205		100	3.3		3.2
11	250	(10.4)	235		100	3.5		(3.2)
12	255	10.3	230	5.2	100	3.5		3.2
13	250	(10.5)	220		100	3.5		(3.2)
14	250	(10.0)	220		100	3.4		3.1
15	242	10.2			100	3.2		3.1
16	240	10.4			100	2.8	2.0	3.1
17	240	9.6			115	2.0	2.1	3.1
18	250	9.5						3.0
19	250	8.0						2.9
20	250	7.4						2.8
21	250	6.5						2.7
22	255	6.0						2.7
23	250	5.5						2.7

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

Table 39

Townsville, Australia (19.4°S, 146.5°E) July 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	5.8						3.0
01	250	5.3						2.9
02	250	4.5						3.0
03	250	4.0						3.0
04	255	3.5						2.9
05	250	3.6					2.6	2.9
06	250	3.7					2.1	3.0
07	250	7.5				2.1	2.7	3.2
08	250	10.0				2.9	3.0	3.2
09	250	11.6	240			3.5	3.6	3.1
10	250	12.0	225			3.8	3.8	3.1
11	260	11.5	215			3.9	3.9	3.1
12	280	11.0	200	5.6	100	3.9	4.4	2.9
13	300	10.8	200	6.0	100	3.8	3.9	2.9
14	275	10.5	200	5.3	100	3.8	3.4	2.8
15	300	10.3	210	6.0	100	3.6	3.8	2.8
16	255	10.0	225			3.3	3.6	2.8
17	250	10.0				2.6	3.0	2.9
18	245	9.5				1.6	3.0	2.9
19	225	8.4					2.9	2.9
20	230	7.5					2.4	2.8
21	250	7.5					2.0	2.9
22	240	7.0						3.0
23	240	6.3						2.9

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

Table 40

Brisbane, Australia (27.5°S, 153.0°E) July 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	265	5.0						2.9
01	280	4.9					1.8	2.9
02	280	4.7						2.8
03	280	5.0					3.4	2.9
04	(270)	4.6						2.9
05	(280)	4.4						2.9
06	260	4.3						2.9
07	230	7.7				2.2		3.3
08	230	(10.4)			110	2.8		(3.3)
09	240	(11.5)			110	3.2		(3.3)
10	230	(12.0)			110	3.5		(3.2)
11	230	(11.0)			110	3.6		(3.1)
12	240	(11.0)			110	3.7		(3.0)
13	235	(10.5)			110	3.6	4.2	(3.0)
14	235	(10.5)					4.0	(2.9)
15	230	(10.0)			110	3.2	3.2	(3.0)
16	230	9.5				2.7	2.8	3.0
17	240	9.2					3.2	3.0
18	230	8.2					2.6	2.9
19	250	7.3					3.1	2.8
20	250	7.0						3.0
21	260	6.2						2.9
22	260	6.0						2.9
23	250	5.5						3.0

Time: 150.0°E.
Sweep: July 1 through July 7, 2.2 Mc to 12.5 Mc in 2 minutes 30 seconds.
July 22 through July 31, 1.0 to 16.0 Mc in 1 minute 55 seconds.

Table 41

Watheroo, W. Australia (30.3°S, 115.9°E) July 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	265	4.2					3.0	2.7
01	272	4.2					3.0	2.7
02	270	4.2					3.1	2.7
03	270	4.1					3.0	2.7
04	265	4.0					3.1	2.7
05	255	3.9					3.0	2.8
06	250	3.8					3.0	2.9
07	242	5.7				1.8	3.0	3.1
08	240	8.8				2.5	3.3	3.3
09	242	10.1	240	4.3		3.1	3.8	3.2
10	250	11.2	235	5.0		3.4	3.7	3.1
11	255	11.3	230	5.0		3.6	3.8	3.0
12	265	11.2	230	5.2		3.6	3.8	2.9
13	272	11.2	230	5.5		3.6	4.0	2.8
14	260	10.8	240	5.2		3.5	3.8	2.8
15	265	10.8	245	4.7		3.2	3.8	2.8
16	250	10.9	250	4.5		2.8	3.3	2.8
17	240	10.2				2.0	3.2	2.9
18	220	9.0					3.1	3.0
19	238	7.2					3.2	2.8
20	230	6.0					3.2	2.9
21	250	5.0					3.1	2.9
22	260	4.6					3.1	2.8
23	260	4.4					3.0	2.7

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

Table 42

Canberra, Australia (35.3°S, 149.0°E) July 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	4.7						2.7
01	290	4.7					1.2	2.7
02	285	4.8					2.4	2.7
03	280	5.0						2.8
04	250	4.8						2.9
05	240	4.3						2.9
06	250	3.9						2.9
07	240	5.8						3.1
08	240	8.8			100	2.4		3.3
09	240	10.8			100	3.0		3.3
10	240	11.1	230	4.6	100	3.4		3.2
11	240	11.4	220	4.8	100	3.4		3.1
12	240	11.2	210	4.6	100	3.4		3.1
13	250	11.0	210	4.8	100	3.4		3.0
14	250	10.9	210	4.4	100	3.4		3.0
15	240	10.6	210	3.8	100	3.0		3.0
16	240	10.4			100	2.7		3.0
17	240	9.4					2.8	3.1
18	230	8.1						3.0
19	240	7.2						3.0
20	250	6.4						3.0
21	250	5.8						2.8
22	250	5.4						2.8
23	250	5.0						2.8

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

Table 43

Hobart, Tasmania (42.8°S, 147.4°E) July 1947*

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	282	(4.3)					1.6	(2.7)
01	293	(4.2)					2.5	(2.6)
02	290	(4.2)					2.1	2.7
03	280	4.0					2.1	2.7
04	265	4.2						2.8
05	250	4.0						2.8
06	250	3.8						2.7
07	255	4.2						2.8
08	242	7.0			112	2.1	2.1	3.1
09	245	9.0			115	2.8	2.1	3.2
10	240	(9.8)			105	3.2		(3.2)
11	245	(10.0)	240		105	3.3		(3.2)
12	250	(10.0)			105	3.3		(3.2)
13	250	(10.0)	210		103	3.3		(3.3)
14	250	(10.0)			103	3.3		(3.3)
15	240	9.8			103	2.9	2.8	3.3
16	238	9.6			110	2.4		3.1
17	240	9.4					1.7	3.1
18	240	(7.5)						(3.0)
19	245	7.2						2.9
20	240	6.3						2.9
21	250	5.1						2.9
22	252	4.4						2.9
23	250	(4.4)						(2.7)

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.
*July 6 through 23, 30, and 31, only.

Table 44

Delhi, India (28.6°N, 77.1°E) June 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00	450	9.4						2.5
01	420	9.0						
02	420	9.0						
03	420	8.8						
04	405	8.6						2.6
05	390	8.8						
06	360	9.2						
07	360	9.6						
08	390	9.8						2.7
09	420	10.2						
10	480	10.8						
11	480	11.4						
12	480	11.6						2.3
13	450	12.0						
14	450	12.0						
15	450	12.0						
16	420	11.7						2.6
17	420	11.5						
18								
19								
20	450	9.6						2.5
21	450	9.4						
22	450	9.5						
23	450	9.5						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 45

Bombay, India (19.0°N, 73.0°E) June 1947

Time	* f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00							2.4
01							
02							
03							
04							2.7
05							
06	(360) (8.6)						
07	360 9.8						
08	390 10.0						2.7
09	480 10.8						
10	540 11.5						
11	570 (12.5)						
12	(540) (12.9)						2.3
13	540 (13.4)						
14	525 (13.8)						
15	(510) (14.0)						
16	510 (14.3)						2.4
17	480 13.9						
18	450 13.7						
19	495 12.8						
20	510 11.8						2.4
21	540 10.8						
22	510 10.0						
23	(450) (8.1)						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 46

Madras, India (13.0°N, 80.2°E) June 1947

Time	* f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00							
01							
02							
03							
04							
05							
06							
07	420 10.5						
08	480 11.4						2.6
09	540 11.8						
10	600 11.9						
11	600 12.0						
12	660 12.0						2.2
13	660 12.1						
14	660 12.2						
15	660 12.4						
16	660 12.5						2.2
17	600 12.8						
18	600 12.8						
19	600 (12.0)						
20	(600) (11.0)						
21	(540) (10.8)						
22	(540) (10.6)						
23							

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 47

Watheroo, W. Australia (30.3°S, 115.9°E) June 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	4.4					3.0	2.7
01	270	4.2					3.0	2.7
02	260	4.1					3.0	2.8
03	265	4.2					3.0	2.7
04	265	4.0					2.9	2.8
05	250	3.9					3.0	2.7
06	250	3.8					2.8	2.8
07	245	5.8				1.8	2.9	3.0
08	245	9.2				2.5	3.2	3.2
09	250	11.0				3.1	3.9	3.1
10	265	11.9	245	5.6		3.4	3.6	3.1
11	265	11.9	240	5.6		3.6	4.0	3.0
12	280	11.8	240	5.5		3.6	4.2	2.8
13	288	11.7	240	5.6		3.6	4.4	2.8
14	290	11.7	250	6.0		3.4	4.2	2.8
15	288	11.6	250	5.2		3.2	4.2	2.7
16	280	11.5	248			2.7	3.6	2.8
17	240	10.9				1.8	3.2	2.9
18	228	9.4					3.3	2.9
19	240	8.0					3.2	2.9
20	232	6.6					3.0	2.9
21	245	5.6					3.0	2.8
22	260	5.2					2.9	2.7
23	265	4.7					3.0	2.7

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

Table 48

Delhi, India (28.6°N, 77.1°E) May 1947

Time	* f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00	435 9.5						2.5
01	(420) (10.0)						
02	420 9.2						
03	(420) (9.0)						
04	390 9.0						2.6
05	390 8.8						
06	360 10.0						
07	360 10.1						
08	420 10.6						2.6
09	420 11.4						
10	480 12.1						
11	480 12.8						
12	480 (13.0)						2.3
13	480 (13.5)						
14	450 (14.0)						
15	450 (13.5)						
16	450 (13.0)						
17	435 (12.5)						
18							
19							
20	450 10.9						2.6
21	465 10.1						
22	480 10.1						
23	480 10.0						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 49

Bombay, India (19.0°N, 73.0°E) May 1947

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	** F2-M3000
00								2.6
01	(420)	(9.8)						
02								
03								
04								2.4
05								
06	(360)	(8.9)						
07	360	10.2						
08	390	11.2						2.5
09	420	12.2						
10	480	12.9						
11	(570)	(13.1)						
12		(13.5)						2.4
13		(13.7)						
14	(540)	(13.9)						
15	(570)	(13.9)						
16	525	(14.1)						2.4
17	(510)	(13.9)						
18	(510)	(13.9)						
19	(540)	(13.3)						
20	(510)	(13.2)						2.3
21	510	12.0						
22	510	11.7						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**M3000, average values; other columns, median values.

Table 50

Madras, India (13.0°N, 80.2°E) May 1947

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	** F2-M3000
00								
01								
02								
03								
04								
05								
06								
07	480	11.2						
08	555	12.3						2.3
09	600	12.4						
10	660	11.9						
11	660	11.8						
12	660	12.0						2.0
13	660	12.2						
14	660	12.4						
15	660	12.7						
16	660	13.0						2.1
17	660	13.2						
18	600	13.0						
19	(600)	(12.0)						
20		(11.2)						
21		(11.0)						
22		(10.5)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**M3000, average values; other columns, median values.

Table 51

Watheroo, W. Australia (30.3°S, 115.9°E) May 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	265	5.5					3.0	2.7
01	265	5.3					3.1	2.7
02	265	5.0					3.0	2.7
03	265	4.8					3.0	2.7
04	260	4.5					3.1	2.7
05	262	4.3					3.2	2.6
06	260	4.2					3.1	2.7
07	250	7.2				1.7	3.0	3.1
08	245	10.3				2.7	3.1	3.2
09	255	12.1	250	5.2		3.3	3.3	3.1
10	265	13.2	245	5.5		3.6	3.7	3.0
11	270	13.3	240	5.5		3.7	4.0	2.9
12	290	12.7	240	6.6		3.8	4.1	2.8
13	308	12.5	245	7.0		3.7	4.2	2.7
14	298	12.5	250	6.5		3.6	4.0	2.7
15	290	12.4	245	6.6		3.3	3.6	2.7
16	250	12.0	250	5.0		2.8	3.1	2.8
17	245	11.7				1.9	3.2	2.8
18	238	10.8					3.2	2.8
19	240	9.0					3.2	2.8
20	240	8.1					3.2	2.8
21	248	7.0					3.0	2.8
22	250	6.5					2.9	2.8
23	260	5.9					3.0	2.7

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

TABLE 52

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

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat 39.0°N, Lang 77.5°W 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	230	250	250	250	250	250	250	220	230	230	220	230	250	220	230	220	230	230	(240)^{A}	(230)^{A}	(250)^{A}	(250)^{A}	240	A
2	A	(300)^{A}	(260)^{A}	(250)^{C}	(250)^{C}	(230)^{C}	(200)^{C}	230	220	230	220	(210)^{C}	(200)^{C}	220	230	230	230	230	220	(230)^{A}	240	240	250	240
3	240	250	250	240	250	250	240	230	230	230	230	230	230	220	230	230	240	230	220	240	250	250	250	230
4	240	240	240	250	250	250	270	240	250	220	210	230	220	230	230	230	220	210	210	230	(240)^{A}	240	240	250
5	250	250	240	240	230	230	(230)^{A}	240	230	230	220	230	230	230	240	230	230	220	240	240	240	240	250	250
6	260	250	250	240	240	240	240	240	230	230	220	230	220	240	240	230^{H}	240	220	230	220	210	240	250	250
7	250	260	250	250	250	240	240	240	230	240	240	230	230	220	240	240	230	220	220	230	220	240	250	260
8	280	280	250	(300)^{A}	270	250	(300)^{A}	260	240	250	250	240	250	240	250	250	240	220	230	230	250	250	250	250
9	260	260	250	240	240	230	270	270^{K}	240^{K}	240^{K}	230^{K}	250^{K}	240^{K}	250^{K}	(250)$^{B}_{K}$	240^{K}	260^{K}	270^{K}	250^{K}	(380)$^{F}_{K}$	(340)$^{F}_{K}$	(300)$^{F}_{K}$	(290)$^{F}_{K}$	280^{K}
10	280$^{F}_{K}$	300$^{F}_{K}$	300$^{F}_{K}$	250^{K}	220^{K}	210^{K}	250^{K}	230	250	220	230	230	230	230	230	230	230	220	230	200	260	(280)^{S}	310	250
11	250	240	260	290	300	300	280	240	230	220	240	230	230	230	230	220	220	230	230	240	230	240	240^{K}	300$^{F}_{K}$
12	320$^{F}_{K}$	300$^{F}_{K}$	300$^{F}_{K}$	270^{K}	240^{K}	(280)$^{A}_{K}$	270^{K}	240^{K}	230^{K}	220	240	240	230	240	230	230	210	220	220	240	230	250	250	260
13	270	280	280	260	260	240	250	250	240	230	230	220	220	220	230	240	230	210	220	220	210	240	240	240
14	250	250	230	250	240	260	270	240	230	220	220	230	230	230	230	230	230	230	230	230	220	220	250	250
15	260	270	250	240	240	(300)^{A}	(300)^{A}	250	220	220	220	230	220	220	230	230	220	220	220	230	230	240	260	270
16	270	240	250	260	260	250	270	250	220	230	230	230	230	220	230	240	230	240	230	220	210	240	240	240
17	250	240	250	250	250	250	240	240	230	C	230	220	230	220	230	240	230	220	200	220	220	250	250	260
18	260	260	240	230	250	280	250	240	220	220	230	230	220	230	230	230	230	230	220	220	220	240	240	240
19	270	300	300	330	350	310	300	260	250	230	240	230	230	230	230	240	230	220	200	220	220	240	240	250
20	250	240	240	240	250	230	250	250	230	230	220	230	230	230	230	230	230	220	220	220	230	230	240	250
21	280	310	320	270	250	240	250	250	220	230	220	220	220	220	240	230	240	230	210	210	230	240	240	240
22	250	260	250	250	240	260	240	250	240	230	220	220	210	220	230	230	240	230	230	220	220	240	240	250
23	250	250	240	240	260	260	270	250	240	230	220	230	C	250	230	230	230	220	(280)^{A}	240	220	220	230	250
24	250	250	260	250	250	240	250	240	230	230	220	220	(220)^{B}	230	230	240	240	250	230	240	220	240	240	240
25	240	240	240	270	260	240	240	230	220	230	230	220	240	240	230	230	230	(230)^{A}	240	220	220	240	240	230
26	(260)^{S}	260	250	270	250	250	260	230	240	C	230	220	220	230	230	240	230	240	230	240	230	230	220	250
27	250	250	270	280	250	240	220	250	240	230	230	200	240	240	230	240	240	220	240	220	230	240	250	250
28	260	260	260	250	250	250	250	250	230	230	220	230	230	230	230	230	240	220	210	240	230	240	250	250
29	290	280	290	250	250	240	250	250	230	220	220	210	220	230	230	230	230	220	220	200	220	230	240	230
30	240	250	250	250	230	230	220	A	230	220	230	220	220	220	220	230	220	230	200	210	220	240	240	240
31																								
Median	250	255	250	250	250	250	250	240	230	230	230	230	230	230	230	230	230	220	225	230	230	240	240	250
Count	29	30	30	30	30	30	30	29	30	28	30	30	29	30	30	30	30	30	30	30	30	30	30	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1946 O - 703519

TABLE 53

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

Form adopted June 1946

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	7.4	7.2	6.8	6.4	6.6	(6.2)J	6.0	(8.7)J	(10.5)J	13.0	14.5	14.8	14.8	(14.0)J	(14.0)J/S	(13.5)	(13.0)J	(12.0)P	(11.0)P	10.2	9.2	(8.7)J	(7.8)J	7.2
2	7.0	7.3	8.0	7.2	6.8	(6.2)J	5.5	(8.0)	(12.2)	(13.0)C	(13.5)C	(13.4)P	(13.2)P	(13.4)P	13.4	13.2	(12.4)J	(12.4)	(11.5)S	(9.4)P	(9.3)S	8.3	8.3	7.9
3	6.9	6.6	6.0	5.6	5.3	4.9	4.8	7.4	10.6	(12.6)B	(13.4)P	(13.7)J	(14.0)P	(14.0)	(13.0)	(12.8)	(12.2)	12.2	(10.5)	9.4	8.5	8.4	8.4	8.0
4	7.9	7.3	6.8	6.5	6.0	5.5	5.2	7.5	(9.8)	(13.0)	(13.2)	13.4	(14.0)	(14.3)S	(13.7)	(12.7)P	(13.5)P	(12.0)P	[10.7]S/C	(9.4)	(8.8)J	8.3	7.8	7.3
5	7.0	7.2	7.0	6.8	6.1	5.3	4.8	7.6	(10.7)J	12.2	13.5	13.6	(13.4)P	13.0	(13.3)P	13.1	(12.8)P	(11.8)P	(9.4)P	9.0	8.0	7.2	(6.6)J	(6.2)J
6	6.0	6.0	6.0	5.8	5.4	4.7	4.2	7.3	(9.8)P	11.7	(12.6)P	12.9	13.1	13.2	13.1	13.0	(13.0)	(12.6)	(9.8)	9.5	7.8	7.2	6.5	6.0
7	5.6	5.5	5.3	5.2	5.1	4.6	4.5	7.6	10.6	12.2	12.6	13.2	13.5	13.1	13.1	13.3	(12.5)P	[11.1]S	(9.7)P	8.7	8.2	7.3	6.7	6.6
8	6.5	6.7	6.5	(6.2)J	6.4	5.9	5.5	6.6	8.2	9.8	10.2	11.5	12.8	13.0	(12.6)P	(12.4)S	(12.0)S	(11.6)	(10.7)	8.8	8.5	(7.8)J	7.2	7.3
9	7.8	7.7	7.6	7.4	6.4V	5.5	4.8V	5.8K	7.2K	8.9K	7.8K	9.5V/K	(10.3)P/K	11.4K	10.4K	10.6K	11.6K	(12.7)P/K	S C/K	F S/K	F R/K	F R/K	F R/K	F R/K
10	F R/K	F R/K	F R/K	(5.1)F/K	(4.8)F/K	(4.0)F/K	(3.9)F/K	6.0	9.0	(11.0)K	12.0	13.2	(13.8)P	(13.5)P	13.4	13.1	12.0	11.7	(10.4)S	[7.0]S	5.6	(5.2)J/V	(5.2)Z/V	(5.8)Z/V
11	6.0V	(5.4)R	(4.6)Z	(3.6)Z/V	(3.4)Z/V	(3.4)Z	(4.0)F	6.4V	9.5	10.2	(10.7)	12.2	13.1	13.0	12.2	11.9	10.4	(10.0)P	9.5	[9.0]S	7.9	7.4	6.2K	F R/K
12	F R/K	F R/K	F R/K	F R/K	F R/K	F R/K	F R/K	(6.0)F/K	[9.0]S/K	12.1	13.0	13.0	13.4	13.3	13.1	12.9	12.0	(11.2)J/S	(9.7)P	8.6	7.4	7.2	6.5	5.8
13	5.6V	5.4V	5.5V	5.1F	4.8F	(4.7)J/V	3.6V	5.7V	(9.4)J	(10.8)	(12.4)	(13.4)	(13.4)	13.0	13.5	13.2	13.0	11.6	9.8	8.4	7.0	6.8	6.0	5.4
14	5.2	5.3	4.6	4.3	4.2	3.8	3.8	6.8	(10.2)	(11.7)J	13.6	13.8	13.8	13.5	13.7	13.5	13.2	(12.6)	S C	S C	(9.2)J	7.2	(6.6)J	5.6
15	5.2	5.1	5.2	5.0V	4.9V	3.5V	3.8	[7.4)	(10.2)J	12.6	(13.5)P	(13.2)P	(13.5)P	13.5	13.6	13.5	13.3	(12.7)P/S	[12.4]S/C	(10.2)S	8.7	(7.4)J	(6.7)J	(6.7)J
16	6.6	6.4	5.9	5.8	5.6	5.5	5.5	7.8	(11.0)J	13.5	13.3	(14.3)J	(14.7)J	(13.5)P	13.1	13.1	13.1	(12.3)P	(11.0)S	(9.3)P	7.6	7.6	6.8	5.6
17	5.4	5.3	5.0	4.9	4.7	4.4	4.0	6.4	(10.0)S	(12.0)P	13.5	(13.6)P	(14.1)	13.6	13.2	13.6	13.6	(11.2)	(10.6)	(9.6)	8.2	7.2	6.6	6.6
18	6.5	6.6	6.0	5.7	4.5F	4.3F	4.4F	7.0	10.4	12.6	13.2	13.7	14.2	(14.0)J	(13.6)P	(13.6)P	13.6	(11.7)J	[10.9]S/C	(10.2)	(8.8)S	8.6	7.8	(6.6)J
19	6.6	5.6	5.8	5.4	5.2	5.2	5.5	6.8	9.7	10.6	11.8	13.5	14.0	13.8	14.2	13.7	13.6	13.6	12.0	9.5	8.4	8.0	7.0	5.8
20	(6.2)J	5.8	5.5	5.4F	4.6F	4.2F	4.2F	6.6	(10.5)J	12.8	14.0	14.0	14.4	13.6	13.2	12.8	12.6	(11.8)	9.8	9.0	7.9	7.2	5.9	5.4
21	5.0F	5.3	5.2F	5.5	5.5F	5.1F	4.1F	6.9	10.8	13.6	(14.4)	(14.5)	(14.0)J	13.5	13.2	12.8	12.6	(12.3)S	(10.7)P	(9.8)S	(8.8)S	8.0	7.3	6.6
22	6.0	6.2	6.2	6.1	5.6	4.9	4.4	6.4	(9.8)P	12.7	13.0	(13.4)P	(14.0)S	(13.7)S	(13.9)P	(13.8)P	(12.6)S	(12.6)	(11.5)S	[10.2]S/C	9.0	8.0	7.0	(6.5)J
23	6.2	6.1	5.6	4.9	4.3	4.5	4.8	7.8	11.7	12.7	13.0	(14.0)	[14.1]C	(14.2)J	(13.5)S	13.4	(13.0)S	(12.5)S	(10.8)S	(9.6)S	8.6	7.5	6.8	(6.4)J
24	5.9	5.5	5.8	5.6	5.2	4.8	4.7	7.2	(11.0)J	(12.4)J	(13.6)J	(13.2)J	(13.3)P	(13.6)	13.2	12.6	12.0	(12.0)	(10.5)	9.6	8.8	8.4	8.0	7.6
25	7.2	6.2	5.5	5.5	5.4	5.6	5.0	7.6	(10.0)	12.6	14.0	14.0	14.5	(13.4)P	(12.5)P	(13.5)P	[12.0]S/C	(11.6)S	[10.4]S/C	(9.2)P	8.2	7.2	(6.7)V	6.2
26	6.0	6.0	6.9V	5.8V	5.7	5.5V	5.4	6.6V	(10.7)S	(12.0)P	(12.6)S	(13.3)P	13.3	(12.9)P	(12.7)C	(12.0)J	(11.7)J	(11.5)S	S C	S C	8.1	7.3	(6.8)J	(6.2)J
27	6.2	5.5	5.5	5.5	5.4	5.4	4.8V	(7.3)J/V	(10.3)P	11.5	12.6	(11.2)J/S	12.7	12.8	12.5	12.7	(11.5)S	(10.4)J	[9.6]S/C	(8.8)P	7.8	8.0	6.8	6.0
28	5.8	5.7	5.8	5.9	5.5	5.5	5.2	6.8	9.7	12.1	13.1	13.3	13.4	13.6	(13.2)S	12.9	(12.2)J	(10.5)S	(10.0)P	9.6	8.8	7.6	6.8	6.6
29	5.7	6.2	6.5	6.2	6.0	5.7	5.2	6.5	9.3	12.0	13.0	12.6	13.2	13.5	13.1	13.1	[11.7]S/C	(10.3)P	10.4	9.8	9.1	8.0	7.3	6.4
30	5.6	5.6	5.5	5.4	5.3V	4.7	4.3	5.8	9.2	11.1	12.5	12.6	13.1	13.3	12.8	12.2	11.9	(10.5)S	(10.2)J	9.6	8.2	7.0	6.0	6.4
31																								
Median	6.1	6.0	5.8	5.6	5.4	4.9	4.8	6.8	(10.1)	12.2	13.0	13.4	13.5	13.5	13.2	13.0	12.6	(11.8)	(10.5)	9.4	8.4	7.5	6.8	6.4
Count	28	28	28	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	27	27	29	29	29	29

Sweep 1.0 Mc to 25.0 Mc In 0.25 min

Monuol ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1948 O - 708318

TABLE 54

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

Form adopted June 1946

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), November (Month), 1947

Observed at Washington, D.C.

