

CRPL-F 141 PART A

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PART A
IONOSPHERIC DATA

ISSUED
May 1956

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

CRPL-F 141
PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
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Issued
22 May 1956

IONOSPHERIC DATA

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SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in Document No. 626-E referred to above, plus an additional symbol, R: "Scaling of characteristic is influenced or prevented by absorption in the neighborhood of the critical frequency," (May 1955). Also, beginning with January 1956, additional meanings are assigned to T: A smoothed value which better fits the observations, replacing a doubtful or clearly inconsistent observed value; and to U: foF2 minus foF1 is 0.5 Mc or less (used with (M3000)F2).

a. For all ionospheric characteristics:

Values missing because of A, C, F, L, M, N, Q, R, S, or T are omitted from the median count.

b. For critical frequencies and virtual heights:

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

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the symbol D, only when it replaces a frequency characteristic.

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

c. For MUF factor (M-factors):

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

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

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

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

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

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

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

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

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

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice

in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when f_{oF2} is less than or equal to f_{oF1} , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

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

Ordinarily, a blank space in the f_{Es} column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of f_{oE} . Blank spaces at the beginning and end of columns of $h'F_1$, f_{oF1} , $h'E$, and f_{oE} are usually the result of diurnal variation in these characteristics. Complete absence of medians of $h'F_1$ and f_{oF1} is usually the result of seasonal effects.

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

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.
- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

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

<u>Month</u>	<u>Predicted Sunspot Number</u>										
	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946
December	42	11	15	33	53	86	108	114	126	85	
November	35	10	16	38	52	87	112	115	124	83	
October	135	31	10	17	43	52	90	114	116	119	81
September	119	30	8	18	46	54	91	115	117	121	79
August	105	27	8	18	49	57	96	111	123	122	77
July	95	22	8	20	51	60	101	108	125	116	73
June	89	18	9	21	52	63	103	108	129	112	67
May	77	16	10	22	52	68	102	108	130	109	67
April	68	13	10	24	52	74	101	109	133	107	62
March	60	14	11	27	52	78	103	111	133	105	51
February	53	14	12	29	51	82	103	113	133	90	46
January	48	12	14	30	53	85	105	112	130	88	42

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

Observed Sunspot Number

<u>Month</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64		

WORLD - WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 144 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
Buenos Aires, Argentina

Commonwealth of Australia, Ionospheric Prediction Service of the
Commonwealth Observatory:
Canberra, Australia
Hobart, Tasmania
Townsville, Australia

University of Graz:
Graz, Austria

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

Defence Research Board, Canada:
Churchill, Canada
Ottawa, Canada
Resolute Bay, Canada
Winnipeg, Canada

Radio Wave Research Laboratories, National Taiwan University, Taipeh,
Formosa, China:
Formosa, China

Danish National Committee of URSI:
Godhavn, Greenland

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

The Royal Netherlands Meteorological Institute:
De Bilt, Holland

Indian Council of Scientific and Industrial Research, Radio Research
Committee, New Delhi, India:
Ahmedabad, India (Physical Research Laboratory)
Bombay, India (All India Radio)
Calcutta, India (Institute of Radio Physics and Electronics)
Delhi, India (All India Radio)
Madras, India (All India Radio)
Tiruchy (Tiruchirapalli), India (All India Radio)

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

Christchurch Geophysical Observatory, New Zealand Department of
Scientific and Industrial Research:
Campbell I.

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

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa
Johannesburg, Union of South Africa
Nairobi, Kenya (East African Meteorological Department)

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

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

United States Army Signal Corps:
Adak, Alaska
Ft. Monmouth, New Jersey
Okinawa I.
White Sands, New Mexico

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

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 83 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F
32

The U is a weight meaning doubtful. Other weights are I, interpolated, D, greater than, and E, less than. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foFl and foE. Thus at a later date it will be possible to register more closely scaled values of these characteristics, whenever such are reported.

TABLES OF IONOSPHERIC DATA

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Table 1

Time	Washington, O. C. (30.7°N, 77.1°W)							April 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00	290	6.7			(2.4)		2.70	
01	200	6.3					2.70	
02	290	6.1					2.70	
03	280	5.7					2.70	
04	200	5.3					2.70	
05	270	4.9					2.00	
06	250	5.8	270	---	119	1.9	3.05	
07	250	6.9	240	4.2	109	2.6	3.00	
08	270	7.8	225	4.6	105	3.0	3.05	
09	280	8.7	210	4.0	103	3.3	3.5	2.95
10	310	9.4	205	4.9	101	3.4	3.7	2.90
11	310	9.4	210	5.1	102	3.5	2.80	
12	320	9.0	215	5.2	101	3.6	3.6	2.80
13	330	10.2	215	5.2	101	3.6	2.75	
14	320	10.0	220	5.2	101	3.6	2.70	
15	340	9.6	220	5.0	101	3.5	2.75	
16	300	9.5	230	4.0	105	3.2	2.80	
17	270	9.4	240	4.4	109	2.8	2.0	2.80
18	250	9.5	255	---	119	2.1	2.2	2.90
19	240	9.2					1.6	2.90
20	240	8.2					3.0	2.80
21	260	7.6					2.6	2.75
22	270	7.0					2.70	
23	280	6.8					(3.0)	2.70

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Time	Kiruna, Sweden (67.0°N, 20.3°E)							March 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00	(325)	(5.0)				3.1	---	
01	(310)	(5.2)			<3.8	---		
02	(305)	(5.0)			2.2	---		
03	(310)	(5.0)			2.2	---		
04	300	(4.4)			2.0	(2.7)		
05	295	(4.7)			E	<2.0	(2.75)	
06	275	5.2	---	---	115	<1.7	2.9	
07	260	5.6	250	---	---	<2.0	3.0	
08	260	6.4	240	---	---	---	3.05	
09	250	7.1	230	(4.0)	110	2.4	<1.9	3.0
10	265	7.8	230	(4.0)	110	2.8	3.0	
11	275	8.3	230	(4.2)	110	---	<1.9	2.9
12	260	8.6	225	(4.0)	110	2.9	2.9	
13	260	9.0	230	4.1	110	<2.9	<3.0	2.9
14	260	8.5	230	---	110	2.6	<3.0	2.9
15	250	8.0	235	---	---	---	3.0	
16	255	8.0	240	---	---	2.0	<2.0	3.0
17	260	7.2	240	---	---	<1.8	2.0	3.0
18	260	6.5	---	---	---	<3.1	3.0	
19	250	(6.0)	---	---	---	<3.0	(2.9)	
20	260	(5.5)	---	---	---	3.8	(2.9)	
21	275	(5.0)	---	---	---	3.5	(2.8)	
22	(300)	(5.2)	---	---	---	3.8	(2.8)	
23	(280)	(4.9)	---	---	---	5.0	---	

Time: 15.0°E.

Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 5

Time	Anchorage, Alaska (61.2°N, 149.9°W)							March 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00							2.50	
01	2.9				2.4		2.40	
02	3.3				2.1		2.45	
03	3.1							
04	3.5						2.40	
05	3.4						2.40	
06	3.5						2.40	
07	3.9						2.50	
08	4.9	---	130	2.0			2.80	
09	5.5	---	128	2.4			2.80	
10	6.0	---	127	2.7			2.80	
11	6.3	(4.5)	125	2.8			2.80	
12	7.1	4.6	121	3.0			2.70	
13	8.0	---	120	3.0			2.75	
14	8.4	---	121	3.0			2.75	
15	8.6	---	119	2.9			2.80	
16	8.6	---	127	2.7			2.80	
17	8.6	---	127	2.5			2.85	
18	8.5	---	137	2.2			2.90	
19	8.3	---	---	---			2.95	
20	6.5						2.90	
21	6.0						2.80	
22	4.6						2.80	
23	3.8						2.60	

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Time	Tromso, Norway (69.7°N, 19.0°E)							March 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00		---			(4.0)			3.2
01		---			(5.4)			3.6
02		(345)			(5.2)			4.0
03		(305)			4.9			(2.40)
04		300			4.6			3.2
05		200			4.4			2.65
06		200			5.1	---	---	1.4
07		255			5.8	---	---	<1.7
08		(250)			260	---	---	2.80
09		(245)			250	---	---	2.80
10		(250)			245	---	---	2.80
11		255			245	---	---	2.80
12		255			245	---	---	2.90
13		255			245	---	---	2.90
14		250			245	---	---	2.90
15		245			245	---	---	2.95
16		250			245	---	---	2.95
17		245			245	---	---	2.90
18		(250)			5.9	---	---	2.90
19		(275)			5.4	---	---	2.80
20		(280)			5.8	---	---	<3.4
21		(260)			(6.0)	---	---	(2.80)
22		(260)			(5.3)	---	---	3.0
23		(260)			(5.0)	---	---	3.0

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 4

Time	Fairbanks, Alaska (64.9°N, 147.8°W)							March 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00					(3.5)			4.4
01					(4.6)			4.2
02					(4.6)			4.4
03					(4.0)			3.8
04					(3.5)			3.2
05					(3.8)			3.6
06					(4.3)			(2.85)
07					(5.2)	---	---	(2.90)
08					(5.4)	---	---	(2.95)
09					5.9	---	---	3.00
10					(6.4)	---	---	2.80
11					6.6	---	---	2.80
12					(4.5)	113		2.80
13					6.6	---	---	2.90
14					7.7	---	---	2.85
15					(8.0)	---	---	3.00
16					(8.2)	123		(3.05)
17					(8.0)	131		(3.05)
18					(7.4)	145		(3.10)
19					(6.9)			1.8
20					(5.4)			3.0
21					(4.3)			2.0
22					(4.4)			3.4
23					(4.0)			4.2

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

Time	Narsarssuak, Greenland (61.2°N, 45.4°W)							March 1956
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00							3.4	----
01					(3.4)		3.8	(2.75)
02					(4.2)		4.0	(2.85)
03					(3.9)		4.0	(2.70)
04					--		3.9	----
05					(4.1)		3.6	(2.95)
06					(5.2)	---	3.0	(3.10)
07					6.1	---	2.7	3.05
08					6.6	---	119	(2.8)
09					7.0	(4.5)	3.0	3.00
10					7.0	(4.6)	115	2.90
11					7.0	(4.6)	115	2.90
12					7.8	(4.6)	111	(3.1)
13					8.1	(4.6)	112	3.1
14					(8.0)	(4.3)	111	(3.0)
15					(8.5)	---	111	(3.0)
16					(7.2)	---	113	2.6
17					(6.8)	---	120	2.2
18					(6.2)	---	---	3.3
19					(7.1)			3.2
20	</							

Table 13

Okinawa I. (26.3°N, 127.8°E)							March 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	10.4					2.80	
01	260	10.1				1.9	2.85	
02	250	9.4					2.90	
03	240	8.8				2.2	3.05	
04	220	6.9					3.00	
05	230	5.7					2.80	
06	260	5.1				2.0	2.75	
07	240	7.6			131	2.1	2.8	3.20
08	230	10.0	240	---	113	(2.9)	4.4	3.25
09	(250)	10.8	230	---	109	(3.3)	4.5	3.10
10	(270)	12.4	230	---	110	(3.5)	4.8	3.00
11	270	13.3	220	---	109	(3.7)	4.8	2.90
12	290	14.0	220	---	111	(3.8)	5.1	2.85
13	330	15.0	210	---	110	(3.9)	5.0	2.80
14	330	16.0	220	---	111	3.8	4.9	2.80
15	320	16.2	230	---	113	3.7	4.7	2.80
16	310	16.4	230	---	113	3.5	4.7	2.80
17	280	16.1	235	---	115	3.0	4.4	2.85
18	250	14.8	---	---	121	2.3	3.2	2.90
19	240	14.9					3.1	2.90
20	250	(15.2)					2.1	2.85
21	230	(14.8)					2.2	(2.80)
22	240	13.3						2.85
23	250	(11.4)						(2.80)

Time: 135.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Maui, Hawaii (20.8°N, 156.5°W)							March 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	8.2					3.00	
01	250	7.1					3.00	
02	240	6.4					3.00	
03	230	5.3					2.90	
04	260	4.0					2.80	
05	290	3.4					2.70	
06	310	3.7					2.65	
07	250	7.4			130	2.0		3.10
08	250	10.0	240	---	117	2.8	3.7	3.20
09	260	11.3	230	---	111	3.3	4.3	3.00
10	270	12.3	220	---	111	3.6	5.0	2.90
11	280	12.8	215	---	111	3.8	4.7	2.75
12	290	13.8	210	---	111	3.9	4.6	2.75
13	320	14.3	215	5.2	109	3.9	4.8	2.70
14	340	14.6	220	---	109	3.8	4.3	2.70
15	330	14.8	235	---	111	3.6	3.8	2.70
16	300	15.3	235	---	111	3.4	4.0	2.80
17	260	14.2	240	---	117	2.9	3.4	2.80
18	250	13.6			127	2.0	2.6	2.90
19	250	13.2					2.8	2.90
20	240	12.3					2.4	2.90
21	230	11.6					1.8	2.90
22	250	10.1						2.90
23	250	9.4						3.00

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 17

Guam I. (13.6°N, 144.9°E)							March 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	13.0				1.7	3.10	
01	230	12.5				1.4	3.15	
02	225	10.4					3.20	
03	230	8.6					3.15	
04	235	7.1					3.20	
05	235	5.8				2.2	3.20	
06	235	4.8				2.1	3.20	
07	250	8.3			121	2.0	2.5	3.20
08	240	10.8	230	---	113	2.9		3.10
09	---	12.2	220	---	111	3.3		2.90
10	---	13.0	215	---	111	3.6		2.65
11	---	13.0	210	---	113	3.7		2.40
12	---	12.5	210	---	111	3.8		2.35
13	---	12.3	200	---	112	3.7		.30
14	---	12.8	205	---	111	3.6		2.40
15	---	13.1	220	---	111	3.5		2.50
16	---	13.8	230	---	111	3.3		2.50
17	---	14.0	240	---	117	2.9	3.5	2.55
18	265	14.2			125	2.0	2.6	2.50
19	310	13.5				2.0		2.45
20	340	12.9						2.40
21	300	12.8				1.6		2.60
22	245	12.6				2.7		2.90
23	235	13.0				2.6		3.05

Time: 150.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Formosa China (25.0°N, 121.5°E)							March 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	11.9					<1.7	2.9
01	260	9.8					<1.7	3.0
02	260	9.6					<1.7	3.0
03	---	---						
04	---	---						
05	---	---						
06	---	---						
07	---	---						
08	240	11.0	---	---	120	3.1		3.0
09	250	12.5	240	---	120	3.4	<3.8	3.0
10	260	13.4	230	---	120	(3.6)	<4.1	2.9
11	(260)	14.1	220	---	120	---	4.3	2.7
12	(280)	15.2	220	---	120	---	<5.0	2.7
13	(270)	16.2	220	---	120	3.8	4.7	2.7
14	(270)	16.4	240	---	120	3.6	<4.4	2.8
15	270	>16.8	240	---	120	3.5	4.2	2.8
16	(270)	>16.8	240	---	120	(3.2)	4.0	(2.9)
17	260	>16.5	240	---	120	2.8	3.4	2.95
18	260	>16.5					<2.8	(2.8)
19	280	>16.5					2.7	(2.8)
20	280	>16.8					2.2	(2.7)
21	240	>16.8					2.2	(2.95)
22	240	13.6					<1.8	2.9
23	260	12.6					<1.7	2.9

Time: 120.0°E.

Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 16

Puerto Rico, W. I. (18.5°N, 67.2°W)							March 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	8.4						2.95
01	260	7.8						3.00
02	250	7.5						3.05
03	240	6.2						3.10
04	250	5.3						3.00
05	250	4.9						2.80
06	290	4.6						(2.3)
07	250	7.1						2.80
08	240	9.2	240	---	115	2.8		3.20
09	260	10.8	230	---	111	3.3		3.05
10	280	12.1	230	---	111	3.6		3.00
11	280	12.6	220	5.2	111	3.8		2.95
12	290	12.7	215	5.3	111	3.9		2.85
13	300	13.1	220	5.3	112	3.9		2.85
14	300	12.9	220	5.3	111	3.8		2.80
15	300	12.8	225	---	113	3.6		2.85
07	250	7.6						2.70
08	(250)	10.0	235	---	113	3.0	3.2	3.15
09	(270)	11.4	225	---	110	(3.5)		2.95
10	280	12.8	220	---	110	3.8	4.1	2.90
11	(280)	13.3	210	(5.4)	110	(4.0)		2.85
12	290	14.0	210	(5.6)	110	(4.0)		2.80
13	280	14.2	210	5.6	110	(4.1)		2.75
14	(300)	14.5	210	---	109	(4.0)		2.75
15	(310)	14.4	225	---	109	(3.8)	4.5	2.75
16	290	14.4	230	---	110	3.3	4.1	2.75
17	280	(13.8)	240	---	112	2.9	3.8	(2.80)
18	250	(13.2)	---	---	125	(2.1)	2.8	(2.80)
19	240	(12.1)					2.3	(2.85)
20	250	(11.9)						(2.85)
21	230	(11.6)						(2.85)
22	240	(10.8)						(2.85)
23	240	10.1						2.85

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 19

Resolute Bay, Canada (74.7°N, 94.9°W)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	250	4.0						3.0	
01	250	3.8						3.0	
02	260	3.3				<1.2		3.0	
03	260	3.3					<1.3	3.0	
04	270	3.0	---	---				3.0	
05	270	3.2	---	---	---	---	<1.4	(2.9)	
06	270	3.2	---	---	---	---	<1.4	3.05	
07	270	4.0	---	---	---	---	<1.4	(3.0)	
08	260	4.2	---	---	---	1.2	<1.4	3.05	
09	250	4.6	---	---	120	1.5		(3.2)	
10	240	5.2	---	---	105	1.5		3.2	
11	250	5.2	---	---	110	1.6		3.1	
12	250	5.4	---	---	115	1.8		3.2	
13	240	5.6	---	---	110	1.9		3.2	
14	240	5.6	---	---	110	1.8		3.2	
15	260	5.2	---	---	120	1.6		3.05	
16	250	5.2	---	---	120	1.6		2.95	
17	250	5.2	---	---			1.7	3.0	
18	250	5.2	---	---			<1.2	2.9	
19	250	5.0	---	---				(3.05)	
20	240	4.7	---	---				<1.6	3.0
21	250	4.2	---	---				<1.1	3.0
22	250	4.0	---	---				<1.4	2.9
23	250	4.2	---	---					2.9

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 20

Kiruna, Sweden (67.8°N, 20.3°E)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	305				(3.7)				3.0
01	300				(3.8)				2.5
02	310				(4.0)				2.5
03	295				(3.5)				<1.6
04	285				(3.8)				(2.8)
05	265				3.7				<1.1
06	270				3.0				2.85
07	260				4.0				3.05
08	245				5.5				3.1
09	230				6.5				3.3
10	230				7.2				3.25
11	230				7.3				2.4
12	225				8.1				2.5
13	230				8.2				3.2
14	225				8.0				3.3
15	230				7.3				3.3
16	230				6.4				3.2
17	225				5.5				<1.5
18	225				4.3				(3.2)
19	250				4.2				<2.0
20	(275)				(3.4)				<2.0
21	(275)				(4.0)				3.0
22	(300)				(3.8)				3.5
23	(300)				(4.6)				<3.4

Time: 15.0°E.

Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 21

Anchorage, Alaska (61.2°N, 149.9°W)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00		2.0						2.60	
01		1.8						2.45	
02		1.9				1.6		2.50	
03		2.0						2.50	
04	(1.8)							(2.45)	
05		1.9				1.4		2.50	
06		1.8						(2.50)	
07		2.7						2.70	
08		4.5	130	---				2.90	
09		6.0	131	2.2				3.05	
10		6.8	131	2.5				3.00	
11		7.6	129	2.7				2.90	
12		8.0	130	2.8				2.90	
13		8.4	131	2.8				2.90	
14		8.6	131	2.7				2.85	
15		8.5	136	2.4				2.90	
16		8.4	140	2.0				2.95	
17		7.8	---	---				2.95	
18		6.2						2.90	
19		4.7						2.90	
20		3.3						2.90	
21		2.7						2.80	
22		2.4						2.70	
23		2.0						(2.70)	

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Churchill, Canada (58.8°N, 94.2°W)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	300	4.0			120	2.5	5.0	(2.9)	
01	300	3.8			115	2.4	5.0	(3.05)	
02	300	3.8			130	2.4	5.0	(3.0)	
03	300	3.6			120	3.2	4.5	(2.8)	
04	320	(3.6)			120	2.6	4.6		
05	340	3.8			110	3.0	4.5	(2.9)	
06	340	4.0			115	3.2	4.0	2.8	
07	330	4.0			110	3.0	4.1	3.0	
08	290	4.8			110	2.5	3.6	3.2	
09	280	5.8	---	---	120	3.0		3.2	
10	270	6.3	---	---	120	3.0		3.2	
11	270	6.9	250	---	125	3.0		3.2	
12	270	7.7	260	4.0	125	3.1		3.2	
13	270	8.0	250	4.1	120	3.1		3.15	
14	260	8.8	260	4.1	125	3.0		3.15	
15	250	8.8	240	---	130	2.8		3.1	
16	260	8.0	---	---	130	2.4		3.2	
17	250	6.9			130	2.4		3.2	
18	260	5.2			120	2.8	3.0	3.2	
19	290	5.0			120	2.7	3.3	3.1	
20	300	4.6			120	2.8	3.0	3.0	
21	300	4.5			130	2.6	4.0	(3.0)	
22	280	4.5			130	2.8	5.0	3.2	
23	300	4.3			130	2.6	5.0	(3.0)	

Time: 90.0°W.

Sweep: 0.6 Mc to 15.0 Mc in 16 seconds.

Table 23

Winnipeg, Canada (49.9°N, 97.4°W)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	300	3.0						2.8	
01	320	2.9						2.7	
02	320	2.8						2.7	
03	320	2.8						2.7	
04	310	2.7						2.7	
05	320	2.4						2.7	
06	320	2.4						2.7	
07	300	2.8						2.7	
08	270	5.0	120	2.0				3.0	
09	250	6.0	---	---				3.0	
10	270	7.2	240	4.0	120	2.8		3.0	
11	280	7.9	240	4.0	120	3.0		3.0	
12	280	8.4	240	4.3	125	3.1		3.0	
13	280	8.8	240	4.3	125	3.1		3.0	
14	280	8.8	240	4.2	120	3.1		2.9	
15	270	9.0	240	4.0	120	3.0		2.9	
16	260	9.1	250	---	120	2.8		3.0	
17	250	9.0			130	2.3		3.0	
18	240	8.0					1.7	3.0	
19	240	6.6						2.95	
20	240	5.3						2.9	
21	260	4.5						2.9	
22	280	4.0						2.9	
23	290	3.2						2.9	

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 24

Schwarzenburg, Switzerland (46.8°N, 7.3°E)								February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	300	4.0							3.1
01	290	4.0							3.2
02	290	3.8							3.2
03	290	3.8							3.2
04	280	3.6							3.2
05	260	3.3							3.3
06	245	3.1							3.35
07									

Table 25

Ottawa, Canada (45.4°N, 75.9°W)	Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	February 1956
	00					<1.6			3.0	
	01	3.7				<1.6			3.0	
	02	3.6				<1.6			2.9	
	03	3.5				<1.6			3.0	
	04	3.2				<1.6			3.0	
	05	3.0				<1.6			3.05	
	06	2.8				<1.6			3.05	
	07	4.2				1.7			3.1	
	08	6.2			120	2.3			3.3	
	09	7.1			4.2	110	2.9		3.3	
	10	8.2			4.2	110	3.1		3.25	
	11	9.0			4.6	110	3.3		3.2	
	12	9.4			4.6	110	3.4		3.2	
	13	9.2			4.7	110	3.4		3.2	
	14	9.6			4.5	110	3.3		3.1	
	15	9.2			4.3	110	3.0		3.15	
	16	9.3			3.7	110	2.7		3.2	
	17	9.0				120	2.1		3.2	
	18	8.2			---	---	<1.6		3.1	
	19	6.8			---	---	<1.6		3.1	
	20	5.5			---	---	<1.6		3.1	
	21	4.8			---	---	<1.6		3.1	
	22	4.1			---	---	<1.6		3.05	
	23	3.9				---	<1.6		3.0	

Time: 75.0°W.

Sweep: 1.0 Mc to 15.0 Mc in 15 seconds.

Table 27

Talara, Peru (4.6°S, 81.3°W)	Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	February 1956
	00	230	9.7				5.0		3.10	
	01	220	8.0				6.0		3.15	
	02	220	6.6				5.0		3.30	
	03	230	6.1				5.2		3.30	
	04	240	4.9				4.8		3.20	
	05	240	4.0				4.7		3.30	
	06	250	3.7				4.7		3.20	
	07	260	7.0			123	2.0	4.4	3.10	
	08	(240)	9.5	235	---	111	2.9	4.7	2.90	
	09	---	11.0	220	---	111	3.4	5.6	2.75	
	10	(300)	11.6	210	---	111	3.7	6.6	2.65	
	11	(300)	11.7	200	4.9	109	3.8	5.2	2.40	
	12	300	11.4	200	5.0	109	4.0	6.9	2.30	
	13	280	12.0	200	5.0	109	4.0	6.2	2.30	
	14	(320)	12.3	200	4.8	108	3.9	5.6	2.40	
	15	---	12.5	200	---	107	3.7	5.0	2.50	
	16	(240)	12.3	215	---	107	3.5	5.3	2.60	
	17	240	12.4	230	---	109	2.9	4.5	2.60	
	18	260	12.7			116	2.3	4.3	2.65	
	19	280	(13.0)					3.5	(2.60)	
	20	310	(12.4)					3.8	(2.60)	
	21	280	(13.0)					3.4	(2.85)	
	22	250	(11.6)					3.7	(3.00)	
	23	240	11.6					3.8	3.00	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 29

Huancayo, Peru (12.0°S, 75.3°W)	Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	February 1956
	00	300	(9.2)				4.6		(3.05)	
	01	250	(7.4)				4.5		(3.10)	
	02	230	6.6				4.7		3.20	
	03	230	5.8				3.3		3.25	
	04	230	4.8				(3.6)		3.30	
	05	230	3.7				(5.9)		3.30	
	06	280	5.0				4.2		3.00	
	07	240	8.4	240	---	111	2.6	8.5	3.00	
	08	---	10.2	225	---	107	---	11.5	2.80	
	09	(300)	11.0	210	---	105	---	12.5	2.55	
	10	(300)	11.2	205	4.9	105	---	12.6	2.45	
	11	(330)	11.2	200	5.1	105	---	12.7	2.40	
	12	355	11.3	200	5.1	105	---	12.7	2.35	
	13	335	11.0	200	5.0	103	---	12.7	2.35	
	14	(330)	11.5	200	4.9	105	---	12.3	2.35	
	15	---	11.4	200	---	106	---	11.9	2.40	
	16	---	11.4	200	---	105	---	11.6	2.45	
	17	240	11.7	230	---	105	---	9.3	2.40	
	18	260	11.5			113	2.1	6.0	2.35	
	19	310	11.0					2.30		
	20	350	9.6					2.30		
	21	370	(10.1)					(2.40)		
	22	330	(9.9)					(3.6)	(2.60)	
	23	290	(9.9)					(4.2)	(2.70)	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 26

Leopoldville, Belgian Congo (4.4°S, 15.2°E)	Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	February 1956
	00	240	7.5							2.6
	01	250	7.0							2.7
	02	240	6.4							2.8
	03	230	5.2							2.8
	04	230	4.6							2.9
	05	250	4.6	---	---	---	---	---	2.1	2.8
	06	260	7.6	245	---	115	2.6		2.9	2.9
	07	280	8.9	230	---	110	3.2			2.7
	08	310	9.5	220	4.6	110	3.6			2.5
	09	340	10.4	220	5.0	110	3.7			2.3
	10	420	>11.2	220	5.0	110	3.8			2.3
	11	405	12.3	210	5.1	110	3.9			2.3
	12	380	13.1	210	5.0	110	4.0			2.3
	13	395	13.2	220	5.0	110	3.7			<2.4
	14	370	13.5	220	5.3	110	3.6			2.4
	15	360	>13.3	230	---	110	3.3			2.4
	16	340	13.5	240	---	110	2.8			2.4
	17	285	>13.4	260	---	---	---		2.6	2.4
	18	290	>13.4						2.8	<2.5
	19	290								--
	20	260	>13.3							2.6
	21	230	>13.5							2.9
	22	220	13.1							3.0
	23	205	9.4							2.8

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 29

Lindau/Barz, Germany (51.6°N, 10.1°E)	Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	January 1956
	00	300	2.9							2.3
	01	280	2.8							2.4
	02	300	2.8							2.3
	03	290	2.6							2.7
	04	280	2.4							2.9
	05	265	2.3							2.6
	06	260	2.2							3.05
	07	265	2.3							2.8
	08	230	4.0				E			3.2
	09	220	6.8				1.8	3.3		3.5
	10	220	7.7				110	2.4	3.7	3.5
	11	220	8.2				110	2.5	3.6	3.4
	12	225	8.4				110	2.6	3.7	3.5
	13	225	8.7				110	2.7	3.8	3.4
	14	230	8.4				110	2.6	3.8	3.4
	15	220	7.9				115	2.3	3.8	3.45
	16	215	6.8				2.0	3.2		3.4
	17	215	6.7				---	2.9		3.4
	18	215	5.2							3.3
	19	225	3.9							3.2
	20	250	3.2							3.0
	21	275	3.0							2.9
	22	300	2.8							2.8
	23	305	2.8							2.8

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 37

Johannesburg, Union of S. Africa (26.2°S, 28.1°E)								January 1956		
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2		
00	<260	5.6				2.2		2.8		
01	<250	5.2				1.9		2.9		
02	<250	4.9				2.2		2.9		
03	240	4.1				1.8		2.9		
04	---	3.6				1.7		2.8		
05	280	3.4						2.8		
06	260	5.0	250	2.8	130	2.0	2.7	3.0		
07	280	6.1	230	4.2	110	2.7	3.6	3.0		
08	350	7.0	220	4.7	110	3.2	3.7	2.8		
09	350	8.1	210	5.0	110	3.5	4.2	2.7		
10	350	8.6	210	5.1	110	3.7	4.1	2.7		
11	360	9.3	210	5.2	110	3.8		2.7		
12	350	9.4	210	5.2	110	3.9		2.7		
13	350	9.3	210	5.2	110	4.0		2.8		
14	350	9.3	210	5.1	110	3.9	4.0			
15	330	9.2	210	5.0	110	3.6	4.2	2.8		
16	320	8.8	210	4.8	110	3.4	4.2	2.8		
17	300	8.6	220	4.4	110	3.0	3.9	2.9		
18	270	8.2	230	3.6	120	2.4	3.2	2.9		
19	250	8.1					2.9	2.9		
20	<250	7.8				2.4		2.9		
21	240	6.8				2.2		2.9		
22	250	5.8				2.0		2.8		
23	<280	5.6				2.1		2.75		

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 39

De Bilt, Holland (52.1°N, 5.2°E)								December 1955		
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2		
00	300	3.1					2.5			
01	300	3.1					2.5			
02	290	3.0					2.5			
03	280	2.7					2.55			
04	270	2.6					2.6			
05	260	2.4					3.0			
06	240	2.3					2.9			
07	240	3.0					2.9			
08	215	5.6	---	---	140	1.9		3.4		
09	220	7.2	220	3.0	125	2.2		3.5		
10	220	7.4	225	3.4	115	2.5	2.6	3.5		
11	220	7.9	220	3.7	120	2.6	2.8	3.5		
12	220	8.0	225	3.6	120	2.7	2.6	3.4		
13	230	7.9	225	3.3	120	2.5	2.3	3.4		
14	220	7.7	230	3.0	125	2.3		3.4		
15	215	7.3	---	---	140	1.9		3.4		
16	210	6.1						3.3		
17	215	5.0						3.3		
18	225	3.9						3.2		
19	240	3.0						3.15		
20	<270	2.5						2.9		
21	<300	2.5						2.5		
22	310	2.7						2.5		
23	305	2.8						2.5		

Time: 0.0°E.

Sweep: 0.8 Mc to 20.0 Mc in 20 seconds.

Table 41

Akita, Japan (39.7°N, 140.1°E)								December 1955		
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2		
00	340	3.2					2.3			
01	340	3.2					2.5			
02	320	3.2					2.5			
03	300	3.3					2.5			
04	280	3.2					2.5			
05	290	3.0					2.4			
06	280	3.0					2.1			
07	250	5.6					2.5			
08	250	7.2								
09	250	8.1								
10	260	8.6								
11	260	8.8								
12	260	8.6								
13	260	8.5								
14	250	7.8								
15	250	7.6								
16	240	6.6								
17	240	5.0								
18	250	4.0								
19	250	3.3								
20	270	3.0								
21	300	2.7								
22	360	2.8								
23	360	3.0								

Time: 135.0°E.

Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 38

Capetown, Union of S. Africa (34.2°S, 18.3°E)								January 1956		
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2		
00	280	4.8							2.0	2.7
01	270	4.6							2.5	2.8
02	<280	4.6							2.6	2.8
03	270	4.2							2.2	2.8
04	<280	3.8							2.3	2.75
05	<280	3.6							2.0	2.7
06	270	4.5	---	---	140	1.6			2.5	2.9
07	280	5.9	240	3.6	120	2.4			3.1	2.9
08	340	6.7	230	4.6	110	3.0			3.5	2.7
09	360	7.5	220	4.8	110	3.3			4.0	2.6
10	360	8.0	210	4.9	110	3.6			4.0	2.6
11	360	8.1	210	5.1	110	3.7			4.0	2.6
12	350	8.6	200	5.1	110	3.8			4.1	2.6
13	360	9.0	210	5.1	110	3.9			4.1	2.7
14	360	9.0	210	5.1	110	3.8			4.1	2.7
15	340	9.2	210	5.0	110	3.7			3.8	2.7
16	340	8.6	210	4.9	110	3.6			4.1	2.8
17	320	8.0	220	4.7	110	3.2			4.1	2.8
18	300	7.6	230	3.7	120	3.0			4.1	2.8
19	270	7.6	240	3.7	120	3.0			4.1	2.8
20	260	7.4	250	3.7	120	3.0			4.1	2.8
21	250	7.2	260	3.7	120	3.0			4.1	2.8
22	240	7.0	270	3.7	120	3.0			4.1	2.8
23	260	5.0	280	3.7	120	3.0			4.1	2.8

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 40

Wakkanai, Japan (45.4°N, 141.7°E)								December 1955		
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2		
00	320	3.2							2.0	
01	310	3.3							2.0	
02	300	3.3								
03	270	3.2								
04	260	3.3								
05	260	3.2								
06	250	3.0								
07	230	5.0	---	---	120	(2.0)				
08	220	(7.1)	230	---	<120	(2.0)				
09	220	8.6	220	---	(110)	(2.8)	3.5			
10	230	8.6	210	(3.9)	(110)	(3.0)				
11	240	9.4	210	(4.2)	(110)	(3.1)	3.3			
12	240	10.0	220	(4.4)	(110)	3.2				
13	240	9.9	220	---	(110)	3.2	(3.6)			
14	230	9.4	220	---	110	3.0	<3.2			
15	220	9.0	220	---	(110)	(2.7)				
16	220	8.7	---	---	<120	(2.1)	2.7			
17	200	7.1					3.0			
18	210	4.9						<3.2		
19	220	3.6						2.6		
20	220	3.0						2.5		
21	250	2.7							(2.4)	
22	260	2.7							2.4	
23	(270)	2.9							<1.7	

Time: 120.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 43

Tokyo, Japan (35.7°N, 139.5°E)								December 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	300	3.1					2.8		
01	290	3.2					2.8		
02	280	3.3					2.9		
03	270	3.2				2.2	2.9		
04	240	3.2				2.1	3.0		
05	270	2.9					2.9		
06	270	3.1					3.0		
07	240	6.1	---	---	150	1.7		3.35	
08	230	7.7	230	3.1	120	2.4	3.1	3.4	
09	230	8.9	230	4.0	110	2.9	3.3	3.4	
10	240	9.1	230	4.4	110	3.0	3.8	3.3	
11	240	9.5	230	4.5	110	3.2	3.8	3.3	
12	240	9.3	230	4.6	110	3.3	4.0	3.3	
13	240	9.0	230	4.5	110	3.2	3.6	3.3	
14	240	8.4	230	4.0	110	3.0	3.6	3.35	
15	230	8.0	230	---	120	2.6	3.0	3.4	
16	230	7.1	---	---	---	---	2.7	3.4	
17	210	5.6					1.8	3.3	
18	230	4.7						3.2	
19	240	4.1						3.2	
20	250	3.4						3.2	
21	260	3.0						3.0	
22	290	2.9						2.8	
23	320	3.0						2.75	

Time: 135.0°E.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 45

Johannesburg, Union of S. Africa (26.2°S, 28.1°E)								December 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	<260	6.0					1.8	2.8	
01	<260	5.9						2.9	
02	250	5.5						2.9	
03	<250	5.0						2.9	
04	<240	4.3						2.9	
05	260	4.4						2.9	
06	250	6.0	240	3.2	120	2.2		3.1	
07	290	6.9	220	4.4	110	2.9		2.9	
08	330	8.0	210	4.9	110	3.3		2.7	
09	350	9.0	210	5.1	110	3.6		2.7	
10	350	9.8	210	5.2	110	3.8		2.7	
11	350	10.2	200	5.2	110	3.9		2.7	
12	350	10.4	200	5.2	110	3.9	4.0	2.7	
13	350	10.3	200	5.2	110	---	4.2	2.7	
14	350	10.0	210	5.2	110	3.8	4.1	2.7	
15	340	9.5	210	5.1	110	3.6	4.0	2.7	
16	310	9.6	220	4.8	110	3.3	3.9	2.8	
17	300	9.6	220	4.4	110	2.9	3.6	2.8	
18	270	9.0	240	3.4	110	2.3	3.0	2.9	
19	250	8.9					2.4	2.9	
20	<250	8.3						2.9	
21	240	7.6						2.9	
22	250	6.6						2.8	
23	<270	6.3					2.0	2.8	

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 47

Buenos Aires, Argentina (34.5°S, 58.5°W)								December 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	300	9.2					3.6	2.8	
01	290	9.2					3.0	2.9	
02	280	8.6					3.5	2.9	
03	260	0.4					3.1	3.0	
04	230	7.8						2.8	
05	250	7.6					2.8	2.8	
06	240	8.2	230	---	100	2.7	3.8	2.85	
07	300	8.0	210	---			4.0	2.7	
08	300	9.2	210	---			4.0	2.6	
09	360	9.5	200	---			3.5	2.6	
10	400	10.2	200	---				2.6	
11	390	10.8	200	---				2.7	
12	360	11.3	210	5.2	---			2.8	
13	330	11.6	(210)	---				2.9	
14	310	11.5	210	---				2.9	
15	300	11.5	210	---				3.0	
16	300	10.6	220	---			4.3	3.0	
17	290	10.4	220	---			3.5	3.0	
18	280	9.0	230	---			3.0	3.0	
19	280	9.4						2.9	
20	300	9.2						2.8	
21	320	9.4						2.0	
22	310	9.2					3.2	2.0	
23	310	9.4					3.5	2.8	

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 44

Yamagawa, Japan (31.2°N, 130.6°E)								December 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00							3.3		
01							3.4		
02							3.3		
03							3.2		
04							3.4		
05							3.0		
06							2.6		
07							4.4		2.1
08							7.9		
09							9.5		
10							10.0		
11							10.2		4.8
12							10.5		5.4
13							10.8		5.4
14							10.3		3.7
15							9.9		
16							9.2		3.3
17							8.4		3.2
18							7.0		2.3
19							5.8		2.3
20							5.4		2.2
21							5.0		
22							4.3		
23							3.6		

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 48

Nairobi, Kenya (1.3°S, 36.8°E)								November 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00							0.9		(3.35)
01							0.0		(2.8)
02							0.6		2.9
03							8.2		3.0
04							7.2		3.1
05							6.0		3.2
06							5.0		3.2
07							7.0		3.25
08							4.6		3.2
09							5.0		2.9
10							5.0		2.8
11							10.8		(5.3)
12							5.4		2.7
13							(11.6)		(2.6)
14							(11.9)		(2.6)
15							5.0		2.6
16							12.2		2.6
17							5.0		2.6
18							11.0		2.6
19							11.0		2.8
20							3.0		2.8
21							11.0		(3.1)
22							12.0		2.6
23							220		---

Time: 45.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 49

Delhi, India (28.6°N, 77.1°E)	August 1955						
Time	*	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	280	(4.8)					3.25
01	280	4.5					3.25
02	(300)	(4.2)					(3.10)
03							
04	280	4.2					3.25
05	280	4.2					3.25
06	280	5.2					3.25
07	240	6.6					3.60
08	260	6.9					3.40
09	280	7.0					3.25
10	320	7.4					3.00
11	320	7.9					3.00
12	320	8.5					3.00
13	320	8.9					3.00
14	320	9.0					3.00
15	320	9.2					3.00
16	280	8.9					3.25
17	280	8.2					3.25
18	280	8.1					3.25
19	280	7.5					3.25
20	240	6.9					3.60
21	280	6.0					3.25
22	290	5.3					3.20
23	280	(5.0)					3.25

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.Table 51

Calcutta, India (22.9°N, 88.5°E)	August 1955						
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	270	5.0				2.0	2.95
01	260	4.5				2.5	3.10
02	230	3.8				2.1	3.10
03	240	3.3				2.9	3.10
04	270	3.0				3.6	3.10
05	270	2.5				4.0	3.05
06	240	4.2				3.6	3.20
07	260	6.8	220	3.8	105	2.6	4.0
08	290	7.5	205	4.2	100	2.8	5.4
09	310	9.1	200	4.4	100	3.2	4.5
10	350	10.0	190	4.6	100	3.5	5.2
11	350	11.0	185	4.7	100	3.7	5.2
12	350	11.6	180	4.9	100	3.8	5.0
13	350	11.8	190	4.7	100	3.7	4.5
14	330	12.0	200	4.6	100	3.6	4.3
15	320	11.8	200	4.5	100	3.4	4.0
16	300	11.5	205	4.4	100	3.1	4.4
17	280	11.4	215	4.0	100	3.0	3.8
18	260	11.0	215	3.6	105	2.6	4.6
19	230	10.1				3.7	3.20
20	200	9.0				2.6	3.25
21	235	7.0				2.1	3.15
22	270	5.5				2.1	3.00
23	265	4.8				2.0	3.00

Time: 90.0°E.

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

Table 53

Madras, India (13.0°N, 80.2°E)	August 1955						
Time	*	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05							
06	320	5.8					3.00
07	360	7.4					2.80
08	400	8.1					2.60
09	450	7.9					2.45
10	480	7.3					2.30
11	480	7.4					2.30
12	480	7.7					2.30
13	480	7.9					2.30
14	480	8.5					2.30
15	480	88.8					2.30
16	420	9.3					2.55
17	400	10.5					2.60
18	360	10.2					2.60
19	360	8.7					2.80
20	360	27.5					2.80
21	320	>6.0					3.00
22	---	---					----
23							

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.Table 50

Ahmedabad, India (23.0°N, 72.6°E)	August 1955						
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	300	4.1					3.7
01	290	3.8					3.10
02	270	3.7					3.6
03	290	3.6					3.10
04	285	3.2					3.8
05	270	3.0					3.10
06	245	4.4	---	---	---	1.6	3.5
07	250	6.5	220	3.8	110	2.3	4.0
08	265	6.6	210	4.2	110	2.8	5.3
09	290	7.0	210	4.4	105	3.0	>7.0
10	315	7.6	210	4.5	105	3.2	3.00
11	355	8.4	215	4.6	105	3.4	>5.0
12	355	9.4	230	4.6	105	3.5	4.6
13	350	10.5	240	4.6	105	3.4	4.6
14	330	11.0	225	4.5	105	3.3	5.8
15	310	11.3	215	4.5	105	3.2	5.4
16	295	10.2	230	4.2	105	2.9	5.1
17	280	10.4	230	3.9	112	2.5	5.4
18	260	9.0	240	3.4	---	1.9	4.2
19	240	8.0					4.2
20	220	7.2					4.0
21	230	5.0					4.2
22	295	4.6					4.0
23	300	4.1					3.7

Time: 75.0°E.

Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 52

Bombay, India (19.0°N, 73.0°E)	August 1955						
Time	*	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05							
06	270	4.4					3.35
07	300	5.1					3.10
08:30	300	6.2					3.10
09	330	6.8					2.95
10	360	7.4					2.80
11	390	8.1					2.65
12	420	9.1					2.55
13	420	9.7					2.55
14	420	10.0					2.55
15	(420)	10.1					(2.55)
16	390	10.0					2.65
17	390	9.4					2.65
18	390	9.2					2.65
19	360	8.2					2.80
20	(300)	(7.1)					(3.10)
21	300	5.8					3.10
22	270	4.7					3.35
23							

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 54

Tiruchy, India (10.8°N, 78.8°E)	August 1955						
Time	*	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05							
06	300	5.4					3.10
07	320	7.3					2.80
08	360	8.0					2.80
09	400	7.6					2.60
10	440	7.5					2.50
11	440	7.6					2.50
12	440	7.6					2.50
13	440	7.8					2.50
14	440	8.4					2.50
15	400	8.9					2.60
16	400	9.3					2.60
17	360	9.7					2.80
18	360	>9.2					2.80
19	320	8.5					3.00
20	320	7.5					3.00
21	320	6.5					3.00
22	280	6.0					3.25
23							

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 55

Godhavn, Greenland (69.2°N, 53.5°W)							July 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(4.0)	250	---	---	1.4	1.7	3.2
01	250	(4.0)	250	---	---	<1.7	---	(3.2)
02	260	(4.0)	240	---	---	---	2.7	(3.3)
03	(280)	(3.8)	230	---	120	(1.7)	2.3	---
04	(330)	(3.9)	220	(3.0)	120	(1.6)	<2.4	---
05	(300)	(4.2)	210	(3.3)	110	2.0	3.6	---
06	(360)	(4.0)	210	(3.6)	110	2.2	3.8	---
07	470	(4.4)	200	(3.7)	100	2.4	3.7	(2.5)
08	(390)	4.6	210	(4.0)	100	2.6	3.7	(2.7)
09	380	(4.7)	210	(4.0)	100	2.8	3.8	(3.1)
10	400	(4.7)	210	4.1	100	2.8	3.6	(3.0)
11	400	(4.9)	200	4.1	100	2.9	3.0	3.0
12	380	(4.9)	200	4.1	100	2.9	3.1	(3.0)
13	390	(5.0)	200	4.2	100	2.9	3.2	(2.9)
14	(350)	(5.0)	200	4.2	100	2.8	4.6	(3.1)
15	360	(4.9)	200	4.1	100	2.8	5.8	3.1
16	360	(4.8)	200	4.0	100	2.7	6.2	(3.0)
17	360	(4.8)	200	3.9	(110)	2.5	5.0	(3.0)
18	360	(4.6)	210	3.8	(110)	2.4	5.2	(2.9)
19	340	(4.7)	220	3.6	(110)	2.2	4.5	(3.0)
20	300	(4.6)	220	3.4	(110)	1.9	5.2	(3.1)
21	(290)	(4.5)	240	(3.2)	(120)	1.8	4.0	3.1
22	(260)	(4.2)	240	---	120	(1.6)	<2.4	3.1
23	(260)	(3.9)	240	---	(120)	1.5	1.7	(3.1)

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 57

Ahmedabad, India (23.0°N, 72.6°E)							July 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.0				4.2	3.00	
01	290	3.8				4.0	3.10	
02	290	3.6				3.8	3.15	
03	300	3.3				3.4	3.15	
04	300	3.1				3.6	3.20	
05	290	3.0				3.6	3.20	
06	250	4.4	240	(3.3)	---	1.7	3.7	3.35
07	275	5.7	220	3.9	113	2.4	3.9	3.30
08	280	6.6	215	4.2	110	2.8	4.3	3.30
09	320	6.8	230	4.4	107	3.0	4.4	3.10
10	335	7.3	210	4.5	107	3.2	5.8	3.00
11	370	7.9	205	4.6	107	3.4	7.0	2.85
12	370	8.3	210	4.6	107	3.5	7.0	2.75
13	360	9.2	210	4.6	107	3.5	6.0	2.80
14	340	9.2	220	4.6	110	3.4	6.0	2.90
15	330	9.1	215	4.4	107	3.3	6.2	2.90
16	320	9.2	230	4.2	107	3.0	6.2	2.85
17	310	8.6	230	4.0	111	2.6	4.0	3.00
18	300	8.3	240	3.6	120	2.2	5.2	3.05
19	250	7.6				4.2	3.15	
20	240	6.9				5.0	3.20	
21	230	6.0				4.0	3.20	
22	255	5.2				4.0	3.10	
23	300	4.5				4.2	2.90	

Time: 75.0°E.

Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 59

Bombay, India (19.0°N, 73.0°E)							July 1955	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06:30	270	4.5				3.35		
07	300	5.0				3.10		
08:30	330	6.0				2.95		
09	330	6.6				2.95		
10	360	7.4				2.80		
11	390	8.1				2.65		
12	420	8.9				2.55		
13	450	9.6				2.45		
14	480	9.8				2.30		
15	---	---				---		
16	(450)	(9.1)				(2.45)		
17	(420)	(8.4)				(2.55)		
18	390	9.4				2.65		
19	360	8.2				2.80		
20	330	6.2				2.95		
21	300	5.6				3.10		
22	300	4.6				3.10		

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 56

Delhi, India (28.6°N, 77.1°E)							July 1955	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		280	(5.6)					3.25
01		300	(5.4)					3.10
02		---	(5.7)					---
03								
04		280	(4.8)					3.25
05		280	4.5					3.25
06		280	5.2					3.25
07		280	6.4					3.25
08		300	6.9					3.10
09		320	7.4					3.00
10		330	7.8					3.00
11		320	8.4					3.00
12		320	8.5					3.00
13		320	8.5					3.00
14		320	8.5					3.00
15		320	8.7					3.00
16		320	8.4					3.00
17		290	8.0					3.20
18		280	7.8					3.25
19		280	7.4					3.25
20		280	7.1					3.25
21		290	>6.5					3.20
22		300	6.0					3.10
23		300	5.9					3.10

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 58

Calcutta, India (22.9°N, 88.5°E)							July 1955	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		275	4.9					3.10
01		270	4.5					3.10
02		250	4.3					3.10
03		250	3.8					3.10
04		250	3.2					3.10
05		250	3.0					3.10
06		240	4.5					3.10
07		265	6.0	220	3.2	105	2.4	3.10
08		310	7.3	210	4.1	100	3.0	2.95
09		320	8.3	205	4.6	100	3.4	2.85
10		340	9.5	200	5.0	100	3.4	2.80
11		340	10.5	200	5.1	100	3.4	2.65
12		340	11.0	195	5.0	100	3.5	2.65
13		345	11.1	200	4.9	100	3.5	2.75
14		330	11.3	200	4.7	100	3.3	2.85
15		310	11.2	---	4.4	100	3.0	2.95
16		300	11.0	---	4.3	105	3.0	3.00
17		295	10.5	210	4.0	105	2.7	3.05
18		280	10.0	220	3.5	120	2.0	5.0
19		245	9.4					3.10
20		220	8.5					3.25
21		220	7.2					3.35
22		250	6.1					3.20
23		260	5.2					2.4

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 61

Tiruchi	India (10.0°N, 70.8°E)	July 1955					
Time	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							
01							
02							
03							
04							
05							
06	320	5.1				3.00	
07	320	6.8				2.80	
08	360	7.3				2.80	
09	400	7.3				2.60	
10	440	7.2				2.50	
11	440	7.2				2.50	
12	440	7.1				2.50	
13	440	7.5				2.50	
14	440	7.9				2.50	
15	440	8.2				2.50	
16	400	8.3				2.60	
17	400	8.5				2.60	
18	360	8.5				2.80	
19	360	8.5				2.80	
20	320	7.2				3.00	
21	320	6.4				3.00	
21:30	320	6.0				3.00	
23							

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 63

Time	April 1955					
Canberra, Australia (35.3°S, 149.0°E)	foF2	h'F1	foF1	h'E	foE	fEs
	(M3000)F2					
00	---	3.0			3.1	3.1
01	---	3.7			3.1	3.1
02	---	3.7			1.5	3.1
03	---	3.7			3.2	
04	<230	3.7			3.3	
05	(200)	3.3			3.45	
06	---	2.7			3.1	
07	220	4.6			1.9	3.6
08	230	5.5	220	(3.6)	100	2.4
09	260	6.0	210	(4.0)	100	2.7
10	250	6.0	210	4.2	100	2.9
11	265	6.5	200	4.2	100	3.0
12	260	6.6	200	4.3	100	3.1
13	260	6.6	200	4.2	100	3.1
14	250	6.8	200	(4.1)	100	3.0
15	250	6.0	210	(4.0)	100	2.8
16	230	6.6	220	(3.5)	100	2.5
17	220	6.2			(1.9)	2.8
18	210	5.2				3.5
19	---	4.3				2.4
20	---	4.0				3.4
21	---	4.0				3.1
22	---	3.6				2.0
23	---	3.8				3.2

Time: 150.0°E.

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

Table 65*

Time	February 1951					
Campbell I. (52.5°S, 169.2°E)	h'F2	foF2	h'F1	foF1	h'E	foE
	fEs	(M3000)F2				
00						
01						
02						
03						
04						
05	260	(4.1)			2.1	2.9
06					---	
07	310	5.0	250	4.2	120	2.7
08	340	5.4	240	4.4	110	3.1
09	350	5.6	230	4.5	120	3.3
10	350	6.2	230	4.6	110	3.4
11	330	6.4	220	4.7	110	3.5
12	330	6.6	210	4.7	110	3.6
13	350	6.6	230	4.7	110	3.6
14	340	6.8	230	4.6	110	3.4
15	320	7.0	240	4.5	110	3.3
16	310	6.8	230	4.5	120	3.0
17	300	7.0	250	---	120	2.7
18	290	6.8	250	---	140	2.4
19	260	7.0			2.0	3.6
20						3.0
21	300	(6.5)				2.6
22						---
23	300	---				3.3

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 62

Townsville, Australia (19.3°S, 146.7°E)	April 1955*							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(3.7)						3.5
01	250	3.4						3.1
02	250	3.3						3.1
03	230	3.3						2.8
04	250	3.0						2.6
05	270	2.8						2.5
06	250	3.0						2.3
07	230	>5.2	---	---	120	2.0		3.3
08	(250)	6.6	230	3.9	100	2.5		3.6
09	250	6.8	220	4.2	100	2.9		3.5
10	260	8.0	210	4.3	100	3.1		3.4
11	250	8.4	210	4.4	100	3.3		3.4
12	250	7.6	200	4.4	100	3.3		3.5
13	275	7.0	205	4.4	100	3.3		3.25
14	285	7.6	---	4.4	100	3.2		3.25
15	260	8.2	220	4.2	100	3.0		3.4
16	250	8.3	---	4.0	100	2.8		3.45
17	230	>7.4	---	---	100	2.2		(3.65)
18	220	6.4						4.2
19	235	4.7						3.3
20	245	4.2						3.2
21	(250)	3.6						3.1
22	(280)	3.8						3.5
23	260	3.8						(3.0)

Time: 150.0°E.

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

*Data observed from April 1 to 19, inclusive.

Table 64

Hobart, Tasmania (42.0°S, 147.3°E)	April 1955							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	2.2						2.9
01	270	2.0						2.9
02	270	2.3						3.0
03	260	2.3						3.0
04	260	2.1						3.0
05	250	2.1						3.1
06	280	2.0						3.1
07	240	3.5						3.1
08	230	4.5						3.2
09	210	4.9	---	---	100	2.5		3.2
10	210	5.2	---	---	100	2.7		3.1
11	200	5.9	200	4.0	100	2.8		3.15
12	200	6.4	200	4.0	100	2.9		3.1
13	200	6.5	200	4.0	100	2.9		3.2
14	220	6.4	210	4.0	100	2.8		3.2
15	220	6.2	---	---	100	2.5		3.1
16	230	5.6			100	2.2		3.2
17	230	5.5			100	1.7		3.2
18	230	4.0						3.1
19	240	4.2						3.0
20	250	3.5						3.0
21	250	3.0						3.0
22	270	2.5						3.0
23	280	2.4						3.0

Time: 150.0°E.

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

Table 66*

Campbell I. (52.5°S, 169.2°E)	January 1951							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	250	4.4	---	---	120	2.4	3.6	3.0
06								
07	350	5.4	240	4.3	110	3.1	3.6	2.9
08	350	5.7	220	4.5	110	3.2	4.4	3.0
09	350	6.2	220	4.6	110	3.4	4.2	3.0
10	350	6.4	220	4.8	110	3.6	4.2	3.0
11	350	6.6	220	4.8	110	3.7	4.1	3.0
12	350	6.5	210	4.9	110	3.8	4.2	2.9
13	350	6.3	220	4.9	110	3.7	4.2	2.95
14	350	6.5	210	4.8	110	3.6	4.0	2.9
15	350	6.6	220	4.7	110	3.5	3.8	2.9
16	340	6.8	230	4.5	110	3.3	3.3	2.9
17	310	6.8	240	4.3	120	3.0		3.0
18	290	6.7	250	3.8	130	2.7	3.0	3.0
19	260	6.8	260	---	140	2.2		2.9
20								
21	260	7.1						2.7
22								
23	280	6.2						2.8

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 67*

Campbell I. (52.5°S, 169.2°E)		Table 61		December 1950				
Time		h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00								
01								
02								
03								
04								
05		250	4.9	---	---	120	2.6	3.5
06								3.1
07		320	5.7	240	4.6	110	3.2	3.4
08		350	6.0	230	4.7	110	3.4	3.7
09		340	6.3	220	4.7	110	3.5	4.1
10		350	6.4	210	4.8	110	3.6	4.2
11		350	6.4	220	4.9	110	3.7	4.1
12		350	6.6	210	4.9	110	3.7	4.0
13		350	6.4	210	4.9	110	3.7	4.1
14		350	6.6	220	4.8	110	3.6	4.0
15		340	6.9	230	4.7	110	3.5	2.9
16		330	6.8	230	4.6	110	3.3	2.9
17		300	7.1	240	4.4	120	3.0	3.2
18		300	7.3	250	3.9	120	2.6	3.2
19		250	7.6	---	---	140	2.2	3.6
20								
21		260	7.0				2.8	(2.8)
22								
23		290	6.0				4.0	(2.8)

Time: 165.0° E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 69*

Campbell I. (52.5°S, 169.2°E)							September 1950
Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	300	2.7					(2.85)
06							
07	250	4.6			120	2.4	3.3
08	250	5.0	230	---	120	2.8	3.1
09	300	5.3	230	4.4	120	3.0	3.2
10	310	5.7	220	4.5	120	3.2	3.1
11	320	6.0	220	4.6	120	3.3	3.1
12	300	6.1	230	4.5	120	3.4	3.1
13	300	6.4	230	4.5	120	3.3	3.1
14	300	6.3	230	4.4	120	3.2	3.1
15	280	6.2	230	4.1	120	2.9	3.15
16	270	6.2	240	---	120	2.6	3.1
17	260	6.2			---	2.0	3.1
18	250	5.5					3.0
19	270	5.2					2.9
20							
21	300	4.2				2.2	2.9
22							
23	300	3.3				3.7	(2.7)

Time: 165, 0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 71*

Campbell I. (52.5°S, 169.2°E)							July 1950
Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	(290)	(2,9)				2.7	(2.6)
06							
07	280	2.9			---	---	2.7
08	240	4.7			120	1.8	2.1
09	240	5.8	---	---	110	2.3	3.2
10	250	6.4	220	---	120	2.6	3.3
11	250	7.0	240	3.6	110	2.8	3.2
12	250	7.6	240	3.6	120	2.8	3.2
13	250	7.6	230	3.5	110	2.7	3.3
14	250	7.3	240	3.5	120	2.5	3.2
15	240	7.4	230	3.2	120	2.2	3.2
16	240	6.8	---	---	120	2.0	3.2
17	240	5.6			---	---	3.1
18	250	4.9					3.0
19	250	4.5					2.95
20							
21	320	3.7					(2.9)
22							
23	320	---				2.6	---

Time: 165.0° E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 68*

Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	260	4.6	250	---	120	2.4	3.2	3.1
06								
07	360	5.4	240	4.5	110	3.1		3.0
08	400	5.5	230	4.6	110	3.3		2.8
09	360	6.0	230	4.6	110	3.5		2.9
10	360	6.4	230	4.7	110	3.6		2.9
11	360	6.4	220	4.6	110	3.6		2.9
12	350	6.5	220	4.8	110	3.6	3.8	2.9
13	340	6.8	220	4.8	110	3.6		2.9
14	330	6.6	220	4.6	110	3.5		2.9
15	320	7.0	230	4.6	110	3.3		2.9
16	310	7.1	240	4.5	110	3.1		2.9
17	300	7.1	250	4.1	120	2.8		3.0
18	280	7.2	250	---	140	2.4	2.8	2.9
19	260	7.3	---	---	140	2.0	2.9	2.9
20								
21	280	6.7					4.0	2.9
22								
23	290	5.6					4.2	2.8

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 70*

Campbell I. (52.5°S, 169.2°E)							August 1950
Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	(290)	(2.9)					(2.75)
06							
07	250	4.0			120	1.9	2.6
08	250	5.0	230	---	120	2.3	2.6
09	250	5.5	230	---	120	2.6	3.2
10	250	5.8	230	4.0	120	2.9	3.4
11	270	6.5	230	4.2	120	3.0	3.8
12	270	6.6	240	4.2	120	3.1	
13	270	6.6	230	4.2	120	3.1	3.5
14	260	6.8	240	4.0	120	2.8	
15	250	6.8	240	4.0	120	2.6	
16	250	6.6	---	---	140	2.2	
17	250	5.8			---	1.6	
18	250	5.3					
19	250	4.5					
20							
21	290	3.9					
22							
23	320	3.2					

Time: 165.0° E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 71*

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	300	(2.9)					2.8	(2.8)
06								
07	260	(3.2)			---	---		(2.75)
08	250	5.1	---	---	110	2.1		3.1
09	240	6.3	230	4.0	110	2.2		3.2
10	240	7.2	240	3.7	120	2.5		3.2
11	250	8.1	240	3.6	120	2.7		3.1
12	250	8.4	240	3.5	110	2.7		3.2
13	250	8.4	240	3.8	120	2.6		3.2
14	240	8.3	240	3.4	120	2.4		3.1
15	240	8.2	230	3.9	120	2.1		3.15
16	250	7.1	220	3.5	120	2.0		3.1
17	240	6.2			---	---		3.0
18	250	5.2						3.0
19	250	4.6						(2.9)
20								
21	270	---					3.0	---
22								
23	300	---					4.0	---

Time: 165.0° E.

5Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

TABLE 73
IONOSPHERIC DATA

foF2, Mc, April 1956

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. 75°W Mean Time

Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01	F	F	F	F	F	F				H													F	F		
	38	38	36	34	37	38	47	62	63	68	70	70	74	76	76	76	74	74	70	70	67	66	63			
02	F	F	F	F	F	F			F	F																
	56	48	48	43	42	33	45	61	72	71	69	76	78	84	84	87	84	79	88	90	86	72	67	72		
03	68	64	66	60	52	44	57	72	86	96	106	110	109	108	109	107	104	100	98	88	80	78	70	68		
04	66	64	57	58	53	44	56	76	92	98	107	106	108	113	114	113	115	114	114	103	86	76	76	74		
05	72	71	63	62	55	57	58	68	78	86	96	92	97	102	98	92	92	92	90	84	78	76	68	67		
06	U	F	U	F	U	F	F	F																U	S	
	67	64	62	56	50	50	63	76	88	88	96	110	117	113	110	105	100	107	103	100	88	69	76	80		
07	68	68	64	57	53	50	58	62	72	78	84	81	92	94	92	93	90	88	92	87	76	69	64	60		
08	60	56	55	50	44	43	56	70	86	96	96	97	106	102	103	103	102	101	97	94	83	76	68	66		
09	F				F	F																	F	U	F	
	64	63	58	57	50	46	58	80	96	103	110	112	118	115	113	106	107	106	103	98	88	84	72	72		
10	F	F			F	F							I C								J	F				
	70	68	58	57	53	50	59	66	76	90	97	98	101	105	105	105	103	100	94	90	80	79	80	72		
11	F	F	F	F	U	F	U	F	F																	
	69	63	62	58	54	50	64	85	96	101	110	110	111	113	106	113	110	107	102	94	86	82	78	84		
12	F	F																								
	75	70	64	60	58	59	70	89	100	107	108	114	113	112	112	109	105	102	102	99	90	88	86	82		
13	U	S																								
	78	78	70	68	64	65	76	94	109	119	122	120	119	120	118	118	113	108	106	100	93	92	90	88		
14	83	75	71	68	68	64	76	93	104	115	118	120	121	117	117	116	112	107	104	98	91	86	81	90		
15	C	C			F																					
	86				70	66	63	77	95	102	105	120	120	120	120	119	115	115	114	110	106	92	86	86		
16													H													
	72	66	68	67	66	66	76	90	103	110	119	121	120	122	124	117	113	110	110	98	88	79	76	76		
17	70	63	65	60	62	60	73	92	108	111	120	115	119	120	116	115	113	108	109	105	96	88	84	75		
18	F	F	J	F	F	F	F															F	U	S		
	68	62	58	48	46	45	54	57	60	62	66	67	69	72	71	71	70	71	73	69	71	67	65	60		
19	U	C	F	F	F	F	F																			
	60	57	56	54	52	47	55	59	61	64	68	73	76	80	79	79	78	78	80	78	72	66	64	66		
20	F	F	F	F	F	F	F			H	H															
	65	62	61	54	51	48	59	72	79	82	86	87	90	89	90	88	92	87	94	83	76	68	68			
21	66	64	62	58	53	50	53	55	57	54	60	60	62	61	63	70	90	100	97	90	68	63	39	29		
	U	F	I	C	F	F	E	G	E	G	E	G	E	G	E	G	E	G	F	F	U	S	U	J		
22	27	31	30	28	25	32	37	41	47	52	47	51	48	58	63	67	70	70	69	63	63	59	54	46		
23	U	F	U	F	F	F	F																			
	32	24	21	19	19	30	44	56	58	62	62	67	68	68	68	70	70	69	70	68	68	64	62			
24	58	60	61	57	53	51	62	78	87	95	95	98	102	103	101	100	98	92	94	96	94	90	82	80		
25	76	74	71	68	64	61	69	76	82	90	93	95	100	105	103	102	98	95	96	94	88	78	80	71		
26	68	67	66	64	59	63	55	64	63	68	75	82	84	86	83	84	78	78	100	94	35	U	R	B		
	B	B	B	B	F	B	E	G	E	G	E	G	E	G	E	G	E	G	F	F	U	U	B	I		
27	F	F	F	F	E	G	E	G	E	G	E	G	E	G	E	G	E	G	50	30	30	31	F			
	27	27	33	29	25	31	43	46	50	51	52	52	53	53	55	56	56	56	58	50	30	30	31	F	U	F
28	36	27	25	23	22	28	36	45	64	64	64	69	70	74	74	76	76	77	77	76	74	71	72	57		
	60	52	38	38	37	42	45	50	52	60	72	80	86	86	83	88	92	89	86	84	77	68	66	66		
MED	67	63	61	57	53	49	58	69	78	87	94	94	98	102	100	96	95	94	95	92	82	76	70	68		
NO	29	28	28	29	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29		

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 74
IONOSPHERIC DATA

foF₂, Mc, April 1956

Station: Washington, D.C. Lat. 38.7° N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. 75°W Mean Time

Manual □ Automatic ■

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2300	
01	40	37	34	35	38	39	56	64	67	70	71	74	73	75	76	76	75	72	75	68	67	64	66	60	
02	50	49	45	42	37	37	52	68	75	74	75	80	80	84	86	88	82	86	92	88	78	72	69	66	
03	64	64	65	56	48	44	62	82	91	101	117	106	110	106	108	103	100	94	80	78	70	68	67		
04	66	69	58	56	47	47	66	82	94	102	112	108	114	113	116	113	115	110	108	93	84	78	74	76	
05	72	67	64	57	56	56	64	72	81	93	94	92	98	100	94	94	93	87	87	77	75	72	67	65	
06	U F	U F	U F	58	54	48	52	73	78	90	90	110	118	117	110	107	104	103	105	97	96	76	72	78	68
07	69	64	59	55	49	52	66	72	74	80	83	85	92	93	93	93	90	88	92	84	73	66	62	58	
08	58	55	53	47	43	48	68	79	92	94	94	101	103	105	105	100	102	97	94	88	76	69	68	67	
09	64	60	57	53	46	49	72	88	98	107	108	113	116	113	107	108	117	103	103	90	86	80	70	70	
10	70	65	58	55	54	52	66	71	84	90	103	99	106	106	107	107	102	100	96	92	84	79	79	73	70
11	F	F	F	F	U F	F	F	90	98	104	110	109	113	109	109	114	114	107	117	98	92	87	82	82	80
12	66	60	58	56	54	58	74	90	98	107	108	114	109	111	110	108	101	100	99	98	88	86	85	79	
13	70	68	62	58	57	60	79	98	112	120	120	119	120	118	118	115	111	107	103	94	92	90	90	86	
14	76	73	69	66	64	70	88	98	112	120	120	119	120	118	118	115	111	107	103	94	90	84	81	86	
15	78	72	68	68	65	68	85	100	108	118	118	121	119	117	113	110	106	103	94	90	84	81	86		
16	C	C	66	64	68	84	102	107	114	120	120	120	120	120	115	125	114	112	108	96	88	86	88	71	
17	84	68	67	66	66	70	85	93	106	116	120	122	121	122	122	114	110	110	106	90	85	75	76	72	
18	64	66	64	62	59	67	82	104	110	115	120	116	120	120	115	116	110	109	109	102	94	85	79	70	
19	F	J	F	F	F	F	F	62	64	65	67	72	72	70	71	71	71	70	69	68	64	65	60		
20	65	61	53	43	45	48	55	57	62	64	65	67	72	72	70	71	71	70	69	68	64	65	64		
21	65	59	56	54	50	53	57	61	62	60	63	61	67	78	95	98	97	76	71	62	29	29			
22	64	64	57	53	48	52	65	76	81	84	86	89	90	90	89	90	90	93	94	92	79	73	68	66	
23	64	62	60	55	52	52	52	54	55	61	62	60	63	64	68	68	70	70	70	70	67	67	64	58	
24	62	59	60	56	51	55	71	83	90	96	98	100	102	102	102	100	95	96	96	94	92	83	78	76	
25	64	67	70	67	60	64	74	80	85	94	92	96	103	92	102	99	96	96	94	94	83	80	76	71	
26	64	67	64	59	60	57	60	61	64	70	80	84	84	84	84	82	77	90	92	58	F	B	B	B	
27	B	B	B	B	F	B	B	E G	E G	E G	E G	E G	E G	E G	E G	E G	E G	E G	J	U F	U F	U J			
28	27	31	30	27	25	37	44	48	50	51	54	53	54	55	55	55	61	63	68	67	54	36	48	49	
29	28	27	23	23	25	34	42	54	69	65	62	70	72	76	74	75	76	76	77	74	72	72	62	57	
30	56	43	37	37	43	45	48	50	57	68	78	82	88	85	84	92	89	88	86	79	71	67	70	63	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 75
IONOSPHERIC DATA

foFI, Mc, April 1956

75°W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
01									Q	L	L		H	H	H			L	L													
02									L	L	L	U	L		460	490	500	520	520	520	470	450										
03												450		480	500	520	530	500	480													
04									Q	Q	L	L	L	L	L	L	L	L	L	Q	Q											
05											L	L	L	L	L	L	L	L	L	L	Q											
06											Q	L	L	L	L	L	L	L	L	L	Q											
07											L	L	L	L	L	L	L	L	L	L	Q											
08											Q	Q	L	L	U	L	L	L	L	L	A	Q										
09												540		560																		
10											Q	L	L	L	L	L	U	L	L	C	L	L	L	Q								
11												520				H	580	590		560		L	L	L	Q							
12												L	L	L	L	U	U	U	U	L	L	L	L	Q								
13												550	550	550	540																	
14											A	A	A	L	L	L	L	L	L	L	L	Q										
15											Q	Q	L	L	A		500	520														
16												Q	A	A	L	A	A	A	L	L	A	A	L	Q								
17												Q	L	L	L	L	560	520														
18													500	520	530	540	540	540	560	540	500	440										
19												Q	L	L	L	L	U	U	U	L	U	L	L	L								
20													460	540	560	560	560	560	580	560	560	520										
21													Q	L	L	L	580	550	560	600	590	560										
22														420	490	470	500	510	500	500	490	490	500	470								
23														370	410	430	460	470	480	480	500	500	510	490								
24															420	470	480	490	500	520	540	530	500									
25																480																
26																Q	L															
27																	480	480	540	560	540	580	510	520	500	440						
28																	Q	U	L													
29																		330	380	420	490	490	500	500	500	520	500	470				
30																		B														
MED																		420	460	480	490	510	520	520	520	500	480	440				
NO																		3	7	10	11	15	18	17	17	15	11	10	5			

TABLE 76
IONOSPHERIC DATA

foE, Mc, April 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1°W Sweep I.O Mc ta 25.0 Mc in 13.5 sec. Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
01							190	A	H	H	H	H	H	H	H	H	H																	
02								H	H		U H							H																
03							230	280	310	340	340	360	360	350	340	340	310	270	200															
04							A	A	A	300	A	350	A	340	340	330	310	270	190															
05							A	A	A	A	H		A	A	A	A	A	A	A															
06								270	310	340			A	A	A	A	300	280	190															
07							250	300	320	350	350	360	360	350	340	320	270																	
08							170	250	290	320	320		A	A	A		360	340	310	270	A													
09							A		U A	I A							H	H																
10							250	310	330	340	350	360	360	350	360	350	320	280																
11							H	200	260	330	350	380	390	380	360	340	330	280																
12							260		A	A	A	H	U A	U H			370	350	320	290	210													
13							170	260	A	A	A	H	A				360	370	370	350	340	290	220											
14							270		350				380	380	370	360	330	280																
15							H	H	U H	H	H	H	H	H	H	H	H	H	H	H	H	H	H											
16							190	270	310	340	360	380	380	360	360	350	320	300																
17							180	260	300	330	340	350	340	350	340	330	320	300																
18							I A	200	250	300	320	330	310	R	R		370	350	330	320	300													
19							H	H	H	H	U A	R	R	R	R		380	360	330	280														
20							190	280	310	310	330						350	320	280															
21							U A	U H	U A	H	H	H	I A	I A			I R																	
22							210	250	290	320	330	350	370	370	370	370	350	330	290	210														
23							U R	H	H	U B	I B																							
24							170	280	320	350	350	370	380	380	370	350	330	290	230															
25							H	H	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A	U A						
26							210	260	300	320	340	360	350	340	320	300	280	260	240															
27							B	U A	290	320	340	330	330	320	330	330	320	300	280	260	240													
28							160	250	260	300	310	340	340	340	350	380	380	380	350	320	270	230												
29							190	270	300	320	340	340	370	360	350	350	350	320	280	230														
30							B		U P	270	300	330	340	350	340	350	330	310	300	280	220													
MED										190	260	300	330	340	350	360	360	360	350	320	280	210												
NO										1	18	25	25	27	26	23	22	24	27	27	28	28	19	2										

TABLE 77
IONOSPHERIC DATA

fEs, Mc, April 1956

75°W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	E	S	E	E	E	S	32	36	33	32	32	G	G	G	G	G	G	G	S	S	S	S	
02	S	E	E	E	E			G			G	G	G	G	G	G	G	G	12	12	S	S	S	
03	S	S	S	S	S	11	S	18	32	36	32	41	33	38	36	38	G	G	28	22	12	S	S	S
04	S	S	E	S	E	S	17	33	36	40	30		G		G	37	34	28	21	27	S	S	S	
05	S	S	S	S	E	S	27	33	37	39		G	36	38	39	36	34	G	G	S	S	S	S	
06	S	E	E	E	E	S	S	G	37		G	G	G	G	G	G	G	20	S	S	S	S		
07	S	S	S	23	S	S	G	G	38	40		35	36	39	39	38	G	30	21	S	S	S	S	
08	S	S	S	S	S	E	G		18	40	39	42	G	G	G	38	37	66	32	41	S	S	S	
09	S	E	E	E	E	S	33	40	34	68		G	G	G	183	43	G	G	35	S	S	S	S	
10	S	S	S	S	S	S	18	27	40	44	40		G	G	C	G	G	33	22	S	S	E	S	
11	S	21	29		S	S	43	45	48	75	52	40	40	41	G	50	50	31	23	12	S	S	S	
12	29	28	24		S	S	29	37	38	44	49	40	40		G	G	G	33	33	S	S	S	S	
13	S	S	S	S	E	S	33	42	50	41	64	72	42	48	38	39	54	47	43	31	44	52	S	
14	Y	S	S	S	S	S	G	G	G	G	53	44	47	55	47	44	41	49	27	36	35	56		
15	24	28			C	C	S	S	G	18	52	49	54	92	90	110	170	125	90	113	31	40	31	45
16	50						G	G	G	G	41		G	G	G	G	39	54	36	43	S	S	S	30
17	21	29	23	33	52	44	72											G	S	S	S	S	S	
18	28				S	S	S	G	28	44	47	50	40	38	49	52	42	33	32					
19	24	39	23		S	S	S	S	35	41	35	34		G	G	G	G	35	30	22	18	S	S	S
20	23	32	23	29	21		G	31		G	G	G	36	G	G	G	33	29	22	27	31	S	S	S
21	S	S	S	S	S	S	30	28	34	44	34	38	G	G	G	G	G	G	G	16	32	33	S	S
22	70	33	18	C	S	F	G	G	G	G	G	B	G	G	G	G	31	S	S	S	S	S		
23	S	E	E	E	S	S	23	33	40	40	40	37	40	G	G	G	36	34	42	38	39	18	S	S
24	S	S	E	S	S	S	26	25	38	42		37		86	G	G	G	G	S	S	S	44	S	
25	S	S	S	S	S	S	B	G		43	36	37	36	36	40	45	G	G	G	28	29	26	24	S
26	S	S	S	S	E	S	G	27		34	37	38	38	36	36	32	42	29	23	16	B	Y	B	B
27	B	B	B	B	B	B	B	G	33		G	G	G	G	G	G	G	G	G	39	B	S	B	
28	S	18	E	E	G	G	G		32	35		47	G	G	G	G	G	G	B	S	S	S		
29	B	S	14	E	S	15	21	G	32	34	39	36	38	36	36	34	G	G	G	B	E	E	S	
30	E	E	E	E	S	16	B	G	33	35	72	58	68	40	41	53	48	45	45	B	Y	30	45	
MED	U	24					17		36	35	37		36					28	22	16	30	26	U	30
NO	9	12	13	14	12	13	27	30	30	30	30	30	30	30	30	30	30	30	30	17	13	11	4	5

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 78
IONOSPHERIC DATA

f min, Mc, April 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	E S 15	E E S 12	E S E	E E S E	E E S 15	E S 16	E S 15	E S 20	E S 16	E S 15	E S 17	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 15					
02	E S 12	E E E	E E E	E E S E	E S 15	E S 16	E S 16	E S 16	E S 17	E S 20	E S 19	E S 15	E S 16	E S 16	E S 16	E S 15	E S 14	E S 15	E S 16	E S 11	E S 16	E S 16	E S 16	
03	E S 12	E S 15	E S 15	E S 15	E S 11	E S 14	E S 15	E S 16	E S 16	E S 16	E S 23	E S 19	E S 16	E S 18	E S 16	E S 19	E S 16	E S 16	E S 15	E S 16	E S 15	E S 16	E S 12	
04	E S 16	E S 13	E S 12	E S 13	E S 11	E S 15	E S 16	E S 13	E S 23	E S 21	E S 20	E S 23	E S 17	E S 20	E S 16	E S 15								
05	E S 15	E S 13	E S 15	E S 13	E S 15	E S 15	E S 16	E S 22	E S 21	E S 23	E S 16	E S 16	E S 15	E S 15	E S 15	E S 14	E S 15							
06	E S 16	E E E	E E E	E E S E	E S 15	E S 16	E S 19	E S 19	E S 22	E S 17	E S 16													
07	E S 16	E S 16	E S 13	E S 12	E S 13	E S 16	E S 20	E S 21	E S 22	E S 19	E S 18	E S 16	E S 16	E S 15	E S 16									
08	E S 16	E S 13	E S 15	E S 16	E S 13	E S 13	E S 16	E S 16	E S 16	E S 20	E S 23	E S 24	E S 16	E S 16	E S 15	E S 19	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	
09	E S 15	E E E	E E E	E E S E	E S 15	E S 16	E S 15	E S 17	E S 20	E S 23	E S 25	E S 23	E S 22	E S 16	E S 16	E S 17	E S 14	E S 16	E S 15	E S 16	E S 15	E S 16	E S 16	
10	E S 16	E S 16	E S 13	E S 11	E S 12	E S 16	E S 16	E S 16	E S 18	E S 16	E S 21	E S 19	E S 20	E S 18	E S 16	E S 16	E S 17	E S 18	E S 15	E S 16	E S 16	E S 16	E S 16	
11	E S 15	E S 16	E S 16	E S 11	E S 12	E S 13	E S 16	E S 16	E S 16	E S 16	E S 21	E S 20	E S 21	E S 17	E S 18	E S 17	E S 16							
12	E S 15	E E E	E S E	E S E	E S 13	E S 13	E S 13	E S 16	E S 16	E S 16	E S 19	E S 16	E S 16	E S 17	E S 18	E S 15	E S 26	E S 23	E S 16	E S 16	E S 15	E S 16	E S 16	
13	E S 15	E S 15	E S 15	E S 12	E S 16	E S 16	E S 15	E S 16	E S 17	E S 18	E S 16	E S 17	E S 15	E S 16	E S 16	E S 16	E S 15	E S 15						
14	E S 16	E S 15	E S 15	E S 16	E S 12	E S 16	E S 17	E S 16	E S 16	E S 16	E S 17	E S 16	E S 16	E S 17	E S 16	E S 15								
15	E S 16	C C	E S E	E S S	E S 15	E S 13	E S 15	E S 15	E S 16	E S 20	E S 16	E S 16	E S 20	E S 17	E S 17	E S 19	E S 15	E S 16	E S 15					
16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 20	E S 21	E S 20	E S 19	E S 19	E S 18	E S 19	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 13	E S 15	E S 16	E S 16	E S 17	E S 19	E S 19	E S 22	E S 20	E S 19	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 15	
18	E S 15	E S 12	E S 15	E S 13	E S 12	E S 13	E S 16	E S 16	E S 21	E S 24	E S 25	E S 27	E S 22	E S 21	E S 19	E S 19	E S 18	E S 18	E S 18	E S 16	E S 15	E S 16	E S 14	
19	E S 15	E S 13	E S 13	E S 12	E S 12	E S 15	E S 16	E S 18	E S 18	E S 20	E S 24	E S 24	E S 21	E S 25	E S 18	E S 24	E S 16	E S 20	E S 16	E S 15	E S 16	E S 13	E S 15	
20	E S 16	E S 15	E S 13	E S 12	E S 13	E S 15	E S 16	E S 16	E S 17	E S 16	E S 18	E S 24	E S 22	E S 23	E S 22	E S 16	E S 16	E S 15	E S 16					
21	E S 15	E S 14	E S 16	E S 12	E S 12	E S 14	E S 17	E S 18	E S 17	E S 21	E S 21	E S 25	E S 22	E S 22	E S 25	E S 23	E S 18	E S 17	E S 14	E E	E S E S	E S		
22	E E	C	E E	S E	E S	E S	E S	E S	E S	E S	E S	27	24	33	39	22	24	20	19	15	15	14	13	16
23	E S 15	E E	E E	S E	S E	E S	E S	E S	E S	E S	E S	19	21	24	19	22	E S	E S	E S	E S	E S	E S	E S	E S
24	E S 15	E S 12	E S 11	E S 12	E S 11	E S 18	E S 17	E S 16	E S 17	E S 22	E S 22	E S 19	E S 16	E S 20	E S 16	E S 16	E S	E S	E S	E S	E S	E S	E S	
25	E S 15	E S 16	E S 16	E S 12	E S 16	E S 16	E S 19	E S 16	E S 17	E S 21	E S 19	E S 19	E S 15	E S 16	E S 21	E S 16	E S 16	E S 15						
26	E S 19	E S 11	E S 13	E S 13	E S 15	E S 18	E S 15	E S 16	E S 16	E S 20	E S 20	E S 24	E S 24	E S 18	E S 17	E S 16	E S 21	E S 15	E S 12	E S 22	E B	B B		
27	B	B	B	B	B	B	B	B	B	B	27	24	20	18	19	22	20	20	E S	E S	E S	E S	E S	
28	E S 16	E S 16	E S 16	E E	E E	E S	E S	E S	E S	E S	15	15	18	18	18	22	E S	E S	E S	E S	E S	E S	E S	
29	E S 20	E S 15	E S 12	E S 12	E S 18	E S 18	E S 20	E S 18	E S 24	E S 24	E S 24	E S 23	E S 27	E S 23	E S 20	E S 18	E S 18	E S 20	E E	E S E S	E S			
30	E E	E E	E E	E E S	E E S	E S	E S	E S	E S	E S	12	11	27	18	16	15	19	21	20	18	21	18	15	23
MED																								
NO																								

