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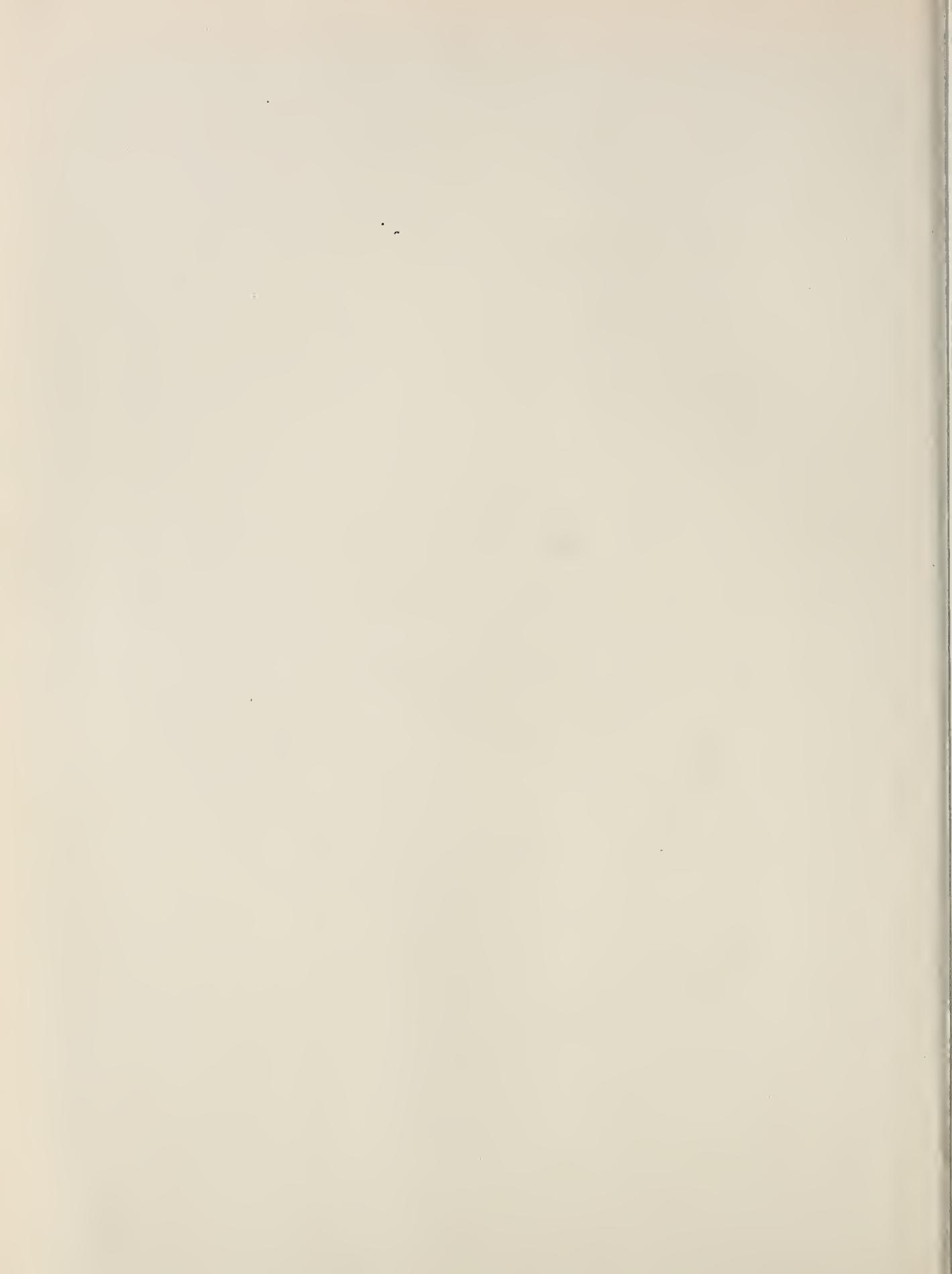
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PART A
IONOSPHERIC DATA

ISSUED
JANUARY 1959

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



CRPL-F 173
PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

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IONOSPHERIC DATA

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SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, 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 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

In the Second Report of the Special Committee on World-Wide Ionospheric Soundings of the URSI/AGI Committee, May 1957, a new descriptive letter was introduced:

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

There was an expansion in meaning of the following:

Z (1) (qualifying letter) Measurement deduced from the third magnetoionic component.
(2) (descriptive letter) Third magnetoionic component present.

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 above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N or R 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'F (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 descriptive 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 are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

B for fEs is counted on the low side when there is a numerical value of a higher layer characteristic; otherwise it is omitted from the median count.

S for fEs is counted on the low side at night; during the day it is omitted from the median count (beginning with data for November 1957).

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 the count is four or less, the data are considered insufficient and no median value is computed.
2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians 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.

Ordinarily, a blank space in the fEs or foEs 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 foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

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

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

PREDICTED AND OBSERVED SUNSPOT NUMBERS

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

Month	Predicted Sunspot Number										
	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949
December	150*	150*	150	42	11	15	33	53	86	108	
November	150*	150*	147	35	10	16	38	52	87	112	
October	150*	150*	135	31	10	17	43	52	90	114	
September	150*	150*	119	30	8	18	46	54	91	115	
August	150*	150*	105	27	8	18	49	57	96	111	
July	150*	150*	95	22	8	20	51	60	101	108	
June	143	150*	150*	89	18	9	21	52	63	103	108
May	146	150*	150*	77	16	10	22	52	68	102	108
April	150*	150*	150*	68	13	10	24	52	74	101	109
March	150*	150*	150*	60	14	11	27	52	78	103	111
February	150*	150*	150*	53	14	12	29	51	82	103	113
January	150*	150*	150*	48	12	14	30	53	85	105	112

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers beginning with the minimum of April 1954. Final numbers are listed through June 1957.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	146	150	151	156	160	164
1957	170	172	174	181	186	188	191	194	196	198	200	199
1958	198	200	200	196	189	184						

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:

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:

Brisbane, Australia
Canberra, Australia
Hobart, Tasmania
Townsville, Australia

Commonwealth of Australia, Department of the Interior:
Macquarie I.

University of Graz:
Graz, Austria

Electronics Directorate of the Brazilian Navy:
Natal, Brazil

Escola Politecnica, University of Sao Paulo:
Sao Paulo, Brazil

British Department of Scientific and Industrial Research, Radio Research Board:
Falkland Is.
Ibadan, Nigeria (University College of Ibadan)
Inverness, Scotland
Singapore, British Malaya
Slough, England

Defence Research Board, Canada:
Winnipeg, Canada

Universidad de Concepcion:
Concepcion, Chile

Danish National Committee of URSI:
Godhavn, Greenland

The Finnish Academy of Sciences and Letters:
Sodankyla, Finland

Central Institute of Meteorology, Budapest, Hungary:
Budapest, Hungary

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

Ahmedabad (Physical Research Laboratory)

Bombay (All India Radio)

Calcutta (Institute of Radio Physics and Electronics)

Delhi (All India Radio)

Kodaikanal (India Meteorological Department)

Madras (All India Radio)

Tiruchi (All India Radio)

National Institute of Geophysics, City University, Rome, Italy:
Rome, Italy

Ministry of Postal Services, Radio Research Laboratories,
Tokyo, Japan:

Akita, Japan

Tokyo (Kokubunji), Japan

Wakkanai, Japan

Yamagawa, Japan

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

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

Manila Observatory:

Baguio, P. I.

Institute of Terrestrial Magnetism, Ionosphere and Radio Propagation, Moscow, U.S.S.R.:
Moscow

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

Post, Telephone and Telegraph Administration, Berne, Switzerland:

Schwarzenburg, Switzerland

United States Army Signal Corps:

Adak, Alaska

Fletchers Ice I.

Ft. Monmouth, New Jersey

Thule, Greenland

White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):

Fairbanks (College), Alaska (Geophysical Institute of
the University of Alaska)
Maui, Hawaii
Panama Canal Zone
Pole Station, Antarctica
Puerto Rico, W. I.
San Francisco, California (Stanford University)
Washington, D. C.

ERRATUM

The values of (M3000)F2 for Inverness, Scotland, July 1957 through January 1958, inclusive, are approximately 10% too high.

TABLES OF IONOSPHERIC DATA

October 1958 - December 1955

Table 1

Fairbanks, Alaska (64.9°N, 147.8°W)								October 1958								
Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	(M3000)F2	Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs
00			(4.25)			3.0	(2.45)		00	7.2	290					
01			(5.0)			3.1	(2.38)		01	6.9	300					(2.62)
02			(4.55)			2.8	(2.45)		02	6.8	295					(2.60)
03			(4.3)			2.9	(2.40)		03	6.5	290					(2.55)
04			(4.9)			3.1	(2.45)		04	6.2	275					(2.50)
05			(5.0)			2.0	(2.45)		05	6.05	275					(2.60)
06			(5.6)				(2.55)		06	6.9	265					(2.65)
07			(6.3)		147	2.00	(2.80)		07	10.0	235					(2.80)
08			7.8		119	2.30	2.95		08	12.0	235					(3.05)
09			(9.1)		115	2.60	(2.90)		09	12.8	230	---	118	3.00		(3.02)
10			9.75		---	<117	2.80		10	13.2	225	---	115	>3.20		(2.95)
11			10.85		---	115	2.92		11	13.25	225	---	113	>3.50		(2.90)
12			11.05		---	117	2.90		12	13.2	230	---	115	(3.60)		(2.75)
13			11.5		---	116	2.80		13	13.2	230	---	113	(3.60)		(2.70)
14			11.9		---	119	2.70		14	12.8	235	---	117	>3.50		(2.70)
15			11.75		---	123	2.30		15	12.8	240	---	115	3.50		(2.70)
16			11.9		175	E	2.85		16	12.7	245	---	123	>2.50		(2.70)
17			11.1		---	---	2.80		17	12.0	240					(2.75)
18			9.3				2.75		18	11.0	245					(2.75)
19			(7.3)				(2.75)		19	10.0	250					(2.70)
20			(6.0)			1.9	(2.70)		20	9.2	260					(2.70)
21			(5.2)			2.4	(2.70)		21	8.7	275					(2.70)
22			(5.0)			2.0	(2.60)		22	8.0	280					(2.65)
23			(4.45)			3.3	(2.70)		23	7.75	280					(2.70)

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Washington, O. C. (38.7°N, 77.1°W)								October 1958									
Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	(M3000)F2	Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	
00			7.5		275			2.65	00	11.3	230						
01			6.9		280			2.60	01	>9.0	225					(3.05)	
02			6.7		200			2.60	02	0.0	230					3.05	
03			6.6		280			2.52	03	6.8	230					2.90	
04			6.3		275			2.50	04	5.3	250					2.90	
05			6.1		270			2.60	05	4.8	280					2.75	
06			6.6		260			2.80	06	5.4	<300	---	---	---	---	2.60	
07			9.6	240	---	119	2.30	3.00	07	9.8	255	122	2.50	2.6		2.70	
08			12.0	235	---	111	2.92	3.0	08	12.3	240	111	3.20	3.3		3.12	
09			13.0	225	---	109	3.30	2.95	09	13.5	230	109	3.65	3.8		3.10	
10			13.8	220	---	109	3.60	2.05	10	14.7	225	109	3.90	4.2		2.80	
11			14.2	220	---	109	3.70	2.75	11	15.3	220	109	4.02	4.4		2.70	
12			13.8	220	---	109	3.80	2.70	12	(385)	15.5	220	(7.9)	109	4.15	4.2	2.60
13			13.8	230	---	110	3.75	2.65	13	380	16.2	220	(7.4)	110	4.15	4.4	2.60
14			13.4	235	---	111	3.60	2.60	14	370	16.3	225	(7.7)	109	4.10	4.5	2.60
15			13.4	235	---	115	3.35	2.65	15	360	15.7	<240	---	109	3.80	4.4	2.60
16			13.2	240	---	115	2.90	2.65	16	(350)	15.3	240	---	<110	3.30	4.0	2.60
17			12.6	240	(121)	2.15		2.70	17	14.8	250	<115	2.70	3.0		2.65	
18			11.45	240				2.70	18	14.5	255	---	---	4.7		2.75	
19			10.2	235				2.70	19	13.9	250			4.0		2.75	
20			9.55	245				2.70	20	15.5	265			3.0		2.70	
21			8.5	260				2.70	21	14.6	260			2.4		2.85	
22			8.2	265				2.68	22	(15,1)	245			3.0		(2.95)	
23			7.85	270				2.65	23	12.6	230			2.0		3.00	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Puerto Rico, W. I. (18.5°N, 67.2°W)								October 1958									
Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	(M3000)F2	Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	
00			9.0		255			2.90	00	(12.5)	250						(2.90)
01			8.2		245			2.95	01	(12.5)	240						(2.90)
02			7.2		245			3.00	02	10.7	230						2.98
03			6.1		245			2.75	03	8.7	235						2.80
04			5.6		270			2.60	04	8.0	255						2.70
05			5.5		295			2.60	05	7.6	265						2.70
06			5.9		265			2.80	06	8.65	300	---	---	---	---		2.75
07			9.6	240	(121)	(2.35)		3.20	07	12.0	270	121	(2.88)	3.1			2.85
08			12.0	235	111	3.08	3.1	3.10	08	14.0	250	117	(3.48)	3.0			2.70
09			13.2	230	109	3.52		3.00	09	15.5	250	119	(3.90)	4.5			2.50
10			13.9	230	109	3.05	4.0	2.90	10	16.0	245	119	(4.05)	4.4			2.30
11			13.9	220	109	4.00	4.3	2.80	11	15.0	240	117	(4.15)	4.4			2.10
12			13.8	220	---	109	(4.10)	4.4	12	(13.9)	235	119	(4.20)	4.6			(2.05)
13			13.7	225	---	109	4.10	4.3	13	14.0	235	119	(4.15)	4.2			2.10
14			13.4	230	109	4.00	4.4	2.60	14	14.0	240	119	(4.00)	4.4			2.10
15			13.1	235	109	3.75	4.2	2.55	15	(14.0)	250	119	(3.75)	4.3			(2.15)
16			12.7	240	111	3.40	4.0	2.55	16	(14.7)	270	119	3.25	3.8			(2.10)
17			12.4	245	<117	(2.70)	3.4	2.60	17	(14.0)	290	(121)	(2.45)	2.6			(2.15)
18			11.9	255			2.6	2.70	18	(12.9)	350						(2.10)
19			11.0	255				2.70	19	(12.0)	450						(2.10)
20			10.0	260				2.70	20	>12.5	(370)						(2.30)
21			9.8	270				2.70	21	(12.0)	(310)						(2.55)
22			9.7	270				2.60	22	>12.0	280						(2.75)
23			9.2	255				2.60	23	(12.65)	260						(2.85)

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 4

Ft. Monmouth, New Jersey (40.4°N, 74.1°W)								October 1958									
Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	(M3000)F2	Time	h'F2	foF2	h'F	foFl	h'E	foE	foEs	
00			7.2		290				00	12.0	235	118	3.00				(2.62)
01			6.9		300				01	12.8	230	115	>3.20				(2.60)
02			6.8		295				02	13.2	225	113	>3.50				2.55
03			6.5		290				03	13.25	225	115	(3.60)				2.50
04			6.2		275	</td											

Table 7

Time	Panama Canal Zone (9.4°N, 79.9°W)							October 1950
	h'F2	foF2	h'F	foF1	h'E	foE	foEs	
	(M3000)F2							
00	9.9	230						2.95
01	0.15	240						3.00
02	6.6	230						2.92
03	5.6	250						2.75
04	4.9	250						2.70
05	4.55	280						2.60
06	6.3	310	114	---	2.3			2.65
07	10.65	250	<118	2.60				2.95
08	13.0	240	111	3.30	3.5			2.95
09	4.5	235	107	3.75				2.85
10	14.7	230	107	4.02				2.75
11	14.5	225	107	4.25				2.65
12	(395)	14.6	230	107	4.30	4.4		2.55
13	395	14.6	225	107	4.25	4.3		2.50
14	420	14.5	230	(7.2)	107	4.05	4.7	2.45
15	410	14.4	(235)	107	3.80	4.8		2.45
16	(380)	14.1	<250	107	3.35	4.9		2.50
17	---	13.8	(255)	(111)	2.70	3.6		2.50
18	13.2	275	---	---	---	3.2		2.60
19	13.0	275	---	---	---	2.9		2.65
20	12.0	260	---	---	---	2.65		
21	12.0	240	---	---	---	2.70		
22	11.75	250	---	---	---	2.70		
23	11.7	250	---	---	---	2.90		

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Time	White Sands, New Mexico (32.3°N, 106.5°W)							September 1950
	h'F2	foF2	h'F	foF1	h'E	foE	foEs	
	(M3000)F2							
00	6.5	300						2.60
01	6.6	300						2.58
02	6.35	300						2.58
03	6.2	<300						2.60
04	6.0	280						2.60
05	5.9	290						2.60
06	7.2	275	---	---				2.02
07	10.0	245	111	2.90				3.05
08	---	11.0	235	---	111	3.40		3.00
09	---	11.65	225	---	109	(3.80)		2.78
10	---	12.1	220	---	107	4.00		2.70
11	---	12.6	215	---	107	4.05		2.60
12	---	12.6	220	---	109	4.10		2.60
13	(420)	12.55	225	6.2	109	4.10		2.55
14	---	12.3	230	---	109	4.00		2.60
15	---	12.25	235	---	109	3.80	4.0	2.55
16	---	12.0	240	---	<111	3.35		2.65
17	---	11.5	245	---	115	2.85	3.0	2.70
18	10.75	245	---	---	---	2.1		2.75
19	9.55	235	---	---	---	2.1		2.70
20	8.35	245	---	---	---	2.60		
21	7.65	270	---	---	---	2.65		
22	7.1	275	---	---	---	2.65		
23	6.9	280	---	---	---	2.60		

Time: 105.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Time	Adak, Alaska (51.9°N, 176.6°W)							August 1950
	h'F2	foF2	h'F	foF1	h'E	foE	foEs	
	(M3000)F2							
00	6.0	(325)						2.45
01	5.6	(340)						2.40
02	5.25	(345)						2.32
03	5.0	(355)						2.28
04	4.7	360	135	---	1.4			2.35
05	(465)	5.7	295	---	121	(2.20)	2.2	2.45
06	510	6.7	(260)	4.1	119	2.60	3.0	2.50
07	495	7.2	(250)	4.6	111	3.10	3.8	2.45
08	490	7.45	(245)	5.0	109	3.45	4.1	2.45
09	400	7.6	<235	5.3	109	3.65	4.5	2.48
10	460	8.0	<230	5.5	109	3.80	4.4	2.40
11	440	8.2	220	5.6	110	3.90	4.2	2.45
12	420	8.2	220	5.7	109	3.90	4.2	2.40
13	420	8.2	220	5.6	109	3.05	4.4	2.55
14	435	8.0	225	5.6	111	3.00	3.9	2.55
15	<425	7.65	230	5.4	111	3.55	3.6	2.60
16	(395)	7.5	240	5.1	111	3.30	3.4	2.62
17	---	7.35	250	---	112	2.90		2.65
18	---	7.4	270	---	119	2.40	2.0	2.75
19	---	7.35	<280	---	---	2.6		2.70
20	7.4	<260	---	---	---	3.6		2.70
21	6.95	285	---	---	---	3.4		2.62
22	6.5	290	---	---	---	2.8		2.55
23	6.2	(315)	---	---	---	2.50		

Time: 100.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Time	Fletchers Ice I. (78.7°N, 123.5°W)*							September 1950
	h'F2	foF2	h'F	foF1	h'E	foE	foEs	
	(M3000)F2							
00	---	(7.1)	(290)	---	---	---	---	2.0 (2.55)
01	---	(7.15)	<300	---	---	---	---	2.1 (2.50)
02	---	(6.75)	(290)	---	---	---	---	2.9 (2.55)
03	---	(7.2)	(290)	---	---	---	---	2.6 (2.58)
04	---	6.25	(280)	---	---	---	---	2.1 (2.60)
05	---	(7.0)	(275)	---	---	---	---	1.8 (2.60)
06	---	6.8	(290)	---	---	---	---	2.58
07	---	6.7	<290	---	---	---	---	2.65
08	---	6.4	(280)	---	<133	1.75		2.70
09	---	(7.0)	(275)	---	(125)	(1.90)		2.70
10	---	6.8	(270)	---	<120	2.12		2.60
11	---	(455)	6.85	(260)	3.8	<115	2.20	2.50
12	---	(450)	6.7	(260)	4.0	<115	(2.45)	2.55
13	500	6.5	(255)	4.5	111	(2.55)		2.50
14	(550)	6.55	260	4.2	111	(2.75)		2.50
15	490	6.65	<260	4.5	111	(2.65)		2.50
16	520	6.3	(270)	4.2	(111)	(2.60)		2.40
17	440	6.8	(270)	4.4	(111)	(2.55)		2.45
18	410	6.7	<305	4.2	111	(2.80)		2.50
19	(490)	6.1	<300	3.9	(115)	---		2.55
20	---	6.55	<295	---	<121	(2.45)		2.50
21	(660)	6.3	<290	---	<121	(2.10)		2.50
22	---	7.1	(300)	---	<129	1.95		2.60
23	---	6.0	300	---	<131	1.90		2.60

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

*Preliminary estimated average position.

Table 10

Time	Godhavn, Greenland (69.3°N, 53.5°W)							August 1950
	h'F2	foF2	h'F	foF1	h'E	foE	foEs	
	(M3000)F2							
00	---	(5.3)	---	---	---	---	---	2.55
01	---	(5.0)	---	---	---	---	---	(2.55)
02	---	(5.0)	---	---	---	---	---	(2.50)
03	---	(4.9)	---	---	---	---	---	2.62
04	---	(4.95)	---	---	---	---	---	(2.60)
05	---	(5.0)	---	---	<122	2.35	---	(2.60)
06	---	(4.95)	---	---	(119)	>2.52	---	(2.60)
07	---	(5.5)	4.2	115	---	---	---	(2.65)
08	---	(5.4)	4.4	113	3.20	---	---	2.42
09	---	(5.05)	4.8	111	3.18	---	---	(2.62)
10	---	(6.3)	4.8	<111	(3.25)	---	---	(2.50)
11	---	6.6	(4.9)	109	(3.35)	---	---	2.48
12	---	(6.75)	(5.1)	(109)	3.40	---	---	2.55
13	---	(6.65)	5.2	(111)	3.40	---	---	(2.45)
14	---	(6.6)	(5.1)	111	3.40	---	---	2.50
15	---	(6.1)	5.0	109	3.32	---	---	(2.50)
16	---	6.6	(4.8)	111	3.20	5.7	---	2.45
17	---	(5.95)	(4.0)	<113	---	5.7	---	2.45
18	---	(6.2)	(4.6)	116	(2.92)	3.2	(2.55)	---
19	---	6.0	---	---	---	2.0	---	2.60
20	---	(6.1)	---	---	<127	2.40	---	(2.62)
21	---	(5.9)	---	---	---	2.65	---	---
22	---	5.7	---	---	---	2.62	---	---
23	---	6.0	(310)	---	---	3.5	---	2.50

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 12

Time	San Francisco, California (37.4°N, 122.2°W)		
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Table 13

Tromso, Norway	(60°, 7°N, 19°E)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00	---	5.4	---	---	---	4.0	(2.40)	
01	---	(5.3)	---	---	---	>3.2	(2.40)	
02	---	5.4	---	---	---	3.9	(2.50)	
03	---	(5.9)	(295)	---	---	4.2	(2.40)	
04	(500)	5.6	(260)	3.90	105	2.70	>3.2	2.40
05	490	5.7	(250)	4.20	100	2.85	3.2	2.40
06	500	5.8	250	4.50	105	3.10		2.30
07	525	5.9	245	4.70	105	3.20		2.40
08	175	6.2	245	4.90	100	3.20		2.40
09	465	6.5	240	5.05	105	---		2.40
10	470	6.6	240	5.20	100	---		2.45
11	475	6.6	225	5.25	105	---		2.40
12	485	6.5	225	5.25	105	3.55		2.40
13	495	6.5	215	5.20	105	3.60		2.45
14	515	6.4	215	5.10	105	3.55		2.40
15	500	6.3	240	4.95	105	3.50		2.45
16	470	6.1	245	4.90	105	3.40		2.55
17	(460)	6.1	255	4.70	105	3.20		2.55
18	---	6.0	255	---	105	3.00	3.9	2.70
19	---	6.0	(255)	---	105	3.10	3.6	2.70
20	---	5.0	(270)	---	105	---	3.0	2.60
21	---	5.0	(270)	---	100	---	3.6	2.55
22	---	(305)	5.4	(300)	---	---	3.2	2.50
23	---	5.5	(320)	---	---	2.40	>3.2	2.55

Time: 15.0°E.

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

Table 15

Inverness, Scotland	(57.4°N, 4.2°W)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00		(6.4)	320			2.4		2.35
01		6.2	315			2.7		2.35
02		(5.8)	325			2.5		(2.4)
03		5.4	340		115	1.40	2.2	2.30
04	510	5.6	300	---	110	1.05	2.3	2.5
05	400	5.7	265	---	110	2.25		2.55
06	440	6.0	250	4.2	110	2.70	2.8	2.6
07	475	6.3	245	4.6	105	3.05	3.3	2.55
08	420	6.7	235	5.0	105	3.30	3.6	2.6
09	435	6.7	230	5.2	105	3.50	3.0	2.6
10	445	6.9	230	5.5	105	3.70	4.0	2.55
11	455	7.0	220	5.5	105	3.75	4.0	2.55
12	475	7.0	220	5.6	105	3.85	4.0	2.5
13	455	7.2	220	5.6	105	3.00		2.55
14	455	7.1	230	5.5	105	3.70		2.55
15	450	7.2	245	5.4	105	3.65		2.55
16	415	7.3	240	5.4	105	3.60		2.6
17	410	7.3	245	5.1	110	3.35	3.4	2.6
18	390	7.2	250		110	3.00	3.2	2.7
19	365	7.3	255		115	2.60	2.9	2.7
20		7.2	270		120	2.15	2.3	2.7
21		7.0	290		110	1.75	2.0	2.65
22		6.9	300			<1.6	(2.4)	
23		6.9	300			1.6		2.45

Time: 0.0°.

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

Table 17

Winnipeg, Canada	(49.9°N, 97.4°W)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00		5.0	300			2.0		(2.7)
01		4.5	310			3.0		(2.8)
02		4.0	340			3.0	---	
03		4.2	340			4.0	---	
04		4.0	320			2.9	---	
05	---	4.4	200	---	100	1.9	2.8	---
06	(500)	4.9	240	4.0	110	2.6		2.9
07	490	5.1	220	4.3	100	3.0		2.6
08	500	5.2	220	4.6	100	3.4		2.5
09	550	5.4	210	4.0	100	3.6		2.4
10	520	5.0	200	5.0	100	3.0		2.5
11	510	6.0	200	5.0	100	4.0		2.5
12	500	6.0	200	5.1	100	4.0		2.5
13	520	6.1	210	5.2	100	4.0		2.4
14	510	6.2	210	5.1	100	4.0		2.5
15	540	6.2	210	5.1	100	3.9		2.4
16	490	6.3	210	5.0	100	3.7		2.5
17	410	6.6	220	4.9	100	3.3		2.6
18	420	6.7	230	4.6	100	3.0		2.7
19	---	6.7	240	---	110	2.7		2.9
20		6.6	270		120	2.0		2.9
21		6.7	270	---	---			2.9
22		6.0	200			2.4		2.8
23		5.2	200			2.6		(2.75)

Time: 00.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Sodankyla, Finland	(67.4°N, 26.6°E)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00			5.0		400			4.0
01			5.0		375			4.0
02			5.5		360			4.1
03			5.6		320			2.40
04			5.7		270			2.40
05			5.6		250			2.40
06			5.7		240	4.2	110	2.45
07			6.0		240	4.4	100	2.40
08			6.2		230	4.0	100	2.40
09			6.4		225	4.9	100	5.5
10			6.5		225	5.0	100	2.40
11			6.6		220	5.2	100	6.1
12			6.5		220	5.2	100	2.40
13			6.6		215	5.2	100	6.0
14			6.7		215	5.1	100	5.4
15			6.5		220	---		2.50
16			6.3		220	---	105	3.40
17			6.2		230	---	105	3.30
18			6.1		240	---	110	4.9
19			6.1		250	---	110	4.5
20			6.3		270	---	110	4.5
21			5.9		290	---	115	2.35
22			5.9		330	---	115	2.20
23			5.9		350	---	4.1	2.65

Time: 30.0°E.

Sweep: 1.4 Mc to 22.0 Mc in 8 minutes, automatic operation.

Table 16

Moscow, U.S.S.R.	(55.5°N, 37.3°E)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00			6.4		295			2.55
01			6.0		300			2.55
02			5.0		300			2.50
03	(330)	5.7	300	---				2.55
04		325	6.0	270		3.5		2.65
05	370	6.3	240	4.4				2.65
06	400	6.6	230	4.0				2.60
07	405	6.0	220	5.0				2.60
08	420	7.4	210	5.3				2.55
09	410	7.4	220	5.5				2.55
10	425	7.6	210	5.6				2.55
11	430	7.4	210	5.6				2.60
12	430	7.0	210	5.7				2.55
13	430	7.6	210	5.7				2.55
14	420	7.2	210	5.5				2.60
15	415	7.1	220	5.5				2.60
16	375	7.1	225	5.4				2.65
17	350	7.3	235	4.9				2.70
18	310	7.4	250	4.3				2.00
19	(275)	7.2	260	---				2.00
20		7.2	270	---				2.00
21		7.3	270	---				2.00
22		7.4	275	---				2.00
23		7.0	200	---				2.00

Time: 30.0°E.

Sweep: 1.0 Mc to 10.0 Mc in 20 seconds.

Table 18

Graz, Austria	(47.1°N, 15.5°E)	July 1950						
Time	h'F2	f0F2	h'F	f0f1	h'E	f0E	f0Es	(M3000)F2
00			>6.6		340			
01			>7.0		340			
02			>5.5		330			
03			(5.9)		340			
04			>4.9		335			
05			(6.6)		205			
06	(380)	(6.9)	250	(4.5)				
07	(340)	(7.0)	240	4.0	---			4.3
08	(360)	7.9	230	5.2	100	3.5	4.4	
09	(400)	8.1	210	>5.3	100	3.6	4.7	
10	400	8.2	210	>5.4	100	3.7	4.3	
11	400	8.3	210	---	100			

Table 19

Schwarzenburg, Switzerland (46.8°N, 7.3°E)

July 1958

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.5					2.9	
01	300	7.2					2.8	
02	300	6.8					2.0	
03	300	6.4					2.9	
04	300	6.1					2.9	
05	300	6.0	---	---	120	1.9	2.4	3.0
06	290	6.8	260	4.0	100	2.4	3.5	3.1
07	300	7.4	230	4.7	100	3.0	4.4	3.25
08	320	7.6	220	5.2	100	3.3	4.6	3.1
09	360	7.7	210	5.4	100	3.6	4.7	3.1
10	330	7.0	200	5.6	100	3.0	4.6	2.9
11	410	8.2	200	5.9	100	3.6	5.0	2.9
12	400	8.3	200	5.9	100	3.9	4.9	2.9
13	400	0.1	210	5.9	100	4.0	4.5	2.9
14	400	7.8	200	6.0	100	3.9	4.3	2.9
15	410	7.9	210	5.7	100	3.8		2.9
16	390	7.8	220	5.5	100	3.7	4.3	3.0
17	360	7.8	220	5.3	100	3.4	4.4	3.0
18	320	7.8	230	4.8	100	3.0	4.4	3.1
19	290	8.0	240	4.6	100	2.5	4.0	3.15
20	260	8.0	---	---	---	3.6		3.2
21	260	8.0				3.0		3.0
22	200	7.8				3.6		3.0
23	290	7.7				2.4		2.9

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 21

Natal, Brazil (5.3°S, 35.1°W)

July 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	(4.45)	(400)					----	
01	(4.5)	<340					----	
02	(4.6)	310					(2.65)	
03	4.45	(200)					(3.00)	
04	4.55	(250)					3.15	
05	4.2	250					3.10	
06	3.55	255					3.10	
07	7.6	255					3.15	
08	10.3	240	111	3.20			3.05	
09	11.8	225	109	3.50			3.00	
10	12.7	220	107	----			2.78	
11	12.95	210	103	----			2.50	
12	13.3	<220	106	----			2.40	
13	----	13.3	<220	----	(106)	----	2.30	
14	----	12.7	215	----	----		2.20	
15	----	12.4	<215	(105)	----	4.2	2.15	
16	11.85	230	(111)	(3.50)			2.20	
17	11.4	250	117	(3.05)	3.8		2.30	
18	>10.55	275					2.28	
19	>9.0	310					(2.20)	
20	>7.0	410					2.10	
21	6.5	<475					2.15	
22	(5.4)	450					(2.20)	
23	(5.05)	(420)					(2.40)	

Time: 30.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 32.4 seconds.

Table 23

Hobart, Tasmania (42.9°S, 147.2°E)

July 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		4.3	200				2.70	
01		>4.0	290				2.65	
02		4.0	300				2.65	
03		3.8	280			3.4	2.70	
04		4.0	200				2.80	
05		3.7	250				2.05	
06		(3.2)	260				2.75	
07		3.5	260				2.90	
08		6.0	230	----	----	----	3.20	
09		(6.2)	230	120	2.70		3.30	
10		(9.0)	230	120	3.10	3.5	3.15	
11		(10.3)	230	120	3.25	3.9	3.20	
12		>11.0	230	120	3.35	4.0	3.15	
13		(11.1)	230	120	3.30	4.0	3.00	
14		>11.0	230	120	3.20	3.6	(3.05)	
15		>10.5	230	120	3.00	3.5	(2.05)	
16		>10.0	230	----	----	----		
17		>9.5	230				(3.05)	
18		>8.5	230				3.00	
19		7.3	230				2.90	
20		6.0	250				2.90	
21		>5.1	250				(2.80)	
22		>4.4	260				2.00	
23		4.3	270				2.70	

Time: 150.0°E.

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

Table 20

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

July 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00					5.6	325		3.4
01					5.6	310		3.0
02					5.45	310		3.0
03					5.25	315		2.6
04					4.85	325		2.0
05					4.85	310	----	2.45
06					(435)	5.7	250	4.0
07					490	6.4	230	4.5
08					510	7.0	220	4.0
09					435	7.4	210	5.1
10					460	7.6	205	5.3
11					450	0.0	210	5.4
12					430	8.2	210	5.5
13					440	0.7	215	5.5
14					425	0.0	220	5.5
15					415	8.6	220	5.4
16					390	8.0	230	5.1
17					380	7.7	230	4.8
18					---	7.55	240	105
19						7.15	270	<123
20						6.0	<260	2,00
21						6.4	270	3.5
22						6.25	<290	3.8
23						5.7	300	3.2

Time: 120.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Brisbane, Australia (27.5°S, 152.9°E)

July 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00					5.2	255		2.70
01					4.9	260		2.75
02					4.7	260		2.65
03					4.7	260		2.4
04					4.2	260		2.70
05					4.2	265		2.70
06					4.2	250	----	2.00
07					8.0	240	140	1.80
08					10.2	235	120	<2.80
09					11.6	230	120	3.30
10					11.0	225	120	3.50
11					11.2	220	120	3.70
12					10.8	220	120	3.70
13					11.0	220	120	>3.60
14					10.6	240	120	>3.50
15					10.0	240	120	3.25
16					10.6	240	120	3.0
17					9.0	240	140	<2.20
18					8.5	230	120	2.0
19					7.5	240		2.2
20					7.0	250		2.1
21					6.5	250		2.70
22					6.3	250		2.70
23					5.7	250		2.65

Time: 150.0°E.

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

Table 24

Thule, Greenland (76.6°N, 68.7°W)

June 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		505	5.6	250	3.6	111	(2,40)	2.60
01		(595)	5.75	245	3.6	110	(2,50)	2.72
02		550	5.3	240	3.8	109	(2,50)	2.50
03		465	5.2	230	4.0	109	2,65	2.55
04		600	5.1	235	4.2	107	2,80	2.40
05		560	5.3	235	4.3	105	2,95	2.30
06		575	<4.7	230	4.5	103	3.10	6
07		540	4.95	220	4.5	101	3.20	2.15
08		610	5.4	225	4.5	101	3.30	2.20
09		615	5.2	230	4.0	101	(3,40)	2.05
10		550	5.6	225	4.8	101	3.40	2.20
11		555	5.5	220	4.8	101	3.45	2.30
12		640	5.3	215	4.0	99	3.45	2.20
13		570	5.6	210	4.0	101	3.40	2.30
14		525	5.75	215	4.0	101	3.38	2.30
15		515	5.8	215	4.7	101	3.30	2.35
16		520	5.7	215	4.7	101	3.20	2.35
17		460	5.8	220	4.5	103	3.10	2.50
18		460	5.95	225	4.4	105	2,95	2.40
19		420	5.7	230	4.2	107	2,80	2.50
20		410	5.9	240	4.0	109	2,70	2.55
21		430</						

Table 25

Kiruna, Sweden (67.8°N, 20.3°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00	---	5.6	365	---	---	4.5	2.4		
01	---	6.0	318	---	---	5.8	2.4		
02	(415)	5.9	(300)	3.2	---	4.8	2.4		
03	420	6.0	260	3.6	(105)	2.2	4.0	2.4	
04	420	6.1	250	4.1	100	2.6	4.0	2.4	
05	450	6.0	250	4.4	100	2.8	3.4	2.4	
06	490	6.0	235	4.5	100	3.0		2.4	
07	500	6.1	235	4.9	100	3.1		2.4	
08	500	6.3	225	5.0	100	3.2		2.4	
09	495	6.4	220	5.0	100	3.3		2.4	
10	500	6.5	225	5.2	100	3.3		2.4	
11	515	6.3	220	5.2	100	3.4	3.4	2.4	
12	530	6.3	220	5.2	100	3.4	3.5	2.4	
13	510	6.3	215	5.2	100	3.4		2.4	
14	500	6.3	215	5.2	100	3.3		2.4	
15	485	6.2	220	5.2	100	3.2	3.7	2.4	
16	445	6.3	230	5.0	100	3.2	3.3	2.55	
17	430	6.3	235	5.0	100	3.0	4.0	2.6	
18	(400)	6.3	245	4.6	105	2.9	4.0	2.6	
19	---	6.2	250	4.5	105	2.7	4.1	2.6	
20	---	6.1	280	---	110	2.4	4.5	2.6	
21	---	6.0	310	---	---	2.3	4.9	2.5	
22	---	6.0	350	---	---	4.6	2.6		
23	---	6.0	350	---	---	4.0	2.5		

Time: 15.0°E.