Lat. 39.0°N, Long. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

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	7.2	7.1	6.6	6.5	6.2	(5.9)J	7.4	(10.3)J	(11.6)C	(14.5)S	(14.7)J	[14.5]C	(14.0)J	(14.4)S	[13.2]C	(13.0)	(12.2)J	(11.5)M	S C	S C	9.0	8.2	7.3	7.0
2	7.2	7.3	7.5	7.0	(6.4)J	6.6	6.8	(9.5)C	S C	(13.4)C	S C	(13.6)F J	(13.5)F	[13.4]C S	(13.3)	(13.5)	(12.6)	(12.1)	[10.7]C S	9.3	8.9	8.2	8.1	7.0
3	6.8	6.4	5.7	5.4	5.2	4.8	5.6	(9.4)F	11.8	(13.8)	(13.7)F	(13.8)J	(14.2)	13.2	(13.0)J	(12.6)	12.6	(12.5)S	(10.4)	9.0	8.4	8.2	8.2	8.2
4	8.0	7.0	6.6	6.0	5.7	5.4	(6.0)J	8.8	10.4	(13.0)	13.2	14.0	(14.4)	[14.3]S	(14.4)J	(13.9)	S C	[11.8]S	(9.2)S	(9.4)F	9.0	8.0	7.6	7.2
5	7.0	7.0	6.8	6.6	5.6	4.9	5.6	9.2	11.6	12.4	(13.5)	(13.6)	(12.9)F	(12.7)F	(13.6)F	13.0	[10.9]C S	(9.9)S	9.3	8.2	7.4	7.1	5.9	6.1
6	(6.0)J	6.1	5.9	(5.6)J	5.0	4.4	5.5	9.2	(10.6)F	11.9	12.9	(12.9)F	13.1	13.1	13.0	13.0	(12.8)	11.0	(10.0)	9.0	7.6	6.8	6.1	5.8
7	5.6	5.2	5.3	5.2	4.8	4.2	5.4	9.5	(11.2)J	12.6	(12.6)	13.4	13.0	(12.8)F	13.2	13.1	[10.3]S	(9.5)F	9.3	8.4	7.6	6.9	(6.5)J	6.6
8	6.8	6.4	6.3	6.4	6.2	5.4	5.8	7.4	8.8	9.6	11.0	12.3	12.9	(12.8)F	(12.4)S	(11.8)S	(11.9)S	[10.8]S	(9.8)F	8.3	8.2	7.3	7.4	7.7
9	7.6	7.5	7.7	6.7	6.2	5.2	5.0	7.2	8.2	8.2	8.5	(10.5)2	(10.9)K	(10.2)K	10.6	10.1	12.5	(12.5)F K	(8.7)J K	F K	(4.4)F K	F R K	F R K	F R K
10	(3.6)F K	(5.8)F K	(6.2)F K	(6.3)F K	(4.7)F K	(3.6)J F	(4.8)J F	(7.6)J	(10.6)	11.0	12.5	(13.6)C	14.4	13.5	13.3	12.5	(11.8)F	11.0	9.4	(6.2)J	6.1	(5.1)R	(4.9)Z V	(6.2)J V
11	(6.0)J V	(5.1)Z V	(3.5)Z R	(3.2)Z F	F R	(3.8)V	4.6	(8.2)F	9.7	(10.6)	10.9	12.6	13.3	12.4	12.0	(11.2)J	[10.4]S	9.6	9.4	8.7	7.8	6.8	(5.8)K	F R K
12	F R K V	F R K V	F R K V	F R K V	F R K	F R K	(4.9)F K	(8.7)F K	(12.0)K	13.0	(13.4)	13.0	13.2	12.8	13.0	(12.7)F	(11.6)S	(9.8)F	(8.5)F	8.2	7.5	(7.0)J	6.0	5.6
13	5.5 V	5.4 V	5.5 V	5.0 F	4.7 F	4.9 F	(7.2)J V	7.4	10.3	12.0	(12.6)	(13.3)	14.0	13.2	(13.3)F	12.7	14.0	(10.6)	9.6	7.7	6.7	6.2	5.9	5.3
14	5.4	4.8	4.3 V	4.2	4.0	3.6	4.9	8.9	11.0	12.4	13.5	13.8	(13.5)F	(13.8)F	13.6	13.5	12.8	[11.2]S	(9.7)F	S C	8.0	7.0	6.0	5.2
15	5.1	5.1	5.2 V	4.2	(3.2)F	3.6 V	5.2 V	9.7	[12.2]C	13.1	13.6	13.1	(13.7)F	(13.4)F	13.7	(13.7)S	13.4	(12.2)	[10.8]S	(9.4)F	8.1	7.2	(6.5)J	(6.7)J
16	(6.7)J	(6.2)F	6.9	5.6	5.5	5.3	6.2	(9.7)F	13.0	(13.7)F	(14.2)J	(14.6)F	(14.7)J	(13.4)F	(13.5)F	13.0	(12.5)S	11.7	(9.8)F	9.0	7.5	(7.3)J	6.5	5.6
17	5.5	5.2	5.0	4.8	4.4	4.2	4.7	9.0	11.6	[13.2]C	13.6	(13.5)F	13.6	13.5	13.8	13.6	12.6	12.0	[10.3]C	8.7	7.4	7.0	6.2	6.3
18	(6.2)J	6.5	6.0	5.4	4.2	4.3	5.0	9.2	12.5	13.0	13.6	14.2	(13.5)F	(13.4)F	13.0	13.4	13.0	(10.3)S	[9.9]S	(9.6)S	8.8	8.2	7.2	(6.4)J
19	6.0	5.8	5.6	5.3	5.4	5.3 V	5.8 V	8.2	10.6	(11.0)J	12.5	14.0	(13.8)	14.0	15.2	13.6	13.6	12.6	(11.4)J	9.6	8.3	7.5	(6.6)J	6.0
20	5.8	(6.8)J	5.2	5.0	4.4	(4.2)F	4.8	8.8	12.7	13.8	13.8	14.0	13.5	13.2	12.9	12.8	(12.4)	(10.6)	9.8	8.6	7.8	6.2	5.7	5.0
21	5.0	4.9	5.4	5.3 F	5.5 F	4.2 F	4.7	9.2	10.5	13.6	14.0	(15.0)	(13.8)F	13.2	13.0	12.6	12.6	(12.0)S	[10.8]S C	(9.7)S	8.1	7.3	7.2	6.3
22	5.9	6.4	6.2	5.8	5.4	4.7	4.8 V	8.4	12.0	13.1	13.2	(14.0)S	(13.8)F	13.6	(13.9)F	(13.0)F	[12.5]S C	(12.0)S	(11.2)J	[9.6]S C	8.1	7.4	(6.9)J	6.2
23	6.2	5.8	5.5	4.8	4.5	4.6	5.5	9.4	12.0	13.2	(14.1)J	(14.0)J	[14.1]C	(14.3)S	(13.2)S	(13.3)F	[12.0]S C	(11.8)F	[10.5]S C	9.2	8.0	7.3	6.6	6.0
24	5.6	5.6	5.7	5.4	5.0	4.7	5.4	9.0	12.4	S C	(13.4)S	(12.5)F	(13.6)	(13.5)	13.0	12.0	12.0	[10.9]C	(9.8)	9.0	8.6	8.3	8.2	7.6
25	7.0	(5.8)J	5.5	5.4	5.6	5.2	5.4	9.2	11.8	13.5	14.0	14.2	[13.5]Q	C	13.0	(13.0)S	(11.7)S	S C	S C	(8.7)J	(7.5)F	6.8	(6.5)J	(6.2)J
26	(6.3)S V	5.9	5.8	5.8	5.5	5.6	5.5	(8.5)F	11.7	[12.6]C	(13.5)F	13.3	13.2	13.0	(12.4)F	(12.3)F	S C	S C	S C	(8.4)F	7.7	7.2	6.2	6.4
27	6.0	5.4	5.4	5.4	5.4	5.4	4.7 V	7.6	(9.4)F	12.2	12.7	12.6	(12.8)F	12.5	12.6	(12.0)C	(11.0)J	(9.2)F	(9.6)S	(8.3)F	8.2	7.1	6.2	5.9
28	5.8	5.8	5.9	5.7	5.6	5.5	5.5	8.7	11.2	12.5	13.1	13.2	13.5	(13.1)S	[13.0]C	12.5	[11.5]S C	(10.4)J S	9.8	9.3	7.7	7.0	6.4	6.2
29	5.8	6.5	6.2	6.0 V	5.8	5.0	5.4	7.8	(10.3)J	(12.2)S J	(12.2)J	13.7	13.4	12.8	(13.0)S	(13.8)F	(12.4)F	[11.3]S C	(10.3)J	9.4	8.0	7.8	(6.8)J	5.8
30	5.8	5.7 V	5.4	5.2 V	5.0	4.5	4.2	7.6	10.8	(11.0)J	12.6	12.5	13.2	13.1	12.4	[11.3]S C	(10.2)J	(11.2)J	10.1	9.4	7.2 Z	6.5	6.4	6.4
31																								
Median	6.0	5.8	5.7	5.4	5.4	4.8	5.4	8.8	11.2	12.6	13.4	13.5	(13.5)	13.2	13.0	13.0	(12.4)	(11.2)	(9.8)	9.0	7.9	7.2	6.5	6.2
Count	29	29	29	29	28	29	30	30	29	29	29	30	30	29	30	30	28	28	27	27	30	29	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1948 O - 705510

TABLE 55

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

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W, 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1													200											
2											200	(190)C												
3																								
4															210									
5												210												
6												220		230	230									
7										220	230	220												
8										210H	230	210H	220		230	230								
9								K	K	230K	210K	230K	230HK	K	B K	K	K	5 K	K					
10									210															
11											230													
12								K	K		210	220	220	230										
13								(180)																
14										110		220												
15												210												
16										220	200	220												
17										C														
18																								
19												210												
20																								
21																								
22																								
23													C	230										
24																								
25													200	230										
26										C			200											
27									(170)				220											
28												220	220											
29														220										
30																								
31																								
Median										220	210	220	220	230										
Count								1	2	5	7	12	8	5	3	1	0	0	0					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1948 O - 702519

TABLE 56

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

Form adopted June 1946

IONOSPHERIC DATA

f°F1 (Characteristic), Mc (Unit), November (Month), 1947

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W — 75°W Mean Time

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

Calculated by: ,

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1946 O - 702518

Form adopted June 1946

TABLE 57

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

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), November (Month), 1947

Observed at Washington, D.C.

Lat. 39.0°N, Long. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	120	100	100	A	A	A	(120)^{A}	(120)	(120)^{A}	120	A					
2									110	110	(110)^{B}	(120)^{B}	(100)^{B}	(120)^{B}	(120)^{B}	120	(120)^{A}	(120)^{B}						
3								120	110	110	110	120	110	100	110	110	120	120	100					
4								100	120	100	100	110	110	(120)^{B}	110	130	100	(130)^{S}	A					
5								100	110	110	110	110	110	(120)^{B}	(120)^{B}	A	(120)^{A}	(100)^{S}						
6								120	120	100	100	(100)^{B}	(100)^{B}	100	100	110	110	140						
7								A	100	100	100	120	100	(120)^{B}	100	110	120							
8								100	(130)^{A}	100	100	100	100	(100)	(120)	A	100	(100)^{B}						
9								(120)$^{A}_{K}$	120^{K}	(120)$^{A}_{K}$	(100)$^{B}_{K}$	(120)$^{B}_{K}$	(120)$^{B}_{K}$	(100)$^{B}_{K}$	B^{K}	(120)$^{B}_{K}$	(120)$^{A}_{K}$							
10								110	110	110	110	(100)^{B}	100	(120)^{B}	110	110	(120)^{S}							
11								110	110	(120)^{A}	110	B	(120)^{B}	(120)^{B}	110	110	(120)^{S}	S						
12								110^{K}	100^{K}	100	100	B	B	B	(130)^{B}	(100)^{B}	B							
13								120	120	100	110	110	120	110	(120)^{B}	(120)^{B}	120	120	100					
14								(170)	110	100	100	100	100	A	(120)^{A}	120	(120)	A						
15								B	100	(120)^{A}	B	A	(130)^{A}	A	(120)^{A}	B	A							
16								110	120	110	(120)^{B}	120	(120)^{B}	120	(120)^{B}	(140)^{B}	(130)^{A}	A						
17								A	110	C	A	A	(120)	110	110	120	B	B	B					
18								B	120	100	110	100	110	120	120	110	(120)^{A}	A						
19								120	(120)^{A}	110	110	100	100	110	100	110	B	B						
20								B	100	100	100	100	100	120	120	110	120	B						
21								S	120	100	100	120	110	(100)^{B}	(120)^{A}	120	120	S						
22								110	100	100	A	(110)^{B}	(110)^{B}	(110)^{B}	(100)^{B}	A	(120)^{A}	A						
23									120	100	(130)^{A}	(110)^{B}	C	(110)^{B}	110	(120)^{B}	(120)^{S}	A						
24								A	(120)^{A}	120	110	110	B	120	B	110	110	110	110					
25								B	100	110	110	110	110	100	110	110	120	S						
26									100	C	110	110	(110)^{B}	110	110	110	110	S^{C}						
27									120	110	(120)^{B}	(120)^{B}	(120)^{B}	(120)^{B}	(120)^{B}	(120)^{B}	(120)^{A}	S^{C}						
28									110	110	110	100	110	110	110	110	110	S						
29								S	100	110	110	(120)^{B}	(120)^{B}	(120)^{B}	110	110	110	A						
30									A	120	(120)^{B}	(120)^{B}	(120)^{B}	(110)^{B}	110	110	110	S						
31																								
Median								110	110	110	110	110	110	110	110	110	120	120						
Count								14	29	28	27	25	26	26	28	26	26	9	3					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE: 1946 O - 703318

TABLE 58

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

Form adopted June 1946

IONOSPHERIC DATA

f°E (Characteristic), Mc (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat. 39.0°N, Lang. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: K. L. W., M. C. E.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								(1.9)^{H}	(2.0)^{H}	3.2^{F}	3.5	A	A	(3.6)^{A}	3.3	(2.8)^{A}	2.4	A	A					
2									2.7	3.0	3.3	(3.6)^{B}	(3.8)^{B}	3.8	3.6	3.2	(2.6)^{B}	B						
3								1.6^{H}	(2.2)^{H}	[2.8]^{A}	(3.5)^{F}	3.6	3.8	3.7	3.5	3.0	(2.8)	B	A					
4								A	2.6	3.0	3.2	3.4	3.6	3.5	3.2	2.9	(2.2)^{H}	1.9	A					
5								1.9	2.6	3.4	3.5	3.6	(3.6)	(3.7)^{B}	3.6	(3.0)^{A}	(2.3)	S						
6								(1.7)^{H}	2.6	3.1	3.4^{F}	3.5	3.7	3.6	3.3	3.0	2.3	1.6						
7								1.9^{H}	2.6	3.1	3.3	3.4	3.4	3.5	(3.4)	(2.9)	(2.1)							
8								(1.9)	2.6	3.0	3.3	3.4	3.4	3.4	3.2	[2.7]^{A}	2.3	B						
9								(1.7)$^{A}_{K}$	(2.5)$^{B}_{K}$	3.0^{K}	3.3^{K}	3.5^{K}	3.6^{K}	(3.6)$^{B}_{K}$	[3.3]$^{B}_{K}$	3.1^{K}	(2.1)$^{H}_{K}$							
10								(1.9)^{A}	(2.4)	(3.0)	3.2	(3.1)	3.5	3.4	3.2	2.8	(2.1)^{H}							
11								(1.7)^{H}	(2.5)	(3.0)	3.1	(3.2)^{B}	3.4	3.4	3.3	2.8	2.3	S						
12								F^{K}	2.2$^{H}_{K}$	2.9	A	B	B	(3.7)^{B}	(3.4)	3.0	B							
13								(1.7)	(2.3)	2.6	3.2	3.5	3.6	3.4	(3.4)	[2.8]^{B}	3.3	B	A					
14								1.9	2.4	3.0	3.3	3.5	3.6	(3.2)^{H}	(3.1)^{H}	3.0	2.4	A						
15									B	(2.8)^{H}	(3.4)	B	B	(3.3)^{H}	[3.1]^{A}	(3.0)^{A}	B	A						
16								(1.7)^{H}	(2.1)^{H}	(3.0)	3.2	(3.4)^{B}	(3.3)^{B}	(3.4)	(3.1)^{B}	3.0	(2.3)^{B}	A						
17								A	2.6	C	A	A	(3.6)^{B}	3.5	3.2	2.9	B	B	B					
18								1.6	(2.5)	[2.9]^{A}	3.3	A	3.6	(3.5)	3.3	2.9	2.4	A						
19								(1.8)^{F}	2.4	[2.8]^{A}	3.3	3.5	3.6	3.6	3.4	3.0	B	B						
20								1.9	2.6	3.1	3.4	[3.5]^{A}	3.6	3.6	3.4	3.1	2.3	1.7						
21								(1.9)	3.7	3.2	[3.5]^{A}	3.8	3.8	3.6	(3.4)^{F}	3.0	2.2	S						
22									(2.6)^{B}	3.2	3.4	[3.5]^{A}	3.7	(3.2)^{H}	(3.1)^{H}	(3.0)^{A}	2.4	A						
23									2.5	3.1	3.5	3.7	[3.8]^{C}	3.9	3.4	(2.8)^{H}	(2.1)^{H}	A						
24								A	(3.4)	(2.9)^{H}	(3.5)	(3.6)^{B}	B	B	B	3.0	2.4	A	A					
25								1.9	[2.5]^{A}	3.1	3.2	3.6	3.7	3.6	(3.0)^{H}	(2.9)^{H}	2.3	S						
26									(2.4)^{F}	[2.9]^{C}	3.3	3.6	(3.7)^{B}	(3.6)^{B}	3.3	(2.7)^{A}	(1.8)^{H}	S^{C}						
27									2.4	3.0	(3.4)^{B}	(3.6)^{B}	(3.1)^{H}	3.6	3.4	(3.0)	(2.4)^{B}	S						
28									2.3	3.0	3.3	3.5	3.6	3.7	3.3	[2.5]^{B}	(1.8)^{H}	S						
29								S	1.8^{H}	[2.5]^{B}	3.3	3.3	(3.6)^{B}	(3.7)^{B}	3.2^{H}	[2.8]^{B}	2.3	A						
30									A	B	3.1	3.4	3.6	3.4	3.3	[2.7]^{B}	(2.2)^{B}	S						
31																								
Median								(1.9)	2.5	3.0	3.3	3.5	3.6	3.6	3.3	3.0	2.3							
Count								17	28	28	28	25	26	29	29	30	26	3	0					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 59

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc-Km (Unit) November (Month), 1947

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W — 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: J. T. D., F. H. L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			2.7/100			2.8/120		1.9/110	1.8/100			5.2/120	4.1/100	4.1/120	4.2/120	3.3/120	2.1/100	2.3/120	4.0/110	2.0/100	4.0/100	3.1/100	3.1/100	4.4/100
2	5.0/100	3.8/100	4.3/100	3.4/100	2.7/100			1.7/110								2.0/100	2.2/100		1.7/100	1.8/100	1.9/110	1.7/100		
3			1.8/100	1.8/110	1.8/100	1.8/110				3.2/120												1.8/110	3.4/100	
4							5.4/100	1.8/100											3.0/130	2.0/110	3.3/100		3.8/110	3.6/100
5							3.2/120	1.8/120								4.2/120	1.9/100		1.8/100					
6	1.7/100								2.2/100															
7	1.7/100	3.3/100	2.1/100	1.6/100	1.6/100			1.8/110			3.1/100	2.4/100						1.8/100					2.1/100	3.1/100
8	1.9/110	1.9/110		3.6/120			3.2/100		2.0/100							2.9/120			1.8/100					1.8/100
9		1.7/100		1.9/100	1.9/100	1.8/100	2.2/100	1.9/100		3.2/100							1.9/100							
10			5.6/120	3.3/140	5.4/140			3.9/120																
11				3.5/130						2.6/100														
12						9.6/140					3.9/100													
13				1.8/120	1.3/120	1.8/120													4.2/100			1.8/100		
14			1.7/110			3.2/110	2.9/100	1.8/110						3.0/100	2.9/100	2.2/100	2.6/120	1.9/100	1.9/100		2.8/120			
15					5.5/120	5.7/130	5.5/120	1.8/120	2.2/120		3.0/100	3.0/100	3.4/100	2.9/100	4.0/100	3.3/100	3.0/120	2.2/100	1.9/100		1.8/100			
16															2.0/100		2.0/100	2.1/100	1.9/100					
17		(3.2)/100	1.7/100		1.8/110			2.0/100			3.7/120	3.4/120												
18			1.4/100							3.6/110		5.5/100					2.0/100	1.8/100						
19					1.3/100		(3.0)/120	6.8/120	2.3/110	2.8/110												1.7/100		
20							3.3/110	2.2/100				4.3/100												
21											3.6/100				2.8/100	1.9/100	2.0/100	1.8/120						
22												3.7/120				3.1/120	2.1/110	3.3/120		2.1/120		1.8/120	1.9/120	
23									1.8/100		3.1/120						2.6/130	2.1/120	3.8/110					
24								2.1/120	2.2/120								4.2/110	5.8/110	2.0/110			3.0/100		
25									5.4/100								(3.8)/130	4.5/110	2.0/110	1.8/110				
26																3.4/130								
27																	2.0/100	1.8/100						
28																4.1/130								
29																		4.4/100						
30								4.2/100	3.7/100	2.1/100	2.1/100													
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30

** MEDIAN f_{E_s} LESS THAN MEDIAN $f^{\circ}E$, 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 - 703519

TABLE 60

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

Form adopted June 1946

IONOSPHERIC DATA

F2-MI500 (Characteristic), ____ (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: B. C. V., J. L. K.

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	1.8	1.9	1.8	1.8	(1.9)J	1.8	(2.1)J	(2.3)J	2.2	2.0	2.0	2.0	(2.1)J	(1.9)S	(1.9)	(1.9)J	(2.0)P	(2.2)P	SC	1.9	(1.9)J	(1.9)J	1.8
2	1.7	1.8	2.1	2.0	2.0	(2.0)J	1.9	(2.3)	(2.2)	(2.3)C	(2.2)C	(2.4)P	(2.3)P	(2.2)P	2.0	2.0	(2.0)J	(2.0)N	(2.0)S	(2.0)P	(1.8)S	2.0	2.0	2.2
3	1.9	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.3	(2.2)B	(2.2)P	(2.2)J	(2.1)	(2.0)	(1.9)	(2.0)	(2.0)	1.9	(2.1)	2.0	1.9	1.8	1.9	2.1
4	1.9	2.1	1.9	1.9	2.0	2.0	1.9	2.1	(2.2)	(2.2)	(2.1)	2.1	(2.0)	(2.1)S	(2.1)	(2.2)P	(2.0)P	(2.2)P	SC	(2.1)	(2.1)J	2.0	2.0	2.0
5	2.0	2.0	2.0	2.0	2.1	2.1	1.9	2.3	(2.3)J	2.1	2.1	(2.1)	(2.0)P	2.2	(2.1)P	2.0	(2.1)P	(2.1)P	(2.4)P	2.1	2.0	1.9	(2.0)J	(2.1)J
6	1.9	2.0	2.0	2.1	2.0	2.0	2.0	2.1	(2.3)P	2.2	(2.3)P	2.1	2.1	2.0	2.1	2.1	(2.1)	(2.1)	(2.2)	2.1	2.0	1.9	2.0	1.9
7	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.2	2.1	2.3	2.2	2.1	2.0	2.0	2.1	2.1	(2.1)P	[2.1]S	(2.1)P	2.0	2.0	1.9	1.9	1.8
8	1.8	1.8	1.7	(1.6)J	1.7	1.7	1.7	2.0	2.1	2.0	2.0	2.0	2.0	1.9	(2.0)P	(2.0)S	(2.0)S	[2.0]S	(2.1)	1.9	1.9	(1.8)J	1.7	1.7
9	1.9	1.8	2.0	2.0	1.9V	1.7	1.7V	1.9K	2.2K	2.2K	2.1K	1.9VK	(2.0)PK	(1.9)SK	2.3K	2.1K	1.8K	(1.8)PK	SCK	FSK	FRK	FRK	FRK	FRK
10	FRK	FRK	FRK	(2.0)FK	(2.0)FK	(2.0)FZK	(2.6)JFK	2.3	2.0	(2.4)J	2.1	2.1	(2.1)P	(2.1)P	2.1	2.1	2.1	2.1	(2.2)S	[2.0]S	1.8	(1.7)JV	(1.5)ZV	(1.8)ZV
11	1.9V	(1.8)R	(1.8)Z	(1.8)ZV	(1.7)ZV	(1.5)Z	(1.7)F	2.1V	2.4	2.2	(2.3)	2.0	2.0	2.0	2.0	2.0	2.1	(2.2)P	2.0	[2.0]S	2.1	2.0	1.9K	FRK
12	FRK	FRK	FRK	FRK	FRK	FRK	FRK	(2.2)FK	[2.2]FS	2.3	2.1	2.0	2.0	2.1	2.0	2.2	2.1	[2.1]S	(2.2)P	2.0	2.0	1.9	1.9	1.9
13	1.7V	1.7V	1.7V	1.9F	1.8F	(1.9)JV	1.9V	2.1V	(2.3)J	(2.3)	(2.3)	(2.2)	(2.1)	2.0	2.1	2.2	2.1	2.3	2.0	2.1	2.0	2.1	2.0	2.0
14	1.9	1.9	2.0	1.9	1.9	1.9	1.8	2.1	(2.3)	(2.2)J	2.1	2.1	2.0	2.2	2.0	2.1	2.0	(2.1)	SC	SC	(2.3)J	1.9	(2.0)J	1.9
15	1.5	1.7	1.8	1.8V	1.5V	1.7V	1.8	(2.0)	(2.4)J	2.4	(2.3)P	(2.2)P	(2.1)P	2.1	2.1	2.2	2.1	(2.2)PS	SC	(2.2)S	2.0	(2.0)J	(1.9)J	(1.7)J
16	1.8	1.9	1.7	1.7	1.7	1.7	1.8	1.9	(2.1)J	2.2	2.2	(2.2)J	(2.1)J	(1.9)P	2.0	2.0	2.0	(2.0)P	(2.1)J	(2.0)P	2.0	2.0	2.0	2.0
17	1.8	1.7	1.8	1.9	1.8	1.8	2.0	2.0	(2.3)S	(2.2)P	2.2	(2.1)P	(2.1)	2.0	2.0	2.0	2.0	(2.1)	(3.1)	(2.3)	2.0	1.9	1.8	1.7
18	1.8	1.8	2.0	1.9	2.0F	1.7F	1.9F	2.1	2.2	2.1	2.0	2.0	2.1	(2.1)J	(2.1)P	(2.0)P	2.0	(2.0)J	SC	(2.0)	(1.9)S	2.0	2.0	(1.9)J
19	1.6	1.6	1.6	1.5	1.5	1.7	1.7	1.9	2.1	2.1	2.1	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	2.1	2.0	1.9	1.8	2.0
20	(1.9)J	1.9	2.0	1.9F	2.0F	1.9F	2.0F	2.1	(2.1)J	2.1	2.1	2.1	1.9	1.9	1.9	2.0	2.1	(2.0)	2.0	1.9	2.2	1.9	1.9	1.8
21	1.6F	1.7	1.6F	1.8	1.9F	2.0F	2.0F	2.0	2.1	2.1	(2.1)	(2.1)	(2.0)J	1.9	1.9	2.0	1.9	[2.0]S	(2.0)P	(1.9)S	(2.0)S	1.9	1.9	1.9
22	1.8	1.9	1.9	2.0	2.1	2.0	2.0	2.0	(2.3)P	2.2	2.2	(2.2)P	(1.9)S	(2.0)J	(1.9)P	(1.9)P	(2.0)S	(2.0)S	SC	2.1	2.1	1.9	(1.9)J	
23	1.8	2.0	2.0	1.9	1.6	1.6	1.9	2.2	2.2	2.3	2.2	(2.0)	C	(2.1)J	(2.1)S	2.1	(2.2)S	(1.9)S	(2.0)J	(2.0)S	2.0	1.9	1.9	(2.0)J
24	2.0	1.9	1.9	2.0	1.9	1.8	1.8	1.9	(2.3)J	(2.2)J	(2.4)J	(2.1)J	(2.1)P	(2.0)	1.9	1.8	1.9	(1.8)	(1.8)	1.8	1.8	2.0	1.9	2.0
25	1.9	1.9	1.8	1.7	1.9	1.9	1.8	1.7	(2.1)	2.0	2.1	1.9	1.9	(1.9)P	(2.0)P	(2.0)P	SC	(1.9)S	SC	(1.9)P	2.0	1.9	(1.8)J	1.8
26	1.8	1.9	1.6V	1.7V	1.9	1.9V	2.0	2.2V	(2.2)J	(2.2)P	(2.2)S	(2.1)P	2.1	(2.1)P	(2.0)C	(1.9)J	[1.9]S	(1.9)S	SC	SC	2.0	1.8	(2.0)J	(1.9)J
27	2.0	1.9	1.7	1.8	1.8	1.9	1.9V	(1.9)JV	(2.2)P	2.0	2.2	(1.9)JS	2.0	2.0	2.0	1.9	(2.2)S	(2.0)J	SC	(2.0)P	2.0	2.0	1.9	1.9
28	1.9	1.8	1.8	1.8	1.9	1.8	1.8	1.9	2.3	2.1	2.1	2.2	1.9	1.9	(2.0)S	2.0	(2.1)J	(2.4)S	(2.1)P	2.0	2.0	1.9	1.9	1.9
29	1.7	1.7	1.8	1.9	1.8	1.8	1.8	2.1	2.2	2.2	2.2	2.3	2.0	2.1	2.1	2.0	SC	(2.4)P	2.2	2.0	2.0	2.0	2.1	2.0
30	1.9	1.9	2.0	2.0V	1.9V	2.0	2.1	2.1	2.5	2.3	2.4	2.2	2.1	2.1	2.0	2.0	2.1	(2.3)J	(2.1)J	2.1	2.1	1.9	1.9	2.0
31																								
Median	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	(2.2)	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	(2.0)	(2.1)	2.0	2.0	1.9	1.9	1.9
Count	28	28	28	29	29	29	29	30	30	30	30	30	29	30	30	30	28	30	22	25	29	29	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 61

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

Form adopted June 1946

IONOSPHERIC DATA

F2-M 3000 (Characteristic), ____ (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: J. L. K., B. C. V.