TABLE 79
IONOSPHERIC DATA

h'F2, Km, April 1956

75°W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01	U S	U S	U S	300	310	330	330	330	290	290	290	270	330	270	340	360	390	390	340	300	260	240	250	270	270	260
02	260	260	270	270	270	290	280		300	320	280	330	370	380	380	270	350		290	250	240	260	250	260		
03	320	330	300	250	260	250	240	240	250		260	280	290	290	300	270	260	250	240	230	250	260	280	300		
04	290	270	290	270	250	260	250	230	240			250	310	270		260	250	240	240	220	230	250	250	260		
05	280	270	270	260	260	250	250	250	250	260	270	260	310	270	290	320	290		260	240	240	260	260	280		
06	270	270	260	250	260	260	250	240		250	320	290	270	280	300			250	230	260	280	290	250			
07	270	270	270	260	280	310	280	250	280			320	300	300		250		250	230	230	230	250	280			
08	290	270	270	260	270	270	250	240	250	260	280	310	290		270	300	280	260	240	230	240	240	250	280		
09	270	260	270	250	240	280	250	230	240	280	260	280	310	290	270	280	260	260	245	230	230	240	250	260		
10	260	260	280	290	320	290	260	240	250	280	260	260	290	280		C	L	L	270	250	240	240	270	260	260	
11	F	F	280	280	250	260	270	250	240	250	250		310	330	300	320	320			250	240	240	260	290	270	
12	260	250	270	280	280	280	270		250	250	260	310	310	320	310	280	300	250	250	240	240	260	260	260		
13	270	260	260	260	250	250	250	230	250	250		U A	L	280	290	290	320	L	U L	U L	U A	U A	U A	U A	U A	
14	250	260	270	270	240	240	240	240	230	250	270	260	260	290	290	280	260	240	240	240	240	250	280	270		
15	U A	C	C	250	260	220	240	230	250	260	310	300	320	330	310	340	300	250	250	230	230	260	260	250		
16	280	310	300	300	280	260	250	250	250	270	280	280		H	280	281			250	230	260	250	300	280		
17	240	290	310	300	290	270	250	250	250		H	L	290	290		L	L	L	L	300	250	240	240	260	260	260
18	300	330	330	330	340	280	280	280	280	420	490	470	480	460	430	430	430	430	370	350	260	270	270	280	300	290
19	320	320	320	320	290	290	270	280	350	450	460	430	440	390	400	390	370	320	280	250	240	260	290	320		
20	320	290	290	290	290	290	260	250	290	260	340	280	330	370	370	360	360		270	250	230	250	270	290		
21	310	300	320	310	320	320		340	400	710	510	610	540	610	610	540	470	360	260	240	260	280	270	470		
22	U A	F	C	500	400	410	450	360		G	G	F	G	G		G		U L	U L	L	270	250	270	270	280	
23	290	280	330	340	360	260		L	380	450	440	450	420	430	450	460	390	380	350		270	250	270	270	280	
24	300	290	280	260	250	250	260	270	260	300	290	340	320	320	320	320	320	300	260	250	250	250	250	280	280	
25	270	280	280	260	270	260	250	250	300	280	280		L	330	330		300	300		270	250	240	245	260	280	
26	300	310	300	300	290	240	250		350	340	390	380	350	380	360	350	360	360	360	300	320	400				
27	B	B	B	B	B	E B	B	500	B	G	G	G	G	G	G	G	530	470	480	350	300	360	360			
28	320	360	310	290	310	330		G	L	430	530	510	520	520	620	500	530	440	350	320	330	280	400	400	370	
29	360	410	420	420	390	380		L	560	310	340	320	380	380	360	360	360	360	340	290	270	240	250	270	280	340
30	330	320	350	310	330	280	280	410	500	450	380	310	320	325	310	340	299		250	240	240	270	290	290		
MED	290	280	290	280	280	270	250	250	270	280	310	310	320	330	320	340	300	270	250	240	240	260	270	280		
NO	29	28	27	29	29	29	26	26	29	27	25	28	29	28	26	25	25	19	29	30	29	28	28	29		

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 80
IONOSPHERIC DATA

h'F1, Km, April 1956

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

75°W Mean Time

Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01								260	240	210	230	215	220	205	210	215	230	235	255							
02								245	235	220	220	220	200	215	225	235	230	250	260							
03								215	220	220	215	215	215	220	225	230	235									
04								230	215	210	215	215	220	220	230	230										
05								240	225	210	200	215	200	210	210	230	225	230								
06								240	210	205	220	230	210	215	215	230	240									
07								270	240	225	210	205	220	210	220	215	225	235	235							
08								230	220	210	210	205	210	210	220	230	225									
09								220	210	200	220	215	215	220	220	230	240									
10								230	210	215	200	200	220	225	220	215	230	220								
11								235	210	210	205	210	220	205	230	230	240	240								
12								250	240	220	215	205	220	210	215	215	230	235	230							
13								220	240	230	215	210	225	225	225	250	240									
14								225	205	200	200	225	205	210	210	210	220									
15								250		A	A	A		230	250		240									
16								230	220	220	200	210	200	215	215	230	240									
17								225	220	215	210	210	220	220	235	220	220	240								
18								240	230	215	205	210	215	230	215	225	230	245								
19								235	220	210	205	200	215	220	230	220	235	245	250							
20								245	220	205	190	190	205	215	220	220	230	240	255							
21								260	240	225	215	210	205	205	240	245	250	260	260	250						
22								300	270	260	235	215	200	205	230	230	240	240	250	270						
23								280	240	205	210	205	200	210	230	220	210	230	235	260						
24								235	235	235	210	200	230	200		A	H	200	220	210	240					
25								230	210	205	200	190	190	200	220	220	220	215	240	250						
26								250	225	205	200	200	220	230	220	220	230	250	260							
27								270	235	205	180	210	235	235	235	215	270	250	270							
28								280	240	220	205	200	190	180	200	200	210	235	250	260						
29								265	260	245	215	215	215	215	210	235	220	215	230	245						
30								235	230	210	240	235	230	215	220	240	245	240	245							
MED								270	240	225	210	205	210	215	215	220	220	230	240	255						
NO								8	21	28	30	29	29	29	29	30	29	29	27	13						

TABLE 81
IONOSPHERIC DATA

$h'E$, Km, April 1956

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual Automatic

75°W Mean Time

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
01									H		H	H		H		H		109	109	125										
02									H	H		H						H												
03								A	A	U A	105	103	101	105	101	101	101	101	109	113	119									
04											H				U A	U A														
05											115	109	109	105	101	101	101	101	105	109	109	119								
06											H	H		H				101	101	105	120									
07									121	115	105	101	101	101	101	101	101	101	109	121										
08											U A			H					H	H										
09											115	109	105	103	101	101	107	101	101	101	105	111	116							
10											H			H	H			I A	H	H										
11											135	107	107	103	103	107	105	105	105	105	109	111								
12											A	H						I C		I A	H									
13											105	105	101	101	101	101	101	103	105	105	112	119								
14											S							U A	U A											
15											109	105	101	103	103	101	101	101	101	109	109	119								
16											I A			H				E B	E B	H										
17											129	109	107	105	101	99	99	101	101	111	107	109	119							
18											A	A	A	H					H											
19											105				101	101	101	99	101	103	113	119								
20											E S	H		H	H	H		H	H	H										
21											141	107	105	99	99	99	99	99	99	99	101	109	117							
22											E S	H	H																	
23											121	111	103	103	105	105	103	101	101	103	109	115	119							
24											H																			
25											121	115	105	105	103	101	101	101	101	101	105	111	115							
26											101	105	101	101	101	101	101	101	101	101	105	109	120							
27											125	111	105	103	105	101	103	101	105											
28											E B																			
29											115	103	101	101	105	101	101	101	103	119	115	120								
30											H																			
MED											119	109	105	103	101	102	101	101	101	101	105	109	119							
NO											1	15	28	27	29	30	30	30	30	30	28	26	29	27	1					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 82
IONOSPHERIC DATA

(M3000) F2, April 1956

Station: Washington, D.C. Lot. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. 75°W Mean Time

Manual Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	270	250	240	250	250	270	300	300	305	295	280	280	270	270	270	280	285	285	295	290	280	285	275	270	290
	F	F	F	F	F	F																			
02	290	290	280	280	280	280	290	290	300	295	290	290	270	250	260	260	265	265	280	290	265	280	265	270	
03	260	240	250	270	270	290	290	310	315	295	290	290	290	290	290	290	300	310	310	300	290	280	270	260	
04	265	270	260	270	290	275	320	330	320	305	290	290	295	295	280	290	290	300	300	300	290	290	275	280	
05	280	285	275	290	270	290	305	320	330	315	310	290	295	290	290	280	300	290	290	300	280	290	285	280	
	U	F	U	F	U	F	F	F																	
06	280	270	270	280	280	285	310	340	310	305	295	290	280	295	250	290	290	290	305	290	290	260	265	300	
07	270	275	280	280	250	260	295	300	320	310	300	290	290	300	290	295	300	305	300	310	310	290	280	270	
08	275	280	285	285	285	290	305	310	310	310	310	290	295	285	290	285	290	295	300	310	300	290	285	275	
09	270	275	270	280	300	280	310	320	315	305	300	300	290	290	285	285	285	290	290	305	300	290	305	300	
10	290	290	280	280	260	255	270	305	310	310	305	300	290	285	280	280	280	290	290	290	280	280	285	285	
11	270	265	270	270	270	275	310	315	320	300	290	290	280	280	265	270	275	280	290	290	280	270	270	270	
12	280	270	270	260	270	275	305	305	305	305	290	285	280	270	280	280	280	280	285	285	290	275	275	280	
13	280	280	270	270	265	290	315	320	300	295	290	290	285	280	280	275	280	285	290	290	280	280	285	285	
14	285	280	270	270	280	280	315	310	300	290	295	290	280	280	275	280	280	275	280	290	280	280	280	275	
15	280	C	C	275	275	280	315	290	310	290	290	280	285	275	270	270	270	270	290	285	275	265	280	280	
16	265	250	250	255	260	275	305	320	310	280	285	280	270	265	270	275	265	270	280	285	285	255	275	255	
17	260	230	250	255	255	270	290	300	295	290	290	280	270	270	280	270	280	280	285	290	290	275	270	270	
18	250	250	250	260	255	280	310	300	265	250	255	250	250	260	265	260	260	270	280	275	265	265	260	270	
19	265	250	255	270	270	280	300	290	285	260	260	265	260	270	270	275	275	290	295	300	275	260	260	250	
20	250	260	270	270	270	280	310	305	305	290	290	275	270	270	270	265	270	280	285	285	265	270	270	250	
21	250	250	245	250	250	260	290	285	270	210	250	230	240	220	215	220	220	250	260	270	260	250	255	210	
22	230	230	250	C	F	F	G	G	G	235	240	210	220	240	260	275	280	280	275	270	270	270	265	265	
23	280	310	280	270	260	340	280	275	260	260	265	270	265	260	260	270	270	270	275	290	270	265	270	275	
24	265	265	275	290	290	300	310	330	310	300	290	280	280	280	270	280	280	280	290	280	290	290	280	270	
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26	260	250	250	260	270	300	310	300	290	290	275	275	290	270	270	275	270	270	275	270	265				
27	B	B	B	B	B	U	B	B	G	G	G	G	G	G	G	G	235	240	260	280	290	280	275	260	
28	290	265	280	290	280	280	F	G	275	275	250	250	255	255	230	255	240	260	280	270	260	255	250	240	
29	260	250	260	250	270	270	315	270	310	315	300	280	280	280	285	275	280	290	300	290	280	290	275	240	
30	255	270	260	280	260	280	285	280	240	260	270	300	295	290	290	280	300	295	290	300	295	280	270	270	
MED	270	270	270	270	270	280	305	300	305	295	290	280	280	275	270	275	280	280	280	290	290	280	275	270	270
NO	29	28	27	29	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	28	28

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

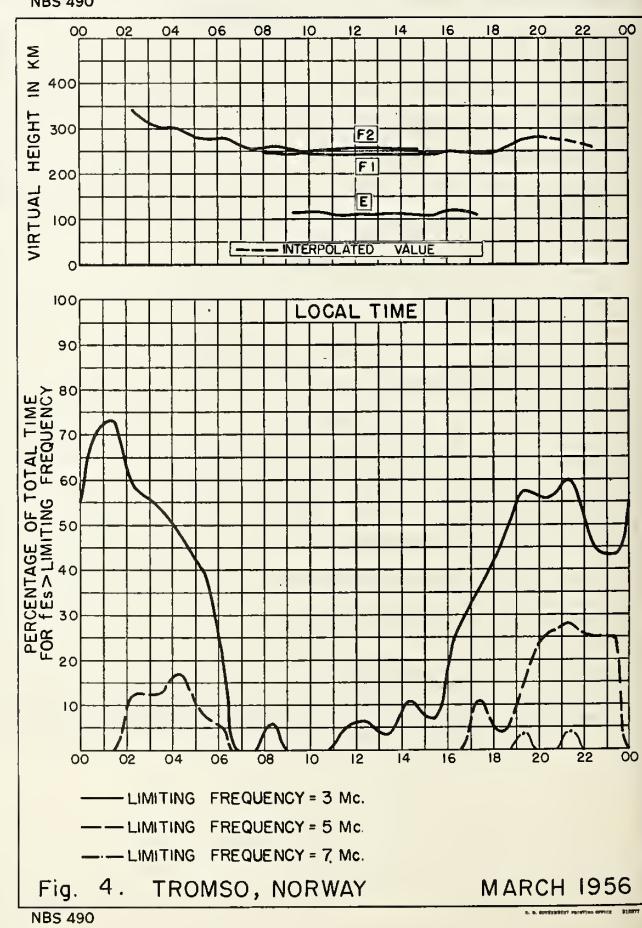
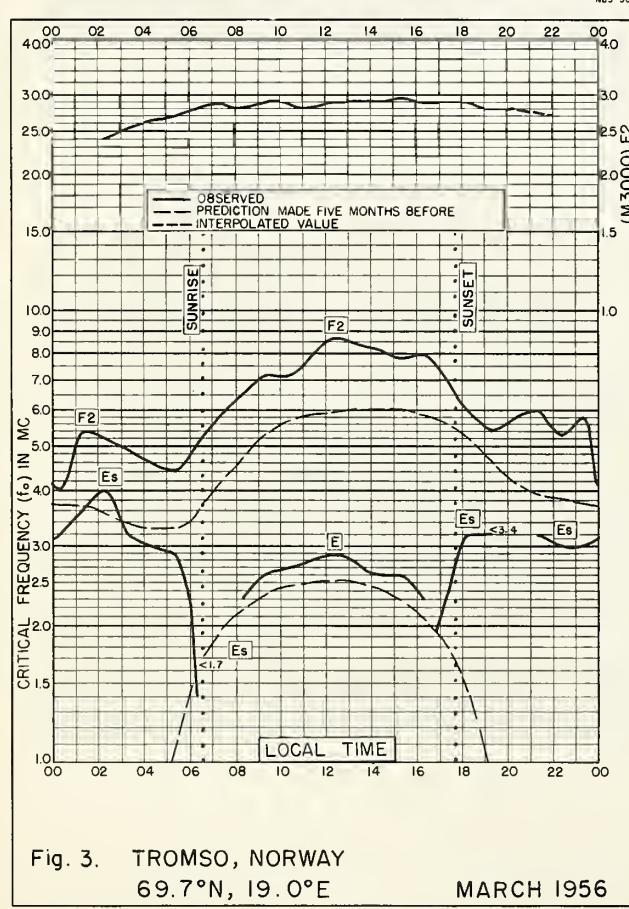
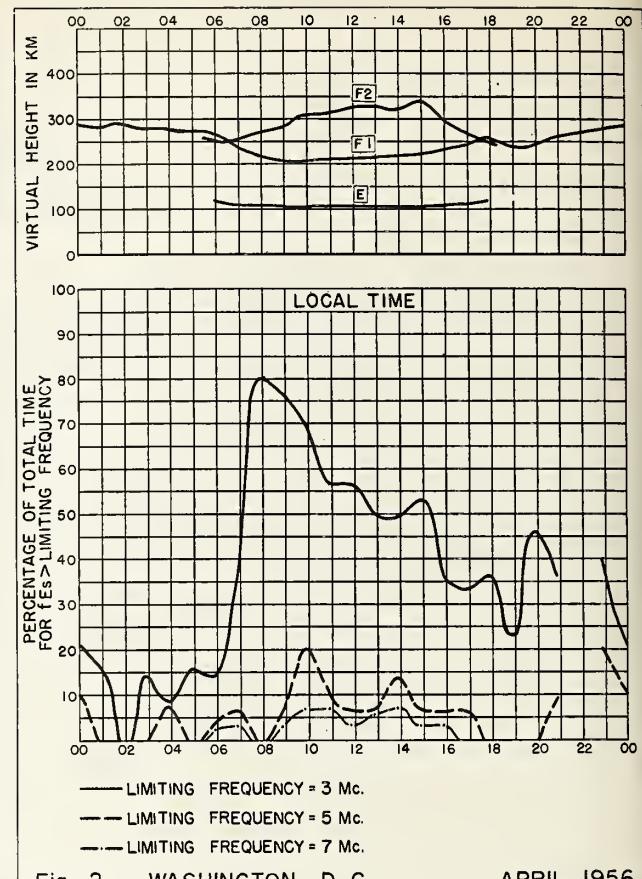
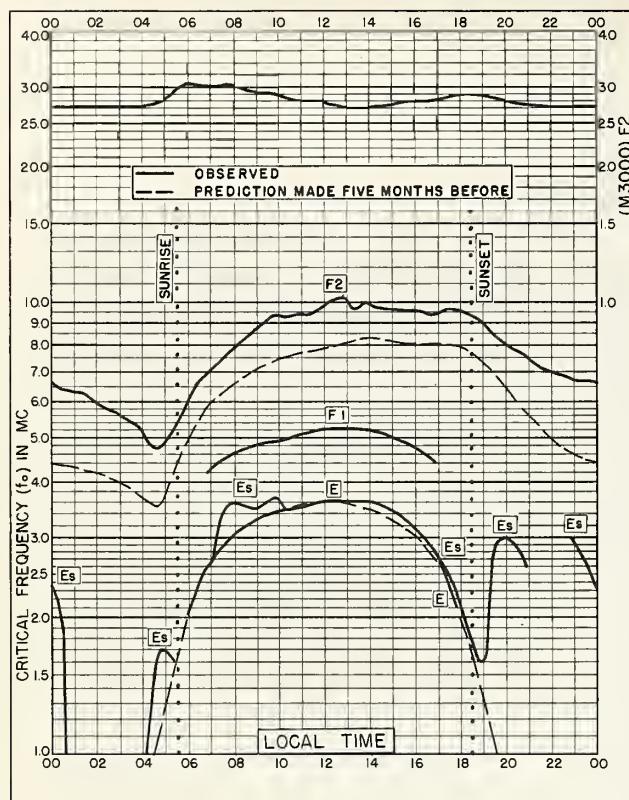
TABLE 83
IONOSPHERIC DATA

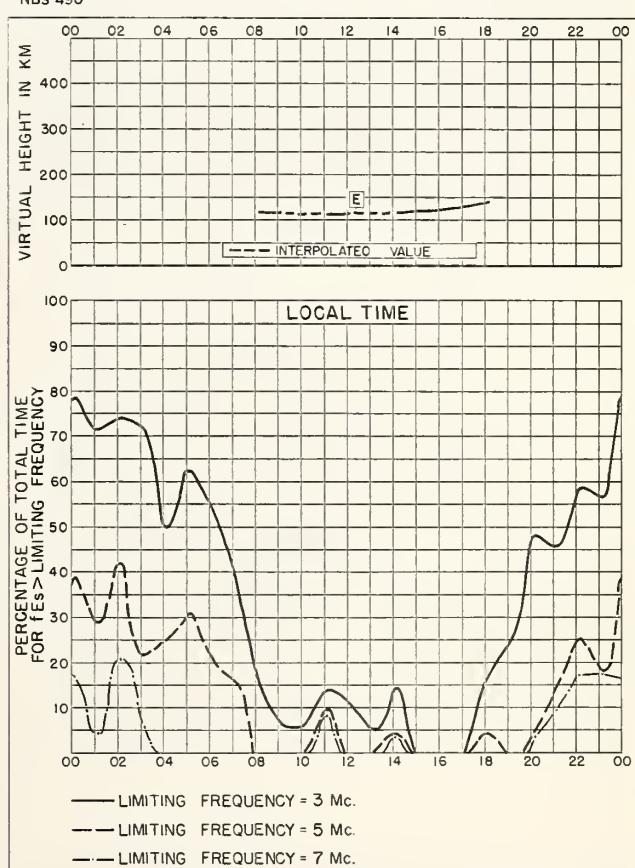
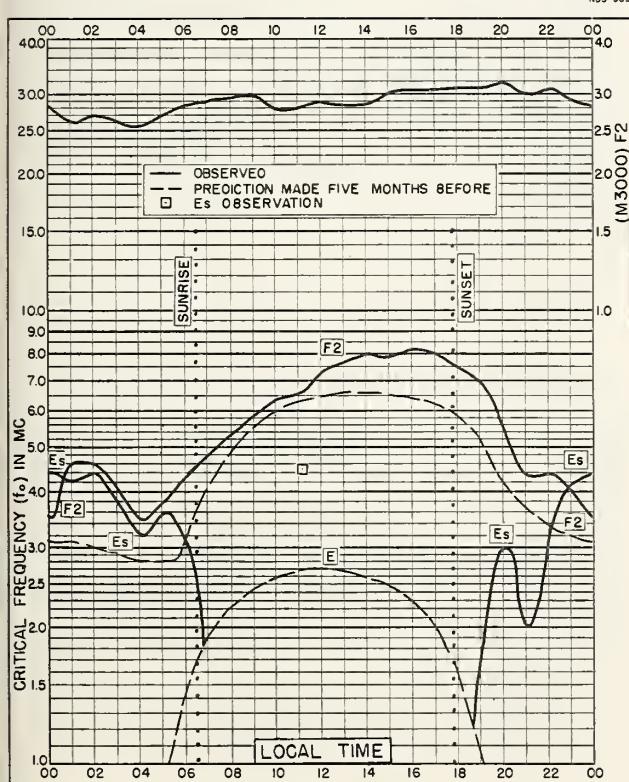
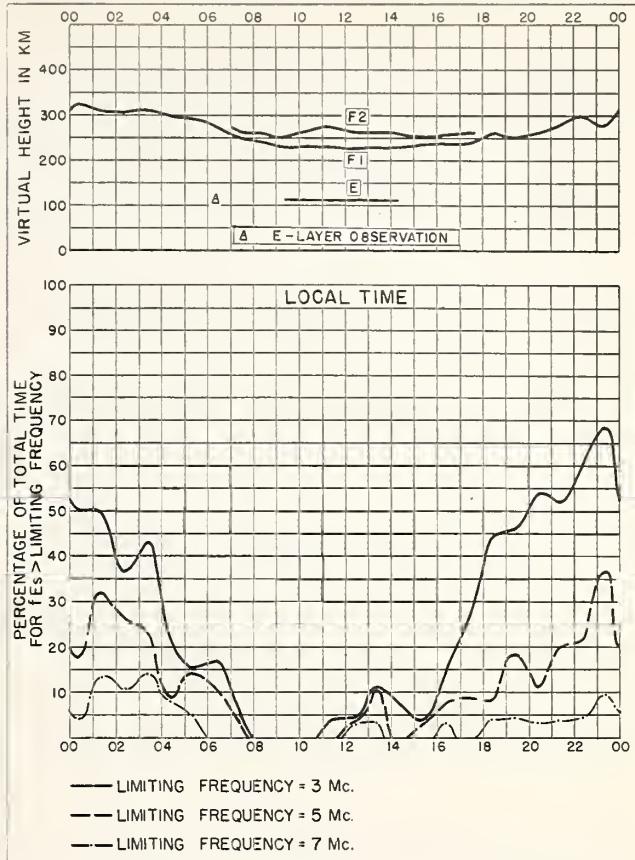
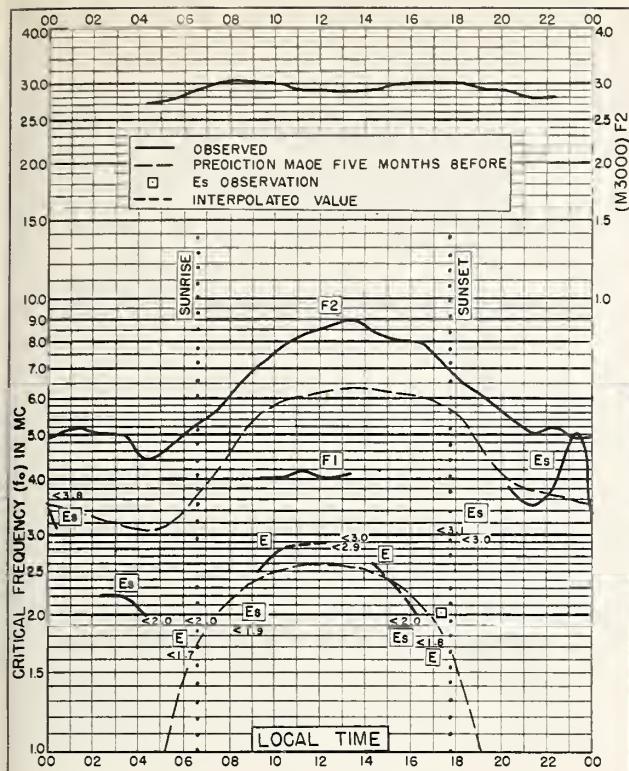
(M3000) FI, April 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Monoal Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01							Q	L	L			H	H	H				L	L							
02								L	L	L	340	350	360	345	340	330	350	350		H	L	L				
03								Q	Q	L	L	L	L	L	L	L	L	L	L	L	Q					
04								Q	Q	L	L	L	L	L	L	L	L	L	Q	Q						
05								L	L	L	L	L	L	L	L	L	L	L	L	L	Q					
06								Q	L	L	L	L	L	L	L	L	L	L	L	L	Q					
07								L	L	L	L	L	L	L	L	L	L	L	L	L	Q					
08								Q	Q	L	L	U	L	L	L	L	L	L	A	Q						
09								Q	Q	L	L	L	H	360	H	H	L	L	L	L	L	Q				
10								Q	L	L	H	H	H	370	H	H	L	I	C	L	L	L	Q			
11								Q	L	L	L	L	H	365	360	360	H	L	L	L	L	Q				
12								L	L	L	L	L	U	L	U	L	U	L	U	A	Q					
13								A	A	A	L	L	L	365	365	380	H	L	L	U	A	U	A	Q		
14								Q	Q	L	L	I	A	395	H	H	H	H	L	Q	Q					
15								Q	A	A	L	A	A	A	A	L	U	A	A	A	L	Q				
16								Q	L	L	L	L	L	390	H	H	H	L	L	L	L	Q				
17								Q	L	L	H	H	H	360	360	380	L	L	H	L	L	L	Q			
18								Q	L					335	335	345	H	H	H							
19								Q	L	H	H	H	H	350	335	325	H	U	B	L	L	L	330			
20								Q	L	L	H	H	H	350	365	350	330	340	340	L	L	L				
21								L						340	340	370	360	360	370	360	350	350	340	330	310	
22														300	310	340	370	390	400	380	350	350	340	320	L	
23									L					325	340	360	380	360	350	340	350	350	350	350	L	
24									L	L	L	L	L	390	L	L	A	H	L	L	L	L				
25									L	L	H	L	H	H	335	H	H	H	L	L	L	L				
26								Q	L					340	360	340	330	340	310	350	330	330	320	L		
27														330	350	390	390	370	370	370	370	370	330	320	L	
28								Q	H					290	310	340	365	380	380	390	360	380	360	330	320	
29														315	340	340	350	360	360	360	370	350	350	360	L	
30														B	340	330	350	340	350	360	350	345	U	A	U	A
MED															330	340	360	360	360	360	350	350	340	330	320	
NO															3	7	10	11	15	18	17	17	15	11	10	5