Sweep: 0.0 Mc to 14.0 Mc in 30 seconds.

Table 27

Wakkanai, Japan (45.4°N, 141.7°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00	8.4	315				2.8	2.50		
01	8.2	300				2.7	2.50		
02	7.8	300				2.5	2.50		
03	7.5	310				3.0	2.50		
04	7.6	290	---		1.75	3.1	2.50		
05	8.4	260	---		2.55	2.9	2.50		
06	390	6.8	260	4.6	3.10	3.5	2.55		
07	420	6.8	250	5.1	3.50	5.0	2.60		
08	470	8.5	250	5.3	3.65	6.3	2.50		
09	490	0.1	240	5.6	3.80	6.0	2.45		
10	490	7.6	235	5.7	3.90	5.3	2.40		
11	405	7.7	235	5.7	3.95	5.2	2.45		
12	490	7.6	235	5.7	3.95	4.8	2.45		
13	490	7.6	240	5.7	3.75	4.6	2.45		
14	465	7.7	250	5.6	3.70	4.5	2.45		
15	450	7.9	240	5.4	3.60	4.9	2.50		
16	450	7.8	250	5.3	3.50	4.7	2.50		
17	420	8.0	260	4.8	3.10	5.2	2.60		
18		7.8	275		2.55	5.5	2.60		
19	0.1	300		---	4.5	2.60			
20	0.3	305				5.2	2.55		
21	0.3	320				3.5	2.45		
22	(0.4)	325				3.3	(2.45)		
23	(0.5)	320				2.5	(2.50)		

Time: 135.0°E.

Sweep: 1.0 Mc to 20.7 Mc in 1 minute.

Table 29

Tokyo, Japan (35.7°N, 139.5°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00		(9.4)	320			4.2	(2.55)		
01	9.2	300				3.4	2.60		
02	8.6	300				3.0	2.60		
03	8.3	310				3.6	2.55		
04	8.0	310				3.4	2.55		
05	8.6	255			2.30	2.4	2.70		
06	9.4	250	---		2.95	3.5	2.75		
07	360	9.7	250	---	3.40	5.2	2.60		
08	360	9.6	250	---	3.70	5.8	2.55		
09	390	9.6	250	6.0	3.90	7.5	2.50		
10	415	9.7	(250)	6.4	4.00	7.2	2.45		
11	420	10.1	230	6.1	(4.10)	6.7	2.50		
12	410	10.2	240	6.2	(4.10)	5.5	2.50		
13	405	10.3	245	6.2	(4.10)	5.0	2.50		
14	405	10.2	240	6.0	4.10	5.0	2.50		
15	400	10.0	245	5.9	3.90	5.0	2.55		
16	390	9.7	250	5.6	(3.60)	5.6	2.60		
17	350	9.4	260	---	3.20	5.2	2.65		
18	<375	9.2	290		2.50	5.0	2.70		
19		8.9	295			5.4	2.60		
20		0.4	330			5.5	2.45		
21		(8.0)	350			4.5	(2.40)		
22		9.2	350			4.9	2.45		
23		9.4	350			5.0	2.50		

Time: 135.0°E.

Sweep: 1.0 Mc to 20.0 Mc in 20 seconds.

Table 25

Kiruna, Sweden (67.8°N, 20.3°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00	---	5.6	365	---	---	4.5	2.4		
01	---	6.0	318	---	---	5.8	2.4		
02	(415)	5.9	(300)	3.2	---	4.8	2.4		
03	420	6.0	260	3.6	(105)	2.2	4.0	2.4	
04	420	6.1	250	4.1	100	2.6	4.0	2.4	
05	450	6.0	250	4.4	100	2.8	3.4	2.4	
06	490	6.0	235	4.5	100	3.0		2.4	
07	500	6.1	235	4.9	100	3.1		2.4	
08	500	6.3	225	5.0	100	3.2		2.4	
09	495	6.4	220	5.0	100	3.3		2.4	
10	500	6.5	225	5.2	100	3.3		2.4	
11	515	6.3	220	5.2	100	3.4	3.4	2.4	
12	530	6.3	220	5.2	100	3.4	3.5	2.4	
13	510	6.3	215	5.2	100	3.4		2.4	
14	500	6.3	215	5.2	100	3.3		2.4	
15	485	6.2	220	5.2	100	3.2	3.7	2.4	
16	445	6.3	230	5.0	100	3.2	3.3	2.55	
17	430	6.3	235	5.0	100	3.0	4.0	2.6	
18	(400)	6.3	245	4.6	105	2.9	4.0	2.6	
19	---	6.2	250	4.5	105	2.7	4.1	2.6	
20	---	6.1	280	---	110	2.4	4.5	2.6	
21	---	6.0	310	---	---	2.3	4.9	2.5	
22	---	6.0	350	---	---	4.6	2.6		
23	---	6.0	350	---	---	4.0	2.5		

Time: 15.0°E.

Sweep: 0.0 Mc to 14.0 Mc in 30 seconds.

Table 27

Wakkanai, Japan (45.4°N, 141.7°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00	8.4	315				2.8	2.50		
01	8.2	300				2.7	2.50		
02	7.8	300				2.5	2.50		
03	7.5	310				3.0	2.50		
04	7.6	290	---		1.75	3.1	2.50		
05	8.4	260	---		2.55	2.9	2.50		
06	390	6.8	260	4.6	3.10	3.5	2.55		
07	420	6.8	250	5.1	3.50	5.0	2.60		
08	470	8.5	250	5.3	3.65	6.3	2.50		
09	490	0.1	240	5.6	3.80	6.0	2.45		
10	490	7.6	235	5.7	3.90	5.3	2.40		
11	405	7.7	235	5.7	3.95	5.2	2.45		
12	490	7.6	235	5.7	3.95	4.8	2.45		
13	490	7.6	240	5.7	3.75	4.6	2.45		
14	465	7.7	250	5.6	3.70	4.5	2.45		
15	450	7.9	240	5.4	3.60	4.9	2.50		
16	450	7.8	250	5.3	3.50	4.7	2.50		
17	420	8.0	260	4.8	3.10	5.2	2.60		
18	7.8	275			2.55	5.5	2.60		
19	0.1	300		---	4.5	2.60			
20	0.3	305				5.2	2.55		
21	0.3	320				3.5	2.45		
22	(0.4)	325				3.3	(2.45)		
23	(0.5)	320				2.5	(2.50)		

Time: 135.0°E.

Sweep: 1.0 Mc to 20.7 Mc in 20 seconds.

Table 29

Tokyo, Japan (35.7°N, 139.5°E)

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2	June 1950
00		(9.4)	320			4.2	(2.55)		
01	9.2	300				3.4	2.60		
02	8.6	300				3.0	2.60		
03	8.3	310				3.6	2.55		
04</									

Table 31

Ibadan, Nigeria (7.4°N, 3.9°E)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	(5.2)	445						
01	(5.2)	410						
02	(5.4)	355						
03	(5.7)	265						
04	(4.9)	245						
05	4.8	245						
06	0.4	260	120	2.30	3.2	3.05		
07	11.3	240	110	3.15	7.8	3.00		
08	12.9	230	105	3.65	8.6	2.75		
09	13.6	220	105	4.00	8.7	2.55		
10	13.2	215	105	4.20	8.9	2.20		
11	12.3	205	105	4.30	8.9	2.20		
12	11.6	205	105	4.35	8.8	2.10		
13	11.2	208	105	4.30	8.6	2.10		
14	11.2	208	105	4.10	8.7	2.10		
15	11.1	215	105	3.80	8.5	2.10		
16	11.2	235	105	3.40	6.6	2.15		
17	11.1	250	110	2.85		2.10		
18	10.7	295	(150)	1.90		2.20		
19	(9.1)	390	---	---		(2.10)		
20	(7.4)	425	---			(1.90)		
21	(6.6)	450	---					
22	(6.5)	430	---					
23	(5.6)	430	---					

Time: 0.0°.

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

Table 33

Townsville, Australia (19.3°S, 146.7°E)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	5.5	250						2.80
01	5.5	258						2.80
02	5.0	258						2.90
03	4.3	250						3.00
04	3.8	258						2.65
05	3.9	200						2.75
06	4.2	255						2.90
07	>7.6	240	<150	2.18				----
08	>10.8	238	185	2.90	3.3			
09	(13.0)	240	100	3.40	3.7	(3.10)		
10	13.8	230	180	3.65	3.8	3.05		
11	>12.0	228	100	3.90	4.1	2.85		
12	12.4	220	100	4.00		2.70		
13	12.0	228	100	3.90	4.2	2.70		
14	>12.0	238	110	3.80	4.1	2.80		
15	>12.0	238	110	3.45	4.2	2.60		
16	>11.0	240	110	3.20	4.0	<2.70		
17	>10.8	245	110	2.50	3.5			
18	>8.0	240			3.0	----		
19	(8.0)	230			3.2	(3.00)		
20	>7.0	250				(2.80)		
21	(7.0)	250				(2.80)		
22	>6.5	<258				(2.98)		
23	>5.9	<245				(2.80)		

Time: 150.0°E.

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

Table 35

Hobart, Tasmania (42.9°S, 147.2°E)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	>4.2	290						2.70
01	>4.1	290						2.65
02	3.9	290						2.70
03	4.1	288						2.70
04	3.9	278			2.4			2.80
05	3.6	260						2.80
06	3.7	260						2.95
07	3.8	268						2.05
08	7.0	240	---	---				(3.15)
09	(8.9)	230	120	2.65				(3.38)
10	10.2	230	120	3.05				3.15
11	>10.8	230	120	3.25				(3.80)
12	>11.0	230	120	3.30				(3.10)
13	>11.0	238	120	3.30				(2.98)
14	>11.0	230	120	3.20				(2.05)
15	>10.5	240	120	2.00				----
16	>10.0	230	---	2.35				(2.75)
17	>10.8	230						----
18	9.0	240						(2.90)
19	>7.5	230						(2.90)
20	6.4	240						2.98
21	>6.0	250						2.08
22	>4.4	270						2.00
23	4.2	268						2.75

Time: 150.0°E.

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

Table 32

Singapore, British Malaya (1.3°N, 103.0°E)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			11.8		240			3.2
01			10.8		225			3.0
02			9.1		225			2.95
03			7.5		230			3.00
04			6.9		235			3.00
05			5.6		240			3.00
06			7.0		265			2.85
07			11.4		255			2.85
08			13.6		258			2.85
09			15.0		240			2.75
10			15.0		230			2.50
11			>14.6		215			2.38
12			300		215			2.20
13			435		210			2.00
14			13.1		210			2.00
15			12.8		215			2.10
16			12.6		245			2.15
17			>12.0		250			2.20
18			13.2		265			2.30
19			>13.2		315			2.40
20			>12.9		340			2.0
21			>12.2		290			2.0
22			>12.2		250			2.0
23			>12.7		245			2.0

Time: 105.0°E.

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

Table 34

Canberra, Australia (35.3°S, 149.0°E)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			(5.0)		258			2.85
01			4.8		250			2.90
02			4.8		250			2.85
03			4.9		250			2.85
04			4.8		248			2.95
05			4.3		220			3.00
06			4.2		220			3.10
07			5.7		215			3.20
08			>9.8		200			3.50
09			>11.8		200			3.40
10			11.7		200			3.30
11			12.0		200			3.20
12			12.0		200			3.15
13			12.8		200			3.15
14			12.8		200			3.10
15			11.8		205			3.05
16			>11.4		210			3.15
17			11.8		200			3.10
18			>9.8		195			3.10
19			>7.8		200			3.20
20			>7.8		218			3.10
21			5.8		<220			3.00
22			5.2		(235)			2.98
23			5.0		(240)			2.98

Time: 150.0°E.

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

Table 36

Falkland Is. (51.7°S, 57.0°W)								June 1950
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			3.3		350			1.8
01			3.3		350			2.30
02			3.2		350			2.35
03			3.2		320			2.35
04			3.2		300			2.45
05			3.2		300			2.55
06			2.0		250			2.50
07			3.8		260			----
08			6.0		240			(3.30)
09			9.1		220			3.28
10			10.8		230			3.25
11			10.8		235			3.25
12			10.7		235			3.25
13			10.0		240			3.25
14			9.5		235			3.20
15			9.2		235			3.30
16			7.4		215			3.30
17			5.8		225			3.20
18			4.7		230			3.15
19			3.0		240			2.4
20			3.2		230			(3.00)
21			3.0		<300			2.2
22			3.1		<320			(2.55)
23			3.3		335			1.8

Table 37

Time	May 1950						(M3000)F2	
	h'F2	foF2	h'F	foF1	h'E	foE	fEs	
00	11.6	240			<2.2	3.00		
01	11.0	240			<2.1	2.90		
02	9.4	240			<2.1	3.00		
03	8.1	240			<2.1	2.95		
04	6.2	240			<2.1	2.90		
05	5.4	270			<2.1	2.90		
06	5.0	290			<2.1	2.60		
07	8.0	270				2.05		
08	12.2	260			3.00	3.00		
09	14.0	250			3.40	3.00		
10	>14.0	240			3.60	2.90		
11	>14.0	240			3.75	2.75		
12	(14.3)	235			3.05	(2.65)		
13	(4.30)	230	7.3		3.90	(2.60)		
14	420	(14.2)	240	7.0	3.65	4.2	(2.50)	
15	(4.10)	(14.4)	250	7.0	(3.45)	3.9	(2.50)	
16	>14.0	260			---	4.3	(2.50)	
17	(14.3)	270			---	3.3	(2.60)	
18	>14.0	270			3.8	(2.75)		
19	>14.0	260			3.2	(2.75)		
20	(13.4)	275			<2.3	(2.70)		
21	13.4	260			<2.2	(2.00)		
22	13.2	240			<2.2	(2.90)		
23	12.4	240			2.3	3.00		

Time: 45.0°W.

Sweep: 1.75 Mc to 20.0 Mc in 2 minutes 30 seconds.

Table 39

Time	April 1950						(M3000)F2	
	h'F2	foF2	h'F	foF1	h'E	foE	fEs	
00	(8.2)	355				----		
01	(8.4)	340				----		
02	(8.4)	295				(2.70)		
03	(8.9)	255				(2.90)		
04	(9.0)	240				(3.05)		
05	7.2	225				3.30		
06	>9.5	260	130	2.20		3.00		
07	(12.7)	245	110	3.10	3.2	3.00		
08	>14.5	240	110	3.70		2.70		
09	(15.3)	230	105	4.05	8.8	(2.45)		
10	>15.3	220	105	(4.30)	8.8	(2.25)		
11	>14.8	215	105	(4.35)	8.8	2.15		
12	13.0	210	105	(4.40)	0.9	2.05		
13	13.5	210	105	(4.30)	8.8	2.05		
14	13.6	210	105	(4.15)	0.0	2.00		
15	>13.3	230	110	(3.00)	0.7	(2.00)		
16	(12.4)	250	110	(3.40)	5.5	(2.00)		
17	>11.6	270	115	2.80	3.2	(2.00)		
18	(11.0)	320	---	1.65		(2.00)		
19	(9.1)	455	---	----		<1.90		
20	(8.4)	490				(1.75)		
21	(8.4)	485				----		
22	(8.3)	435				----		
23	(8.2)	390				(2.10)		

Time: 0.0°.

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

Table 41

Time	February 1958						(M3000)F2	
	h'F2	foF2	h'F	foF1	h'E	foE	fEs	
00	5.8	300				2.55		
01	5.7	300				2.45		
02	5.6	<310				2.55		
03	5.4	300				2.50		
04	5.3	300				2.55		
05	5.1	290				2.55		
06	4.6	270				2.70		
07	5.8	260	---	1.9		2.75		
08	10.2	240	120	2.5		3.10		
09	12.8	230	120	3.1		2.95		
10	14.0	230	120	3.4		2.90		
11	14.2	230	120	3.6		2.80		
12	14.2	230	110	3.7		2.85		
13	13.7	230	110	3.7		2.80		
14	13.6	240	110	3.6		2.75		
15	13.4	240	110	3.4		2.75		
16	13.0	240	110	2.9		2.80		
17	12.6	240	120	2.2		2.85		
18	12.0	240				2.80		
19	9.6	230				2.80		
20	7.9	240				2.75		
21	6.9	250				2.65		
22	6.4	260				2.55		
23	5.8	290				2.50		

Time: 15.0°E.

Sweep: 1.4 Mc to 15.0 Mc in 5 minutes, automatic operation.

Table 38

Time	April 1958						(M3000)F2	
	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	
00	340	7.7						2.6
01	340	7.4						2.6
02	320	7.2						2.6
03	320	6.9						2.6
04	320	6.4						2.6
05	320	6.2						2.7
06	230	6.8	---	---	---	120	2.10	3.0
07	260	7.0	260	4.9	110	2.60		3.1
08	240	8.4	240	5.2	100	3.00		3.15
09	300	9.5	230	5.7	100	3.40		3.0
10	310	10.3	220	6.0	100	3.60		3.0
11	340	11.4	220	7.0	100	3.70		2.9
12	360	12.0	220	6.8	100	3.80		2.8
13	360	12.0	230	6.8	100	3.80		2.8
14	370	11.5	230	6.6	100	3.80		2.8
15	360	11.6	240	7.0	100	3.70		2.8
16	340	10.8	240	6.6	100	3.50		2.8
17	260	10.6	250	6.2	100	3.10		2.9
18	260	10.0	---	---	110	2.55		2.95
19	270	9.0			110	2.20		3.0
20	260	8.9						3.0
21	270	8.4						2.9
22	300	7.8						2.8
23	310	7.7						2.7

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 40

Time	March 1958						(M3000)F2	
	h'F2	foF2	h'F	foF1	h'E	foE	fEs	
00	(10.0)	255						(2.65)
01	(9.8)	250						(2.90)
02	(10.4)	250						2.90
03	(10.0)	240						3.00
04	0.5	220						(3.20)
05	>6.7	215						3.40
06	(8.1)	250						3.40
07	(11.2)	245						3.40
08	13.5	240						3.40
09	14.2	225						2.40
10	(14.0)	220						(2.30)
11	(13.3)	210						(2.15)
12	13.1	210						2.20
13	13.1	215						2.10
14	12.8	220						2.10
15	>12.3	230						2.05
16	12.0	250						2.05
17	11.5	265						2.05
18	>11.0	310						(2.05)
19	(9.2)	450						(2.00)
20	(8.6)	410						(2.05)
21	(9.2)	355						<2.40
22	(9.5)	320						(2.50)
23	(9.3)	290						(2.60)

Time: 0.0°.

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

Table 42

Time	February 1958						(M3000)F2	
	h'F2	foF2	h'F	foF1	h'E	foE	fEs	
00	(9.9)	255						(2.65)
01	(10.6)	245						(2.80)
02	>10.2	240						1.6
03	(9.7)	220						3.20
04	(8.4)	215						3.40
05	5.5	210						3.30
06	6.0	250	---	140	1.60			2.95
07	(10.2)	245	---	110	2.70	5.5		(2.95)
08	>11.7	235	---	105	3.40	8.7		(2.70)
09	12.4	220	---	105	3.85	8.7		2.45
10	12.1	210	---	105	4.10	8.0		2.35
11	12.3	205	---	105	(4.25)	8.9		2.25
12	12.3	205	---	105	4.30	7.0		2.25
13	(12.6)	205	---	105	4.25			(2.25)
14	12.8	210	---	105	(4.10)			2.25
15	(13.4)	225	---	105	3.80			(2.30)
16	>13.4	240	---	110	3.40	6.8		2.25
17	(13.0)	260	---	110	2.70	3.2		(2.30)
18	>11.4	300	---	<155	1.65	2.9		---
19	(10.6)	405						(

Table 43

Concepcion, Chile (36.6°S, 73.0°W)							January 1950	
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.8	365			3.1	2.35	
01		9.4	345			3.7	2.40	
02		9.1	355			3.7	2.35	
03		8.8	360			3.3	2.20	
04		8.5	390			3.1	2.22	
05		9.0	295	---	---	3.7	2.30	
06		9.6	260	---	116	(2.80)	4.6	2.45
07		10.4	250	---	111	(3.30)	4.9	2.25
08	---	11.05	240	---	111	3.85	5.0	2.20
09	500	11.6	235	6.5	111	4.15	5.0	2.30
10	465	12.1	225	6.8	111	4.30	4.9	2.35
11	460	12.2	230	6.7	111	(4.45)	2.35	
12	465	12.45	225	6.6	111	4.50	2.35	
13	450	12.45	(230)	6.5	113	4.50	4.9	2.35
14	440	11.9	235	6.4	111	4.40	4.6	2.40
15	450	11.25	(245)	6.1	111	4.12	5.4	2.40
16	440	10.5	(250)	---	111	3.82	7.0	2.40
17	(440)	9.7	<265	---	112	3.40	5.3	2.35
18	---	9.75	<295	---	117	---	5.0	2.35
19		9.75	(335)	---	---	4.5	2.25	
20		9.9	<420			5.5	2.20	
21		10.3	420			4.4	2.25	
22		9.95	405			4.5	2.30	
23		10.2	385			4.5	2.30	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 45

Pole Station (90.0°S)							October 1957	
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	(500)	(7.35)	<300	---	(129)	---		(2.50)
01	---	(7.0)	<300	---	126	---		(2.45)
02	---	(7.3)	(300)	---	128	---		(2.40)
03	(505)	(7.4)	<315	---	131	---		(2.35)
04	(495)	(7.4)	300	---	<145	---		(2.30)
05	400	(7.2)	(310)	---	(137)	---		(2.20)
06	515	(6.9)	<325	---	<131	---		(2.20)
07	500	(6.6)	320	(4.0)	124	---		(2.30)
08	520	(5.85)	(330)	(3.4)	119	---		(2.20)
09	540	(6.0)	<330	(4.0)	122	---		(2.20)
10	(545)	(5.5)	<340	---	118	---		(2.30)
11	(610)	(5.4)	<335	---	119	---		(2.50)
12	---	(5.5)	<335	---	119	---		2.45
13	---	(5.8)	(315)	---	(121)	---		(2.60)
14	---	(6.2)	<310	---	---	---		2.60
15	---	(7.2)	(300)	---	119	---		2.55
16	---	(7.6)	<315	---	117	---		2.60
17	---	(7.2)	(300)	---	117	---		(2.55)
18	---	(6.8)	(290)	---	122	2.30		(2.65)
19	---	(6.3)	300	---	124	---		2.65
20	---	(6.75)	200	---	124	---		(2.75)
21	---	(6.65)	200	---	---	---		(2.70)
22	---	(6.7)	<280	---	139	---		(2.62)
23	---	(7.2)	(280)	---	(131)	2.30		(2.50)

Time: 0.0°.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 47

Pole Station (90.0°S)							September 1957	
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.2)	(285)					(2.70)
01		(6.6)	(280)					(2.62)
02		(6.6)	(300)					(2.65)
03		(6.9)	<330					(2.65)
04		(7.3)	(320)					(2.50)
05		(6.45)	<325					(2.55)
06		(7.4)	(330)					(2.50)
07		(7.4)	<320	---	---			(2.45)
08		(6.0)	(310)					(2.40)
09		(6.3)	(325)					(2.48)
10		(5.8)	(345)					(2.52)
11		(5.6)	(340)					(2.60)
12		(5.3)	<355					(2.70)
13		(5.9)	310					(2.80)
14		(5.7)	<310					(2.00)
15		(7.05)	<280	---	---			(2.85)
16		(6.6)	275	---	---			(2.90)
17		(7.0)	295	---	---			(2.75)
18		(5.75)	290	---	---			(2.68)
19		(5.05)	320	---	---			(2.65)
20		(5.25)	(295)	---	---			(2.75)
21		(5.45)	295	---	---			(2.80)
22		(5.4)	290					(2.70)
23		(5.75)	<285					(2.00)

Time: 0.0°.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 44

Concepcion, Chile (36.6°S, 73.0°W)							December 1957	
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			9.45		385			5.0
01			>9.25		360			4.0
02			8.8		370			4.4
03			8.55		375			3.0
04			0.3		395			4.0
05			9.0		290	(125)	(2.30)	2.32
06			9.2		260	115	3.10	5.2
07			>9.7		245	111	(3.60)	5.1
08	(500)	10.2	250	---	---	110	(3.95)	5.4
09	495	10.55	(250)	6.6	109	(4.20)	6.4	2.40
10	470	11.1	240	6.5	109	(4.20)	5.4	2.35
11	475	11.1	235	6.6	111	4.35	5.0	2.35
12	475	11.0	(245)	6.4	111	(4.50)	5.3	2.35
13	480	10.95	245	6.4	113	(4.50)	5.1	2.35
14	465	10.8	(250)	6.2	113	(4.30)	5.2	2.35
15	460	10.5	(250)	6.0	111	(4.00)	5.7	2.40
16	460	10.4	(260)	6.0	113	(3.05)	5.0	2.12
17	(440)	>9.85	(270)	---	115	3.45	6.1	2.40
18	---	9.2	(300)	121	(2.60)	5.8	2.40	
19		9.1	<365	---	---	---	5.1	2.25
20		9.1	<420				6.1	2.25
21		9.1	420				5.0	2.25
22		9.1	420				5.5	2.20
23		9.4	400				4.0	2.35

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 46

San Francisco, California (37.4°N, 122.2°W)							September 1957	
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			5.0		320			2.50
01			5.0		315			2.55
02			4.9		310			2.60
03			4.8		310			2.60
04			4.7		305			2.50
05			4.5		315			2.50
06			5.5		290	109	2.00	2.80
07			7.0		250	109	2.75	2.90
08	(935)	7.95	240	4.4	107	3.30		2.92
09	750	9.3	225	4.8	107	3.55		2.05
10	6	9.0	220	4.9	105	3.90		2.75
11	430	9.5	225	5.2	107	4.00		2.65
12	565	10.25	225	5.0	105	4.05		2.65
13	440	10.05	230	5.1	103	4.00		2.65
14	450	9.9	230	5.2	103	3.98		2.65
15	(615)	10.05	235	4.7	105	3.62		2.70
16	(590)	9.5	240	4.6	105	3.30		2.72
17	---	9.3	250	---	111	2.80		2.02
18		>8.9	250	---	(121)	1.96	2.0	2.05
19		7.7	235					2.05
20		6.6	250					2.75
21		6.2	270					2.70
22		5.6	275					2.70
23		5.2	295					2.65

Time: 0.0°.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 49

Ibadan, Nigeria (7.4°N, 3.9°E)							June 1957
Time	h*F2	foF2	h*F	foF1	h*E	foE	(M3000)F2
00		(5.2)	440				(2,28)
01		(5.2)	415				(2,40)
02		(5.2)	365				(2,55)
03		(5.3)	315				(2,65)
04		(5.2)	250				(2,90)
05		(4.5)	250			2.6	(2,88)
06		0.5	265		110	2.35	2.5
07		11.4	250		110	3.20	4.2
08		12.9	240		105	3.70	7.1
09		13.5	230		105	4.00	7.4
10		13.6	220	---	105	4.20	7.4
11		13.3	215	(5.5)	105	4.30	7.4
12		12.3	210	(5.4)	105	4.35	7.4
13		11.0	210	(5.3)	105	4.30	7.5
14		11.5	215	(5.0)	105	4.15	7.6
15		11.5	220	(5.0)	110	3.85	7.4
16		11.4	235	---	110	3.40	6.6
17		11.4	260	---	115	2.00	5.4
18		>10.9	295	---	110	1.80	<2.15
19		9.6	305				2.00
20		(7.3)	435				<2.05
21		(6.4)	480				(2.05)
22		(5.7)	490				(2,18)
23		(5.4)	480				(2,06)

Sweat: 9.67 lbs to 35.0 lbs in 5 minutes, and

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

Table 51*

Time	h*F2	foF2	h'F	foF1	h"E	foE	fEs	(M\$3000)F2
00	<7.3	410				0.9	---	
01	<6.9	385					---	
02	<6.9	350				1.0	---	
03	<7.1	295					---	
04	(6.0)	250						(3.25)
05	4.9	235				6.1	3.30	
06	8.9	255		120	2.30	3.9	3.10	
07	11.9	240		115	3.15	4.7	3.10	
08	13.1	230		110	3.60	7.5	2.90	
09	14.2	225		110	3.95	7.5	2.55	
10	14.4	215		110	4.15	13.8	2.35	
11	14.2	210		110	4.25	13.8	2.10	
12	13.2	205		110	4.25	13.8	2.05	
13	12.4	200		110	4.20	13.7	2.00	
14	12.1	205		110	4.00	13.8	2.00	
15	11.9	210		110	3.70	11.0	2.05	
16	12.4	230		110	3.35	10.8	2.00	
17	12.2	260		115	2.65	8.5	2.00	
18	11.9	310		---	1.75	6.2	2.00	
19	>10.0	400						(1.90)
20	8.7	440					---	
21	<7.6	430					---	
22	(7.7)	420					---	
23	<7.5	430					---	

Time: 0.0°.

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

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

Table 53

Canberra, Australia (35.395°S, 149.0°E)						April 1957	
Time	h'F2	foF2	h'F	foF1	h'E	foE	(M3000)F2
00		(7.0)	270				2.2
01		(6.9)	270				
02		>6.5	270				1.8
03		>6.5	270				
04		(6.4)	250				
05		(5.8)	250				1.8
06		>6.0	250			<1.50	
07		>8.0	220			2.30	
08		>9.0	210			2.00	3.0
09		>10.7	210			3.25	3.5
10		>11.0	200			3.55	3.7
11	---		200			3.70	4.0
12	----		200			(3.70)	4.0
13	----		210			(3.70)	3.0
14	----		210			3.70	
15	----		210			3.50	3.5
16		>10.2	220			3.05	3.2
17		>10.0	220			2.35	2.0
18		>9.5	220			<1.60	2.5
19		>9.0	220				2.1
20		>8.5	240				2.7
21		(7.8)	240				
22		(7.5)	250				
23		>7.0	250				

Time: 150.0° E.

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

Table 50

Macquarie I. (54.5°S, 159.0°E)						June 1957		
Time	h°F2	foF2	h°F	foF1	h°E	foE	foEs	(M3000)F2
00	---	300				2.9		---
01	>3.5	300				2.8		---
02	(4.9)	280				2.2	(2.6)	
03	(5.0)	270				1.7	(2.6)	
04	(4.0)	250				2.2	(2.7)	
05	(4.3)	250					(2.7)	
06	3.4	250					(2.7)	
07	4.8	250				---	(2.75)	
08	7.0	230				1.9		2.9
09	9.0	230				2.4		3.0
10	10.7	230				2.7		2.95
11	11.5	235				2.6		(2.9)
12	0	240				2.8		---
13	0	230				2.6		---
14	0	230				2.4		---
15	0	235				---	1.9	---
16	>7.8	220				---		---
17	(8.5)	245				---	1.6	---
18	---	(240)					2.8	---
19	(6.5)	250					2.1	---
20	---	265					2.3	---
21	(5.0)	(260)					4.1	(2.65)
22	(5.0)	290					4.8	---
23	---	(285)					3.2	---

Time: 150.0°E.

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

Table 52

Ibadan, Nigeria (7.4°N, 3.9°E)							April 1957
Time	h°F2	foF2	h°F	foF1	h°E	foE	fEs (M\$000) F2
00		8.1	330				---
01		<8.0	300				---
02		6.0	290			4.0	---
03		7.9	265			5.2	2.95
04		7.6	245			1.5	3.30
05		6.4	230			7.0	3.30
06		>9.0	255		135	2.18	6.8
07		12.2	240		120	3.10	5.7
08		13.8	230		115	3.58	9.2
09		14.8	220		110	3.94	13.8
10		14.9	215		105	4.16	15.0
11		14.3	210		105	4.28	14.7
12		13.4	210		105	4.30	15.3
13		13.3	205		105	4.20	15.2
14		13.0	205		105	3.98	14.6
15		12.8	215		110	3.70	13.8
16		12.8	235		110	3.22	13.7
17		>12.4	265		115	2.62	10.7
18		(11.5)	315		---	1.60	(7.0)
19		>9.4	440				---
20		(8.2)	460				---
21		<9.2	445				---
22		8.4	405				---
23		<8.6	360				---

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes, automatic operation.
Average values output to ESR-1000.

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

Table 54*

Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	320	5.8						(2.75)
06	280	6.0						2.8
07	260	7.2	---	---	120	2.2		2.9
08	270	7.9	240	4.4	120	2.7		2.9
09	290	9.0	240	4.8	110	2.9		2.8
10	300	9.9	230	4.0	110	3.1		2.9
11	280	10.6	240	5.0	110	3.2		2.8
12	300	11.6	240	5.1	110	3.2		2.8
13	290	11.5	240	5.2	110	3.2		2.8
14	290	11.5	240	4.9	110	3.1		2.8
15	290	11.0	240	5.0	110	2.8		2.7
16	270	10.2	240	---	120	2.5		2.0
17	250	9.7	250	---	---	1.9		2.6
18	260	8.0	---	---	---	1.0		2.7
19	280	8.2						2.6
20	300	7.6					1.7	2.6
21	340	6.9					3.9	2.6
22	350	6.8					4.2	2.6
23	320	6.7					4.5	2.5

Time: 165.0°F

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

*Observations taken on a 19-hour working schedule

Table 55

Macquarie I. (54.5°S, 159.0°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	---	(320)			4.0		---	
01	---	(320)			4.5		---	
02	(5.1)	(300)			4.5		---	
03	(5.1)	300			3.7	(2.6)		
04	(5.5)	290			---	(2.7)		
05	(4.4)	300			---	(2.7)		
06	(5.5)	260			1.7	(2.9)		
07	7.6	250			2.3	(2.8)		
08	8.6	250			2.6	(2.7)		
09	---	10.1	250		3.0	(2.0)		
10	---	11.0	250		3.1	(2.7)		
11	---	11.0	240		3.2	(2.65)		
12	---	12.0	240		3.2	(2.7)		
13	---	0	240		3.1	(2.7)		
14	0	240			2.9	---		
15	(10.5)	250			2.6	---		
16	8.9	250			2.2	(2.7)		
17	>7.7	260			1.6	---		
18	>7.6	260			---	3.3	---	
19	(7.6)	260			---	3.4	---	
20	---	(250)			---	4.7	---	
21	---	(280)			---	4.2	---	
22	---	(330)			---	4.0	---	
23	---	(300)			5.0	---		

Time: 150.0°E.

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

Table 57

Budapest, Hungary (47.4°N, 19.2°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00	320	4.2						
01	---	---						
02	---	---						
03	---	---						
04	285	3.7						
05	---	---						
06	245	5.4	---	---				
07	---	---	---	---				
08	225	10.8	100	3.0	125	2.7		
09	230	11.6	---	---	120	3.0		
10	230	11.6	---	---	120	3.1		
11	230	11.5	---	---	120	3.1		
12	235	11.6	---	---	120	3.1		
13	240	11.6	---	---	125	2.0		
14	230	11.5	---	---	120	2.4		
15	230	10.0	---	---	---	2.4		
16	225	9.0						
17	---	---						
18	235	6.6						
19	---	---						
20	300	4.2						
21	---	---						
22	---	---						
23	---	---						

Time: 0.0°.

Sweep: 1.0 Mc to 20.0 Mc in 35 seconds.

Table 59

Ahmedabad, India (23.0°N, 72.6°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00	235	12.7			3.0	2.75		
01	250	12.0			2.8	2.85		
02	230	10.8			3.2	3.05		
03	230	0.6			3.2	3.00		
04	230	6.8			3.2	2.90		
05	240	5.4			3.2	3.15		
06	255	4.8			3.2	2.90		
07	270	8.7	---	---	3.2	2.90		
08	250	13.5	250	---	110	2.80		
09	250	15.1	240	5.0	110	3.40		
10	250	14.6	230	5.4	107	3.70		
11	305	14.4	225	5.2	107	3.90		
12	340	14.5	230	---	105	4.00		
13	360	14.6	230	---	105	3.90		
14	370	15.2	235	---	107	3.00		
15	350	15.3	240	5.6	110	3.60		
16	320	15.5	250	5.0	115	3.00		
17	265	15.8	---	---	2.10	3.2		
18	250	16.1	---	---	>3.2	2.65		
19	280	16.4	---	---	3.2	2.60		
20	270	16.0	---	---	3.2	2.65		
21	240	17.8	---	---	<3.0	<2.80		
22	225	16.8	---	---	3.2	2.85		
23	225	14.8	---	---	3.0	2.00		

Time: 75.0°E.

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

Table 55

Ibadan, Nigeria (7.4°N, 3.9°E) April 1957

Table 56*

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			9.5	275				---
01			9.9	265				2.70
02			<10.1	255				2.90
03			<9.8	245				3.30
04			7.8	235				3.20
05			>5.8	225				3.30
06			7.2	255	120	1.85	5.3	3.25
07			11.0	245	120	2.90	5.0	2.95
08			13.0	235	115	3.45	10.8	2.70
09			14.1	225	115	3.85	13.8	2.35
10			13.9	215	115	4.10	13.9	2.15
11			13.3	210	115	4.20	14.0	2.10
12			13.0	210	(115)	4.20	13.9	2.10
13			12.7	205	110	4.15	13.9	2.05
14			12.7	205	110	4.00	13.6	2.00
15			12.6	210	115	3.55	13.4	1.95
16			12.6	235	115	3.30	13.2	1.95
17			12.0	265	120	2.65	10.5	1.95
18			>11.2	315	---	1.55	(5.2)	1.85
19			(9.9)	465				1.80
20			<8.9	460				---
21			(9.4)	395				---
22			<9.9	340				---
23			<9.6	300				---

Time: 0.0°.

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

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

Table 57

Delhi, India (28.6°N, 77.1°E) December 1956

Time	*	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		360	7.3					2.80
01		330	7.0					2.95
02		320	6.6					3.00
03								
04		320	4.6					3.00
05		320	3.9					3.00
06		360	4.7					2.80
07		320	9.4					3.00
08		300	13.1					3.10
09		300	14.0					3.10
10		320	13.5					3.00
11		360	13.5					2.80
12		360	13.9					2.80
13		400	13.6					2.60
14		400	13.8					2.60
15		360	13.9					2.70
16		360	13.8					2.80
17		340	13.4					2.90
18		360	12.8					2.80
19		340	12.5					2.90
20		320	12.3					3.00
21		320	10.5					3.00
22		320	8.9					3.00
23		360	8.0					2.80

Time: 75.0°E.