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	2.9	2.8	2.8	2.7	2.7	(2.8)J	2.7	(3.0)J	(3.4)J	3.1	2.8	2.9	2.9	(3.0)J	(3.0)J5	(2.9)	(3.0)J	(2.9)P	(3.0)P	(3.1)	2.9	(2.9)J	(2.9)J	2.7
2	2.6	2.6	3.0	3.1	2.9	(2.9)J	2.9	(3.4)	(3.1)	(3.3)C	(3.1)C	(3.1)P	(3.3)P	(3.1)P	3.0	3.0	(3.0)J	(3.0)	(3.0)S	(3.0)P	(2.7)S	2.9	3.0	3.1
3	2.9	2.9	3.0	2.8	2.8	2.9	2.7	3.0	3.3	(3.3)B	(3.1)P	(3.0)J	(3.1)	(3.0)	(2.7)	(2.9)	(2.7)	2.7	(3.1)	2.9	2.8	2.8	2.9	2.9
4	3.0	3.2	2.9	2.8	3.1	2.9	2.6	3.1	(3.1)	(3.1)	(3.2)	3.1	(3.0)	(2.9)S	(3.0)	(3.1)P	(3.0)P	(3.2)P	S C	(2.9)	(2.9)J	3.0	2.9	2.9
5	2.9	2.8	2.9	2.9	3.1	3.2	2.9	3.3	(3.3)J	3.2	3.1	(3.1)	(3.0)P	3.1	(3.1)P	3.0	(3.1)P	(3.3)P	(3.4)P	3.1	3.0	2.9	(2.9)J	(3.1)J
6	2.8	2.9	3.0	3.3	3.0	3.0	2.9	3.2	(3.5)P	3.4	(3.5)P	3.1	3.1	3.1	3.0	3.2	(3.3)	(2.9)	(3.4)	3.0	3.0	2.8	3.0	2.7
7	2.9	2.9	2.8	2.9	2.9	2.8	2.9	3.3	3.4	3.2	3.2	3.0	3.0	3.1	3.1	3.0	(3.1)P	[3.1]S	(3.1)P	2.9	2.9	2.8	2.8	2.7
8	2.8	2.7	2.5	(2.6)J	2.6	2.6	2.5	2.9	3.1	2.9	3.0	3.1	3.0	2.8	(2.9)P	(2.9)S	(2.9)S	[2.9]S	(3.0)	2.8	2.8	(2.7)J	2.6	2.6
9	2.8	2.7	3.0	3.0	2.8V	2.5	2.5V	2.9K	3.3K	2.7K	3.1K	2.9VK	(3.0)PK	(2.7)SK	2.9K	3.1K	2.7K	(2.7)PK	S CK	F SK	F RK	F RK	F RK	F RK
10	F RK	F RK	F RK	(2.9)FK	(2.9)FK	(2.8)FK	(3.1)JF	3.3	3.0	(3.3)J	3.1	3.0	(3.1)P	(3.1)P	3.1	3.1	3.2	3.1	(3.2)S	[2.9]S	2.7	(2.6)JV	(2.4)EV	(2.8)EV
11	2.8V	(2.7)R	(2.8)E	(2.7)EV	(2.5)EV	(2.4)E	(2.5)F	3.0V	3.5	3.4	(3.3)	2.9	3.1	3.0	3.1	3.0	3.1	(3.2)P	2.9	[3.0]S	3.1	3.0	2.9K	F RK
12	F RK	F RK	F RK	F RK	F RK	F RK	F RK	(3.3)KF	[3.3]SK	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.2	[3.2]S	(3.2)P	3.0	2.9	2.9	2.8	2.8
13	2.6V	2.6V	2.6V	2.7F	2.7F	(2.7)JV	2.8V	3.2V	(3.2)J	(3.4)	(3.3)	(3.2)	(3.2)	3.1	3.0	3.1	3.2	3.4	3.0	3.1	2.9	2.9	3.0	3.0
14	2.8	2.9	3.0	2.8	2.9	2.9	2.7	3.2	(3.4)	(3.2)J	3.1	3.2	3.0	3.1	3.0	3.1	3.0	(3.2)	S C	S C	(3.4)J	2.8	(2.9)J	2.9
15	2.6	2.6	2.7	2.8V	2.2V	2.6V	2.6	(3.0)	(3.6)J	3.4	(3.1)P	(3.2)P	(3.1)P	3.1	3.1	3.1	3.1	(3.0)PS	S C	(3.2)S	3.0	(2.9)J	(2.7)J	(2.6)J
16	2.7	2.8	2.7	2.6	2.5	2.6	2.7	3.0	(3.1)J	3.3	3.2	(3.0)J	(3.0)J	(2.8)P	3.0	3.0	3.1	(3.1)P	(3.1)J	(3.0)P	3.1	2.9	3.0	2.9
17	2.8	2.8	2.8	2.9	2.7	2.7	3.0	3.0	(3.4)S	(3.3)P	3.3	(3.1)P	(3.1)	3.0	2.9	2.9	2.9	(3:3)	(3.2)	(3.2)	3.0	2.8	2.8	2.7
18	2.8	2.8	2.8	2.9	3.0F	2.7F	2.7F	3.2	3.2	3.2	3.0	2.9	3.0	(3.0)J	(3.0)P	(2.9)P	2.9	(3.2)J	S C	(3.0)	(2.8)S	2.9	3.0	(2.9)J
19	2.4	2.4	2.4	2.4	2.3	2.5	2.6	2.8	3.1	3.1	3.0	3.0	2.8	2.9	3.0	3.0	3.0	2.9	2.8	3.2	3.0	2.9	2.9	3.0
20	(2.9)J	2.9	3.1	3.0F	2.9F	2.8F	2.9F	3.2	(3.2)J	3.3	3.0	3.0	2.9	2.9	2.8	2.9	2.9	(2.9)	3.1	3.0	3.0	2.8	2.8	2.6
21	2.5F	2.5	2.6F	2.7	2.8F	2.9F	2.9F	3.2	3.2	3.1	(3.1)	(3.0)	(2.9)J	2.8	2.9	2.9	2.9	(3.1)S	(2.9)P	(2.9)S	(3.2)S	2.9	2.9	2.9
22	2.8	2.8	2.9	3.0	2.9	3.0	2.9	3.0	(3.5)P	3.3	3.1	(3.2)P	(2.9)S	(2.9)S	(2.9)P	(2.8)P	(2.9)S	(2.9)	(2.8)S	S C	3.1	3.0	2.9	(2.8)J
23	2.7	2.9	2.9	2.8	2.4	2.4	2.8	3.1	3.2	3.3	3.2	(3.0)	C	(3.0)J	(3.0)S	2.8	(3.1)S	(2.9)S	(2.8)J	(2.9)S	2.8	2.8	2.8	(3.0)J
24	2.9	2.7	2.8	3.0	2.9	2.7	2.8	2.9	(3.2)J	(3.2)J	(3.3)J	(3.3)J	(3.2)P	(2.9)	2.8	2.8	2.9	(2.7)	(3.0)	2.8	2.7	2.8	2.9	2.9
25	2.9	2.9	2.7	2.7	2.8	2.8	2.7	2.6	(3.2)	3.3	3.0	2.9	2.8	(2.8)P	(3.0)P	(3.0)P	S C	(2.9)S	S C	(2.8)P	3.0	2.9	(2.8)J	2.7
26	2.8	2.8	2.5V	2.7V	2.8	2.8V	3.0	3.0V	(3.3)J	(3.3)P	(3.2)S	(3.0)P	3.0	(3.1)P	(3.0)C	(2.9)J	[2.9]S	(2.9)S	S C	S C	3.0	2.7	(3.0)J	(2.8)J
27	2.9	2.8	2.6	2.7	2.7	2.8	2.9V	(2.9)JV	(3.3)P	3.2	3.2	(3.0)JS	3.0	3.0	3.0	2.8	(3.0)S	(3.0)J	S C	(3.0)P	2.9	3.0	2.8	2.9
28	2.8	2.6	2.8	2.8	2.8	2.7	2.7	2.8	3.3	3.1	3.1	3.0	2.8	2.8	(2.9)S	2.9	(2.9)J	(3.3)S	(3.1)P	3.0	3.0	2.8	2.8	2.8
29	2.5	2.6	2.7	2.8	2.8	2.9	2.8	3.0	3.2	3.3	3.2	3.3	3.0	3.0	3.1	3.0	S C	(3.0)P	3.2	3.0	3.0	3.0	3.1	3.0
30	2.9	2.8	2.9	3.0V	2.9V	2.9	3.0	3.1	3.3	3.2	3.4	3.3	3.1	3.0	2.7	3.1	3.1	(3.4)J	(3.3)J	3.1	3.1	2.9	2.8	3.0
31																								
Median	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.0	(3.3)	3.3	3.1	3.0	3.0	3.0	3.0	3.0	3.0	(3.0)	(3.1)	3.0	3.0	2.9	2.9	2.9
Count	28	28	28	29	29	29	29	30	30	30	30	30	29	30	30	30	28	30	22	26	29	29	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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U. S. GOVERNMENT PRINTING OFFICE: 1948 O - 702510

TABLE 62

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

Form adopted June 1946

IONOSPHERIC DATA

F1-M 3000 (Characteristic), ____ (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: ____, ____

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													L													
2											L	L														
3																										
4															L											
5												L														
6												L		L	L											
7										L	L	L														
8										L	L	L	L		L	L										
9								K	K	L K	L K	L K	L K	K	B K	K	K	S K	K							
10									L																	
11											L															
12								K	K		L	L	L	L												
13								L																		
14										L		L														
15												L														
16										L	L	L														
17										C																
18																										
19												L														
20																										
21																										
22																										
23													C	L												
24																										
25													L	L												
26										C			L													
27									L				L													
28												L	L													
29														L												
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 - 703518

Form adopted June 1946

TABLE 63

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

IONOSPHERIC DATA

E-M1500 (Characteristic), ____ (Unit), November (Month), 1947

Observed at Washington, D. C.

Lat 39.0°N, Lang 77.5°W — 75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: J. L. K., B. C. V.

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								(3.9)H	(4.8)H	4.4	4.3	A	A	(4.2)A	(4.5)	(4.6)A	4.6	A	A					
2									4.2	4.3	4.2	(4.2)B	(3.8)B	3.9	4.2	4.4	(4.2)B	B						
3								4.2 H	(4.5)H	A	(4.3)F	4.2	4.1	4.1	4.3	4.3	(3.8)	B	A					
4								A	3.8	4.5	4.4	4.4	4.1	4.3	4.7	4.5	(4.5)H	4.2	A					
5								3.5	4.4	4.4	4.3	4.2	(4.2)	(4.1)B	4.2	(4.7)A	(4.3)	S						
6								(4.6)H	3.8	4.1	4.4F	4.3	4.1	4.2	4.2	4.0	4.3	3.7						
7								3.4H	3.9	4.4	4.2	4.4	4.4	4.3	(4.4)	(4.6)	(4.5)							
8								(4.7)	3.9	4.0	3.9	4.1	4.1	4.2	4.4	A	4.3	B						
9								(4.1)AK	(3.8)BK	4.0K	4.0K	4.1K	4.2K	(4.2)BK	1.3K	4.5K	(4.5)HK							
10								(4.8)A	(4.6)	(4.3)	4.4	(4.0)	4.4	4.4	4.4	4.3	(4.4)H							
11								(4.4)H	(4.3)	(4.0)	4.3	(4.4)B	4.3	4.4	4.2	4.2	4.1	S						
12								F K	4.3HK	3.8	A	B	B	(3.9)B	(4.1)	4.3	B							
13								(4.5)	(4.7)	4.6	4.2	4.1	4.2	4.1	(4.4)	B	3.9	B	A					
14								3.4	4.2	4.2	3.9	4.3	4.0	(4.7)H	(4.3)H	4.3	4.2	A						
15									B	(4.6)H	(4.3)	B	B	(4.6)H	A	(4.3)A	B	A						
16								(4.2)H	(4.8)H	(4.0)	4.4	(4.4)B	(4.5)B	(4.4)	(4.6)B	4.0	(4.0)B	A						
17								A	4.8	C	A	A	(4.0)B	4.3	4.4	4.2	B	B	B					
18								3.9	(4.2)	A	4.2	A	4.2	(4.5)	4.5	4.1	4.2	A						
19								(4.4)F	4.4	A	4.2	4.0	4.2	4.2	4.5	4.3	B	B						
20								3.6	4.2	4.2	4.1	A	4.2	4.2	4.2	4.4	5.7	B						
21								(3.7)	3.0	4.2	A	4.0	4.0	4.4	(4.7)F	4.3	4.7	S						
22									(4.2)B	4.1	4.1	A	4.1	(4.7)H	(4.5)H	(4.2)A	4.3	A						
23									4.0	3.8	4.3	4.1	C	4.1	4.4	(4.6)H	(4.8)H	A						
24								A	(4.1)	(4.5)H	(4.5)	(4.4)B	B	B	B	4.0	4.2	A	A					
25								B	A	4.0	4.5	4.2	4.1	4.2	(4.4)H	(4.3)H	4.4	S						
26									(4.1)F	C	4.3	4.3	(4.2)B	(4.4)B	4.5	(4.4)A	(4.8)H	SC						
27									4.4	4.3	(4.4)B	(4.2)B	(4.5)H	4.2	4.3	(4.5)	(4.3)B	SC						
28									4.3	4.3	4.4	4.4	4.4	4.3	4.5	B	(4.8)H	S						
29								S	4.9H	B	4.2	4.5	(4.1)B	(4.1)B	4.6H	B	4.5	A						
30									A	B	4.5	4.5	4.2	4.4	4.5	B	(4.5)B	S						
31																								
Median								(4.2)	4.2	4.2	4.3	4.2	4.2	4.2	4.4	4.3	4.4							
Count								16	27	23	27	23	25	29	27	25	26	2						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE : 1946 O - 702519

Table 64

Ionospheric Storminess at Washington, D.C.

November 1947

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	1	0			2	2
2	2	2			2	1
3	1	1			1	2
4	1	1			2	2
5	1	1			1	1
6	1	2			0	1
7	2	2			0	2
8	3	3			3	3
9	1	5	1200	---/	3	5
10	4	2	---/	1200	4	4
11	3	2			4	4
12	4	2	0300	1400	4	2
13	2	2			3	2
14	2	1			2	2
15	2	1			4	2
16	2	1			3	2
17	2	1			2	1
18	1	1			2	2
19	3	1			4	2
20	1	1			2	2
21	3	1			1	2
22	1	1			1	1
23	1	2			2	1
24	1	2			1	3
25	1	1			2	1
26	1	2			1	2
27	2	2			1	2
28	2	1			1	1
29	2	1			2	2
30	1	1			2	2

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

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

/Dashes indicate continuing storm.

Table 65

Sudden Ionosphere Disturbances Observed at Washington, D.C.

November 1947

1947 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
November					
5	1339	1450	Ohio, D.C., England	0.1	
9	1757	2000	Ohio, D.C.	0.0	
13	1700	1725	Ohio, D.C., England	0.2	
21	1149	1240	England	0.03	
23	1952	2005	Ohio, D.C.	0.1	Terr.mag.pulse** 1950-1955
24	1855	1910	Ohio, D.C.	0.3	
27	1918	1935	Ohio	0.2	

*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 November 21.

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

Table 66

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

1947 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
October				
25	1020	1035	Brentwood	Canary Is., Kenya, Southern Rhodesia, Spain, Yugoslavia, Zanzibar
November				
13	1705	1720	Brentwood	Chile, Colombia, Uruguay
22	1250	1330	Brentwood	Belgian Congo, Canary Is., Colombia, Chile, Greece, Kenya, Portugal, Spain, Surinam
22	1305	1325	Somerton	Argentina, Barbados, Brazil, Gold Coast, Union of S. Africa

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 67

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
October 1947

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

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

**In addition to dates marked X, the following were designated as probable disturbed days on forecasts more than eight days in advance of said dates: October 13, 17, 18, and 19.

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 68

American and Zürich Provisional Relative Sunspot Numbers

November 1947

Day	American* number	Zürich** number	Day	American* number	Zürich** number
1	114	101	16	183	170
2	90	98	17	146	168
3	82	74	18	179	177
4	87	80	19	200	180
5	74	81	20	221	182
6	88	76	21	219	190
7	90	91	22	193	180
8	82	69	23	209	171
9	74	72	24	244	180
10	60	55	25	212	190
11	67	65	26	197	193
12	102	90	27	144	160
13	140	85	28	142	100
14	156	107	29	130	113
15	178	192	30	130	131
No. of Days: 30			Monthly means:	141.1	127.4

*Median of data from 20 observers.