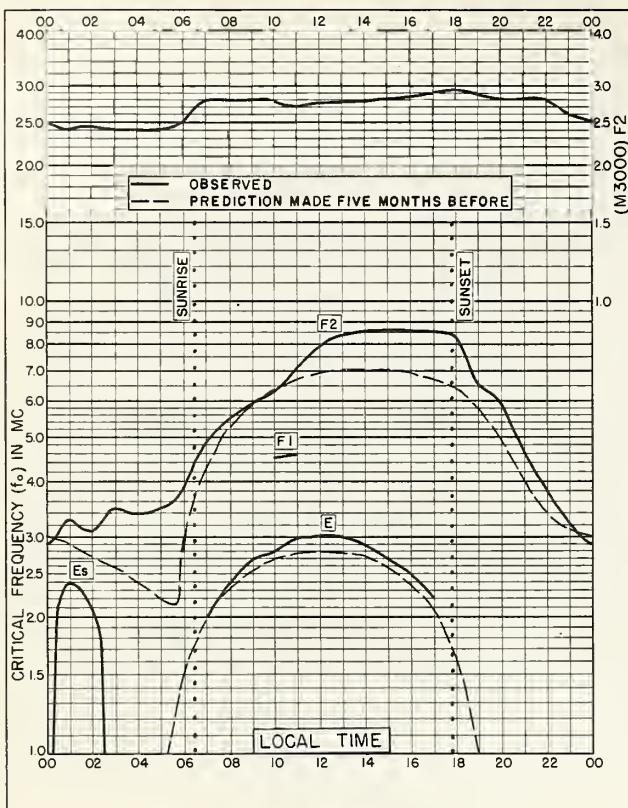


Fig. 9. ANCHORAGE, ALASKA
61.2°N, 149.9°W MARCH 1956

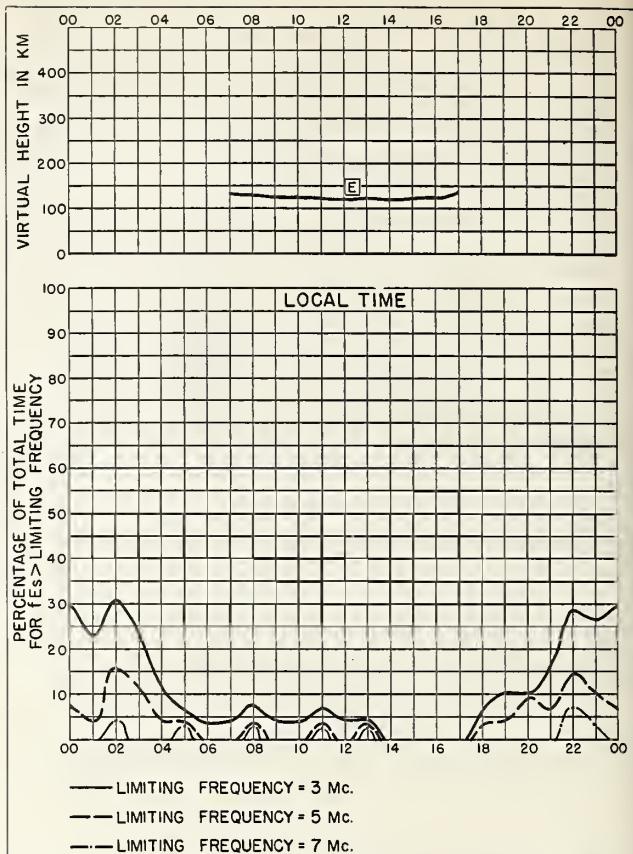


Fig. 10. ANCHORAGE, ALASKA MARCH 1956

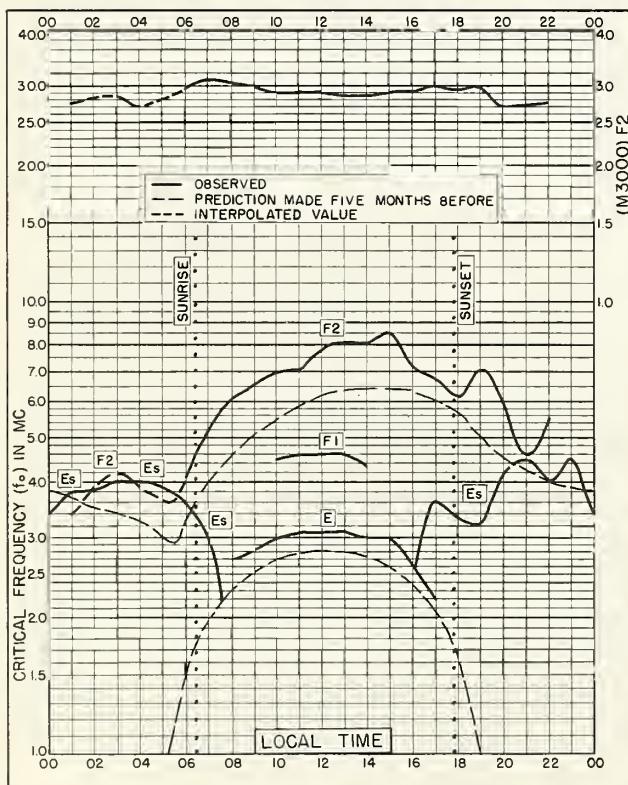


Fig. 11. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W MARCH 1956

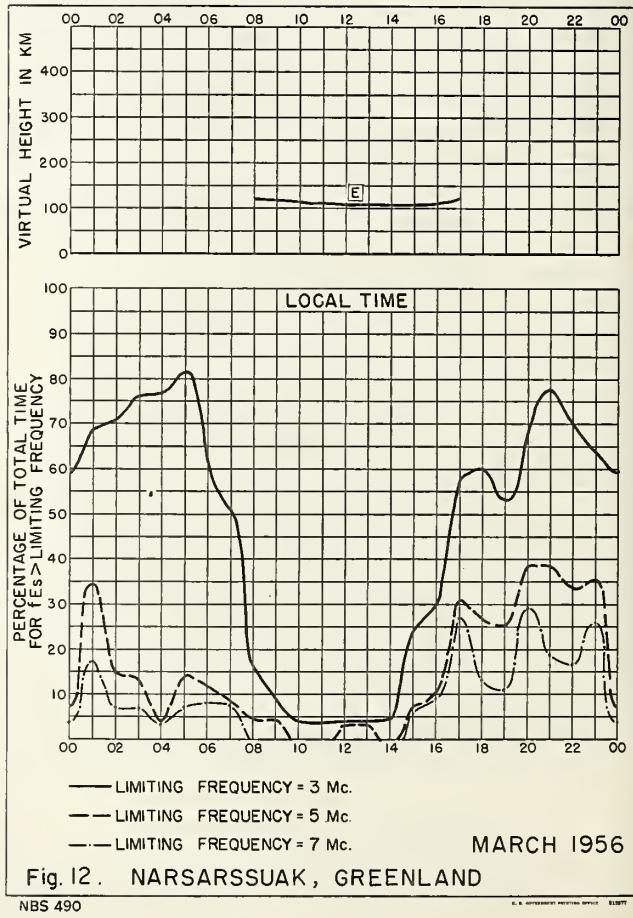


Fig. 12. NARSARSSUAK, GREENLAND MARCH 1956

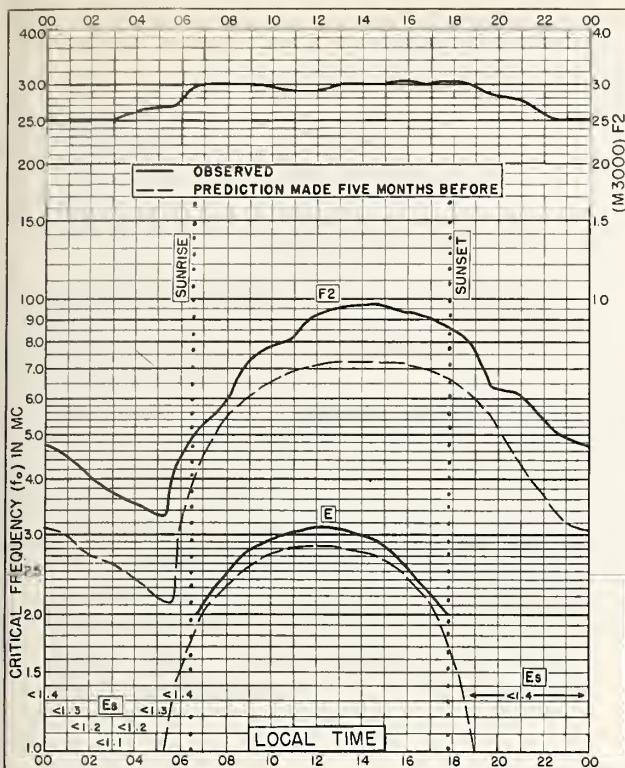


Fig. 13. OSLO, NORWAY
60.0°N, 11.1°E MARCH 1956

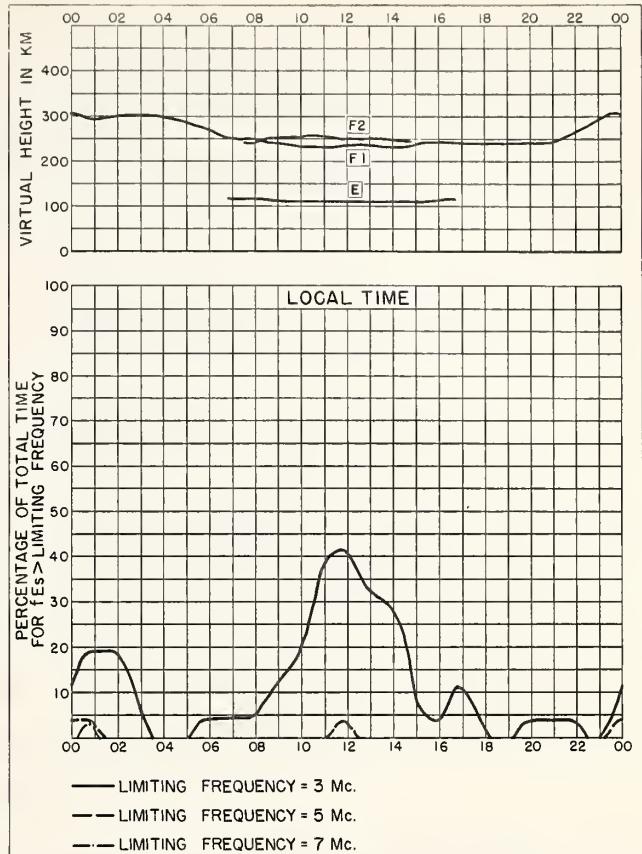


Fig. 14. OSLO, NORWAY MARCH 1956

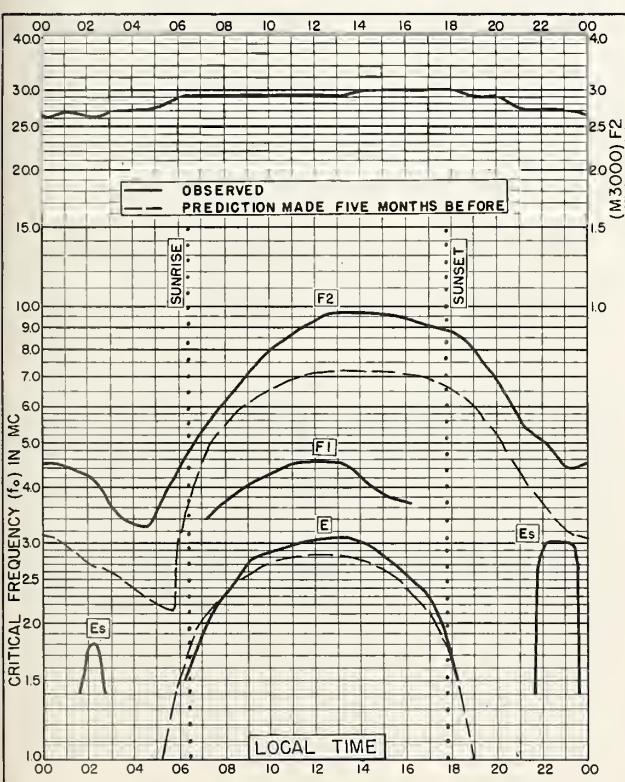


Fig. 15. UPSALA, SWEDEN
59.8°N, 17.6°E MARCH 1956

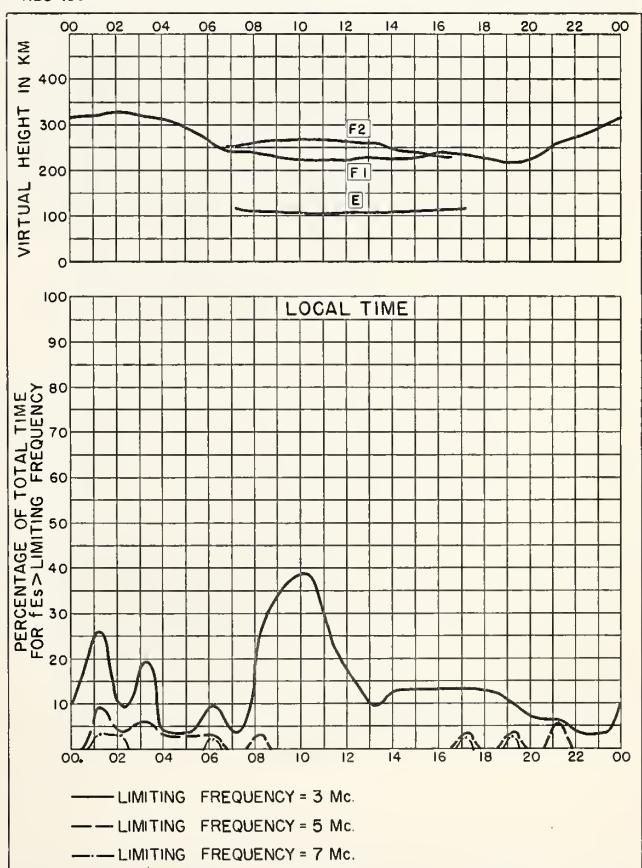
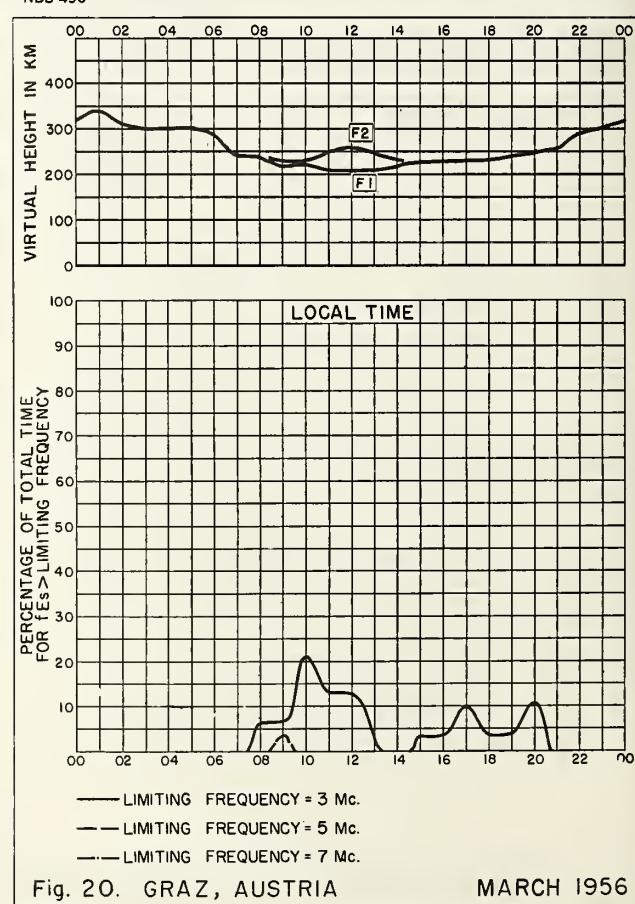
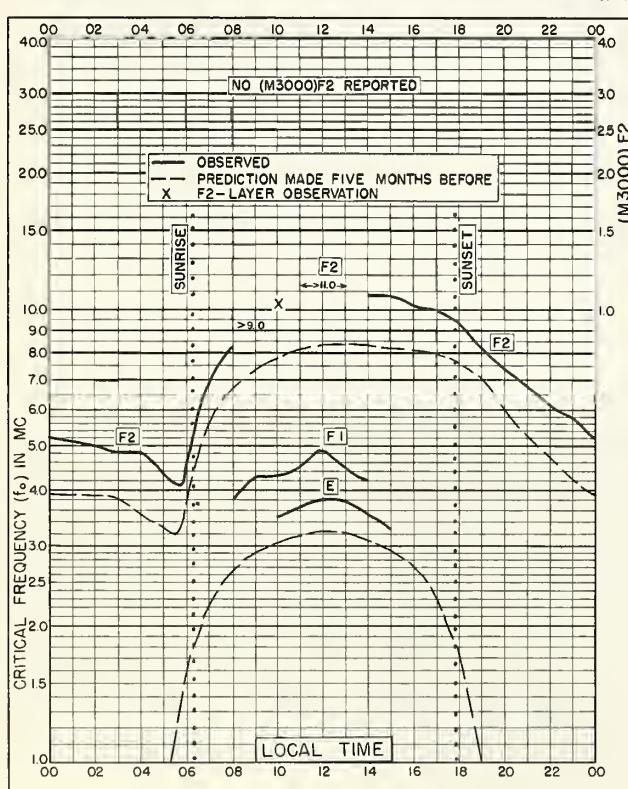
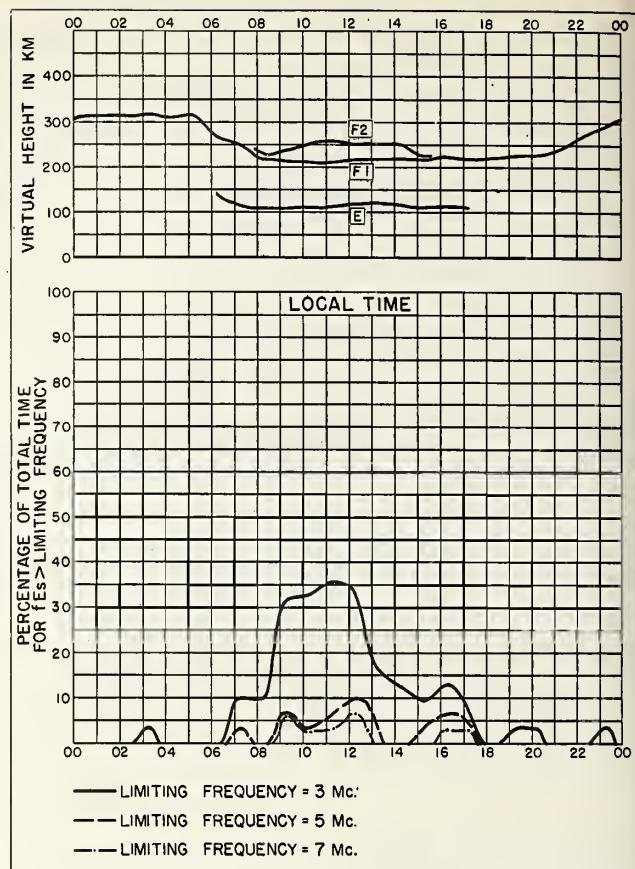
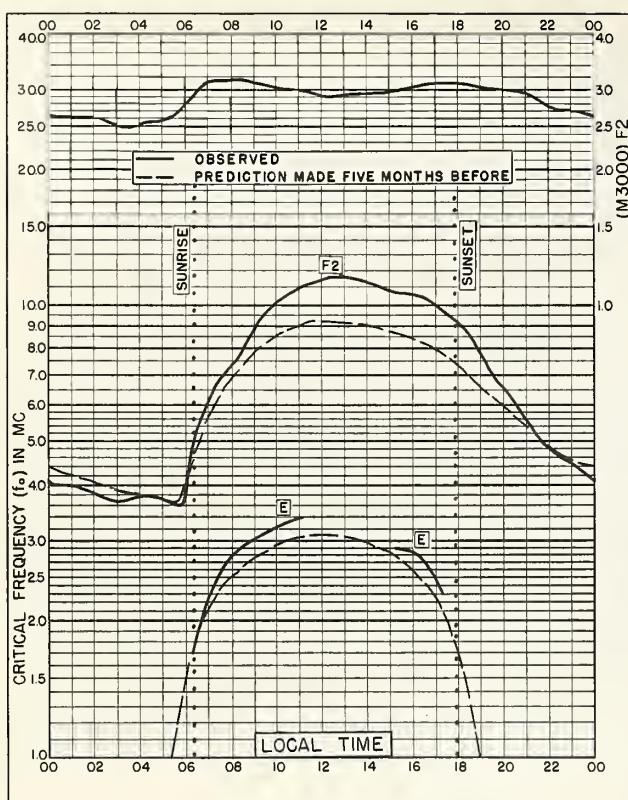
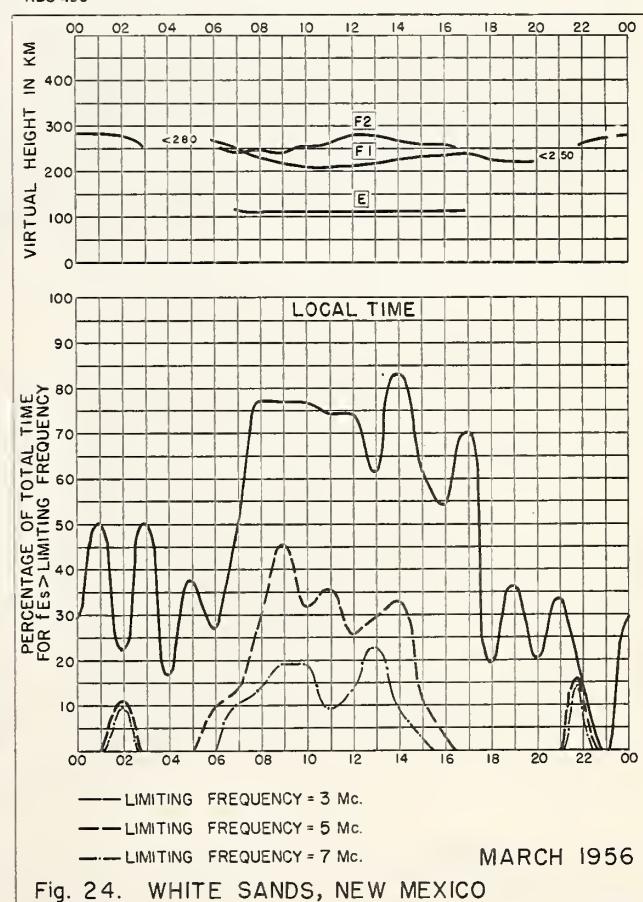
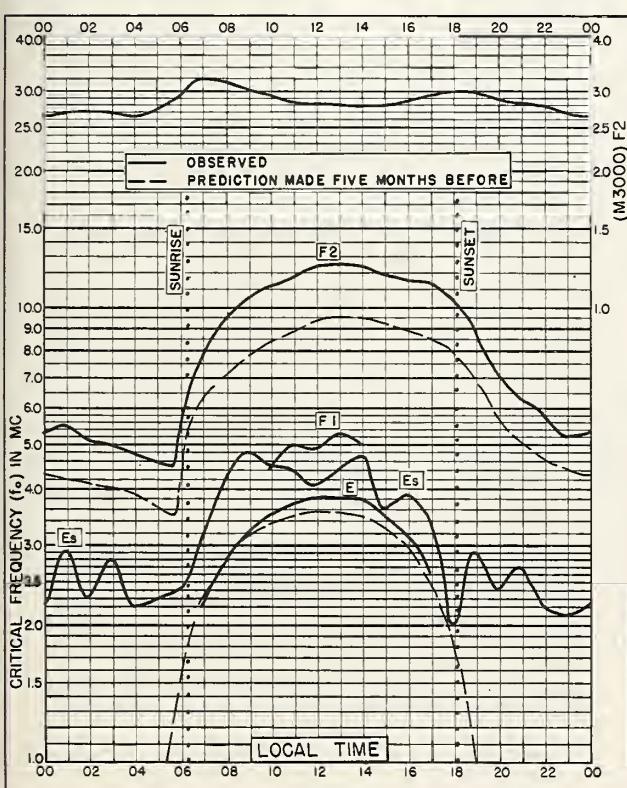
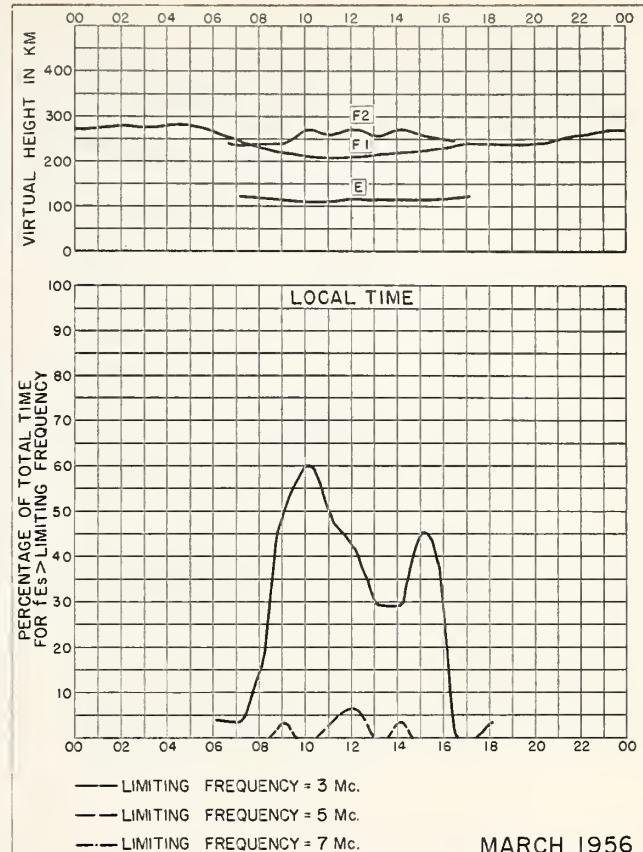
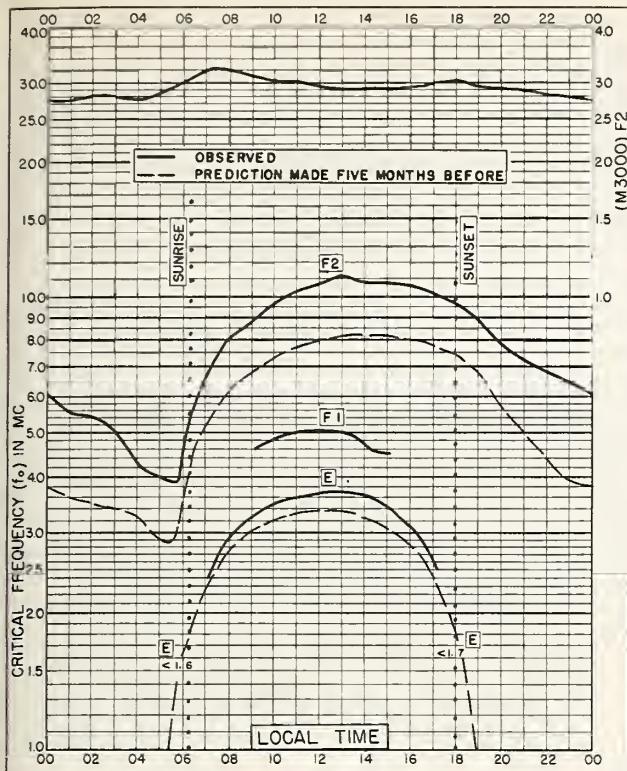


Fig. 16. UPSALA, SWEDEN MARCH 1956





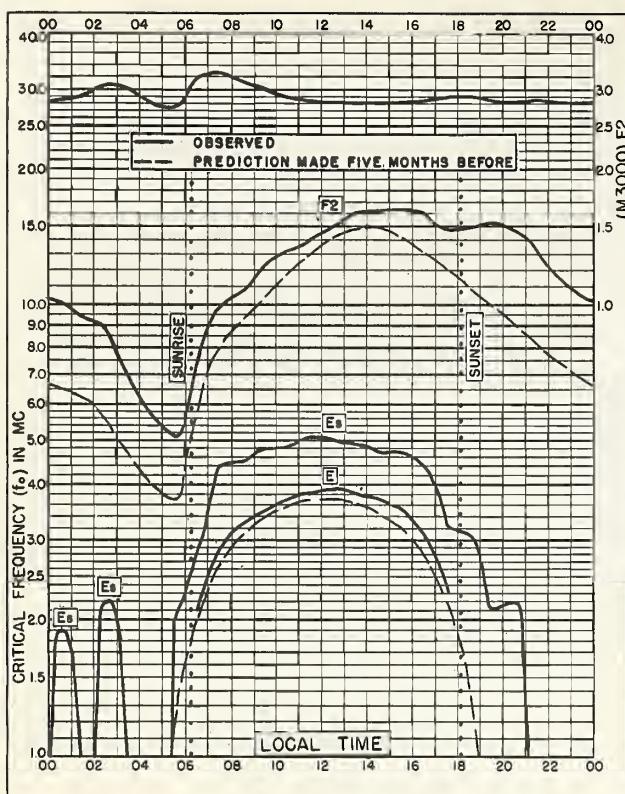


Fig. 25. OKINAWA I.
26.3°N, 127.8°E MARCH 1956

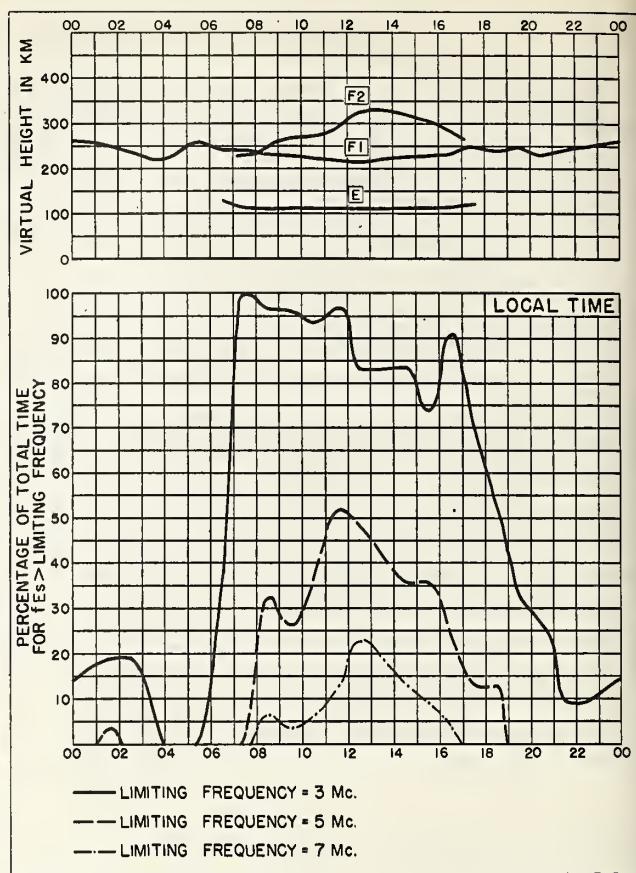


Fig. 26. OKINAWA I. MARCH 1956

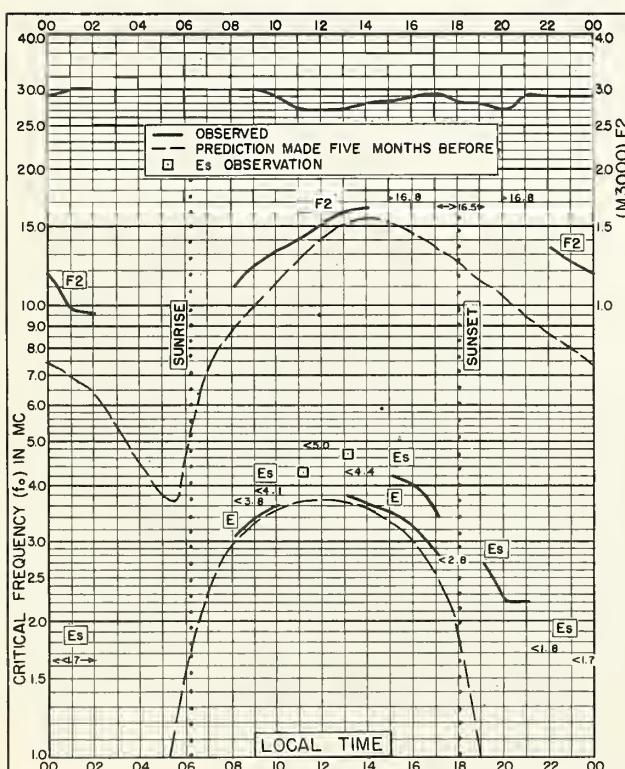


Fig. 27. FORMOSA, CHINA
25.0°N, 121.5°E MARCH 1956

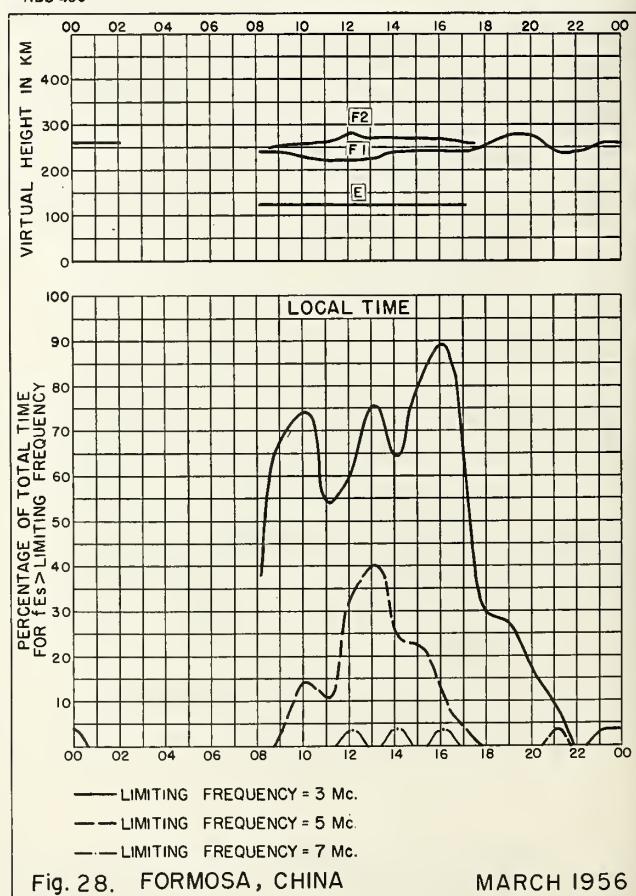
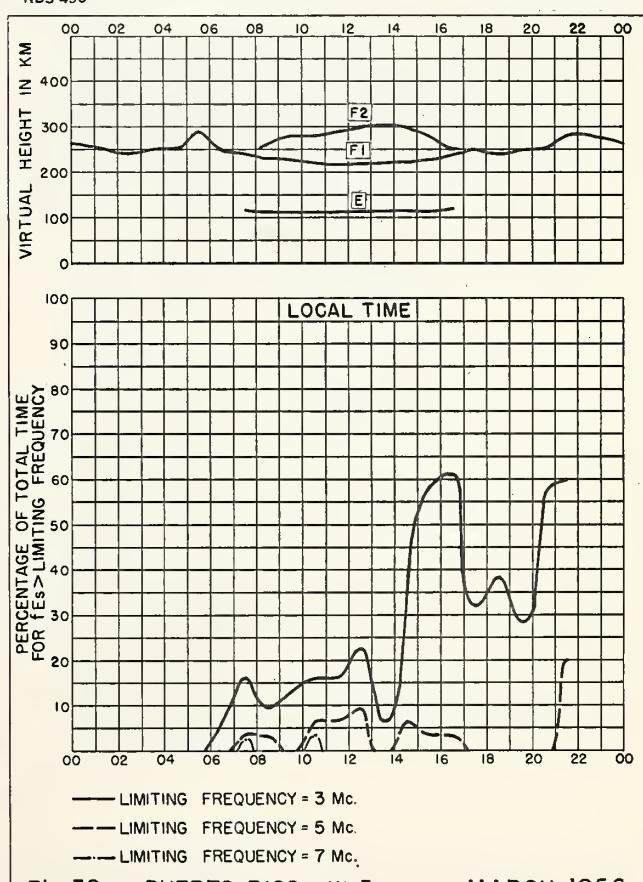
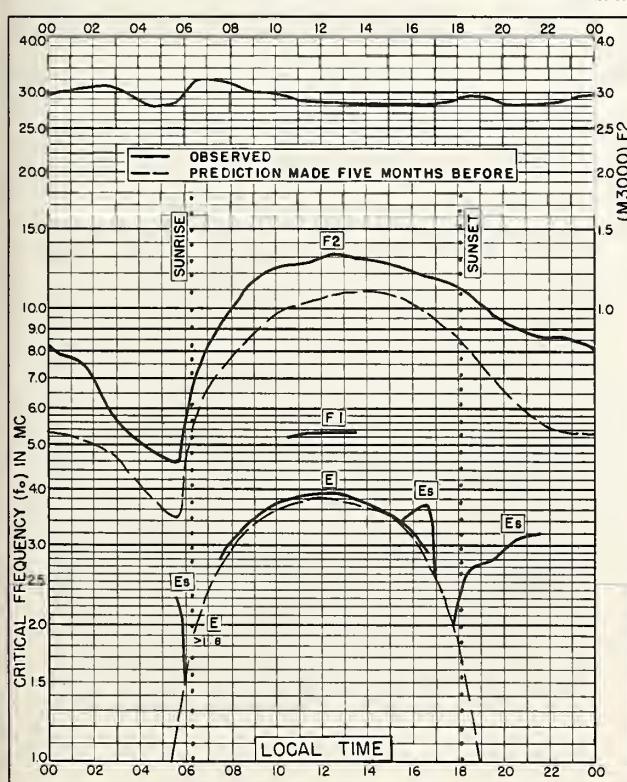
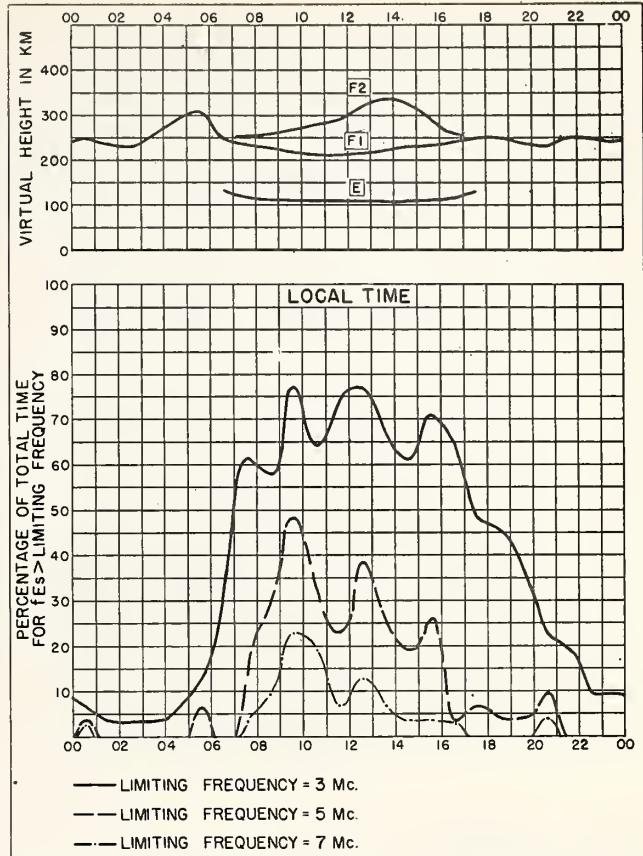
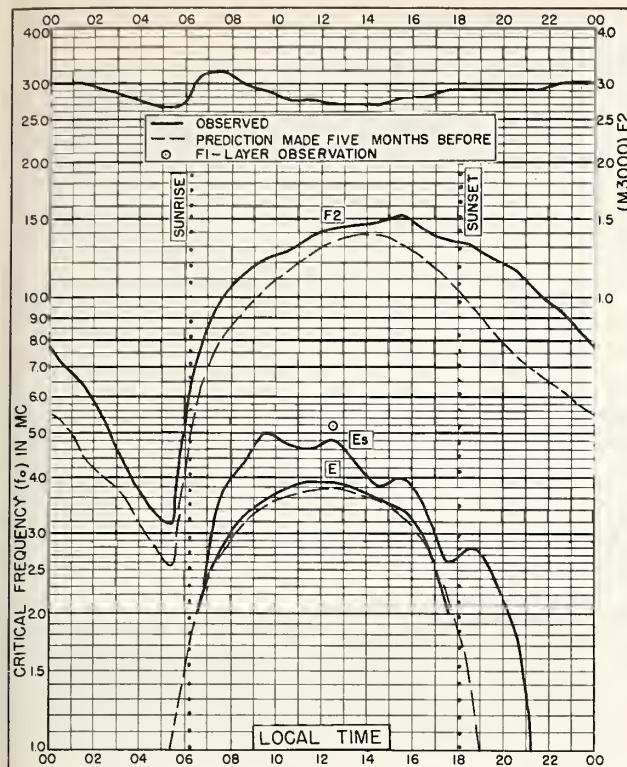


Fig. 28. FORMOSA, CHINA MARCH 1956



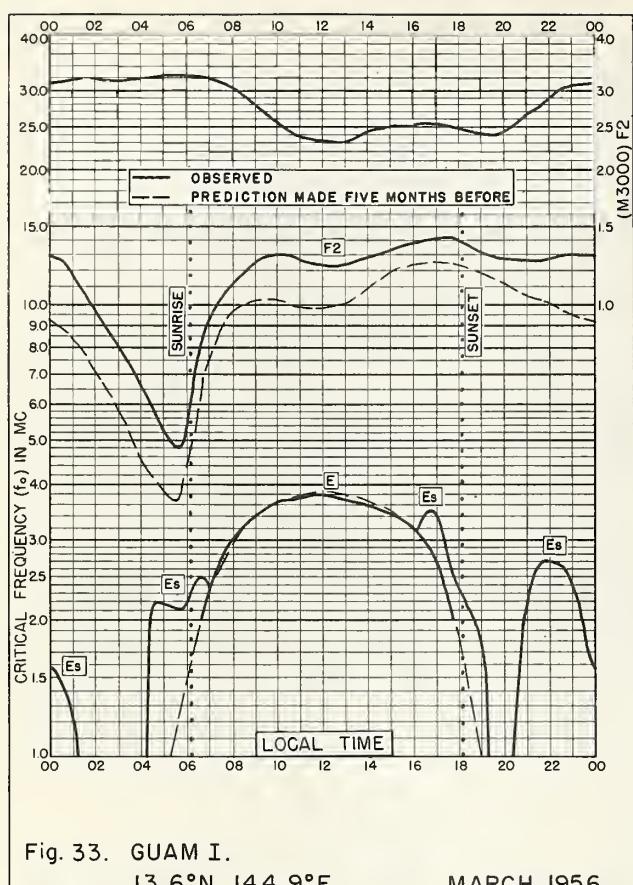


Fig. 33. GUAM I.

13.6°N, 144.9°E

MARCH 1956

NBS 503

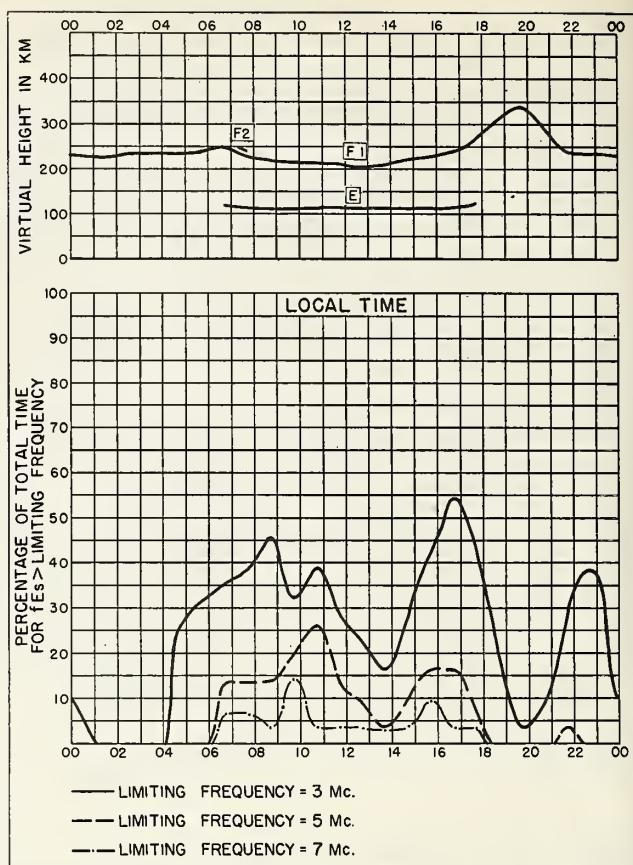


Fig. 34. GUAM I.

MARCH 1956

NBS 490

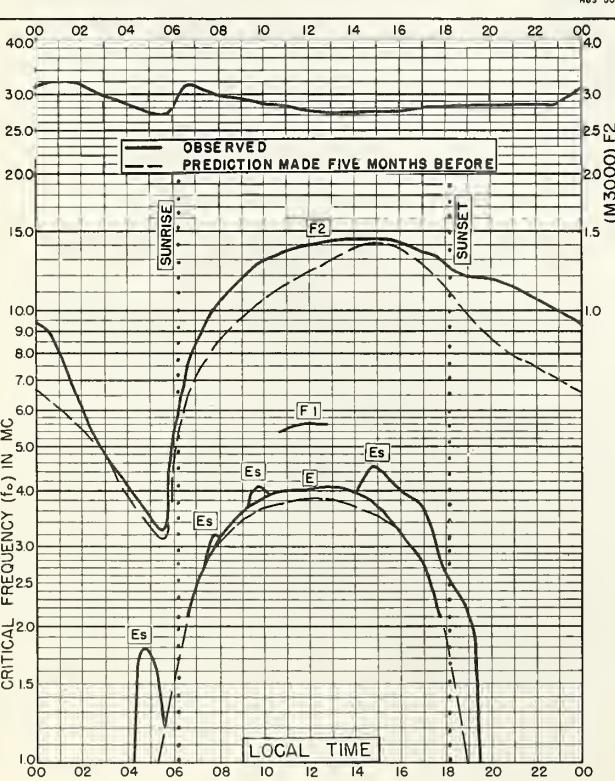
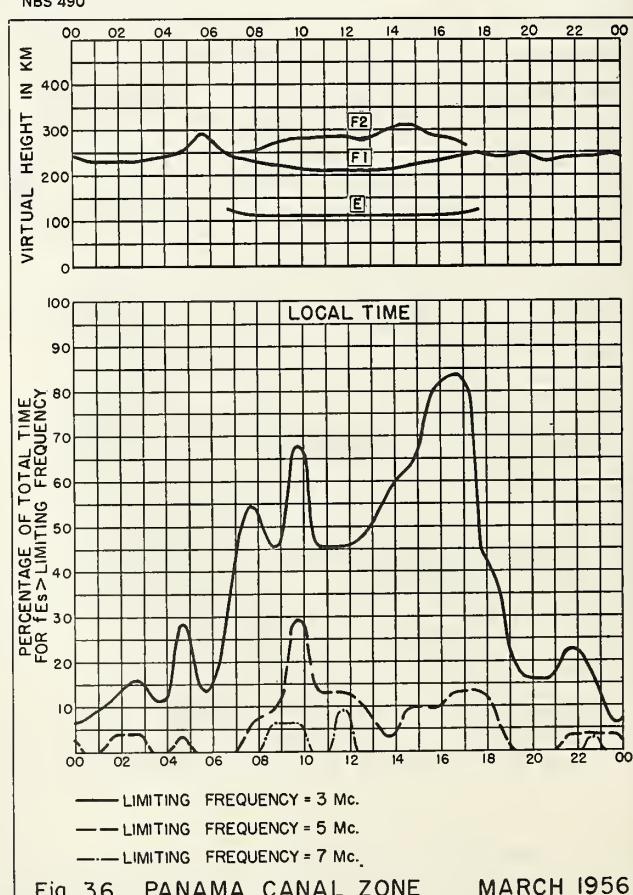