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

*Height at 0.03 foF2.

Table 59

Calcutta, India (22.9°N, 88.5°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	foEs	(M3000)F2
00		250	(8.1)					(3.15)
01		250	(7.8)					(3.15)
02		240	7.0					3.3
03		230	6.2					3.3
04		230	5.2					1.8
05		250	3.5					3.2
06		260	5.4					3.2
07		260	7.6					3.2
08		270	8.0	240	5.1	110	3.0	3.2
09		200	10.5	220	5.5	105	3.4	3.2
10		300	11.7	220	5.7	100	3.6	3.1
11		310	12.5	220	5.9	100	3.0	3.0
12		330	0	220	6.0	100	3.0	(3.0)
13		330	0	210	6.0	100	3.8	
14		340	0	230	5.9	100	3.6	
15		330	0	230	5.8	100	3.4	---
16		300	12.5	220	5.7	100	3.0	(3.0)
17		270	12.0	230	5.4	110	2.5	3.2
18		250	11.5					3.0
19		270	11.2					3.2
20		260	10.5					3.3
21		240	10.2					3.3
22		230	9.4					3.3
23		240	(8.5)					(3.2)

Time: 90.0°E.

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

*Data reported from December 15 through 31 only.

Table 61

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	330	7.2						
07	360	8.0						
08:30	420	9.7						
09	420	10.6						
10	450	11.3						
11	490	12.1						
12	510	12.2						
13	540	12.5						
14	540	12.6						
15	540	12.4						
16	510	11.8						
17	400	11.0						
18	450	10.4						
19	450	9.0						
20	(300)	(9.0)						
21	420	9.0						
22	300	8.6						
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 10.0 Mc in 5 minutes, manual operation.

*Height at 0.03 foF2.

Table 63

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	8.4						
07	360	10.5						
08	400	11.6						
09	400	12.0						
10	480	12.2						
11	520	12.4						
12	560	12.4						
13	560	12.4						
14	500	12.3						
15	560	11.9						
16	560	11.5						
17	540	10.7						
18	560	9.8						
19	(560)	(9.0)						
20	---	---						
21	---	---						
21:30								
23								

Time: 75.0°E.

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

*Height at 0.83 foF2.

Table 65

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01	320	7.6						
02	320	6.9						
03	320	6.0						
04	320	4.8						
05	320	4.7						
06	320	6.9						
07	280	11.2						
08	200	13.6						
09	300	14.4						
10	320	14.7						
11	360	>14.7						
12	380	>15.0						
13	360	15.1						
14	390	>15.0						
15	400	>15.0						
16	360	14.9						
17	360	14.7						
18	340	14.2						
19	320	>13.4						
20	320	13.1						
21	320	11.5						
22	320	9.4						
23	320	8.5						

Time: 75.0°E.

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

*Height at 0.83 foF2.

Table 62

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(380)	10.7					
01		(360)	>10.0					
02		360	9.4					
03		320	8.5					
04		320	>7.5					
05		290	6.8					
06		320	6.2					
07		360	10.8					
08		400	12.4					
09		430	>13.7					
10		400	>13.9					
11		500	13.9					
12		520	13.0					
13		540	13.6					
14		560	13.3					
15		560	13.0					
16		560	>12.5					
17		540	12.2					
18		520	11.7					
19		560	>11.6					
20		550	11.4					
21		(560)	>10.3					
22		(420)	>10.0					
23		(400)	10.5					

Time: 75.0°E.

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

*Height at 0.03 foF2.

Table 64

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.1						
01	290	9.4						
02	280	9.0						
03	260	8.7						
04	240	8.0						
05	240	6.9						
06	290	7.4						
07	260	10.8	---	---	115	2.8		
08	---	12.2	240	---	110	3.3	7.0	
09	---	13.0	235	---	110	3.5	9.3	
10	---	13.2	230	---	105	---	10.9	
11	---	13.2	230	---	110	---	11.6	
12	(490)	12.9	220	---	110	---	11.7	
13	(500)	12.6	220	---	110	---	11.0	
14	---	12.2	220	---	110	---	11.8	
15	---	12.0	240	---	115	---	12.0	
16	---	11.7	260	---	120	3.2	11.4	
17	295	11.0	---	---	---	---	8.8	
18	370	10.5						<2.05
19	460	>9.2						<2.00
20	450	9.2						2.00
21	420	8.6						2.10
22	305	9.0						2.20
23	320	9.0						2.30

Time: 75.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 66

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	12.4						
01	250	10.9						
02	245	9.6						
03	225	8.2						
04	230	5.7						
05	250	4.6						
06	270	6.3						
07	255	10.7	---	---	120	2.10	3.2	3.05
08	250	13.8	240	5.0	110	2.90		
09	250	14.8	235	5.2	110	3.50		
10	250	14.9	230	5.4	107	3.00		
11	330	15.3	230	5.4	107	4.00		
12	350	16.0	230	5.4	106	4.00		
13	350	16.2	235	5.6	107	4.00		
14	360	16.5	235	5.4	107	3.80		
15	360	16.2	240	5.6	110	3.50		
16	325	17.0	250	5.2	115	3.00		
17	260	17.2	---	---	---	2.00	3.2	2.60
18	255	16.4					3.2	2.60
19	290	17.1					3.0	2.55
20	275	18.2					3.2	2.65
21	235	17.4						2.80
22	225	>15.2					2.9	2.80
23	230	13.7					3.2	2.80

Time: 75.0°E.

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

*Height at 0.83 foF2.

Table 67

Calcutta, India (22.9°N, 88.5°E)							November 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	8.0						3.0
01	250	7.5						3.1
02	250	6.5						3.1
03	250	5.8						3.2
04	250	5.1						3.2
05	260	4.4						3.1
06	275	7.4			110	2.2		3.05
07	280	9.6			105	2.7		3.1
08	270	10.7	240	5.0	100	3.0		3.1
09	270	11.4	220	5.2	100	3.2		3.1
10	260	11.5	220	5.5	100	3.4		3.1
11	280	12.0	210	5.5	100	3.5		3.0
12	290	12.5	210	5.6	100	3.6		2.9
13	300	0	210	5.6	100	3.6		(2.05)
14	310	0	230	5.5	100	3.5		(2.0)
15	300	0	230	5.4	100	3.3		(2.9)
16	280	12.5	230	5.4	100	3.0		3.0
17	270	11.5	240	5.0	100	2.6	3.2	3.0
18	250	11.0					2.1	3.1
19	250	10.2						3.2
20	240	9.8						3.2
21	240	9.1						3.2
22	240	8.6						3.2
23	250	8.0						3.1

Time: 90.0°E.

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

Table 69

Madras, India (13.0°N, 80.2°E)							November 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	10.0						3.00
01	320	>10.0						3.00
02	(320)	>8.8						(3.00)
03	300	7.6						3.10
04	280	6.3						3.25
05	300	6.2						3.10
06	320	9.0						3.00
07	360	10.9						2.80
08	420	11.8						2.60
09	440	12.4						2.50
10	450	12.4						2.45
11	490	12.3						2.30
12	500	12.6						2.25
13	510	12.8						2.20
14	520	13.2						2.20
15	520	>13.2						2.20
16	480	12.6						2.30
17	480	11.9						2.30
18	500	12.7						2.25
19	480	11.9						2.30
20	480	>11.7						2.30
21	480	11.9						2.30
22	400	>11.6						2.60
23	(340)	>10.6						(2.90)

Time: 75.0°E.

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

*Height at 0.83 foF2.

Table 71*

Campbell I. (52.5°S, 169.2°E)							February 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	250	4.9	---	---	120	1.8		3.0
06	250	5.5	250	3.0	110	2.4		3.0
07	290	6.2	230	4.4	110	2.9		3.0
08	300	6.7	230	4.6	105	3.0		2.95
09	320	7.0	230	4.7	110	3.5		2.9
10	340	7.2	220	4.9	100	3.5		2.9
11	320	7.2	220	4.9	105	3.6		2.85
12	340	7.3	210	4.9	105	3.6		2.8
13	340	7.5	220	4.9	105	3.6		2.8
14	340	7.4	220	4.9	100	3.5		2.8
15	330	7.4	240	4.8	100	3.3		2.8
16	300	7.6	240	4.5	105	3.1		2.9
17	300	7.6	250	4.2	110	2.8		2.85
18	290	8.0	250	3.5	120	2.2		2.9
19	260	8.0	---	---	135	1.8		2.8
20	250	7.6				3.5		2.8
21	280	7.0						2.7
22	280	6.1						2.6
23	300	5.5						2.6

Time: 165.0°E.

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

*Observations taken on a 19-hour working schedule.

Table 68

Bombay, India (19.0°N, 73.0°E)							November 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06		270						3.35
07		300						3.10
08:30		330						2.95
09		360						2.80
10		360						2.80
11		390						2.65
12		480						2.30
13		510						2.25
14		510						2.25
15		510						2.25
16		480						2.25
17		450						2.30
18		420						2.45
19		360						2.80
20		(330)						(2.95)
21		300						3.10
22		270						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 70

Tiruchi, India (10.8°N, 78.8°E)							November 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05		320						3.00
07		360						2.80
08		400						2.60
09		480						2.30
10		480						2.30
11		520						2.20
12		520						2.20
13		560						2.10
14		560						2.10
15		560						2.10
16		560						2.10
17		560						2.10
18		540						2.20
20		---						---
21		370						2.7
22		360						2.8
23		350						2.8

Time: 75.0°E.

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

*Height at 0.83 foF2.

Table 72*

Campbell I. (52.5°S, 169.2°E)							December 1955	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05		260						3.0
06		300						3.0
07		320						2.9
08		320						2.9
09		320						2.95
10		350						2.9
11		370						2.7
12		360						2.8
13		350						2.8
14		350						2.8
15		340						2.8
16		340						2.8
17		320						2.9
18		300						2.9
19		290						2.8
20		280						2.8
21		280						2.8
22		280						2.7
23		300						2.7

Time: 165.0°E.

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

*Observations taken on a 19-hour working schedule.

GRAPHS OF IONOSPHERIC DATA

13

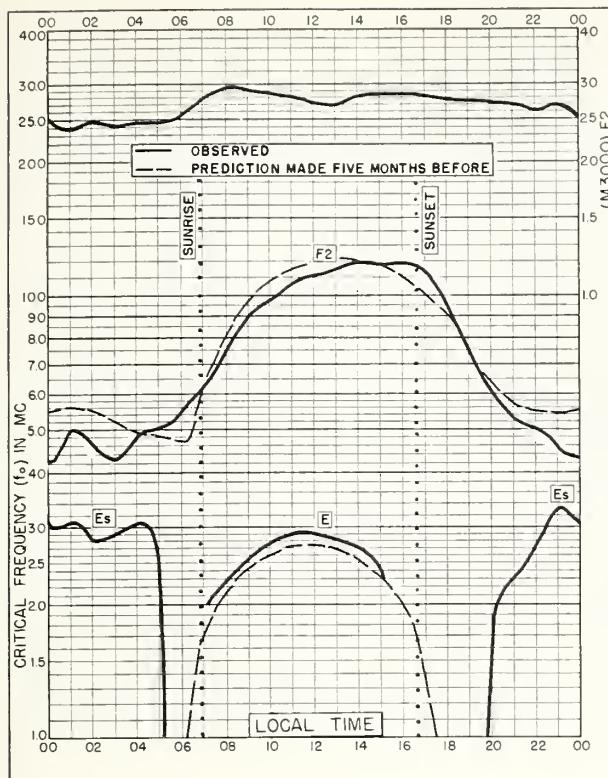


Fig. 1. FAIRBANKS, ALASKA
64.9°N, 147.8°W OCTOBER 1958

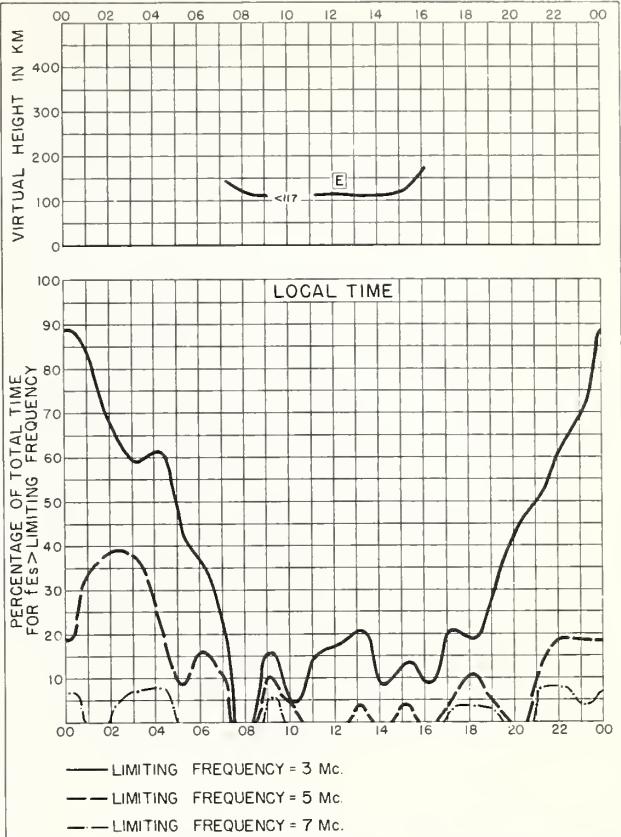


Fig. 2. FAIRBANKS, ALASKA OCTOBER 1958

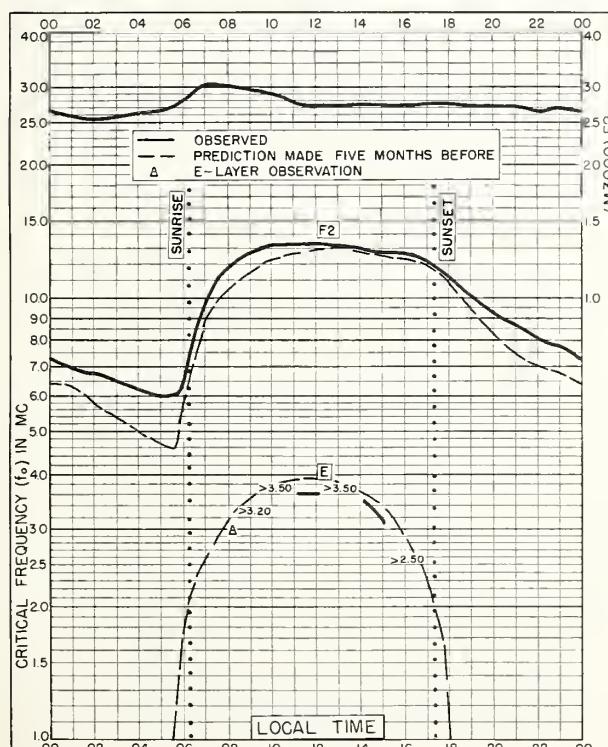
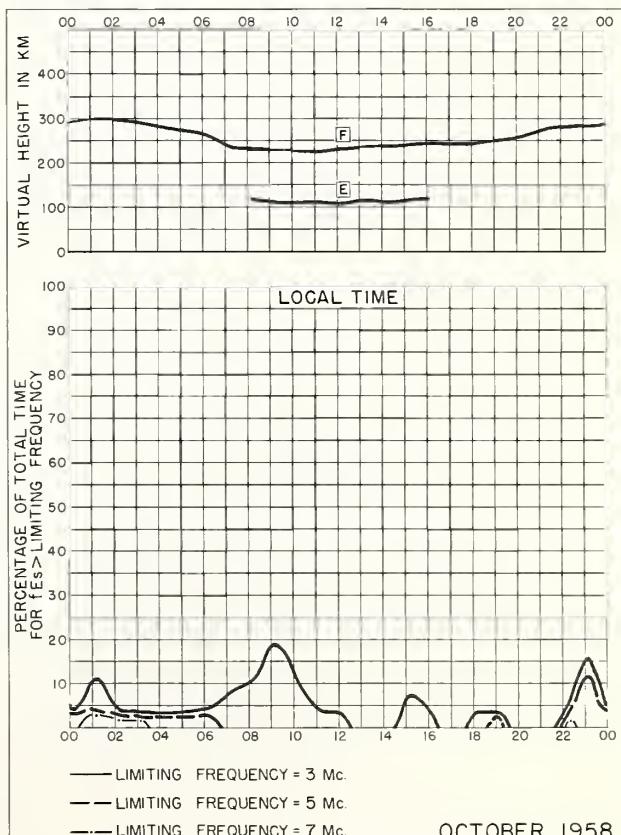
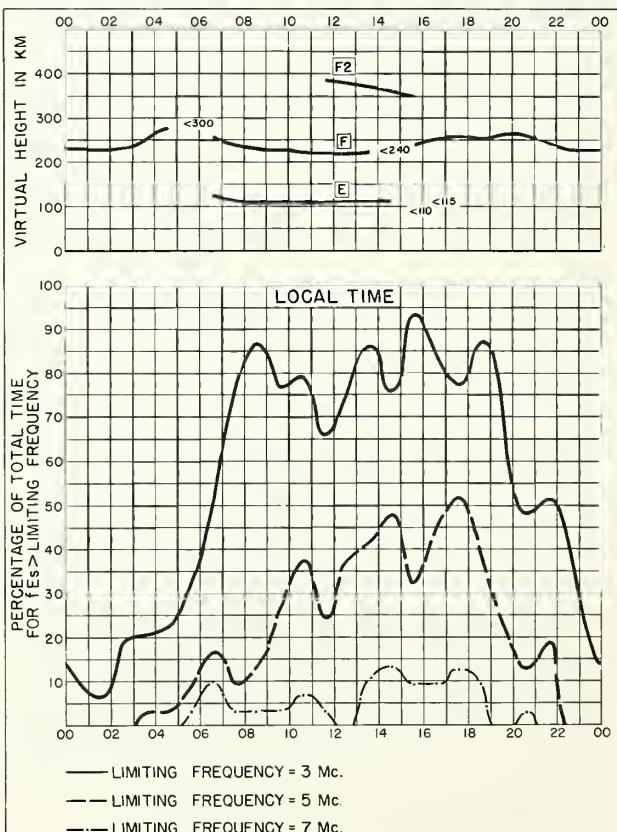
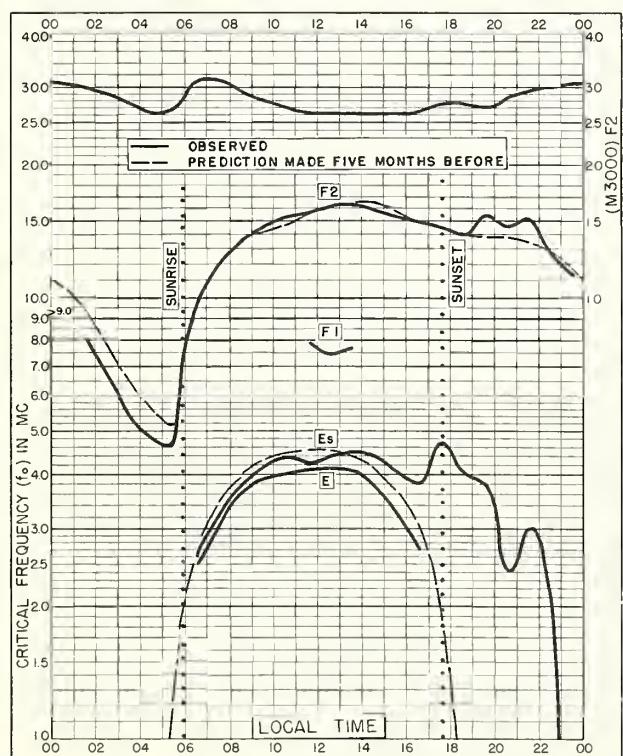
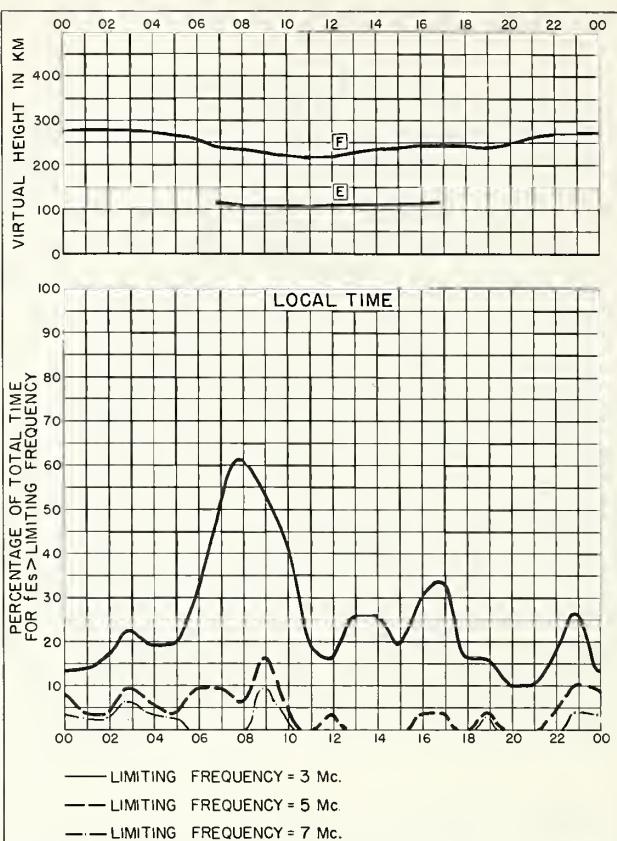
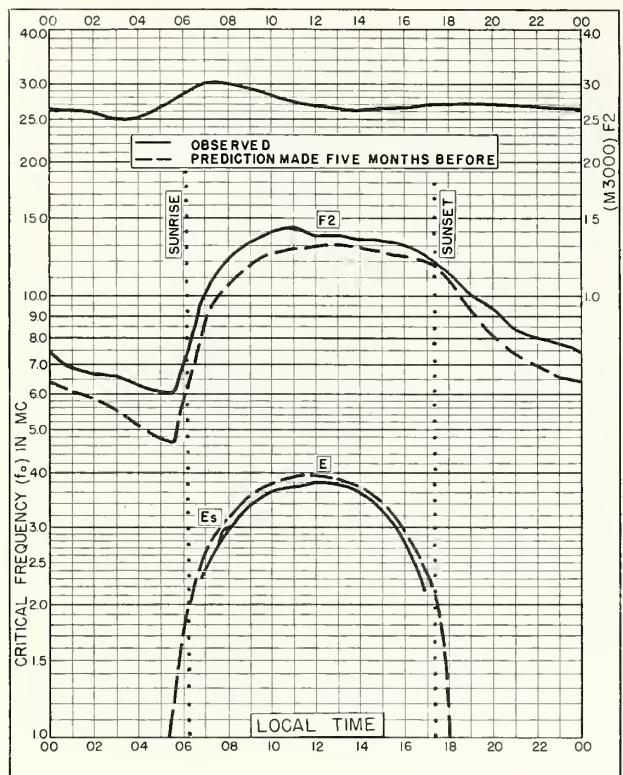
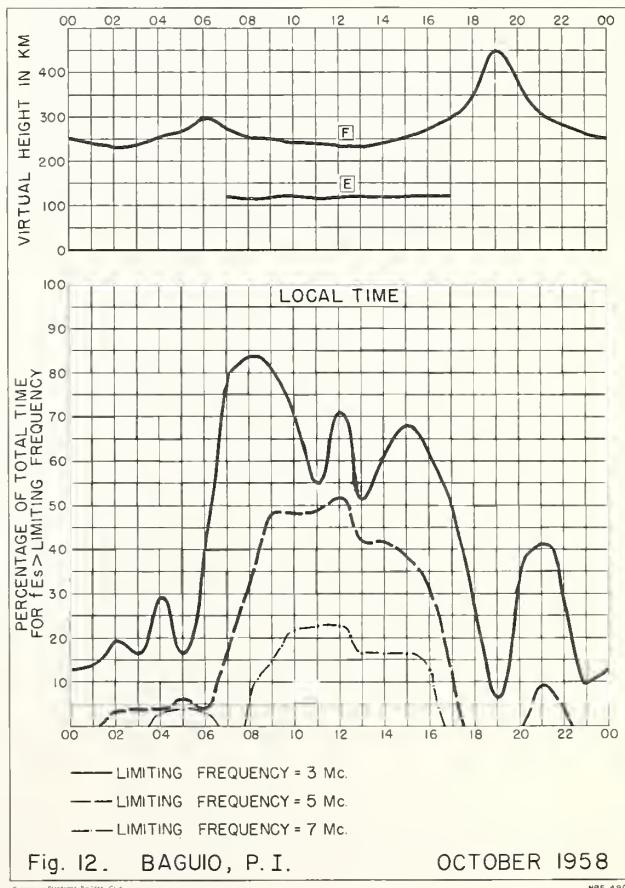
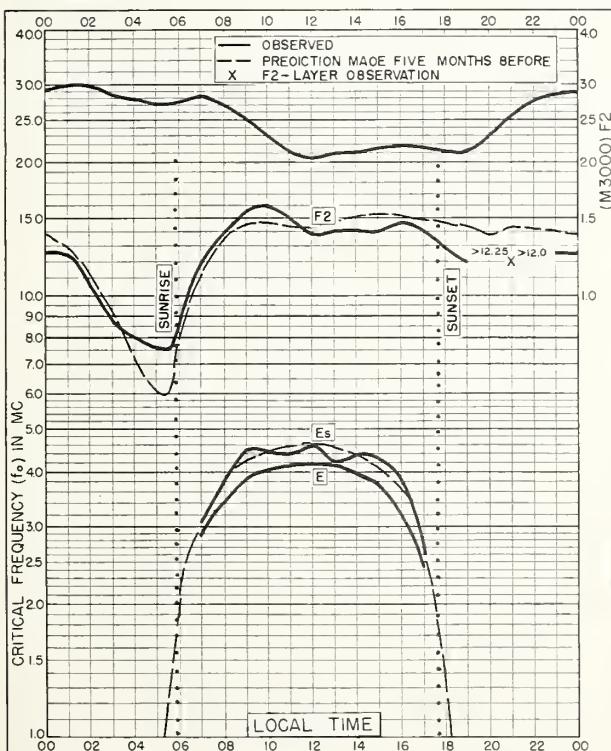
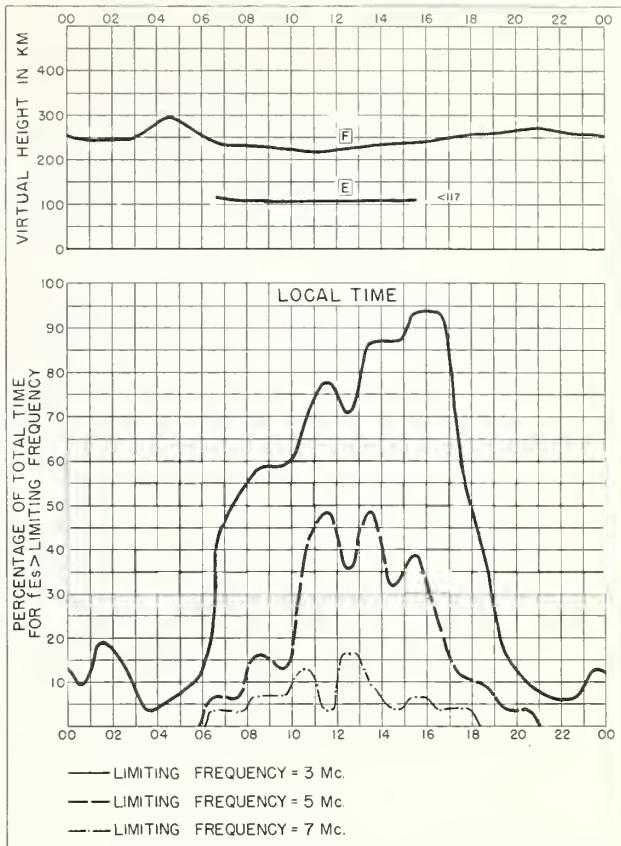
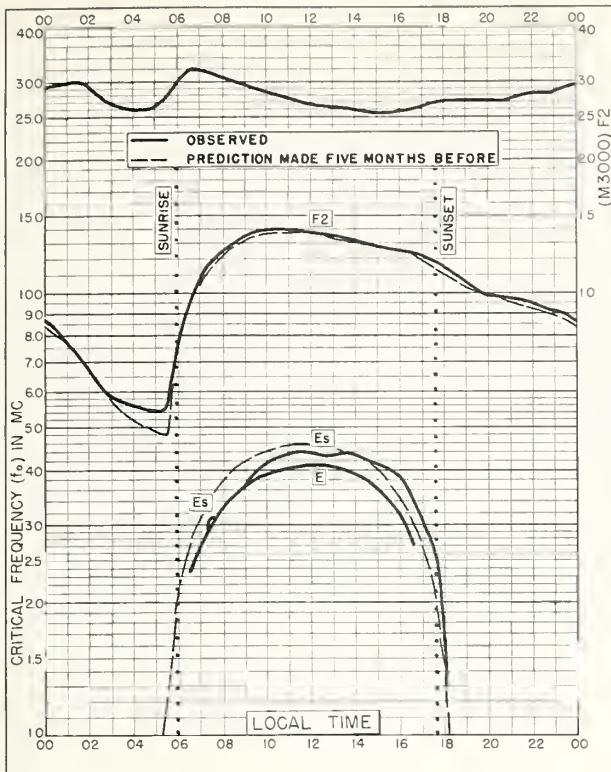