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

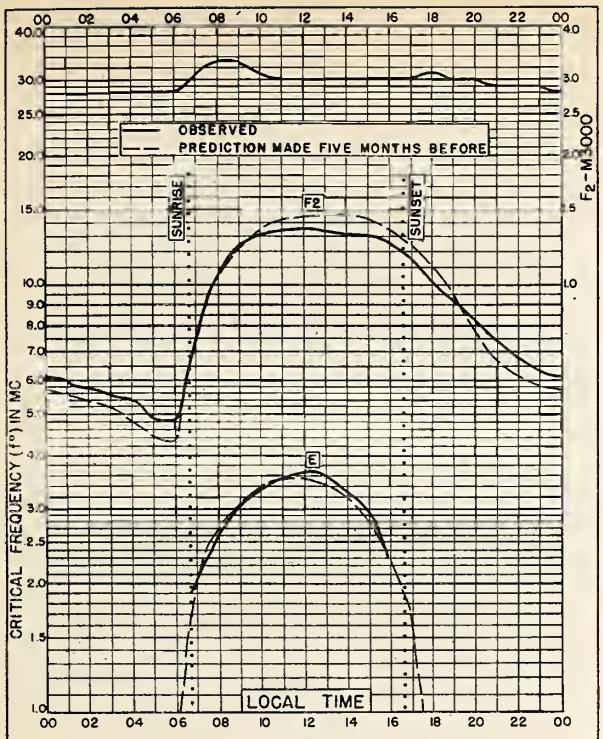

Fig. 1. WASHINGTON, D.C.
39.0°N, 77.5°W NOVEMBER 1947

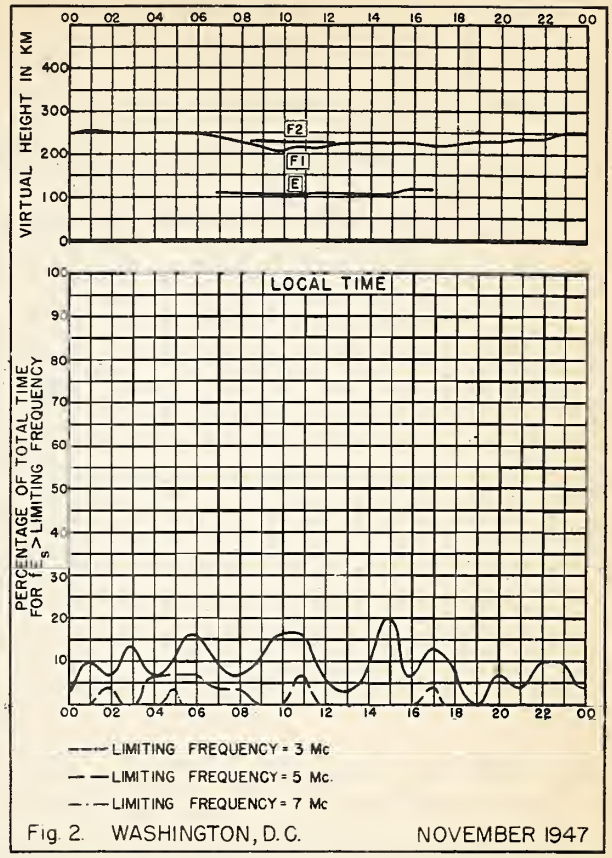

Fig. 2. WASHINGTON, D.C. NOVEMBER 1947

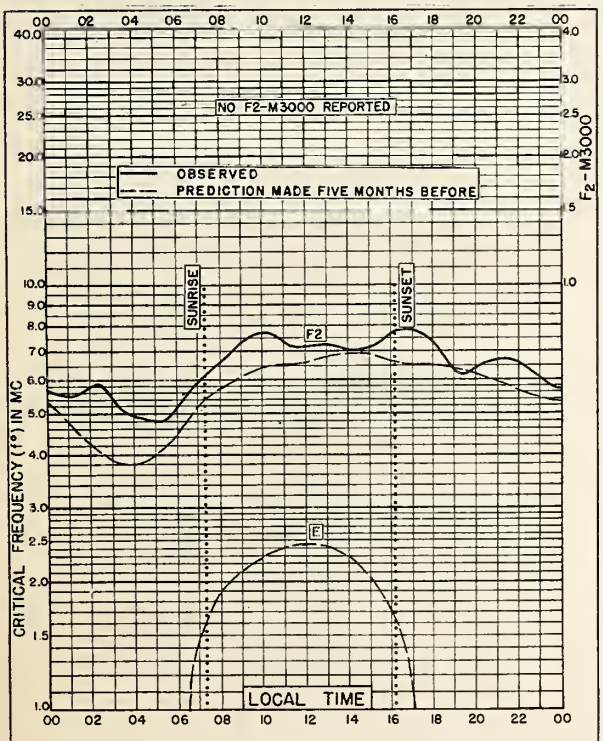

Fig. 3. CLYDE, BAFFIN I.
70.5°N, 68.6°W OCTOBER 1947

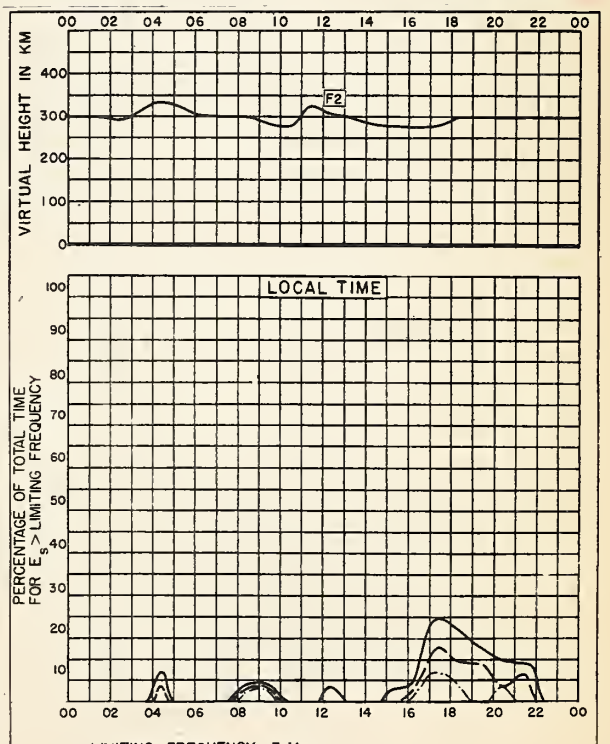

Fig. 4. CLYDE, BAFFIN I. OCTOBER 1947

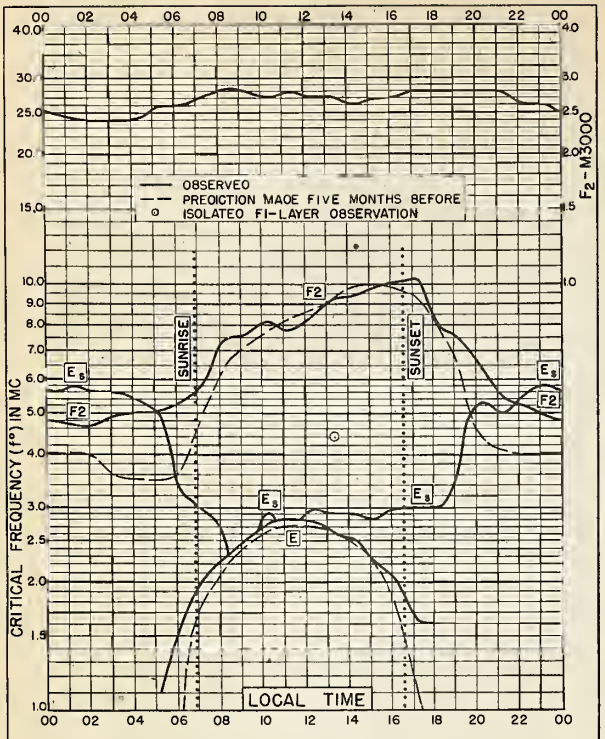

Fig. 5. FAIRBANKS, ALASKA
64.9°N, 147.8°W OCTOBER 1947

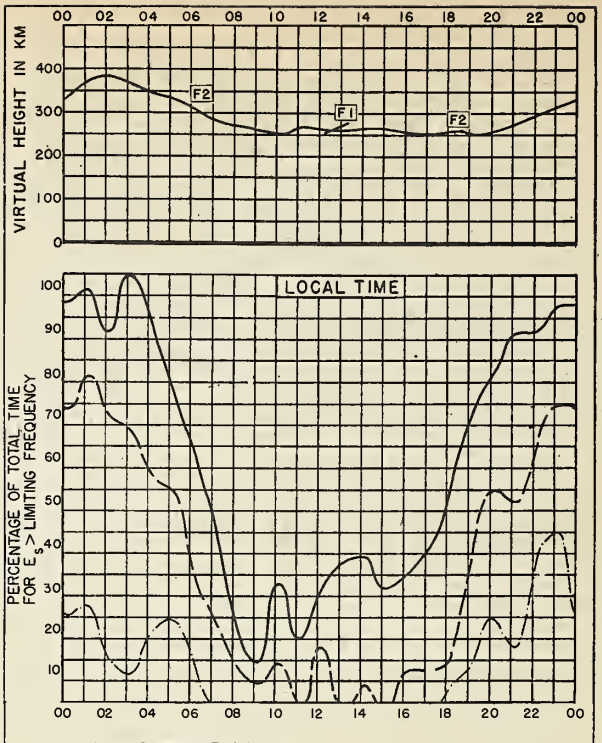

Fig. 6. FAIRBANKS, ALASKA OCTOBER 1947

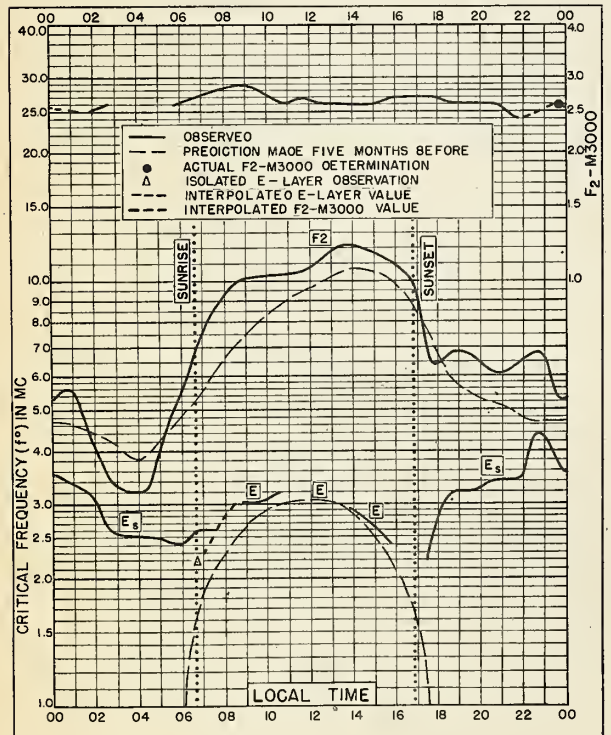

Fig. 7. CHURCHILL, CANADA
58.8°N, 94.2°W OCTOBER 1947

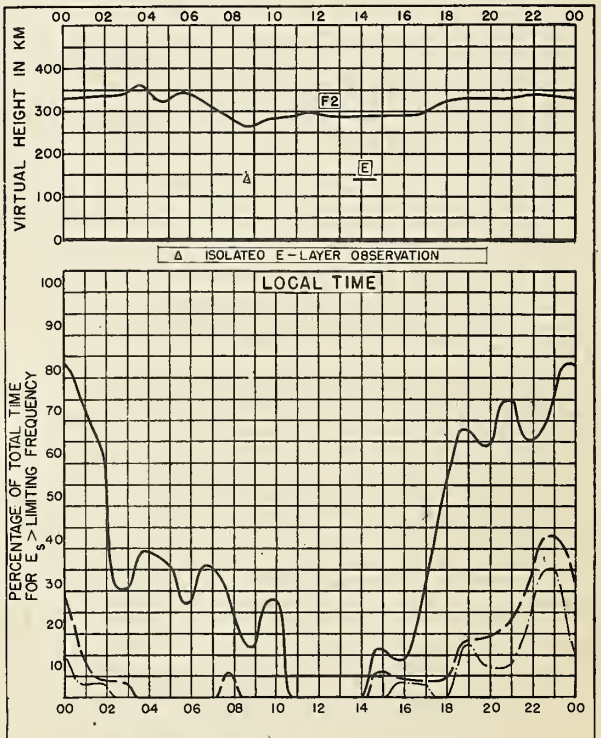

Fig. 8. CHURCHILL, CANADA OCTOBER 1947

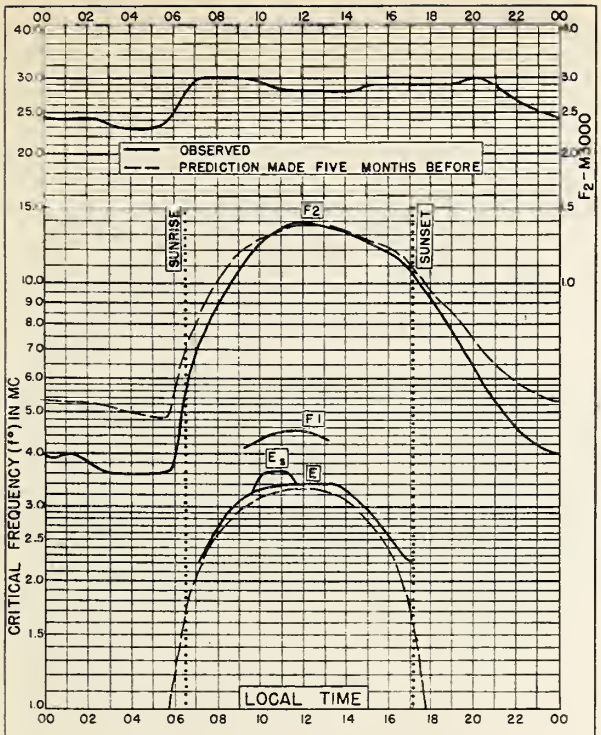

Fig. 9 ADAK, ALASKA
51.9°N, 176.6°W OCTOBER 1947

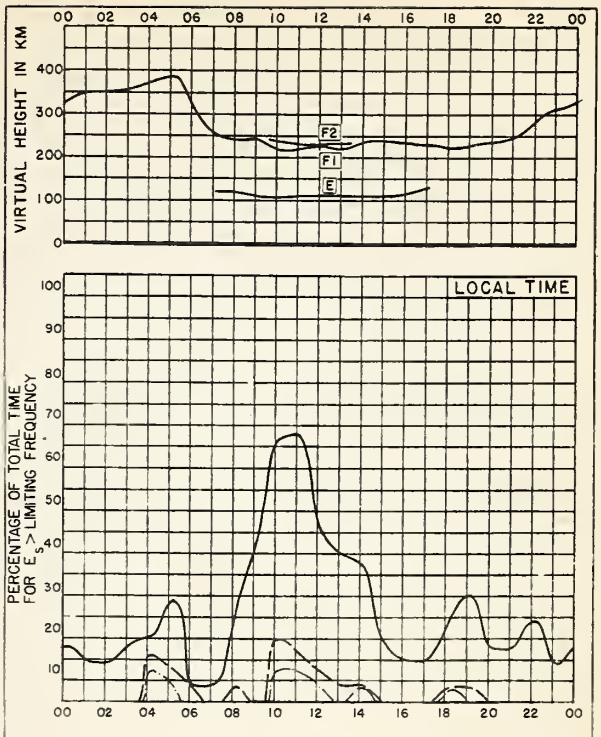

Fig. 10. ADAK, ALASKA OCTOBER 1947

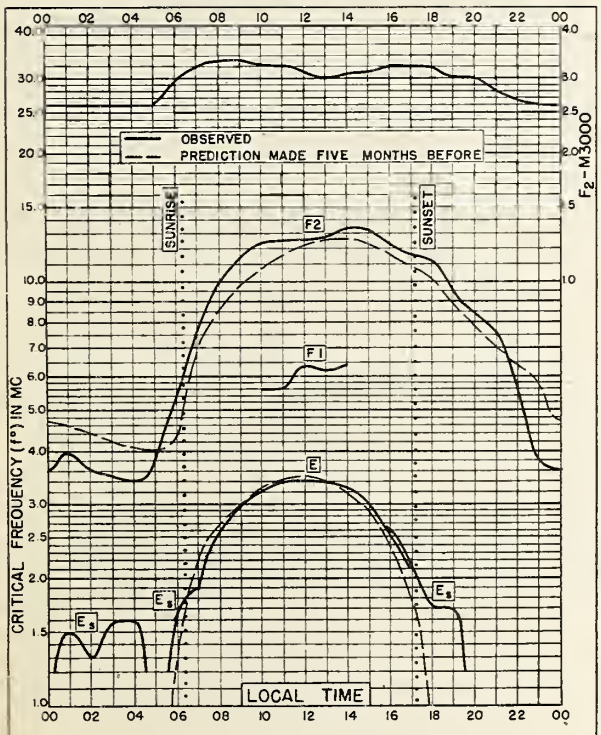

Fig. 11. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W OCTOBER 1947

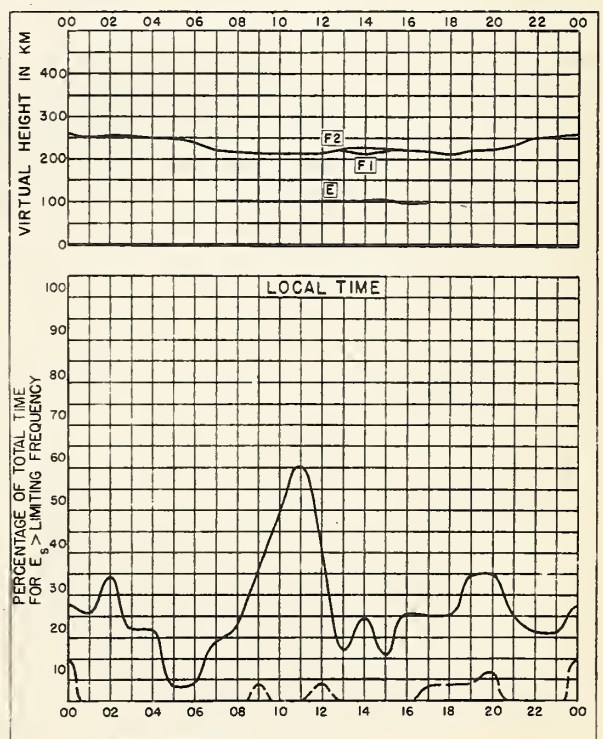

Fig. 12 ST. JOHN'S, NEWFOUNDLAND OCTOBER 1947

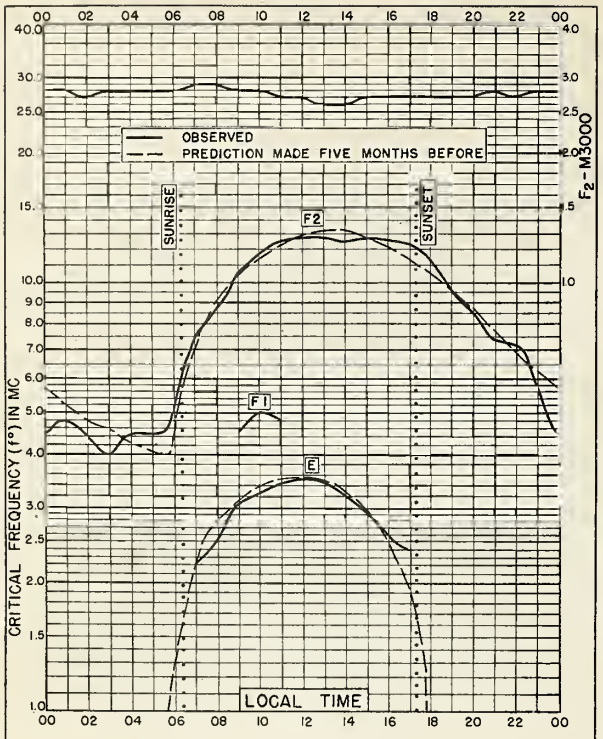

Fig. 13. OTTAWA, CANADA
45.5°N, 75.8°W OCTOBER 1947

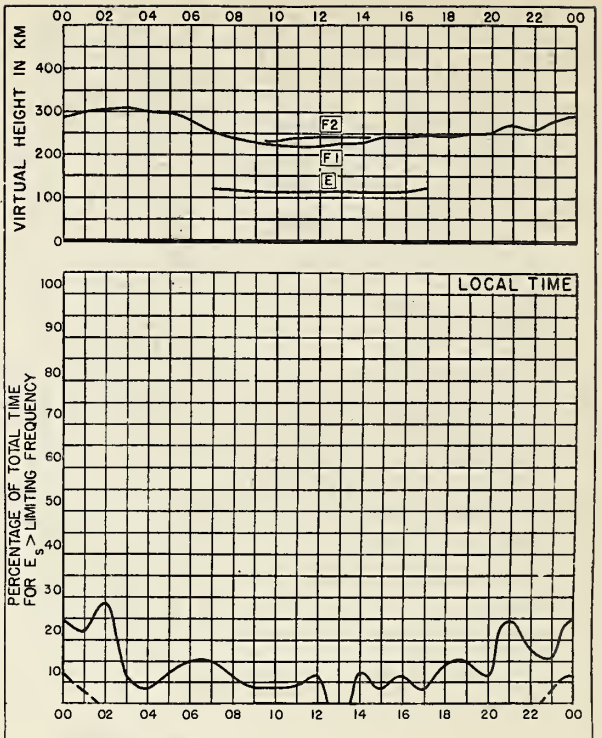

Fig. 14. OTTAWA, CANADA OCTOBER 1947

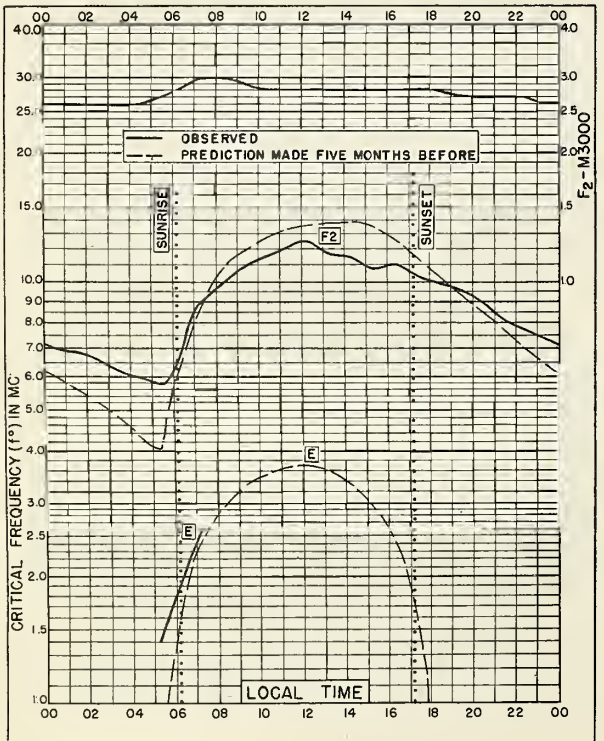

Fig. 15. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W OCTOBER 1947

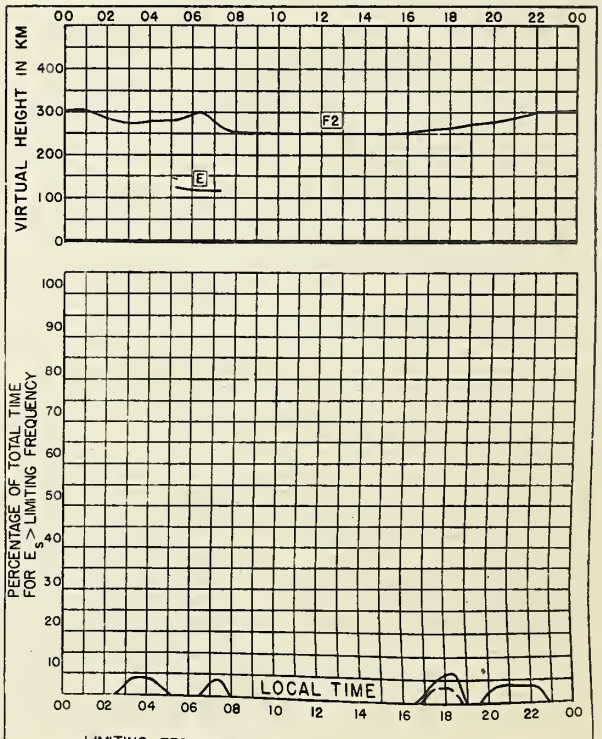

Fig. 16. BOSTON, MASSACHUSETTS OCTOBER 1947

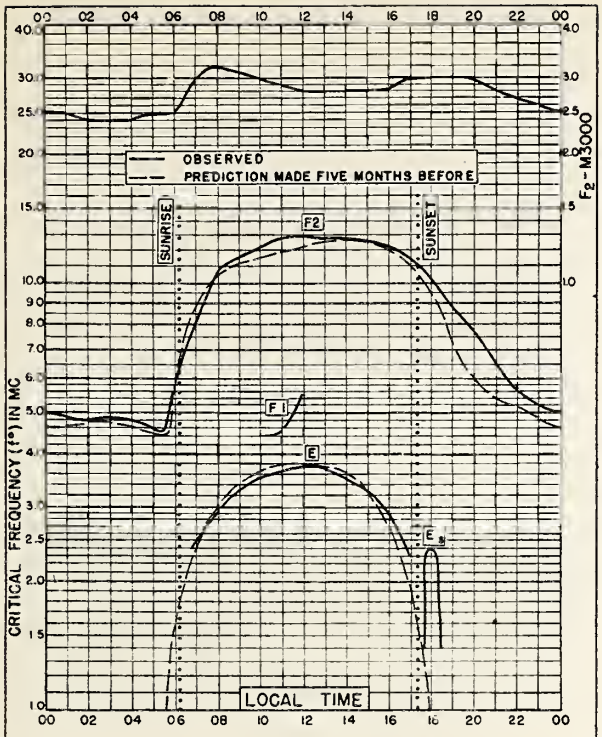

Fig. 17 SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W OCTOBER 1947

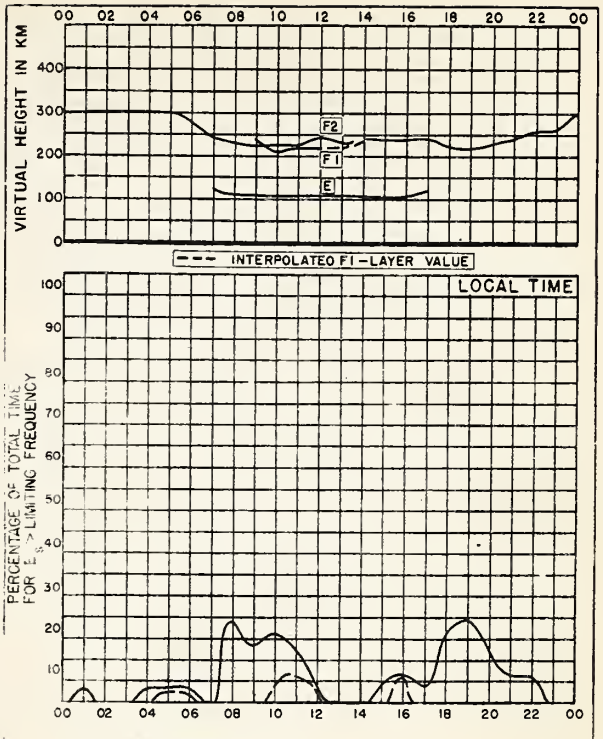

Fig. 18. SAN FRANCISCO, CALIFORNIA OCTOBER 1947

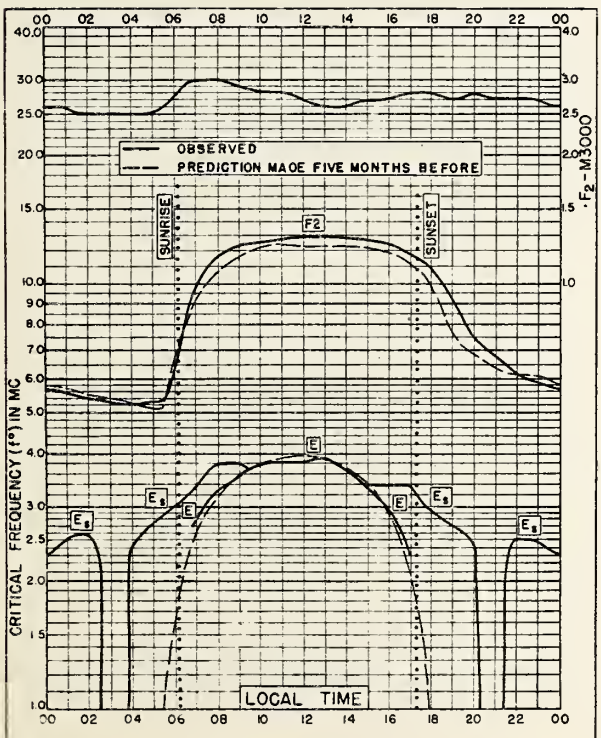

Fig. 19. WHITE SANDS, NEW MEXICO
32.6°N, 106.5°W OCTOBER 1947

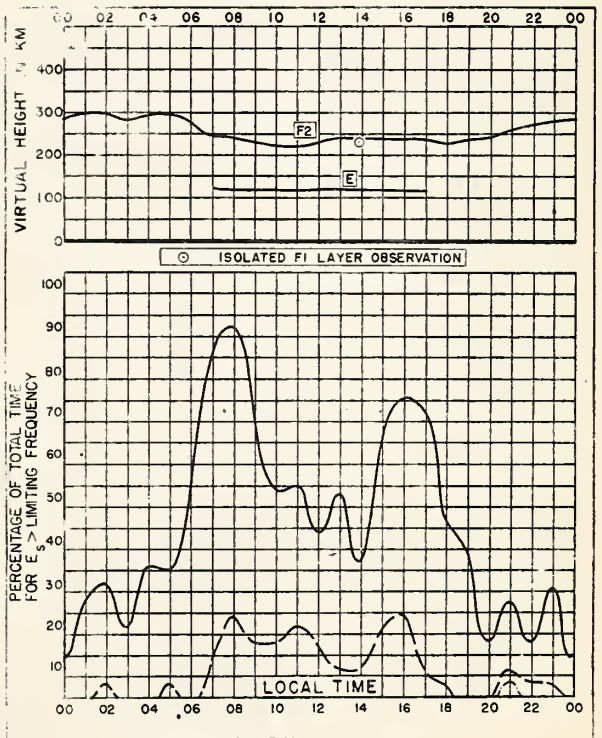

Fig. 20. WHITE SANDS, NEW MEXICO OCTOBER 1947

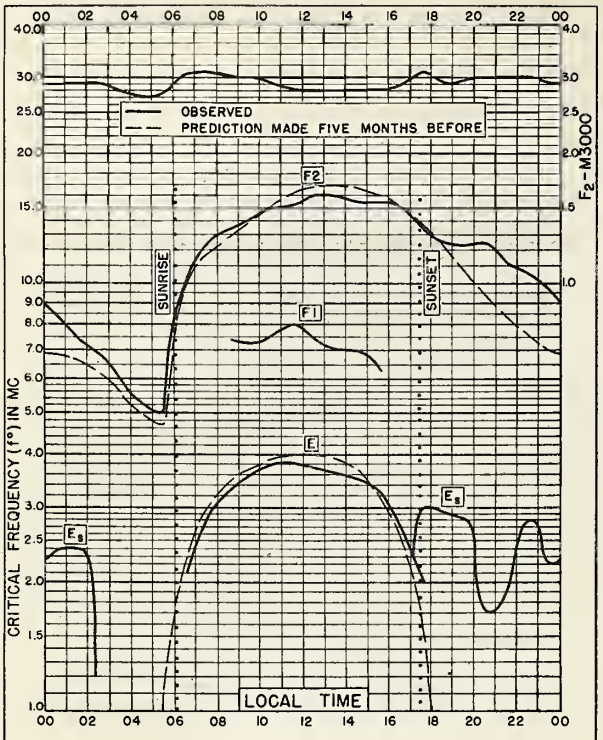

Fig. 21. WUCHANG, CHINA
30.6°N, 114.4°E OCTOBER 1947

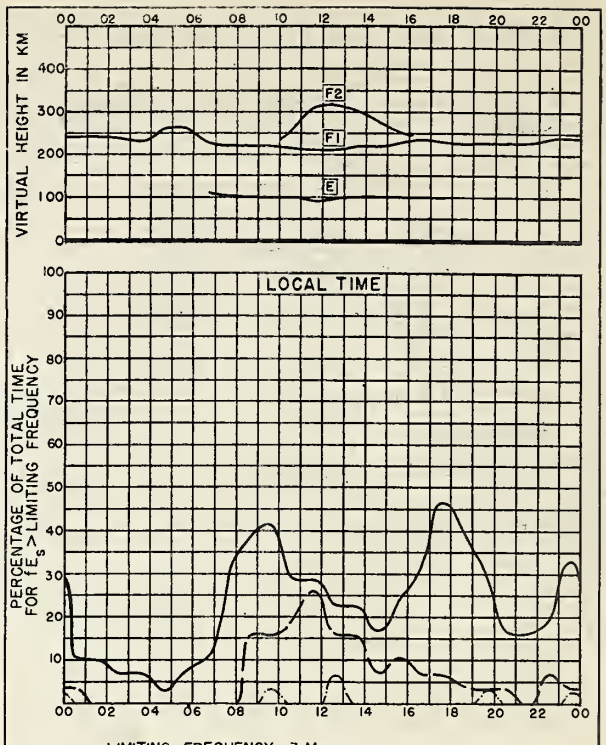

Fig. 22. WUCHANG, CHINA OCTOBER 1947

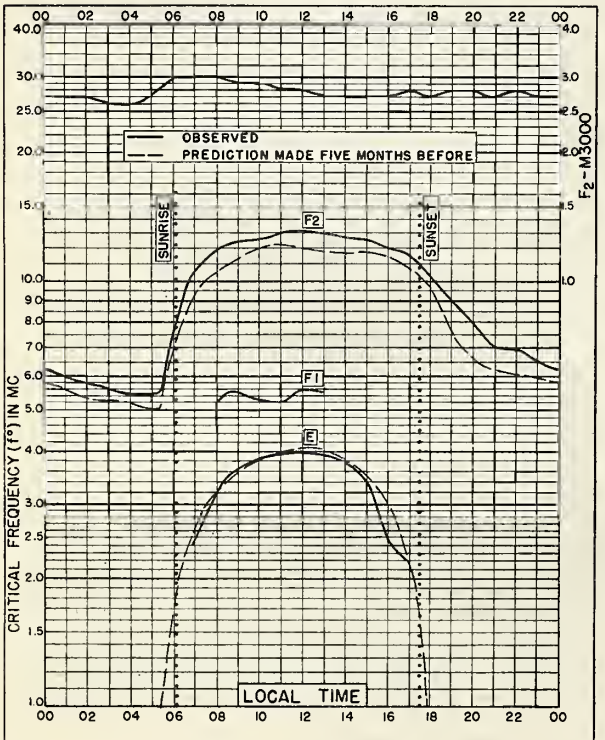