Fig. 35. PANAMA CANAL ZONE

9.4°N, 79.9°W

MARCH 1956

NBS 503

Fig. 36. PANAMA CANAL ZONE

MARCH 1956

U. S. GOVERNMENT PRINTING OFFICE E507

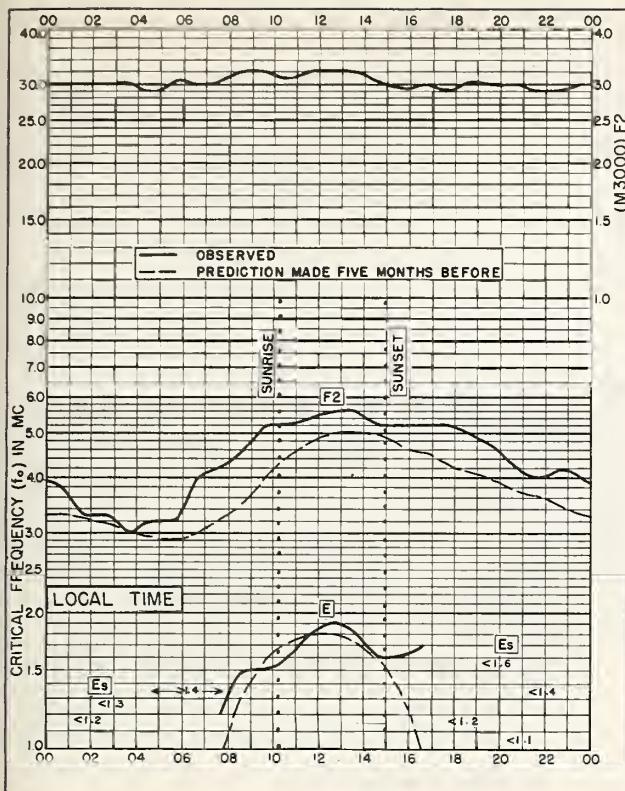


Fig. 37. RESOLUTE BAY, CANADA
74.7°N, 94.9°W FEBRUARY 1956

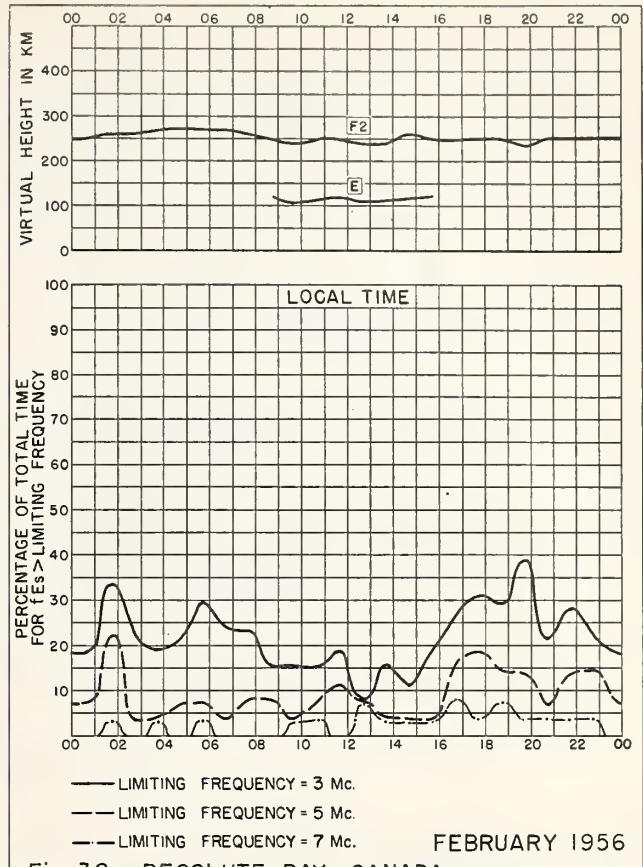


Fig. 38. RESOLUTE BAY, CANADA

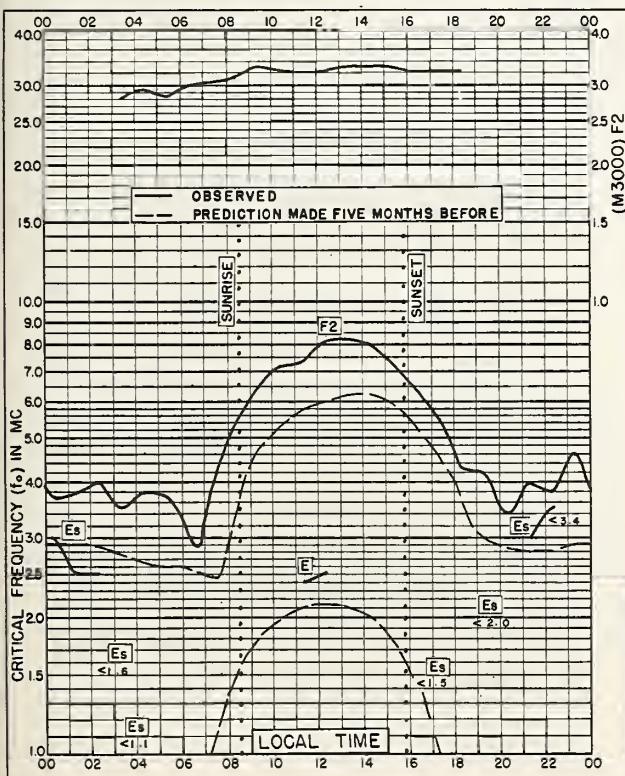
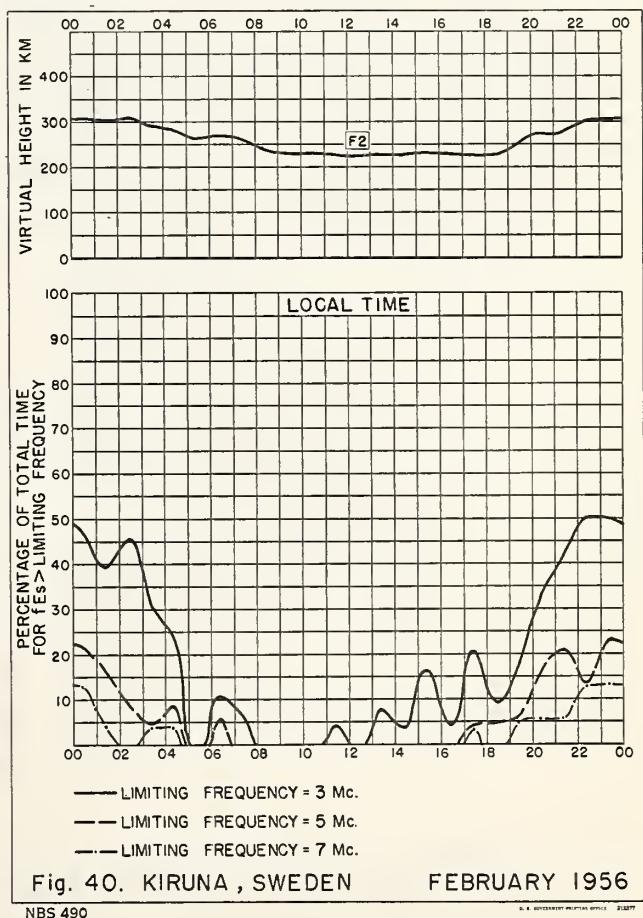
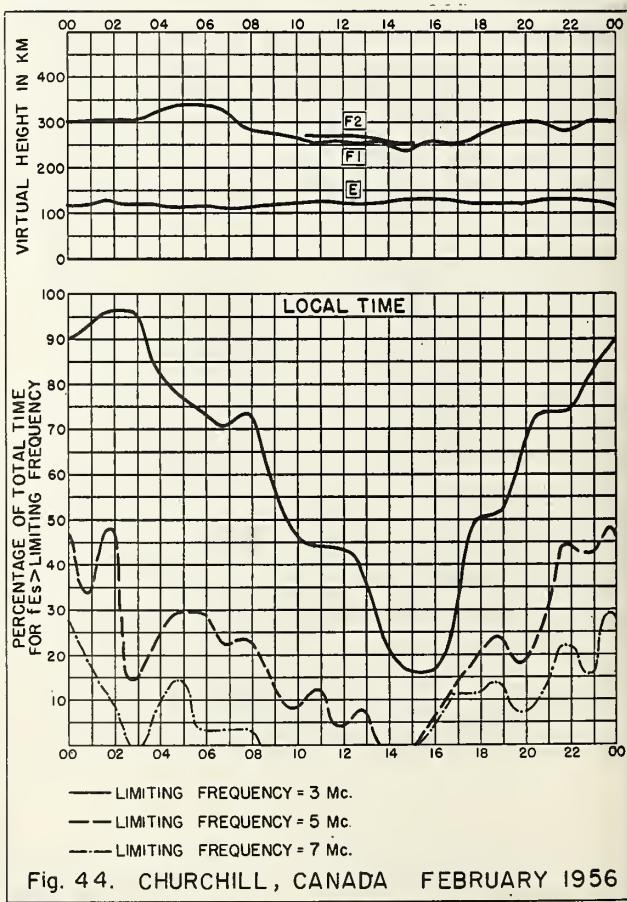
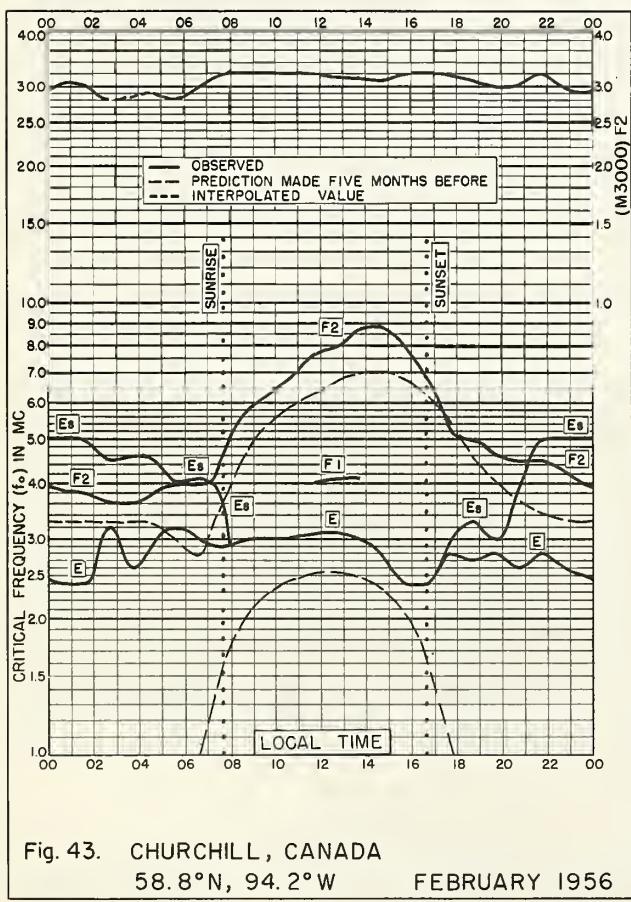
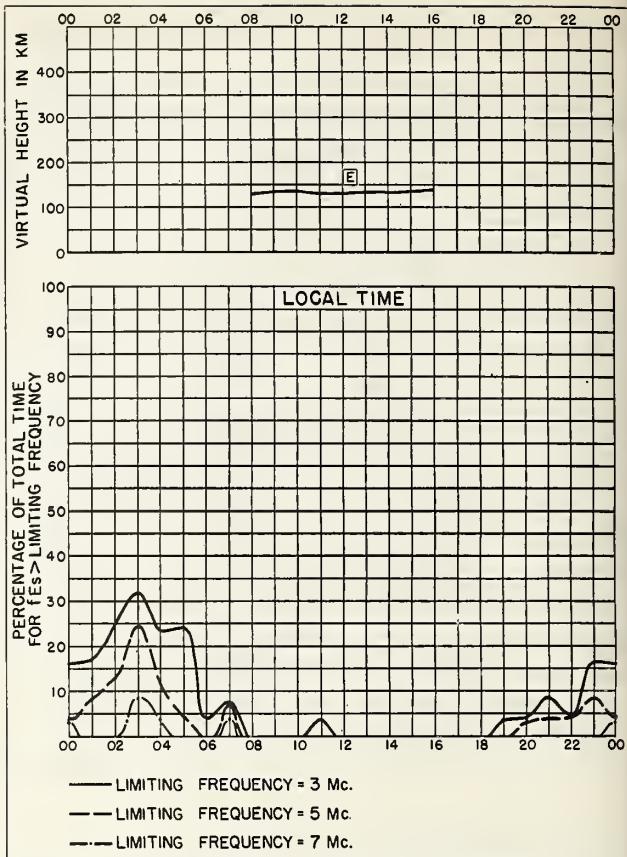
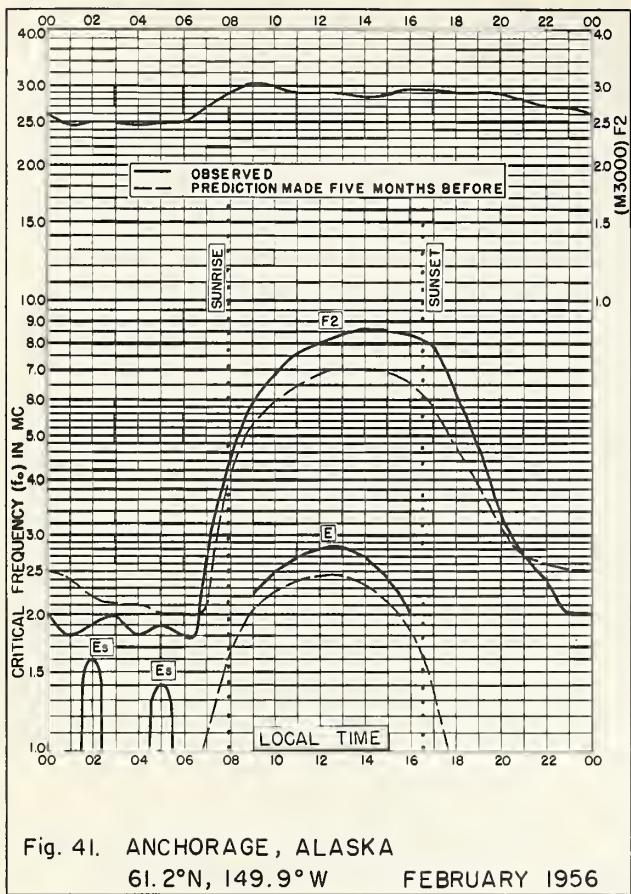
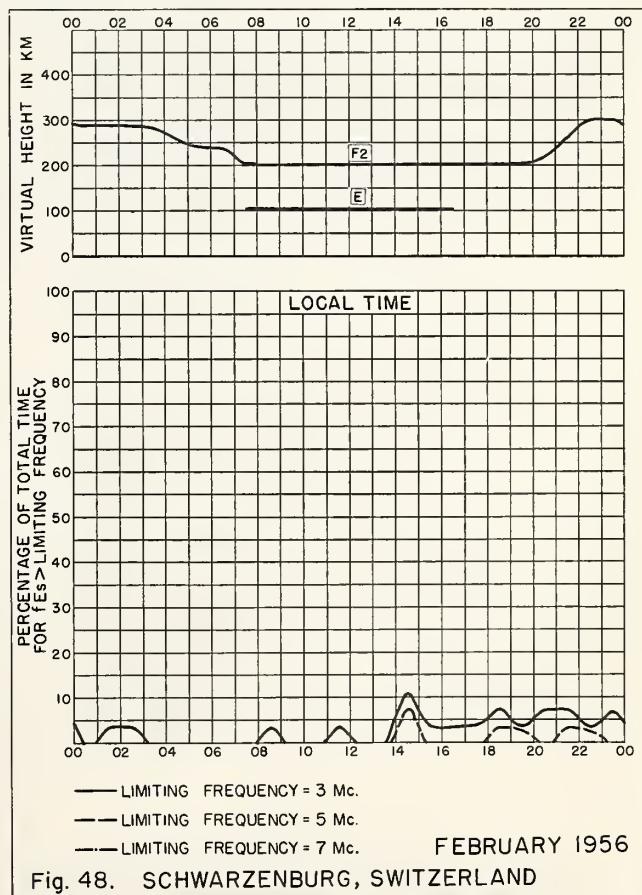
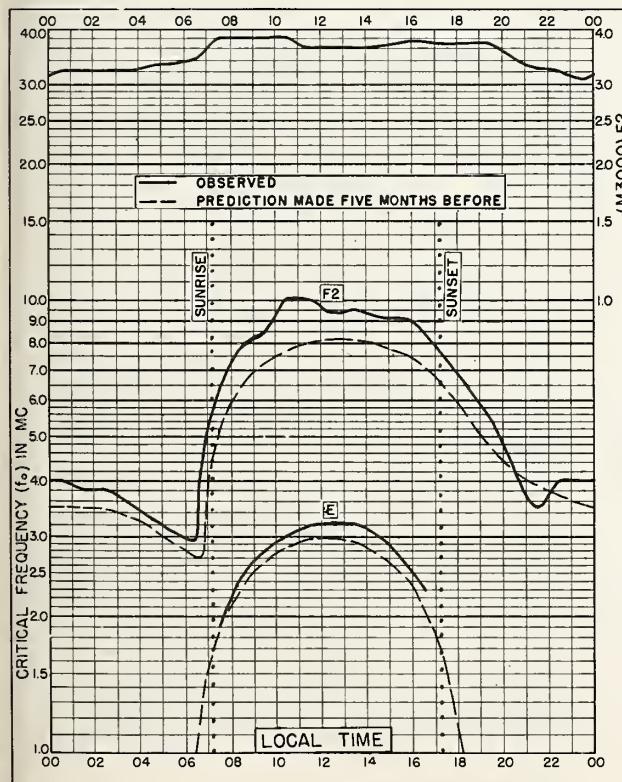
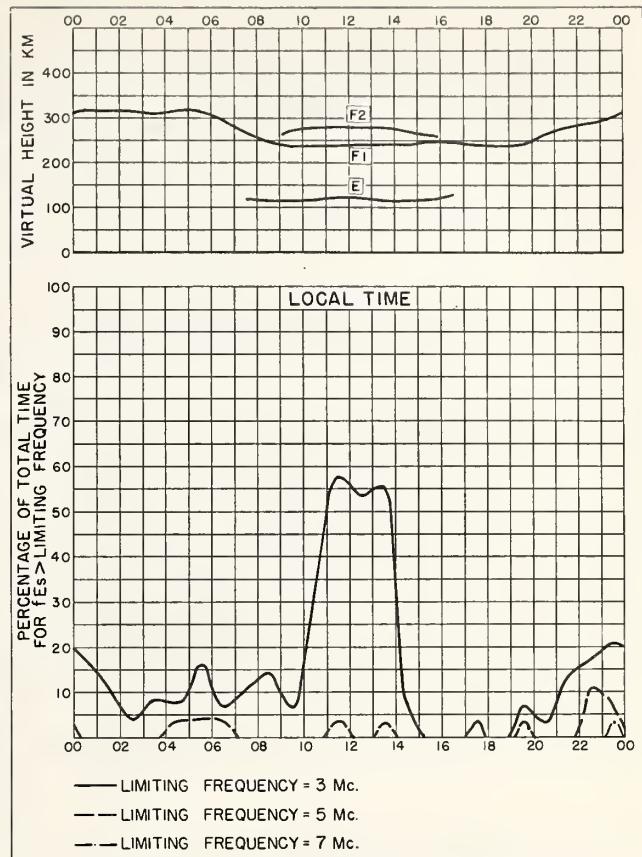
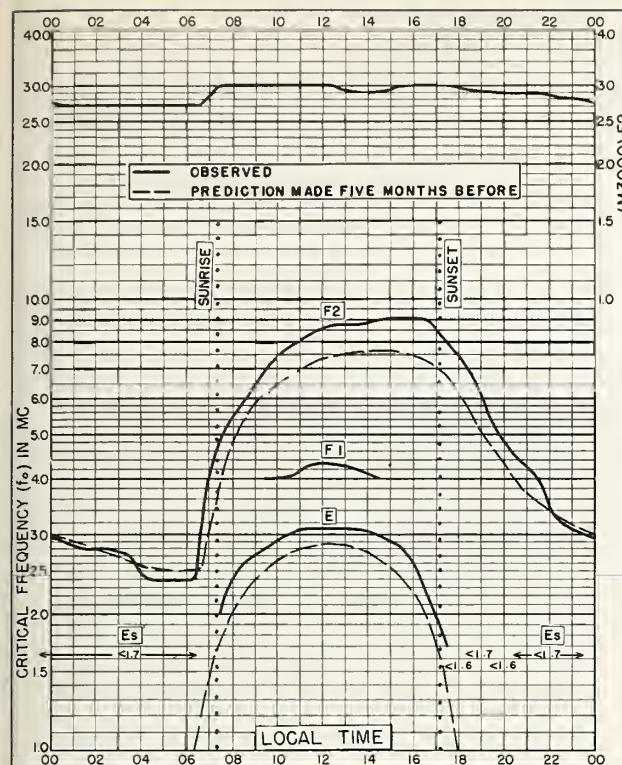


Fig. 39. KIRUNA, SWEDEN
67.8°N, 20.3°E FEBRUARY 1956







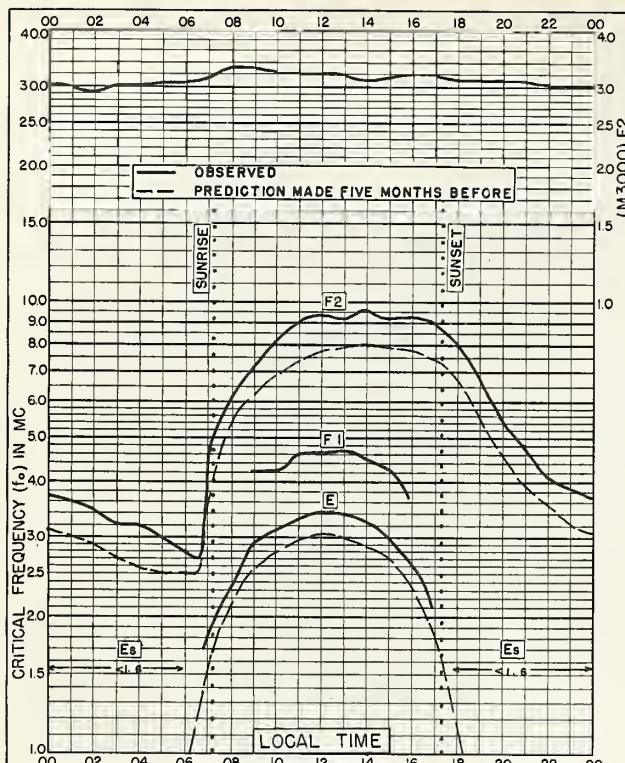


Fig. 49. OTTAWA, CANADA
45.4°N, 75.9°W FEBRUARY 1956

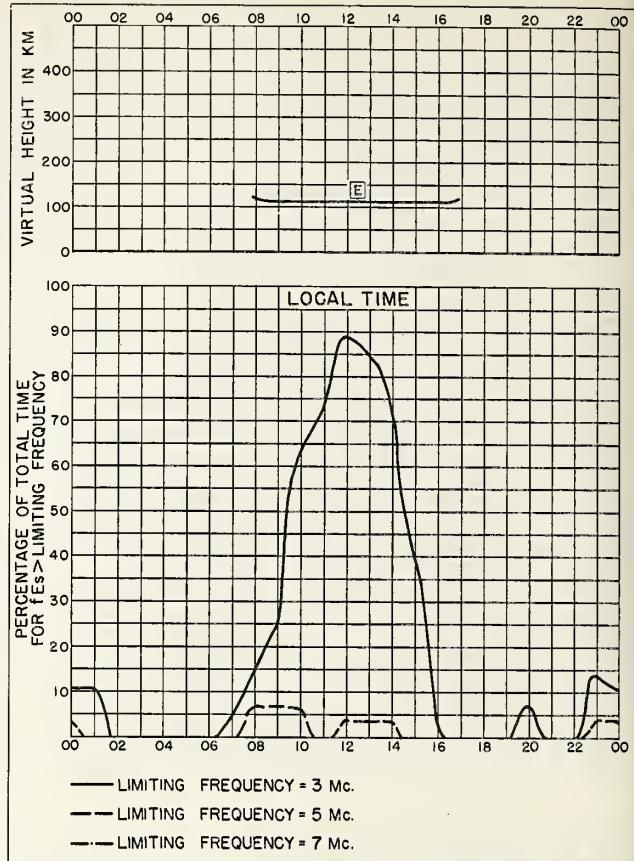


Fig. 50. OTTAWA, CANADA FEBRUARY 1956

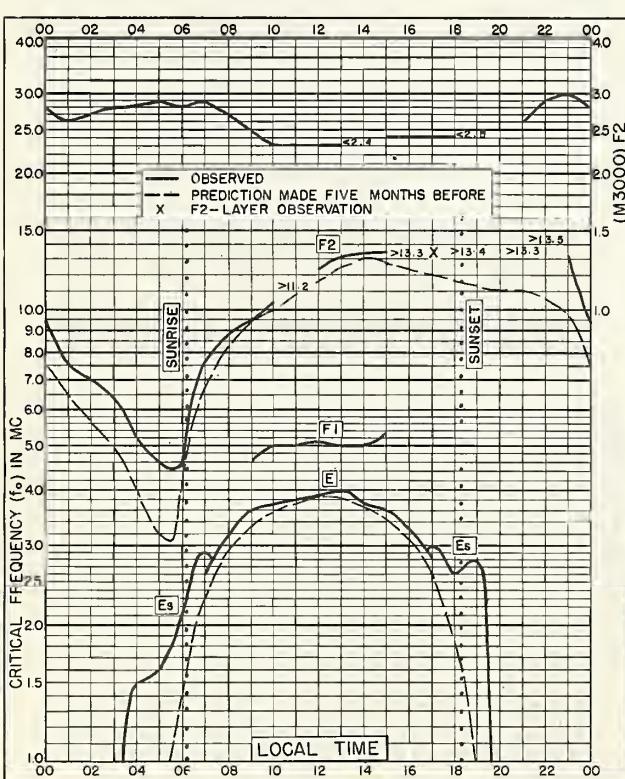
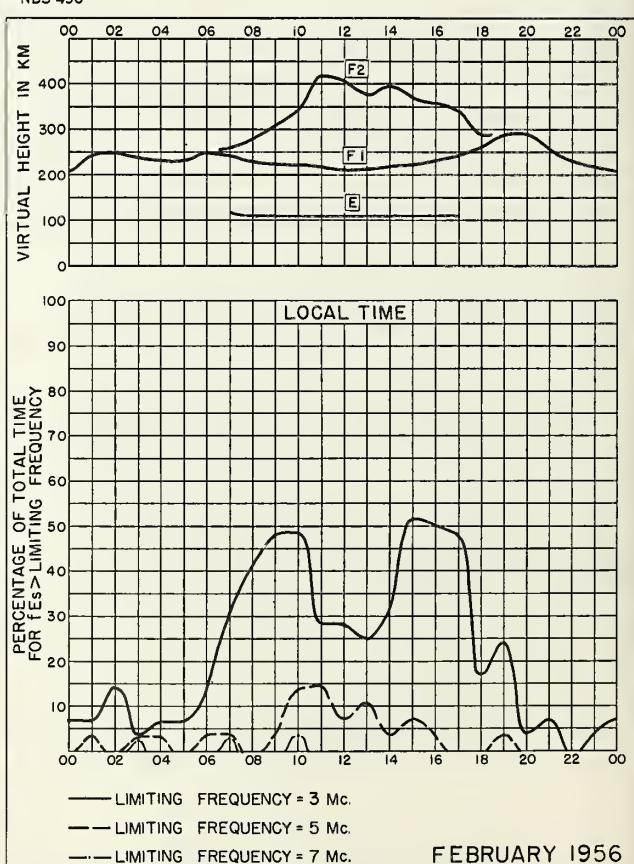
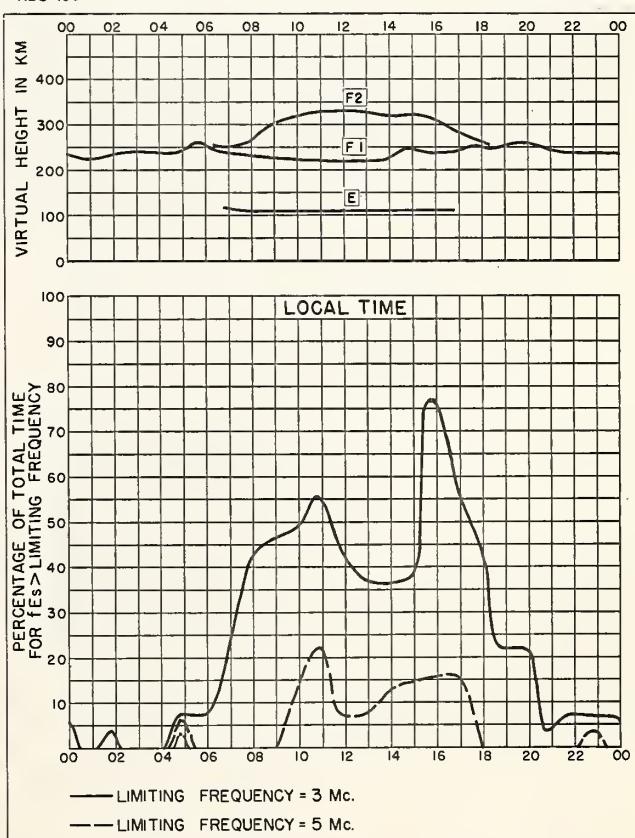
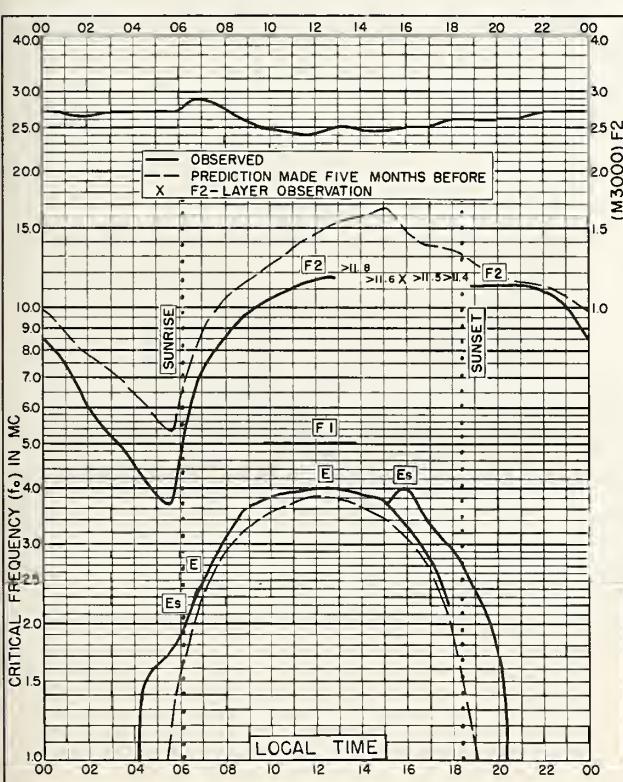
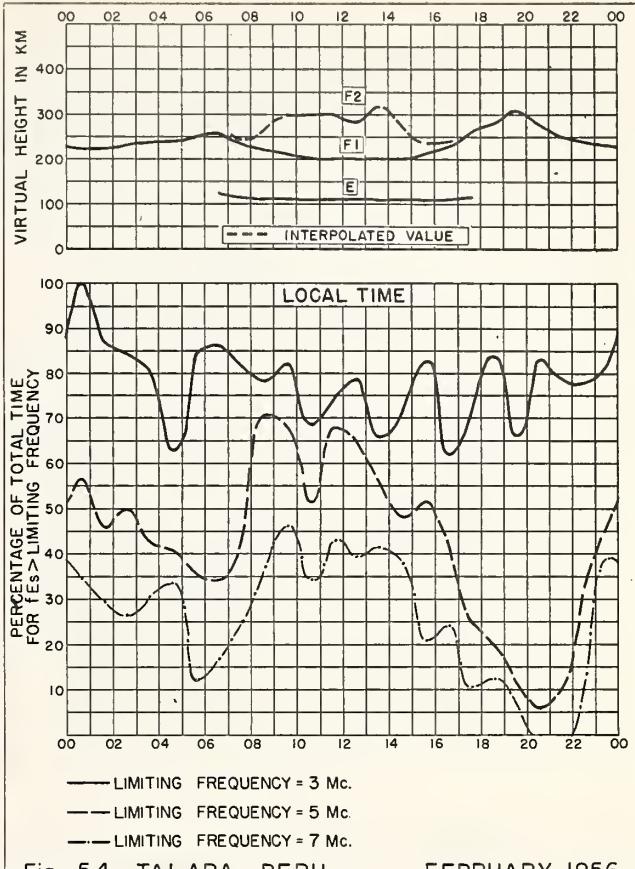
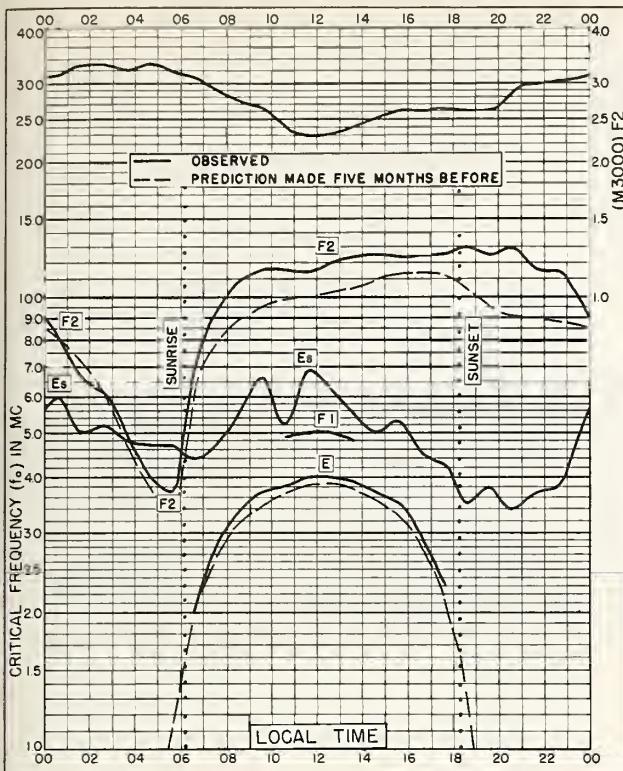
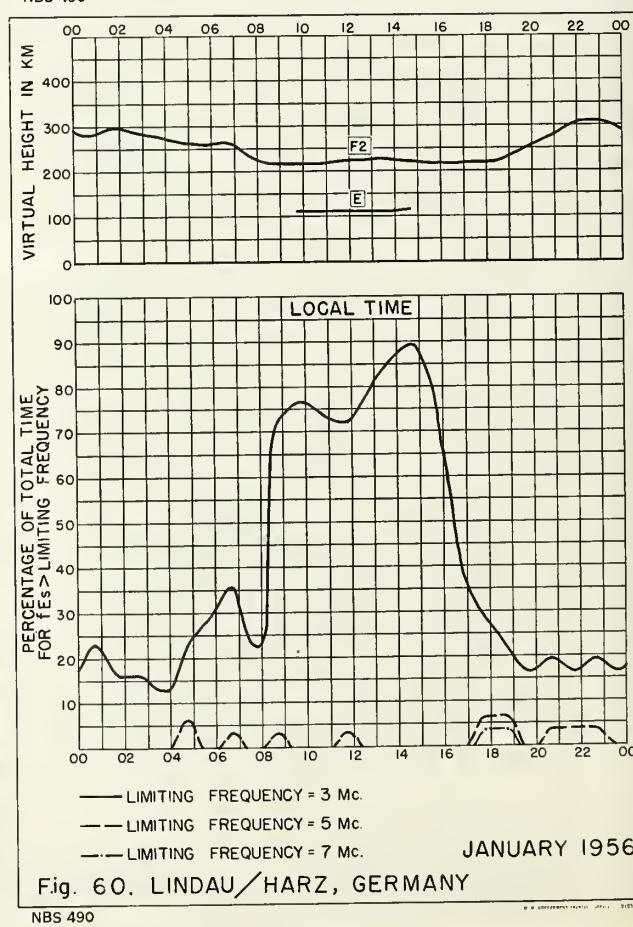
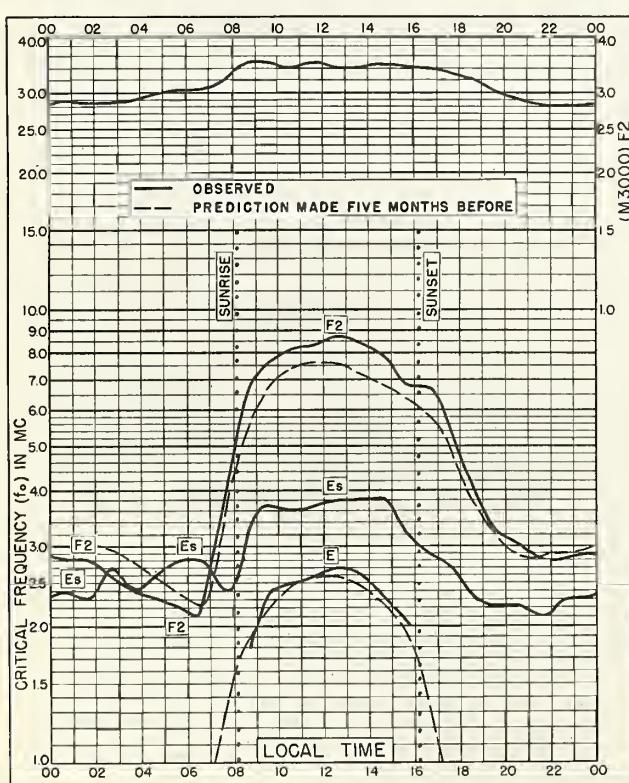
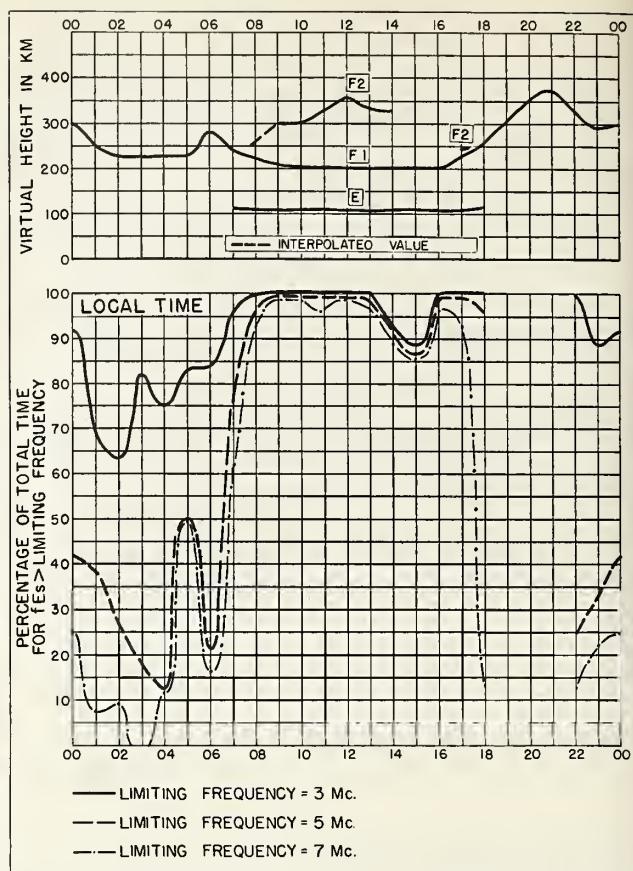
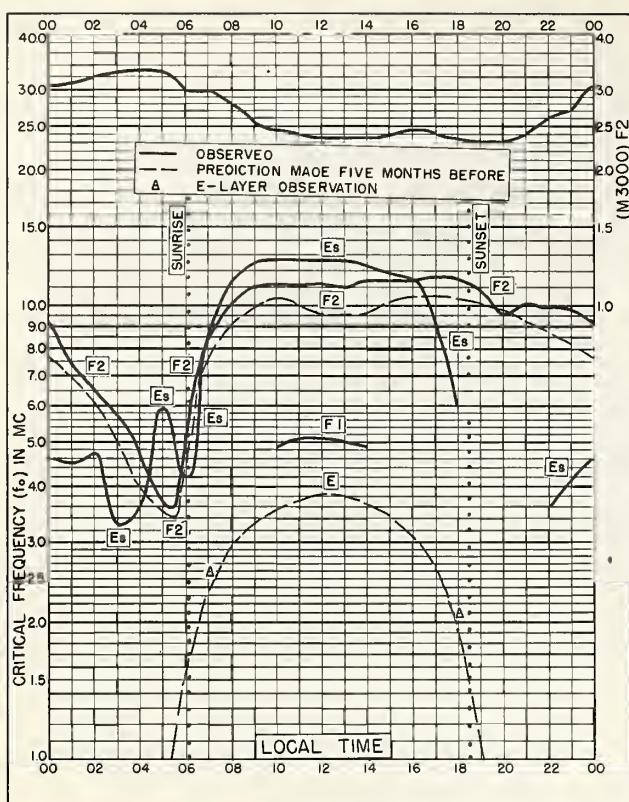


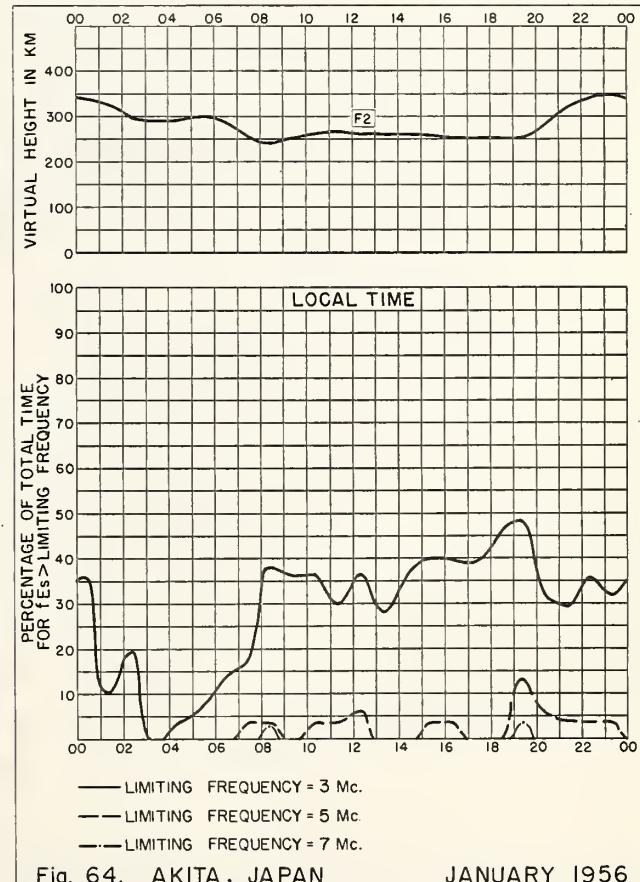
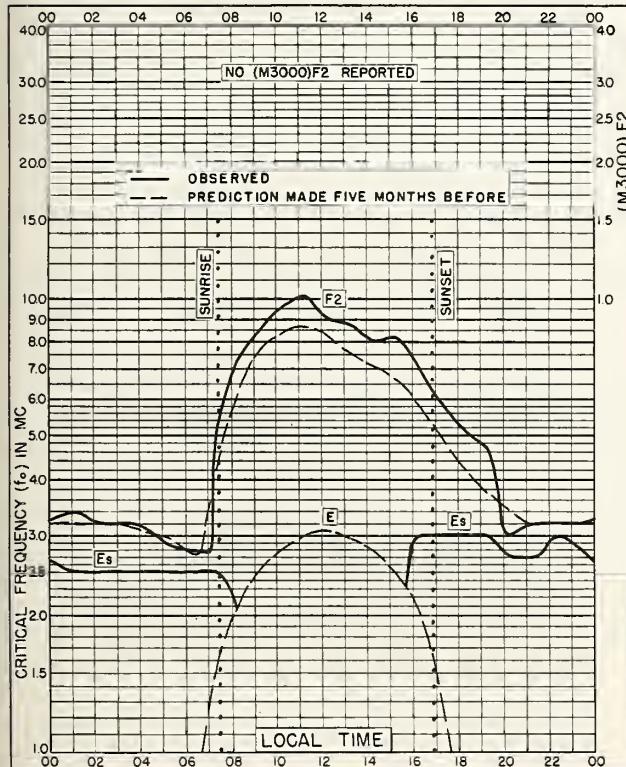
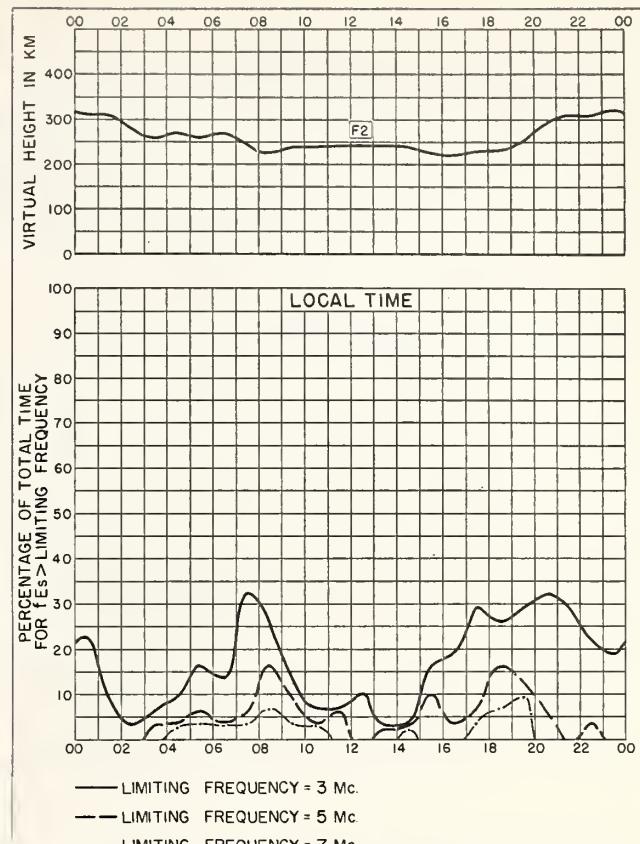
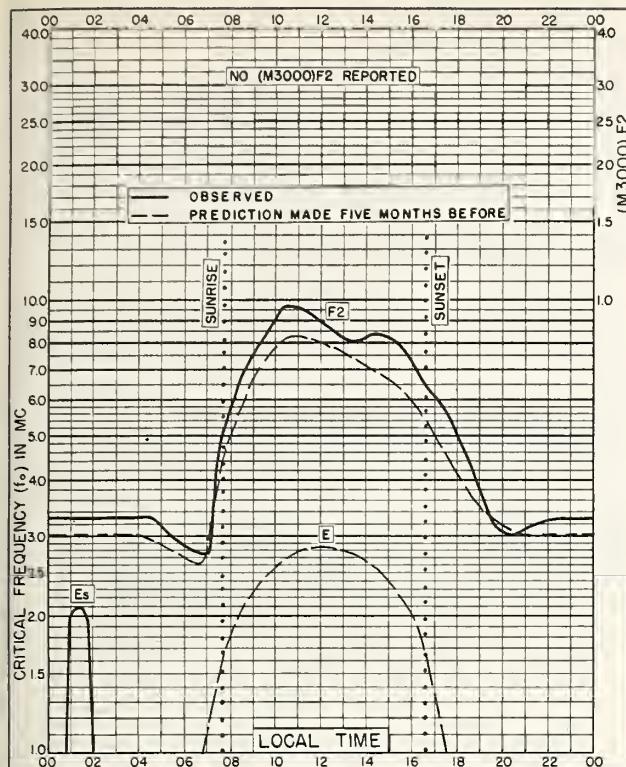
Fig. 51. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E FEBRUARY 1956