Fig. 3. FT. MONMOUTH, NEW JERSEY
40.4°N, 74.1°W OCTOBER 1958



OCTOBER 1958
Fig. 4. FT. MONMOUTH, NEW JERSEY





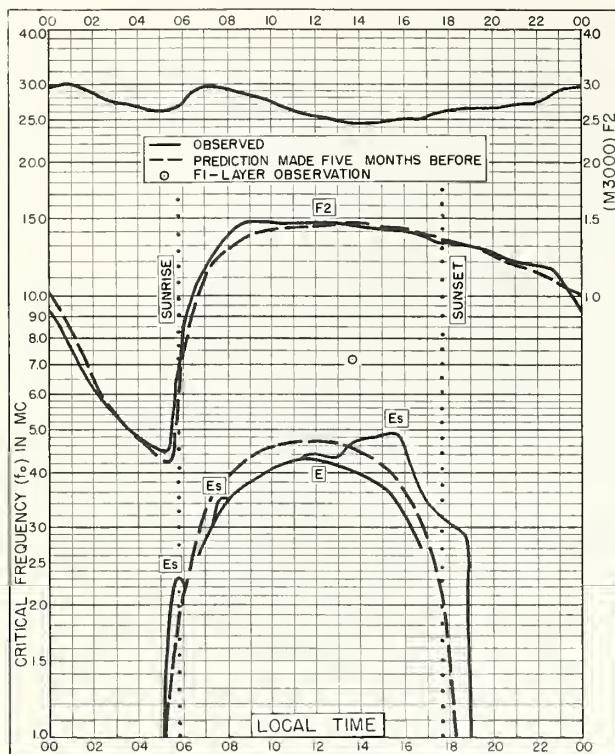


Fig. 13. PANAMA CANAL ZONE
9.4°N, 79.9°W OCTOBER 1958

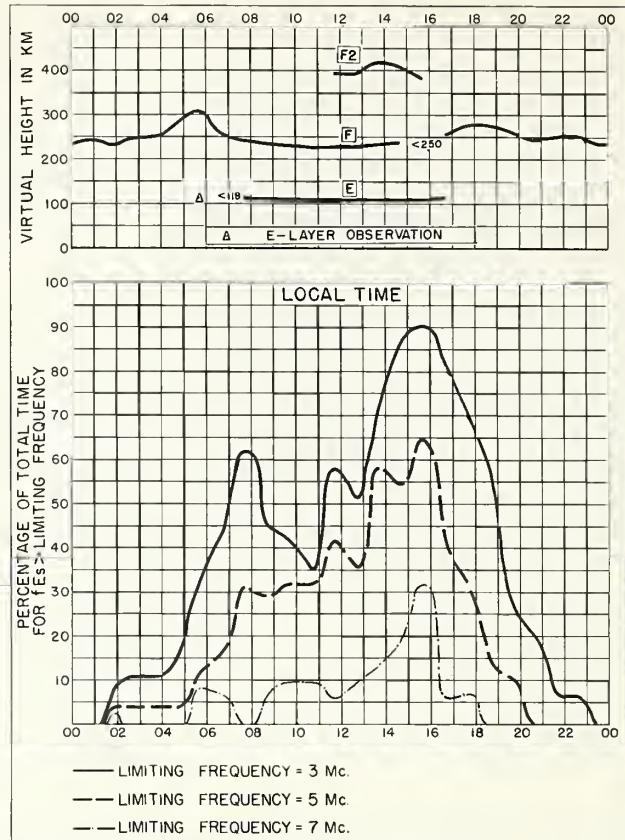


Fig. 14. PANAMA CANAL ZONE OCTOBER 1958

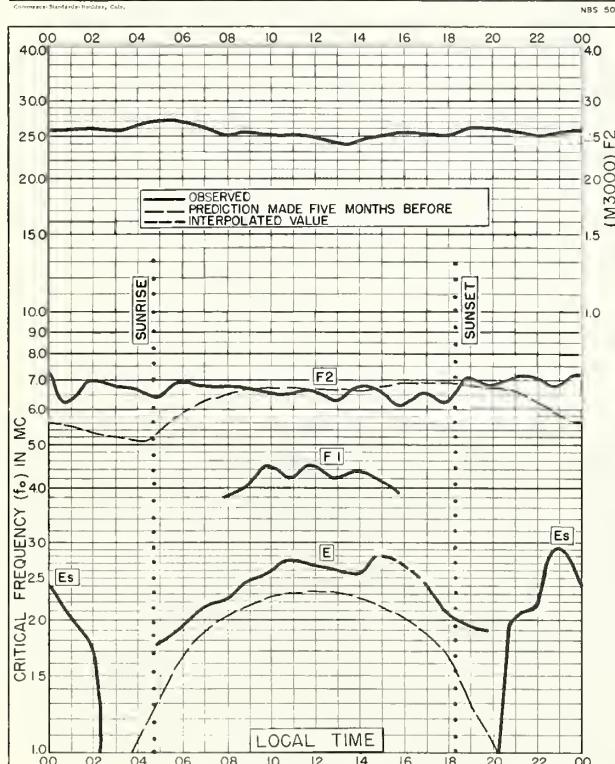


Fig. 15. FLETCHERS ICE I.
78.7°N, 123.5°W SEPTEMBER 1958

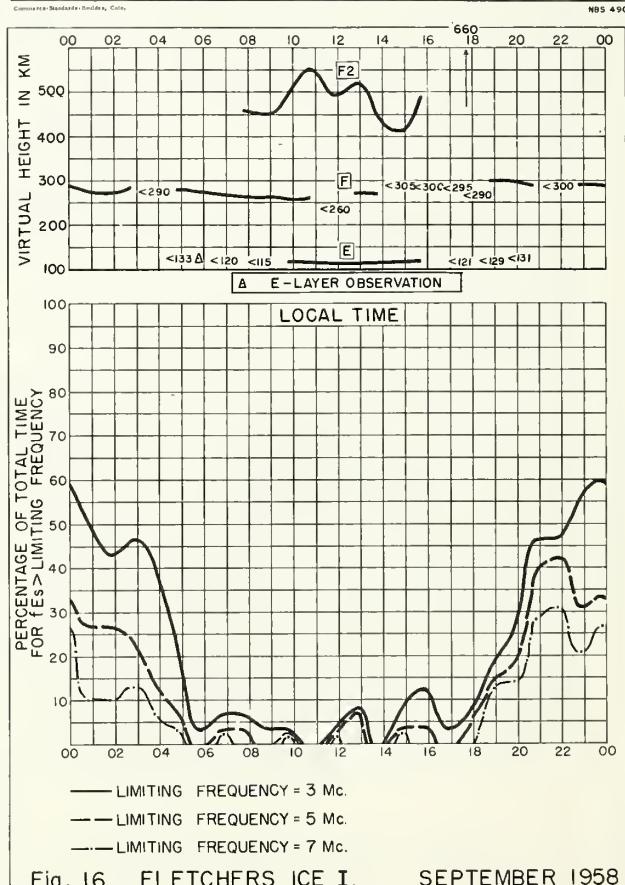


Fig. 16. FLETCHERS ICE I. SEPTEMBER 1958

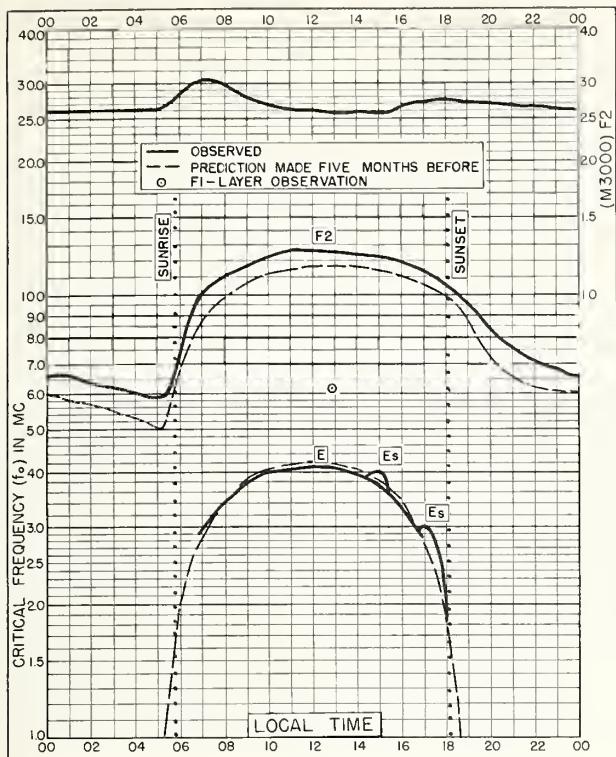


Fig. 17. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W SEPTEMBER 1958

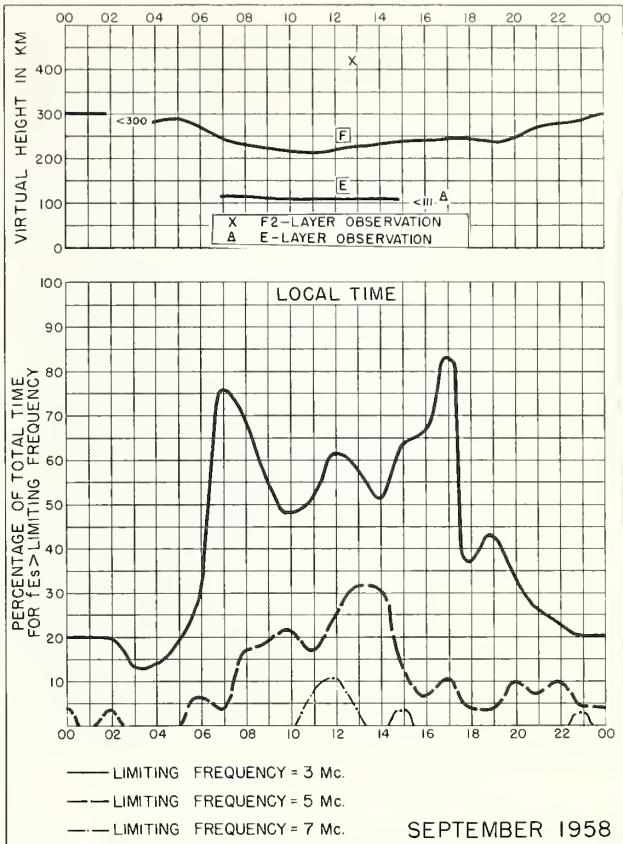


Fig. 18. WHITE SANDS, NEW MEXICO SEPTEMBER 1958

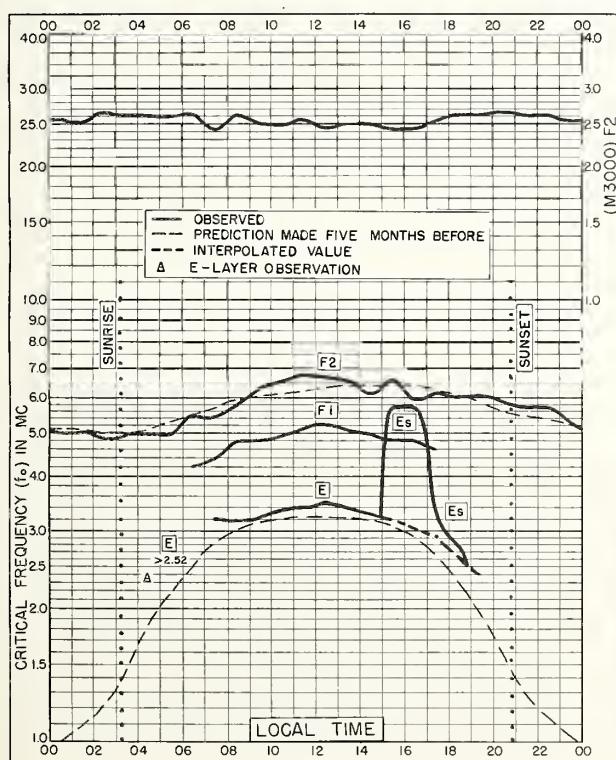


Fig. 19. GODHAVN, GREENLAND
69.3°N, 53.5°W AUGUST 1958

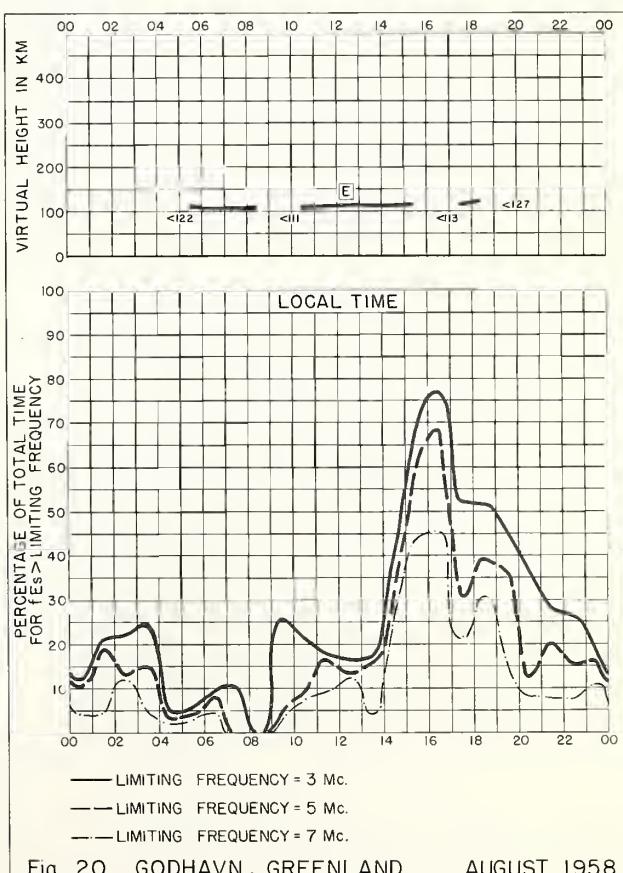


Fig. 20. GODHAVN, GREENLAND AUGUST 1958

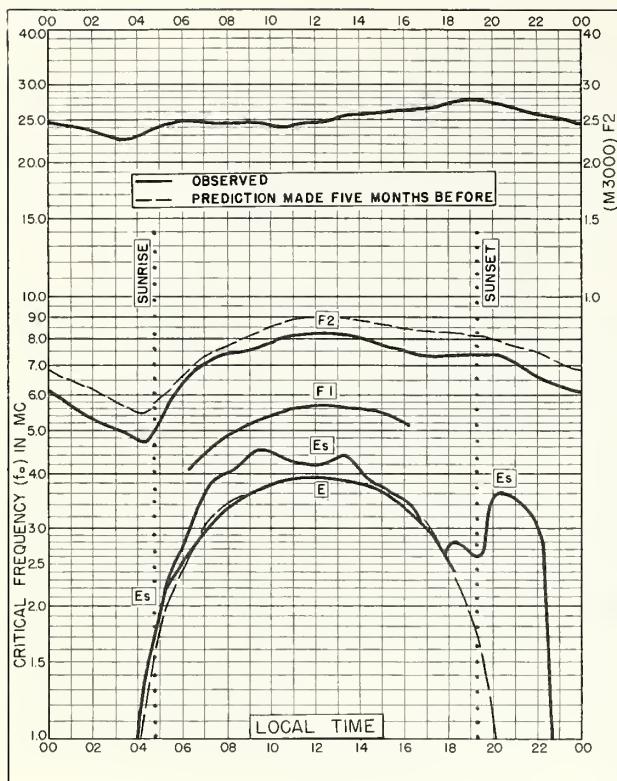


Fig. 21. ADAK, ALASKA
51.9°N, 176.6°W AUGUST 1958

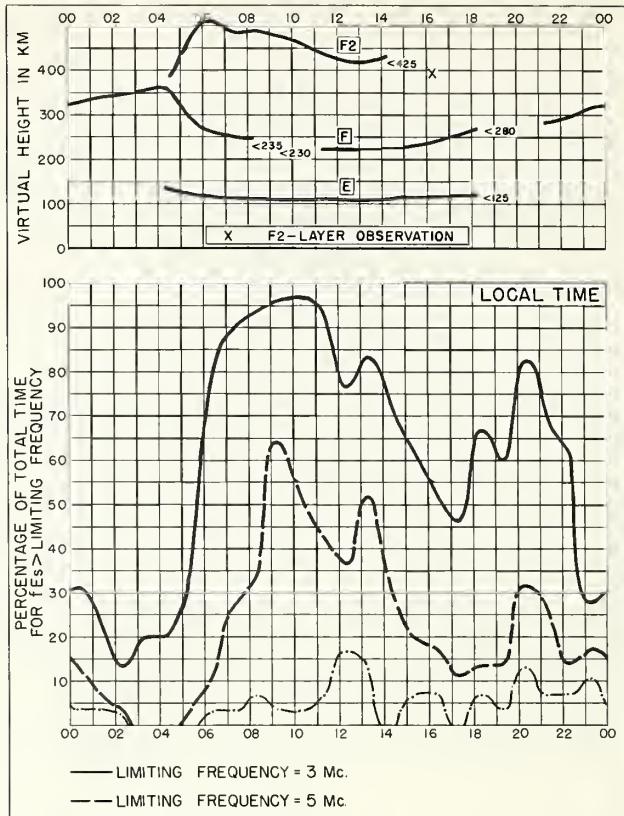


Fig. 22. ADAK, ALASKA AUGUST 1958

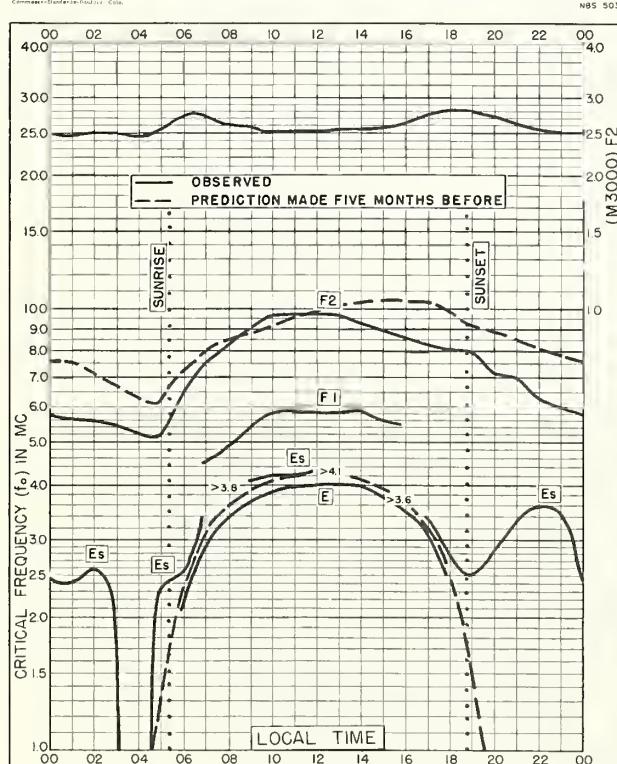


Fig. 23. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W AUGUST 1958

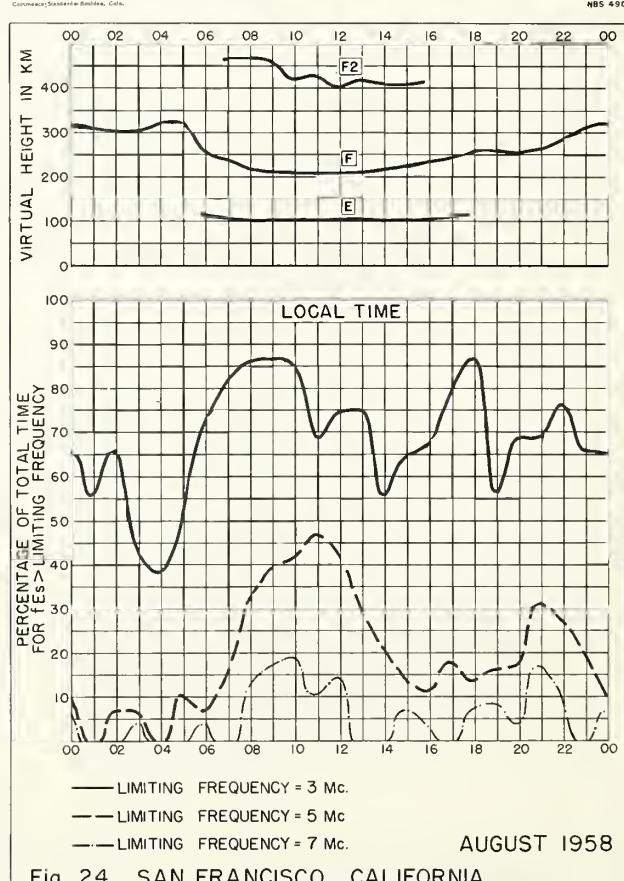
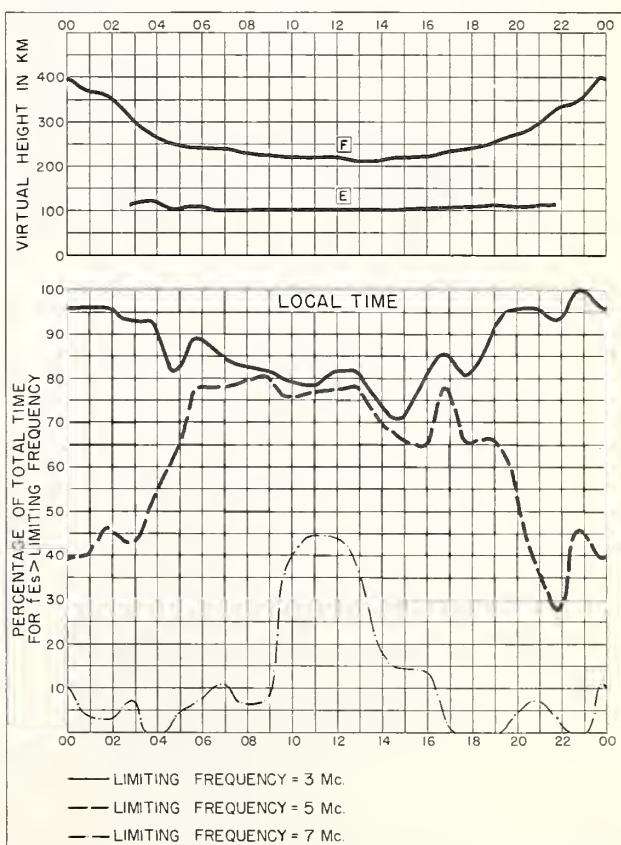
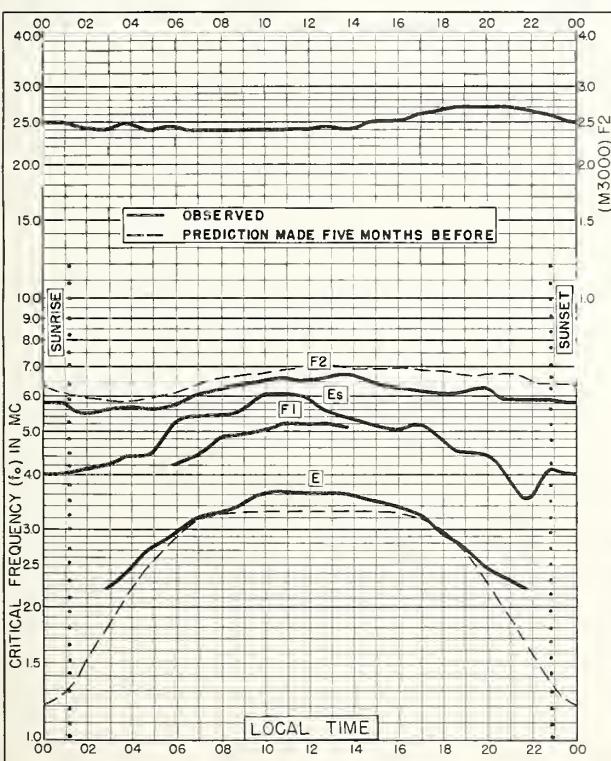
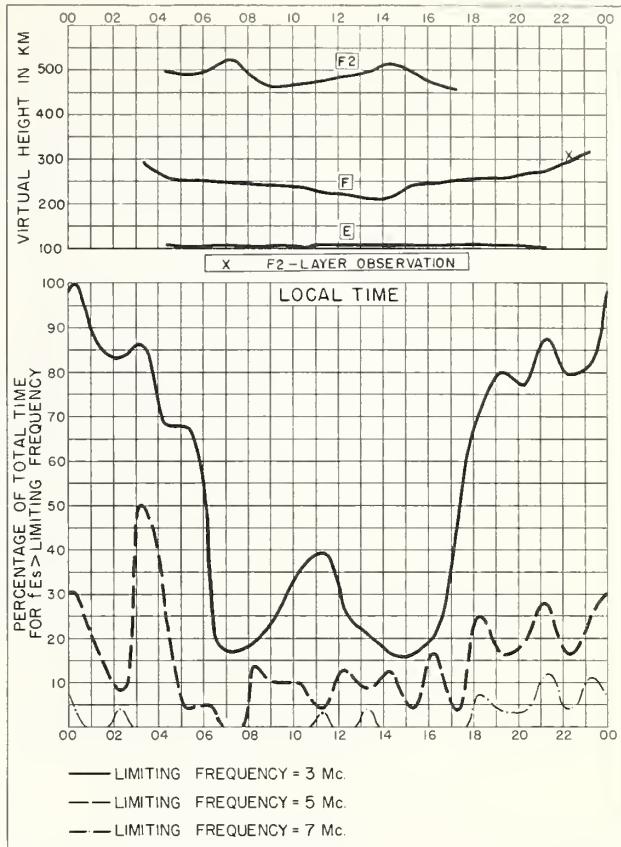
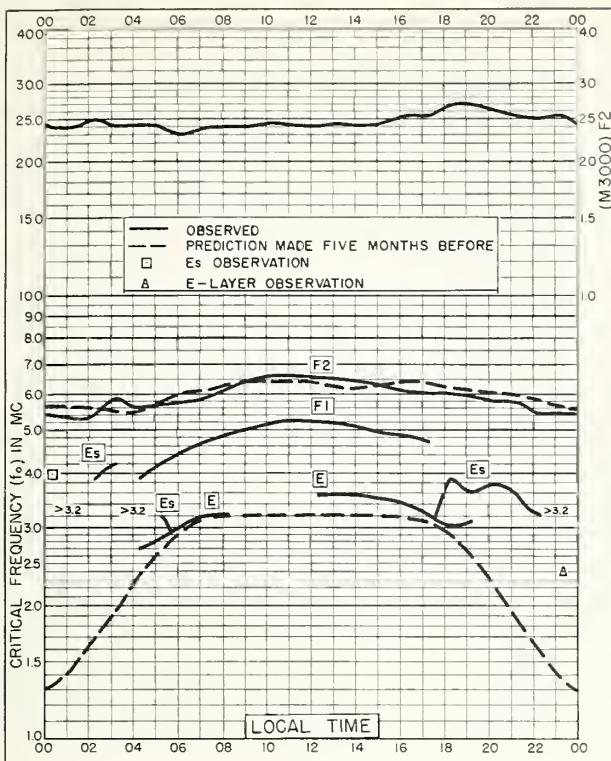


Fig. 24. SAN FRANCISCO, CALIFORNIA



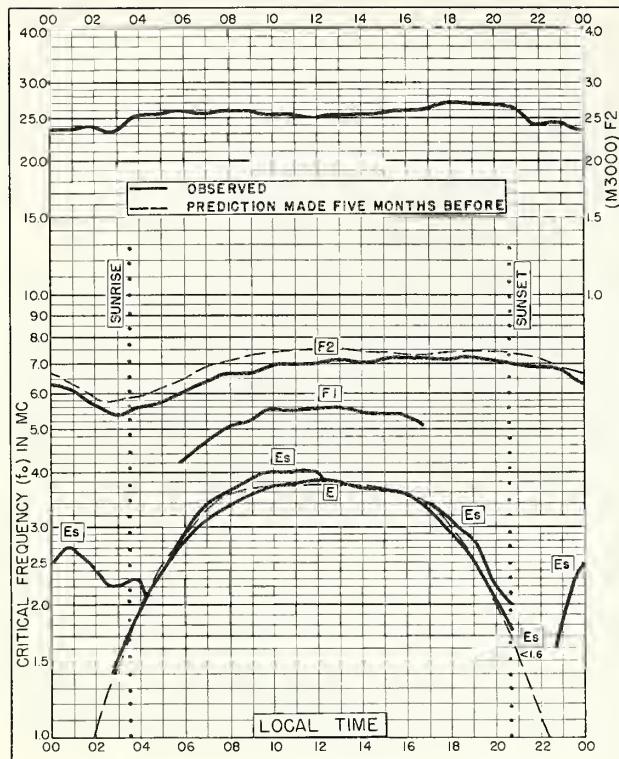


Fig. 29. INVERNESS, SCOTLAND
57.4°N, 4.2°W JULY 1958

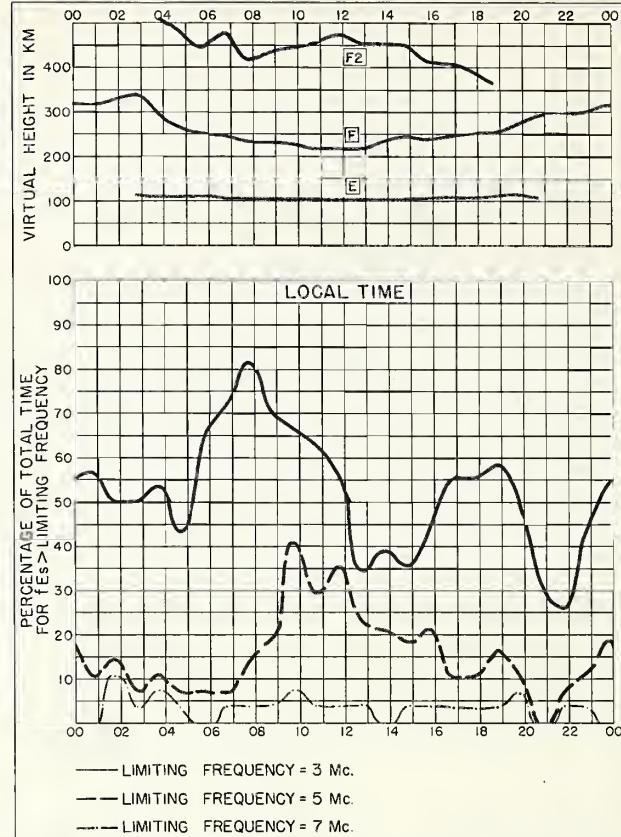


Fig. 30. INVERNESS, SCOTLAND JULY 1958

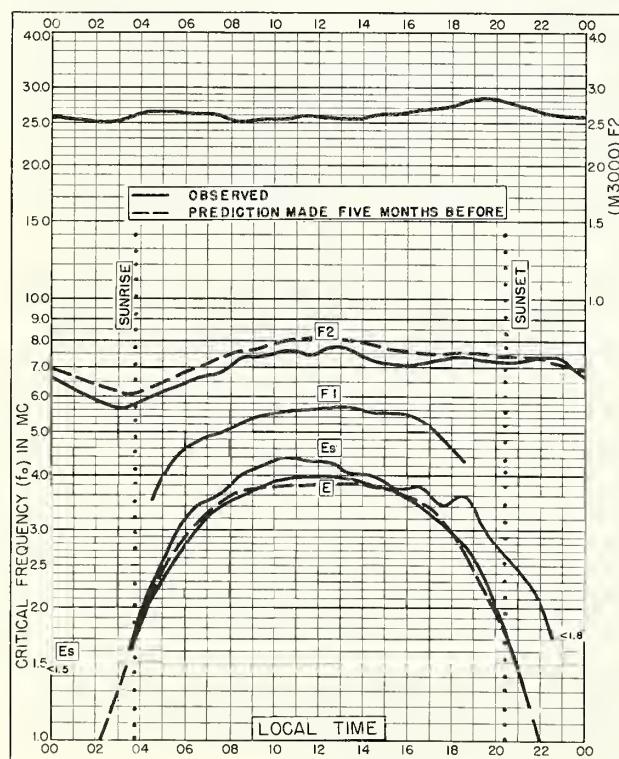


Fig. 31. MOSCOW, U.S.S.R.
55.5°N, 37.3°E JULY 1958

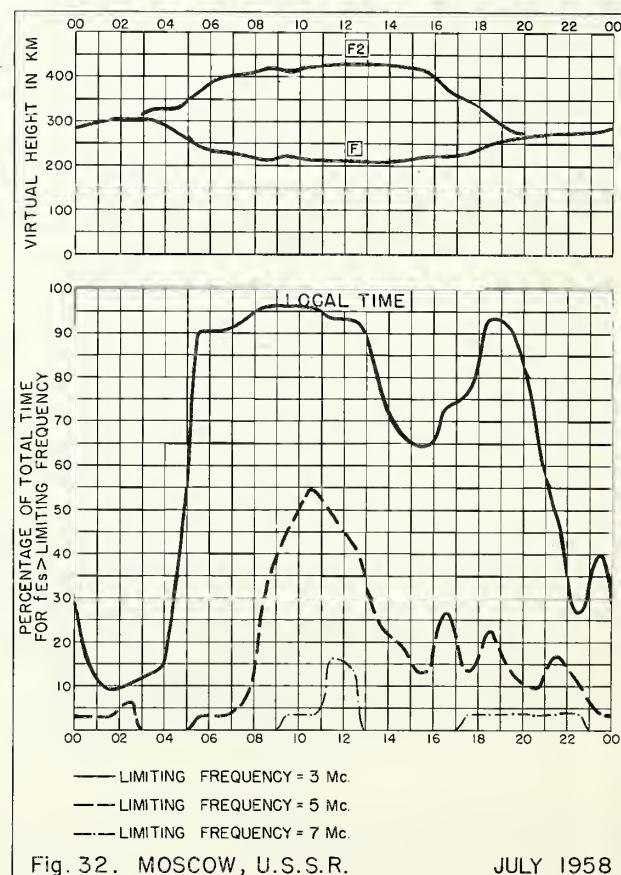
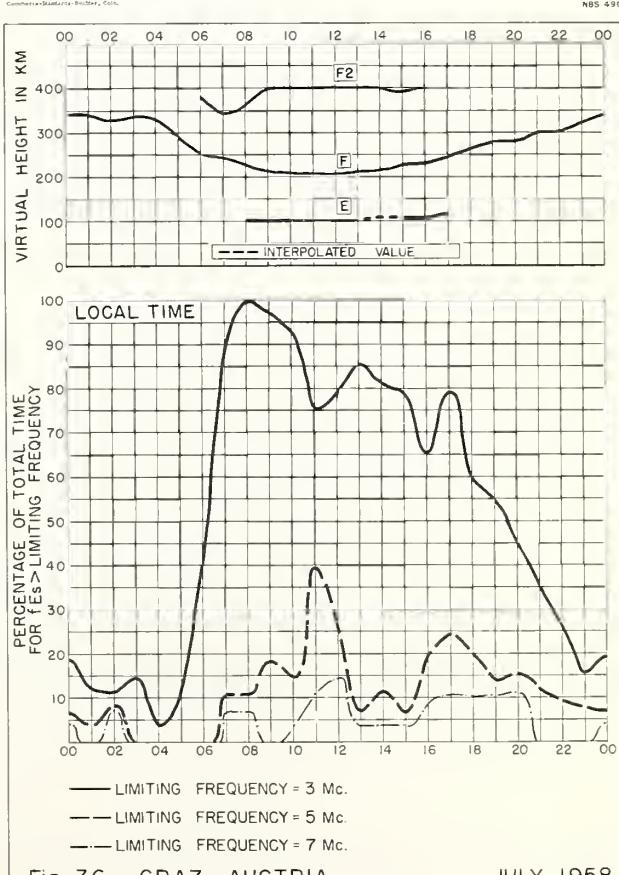
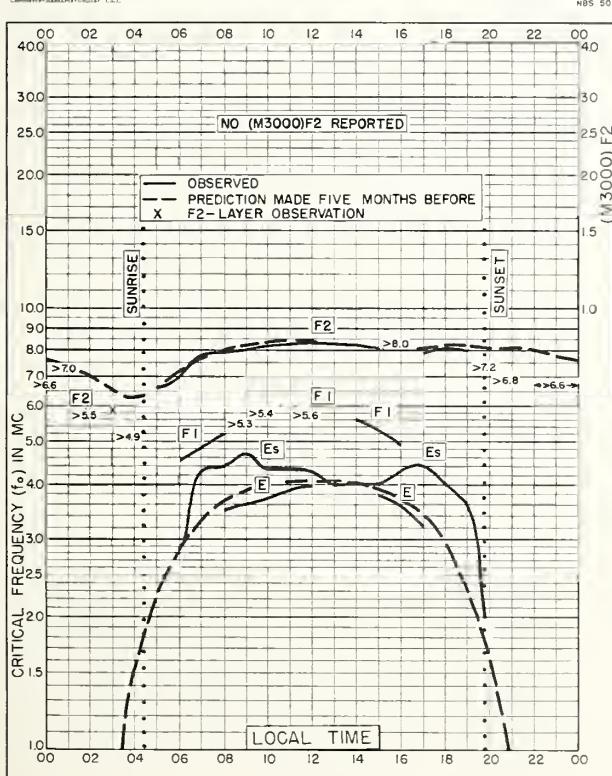
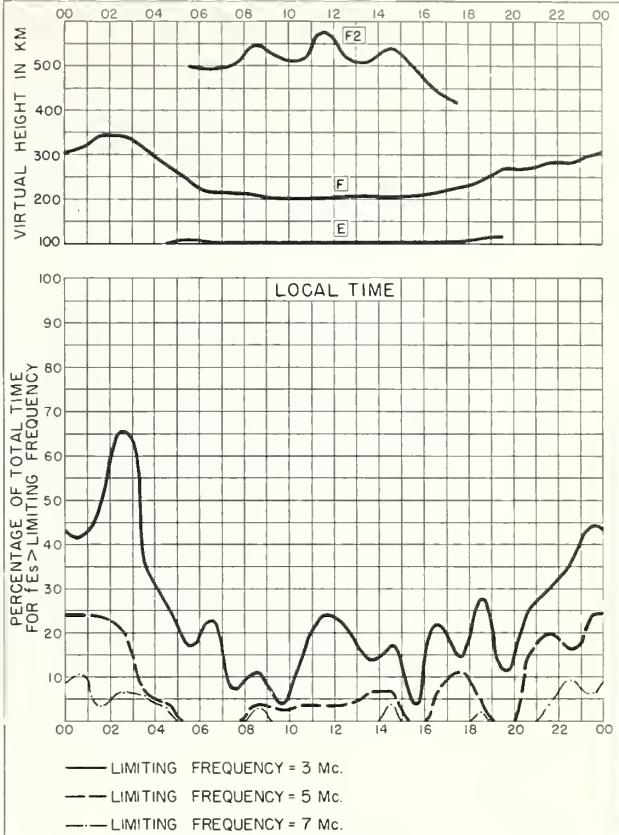
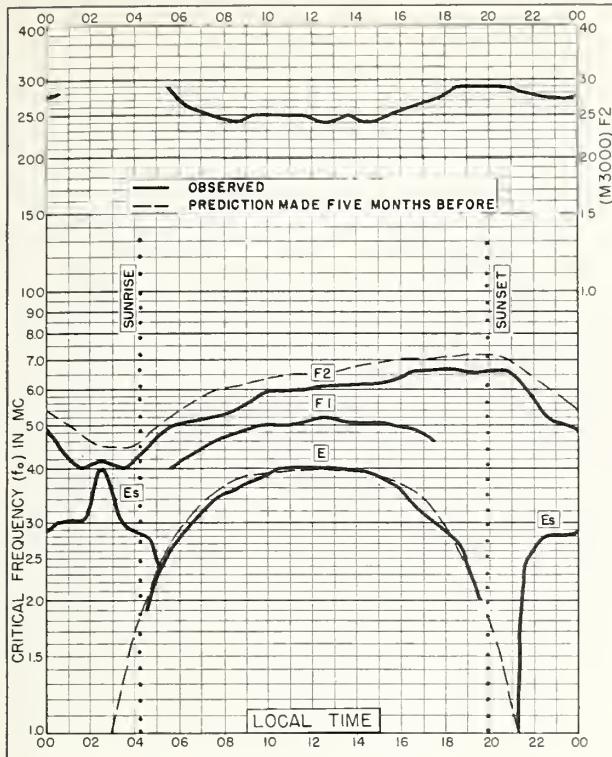