Fig. 23. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W OCTOBER 1947

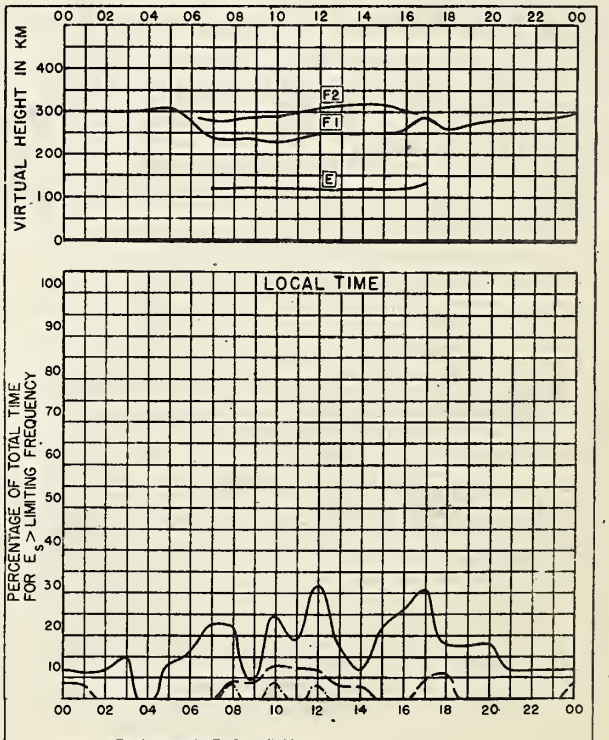

Fig. 24. BATON ROUGE, LOUISIANA OCTOBER 1947

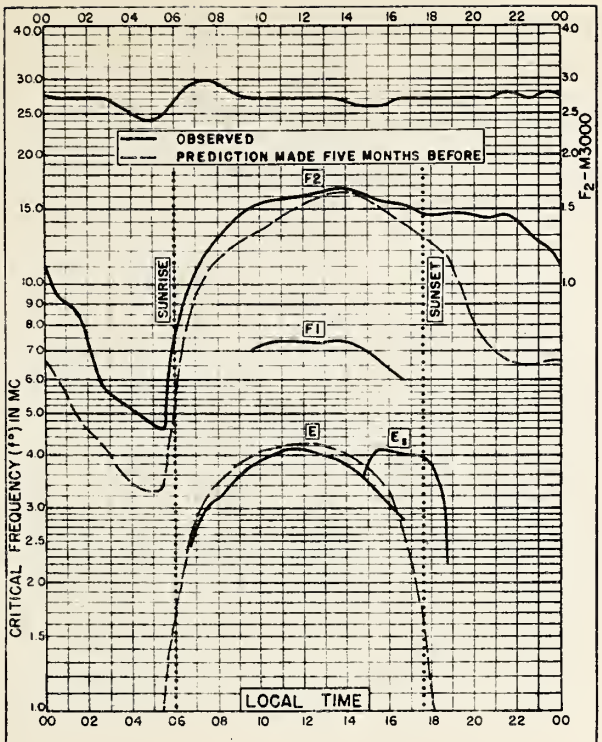

Fig. 25. MAUI, HAWAII
20.8°N, 156.5°W OCTOBER 1947

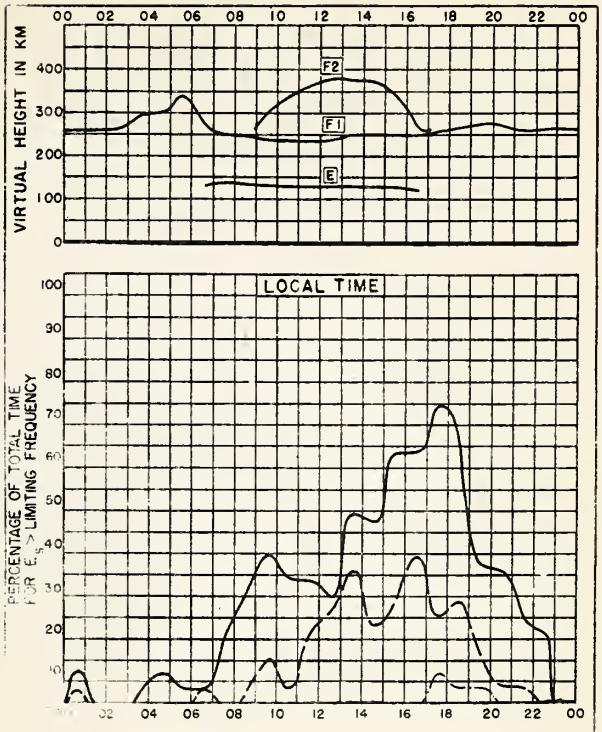

Fig. 26. MAUI, HAWAII OCTOBER 1947

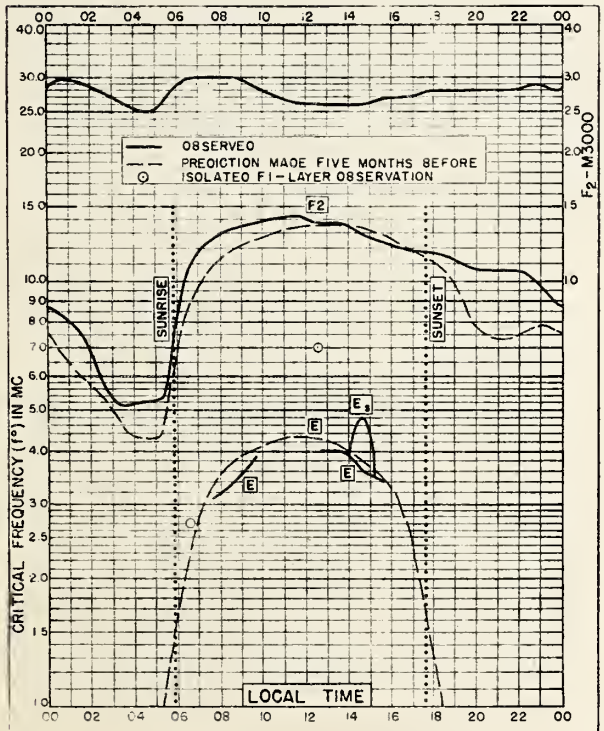

Fig 27. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W OCTOBER 1947

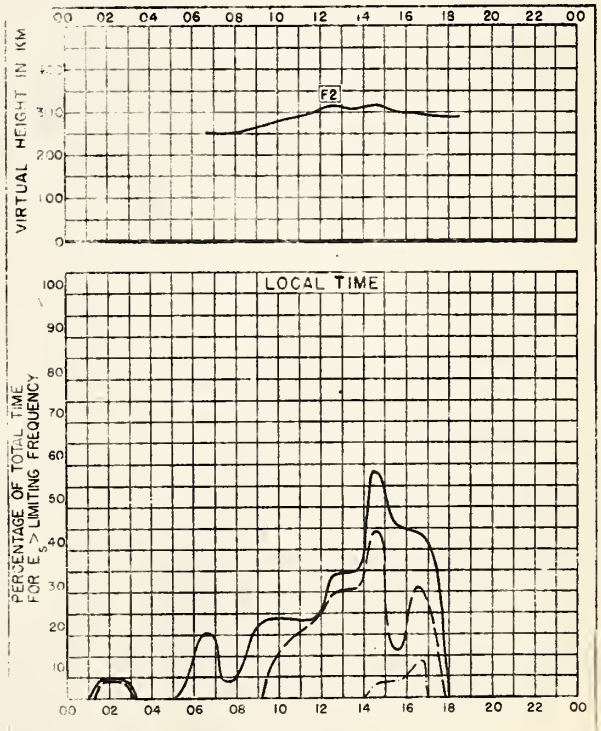

Fig. 28. SAN JUAN, PUERTO RICO OCTOBER 1947

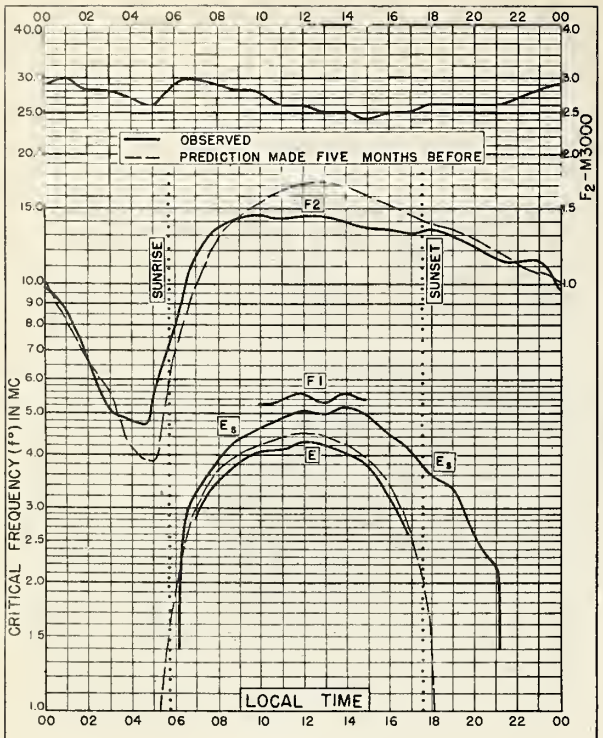

Fig. 29. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W OCTOBER 1947

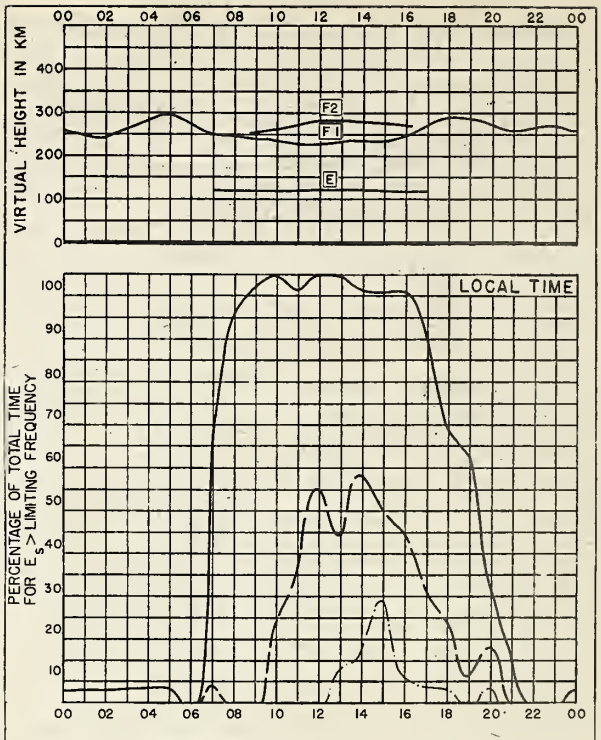

Fig. 30. TRINIDAD, BRIT. WEST INDIES OCTOBER 1947

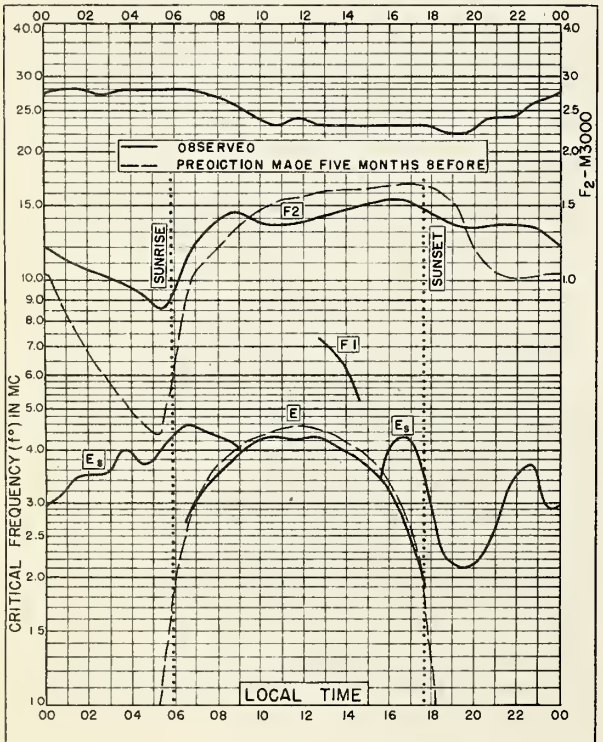

Fig. 31. PALMYRA I.
5.9°N, 162.1°W OCTOBER 1947

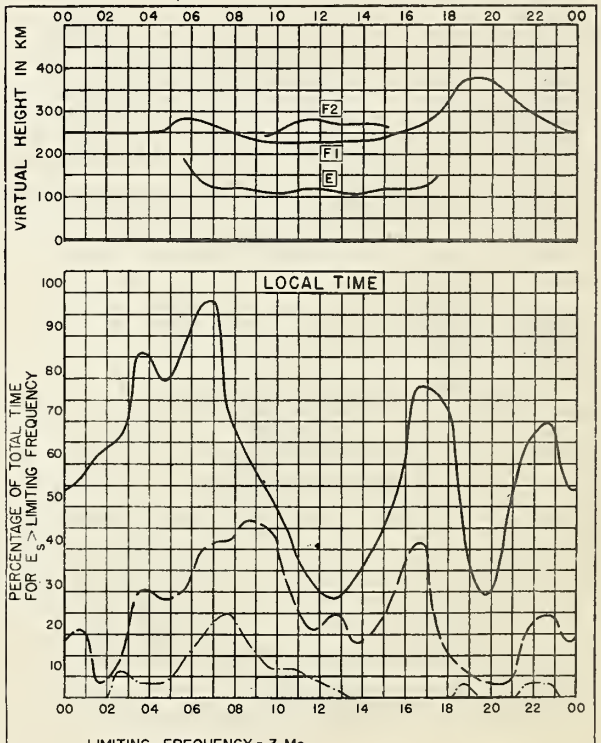

Fig. 32. PALMYRA I. OCTOBER 1947

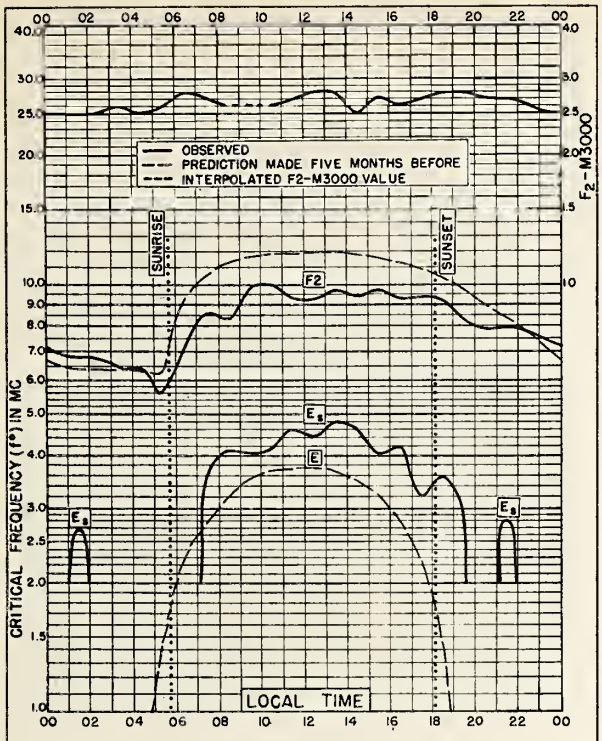

Fig. 33. WAKKANAI, JAPAN
45.4°N, 141.7°E SEPTEMBER 1947

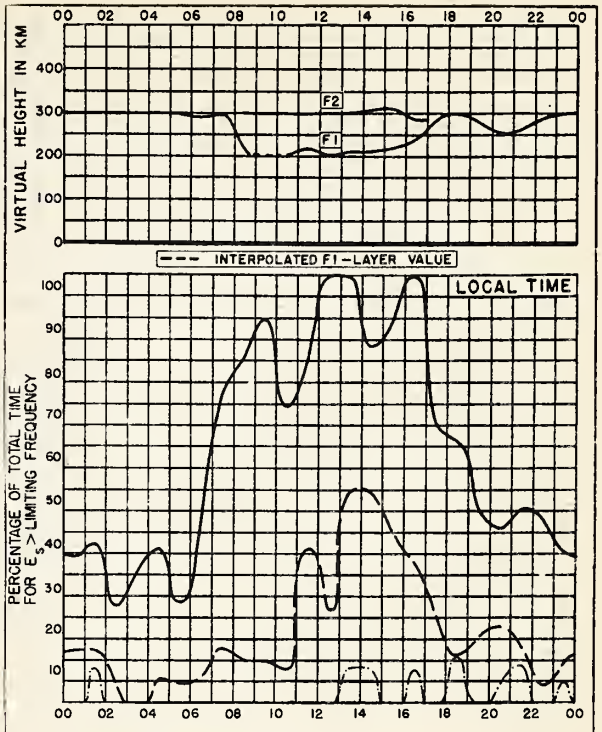

Fig. 34. WAKKANAI, JAPAN SEPTEMBER 1947

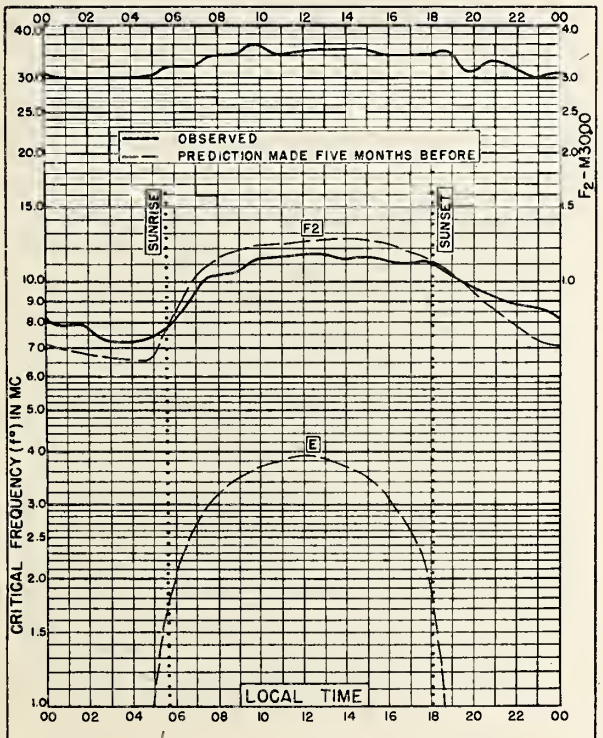

Fig. 35. PEIPING, CHINA
39.9°N, 116.4°E SEPTEMBER 1947

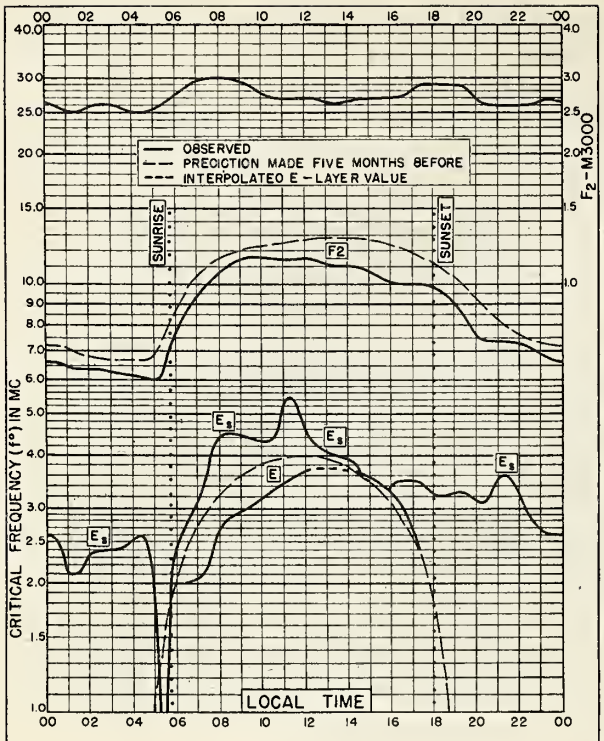

Fig. 36. SHIBATA, JAPAN
37.9°N, 139.3°E SEPTEMBER 1947

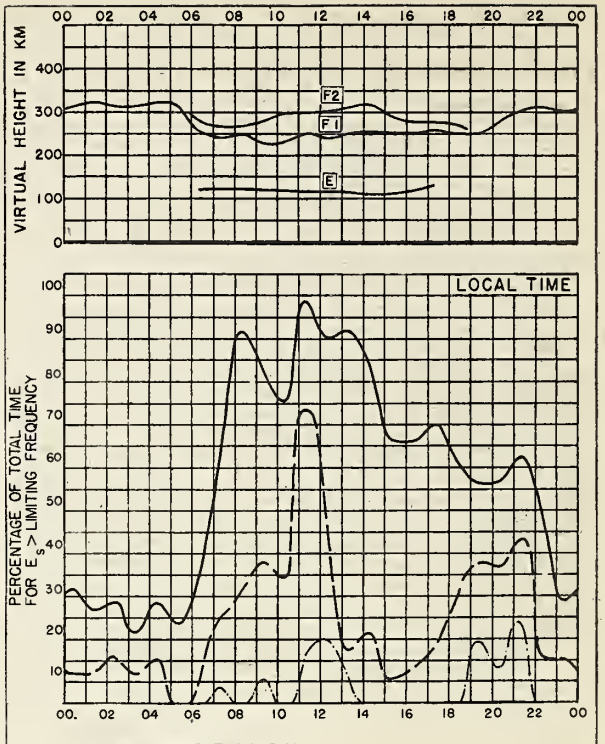

Fig. 37. SHIBATA, JAPAN SEPTEMBER 1947

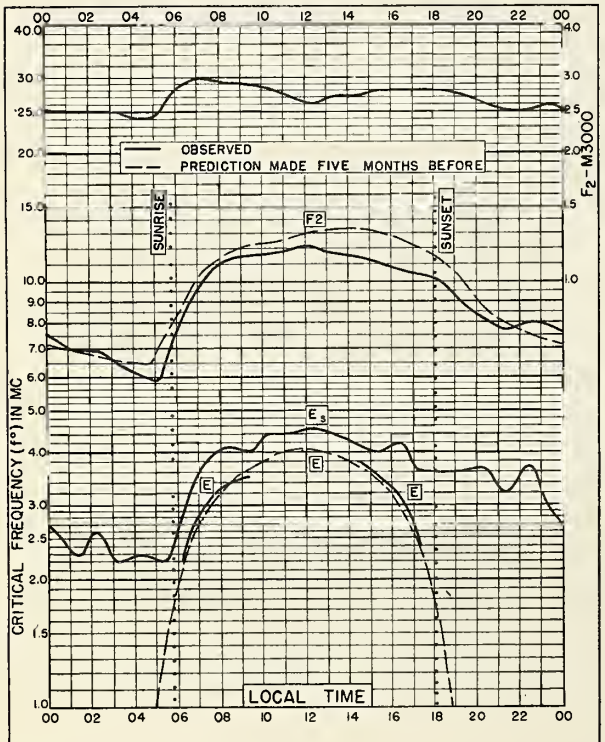

Fig. 38. TOKYO, JAPAN
35.7°N, 139.5°E SEPTEMBER 1947

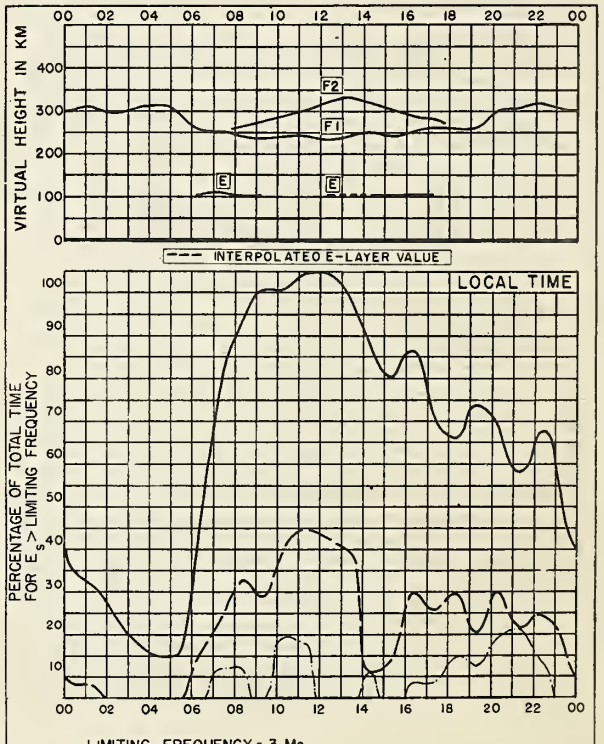

Fig. 39. TOKYO, JAPAN SEPTEMBER 1947

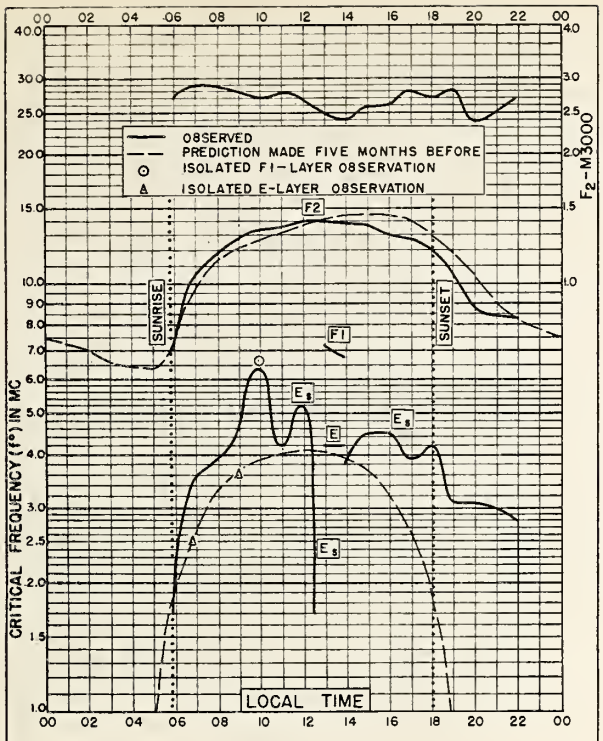

Fig. 40. NANKING, CHINA
32.1°N, 119.0°E SEPTEMBER 1947

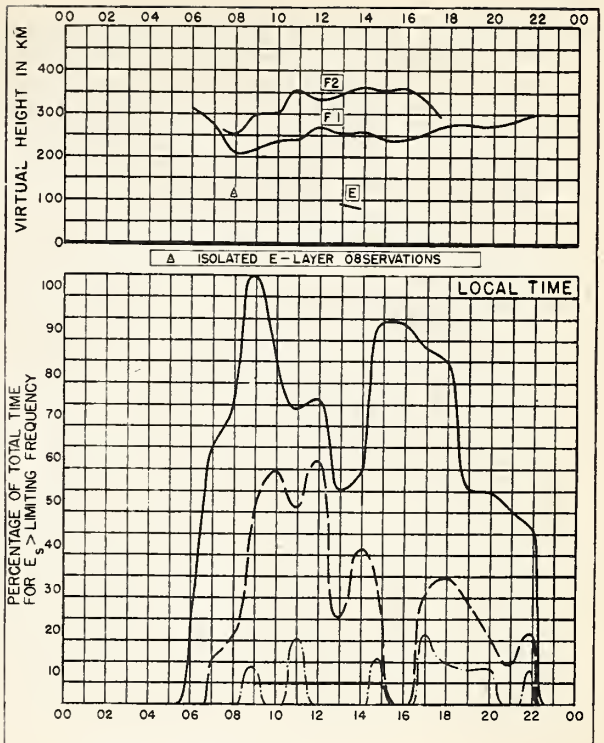

Fig. 41. NANKING, CHINA SEPTEMBER 1947

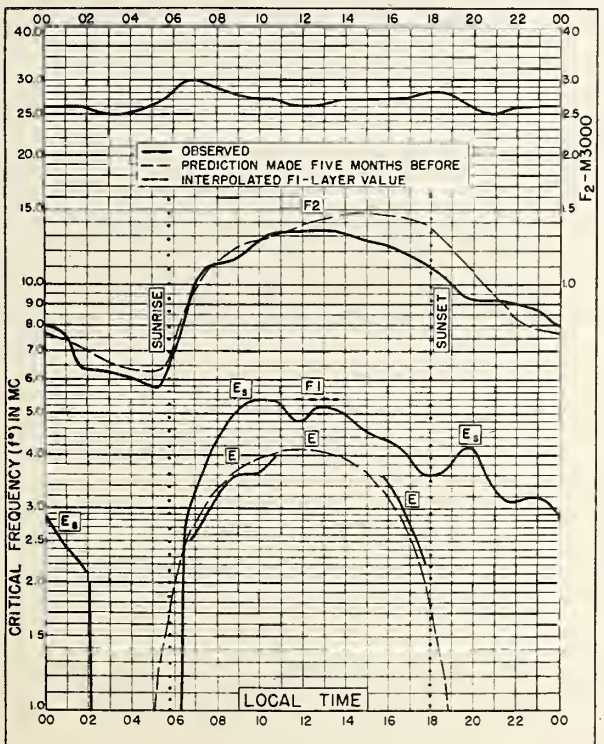

Fig. 42. YAMAKAWA, JAPAN
31.2°N, 130.6°E SEPTEMBER 1947

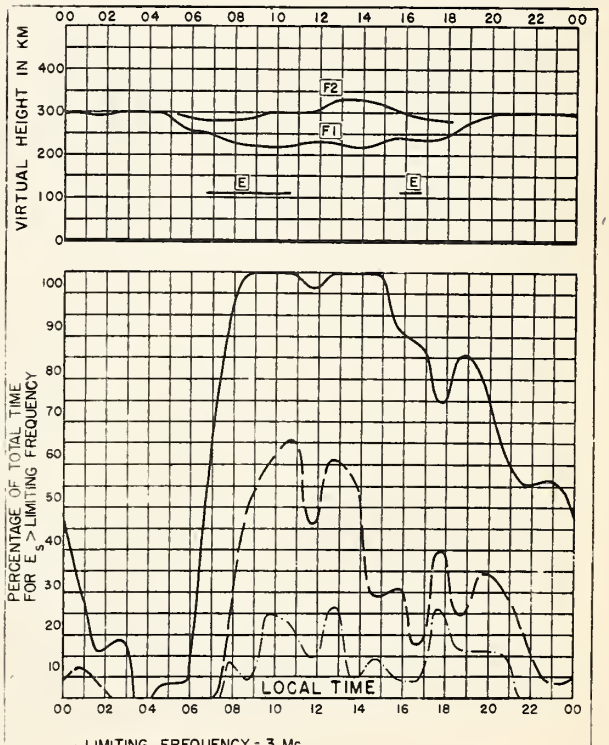

Fig. 43 YAMAKAWA, JAPAN SEPTEMBER 1947

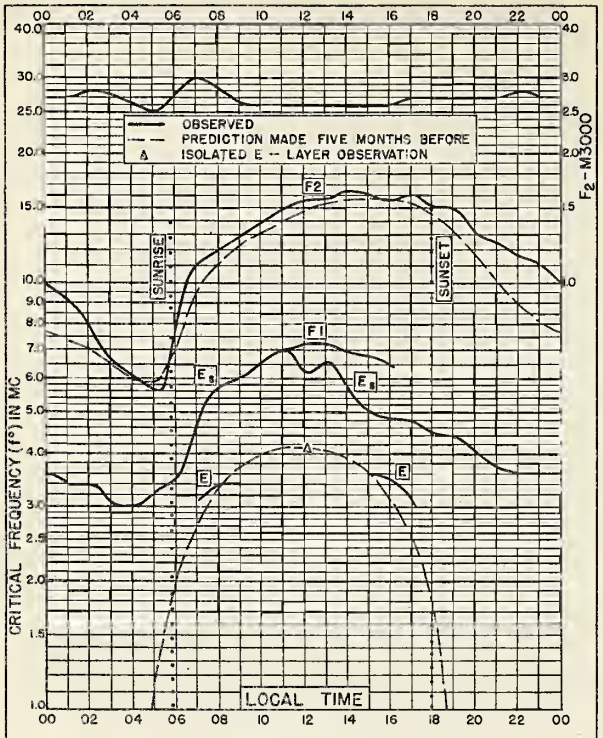

Fig. 44. CHUNGKING, CHINA
29.4°N, 106.8°E SEPTEMBER 1947

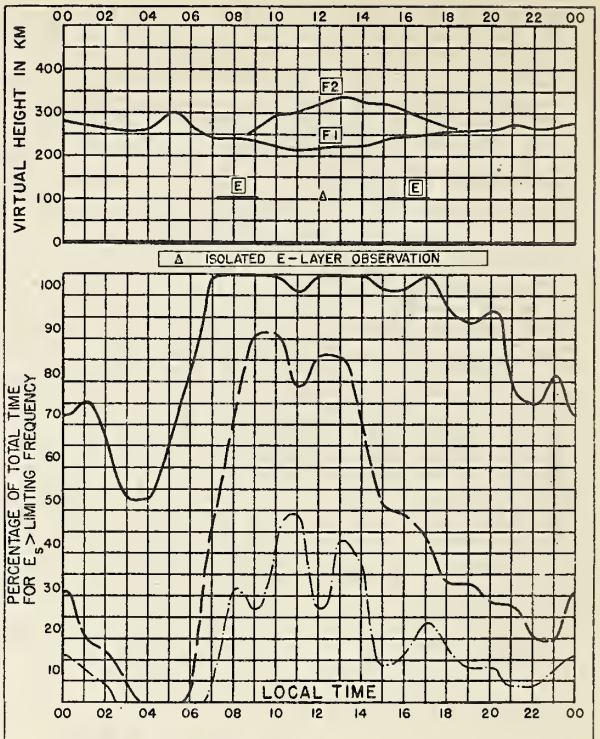

Fig. 45. CHUNGKING, CHINA SEPTEMBER 1947

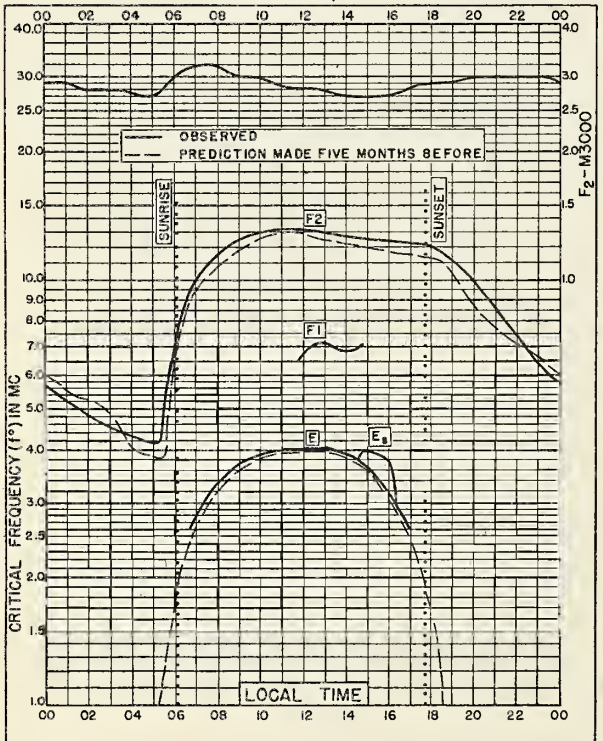

Fig. 46. JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.0°E SEPTEMBER 1947