FEBRUARY 1956
Fig. 52. LEOPOLDVILLE, BELGIAN CONGO







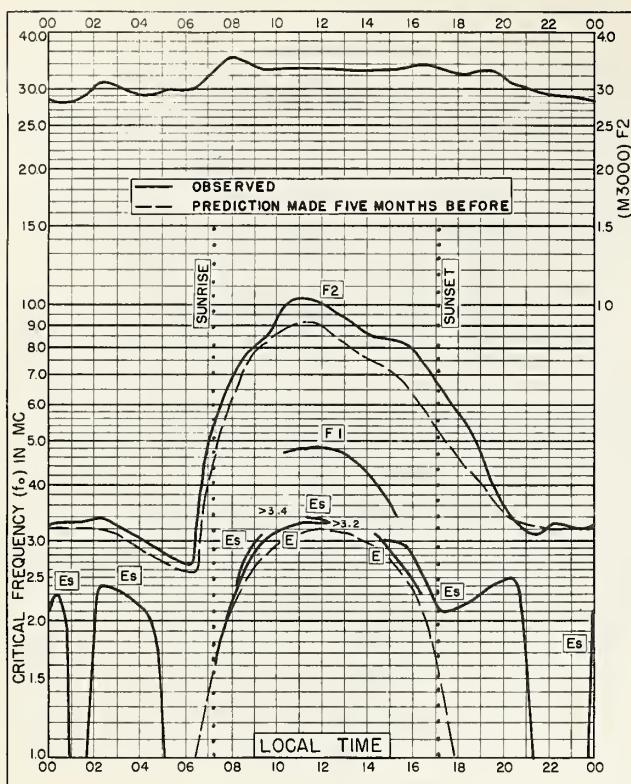


Fig. 65. TOKYO, JAPAN
35.7°N, 139.5°E JANUARY 1956

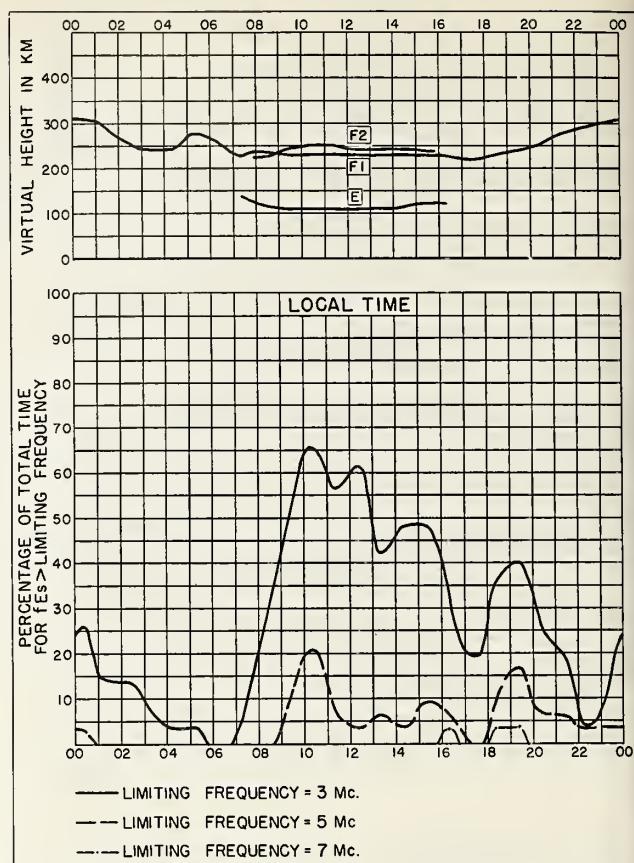


Fig. 66. TOKYO, JAPAN JANUARY 1956

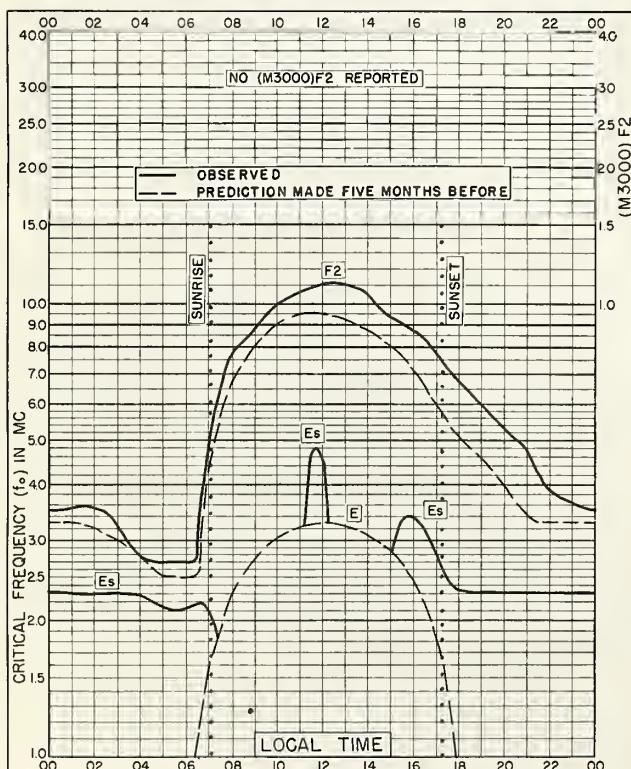


Fig. 67. YAMAGAWA, JAPAN
31.2°N, 130.6°E JANUARY 1956

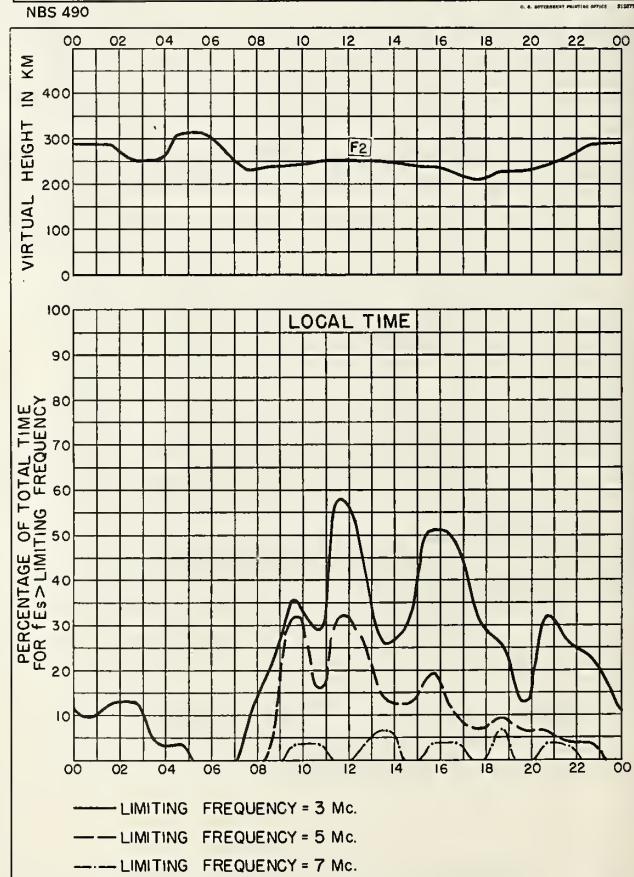
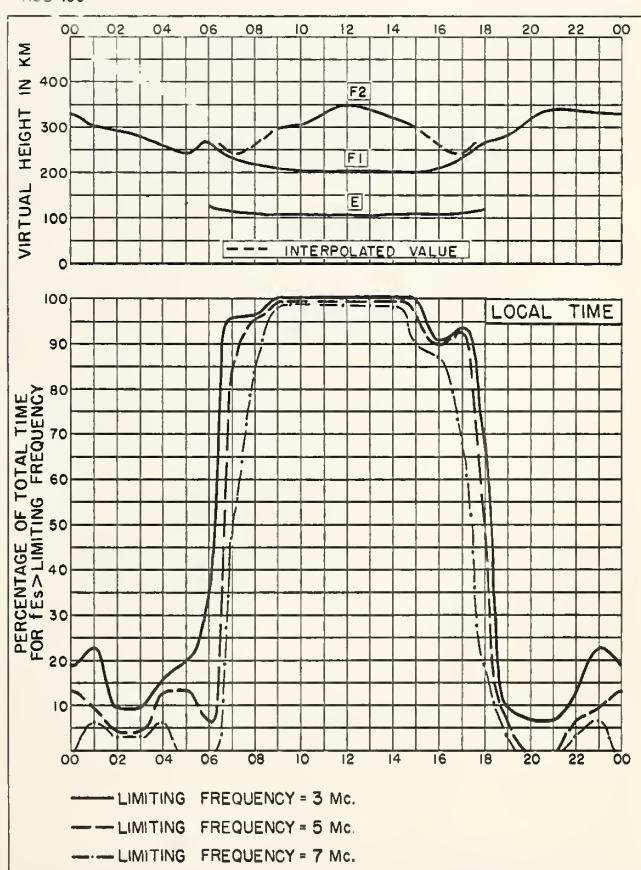
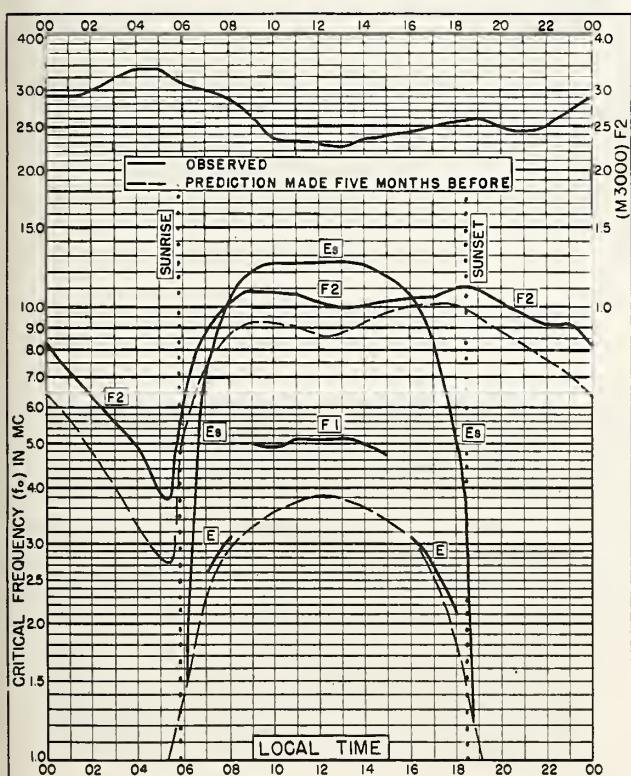
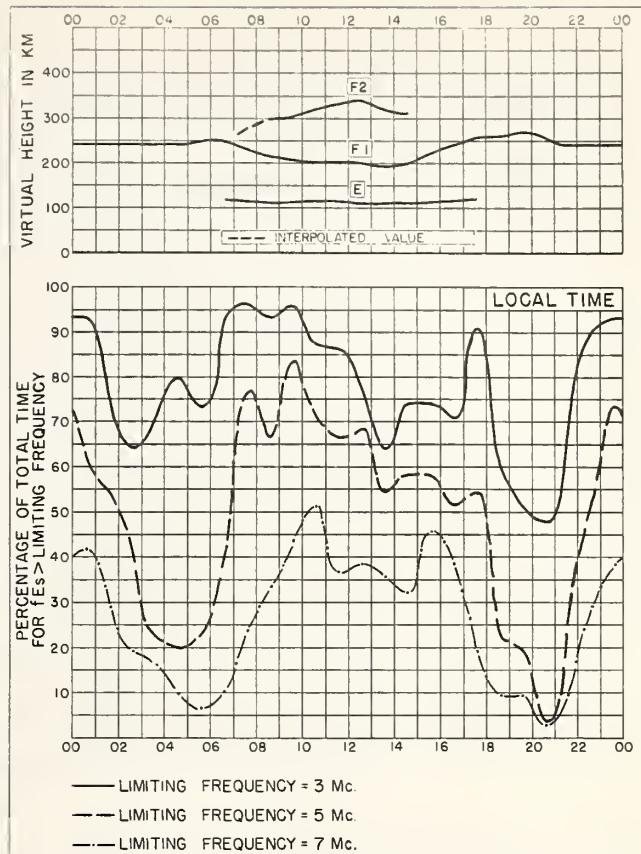
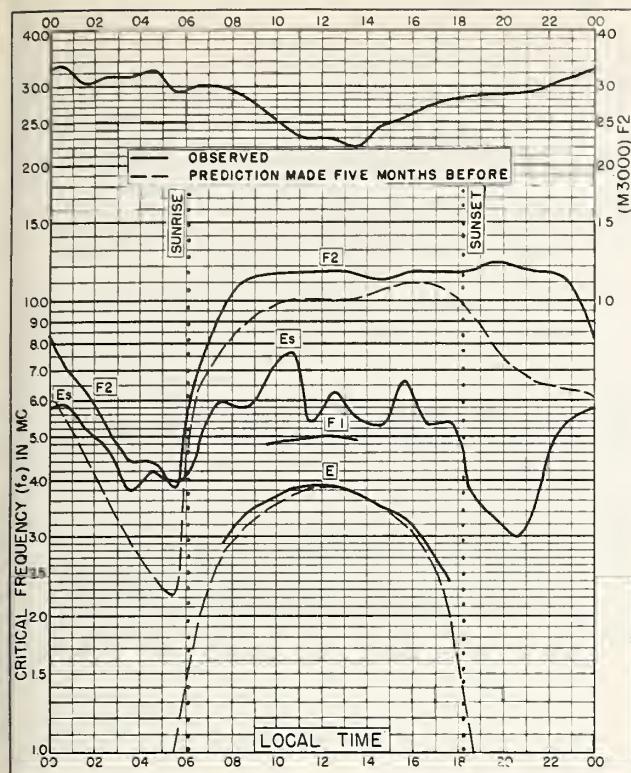
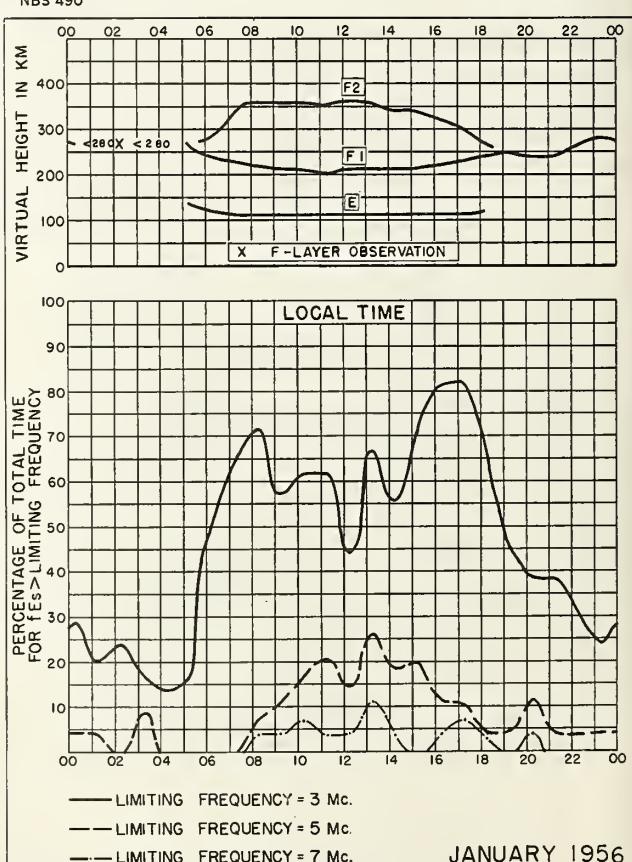
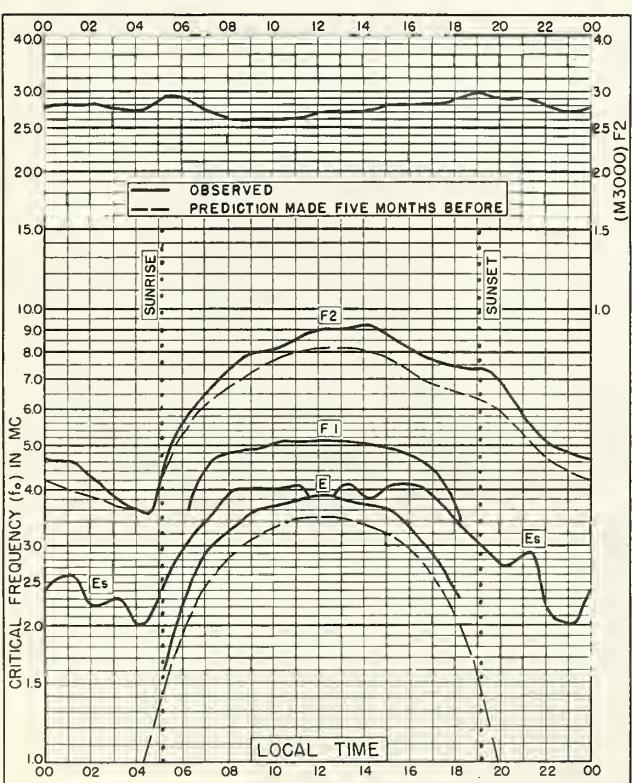
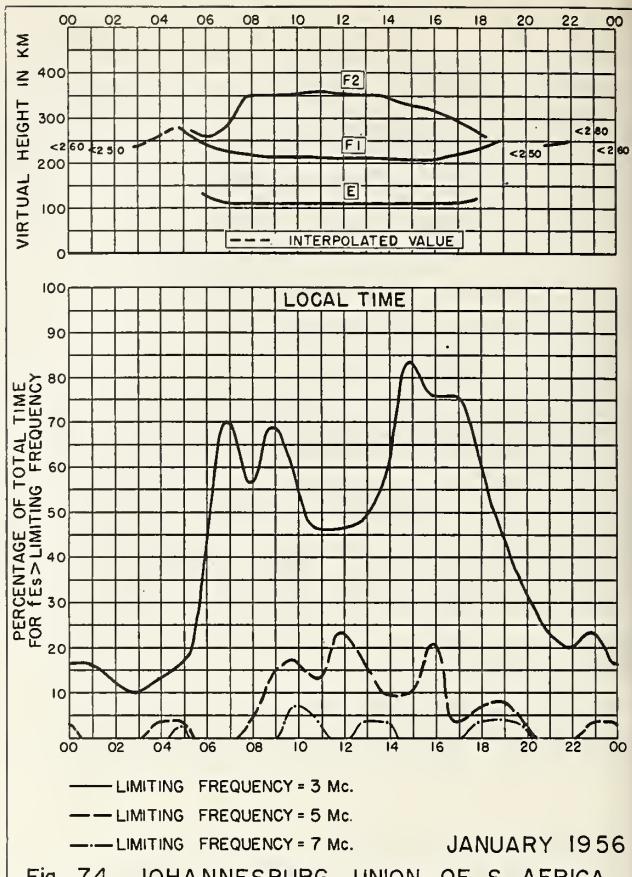
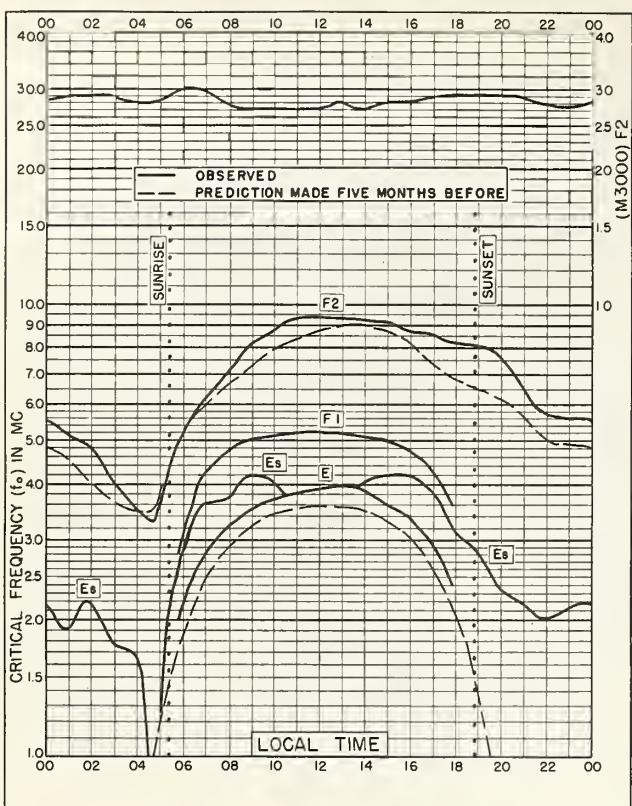


Fig. 68. YAMAGAWA, JAPAN JANUARY 1956





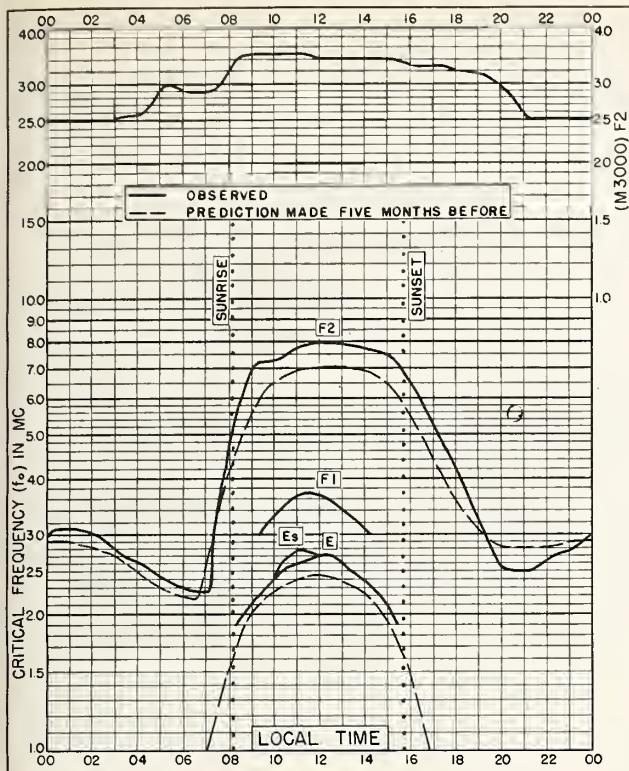


Fig. 77. De BILT, HOLLAND
52.1°N, 5.2°E DECEMBER 1955

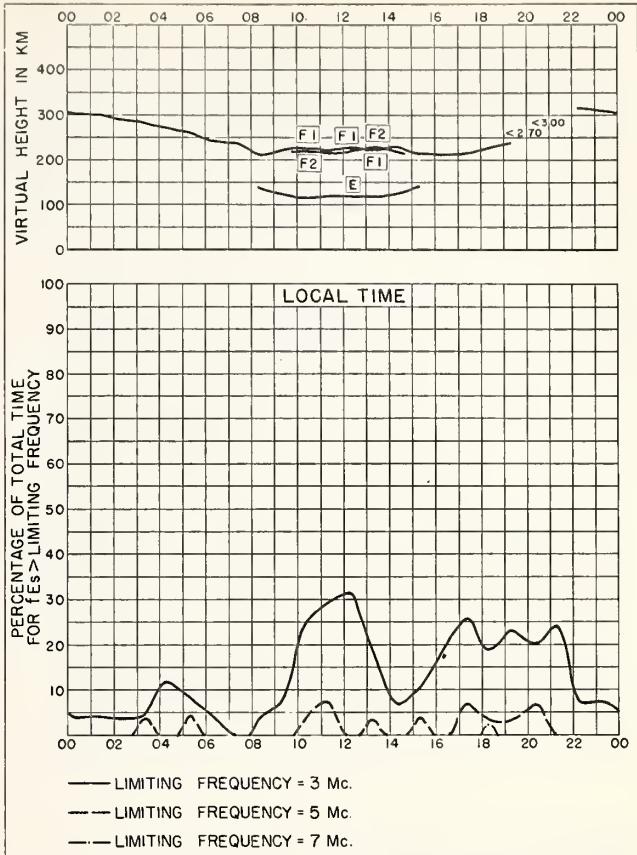


Fig. 78. De BILT, HOLLAND DECEMBER 1955

NBS 490

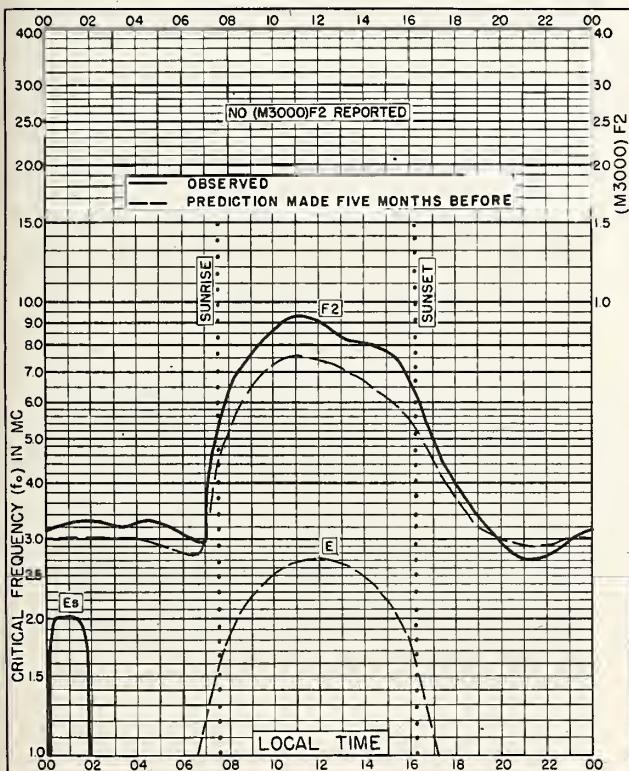


Fig. 79. WAKKANAI, JAPAN
45.4°N, 141.7°E DECEMBER 1955

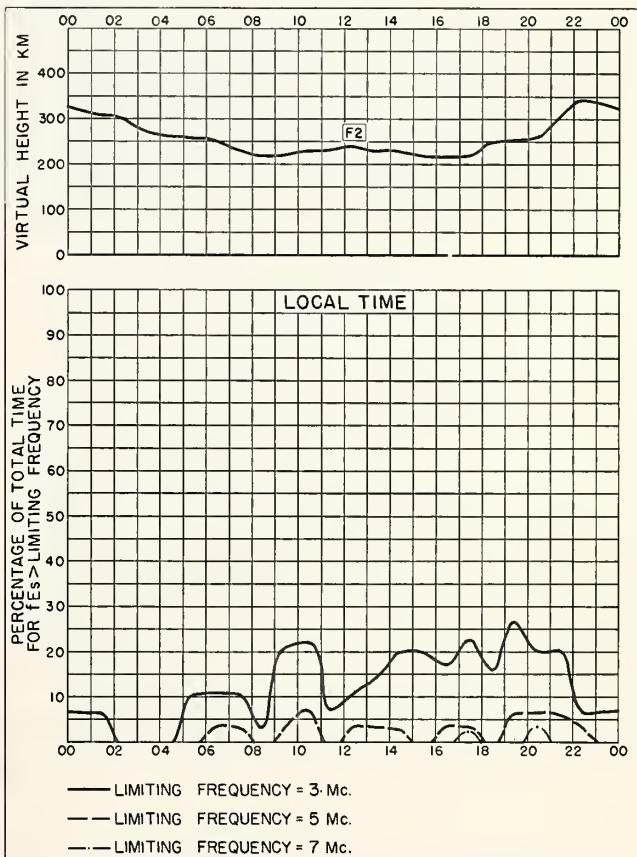
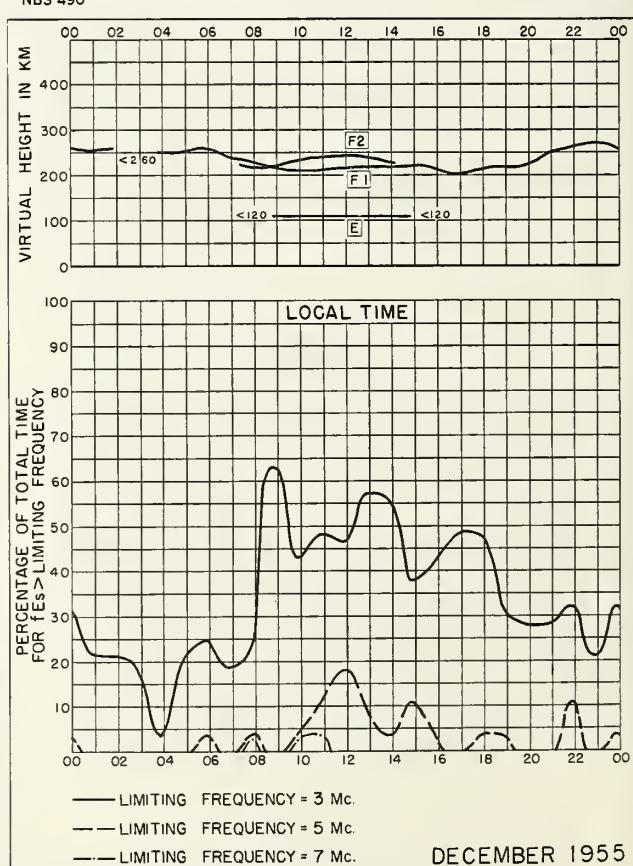
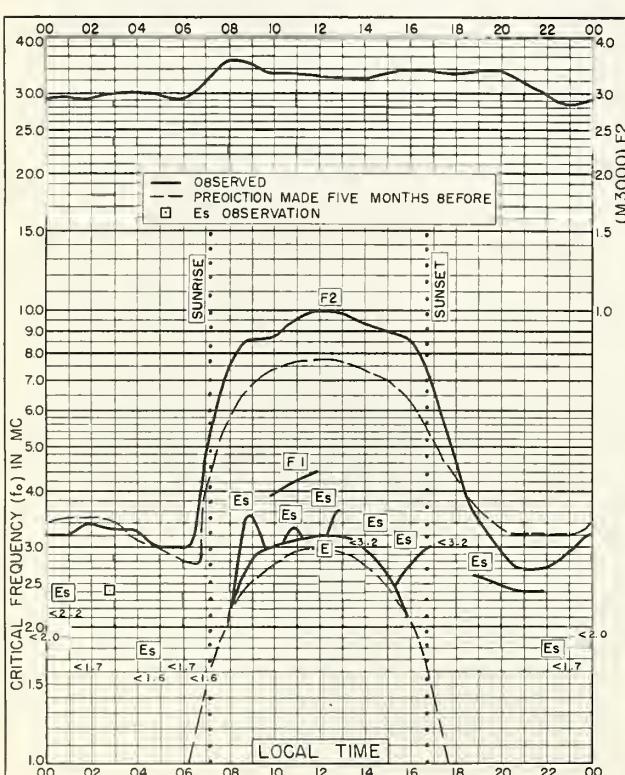
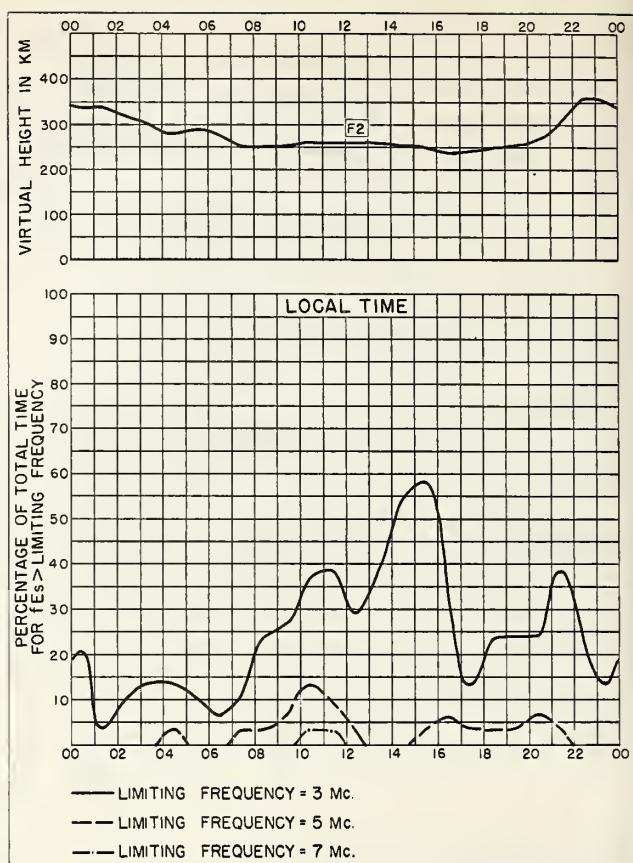
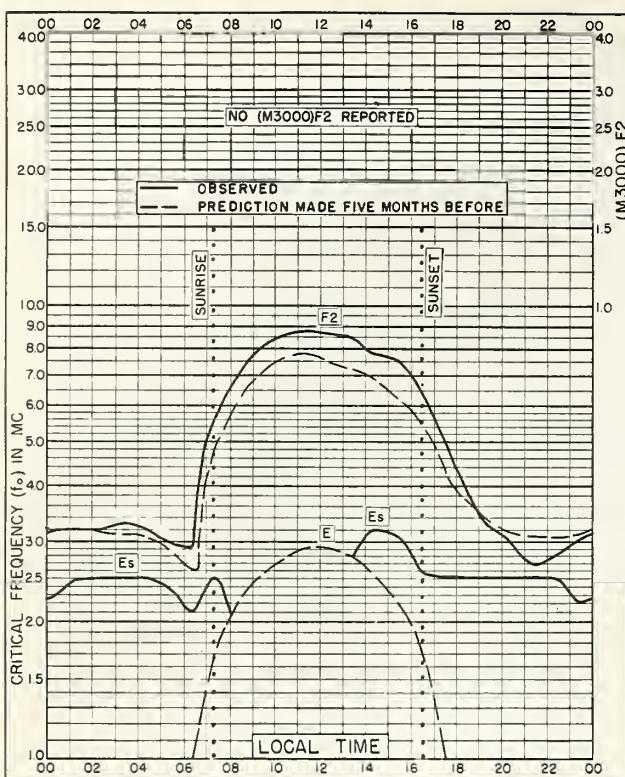


Fig. 80. WAKKANAI, JAPAN DECEMBER 1955

NBS 490



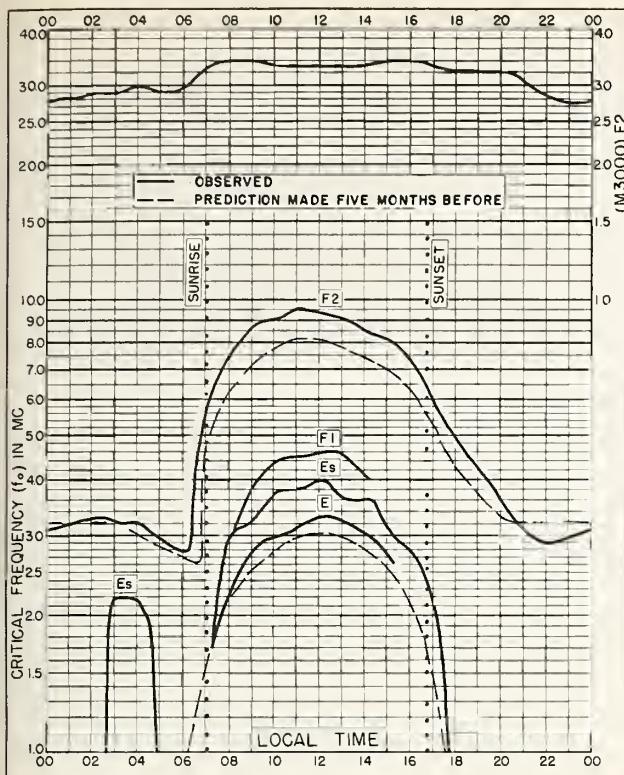


Fig. 85. TOKYO, JAPAN
35.7°N, 139.5°E DECEMBER 1955

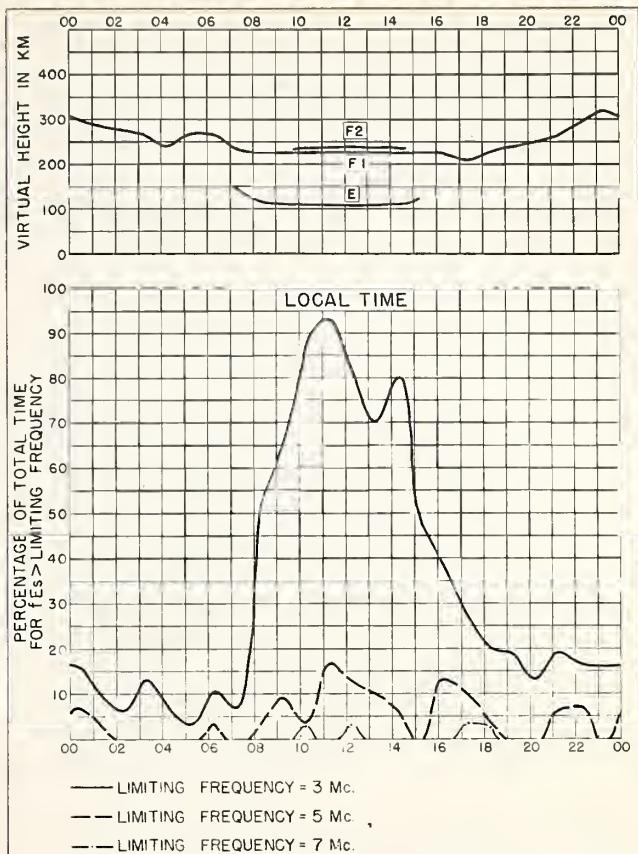


Fig. 86. TOKYO, JAPAN DECEMBER 1955

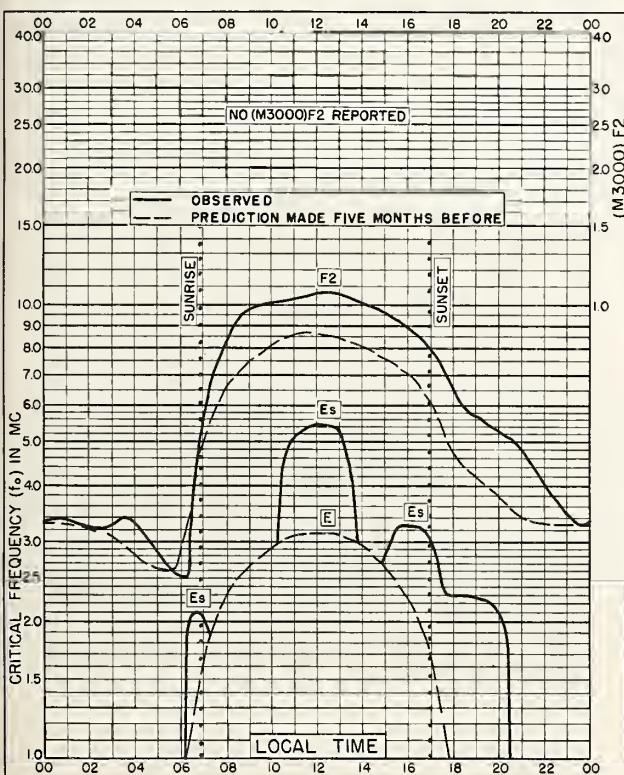


Fig. 87. YAMAGAWA, JAPAN
31.2°N, 130.6°E DECEMBER 1955

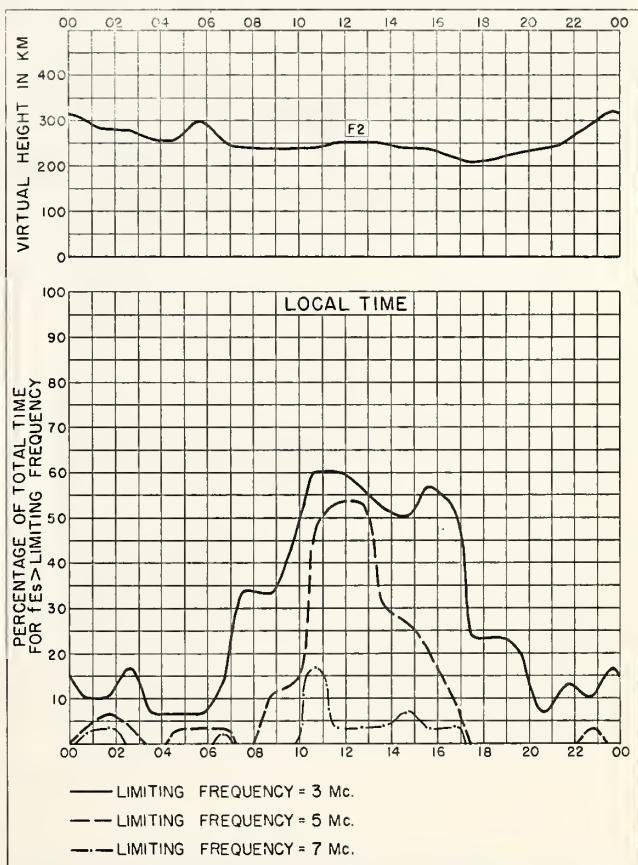


Fig. 88. YAMAGAWA, JAPAN DECEMBER 1955

NBS 490

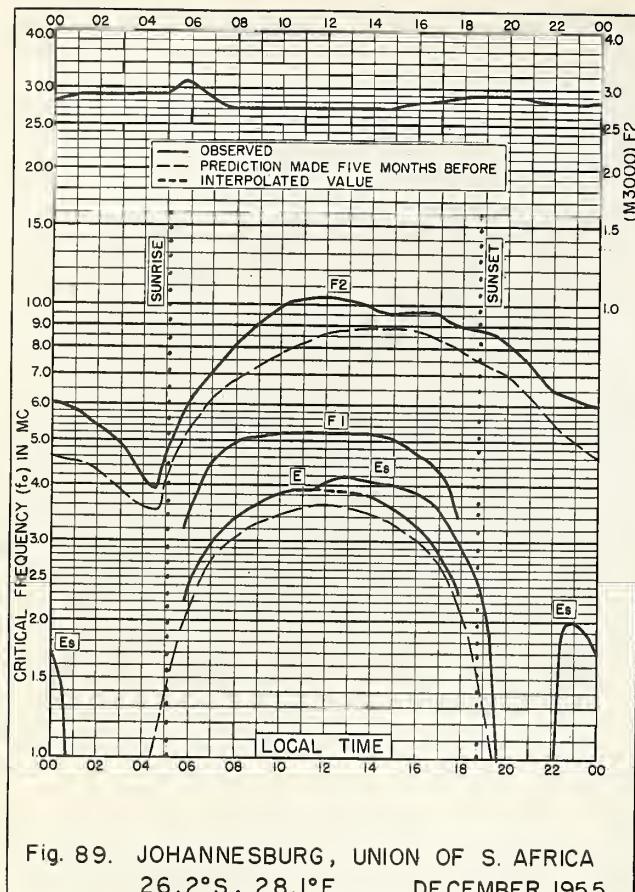


Fig. 89. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.1°E DECEMBER 1955

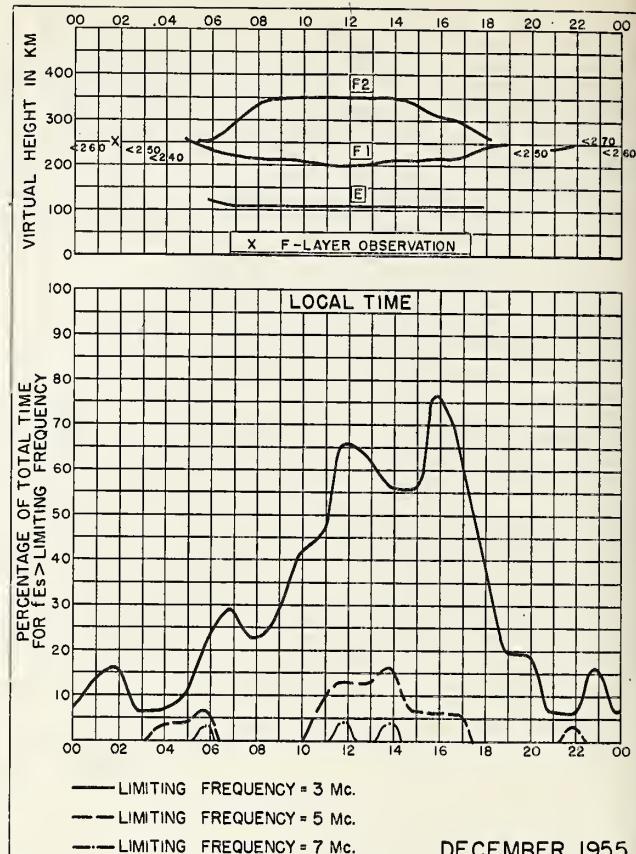


Fig. 90. JOHANNESBURG, UNION OF S. AFRICA
NBS 490 DECEMBER 1955

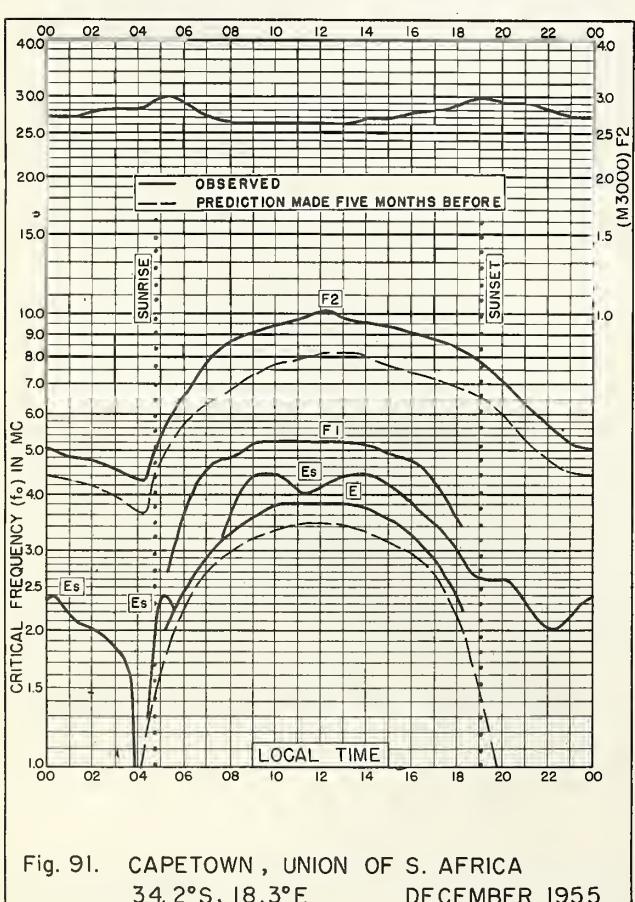


Fig. 91. CAPETOWN, UNION OF S. AFRICA
34.2°S, 18.3°E DECEMBER 1955

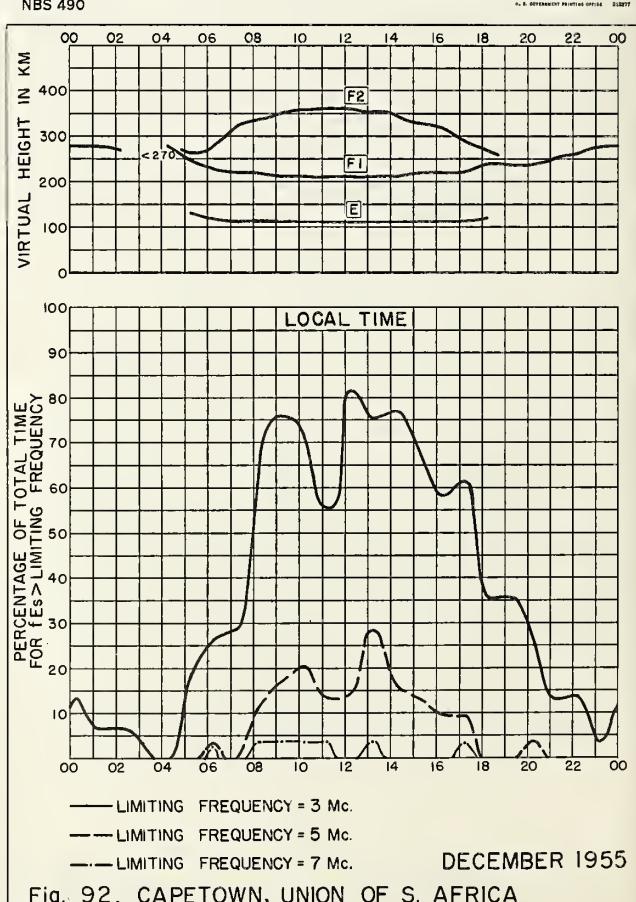


Fig. 92. CAPETOWN, UNION OF S. AFRICA
NBS 490 DECEMBER 1955

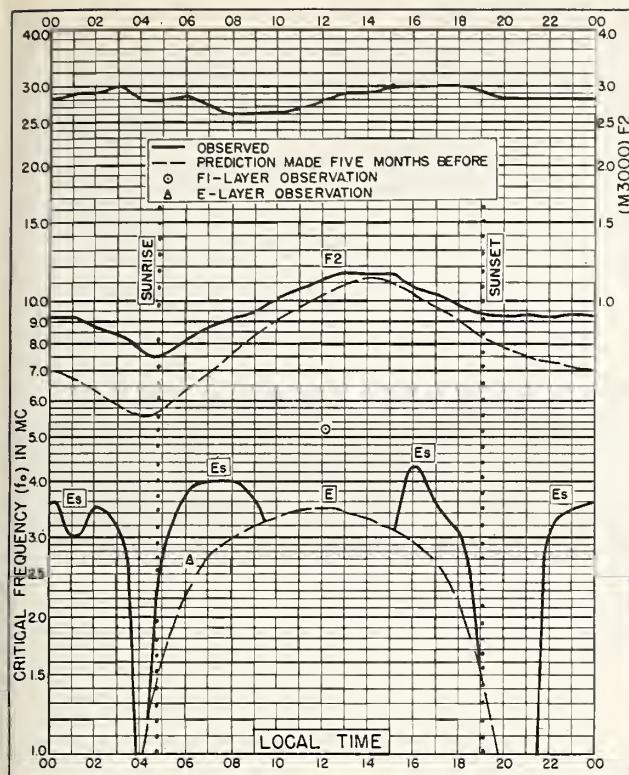
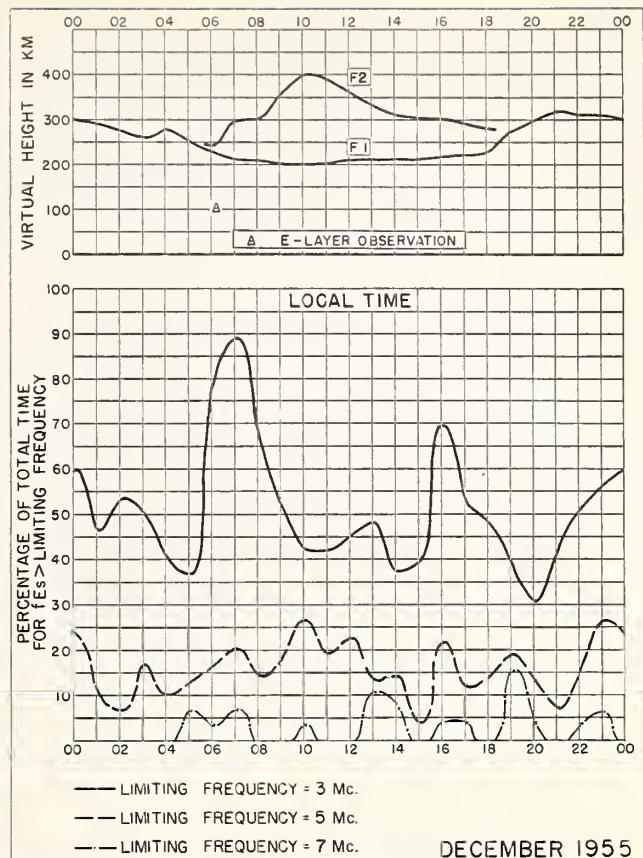