Fig. 32. MOSCOW, U.S.S.R. JULY 1958



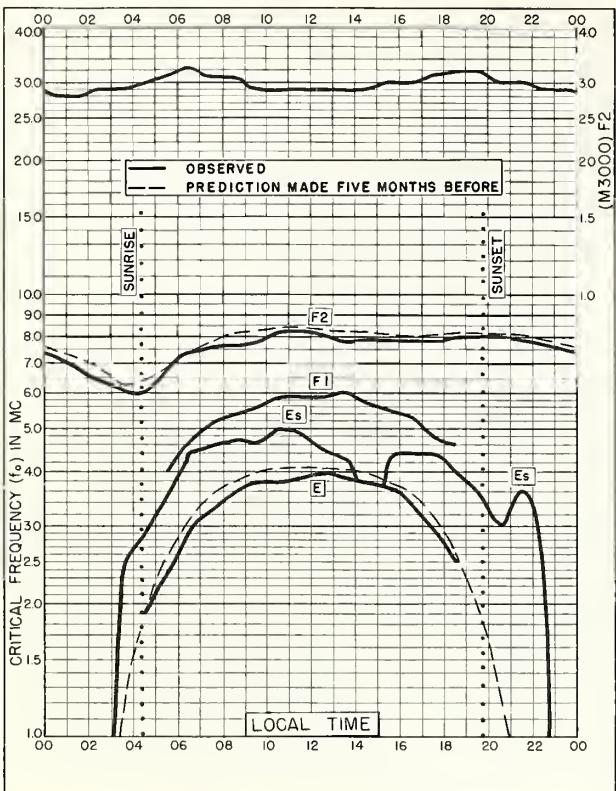


Fig. 37. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E JULY 1958

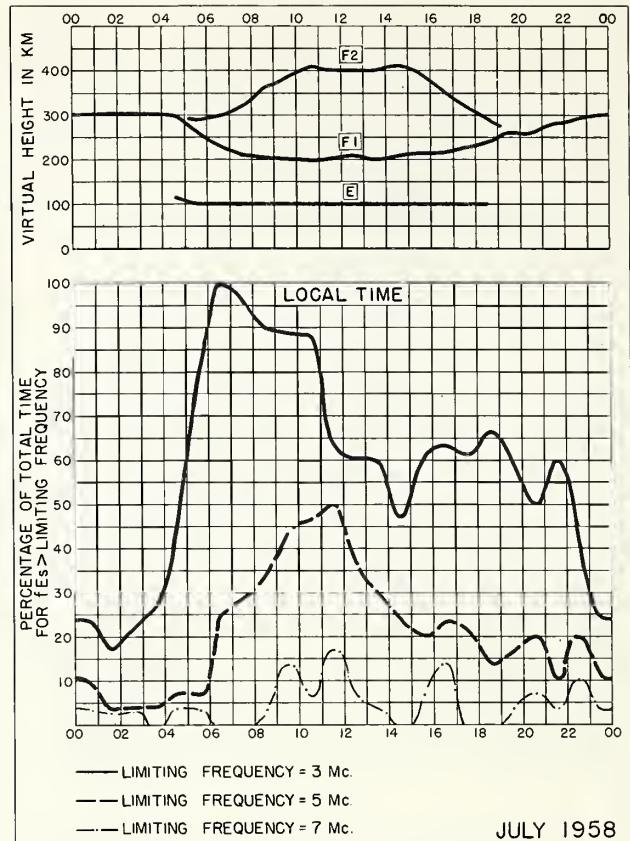


Fig. 38. SCHWARZENBURG, SWITZERLAND JULY 1958

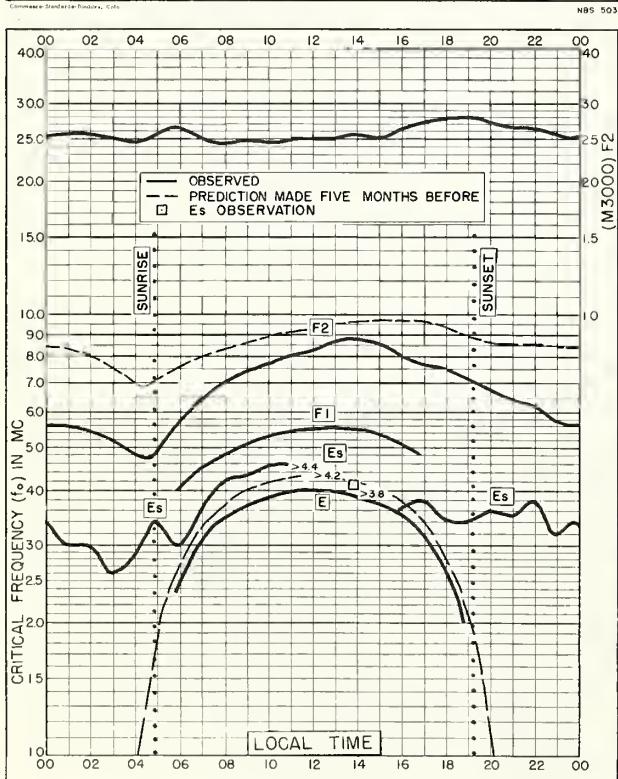


Fig. 39. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JULY 1958

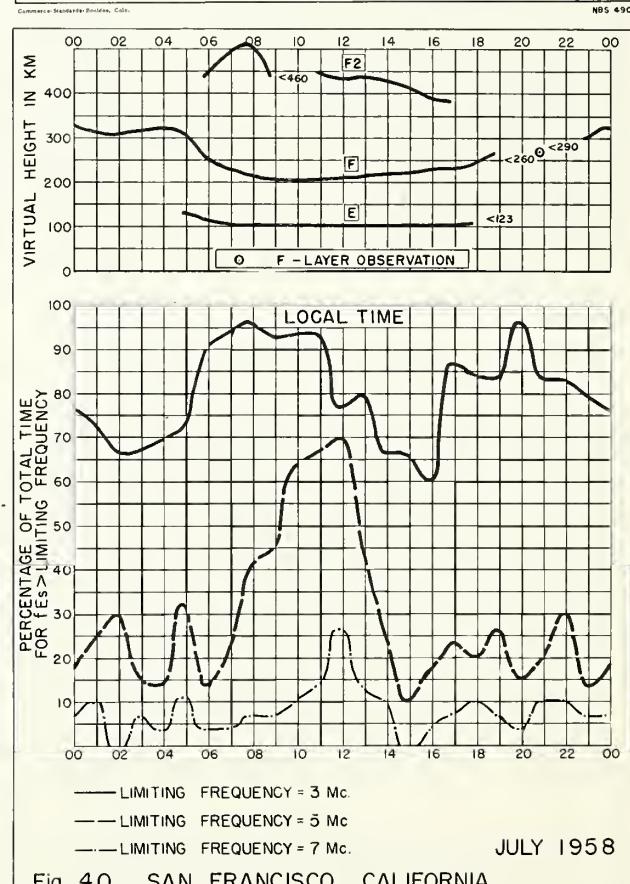


Fig. 40. SAN FRANCISCO, CALIFORNIA JULY 1958

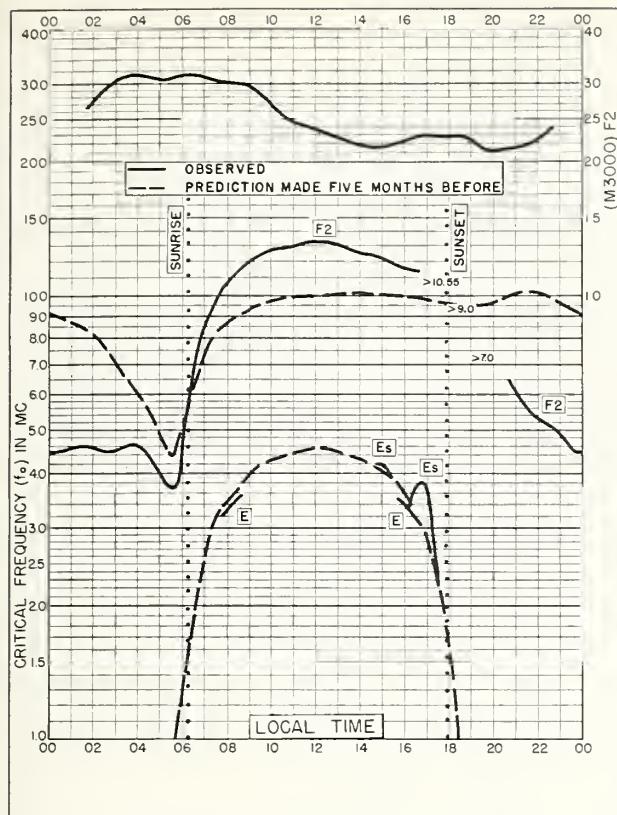


Fig. 41. NATAL, BRAZIL
5.3°S, 35.1°W

JULY 1958

NBS 503

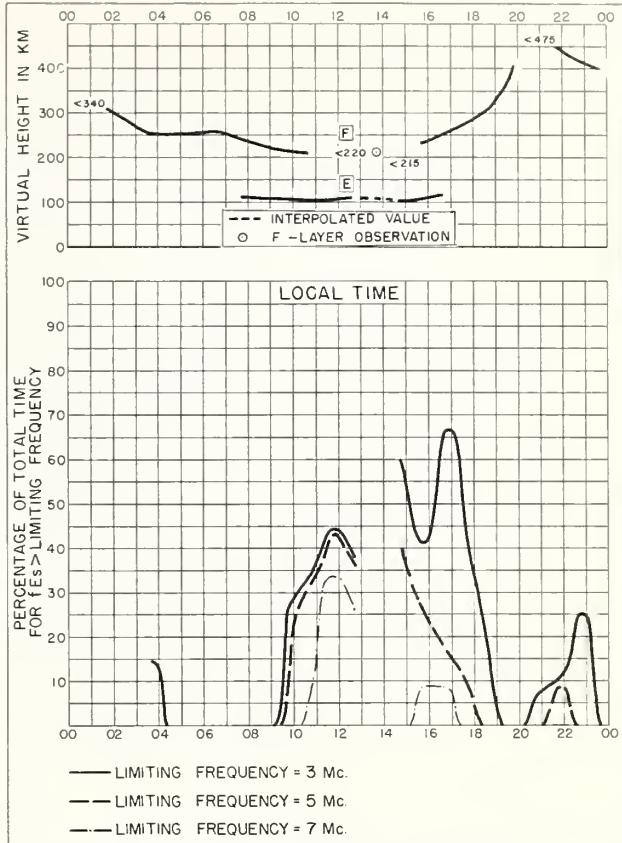


Fig. 42. NATAL, BRAZIL

JULY 1958

NBS 490

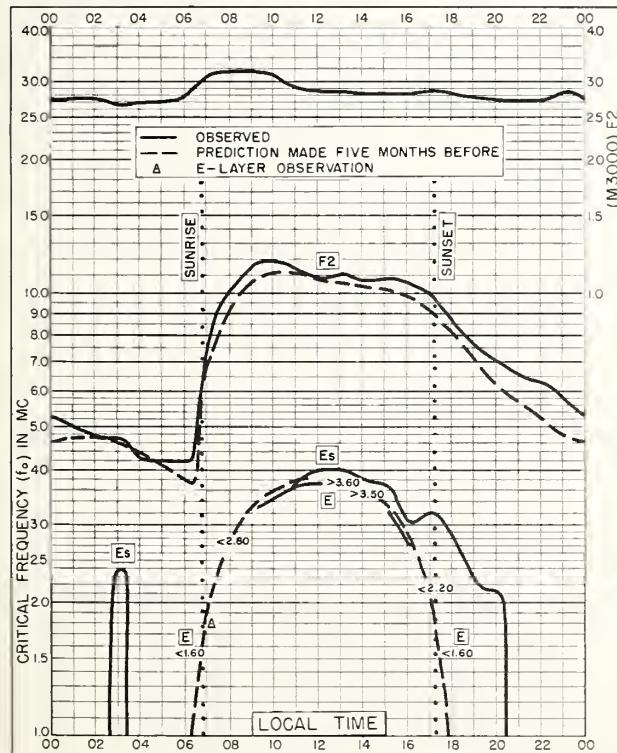


Fig. 43. BRISBANE, AUSTRALIA
27.5°S, 152.9°E

JULY 1958

NBS 503

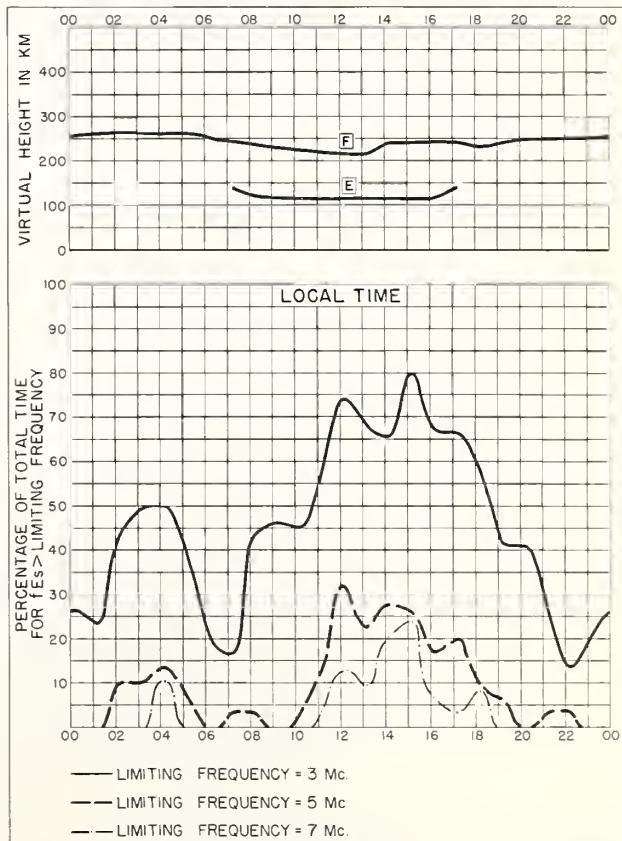
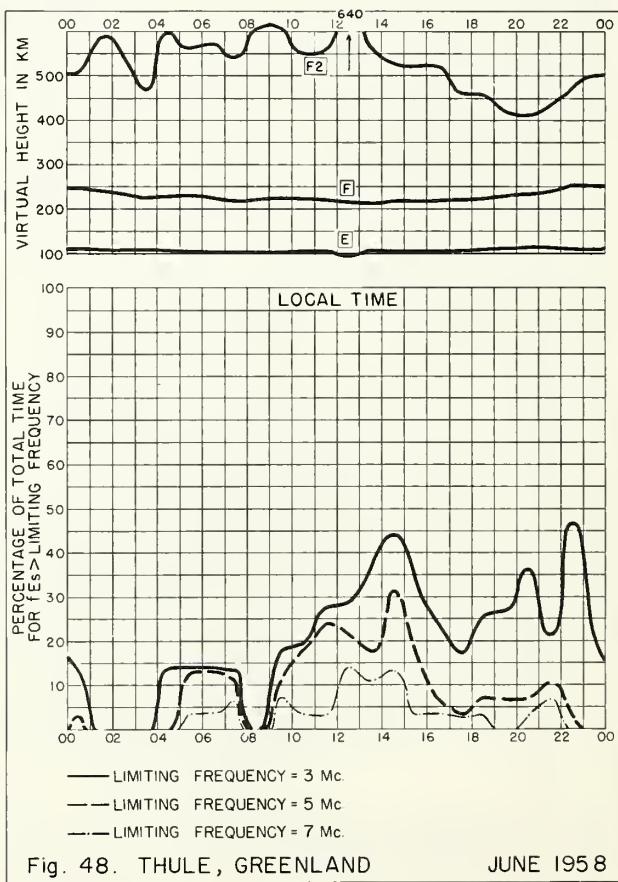
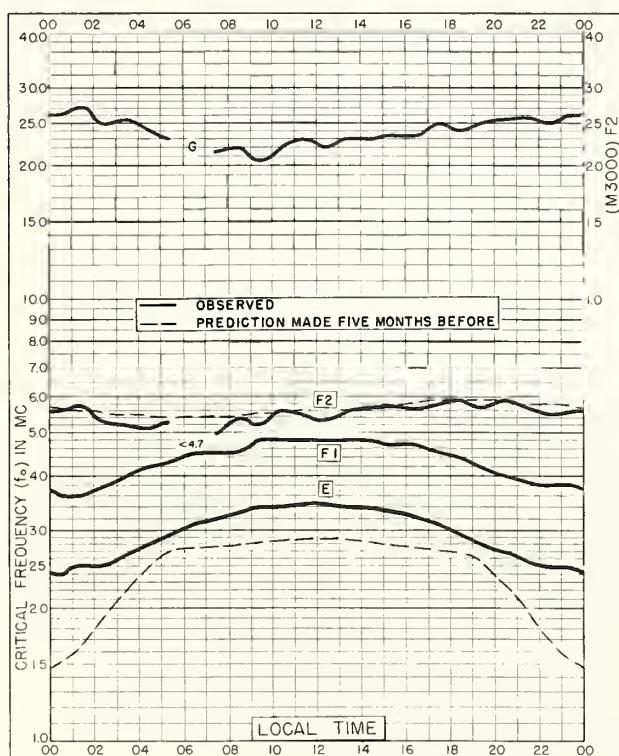
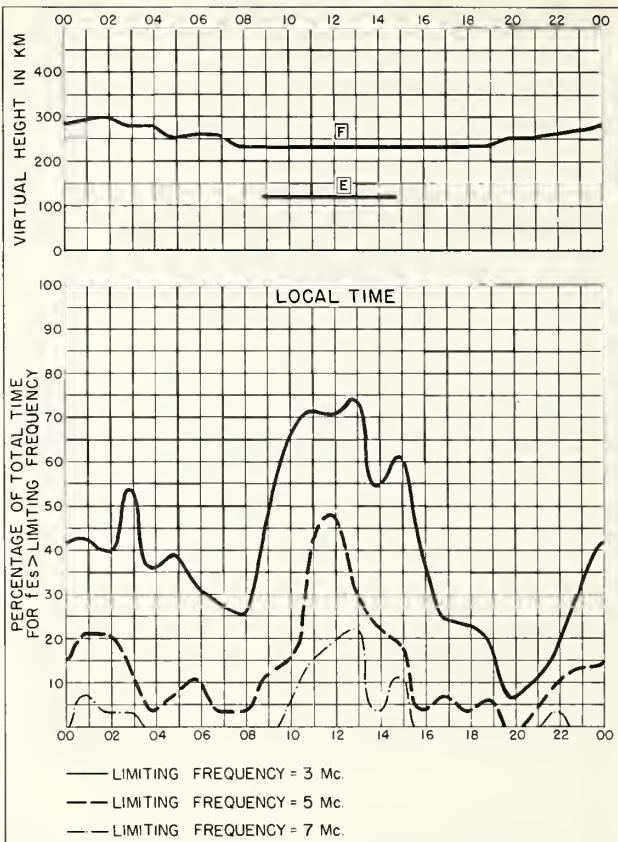
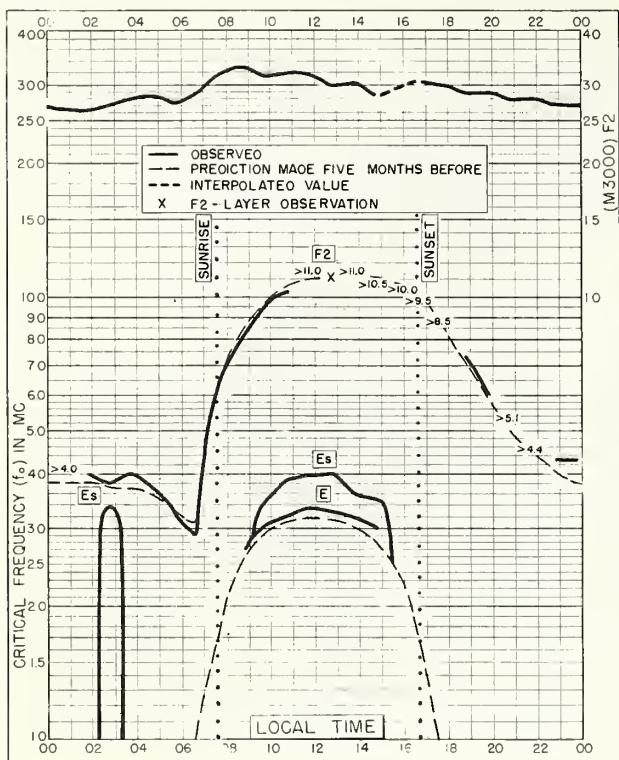


Fig. 44. BRISBANE, AUSTRALIA

JULY 1958

NBS 490



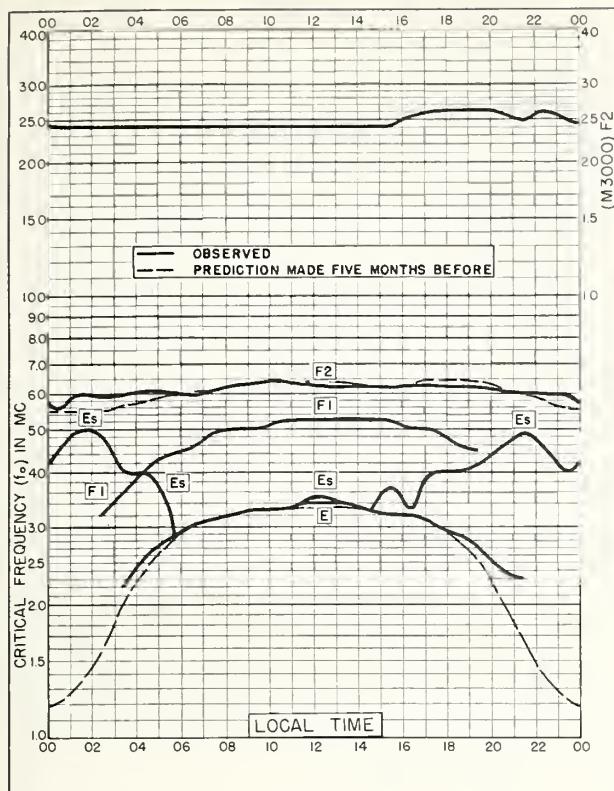


Fig. 49. KIRUNA, SWEDEN
67.8°N, 20.3°E JUNE 1958

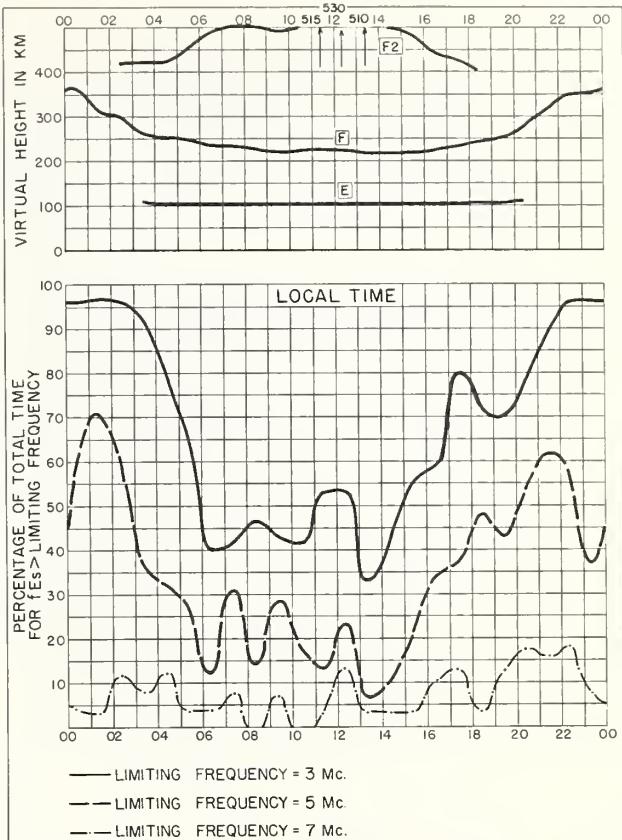


Fig. 50. KIRUNA, SWEDEN JUNE 1958

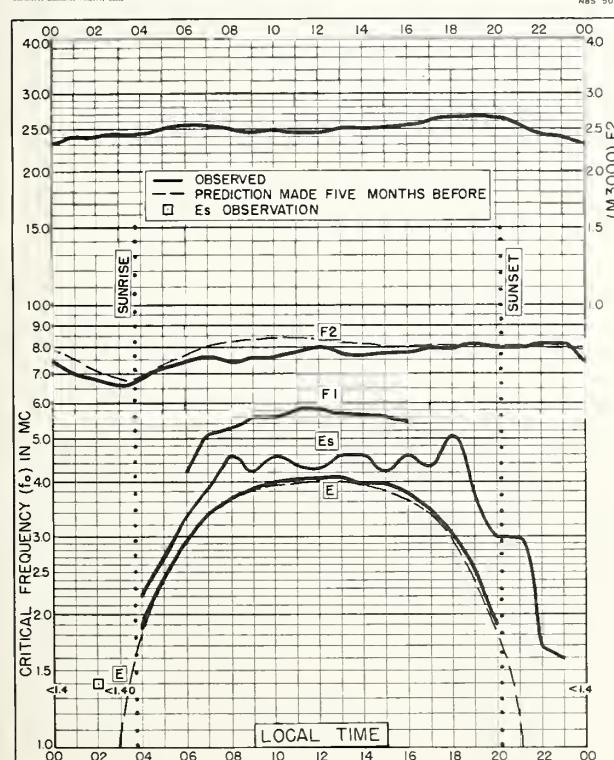


Fig. 51. SLOUGH, ENGLAND
51.5°N, 0.6°W JUNE 1958

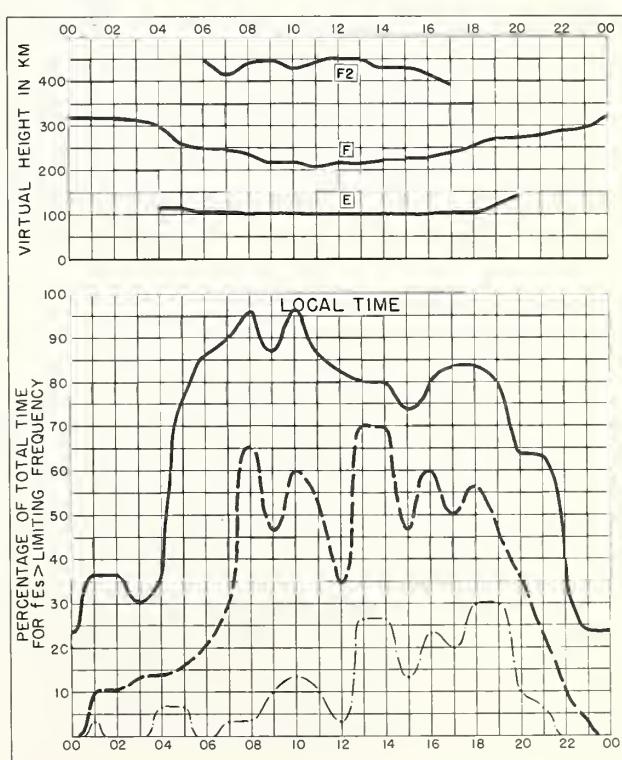


Fig. 52. SLOUGH, ENGLAND JUNE 1958

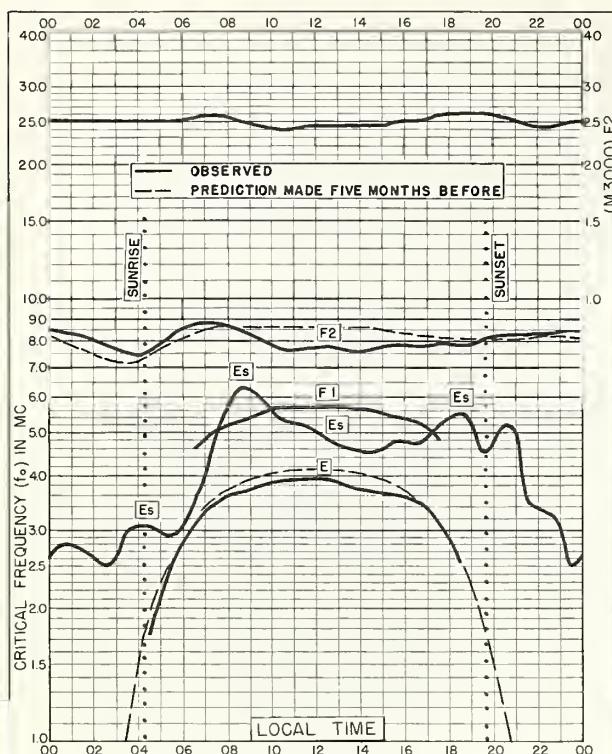
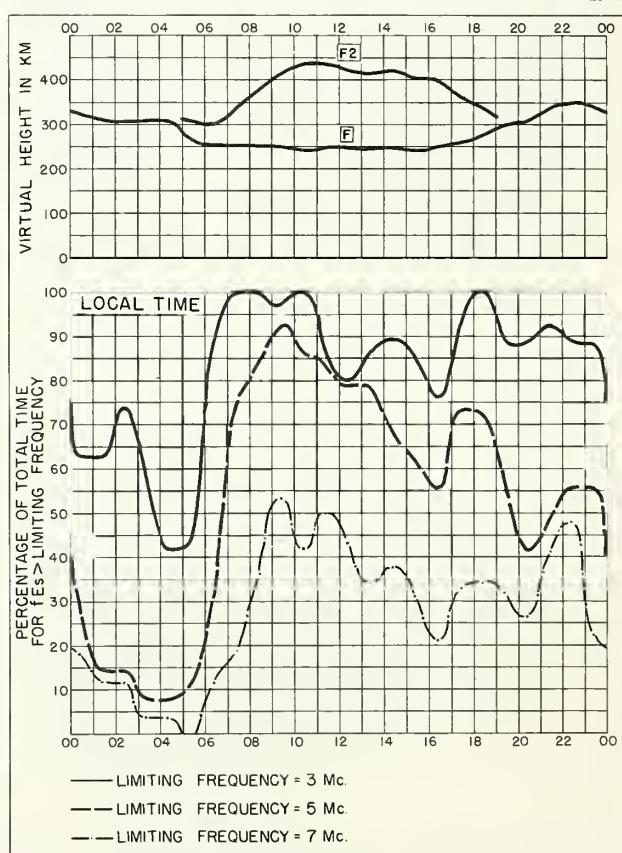
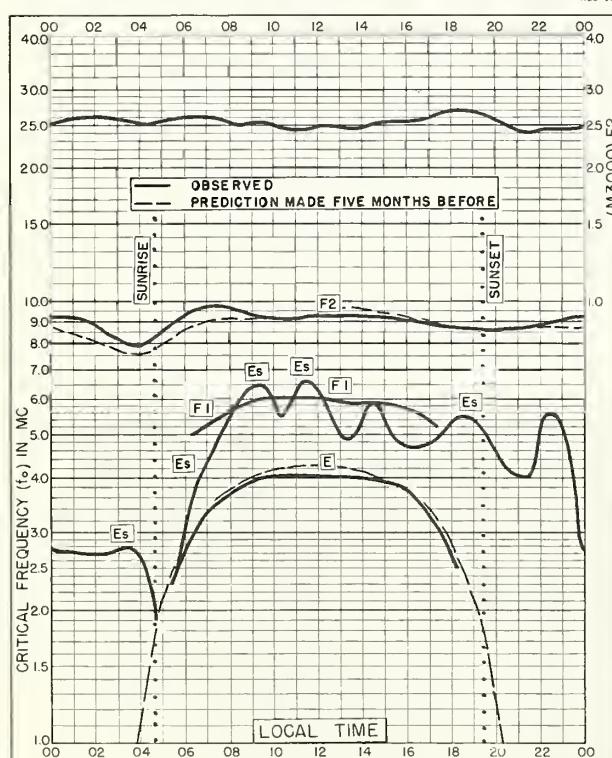
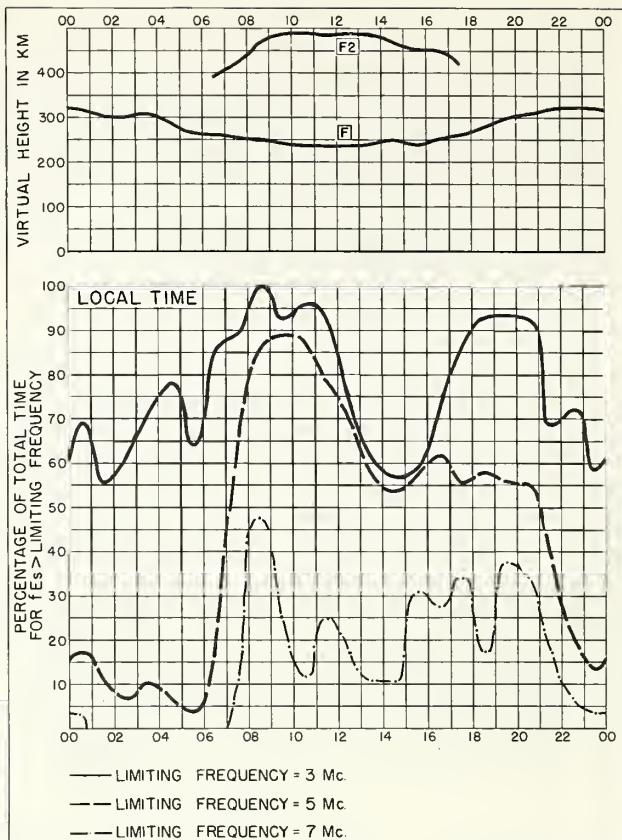


Fig. 53. WAKKANAI, JAPAN
45.4°N, 141.7°E JUNE 1958



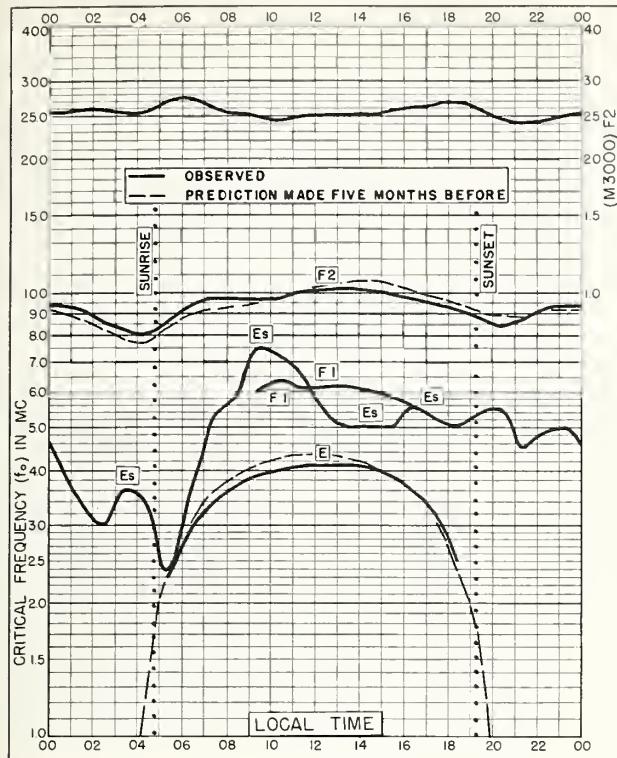


Fig. 57. TOKYO, JAPAN

35.7°N, 139.5°E

JUNE 1958

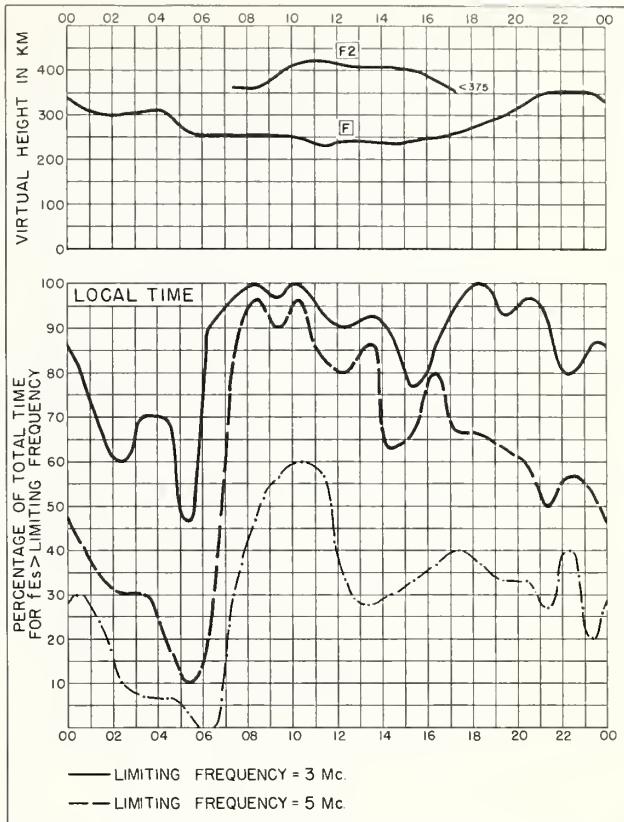


Fig. 58. TOKYO, JAPAN

JUNE 1958

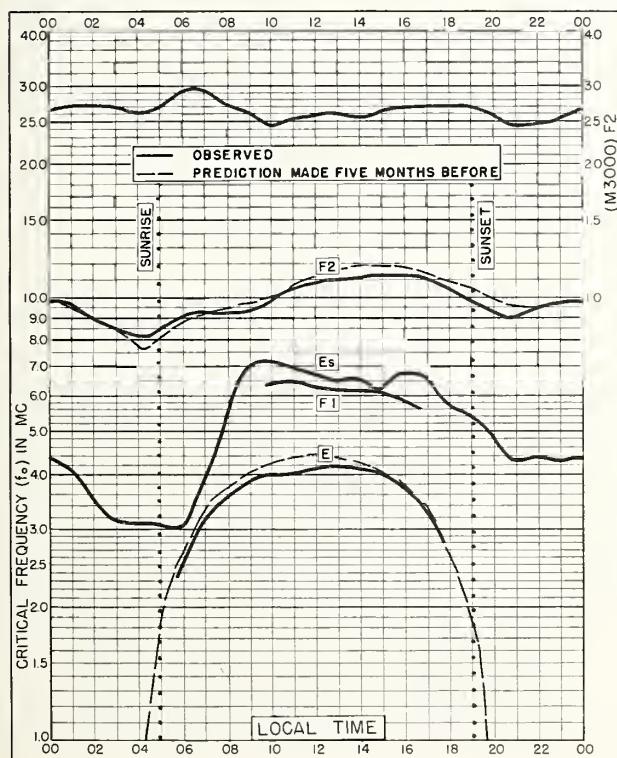


Fig. 59. YAMAGAWA, JAPAN

31.2°N, 130.6°E

JUNE 1958

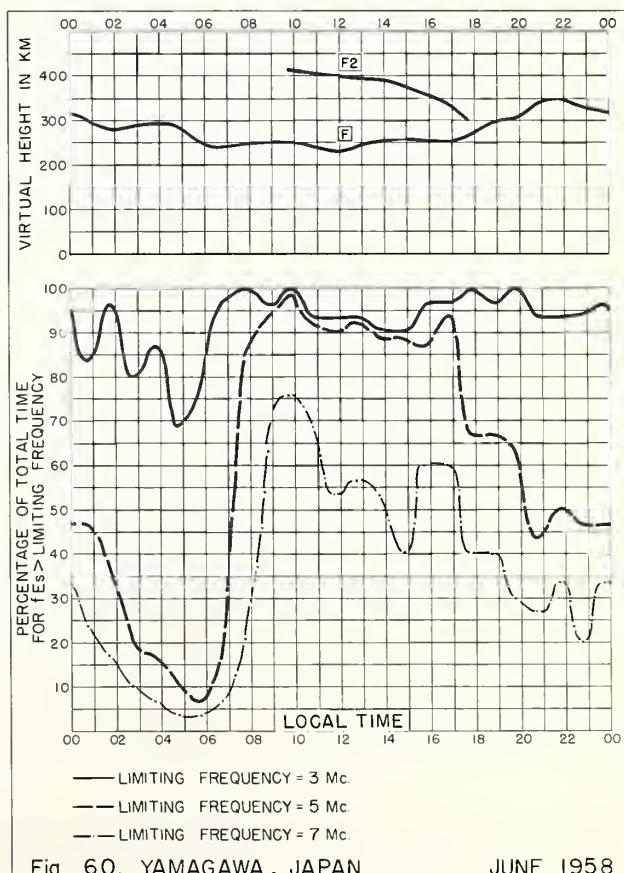


Fig. 60. YAMAGAWA, JAPAN

JUNE 1958

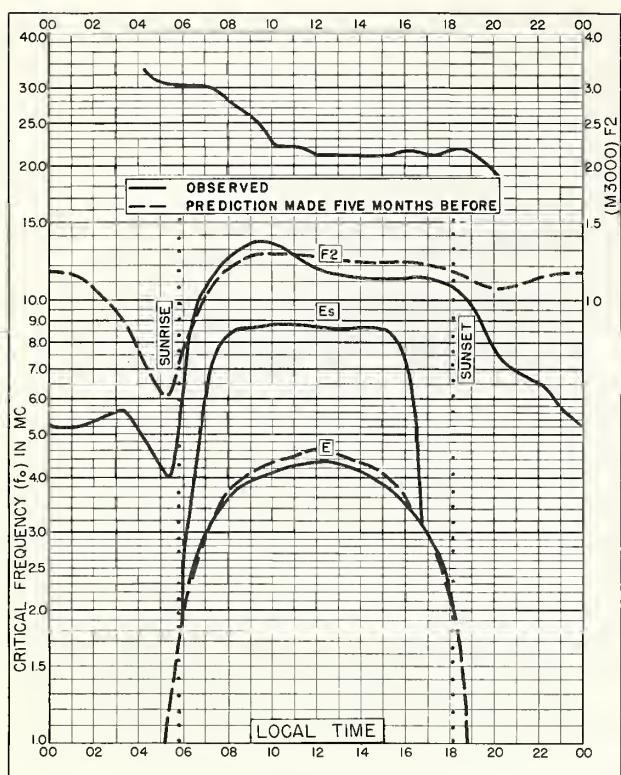


Fig. 61. IBADAN, NIGERIA

7.4°N, 3.9°E

JUNE 1958

Commerce-Standard-Boulder, Colo.