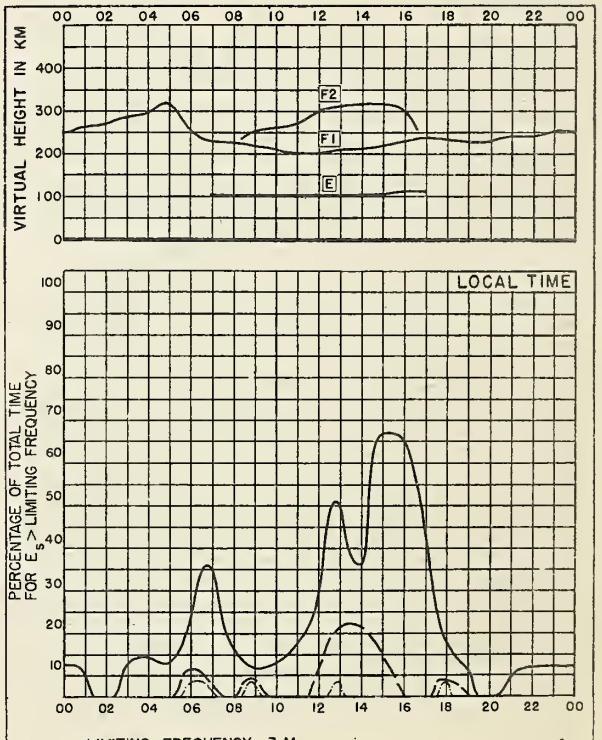

Fig. 47. JOHANNESBURG, U. OF S. AFRICA SEPTEMBER 1947

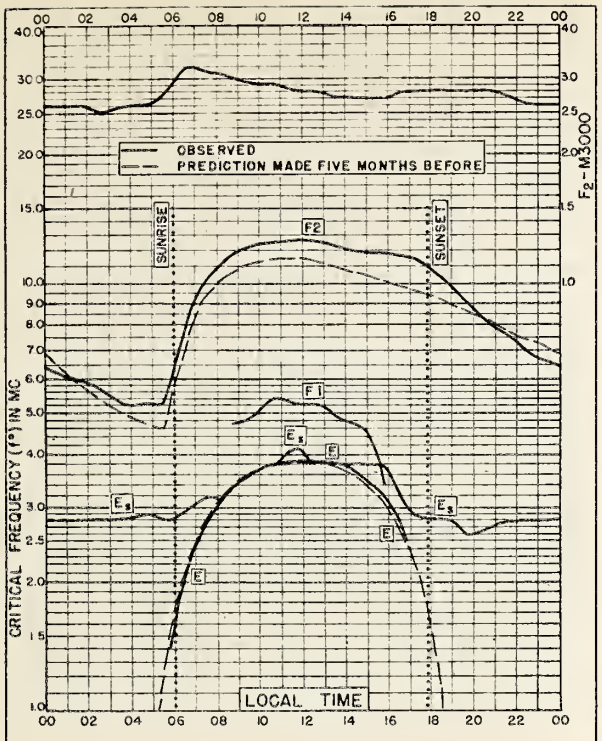

Fig. 48. WATHEROO, W AUSTRALIA
30.3°S, 115.9°E SEPTEMBER 1947

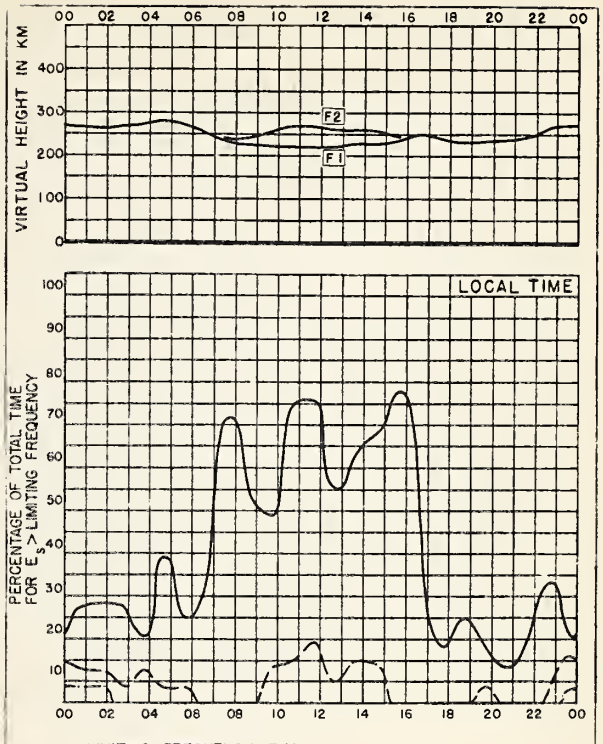

Fig. 49. WATHEROO, W. AUSTRALIA SEPTEMBER 1947

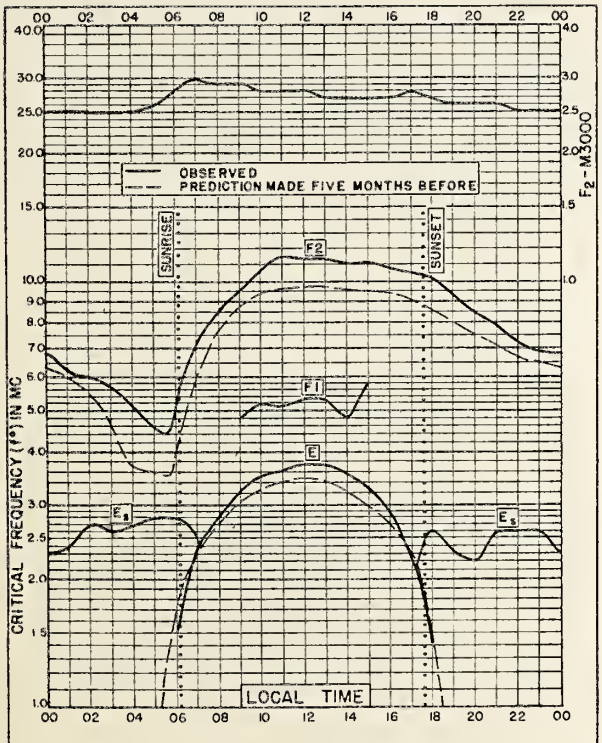

Fig. 50. CHRISTCHURCH, N.Z.
43.5°S, 172.7°E SEPTEMBER 1947

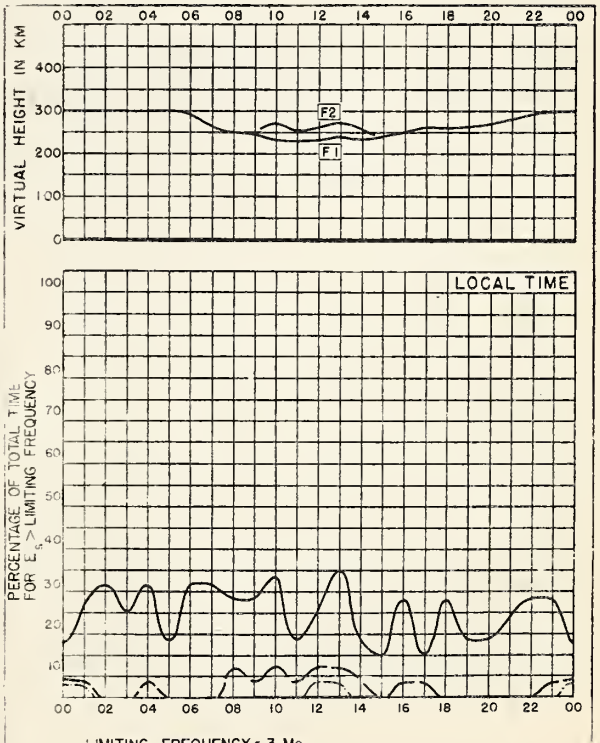

Fig. 51. CHRISTCHURCH, N.Z. SEPTEMBER 1947

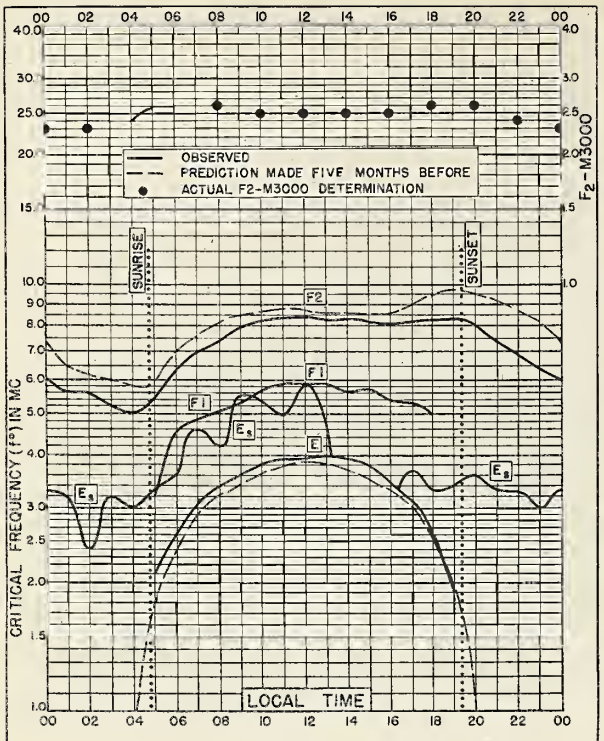

Fig. 52. SLOUGH, ENGLAND
51.5°N, 0.6°W AUGUST 1947

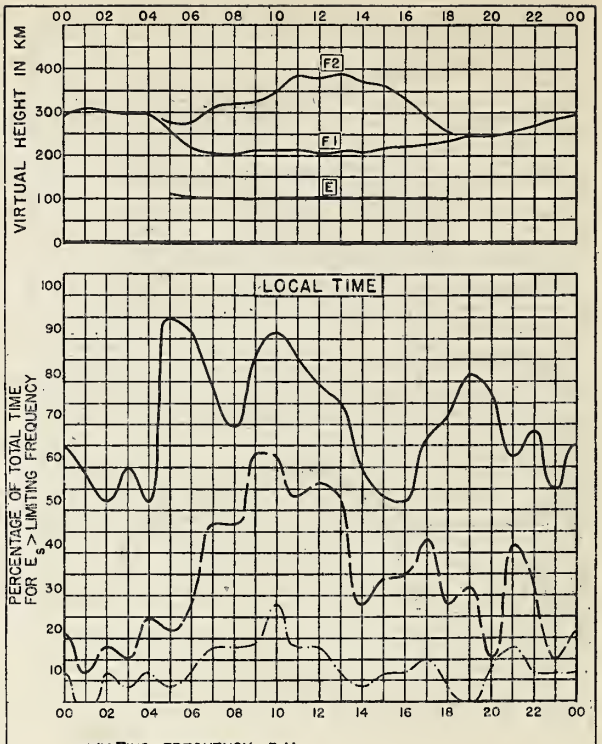

Fig. 53. SLOUGH, ENGLAND AUGUST 1947

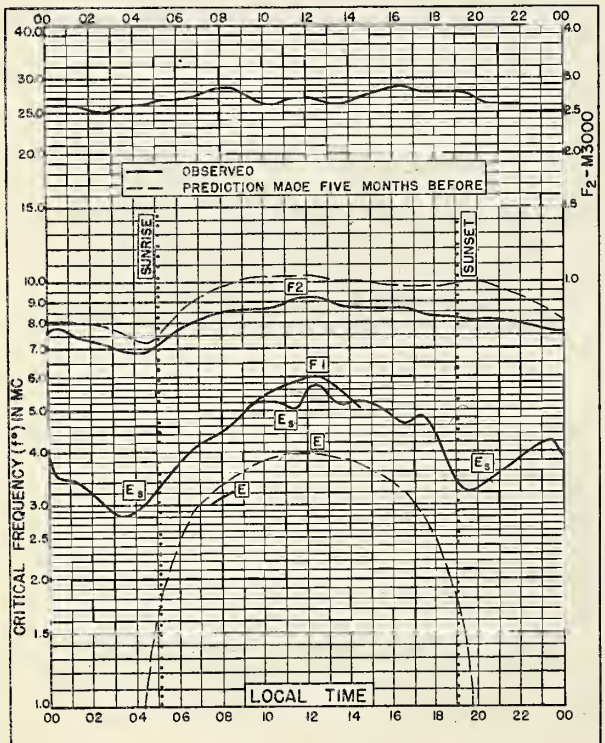

Fig. 54. WAKKANAI, JAPAN
45.4°N, 141.7°E AUGUST 1947

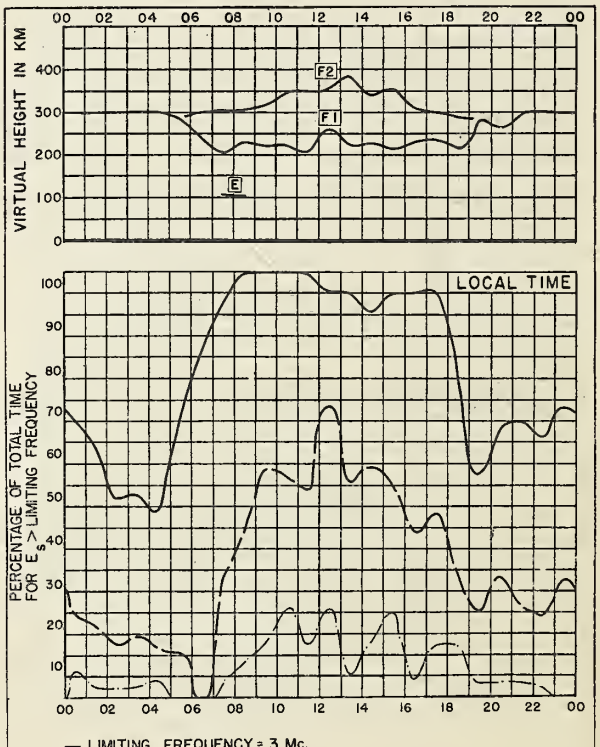

Fig. 55. WAKKANAI, JAPAN AUGUST 1947

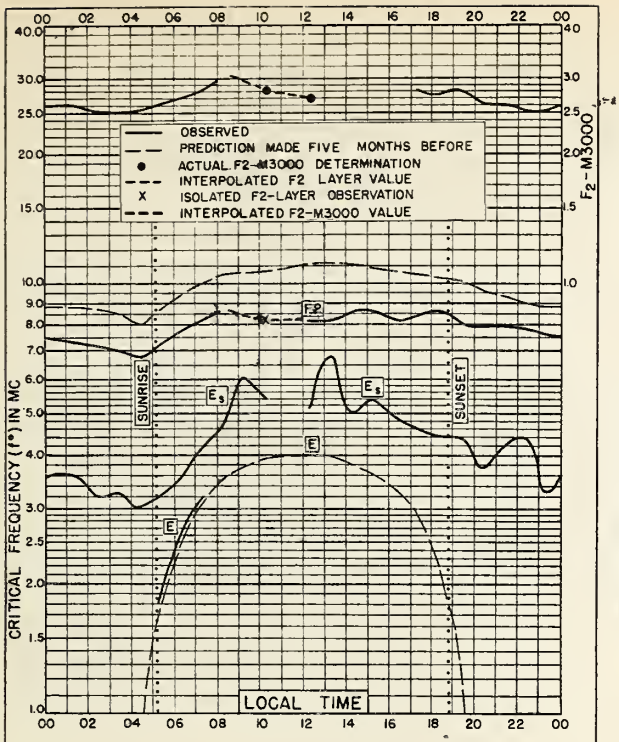

Fig. 56. FUKAURA, JAPAN
40.6°N, 139.9°E AUGUST 1947

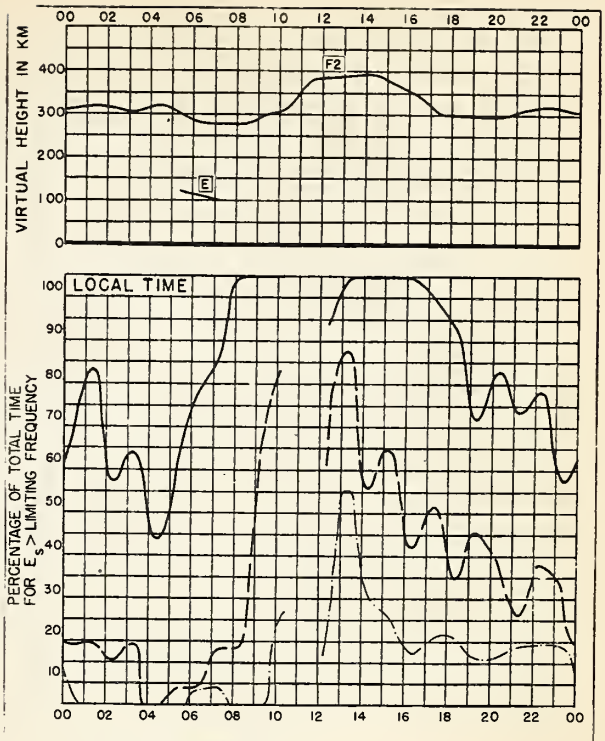

Fig. 57. FUKAURA, JAPAN AUGUST 1947

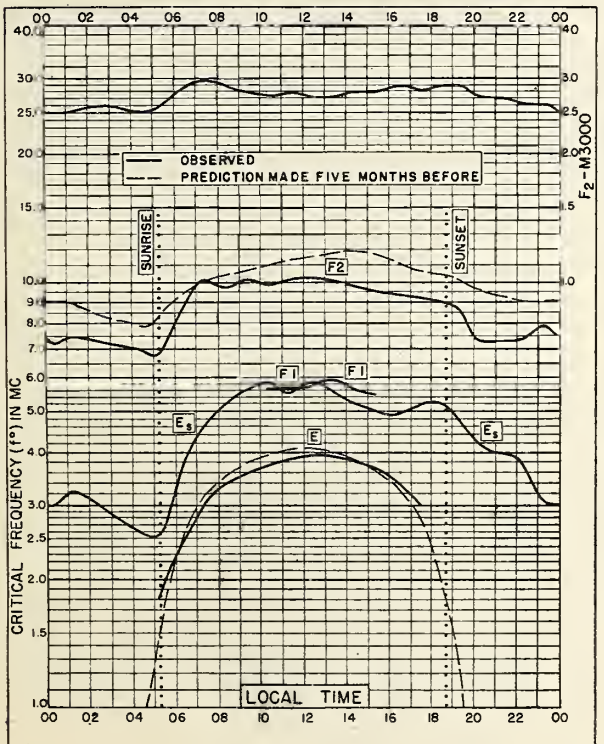

Fig. 58. SHIBATA, JAPAN
37.9N, 139.3E AUGUST 1947

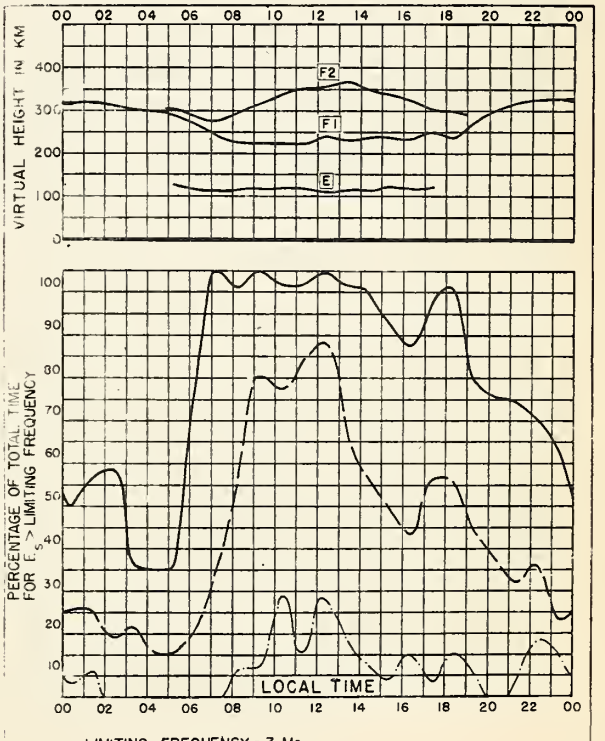

Fig. 59. SHIBATA, JAPAN AUGUST 1947

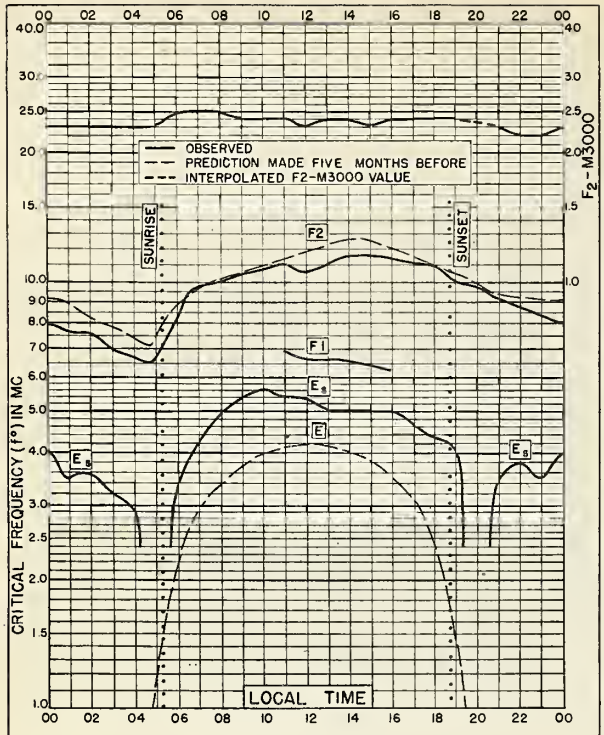

Fig. 60. LANCHOW, CHINA
36.1°N, 103.8°E AUGUST 1947

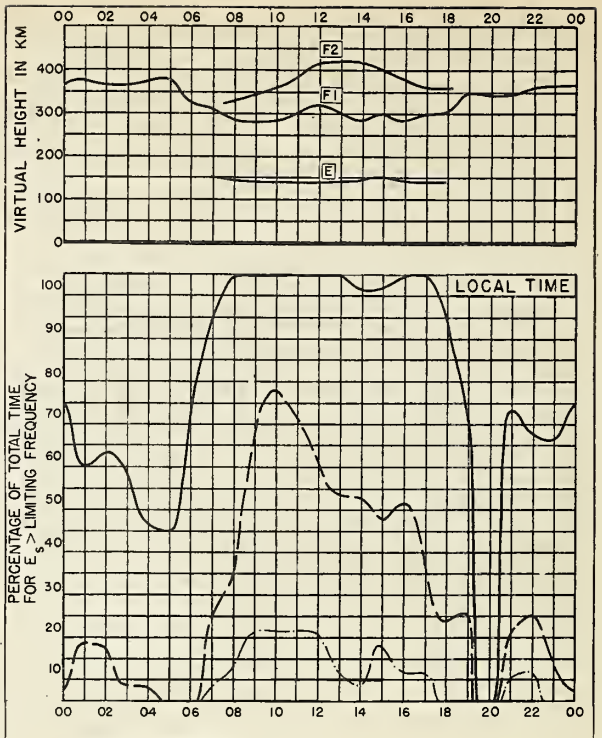

Fig. 61. LANCHOW, CHINA AUGUST 1947

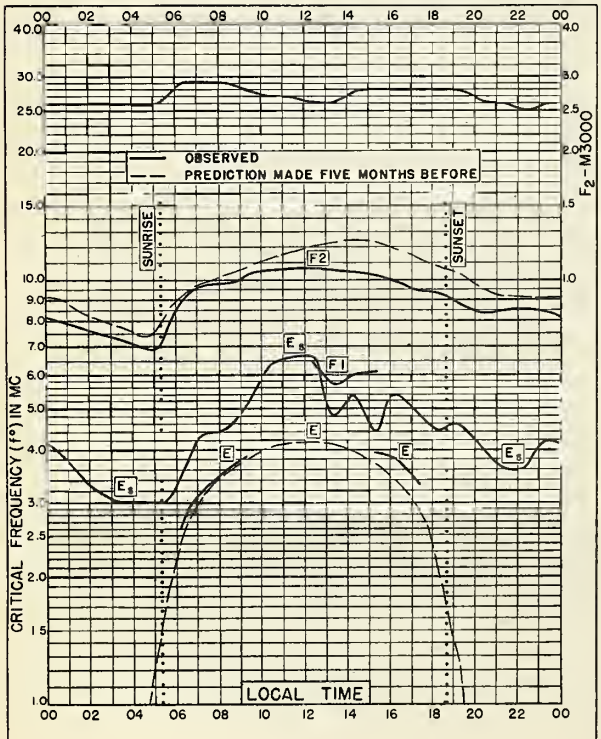

Fig. 62. TOKYO, JAPAN
35.7°N, 139.5°E AUGUST 1947

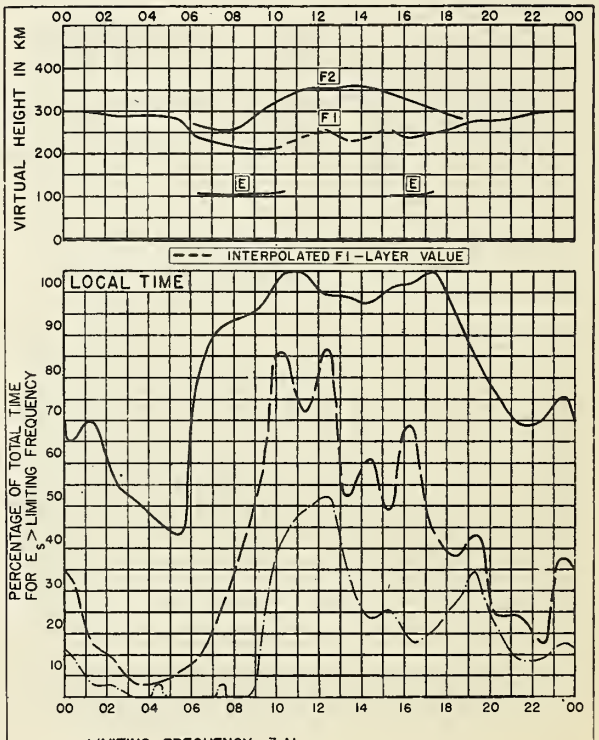

Fig. 63. TOKYO, JAPAN AUGUST 1947

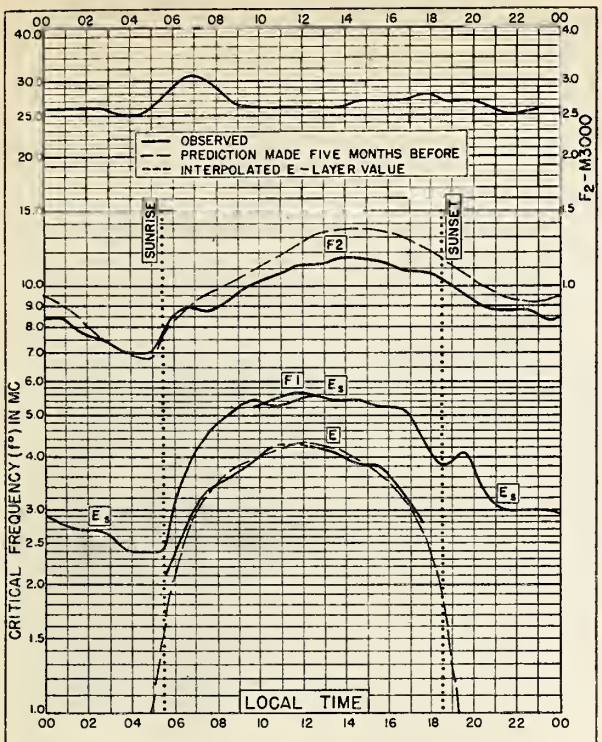

Fig. 64. YAMAKAWA, JAPAN
31.2°N, 130.6°E AUGUST 1947

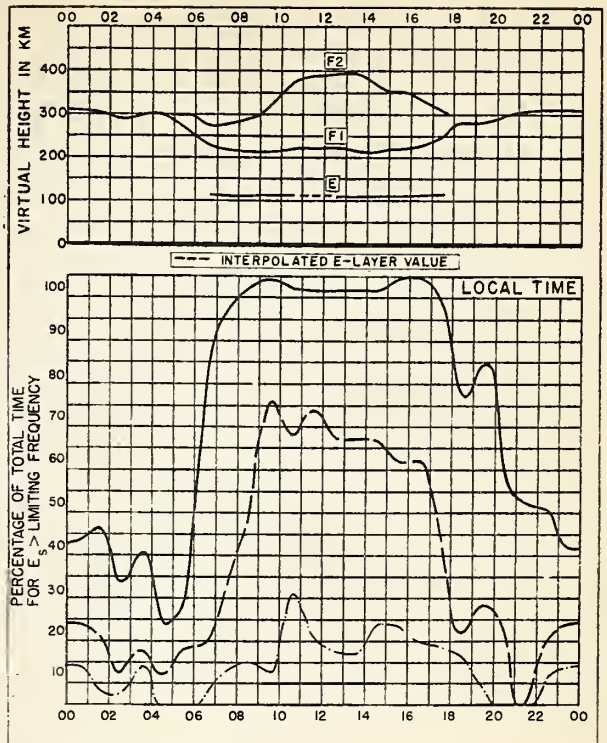

Fig. 65. YAMAKAWA, JAPAN AUGUST 1947

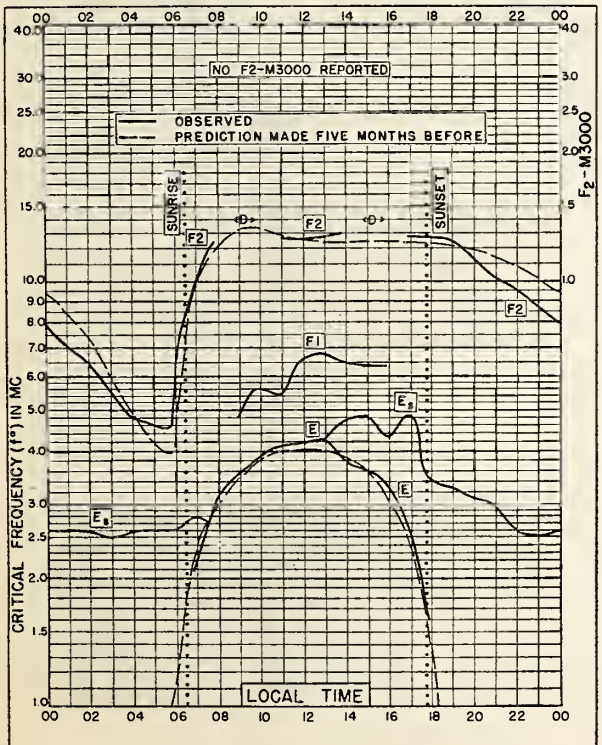

Fig. 66. FIJI IS.
18.0°S, 178.2°E AUGUST 1947

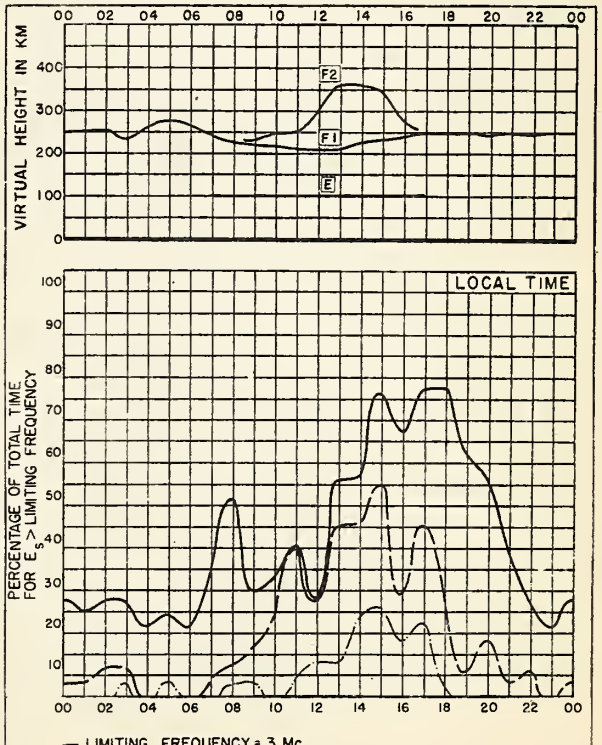

Fig. 67. FIJI IS. AUGUST 1947

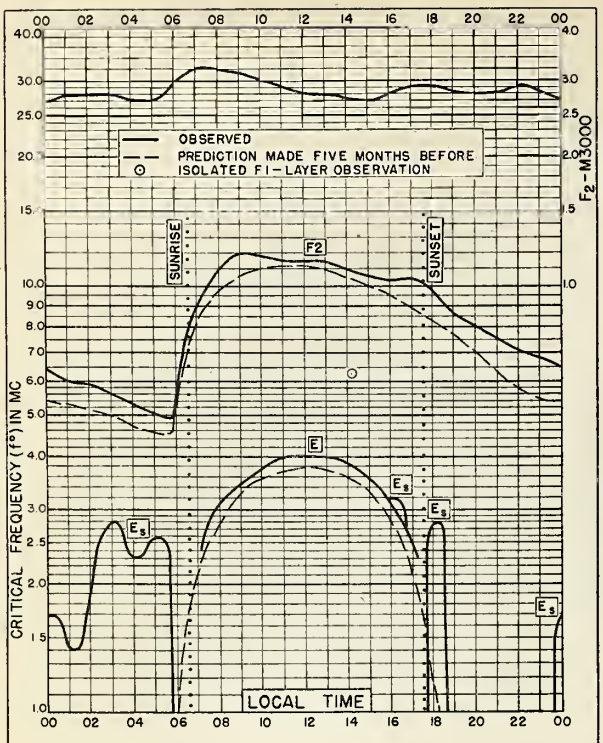

Fig. 68. BRISBANE, AUSTRALIA
27.5°S, 153.0°E AUGUST 1947

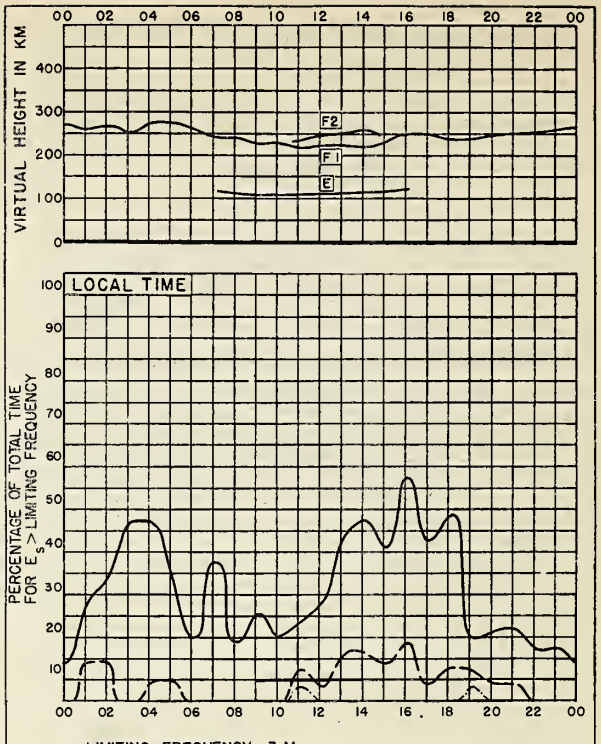

Fig. 69. BRISBANE, AUSTRALIA AUGUST 1947

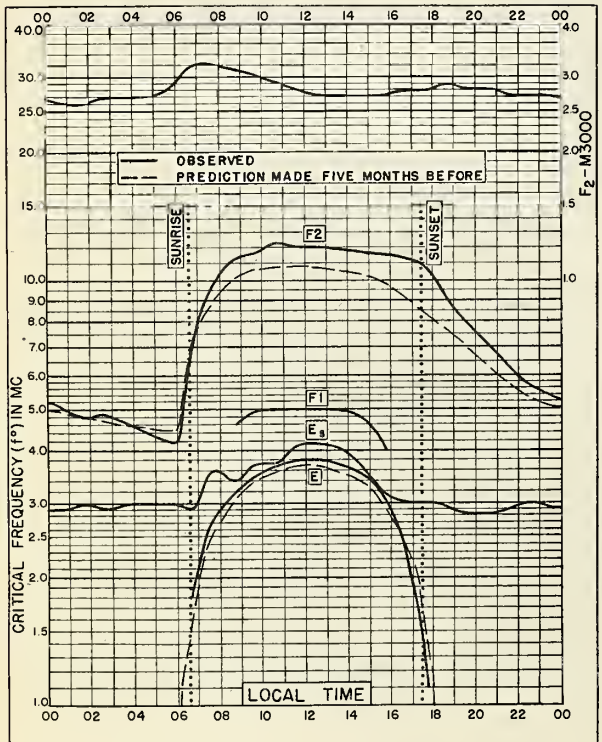

Fig. 70. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E AUGUST 1947

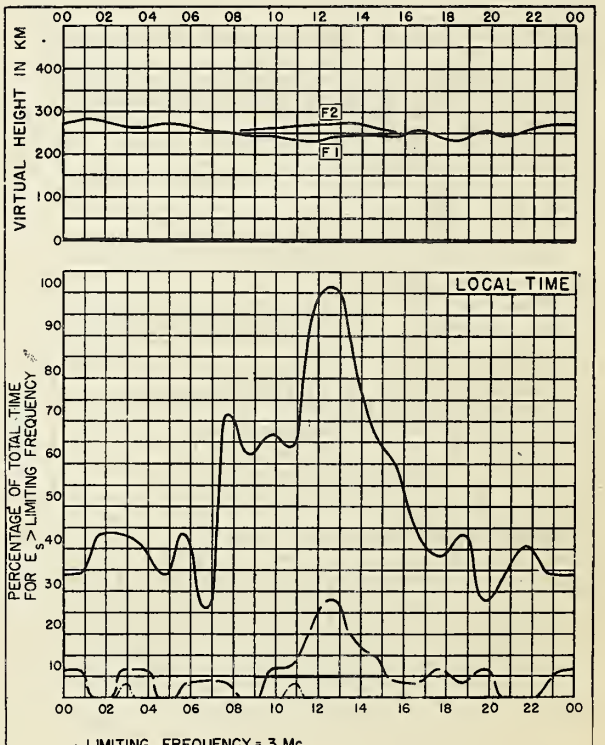

Fig. 71. WATHEROO, W. AUSTRALIA AUGUST 1947

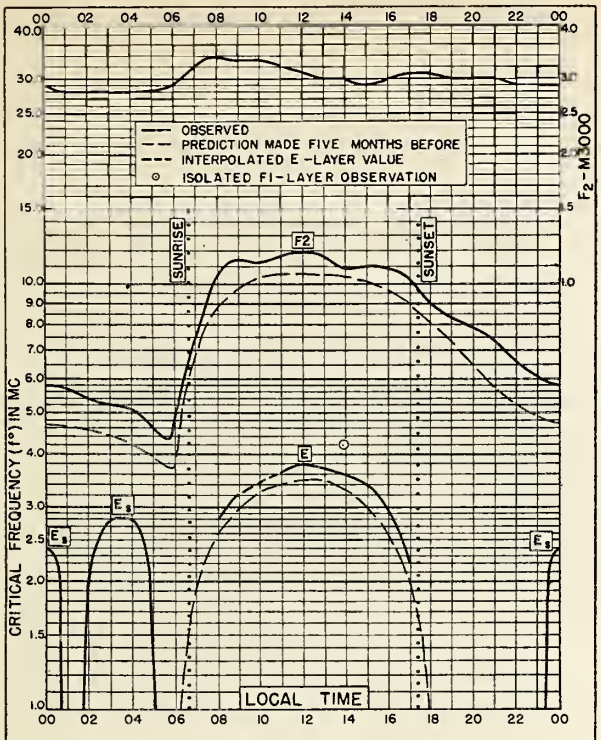

Fig. 72. CANBERRA, AUSTRALIA