Fig. 93. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W DECEMBER 1955



NBS 490

Fig. 94. BUENOS AIRES, ARGENTINA

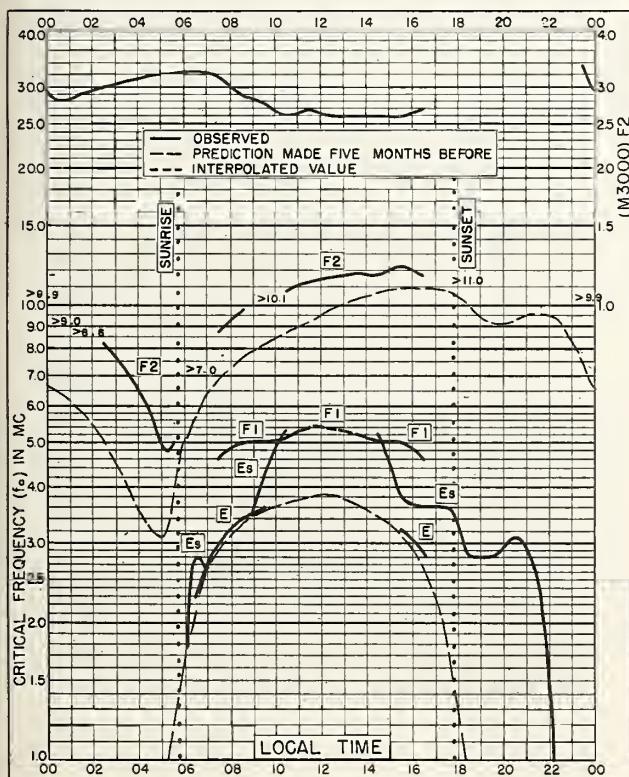
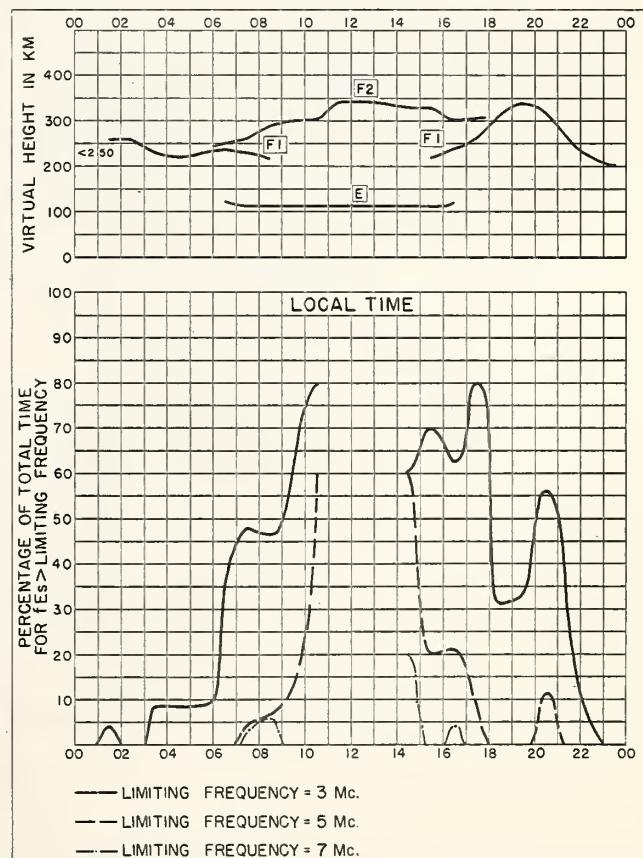
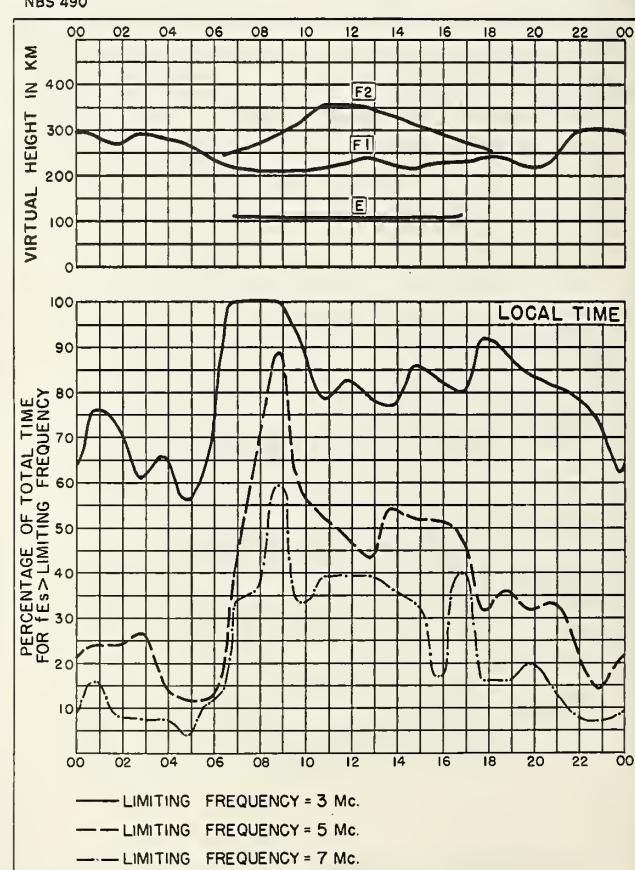
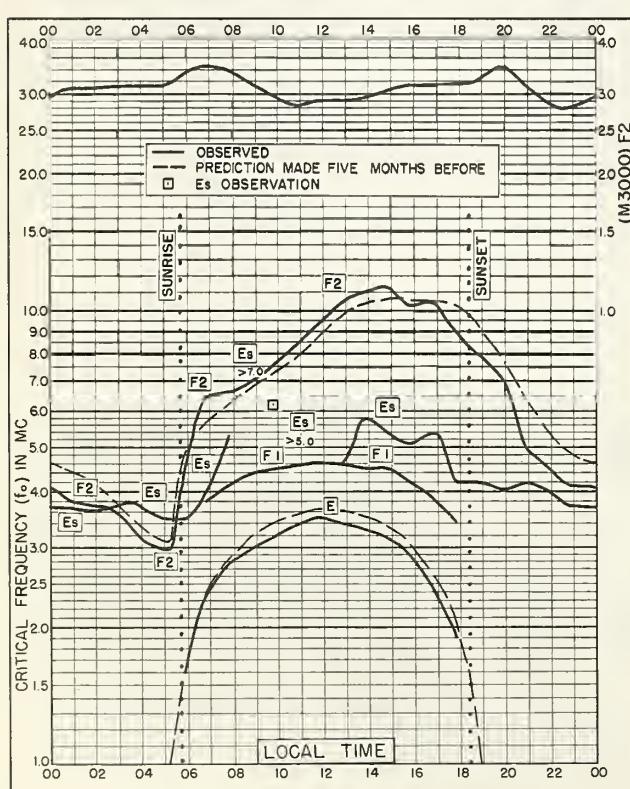
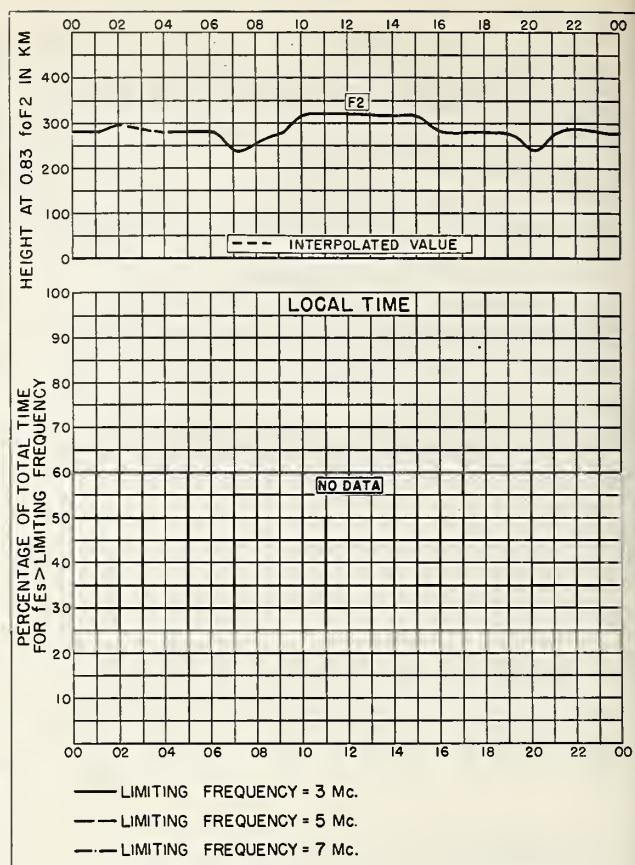
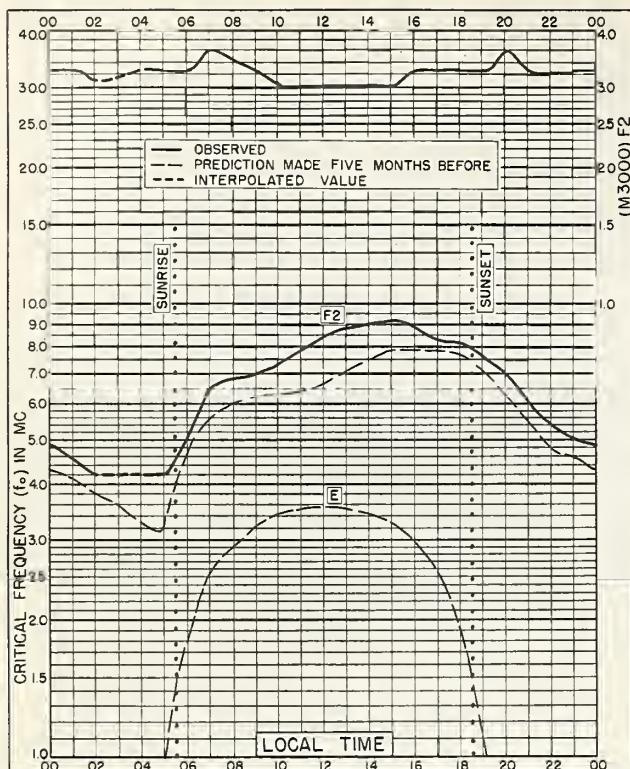


Fig. 95. NAIROBI, KENYA
1.3°S, 36.8°E NOVEMBER 1955



NBS 490



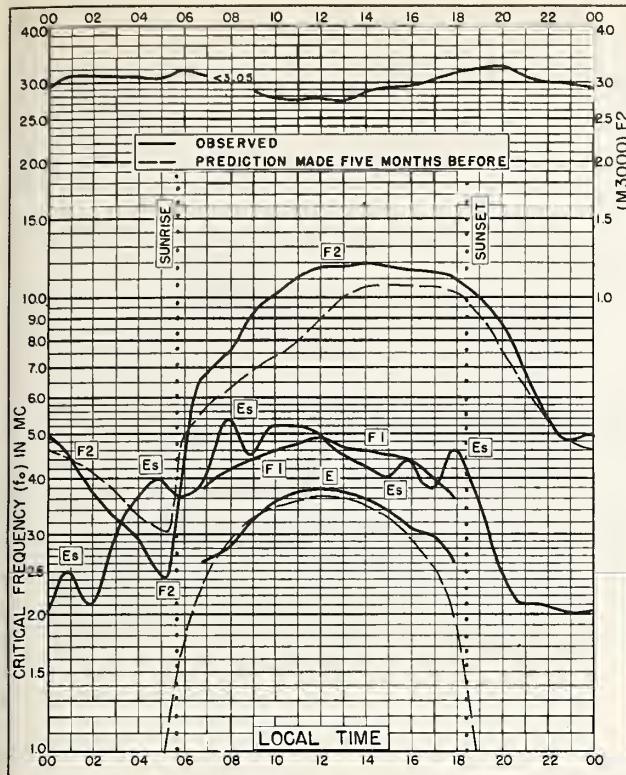


Fig. 101. CALCUTTA, INDIA
22.9°N, 88.5°E AUGUST 1955

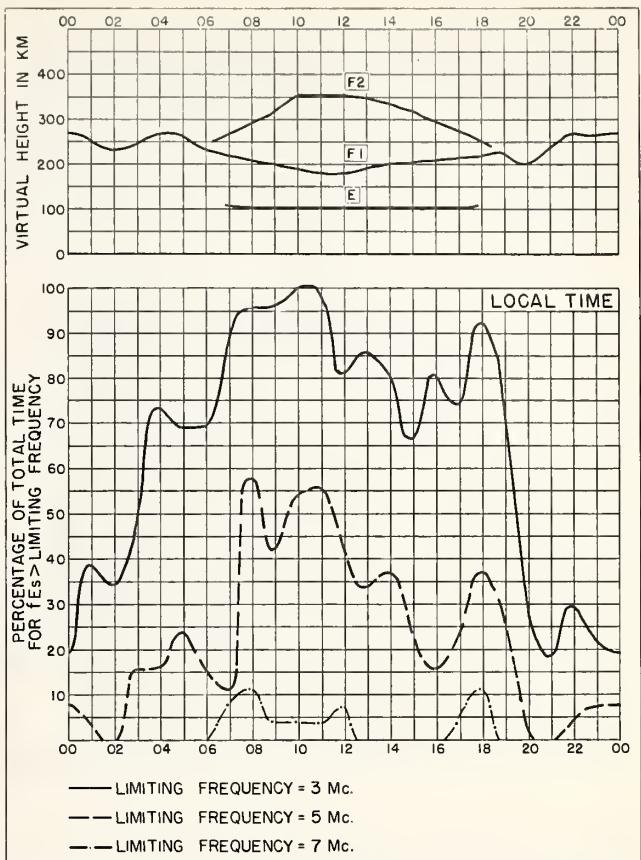


Fig. 102. CALCUTTA, INDIA AUGUST 1955

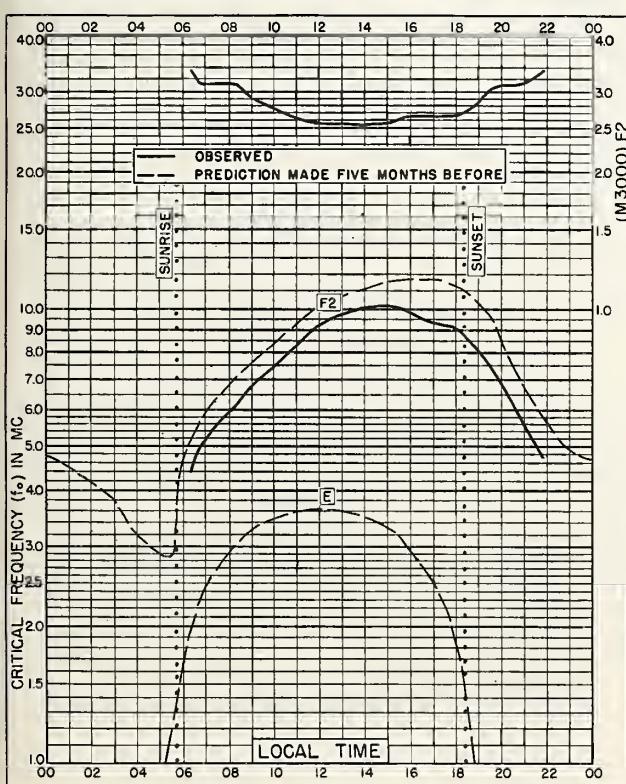


Fig. 103. BOMBAY, INDIA
19.0°N, 73.0°E AUGUST 1955

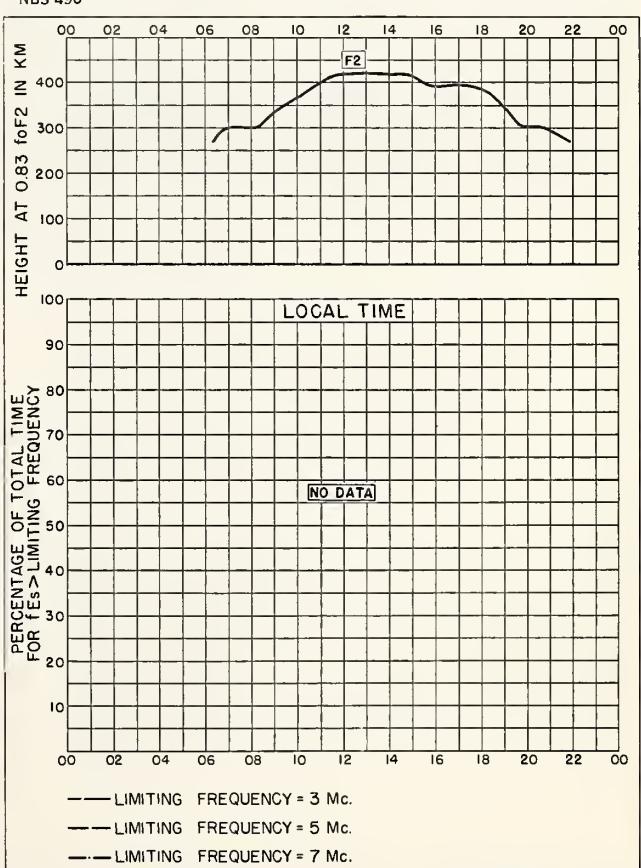


Fig. 104. BOMBAY, INDIA AUGUST 1955

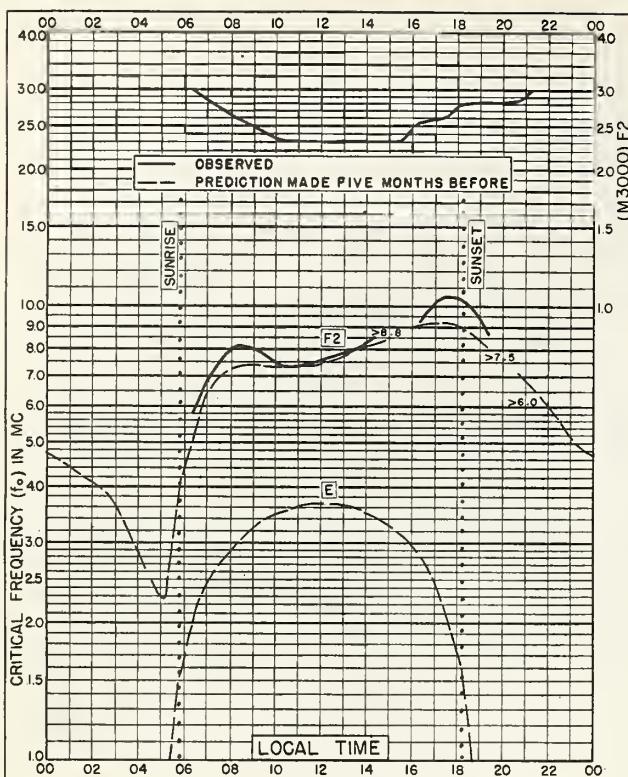


Fig. 105. MADRAS, INDIA
13.0°N, 80.2°E AUGUST 1955

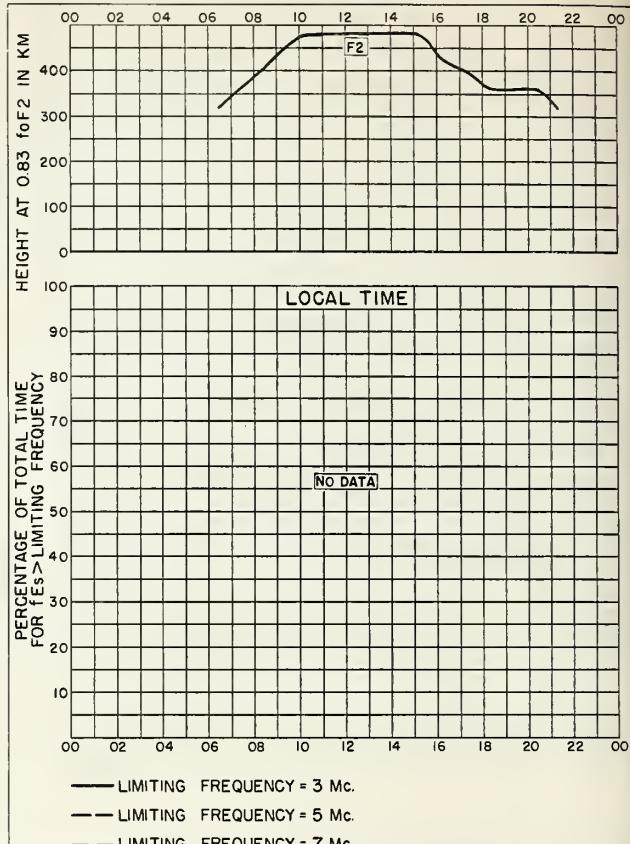


Fig. 106. MADRAS, INDIA AUGUST 1955

NBS 490

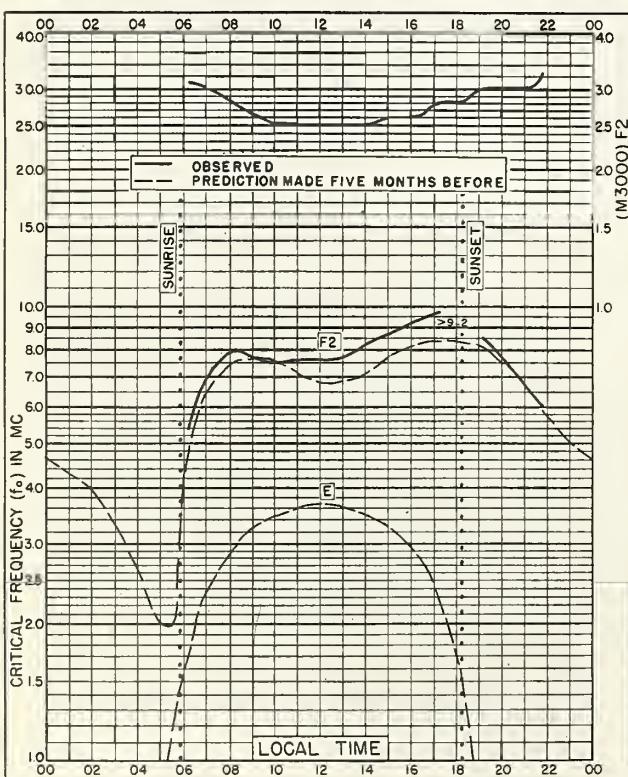


Fig. 107. TIRUCHY, INDIA
10.8°N, 78.8°E AUGUST 1955

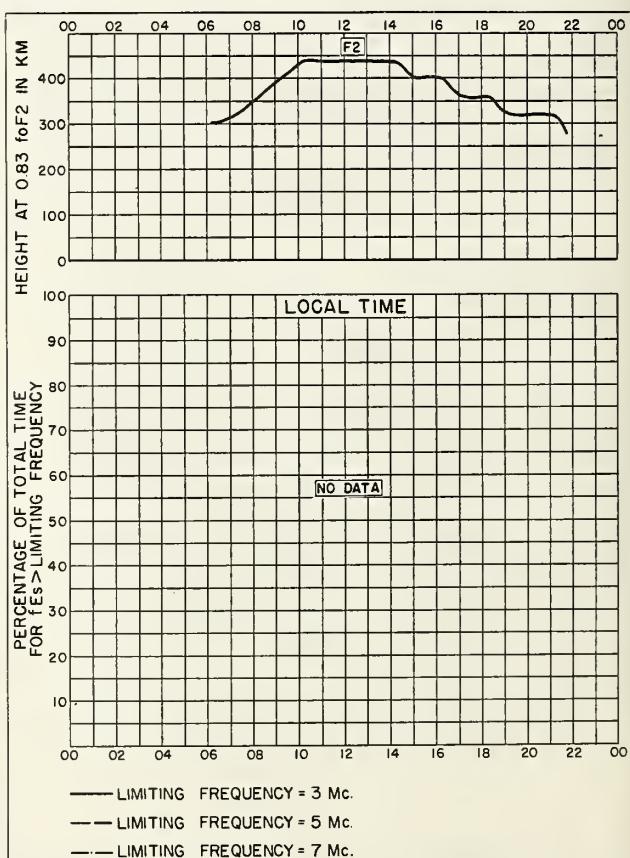
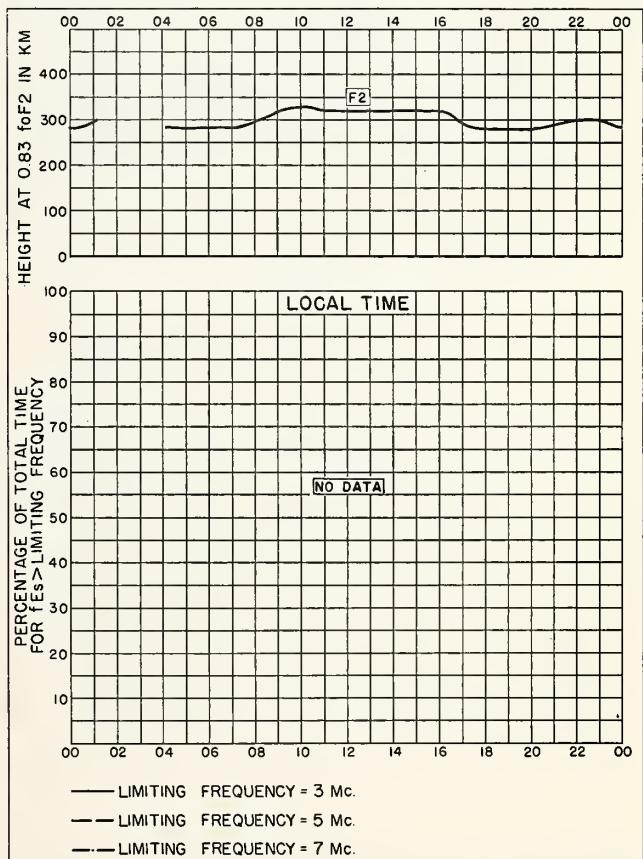
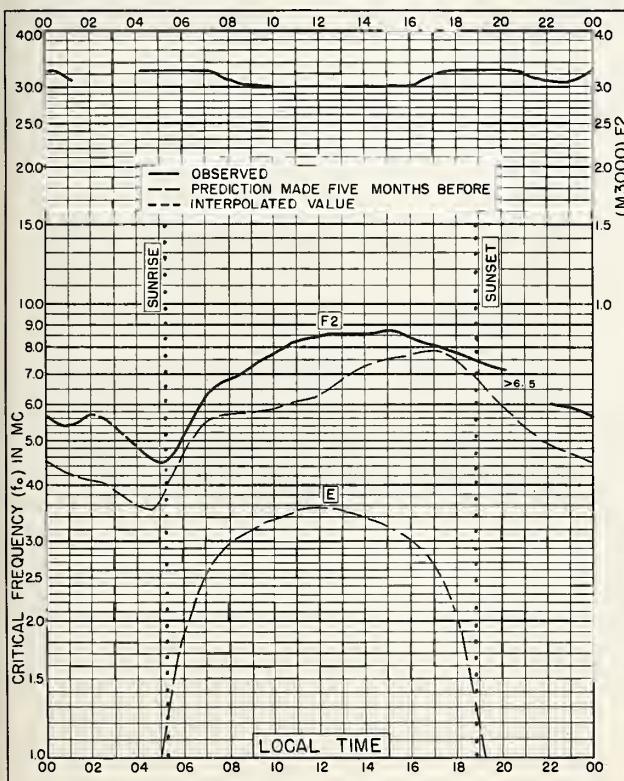
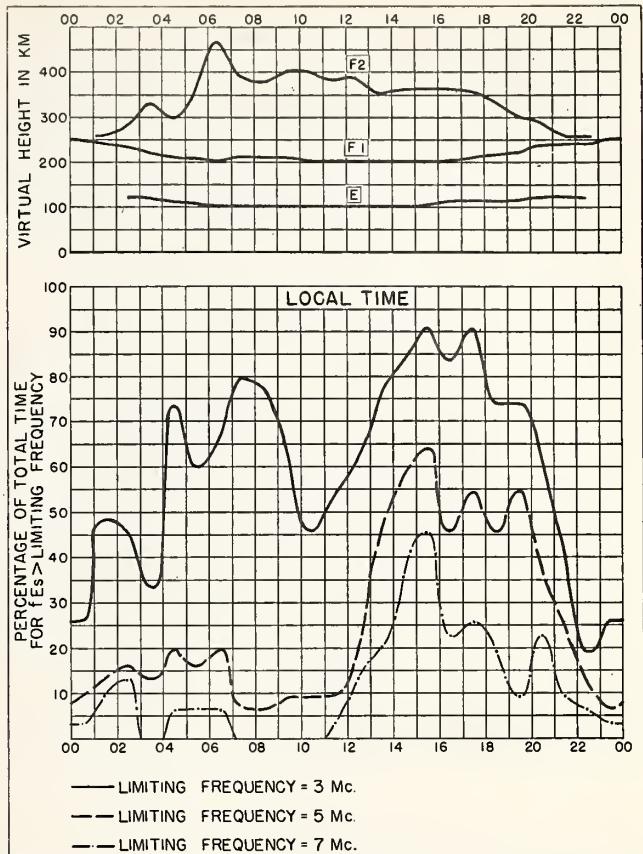
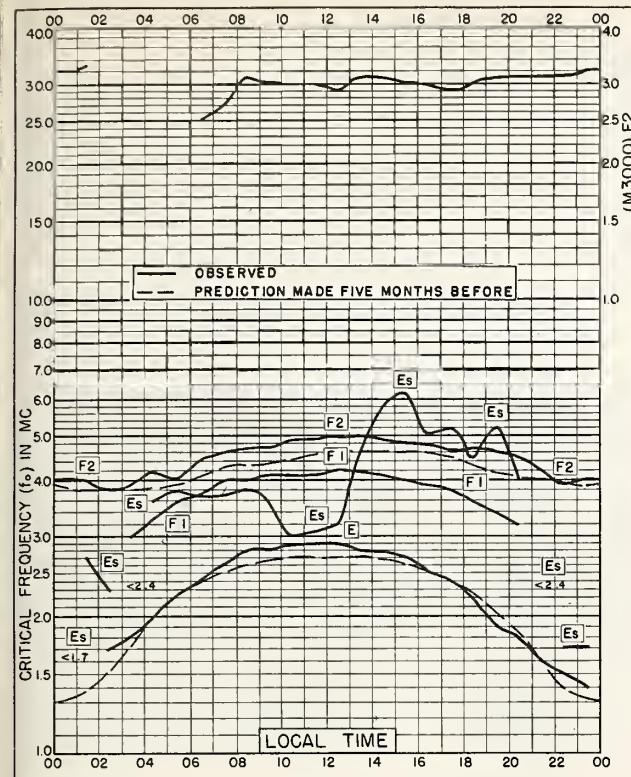