NBS 503

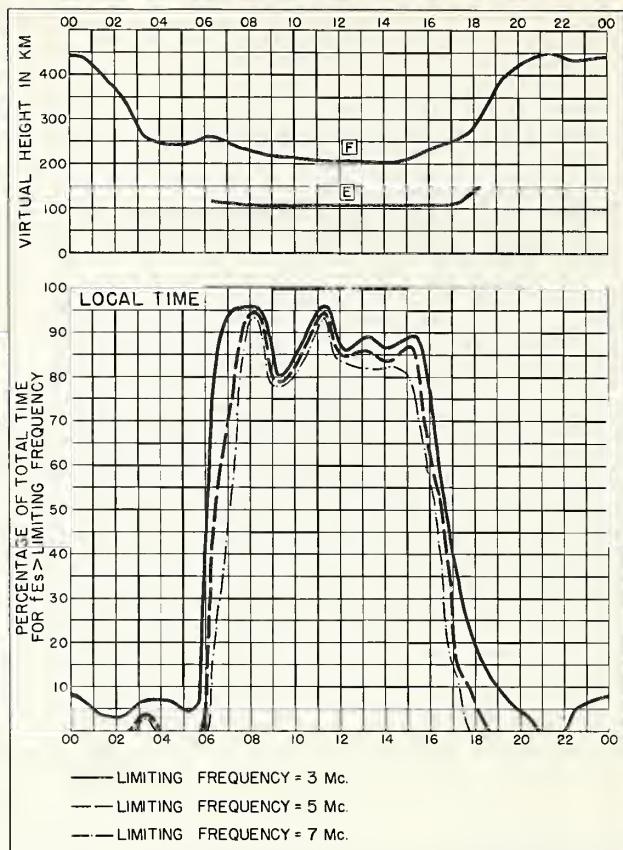


Fig. 62. IBADAN, NIGERIA

JUNE 1958

NBS 490

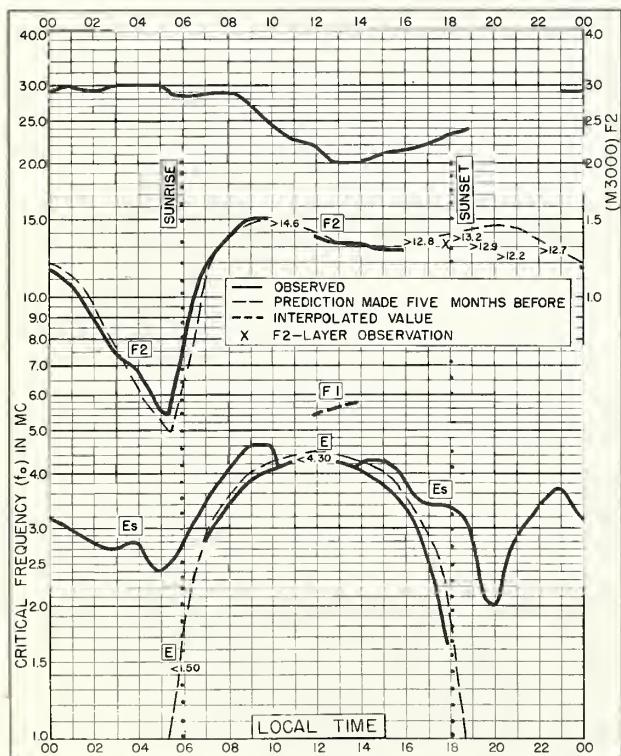


Fig. 63. SINGAPORE, BRITISH MALAYA

1.3°N, 103.8°E

JUNE 1958

NBS 503

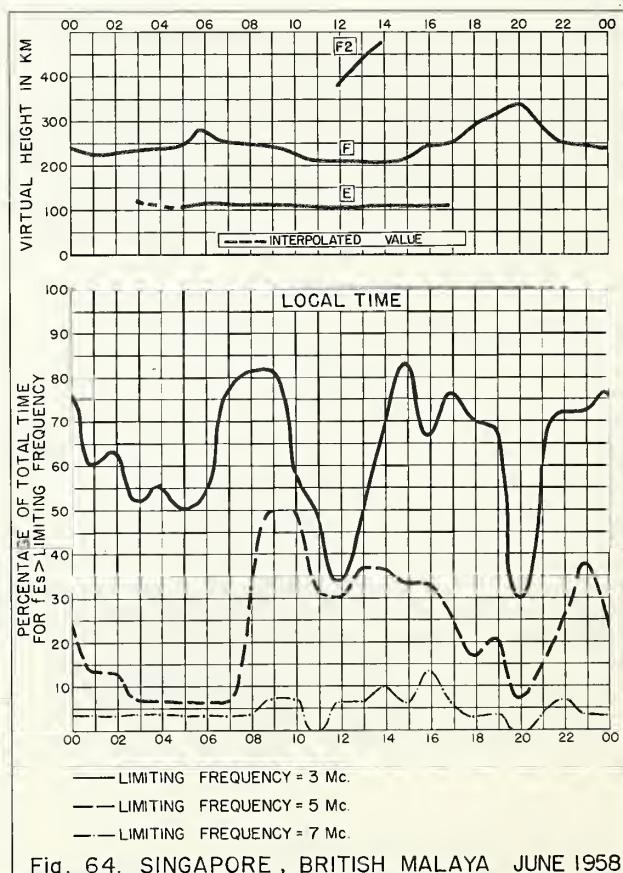


Fig. 64. SINGAPORE, BRITISH MALAYA JUNE 1958

NBS 490

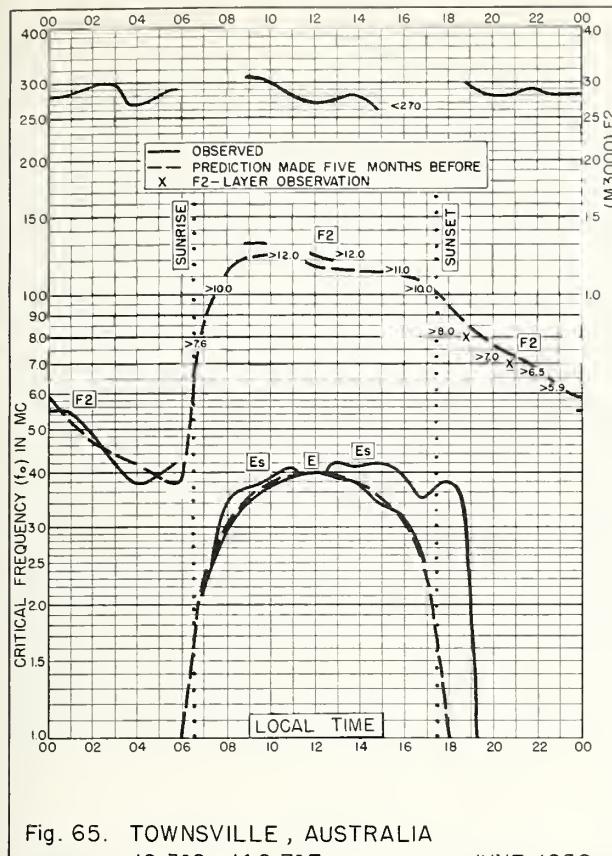


Fig. 65. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E JUNE 1958

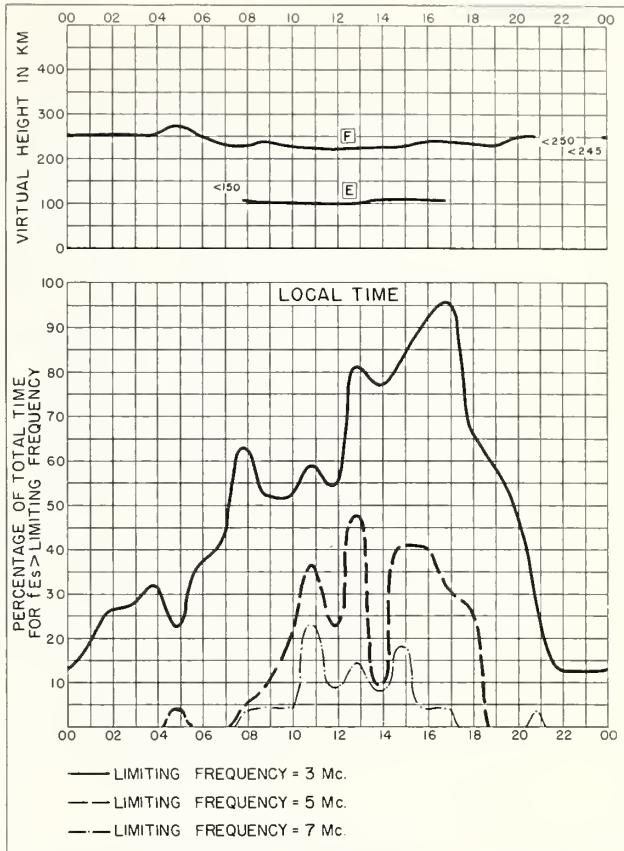


Fig. 66. TOWNSVILLE, AUSTRALIA JUNE 1958

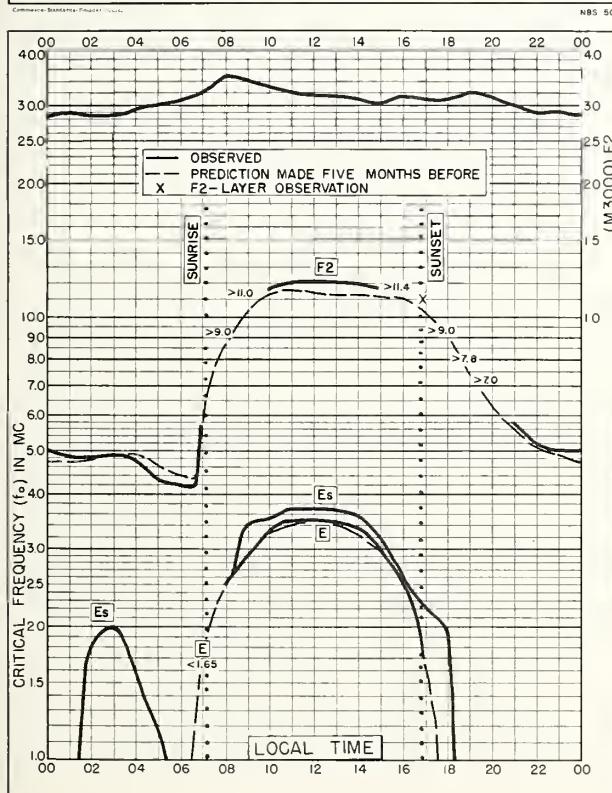


Fig. 67. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JUNE 1958

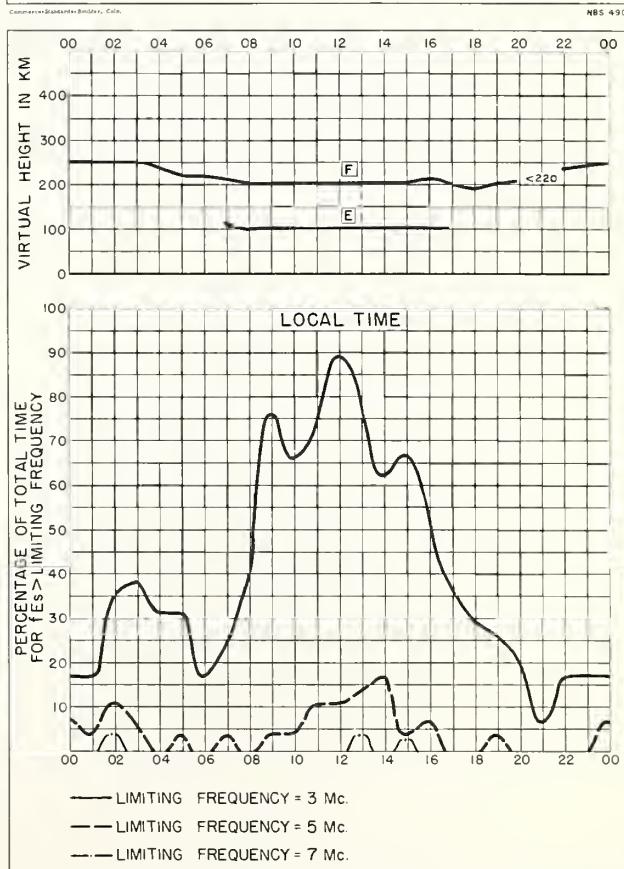
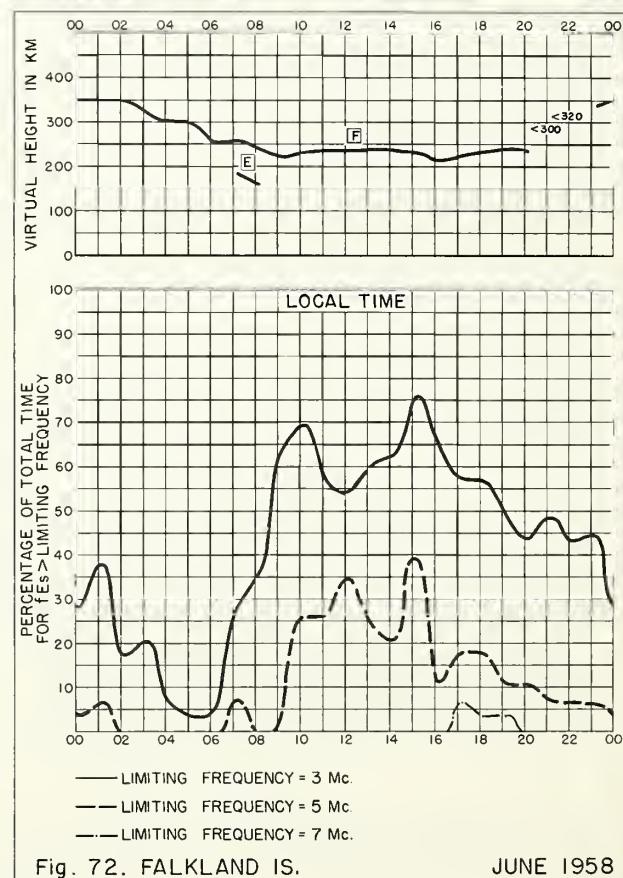
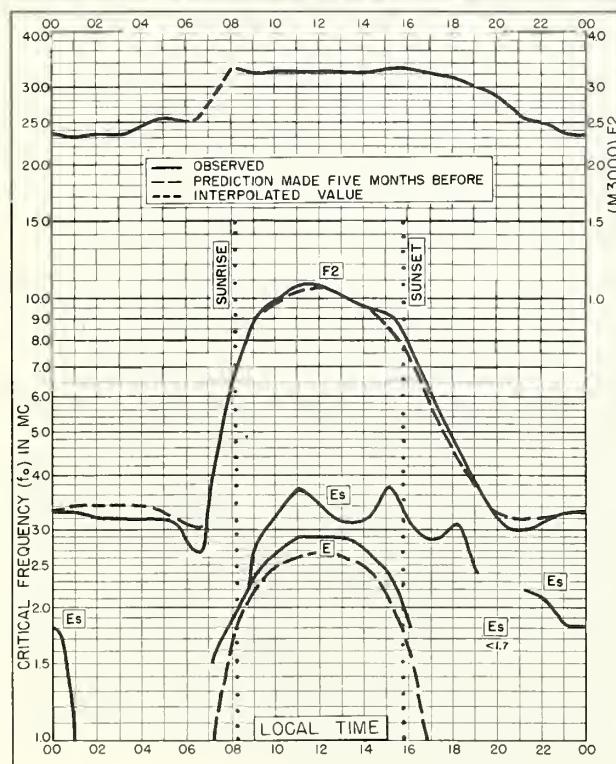
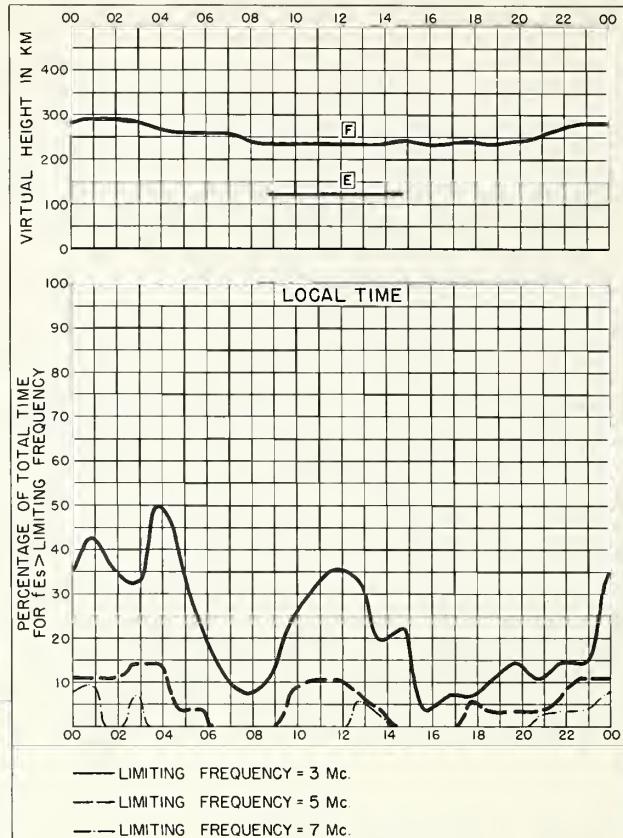
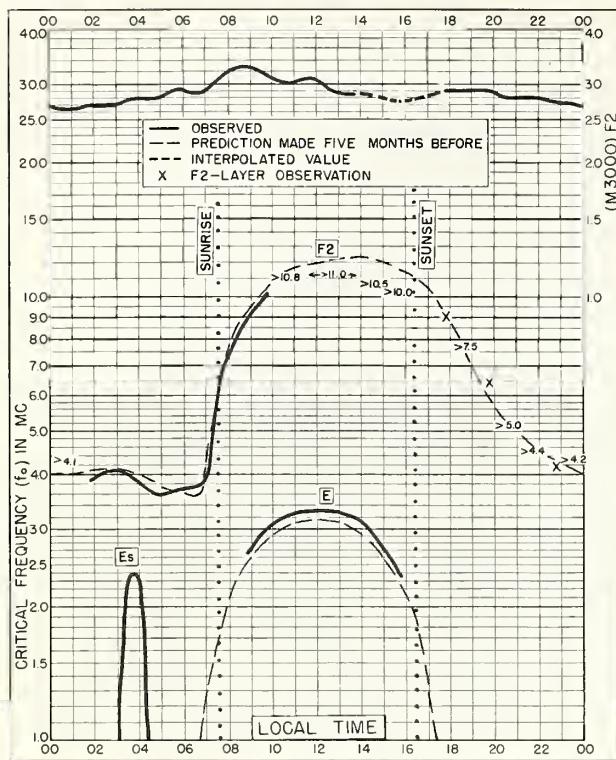


Fig. 68. CANBERRA, AUSTRALIA JUNE 1958



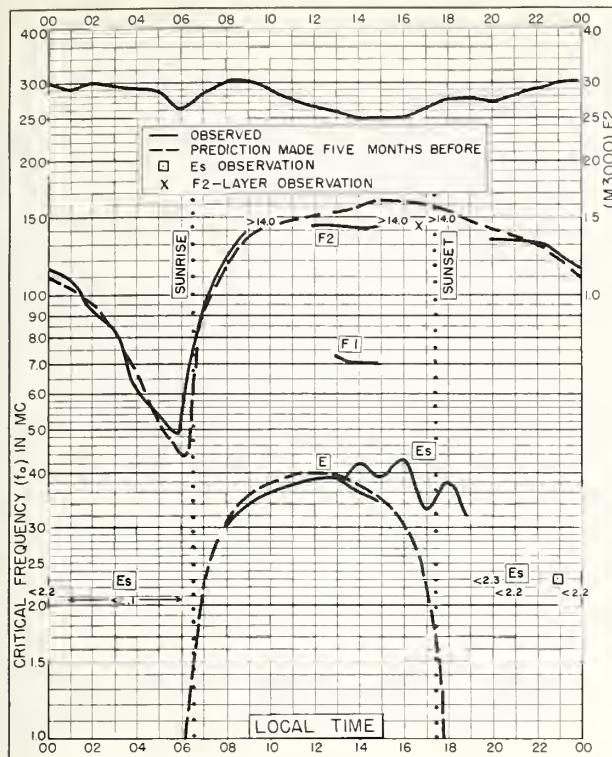


Fig. 73. SAO PAULO, BRAZIL
23.5°S, 46.5°W MAY 1958

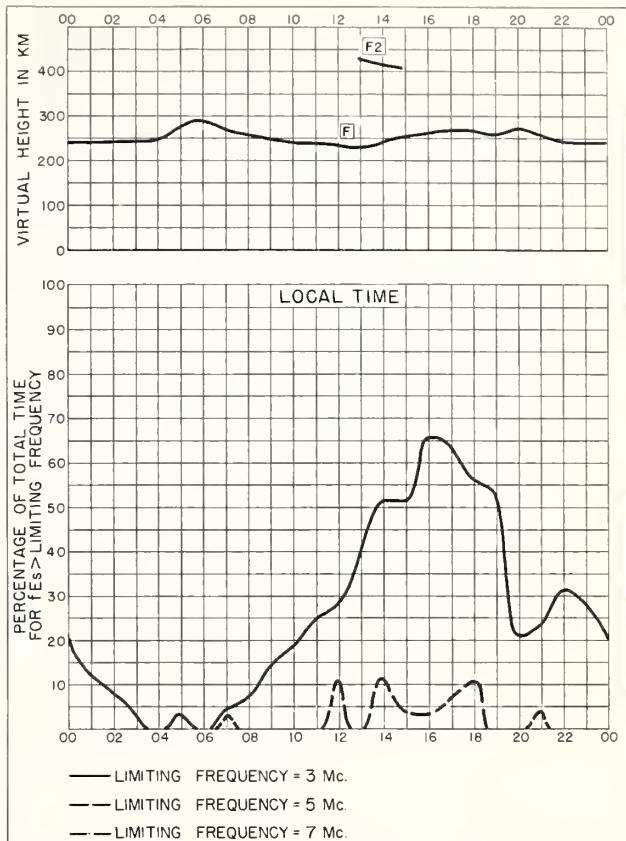


Fig. 74. SAO PAULO, BRAZIL MAY 1958

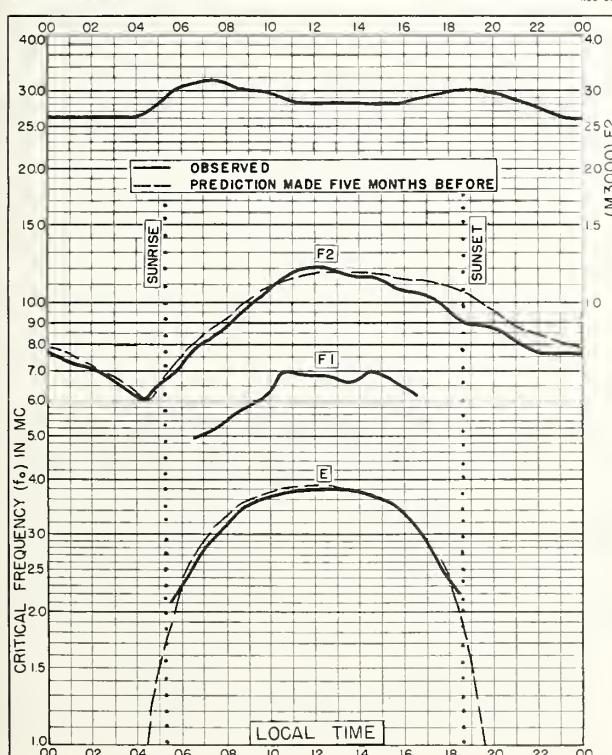


Fig. 75. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E APRIL 1958

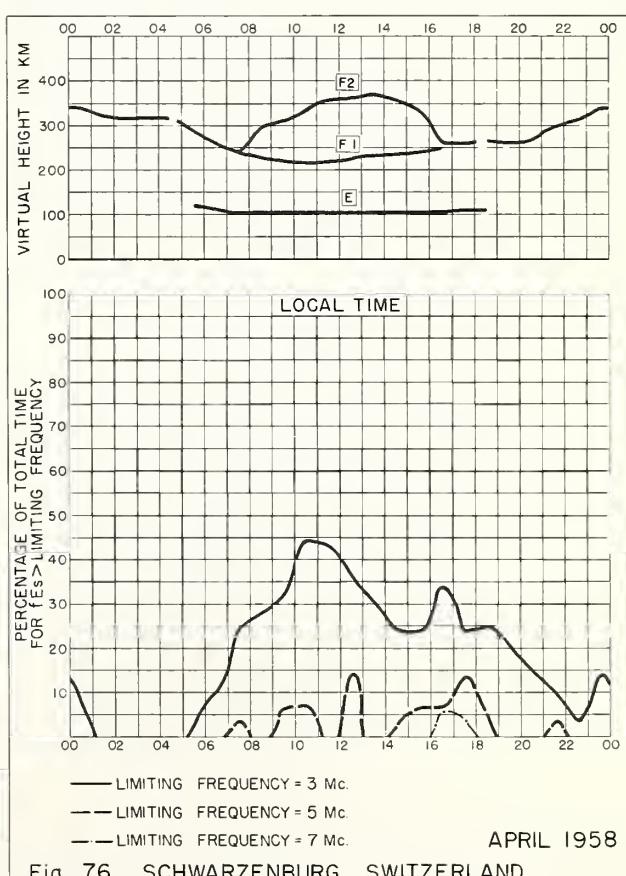


Fig. 76. SCHWARZENBURG, SWITZERLAND APRIL 1958

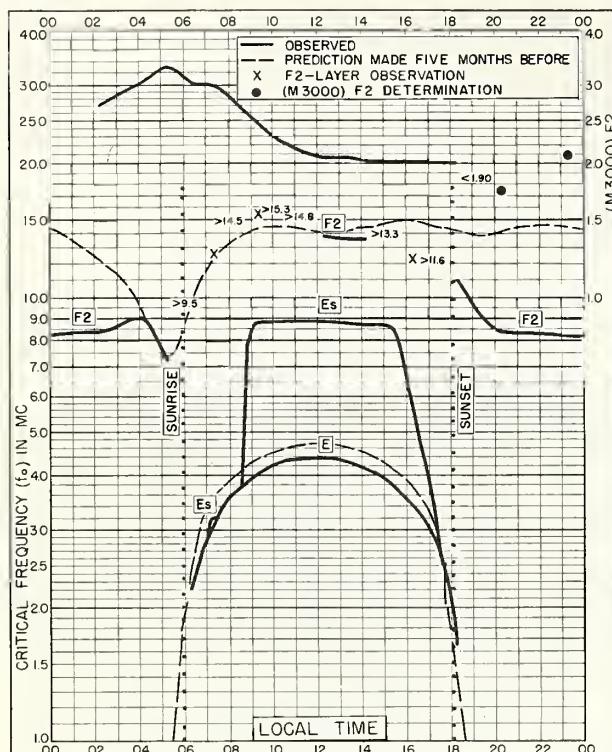


Fig. 77. IBADAN, NIGERIA

7.4°N, 3.9°E

APRIL 1958

NBS 503

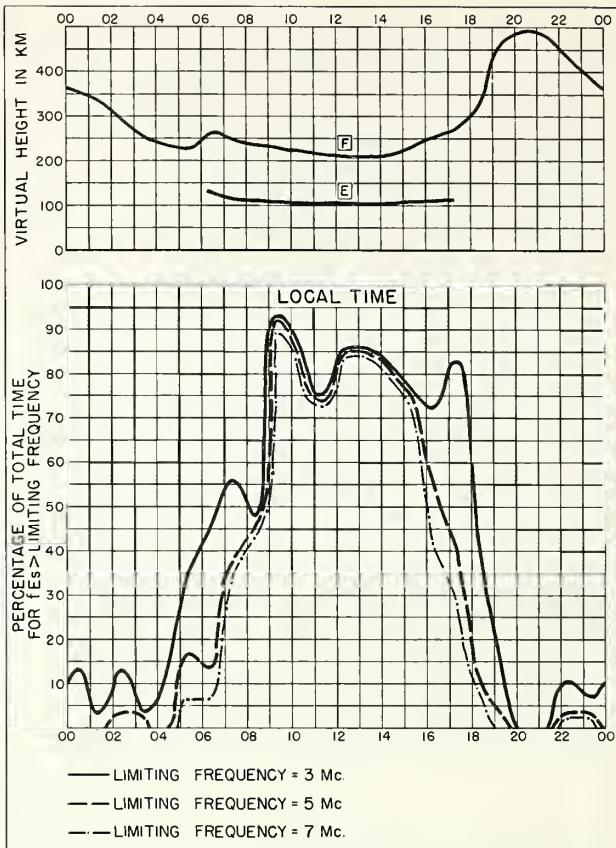


Fig. 78. IBADAN, NIGERIA

APRIL 1958

NBS 490

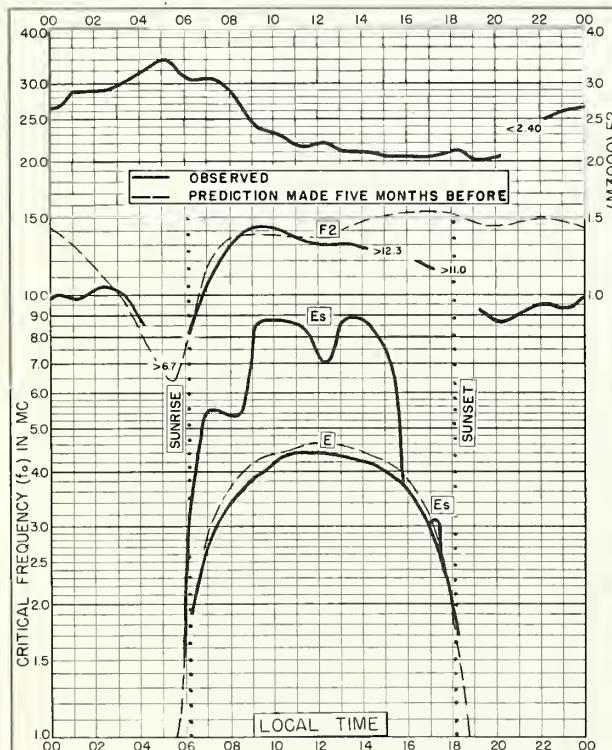


Fig. 79. IBADAN, NIGERIA

7.4°N, 3.9°E

MARCH 1958

NBS 503

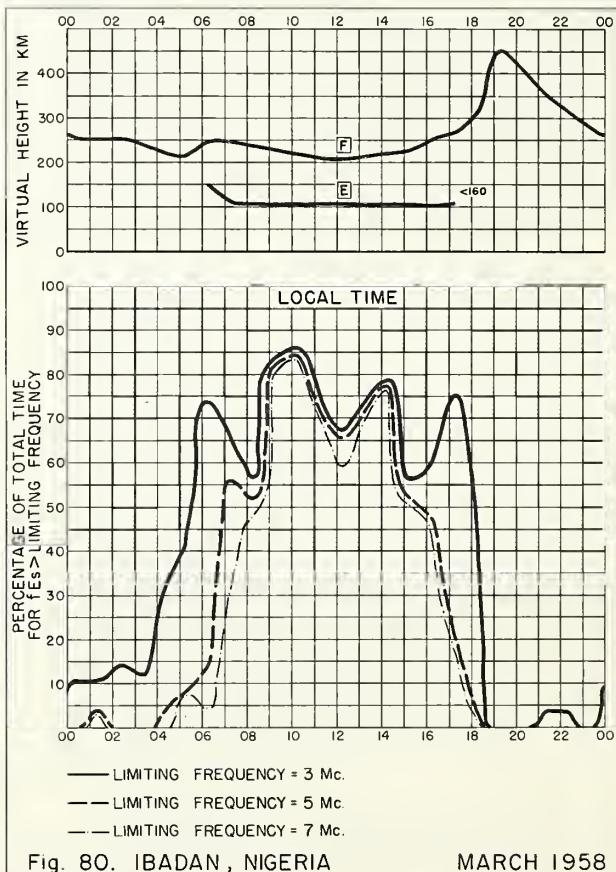
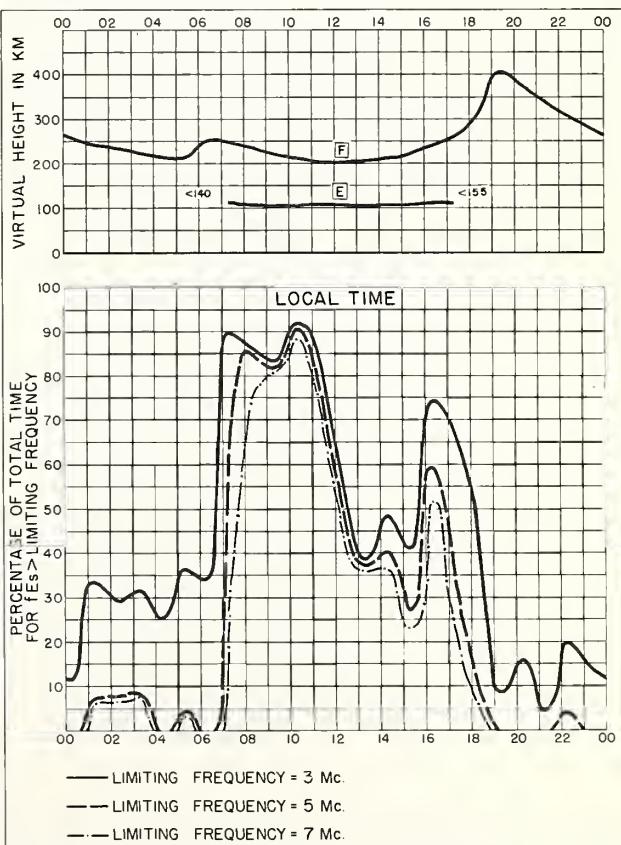
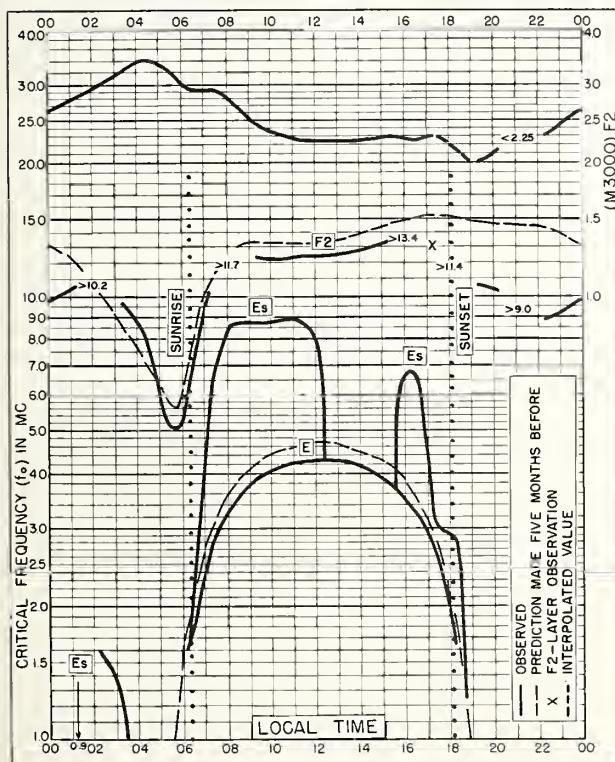
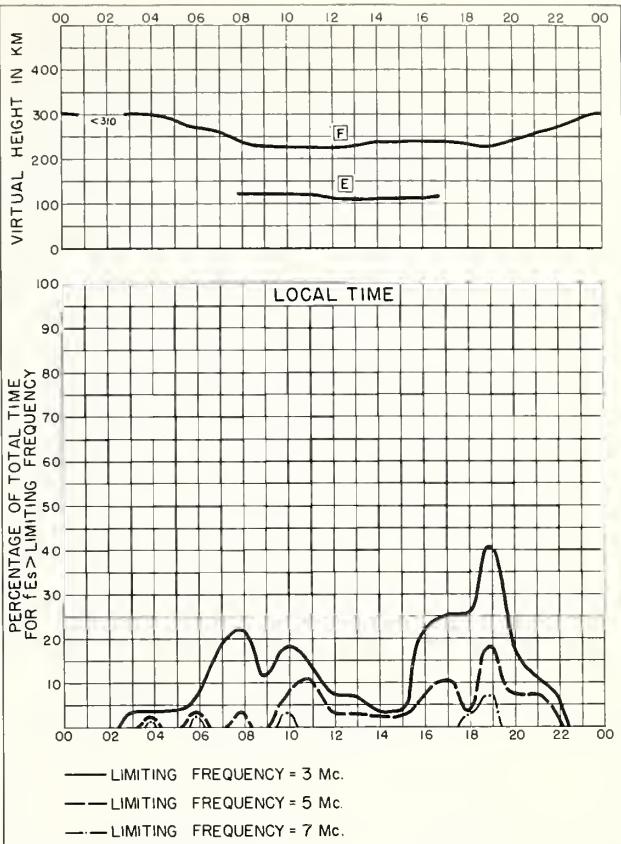
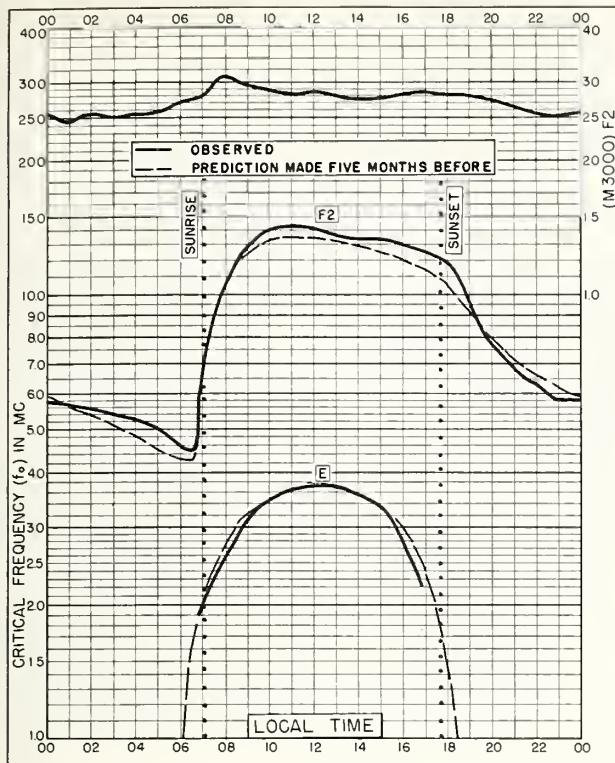