35.3°S, 149.0°E AUGUST 1947

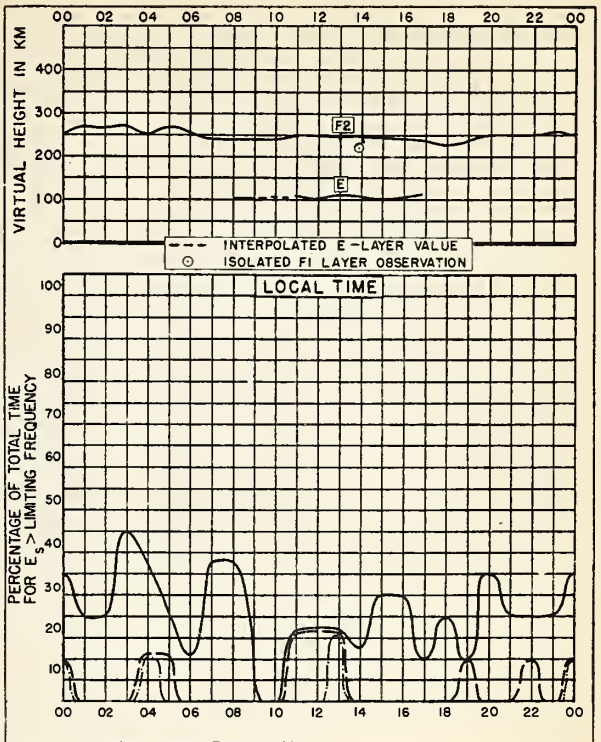

Fig. 73. CANBERRA, AUSTRALIA AUGUST 1947

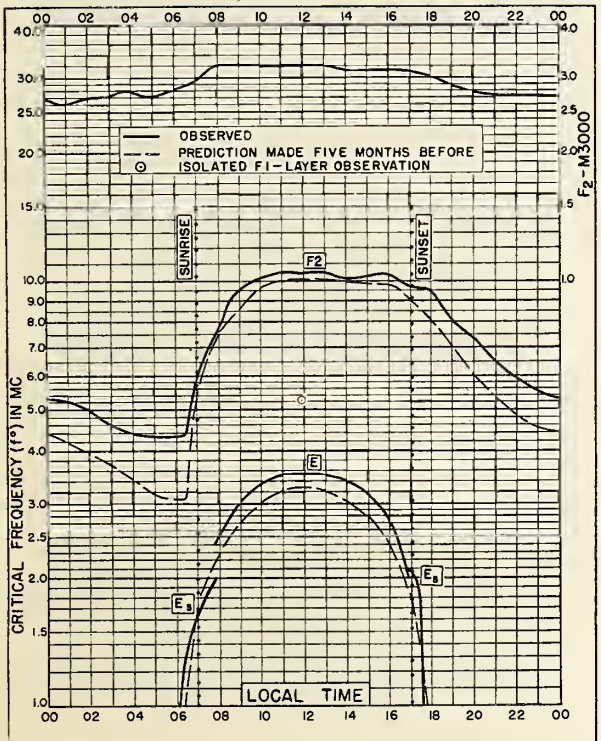

Fig. 74. HOBART, TASMANIA
42.8°S, 147.4°E AUGUST 1947

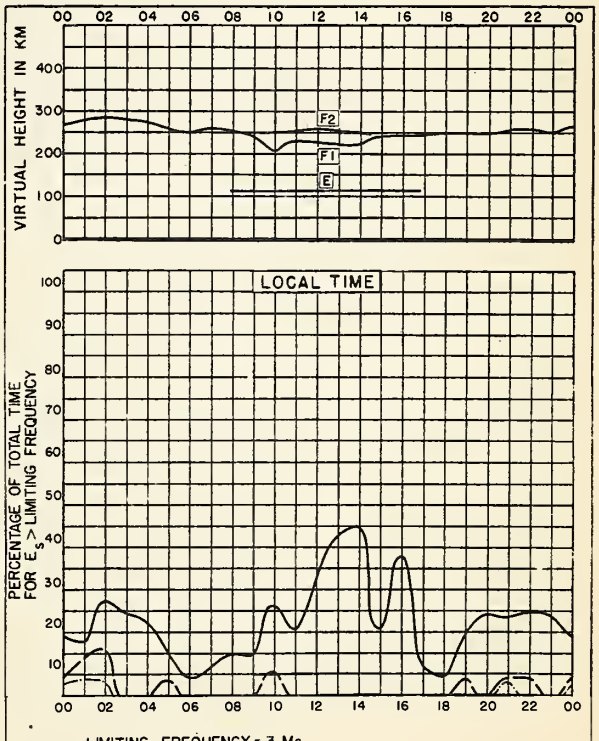

Fig. 75. HOBART, TASMANIA AUGUST 1947

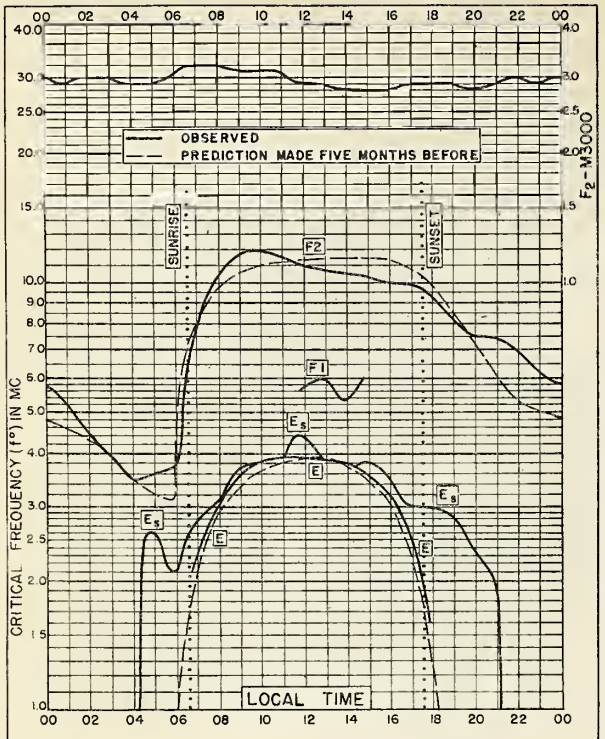

Fig. 76. TOWNSVILLE, AUSTRALIA
19.4°S, 146.5°E JULY 1947

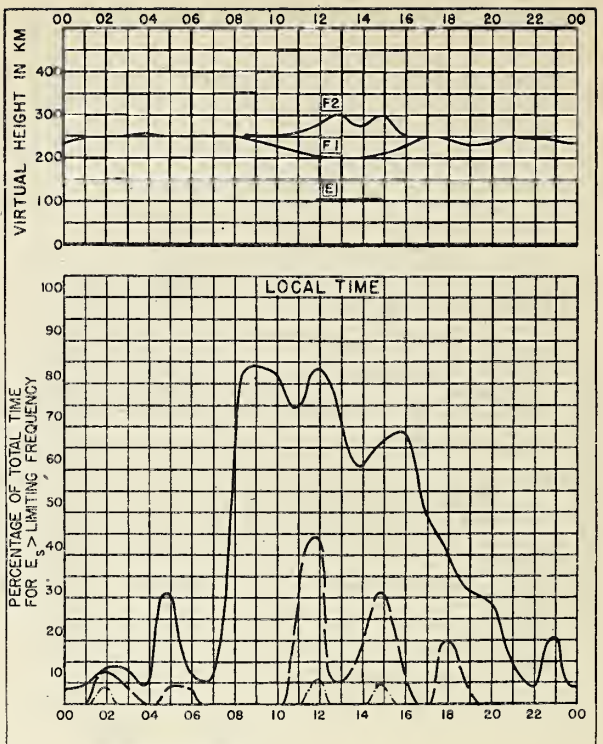

Fig. 77. TOWNSVILLE, AUSTRALIA JULY 1947

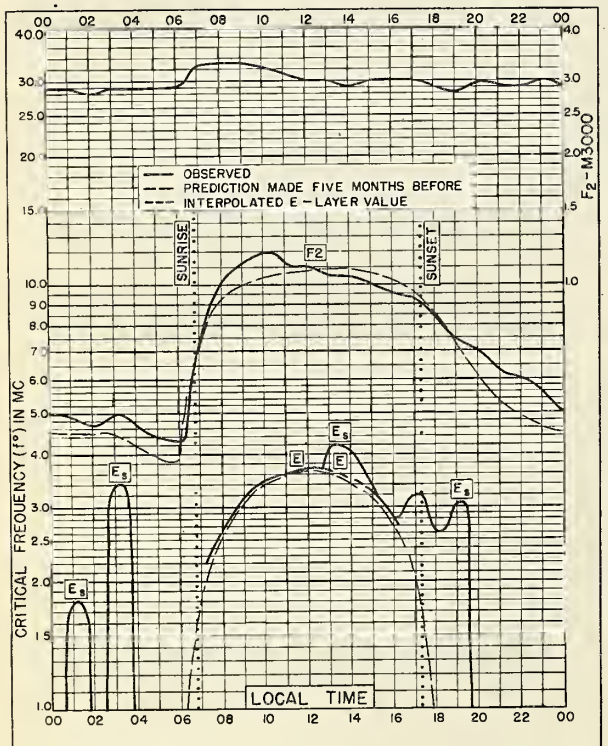

Fig. 78. BRISBANE, AUSTRALIA
27.5°S, 153.0°E JULY 1947

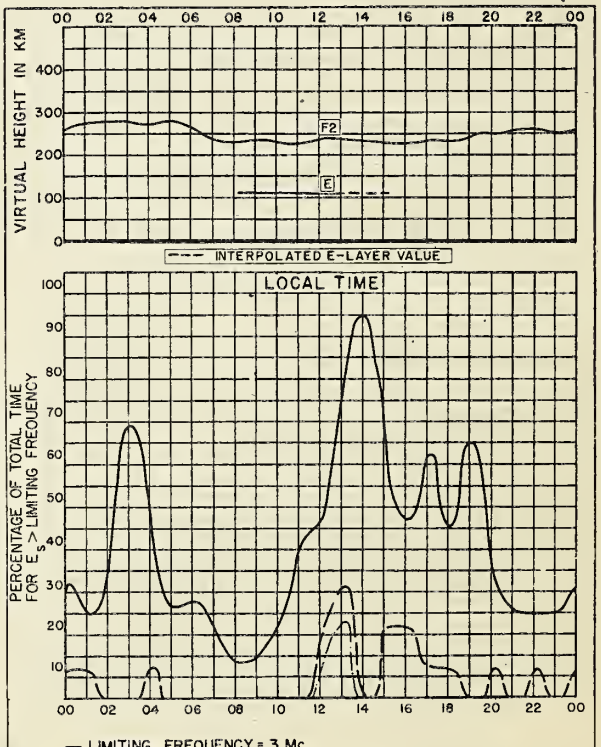

Fig. 79. BRISBANE, AUSTRALIA JULY 1947

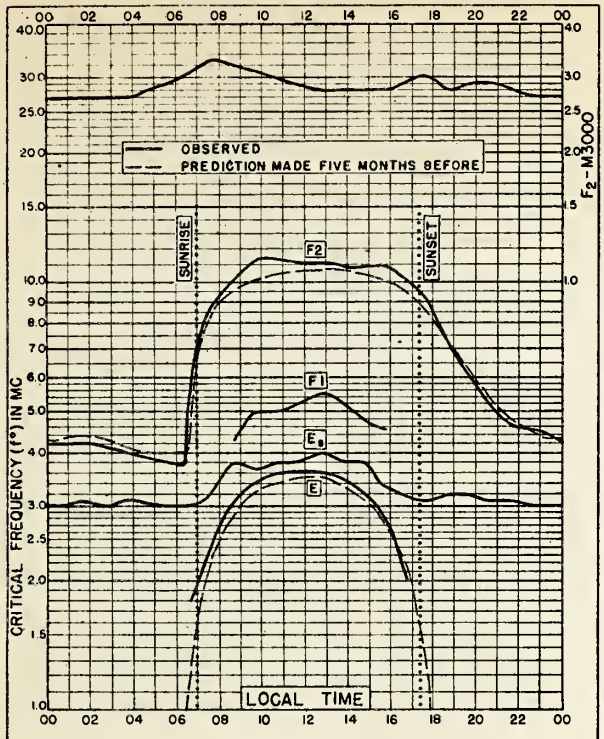

Fig. 80. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E JULY 1947

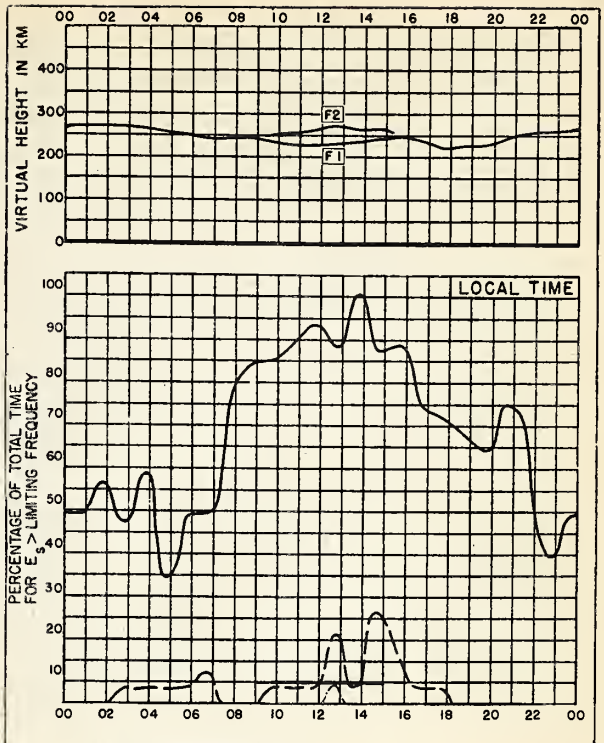

Fig. 81. WATHEROO, W. AUSTRALIA JULY 1947

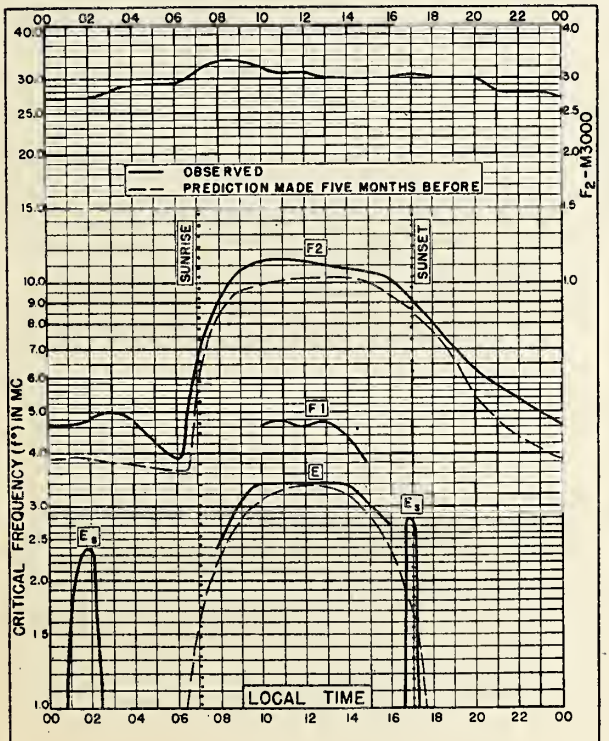

Fig. 82. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JULY 1947

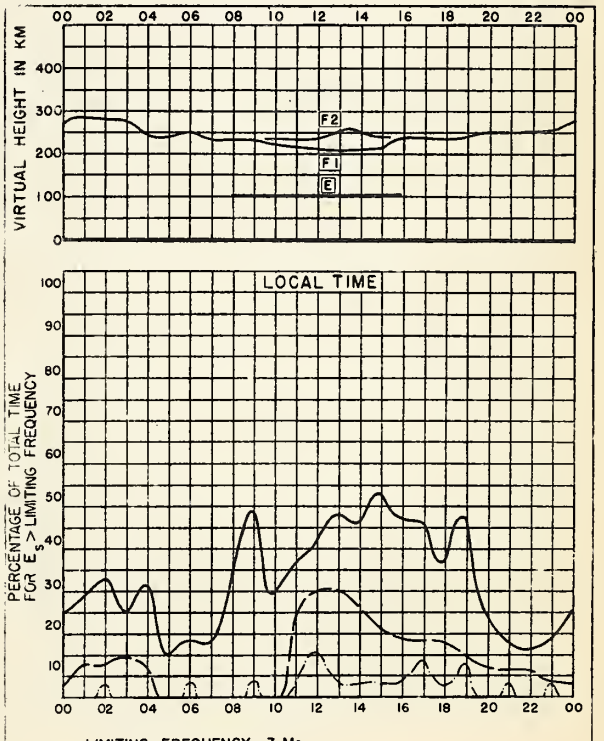

Fig. 83. CANBERRA, AUSTRALIA JULY 1947

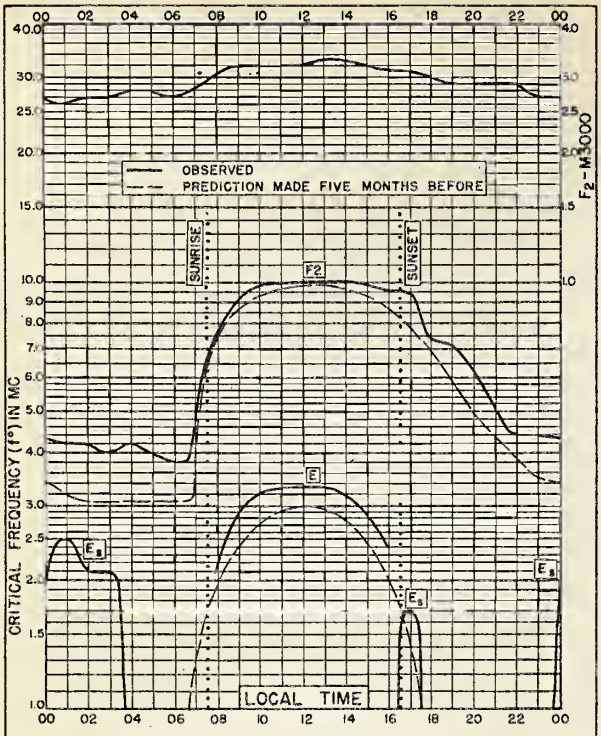

Fig. 84. HOBART, TASMANIA
42.8°S, 147.4°E JULY 1947

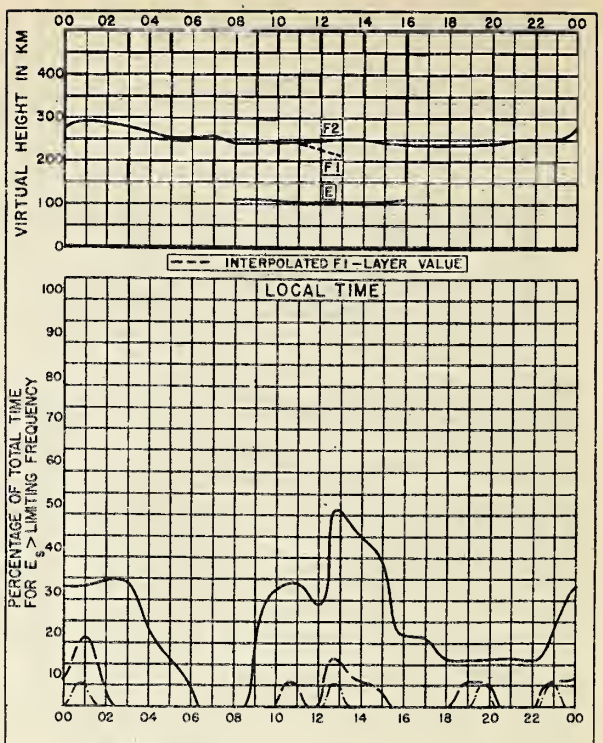

Fig. 85. HOBART, TASMANIA JULY 1947

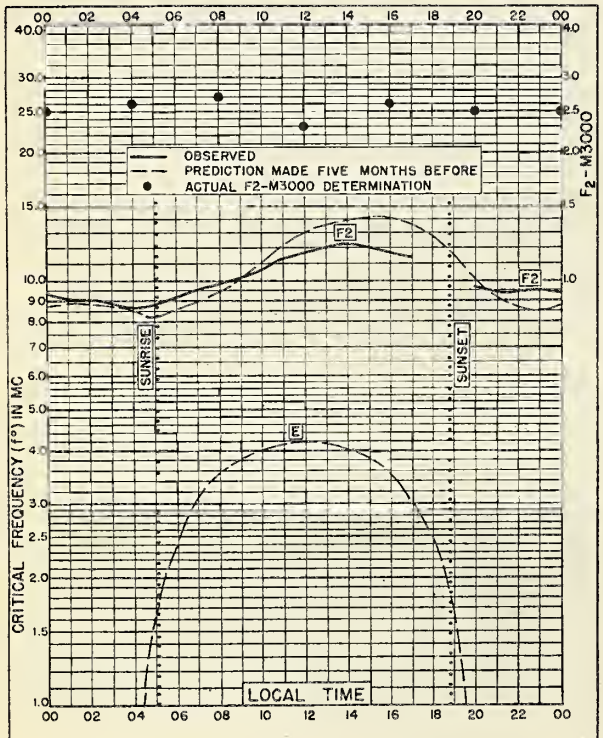

Fig. 86. DELHI, INDIA
28.6°N, 77.1°E JUNE 1947

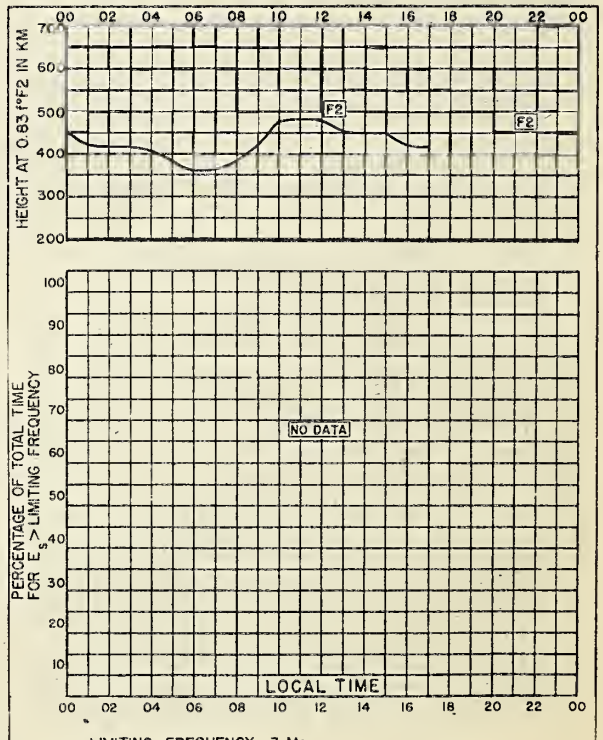

Fig. 87. DELHI, INDIA JUNE 1947

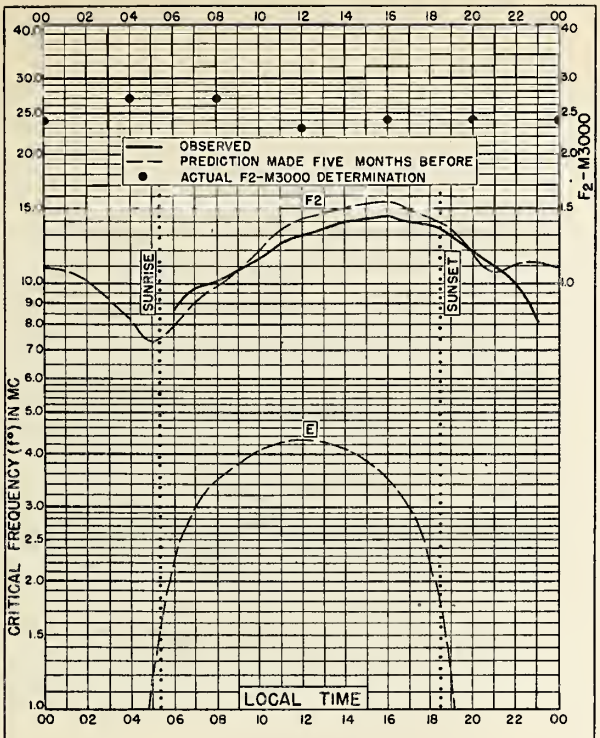

Fig. 88. BOMBAY, INDIA
19.0°N, 73.0°E JUNE 1947

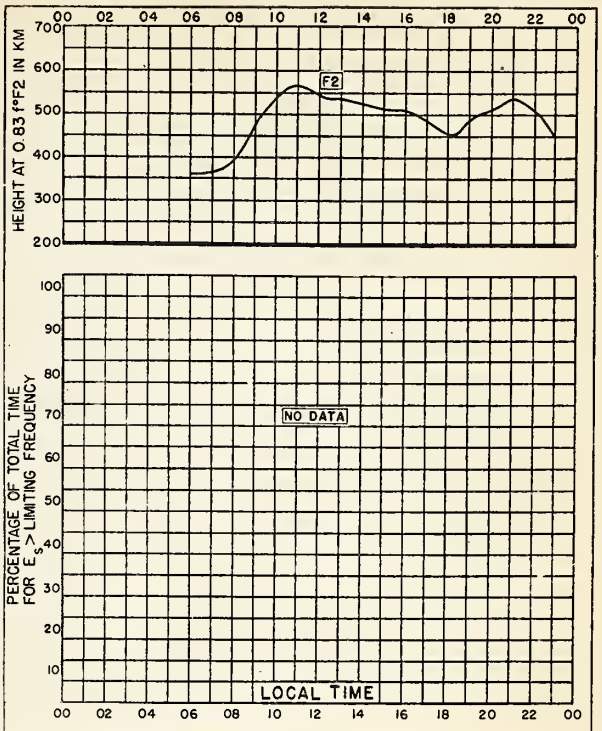

Fig. 89. BOMBAY, INDIA JUNE 1947

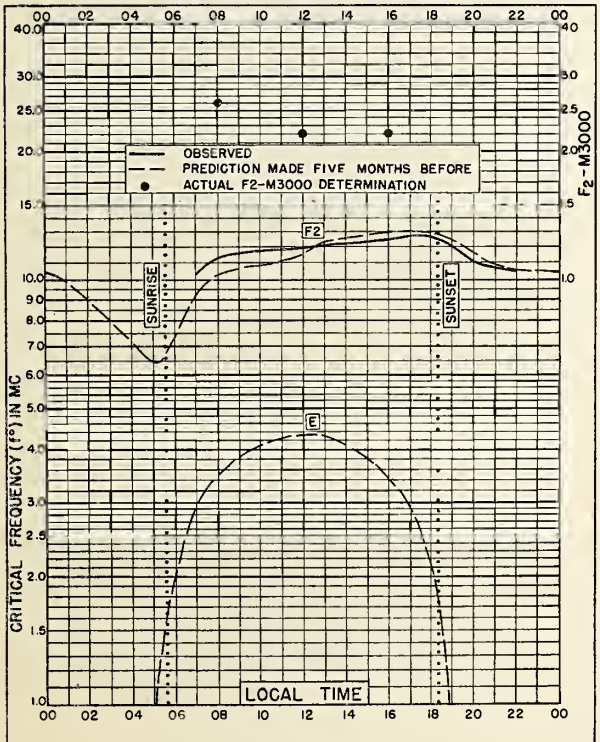

Fig. 90. MADRAS, INDIA
13.0°N, 80.2°E JUNE 1947

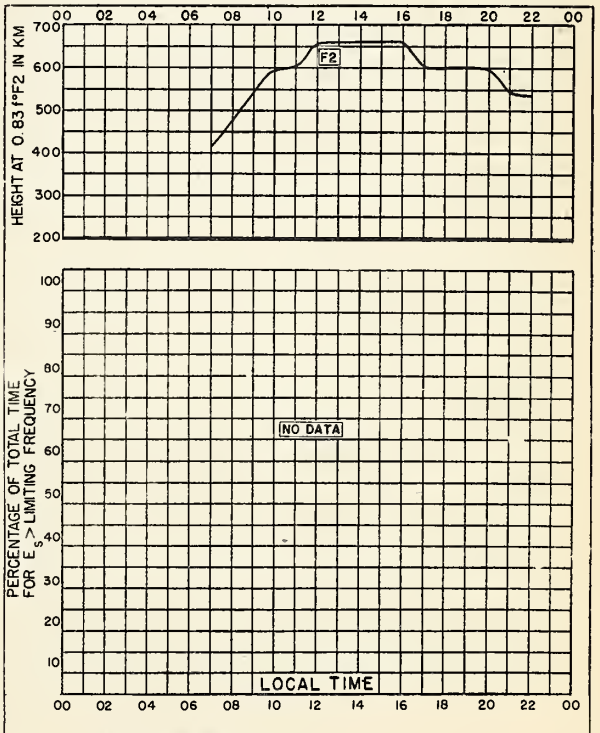

Fig. 91. MADRAS, INDIA JUNE 1947

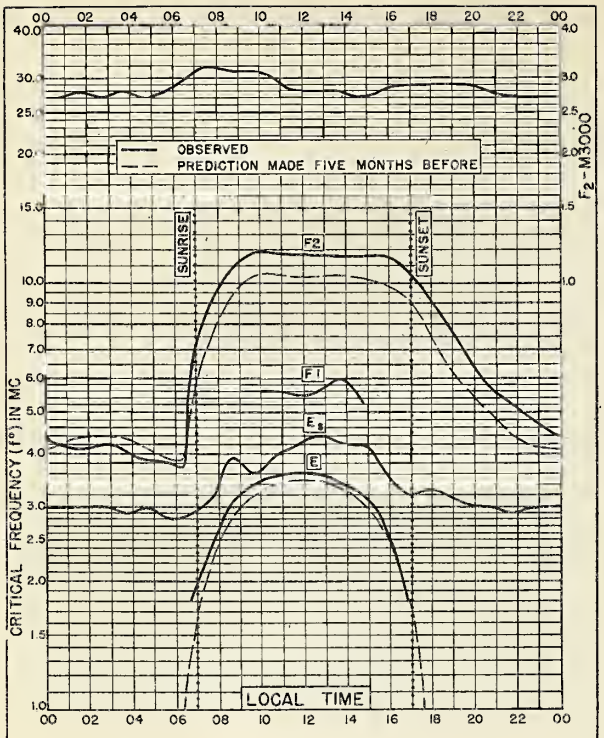

Fig. 92. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E JUNE 1947

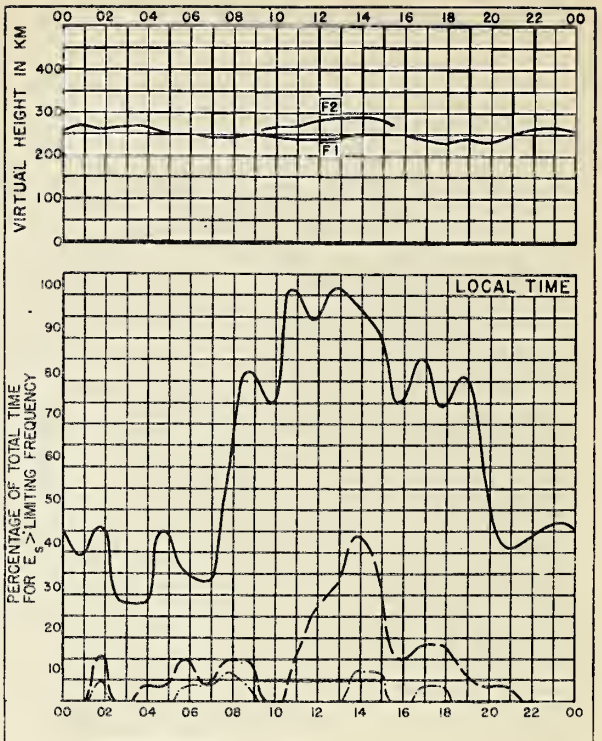

Fig. 93. WATHEROO, W. AUSTRALIA JUNE 1947

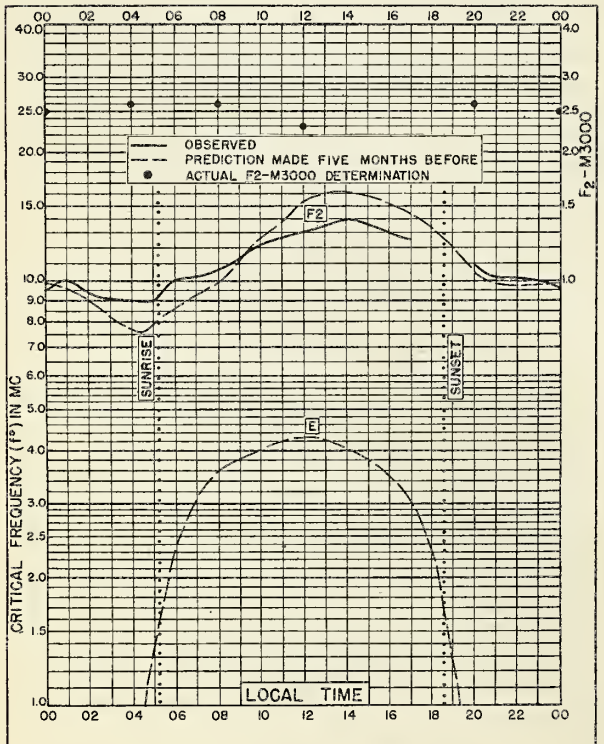

Fig. 94. DELHI, INDIA
28.6°N, 77.1°E MAY 1947

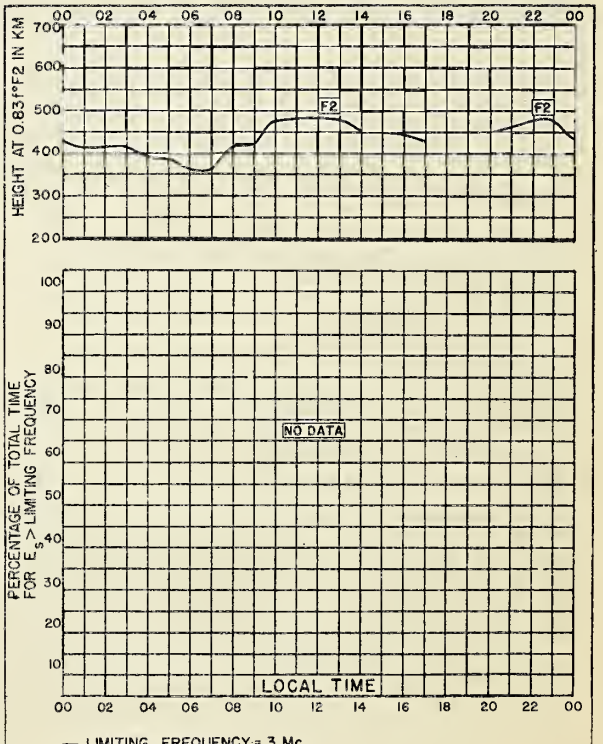

Fig. 95. DELHI, INDIA MAY 1947

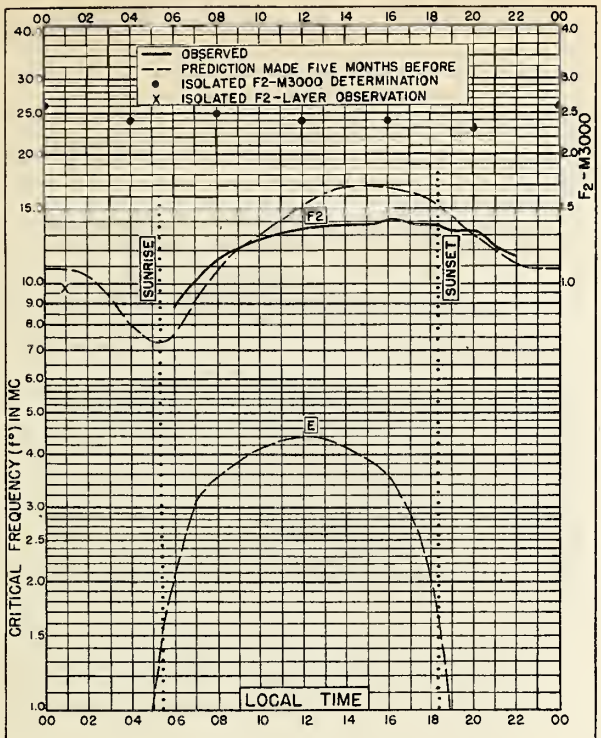

Fig. 96. BOMBAY, INDIA
19.0°N, 73.0°E
MAY 1947

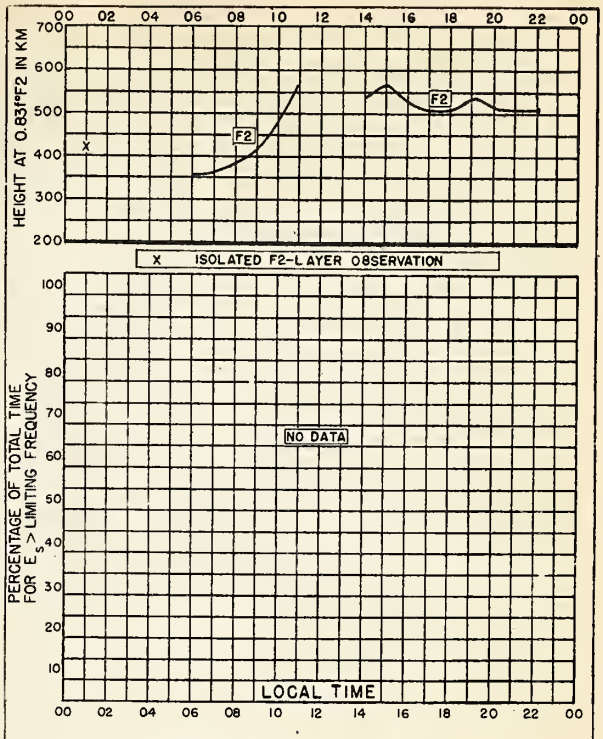

Fig. 97. BOMBAY, INDIA
MAY 1947

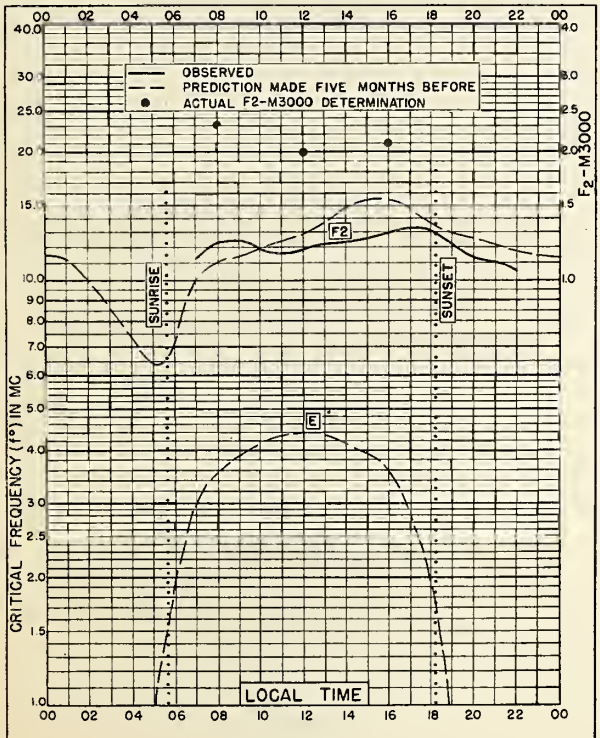

Fig. 98. MADRAS, INDIA
13.0°N, 80.2°E
MAY 1947