Fig. 108. TIRUCHY, INDIA AUGUST 1955

NBS 490



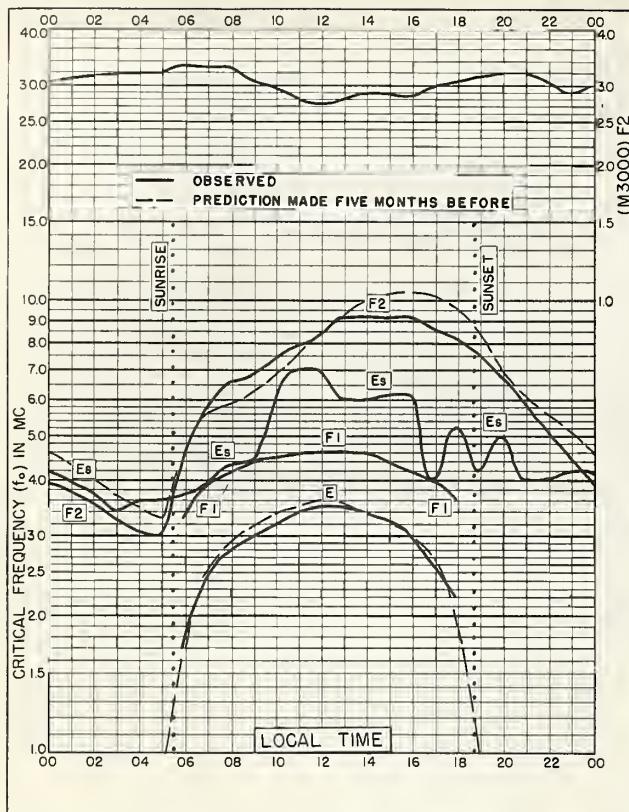


Fig. 113. AHMEDABAD, INDIA

23.0°N, 72.6°E JULY 1955

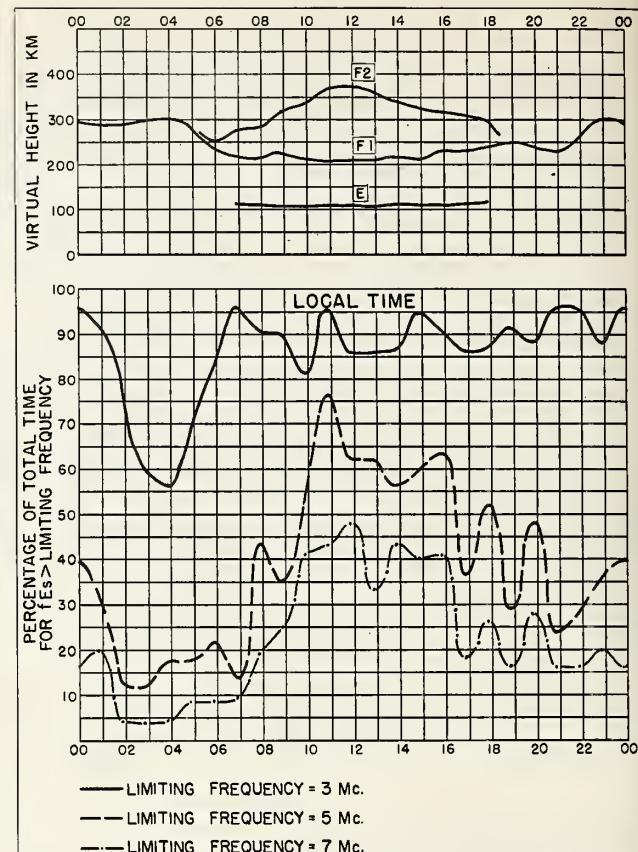


Fig. 114. AHMEDABAD, INDIA,

JULY 1955

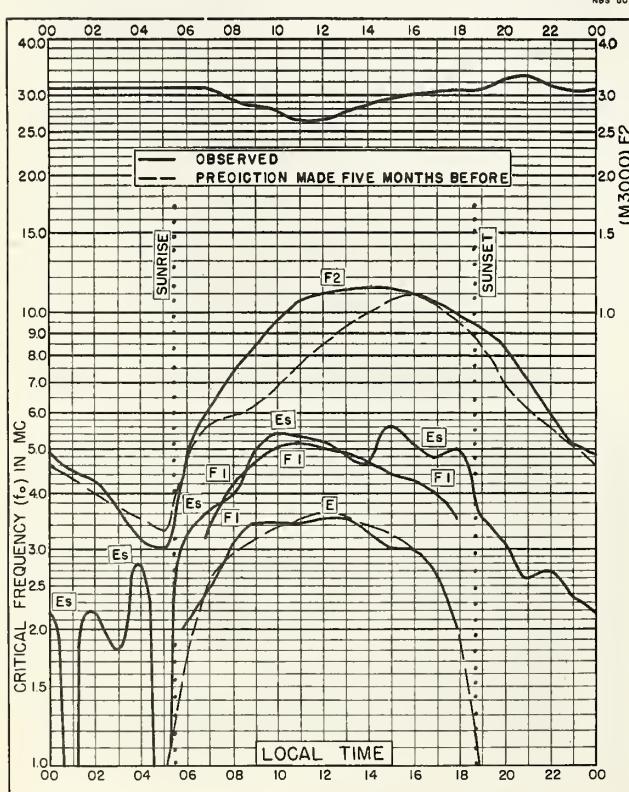


Fig. 115. CALCUTTA, INDIA

22.9°N, 88.5°E JULY 1955

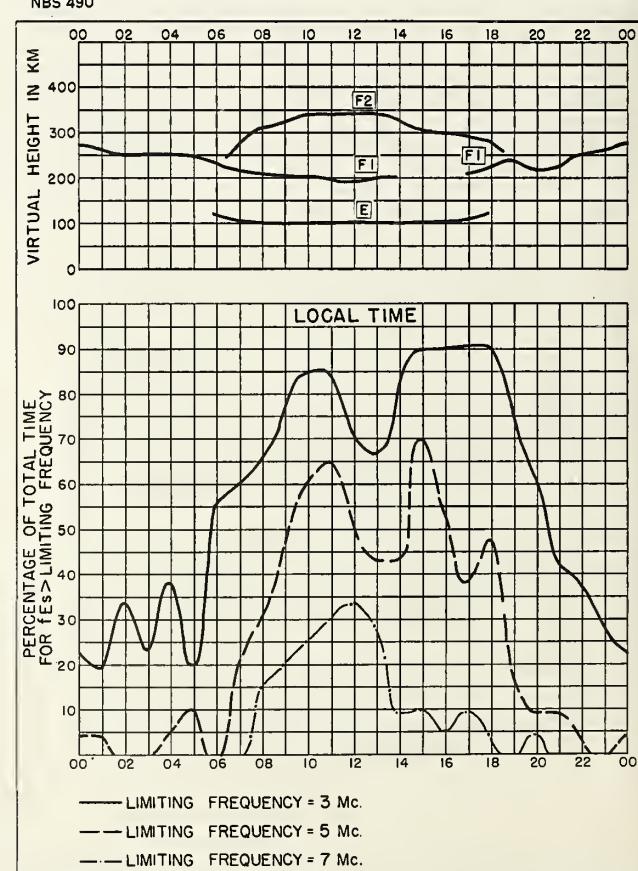


Fig. 116. CALCUTTA, INDIA

JULY 1955

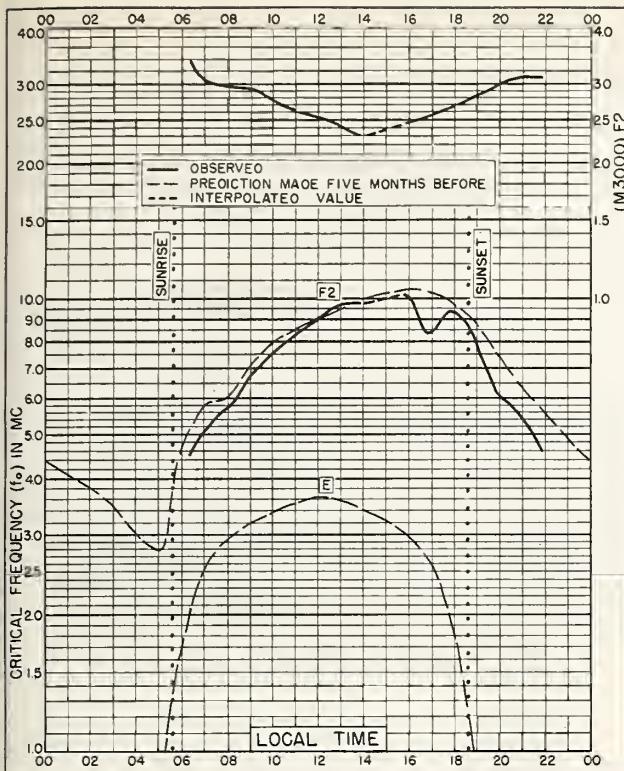


Fig. 117. BOMBAY, INDIA

19.0°N, 73.0°E

JULY 1955

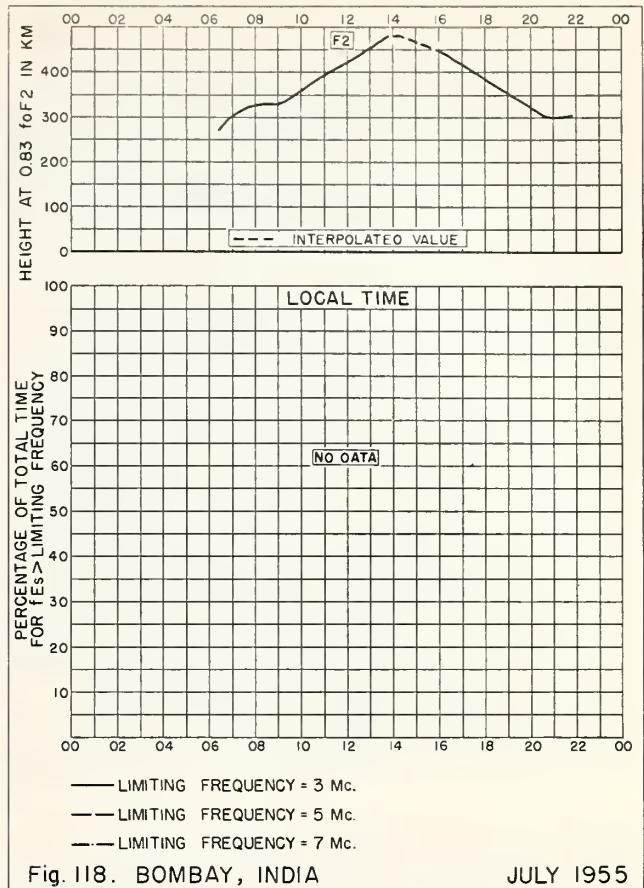


Fig. 118. BOMBAY, INDIA

JULY 1955

NBS 490

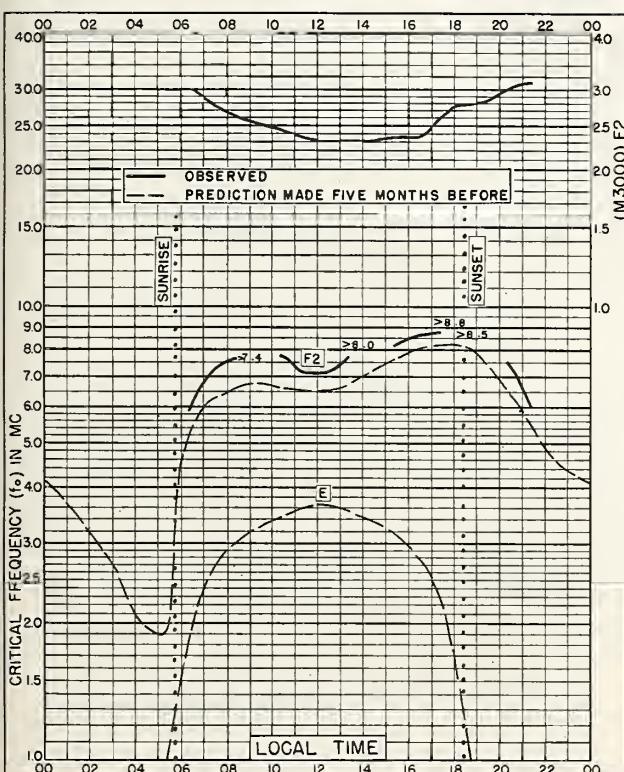


Fig. 119. MADRAS, INDIA

13.0°N, 80.2°E

JULY 1955

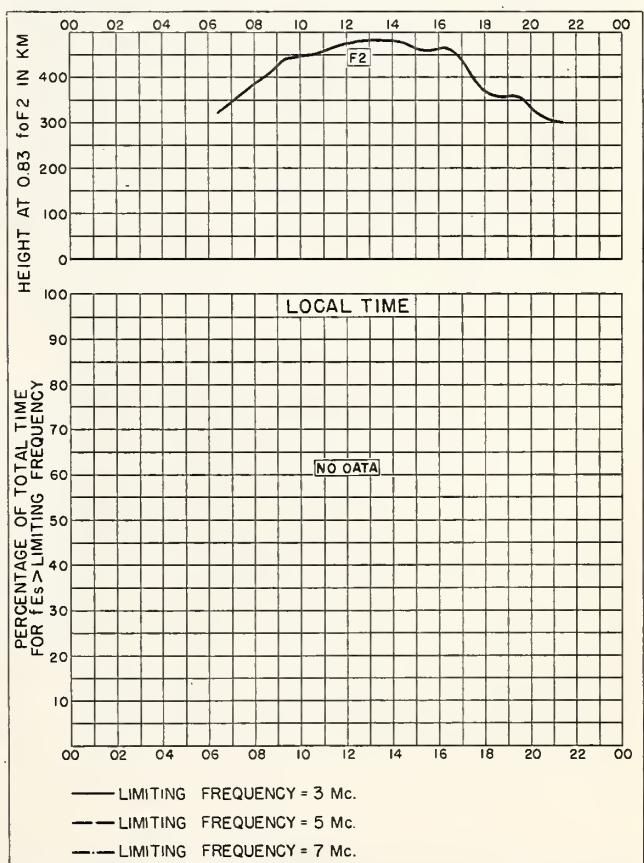
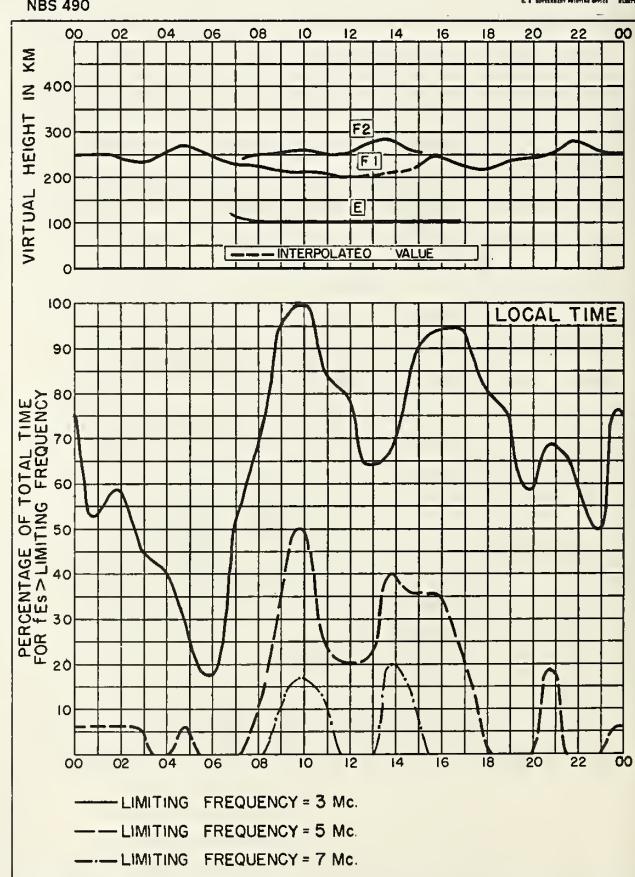
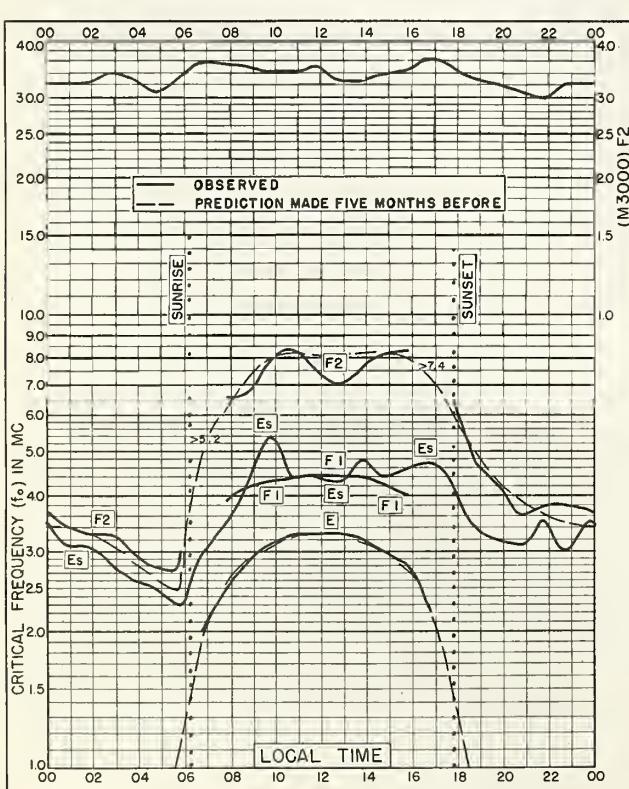
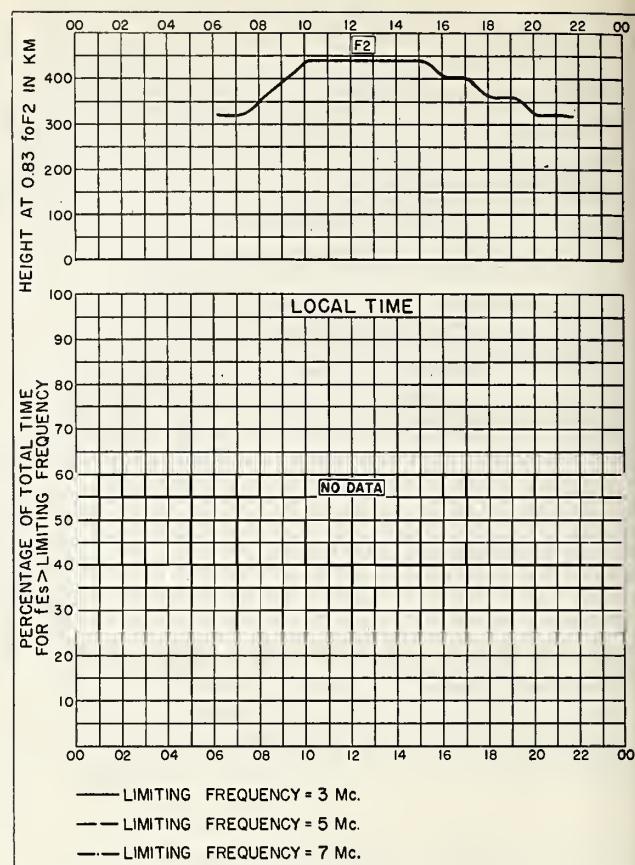
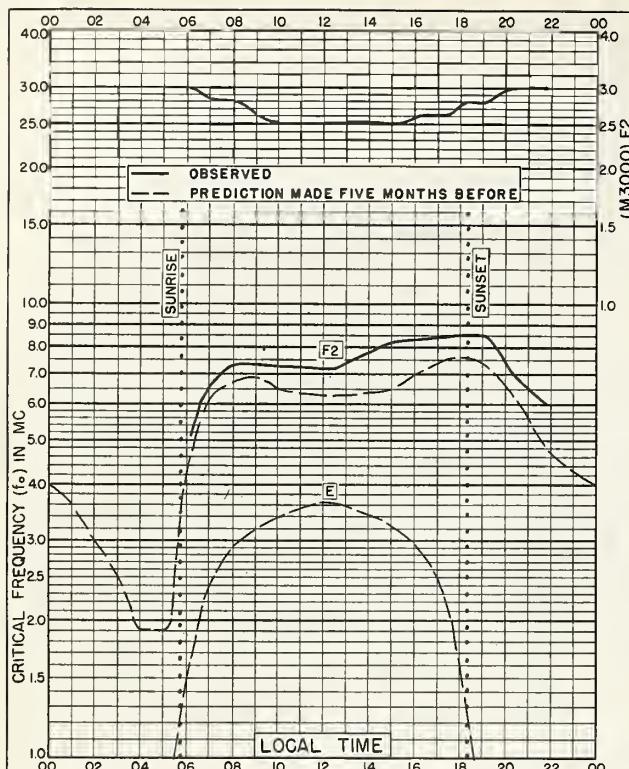


Fig. 120. MADRAS, INDIA

JULY 1955

NBS 490



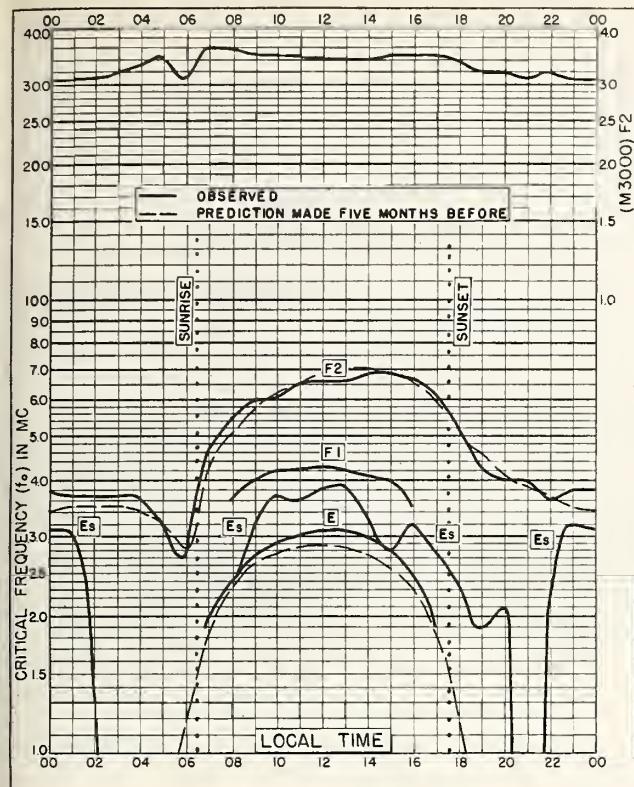


Fig. 125. CANBERRA, AUSTRALIA
35.3°S, 149.0°E APRIL 1955

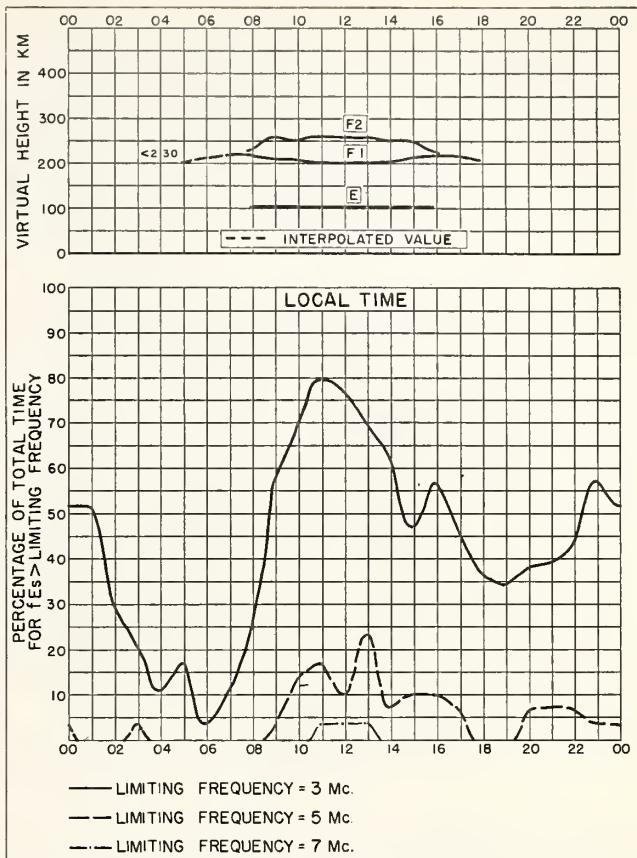


Fig. 126. CANBERRA, AUSTRALIA APRIL 1955

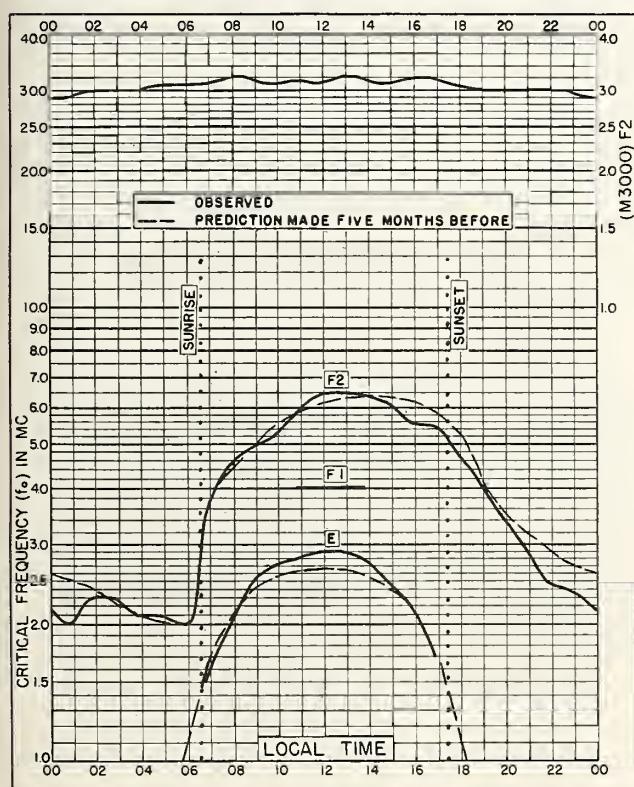


Fig. 127. HOBART, TASMANIA
42.9°S, 147.3°E APRIL 1955

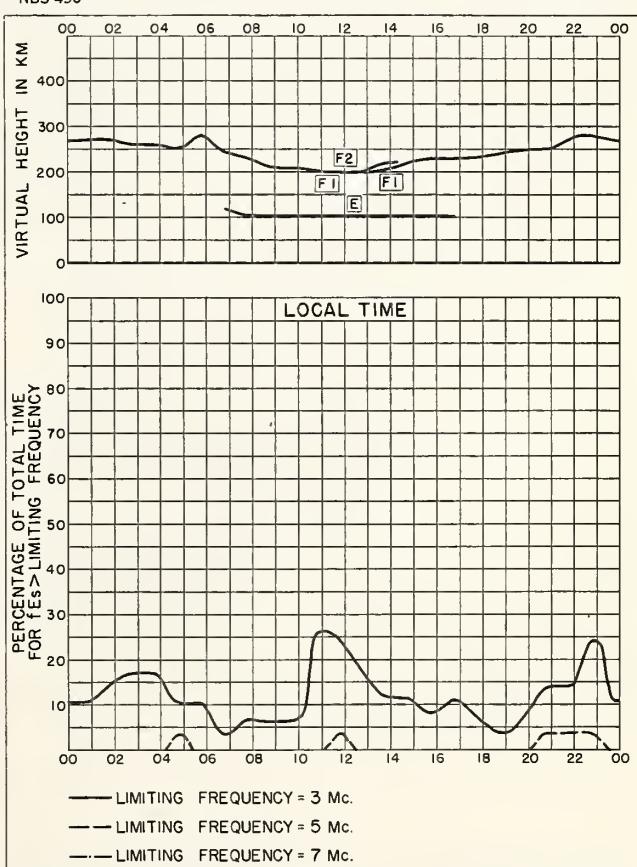


Fig. 128. HOBART, TASMANIA APRIL 1955

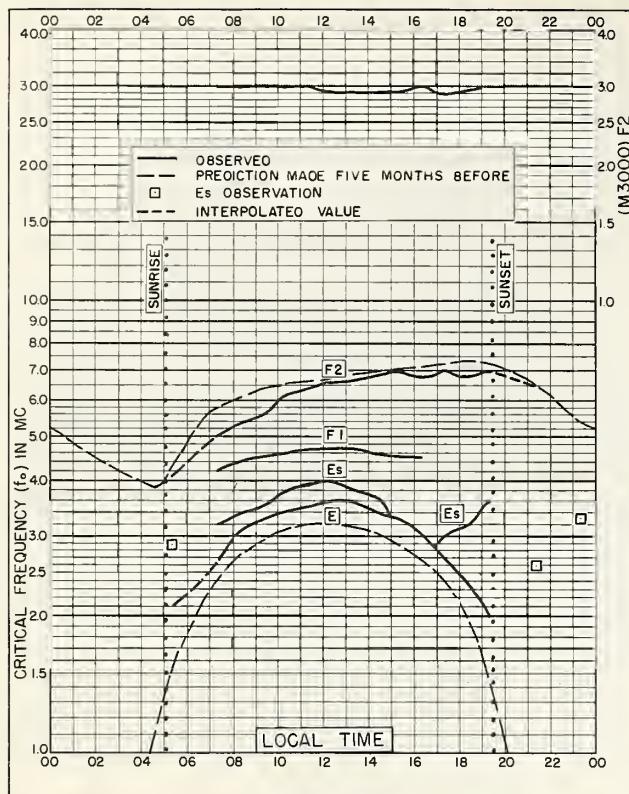


Fig. I29. CAMPBELL I.
52. 5°S, 169. 2°E FEBRUARY 1951

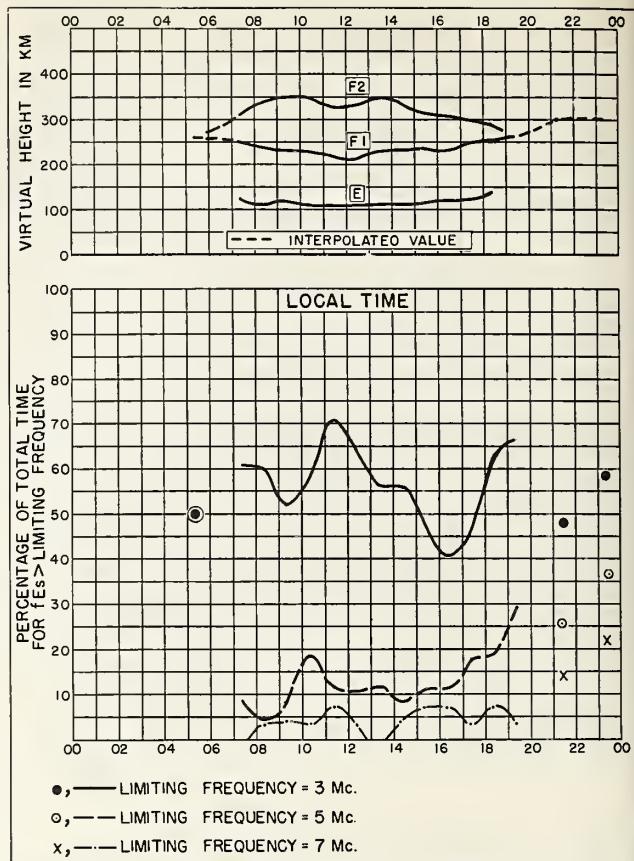


Fig. I30. CAMPBELL I. FEBRUARY 1951

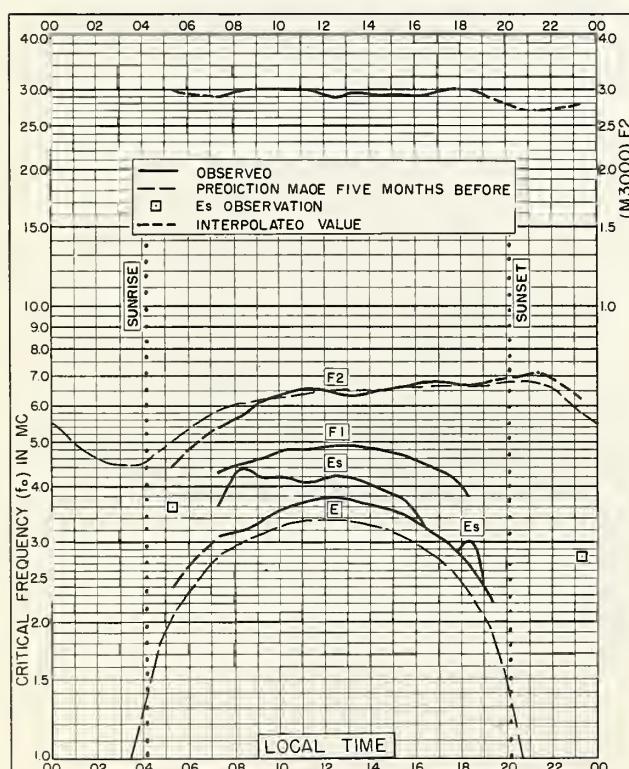


Fig. I31. CAMPBELL I.
52.5°S, 169.2°E JANUARY 1951

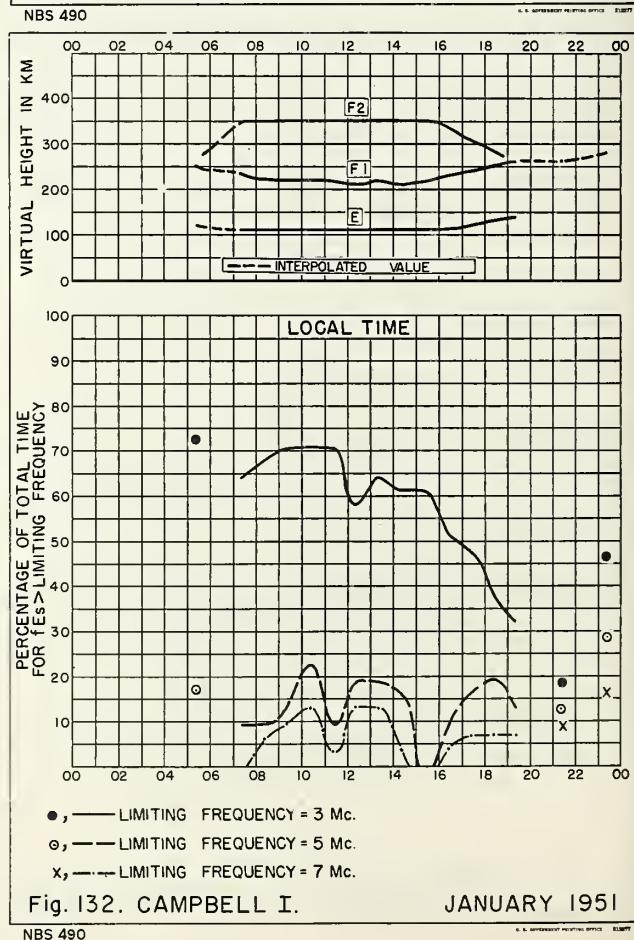


Fig. I32. CAMPBELL I. JANUARY 1951

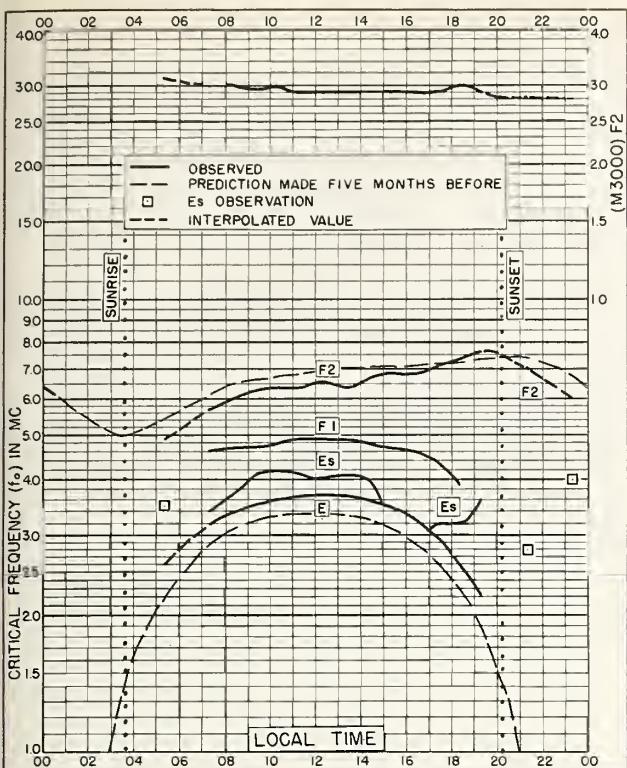


Fig. 133. CAMPBELL I.
52.5°S, 169.2°E DECEMBER 1950

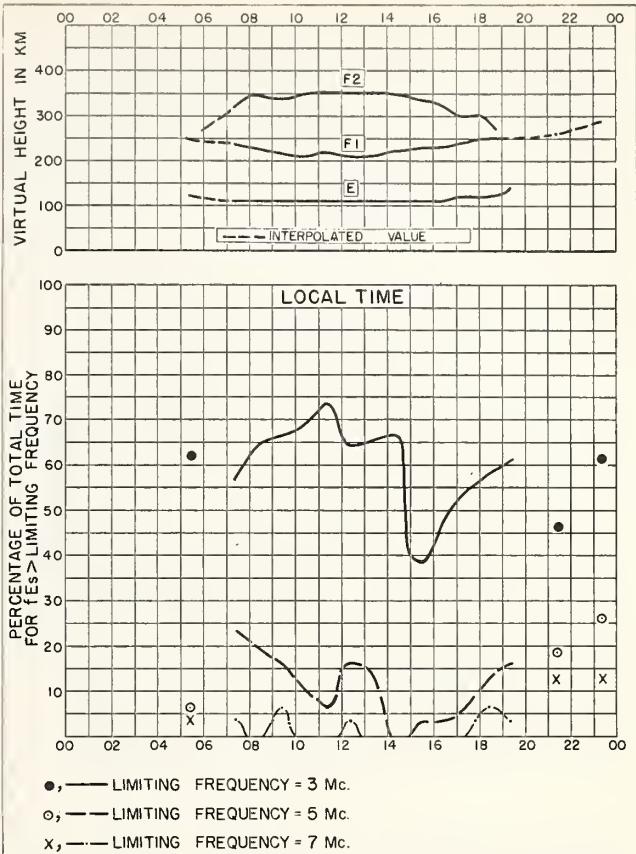


Fig. 134. CAMPBELL I. DECEMBER 1950

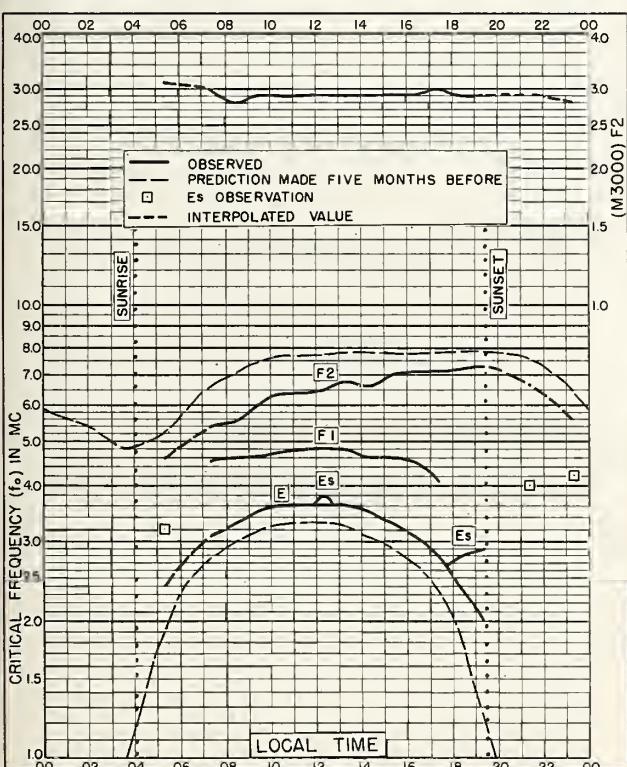


Fig. 135. CAMPBELL I.
52.5°S, 169.2°E NOVEMBER 1950

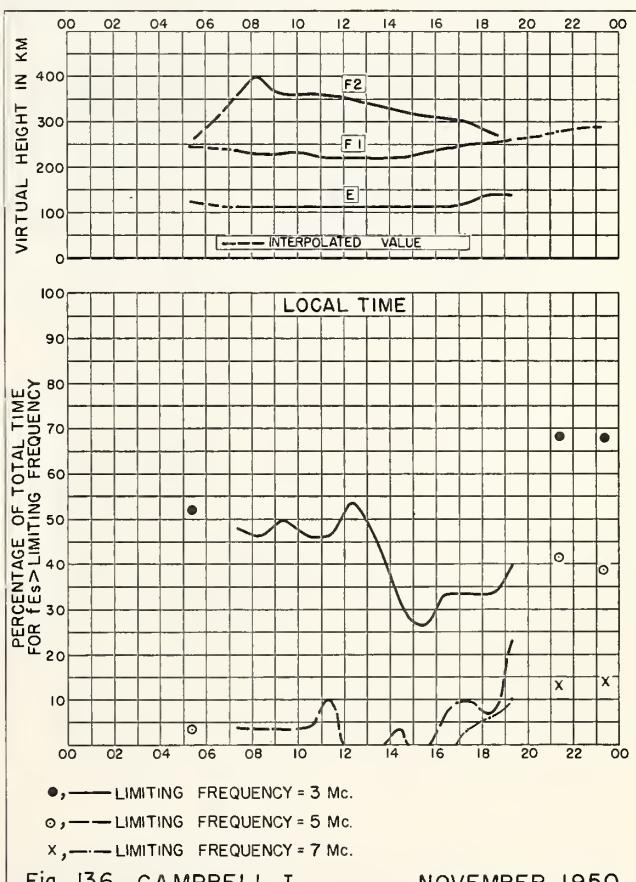


Fig. 136. CAMPBELL I. NOVEMBER 1950

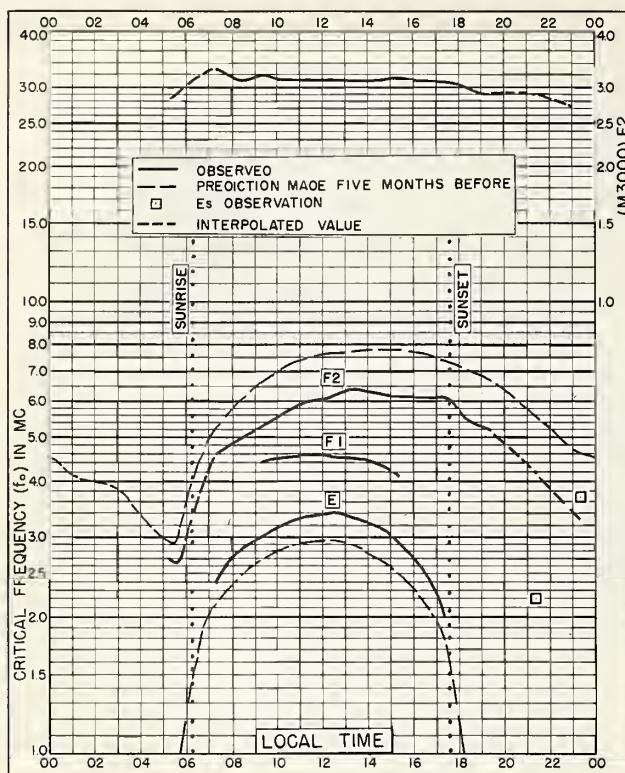


Fig. 137. CAMPBELL I.
52.5°S, 169.2°E SEPTEMBER 1950

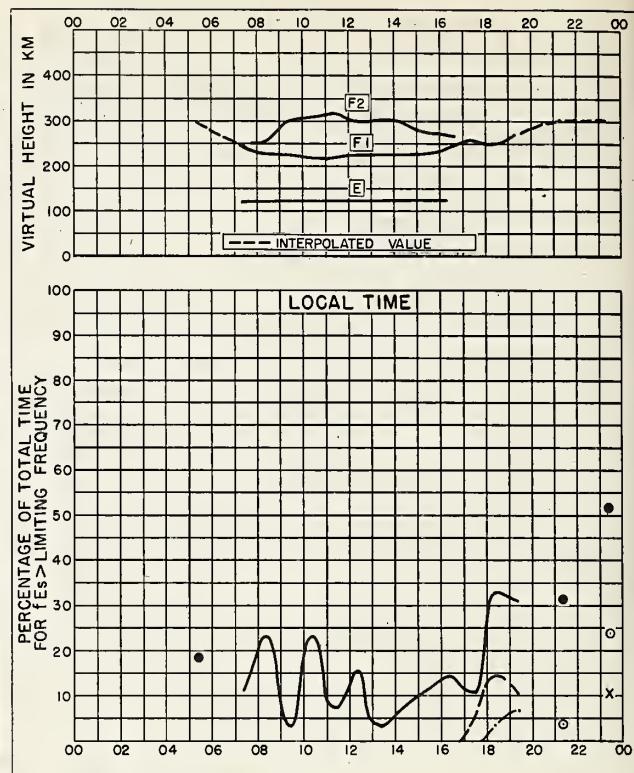


Fig. 138. CAMPBELL I. SEPTEMBER 1950

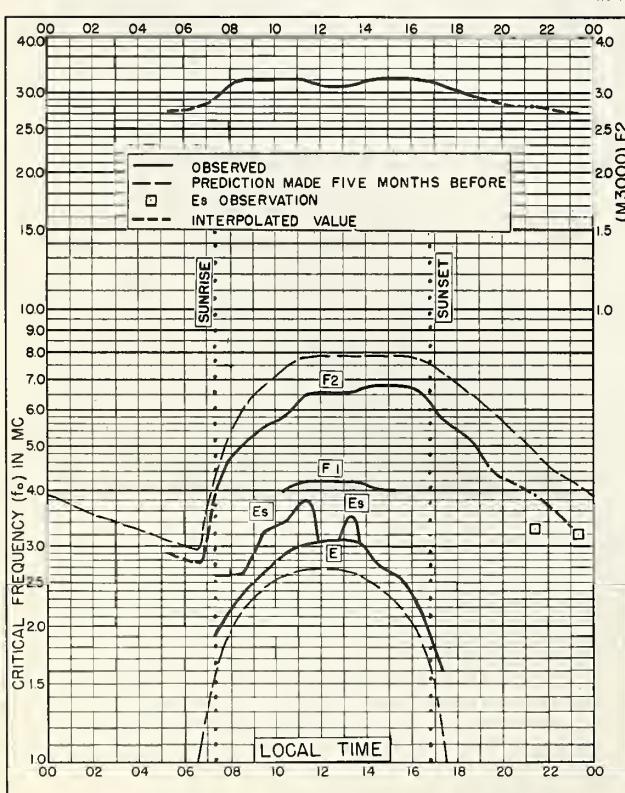


Fig. 139. CAMPBELL I.
52.5°S, 169.2°E AUGUST 1950

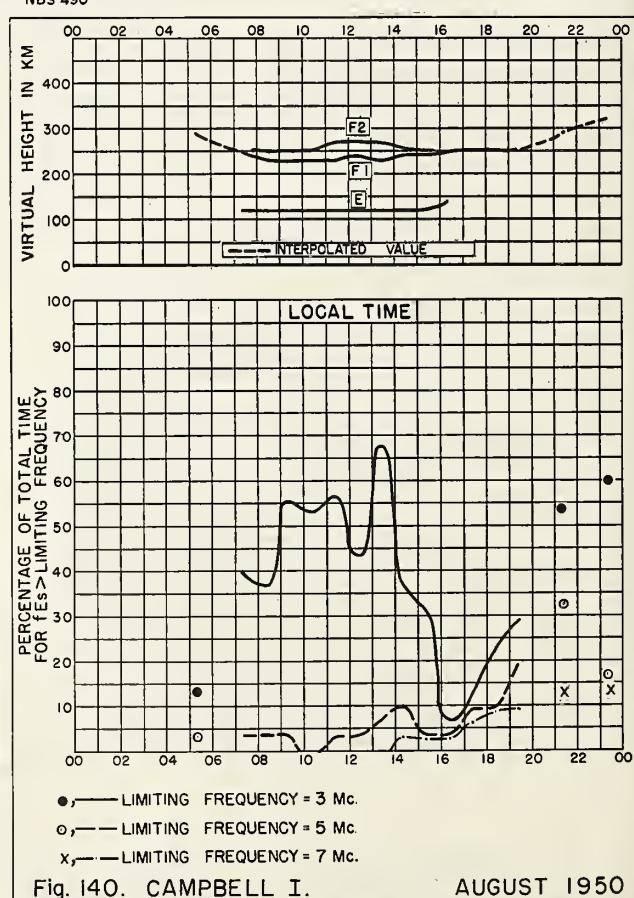
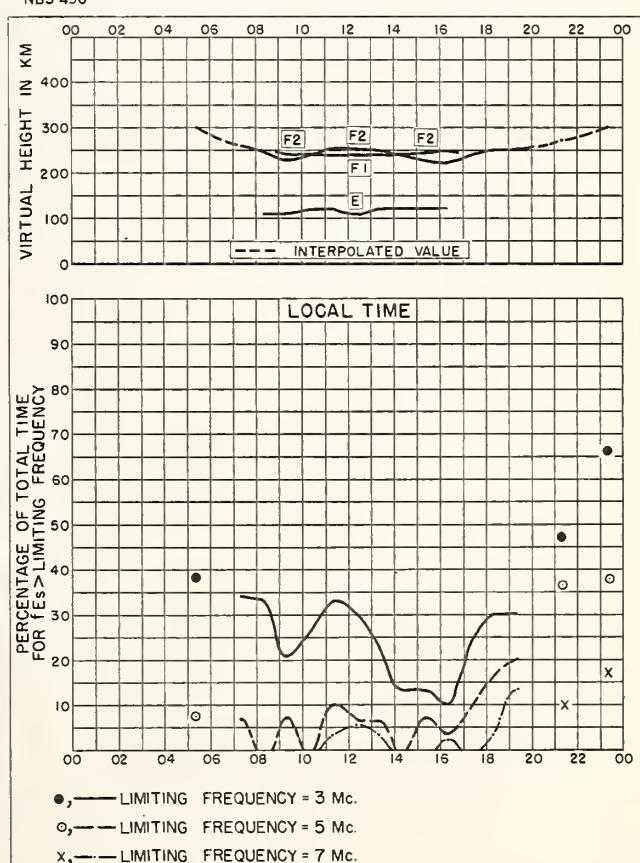
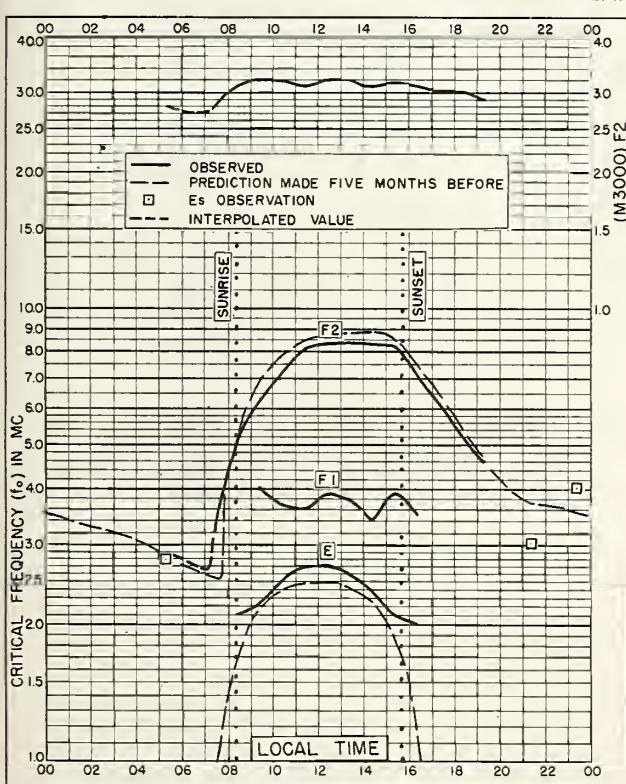
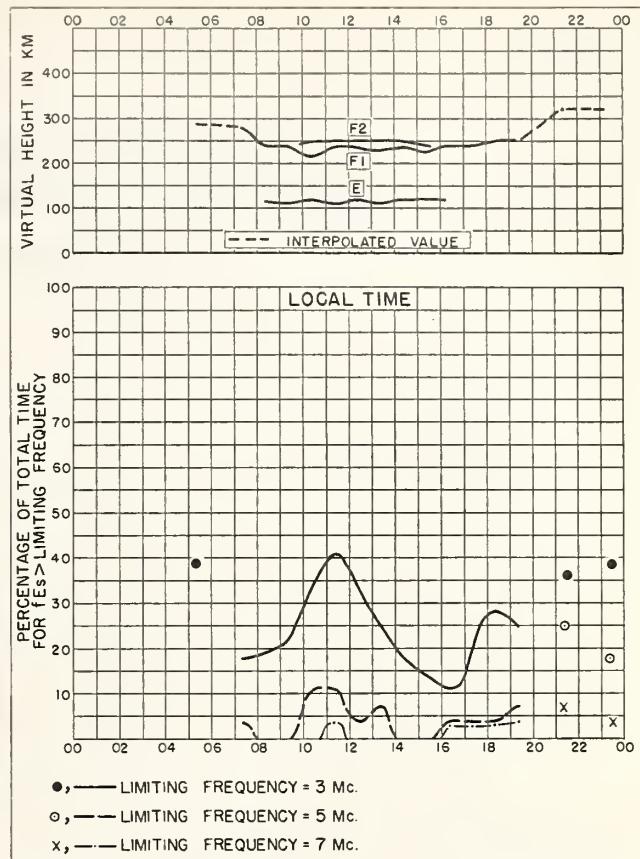
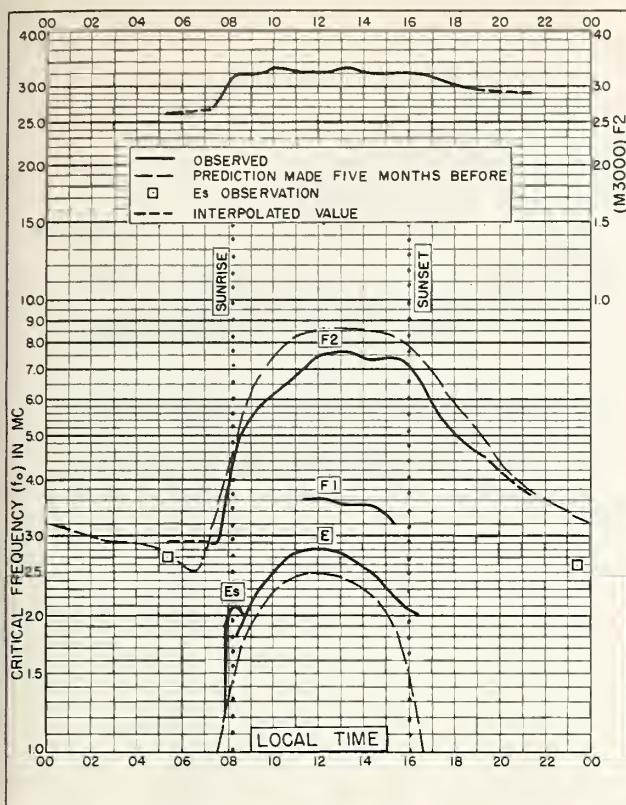


Fig. 140. CAMPBELL I. AUGUST 1950



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CRPL-D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499—, monthly supplements to TM 11-499; Dept. of the Navy, DNC 13 () series; Dept. of the Air Force, TO 31-3-28 series). On sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address cognizant military office.

CRPL-F. (Part A). Ionospheric Data.

(Part B). Solar-Geophysical Data.

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NBS Circular 462. Ionospheric Radio Propagation.

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