Fig. 80. IBADAN, NIGERIA

MARCH 1958

NBS 490



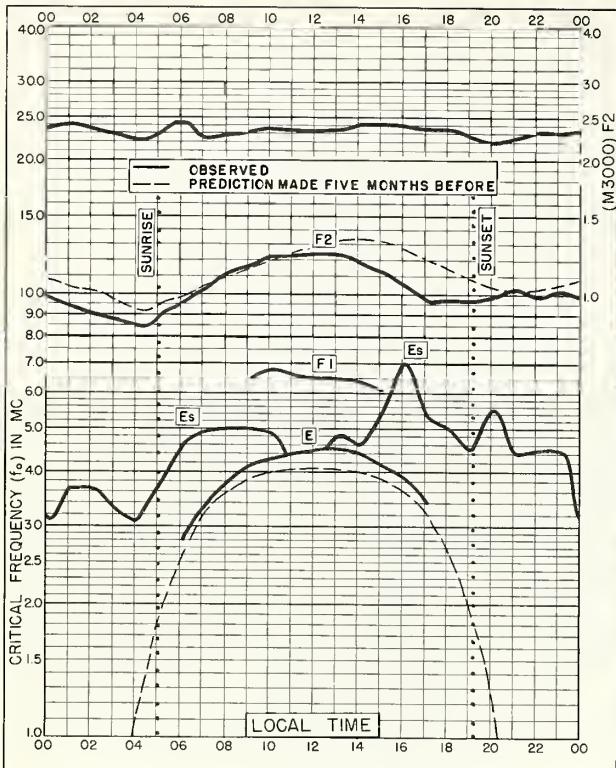


Fig. 85. CONCEPCION, CHILE
36.6°S, 73.0°W JANUARY 1958

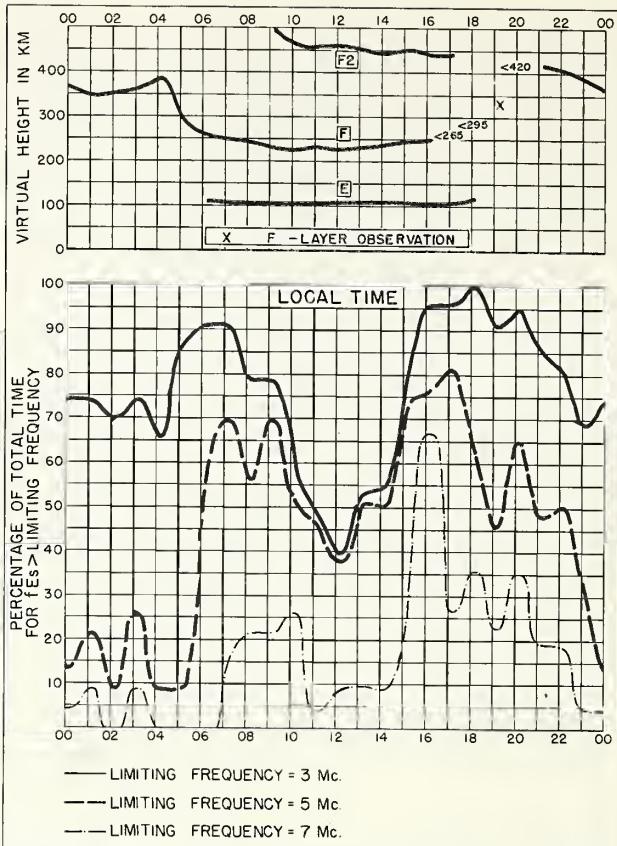


Fig. 86. CONCEPCION, CHILE JANUARY 1958

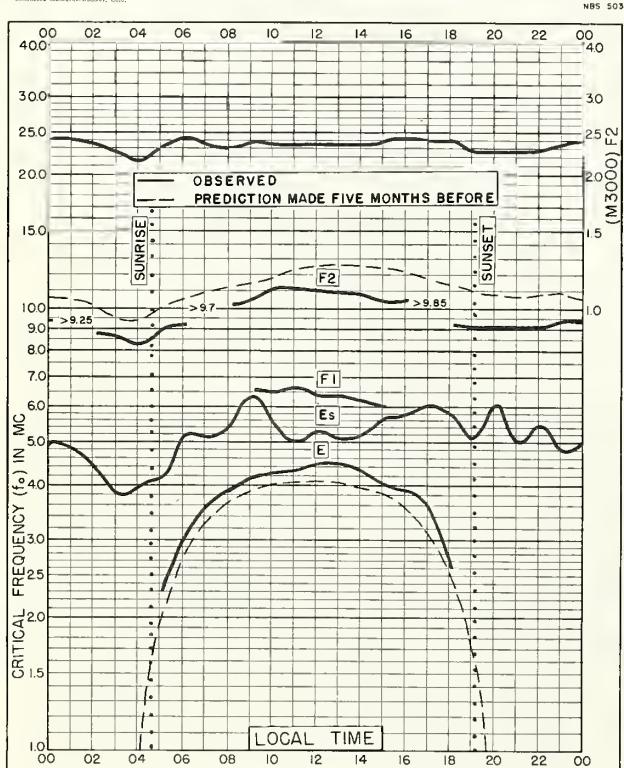


Fig. 87. CONCEPCION, CHILE
36.6°S, 73.0°W DECEMBER 1957

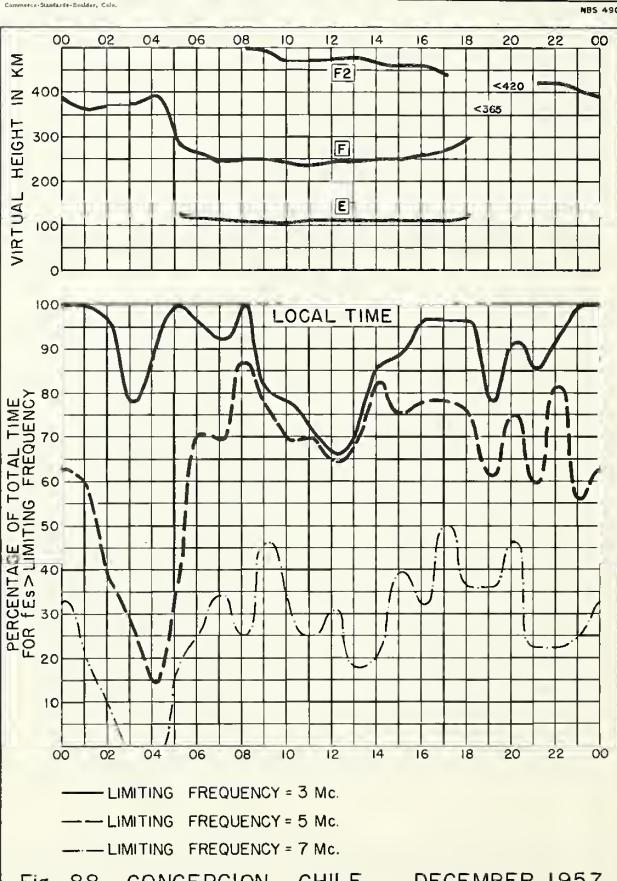
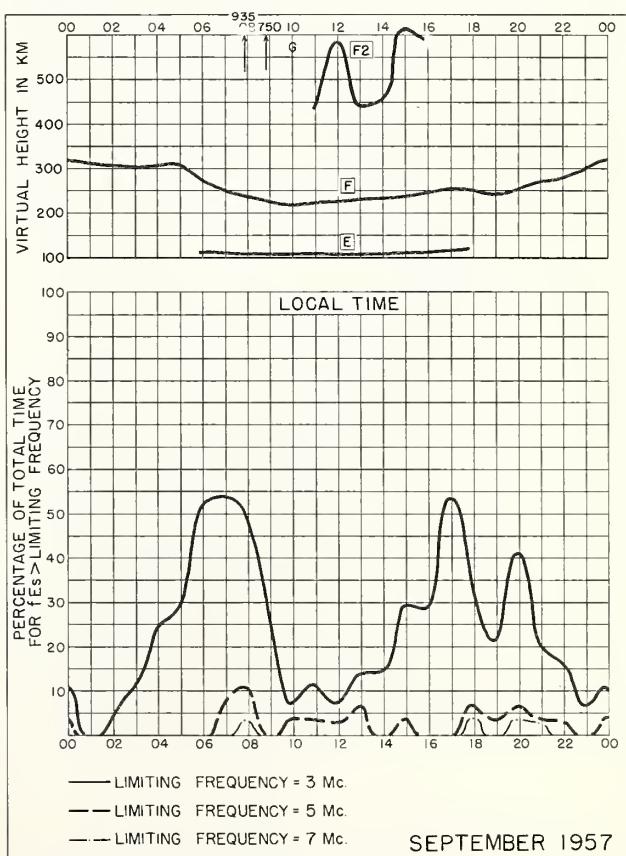
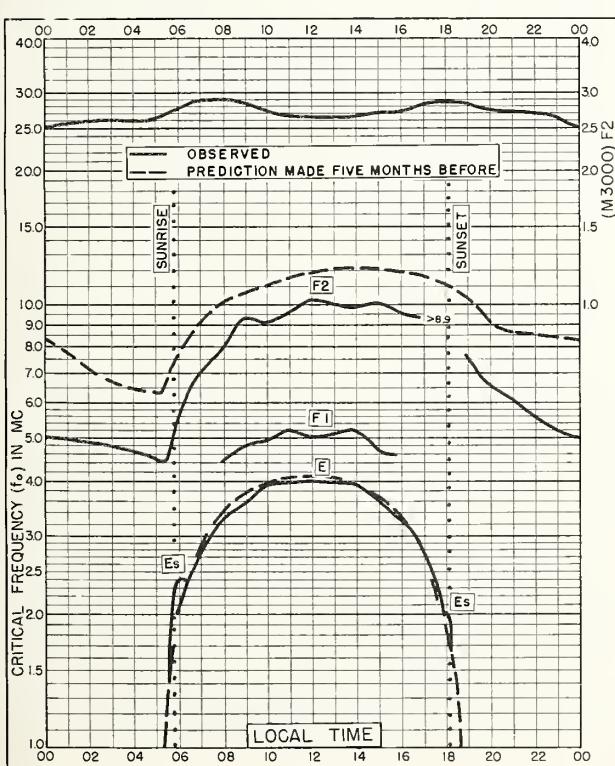
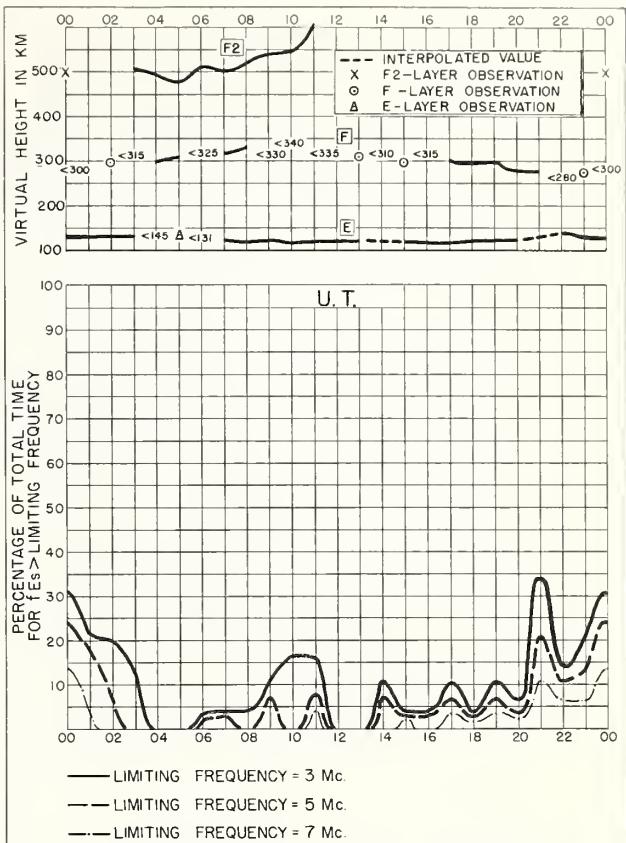
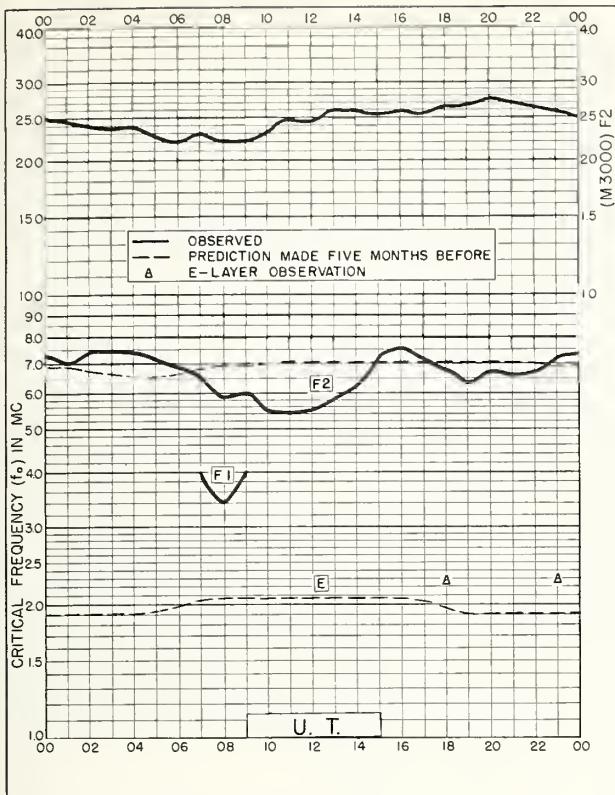
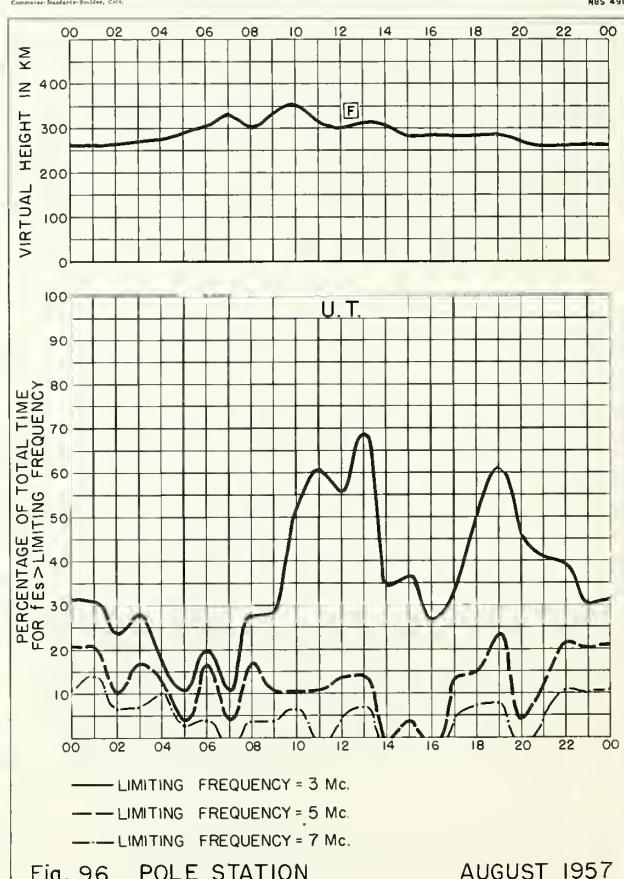
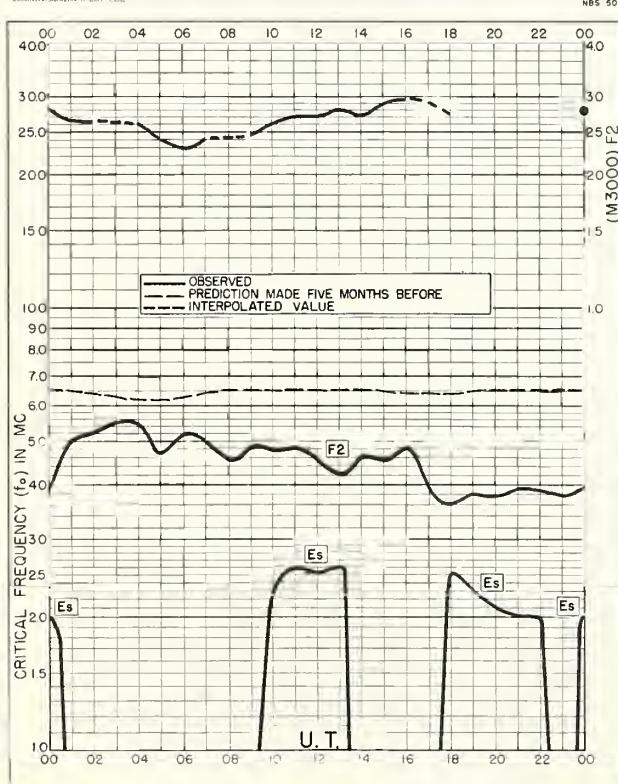
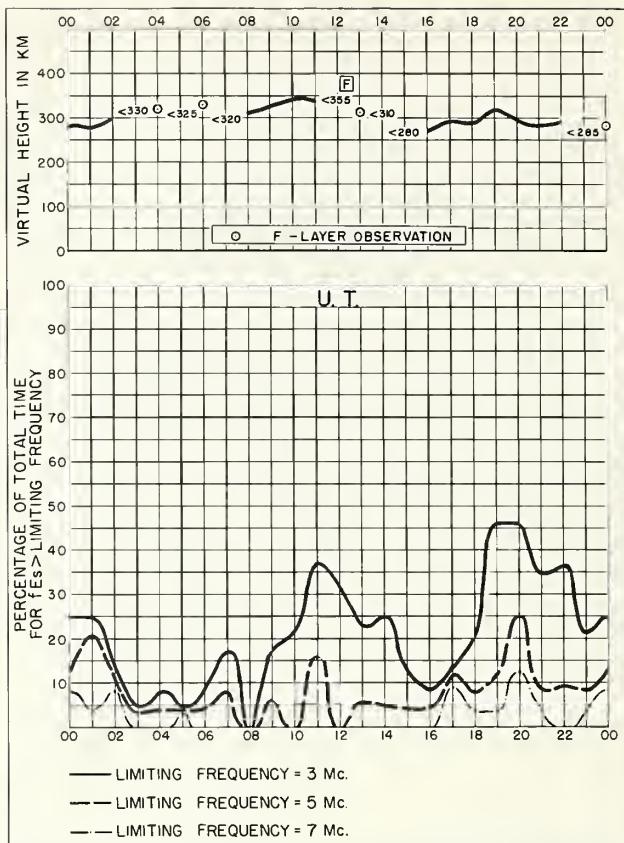
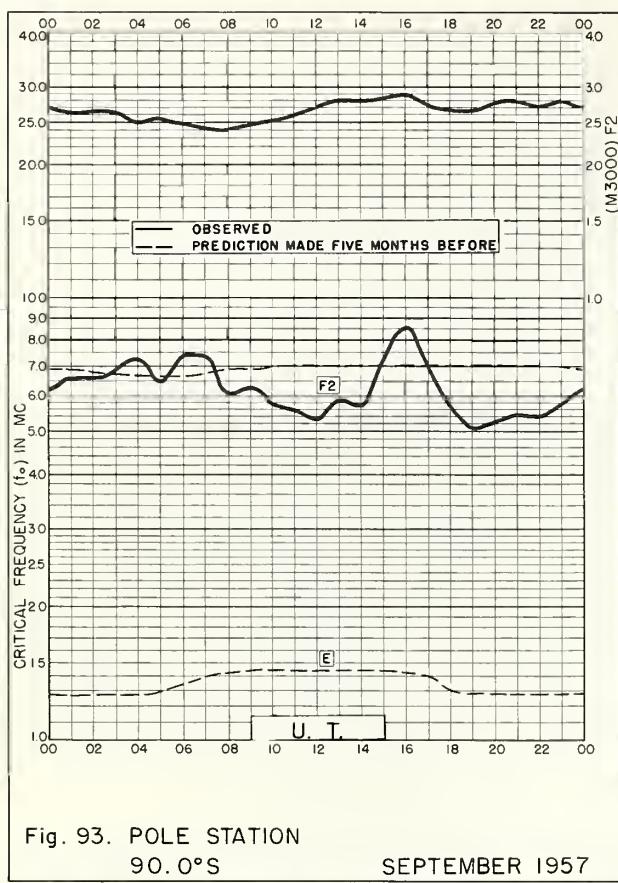
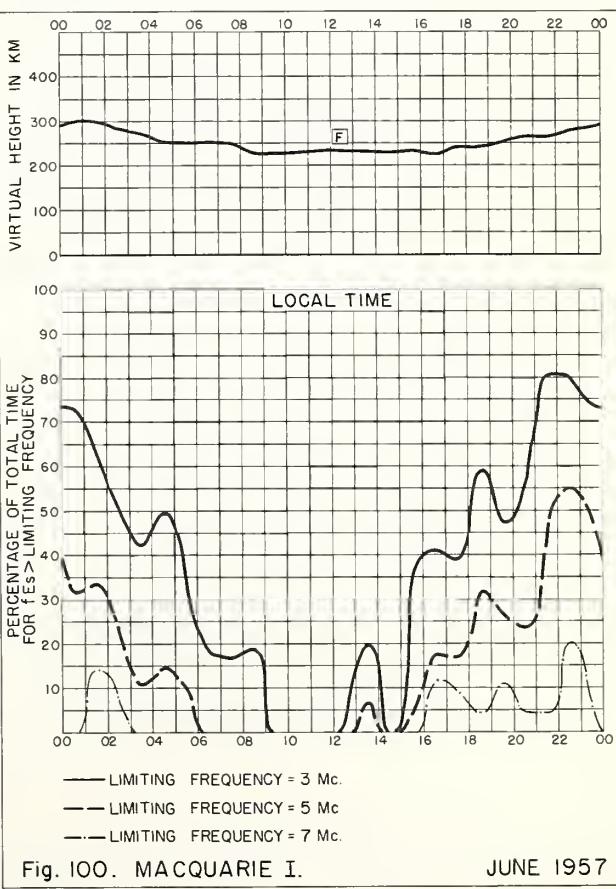
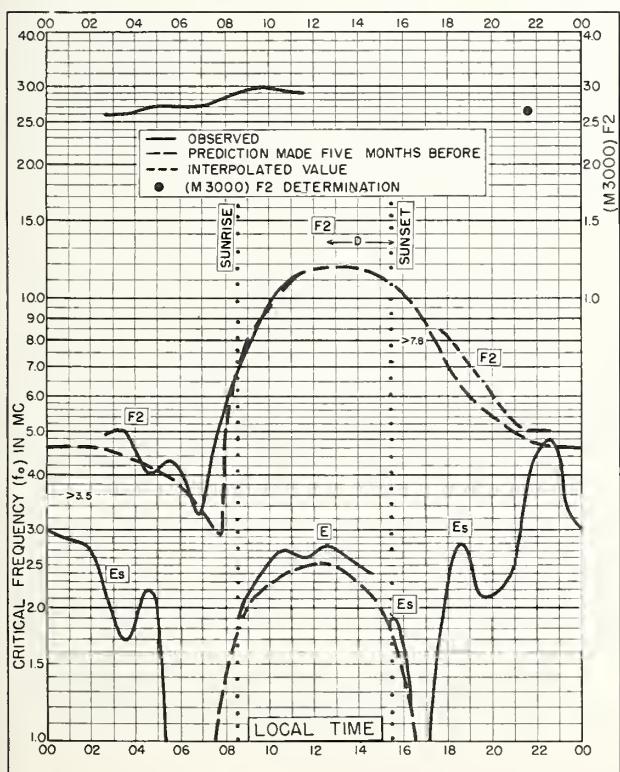
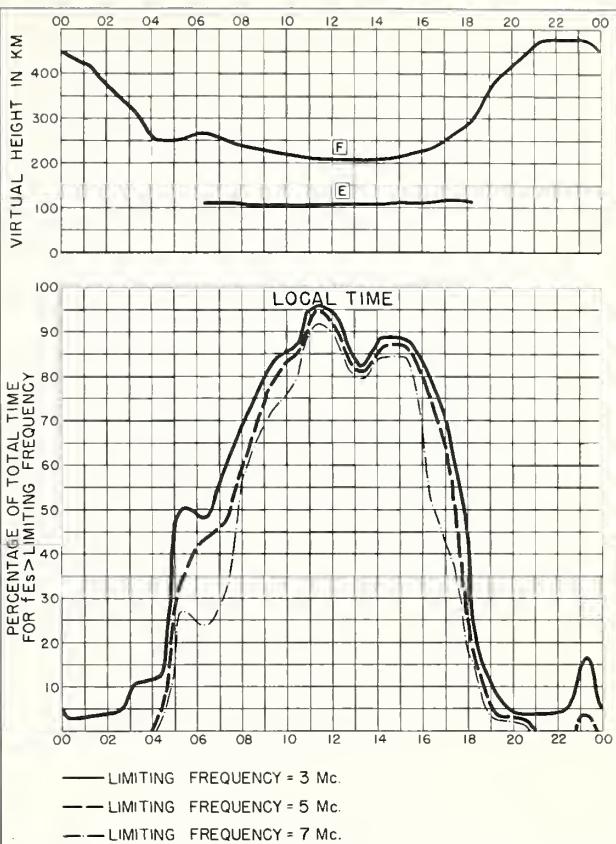
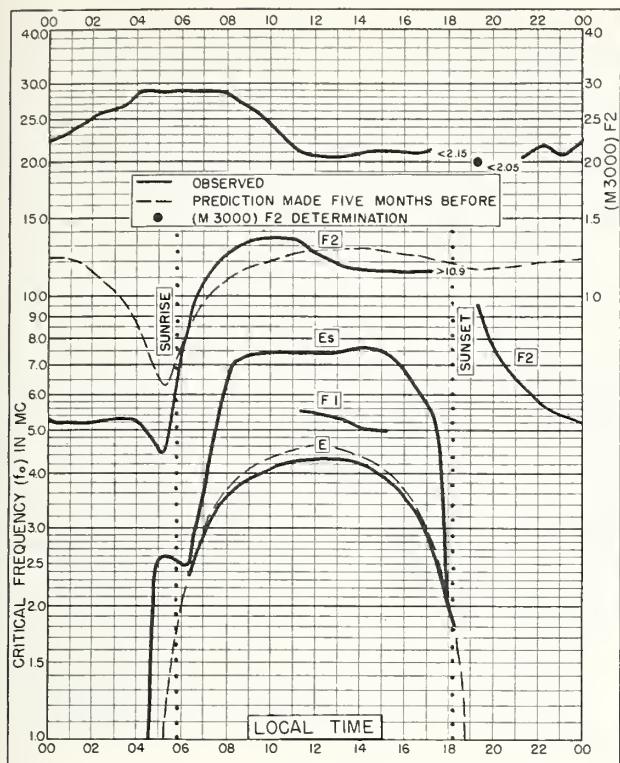
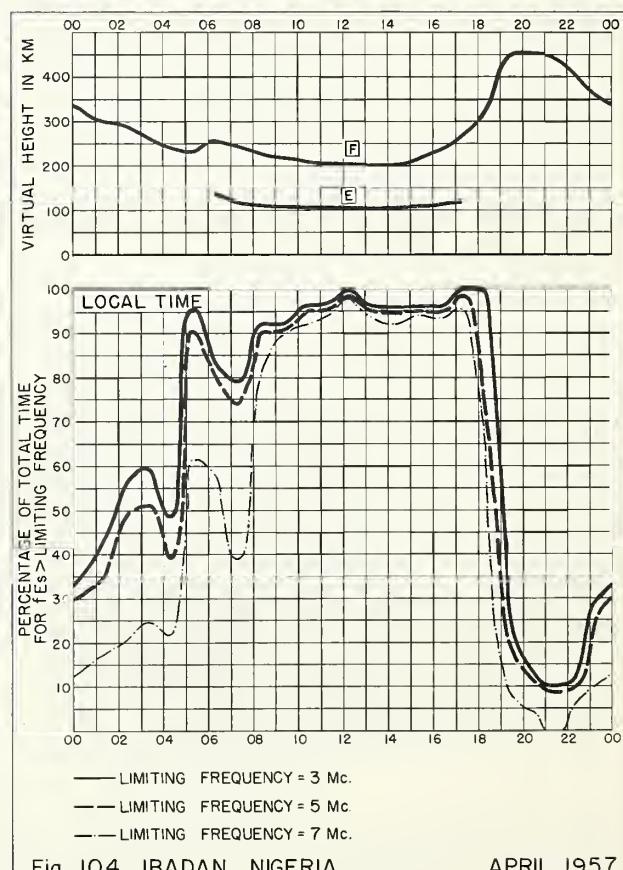
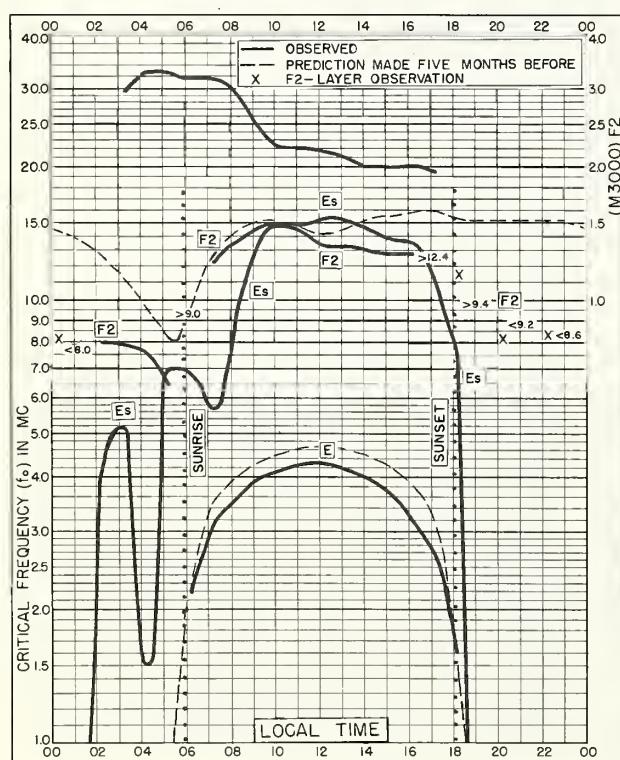
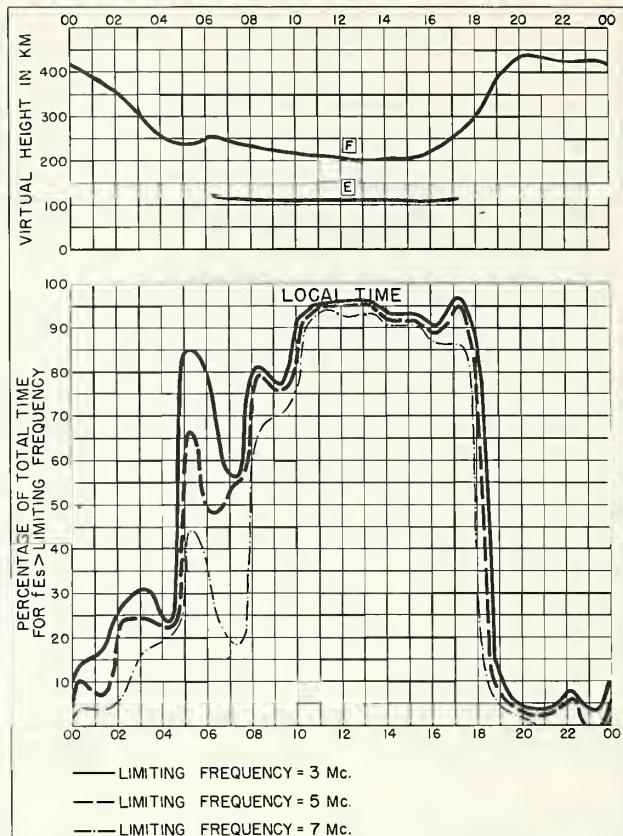
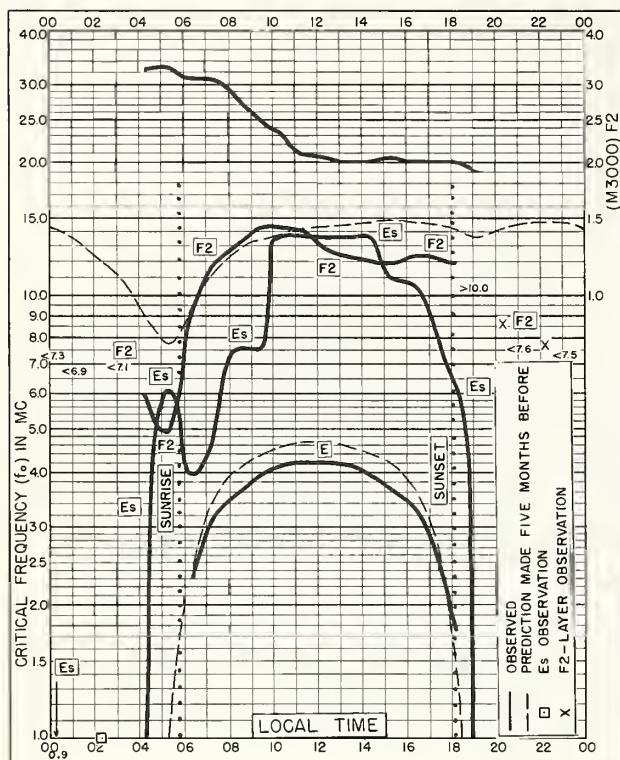


Fig. 88. CONCEPCION, CHILE DECEMBER 1957









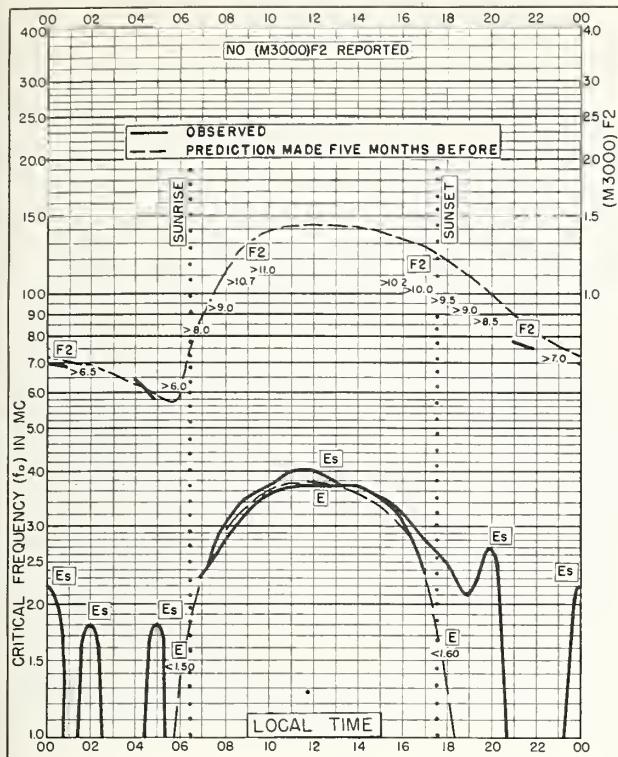


Fig. 105. CANBERRA, AUSTRALIA
35.3°S, 149.0°E APRIL 1957

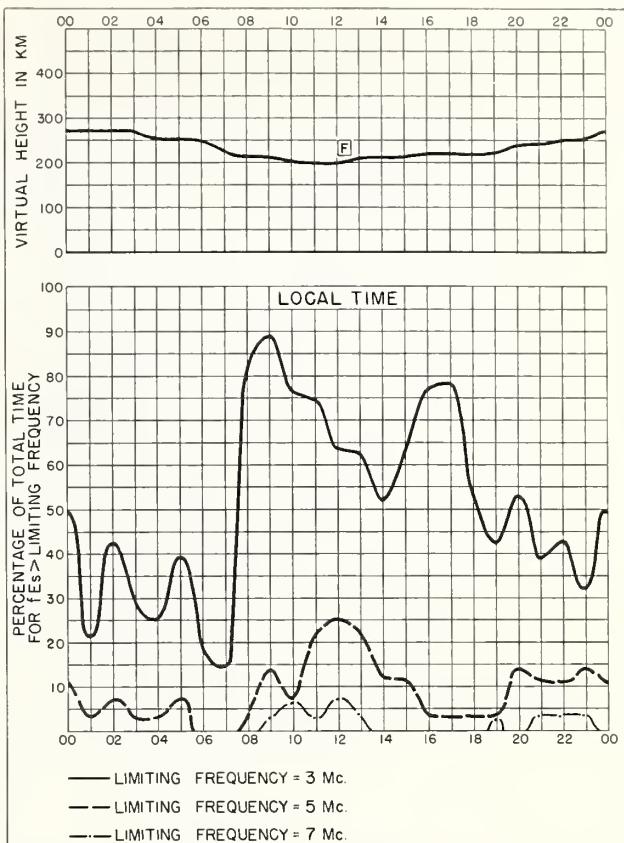


Fig. 106. CANBERRA, AUSTRALIA APRIL 1957

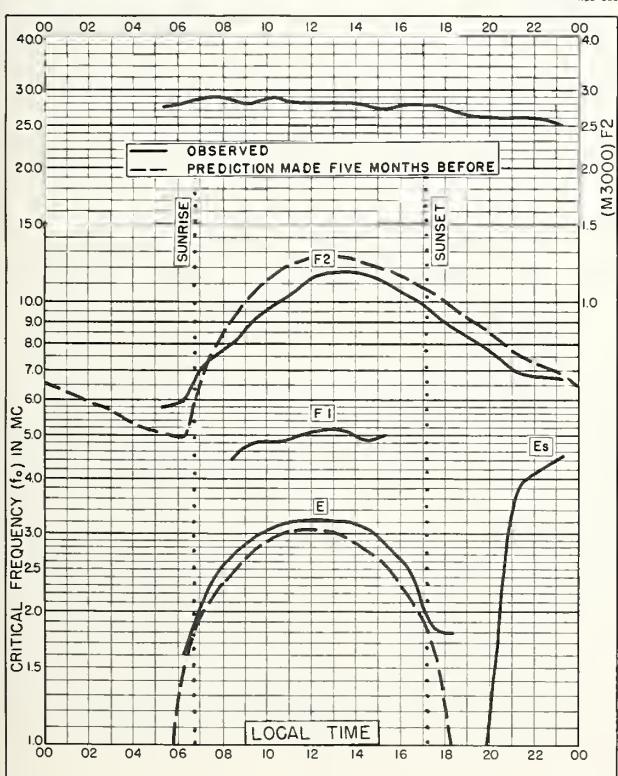


Fig. 107. CAMPBELL I.
52.5°S, 169.2°E APRIL 1957

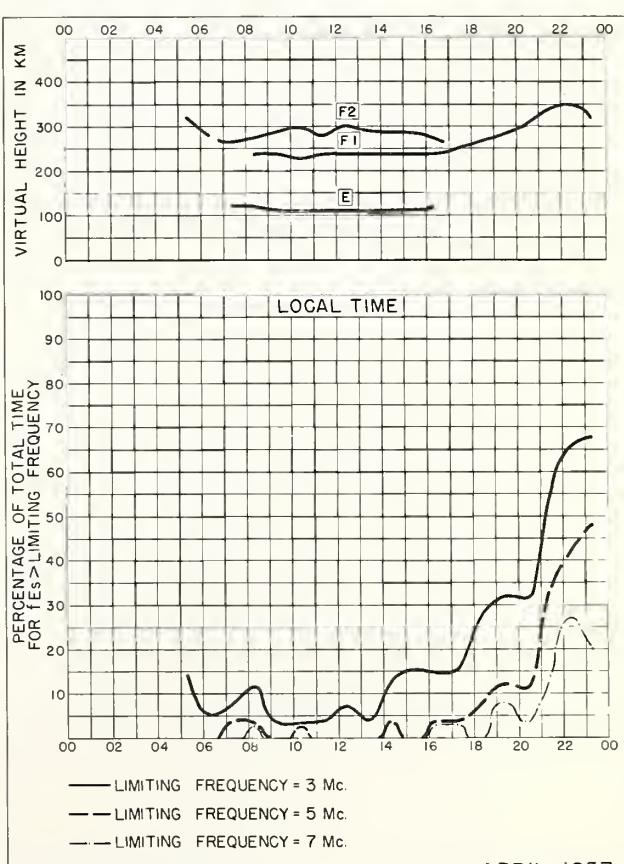


Fig. 108. CAMPBELL I. APRIL 1957

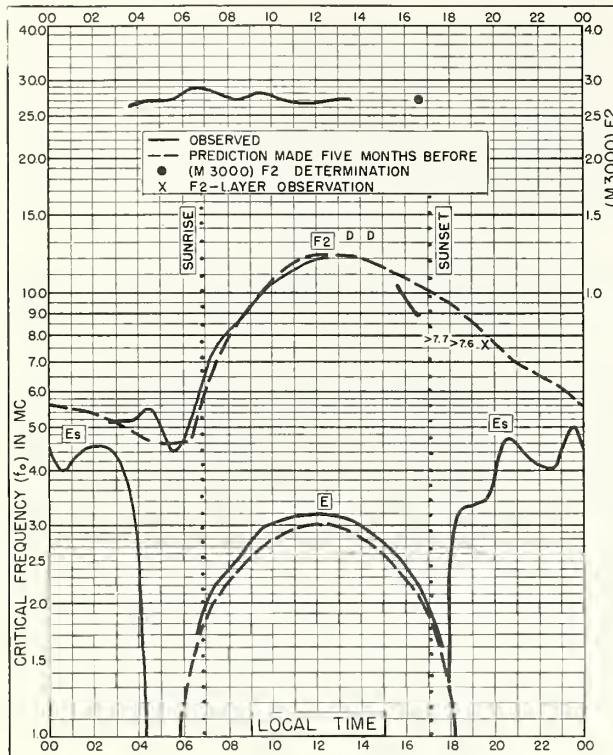


Fig. 109. MACQUARIE I.