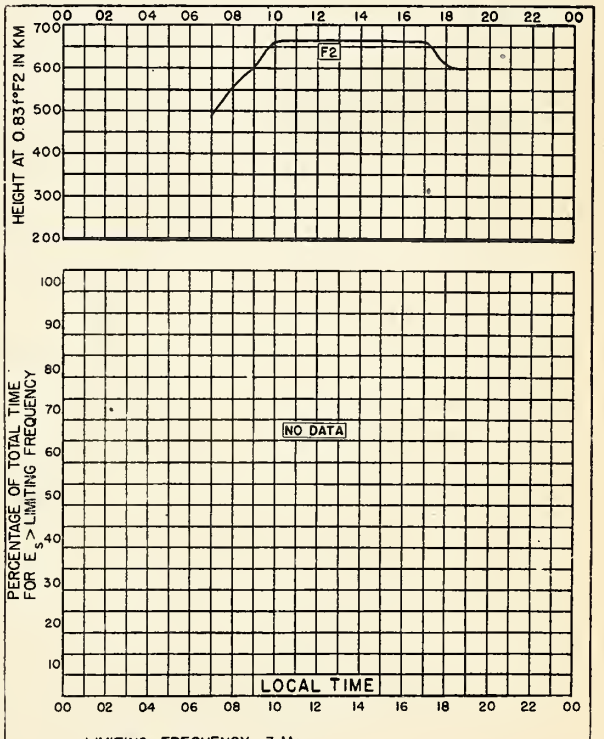

Fig. 99. MADRAS, INDIA
MAY 1947

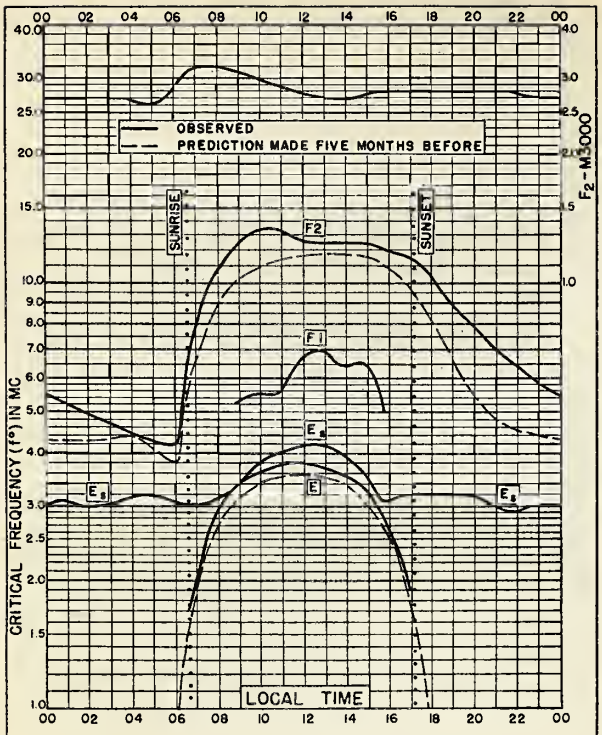

Fig. 100. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MAY 1947

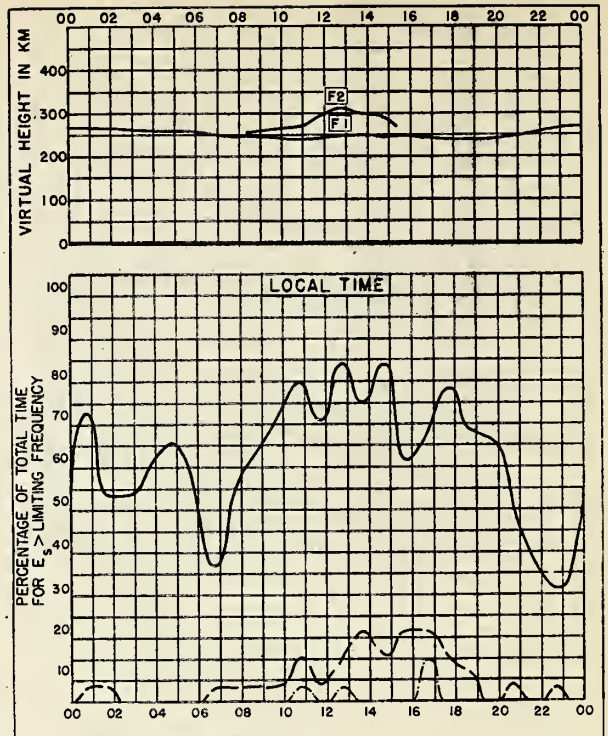

Fig. 101. WATHEROO, W. AUSTRALIA MAY 1947

Index of Tables and Graphs of Ionospheric Data

in CRPL-F40

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CRPL–F. Ionospheric Data.

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Nonscheduled reports:

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CRPL–7–1. Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records.
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.
- R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
- R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
- R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
- R12. Short Time Variations in Ionospheric Characteristics.
- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
- R15. Predicted Limits for *F*2-layer Radio Transmission Throughout the Solar Cycle.
- R16. Predicted *F*2-layer Frequencies Throughout the Solar Cycle, for Summer, Winter, and Equinox Season.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R19. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for June.
- R20. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for September.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R22. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for December.
- R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
- R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
- R25. The Prediction of Solar Activity as a Basis for Predictions of Radio Propagation Phenomena.
- R26. The Ionosphere as a Measure of Solar Activity.
- R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
- R28. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for January.
- R30. Disturbance Rating in Values of IRPL Quality-Figure Scale From A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
- R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
- R32. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for February.
- R33. Ionospheric Data on File at IRPL.
- R34. The Interpretation of Recorded Values of *fEs*.
- R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.

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