54.5°S, 159.0°E

APRIL 1957

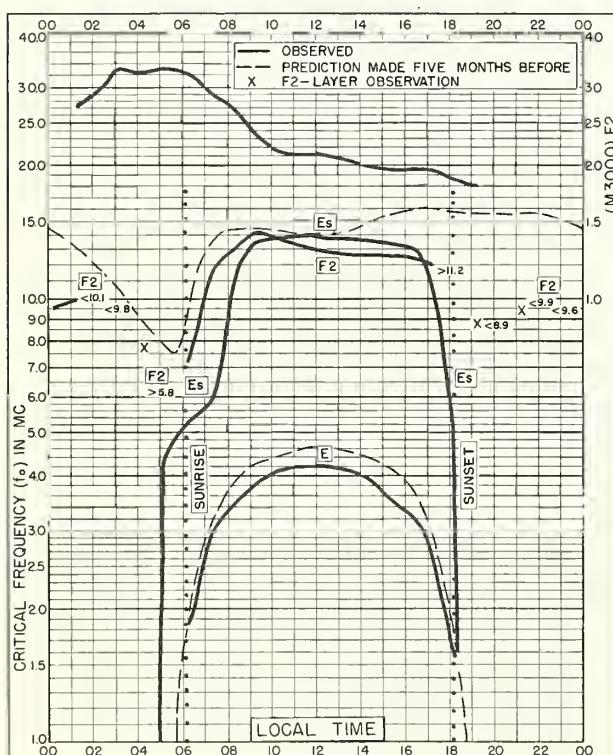


Fig. III. IBADAN, NIGERIA

7.4°N, 3.9°E

MARCH 1957

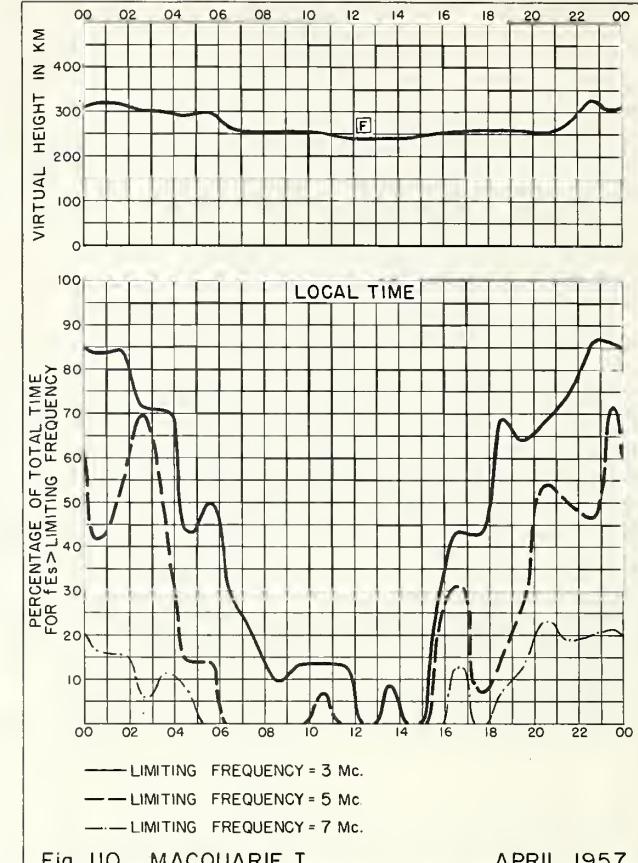


Fig. 110. MACQUARIE I.

APRIL 1957

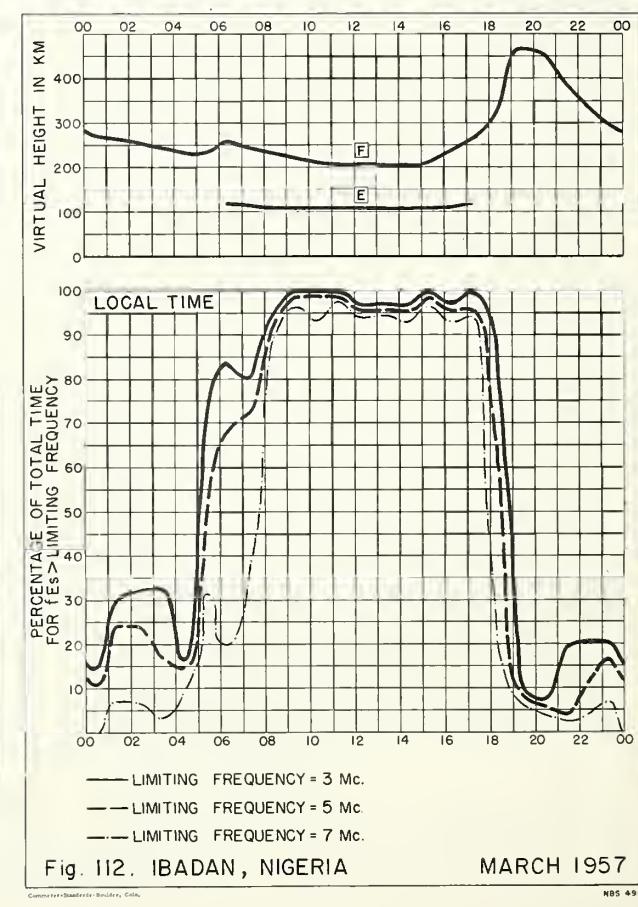
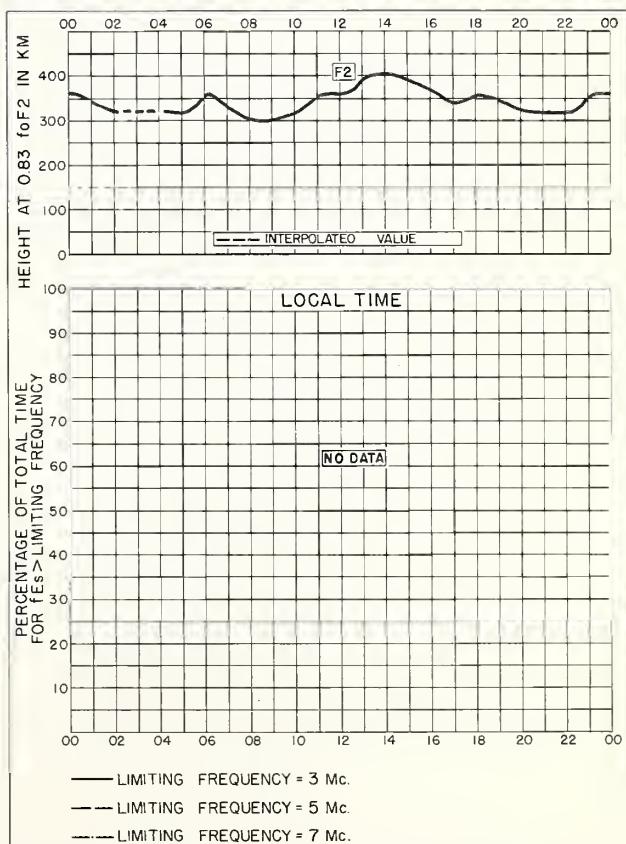
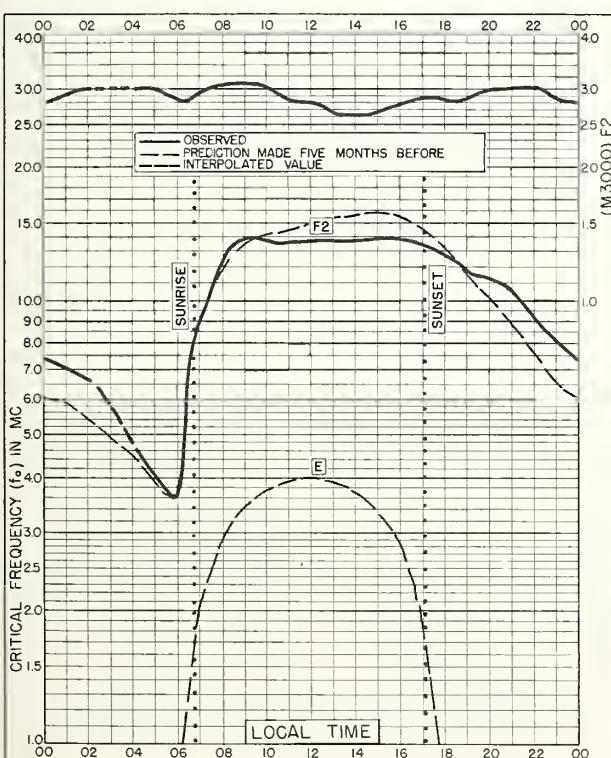
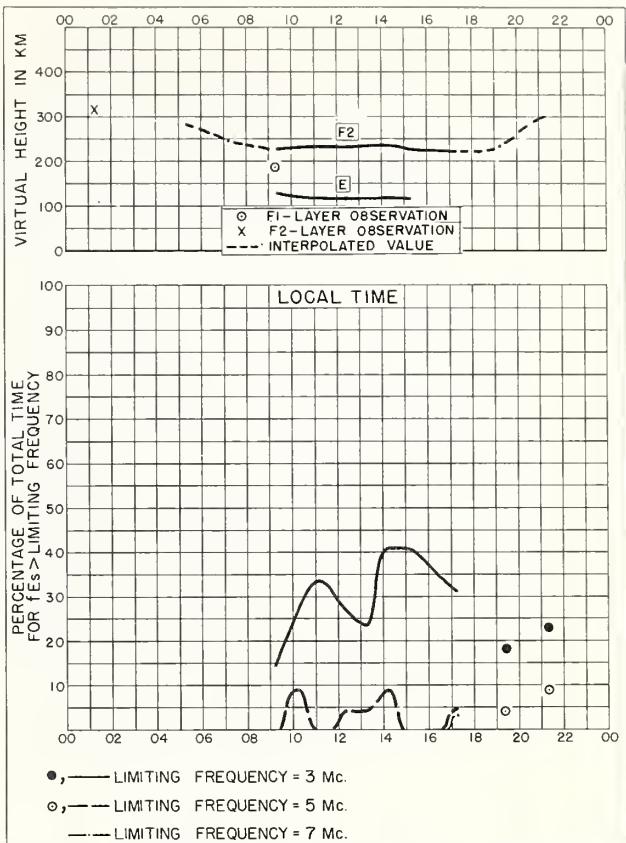
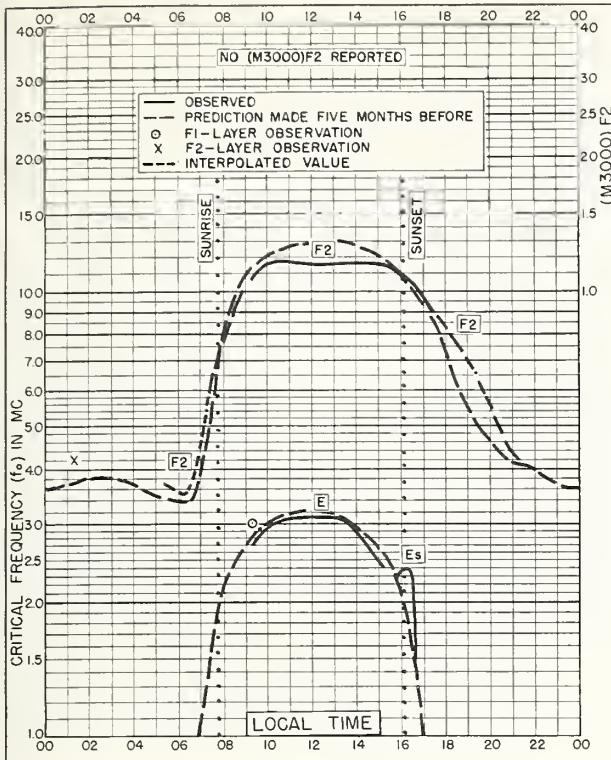


Fig. 112. IBADAN, NIGERIA

MARCH 1957



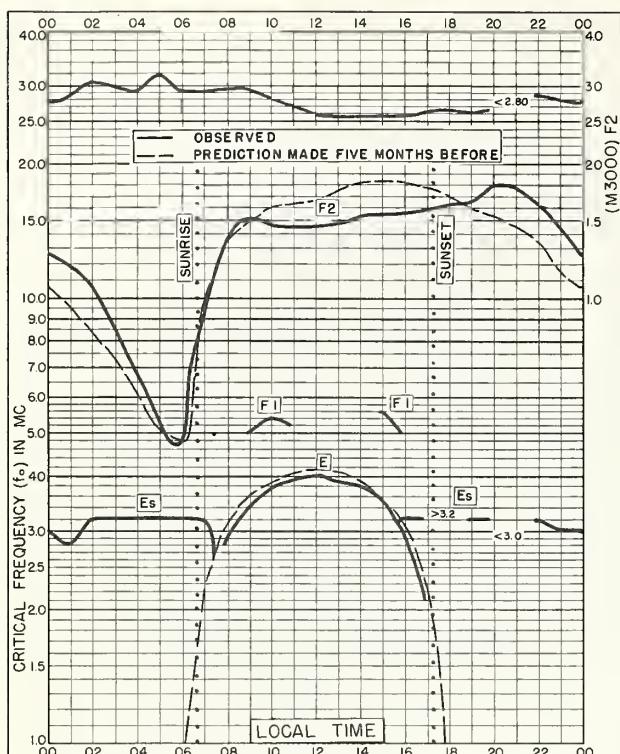


Fig. II7. AHMEDABAD, INDIA
23.0°N, 72.6°E DECEMBER 1956

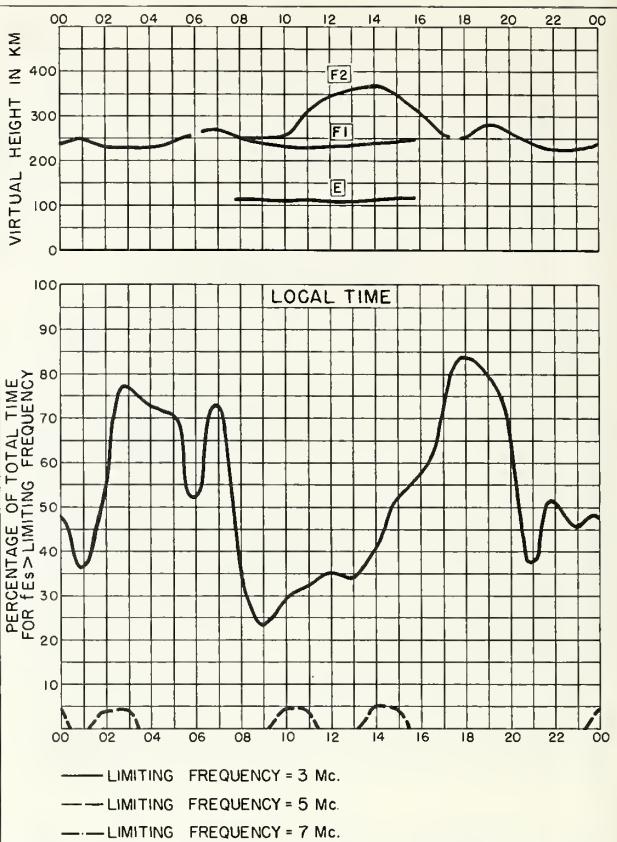


Fig. II8. AHMEDABAD, INDIA DECEMBER 1956

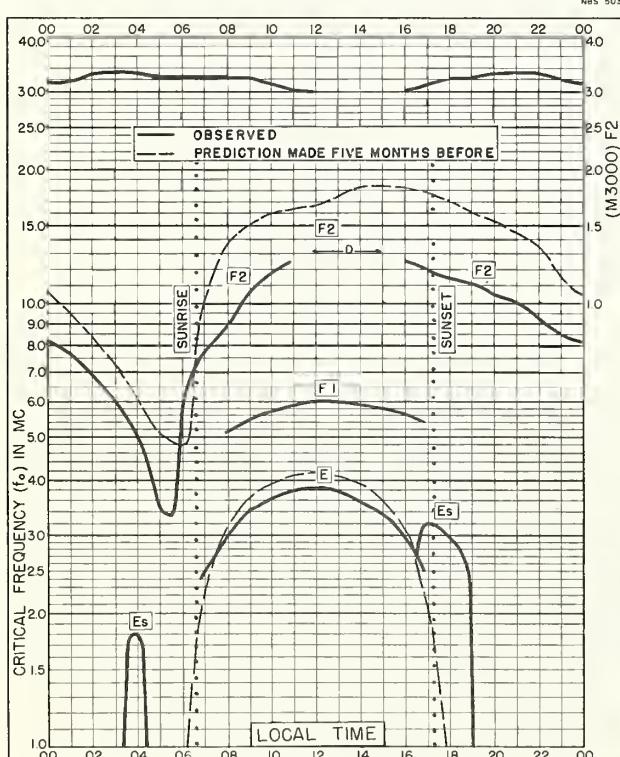


Fig. II9. CALCUTTA, INDIA
22.9°N, 88.5°E DECEMBER 1956

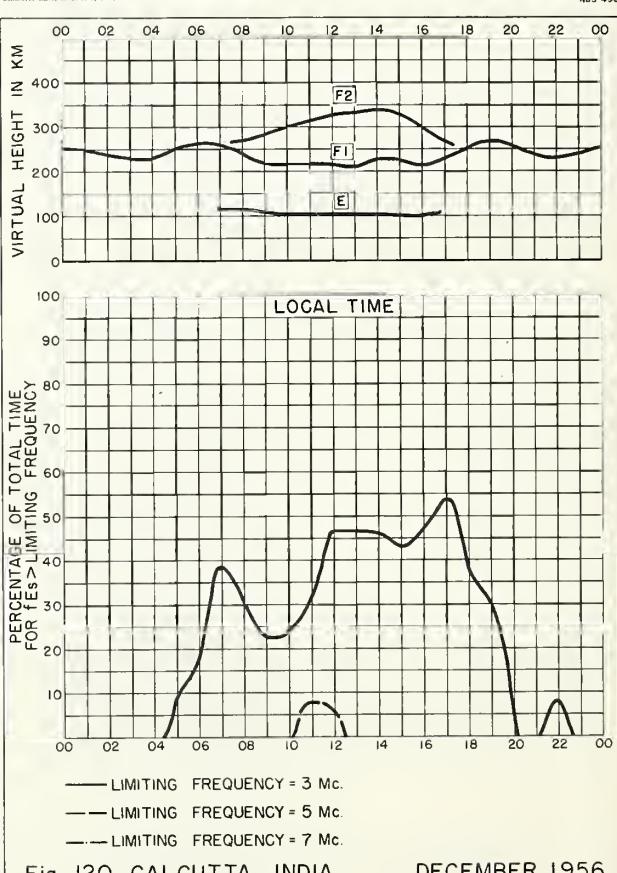


Fig. I20. CALCUTTA, INDIA DECEMBER 1956

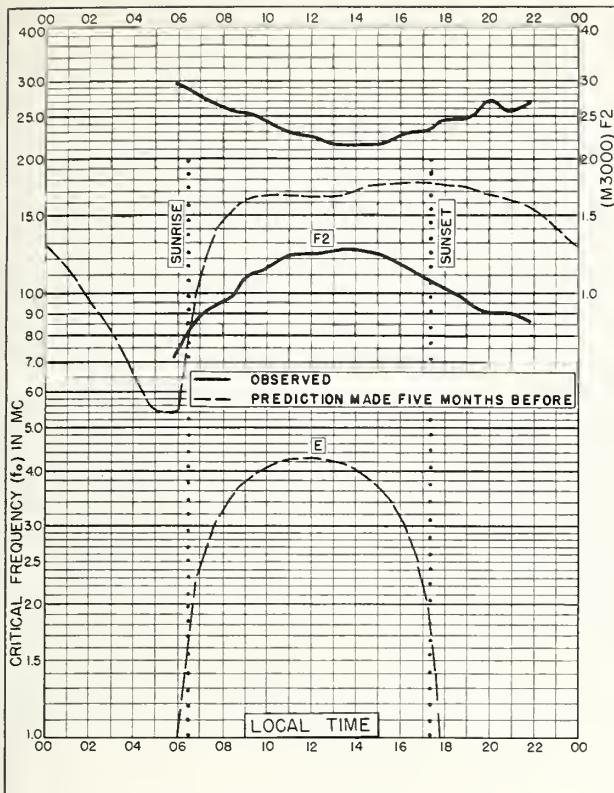


Fig. I21. BOMBAY, INDIA
19.0°N, 73.0°E DECEMBER 1956

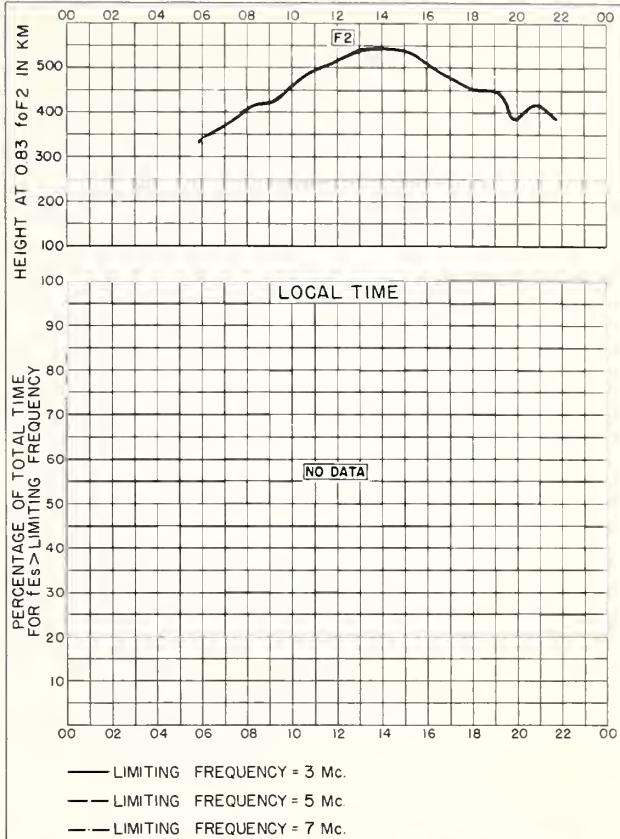


Fig. I22. BOMBAY, INDIA DECEMBER 1956

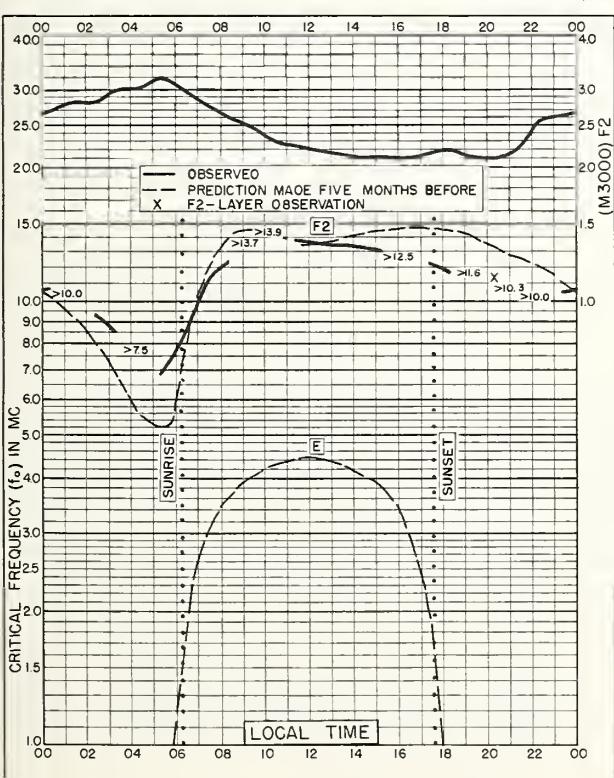


Fig. I23. MADRAS, INDIA
13.0°N, 80.2°E DECEMBER 1956

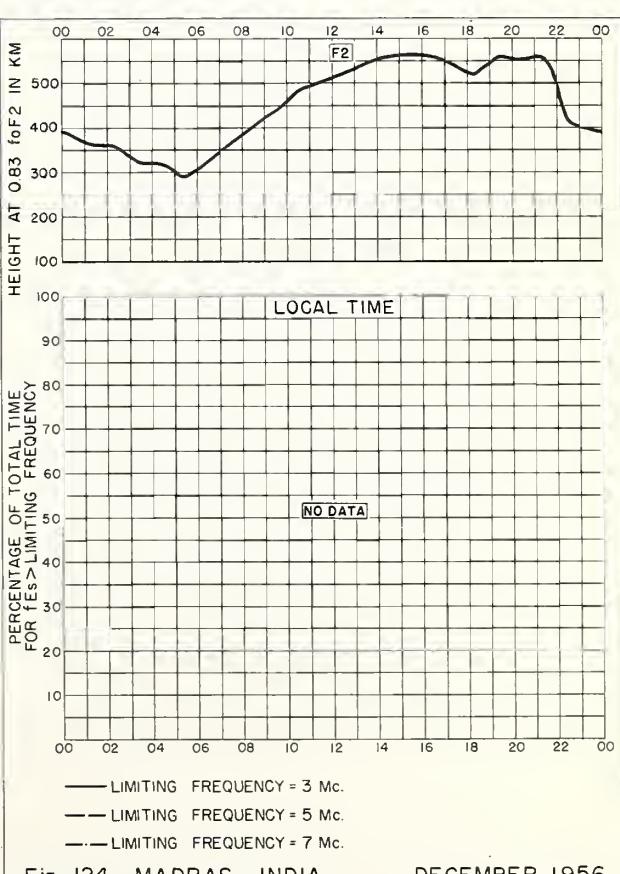


Fig. I24. MADRAS, INDIA DECEMBER 1956

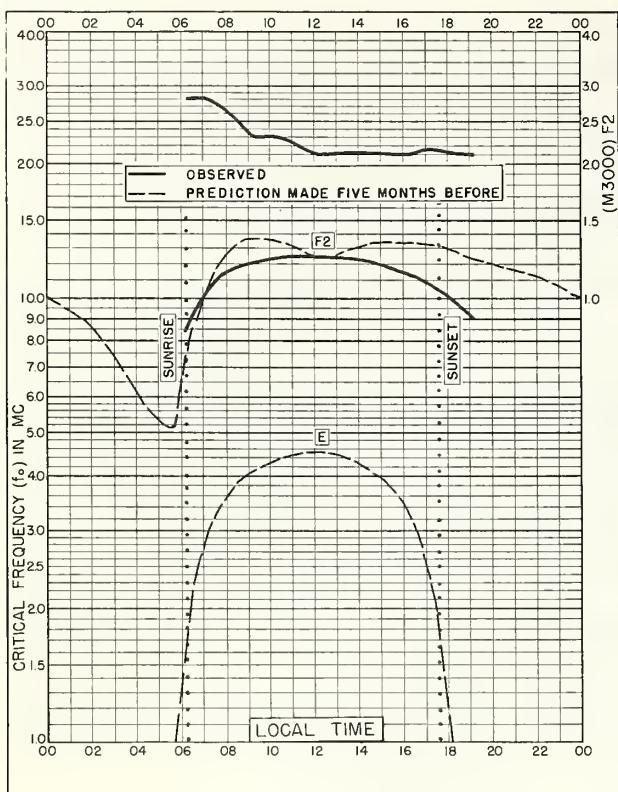


Fig. 125. TIRUCHY, INDIA
10.8°N, 78.8°E DECEMBER 1956

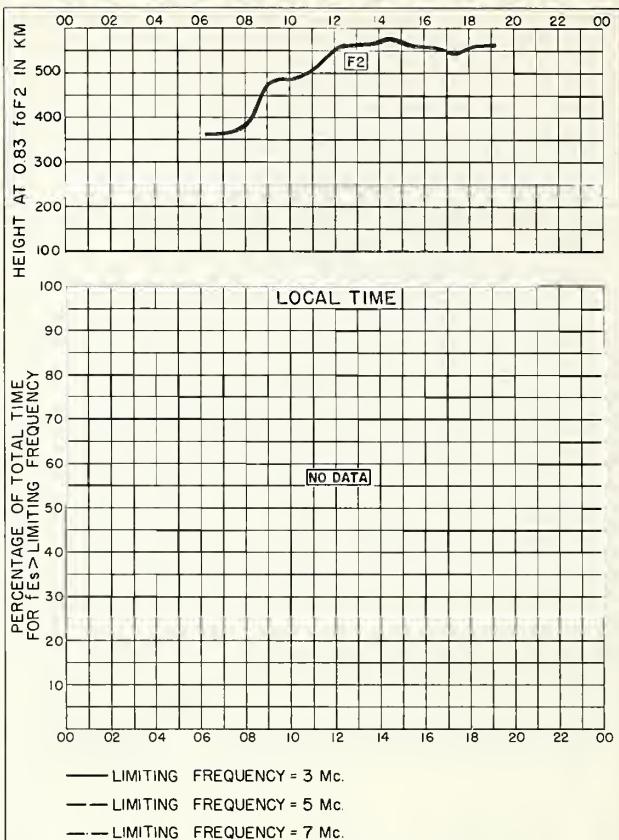


Fig. 126. TIRUCHY, INDIA DECEMBER 1956

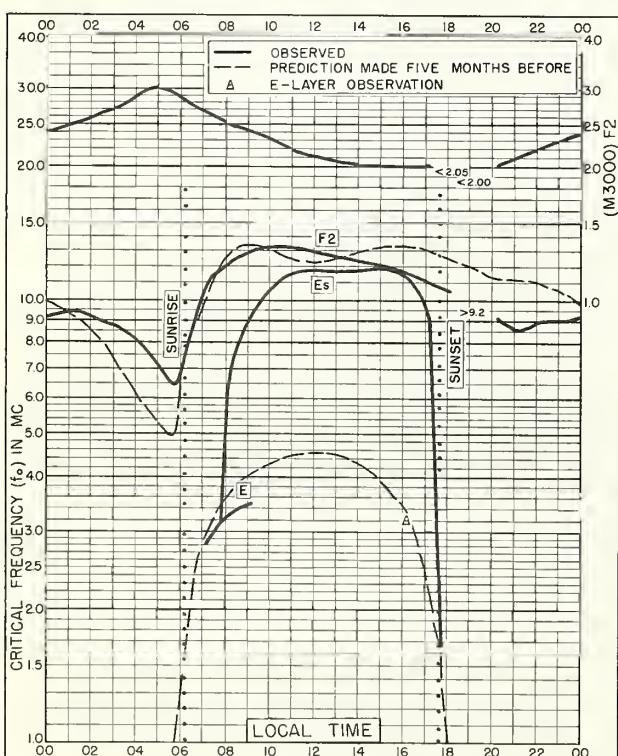


Fig. 127. KODAIKANAL, INDIA
10.2°N, 77.5°E DECEMBER 1956

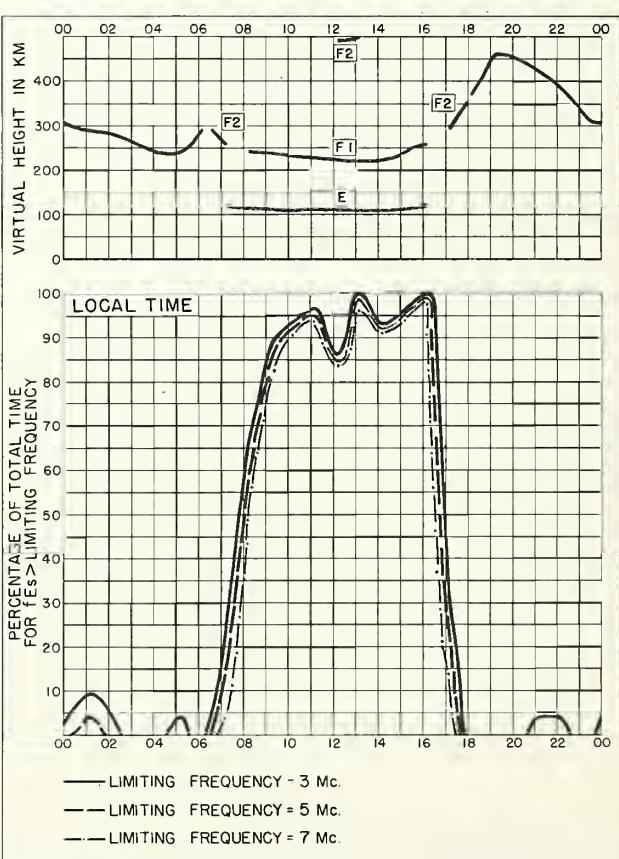
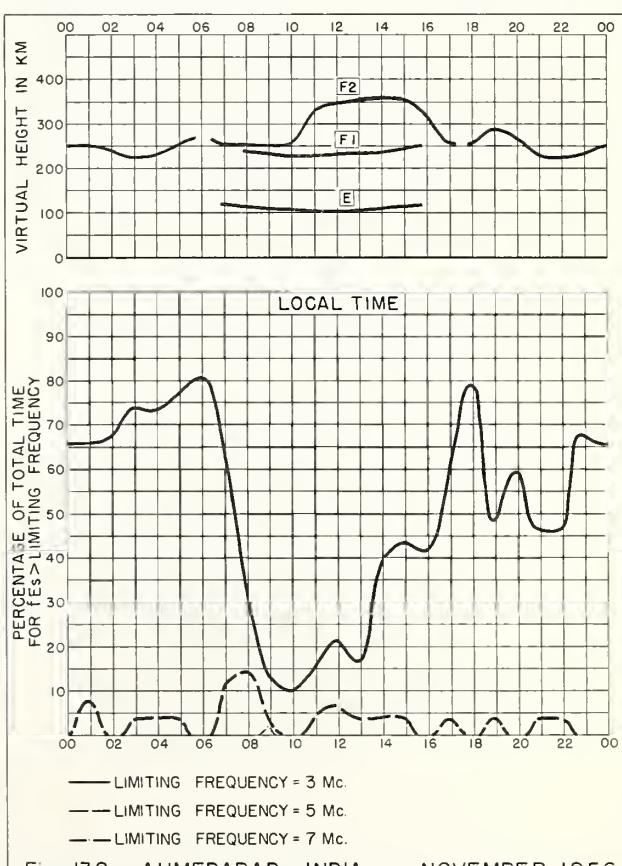
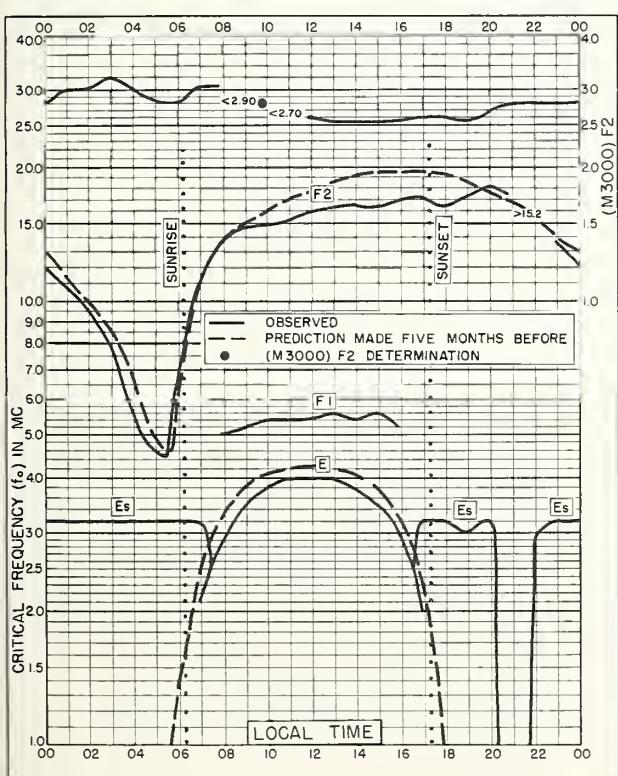
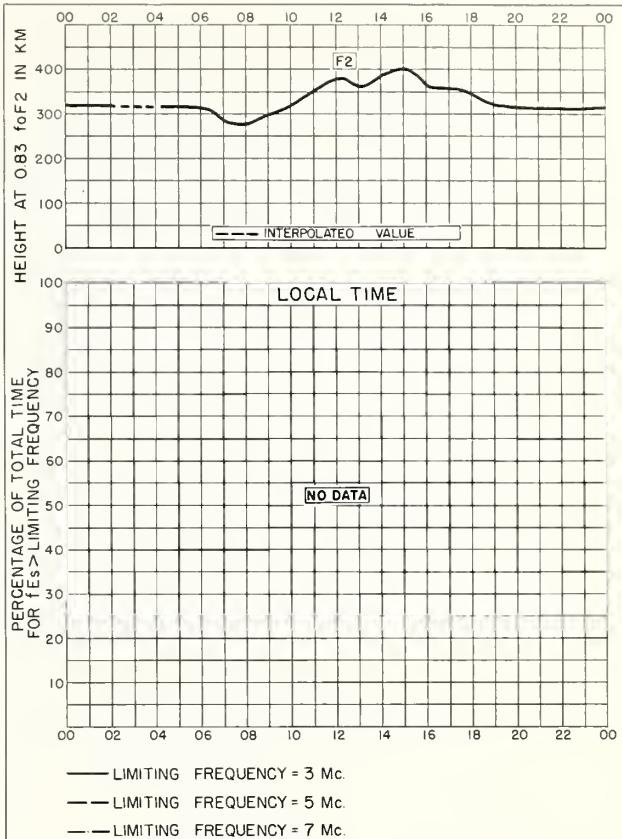
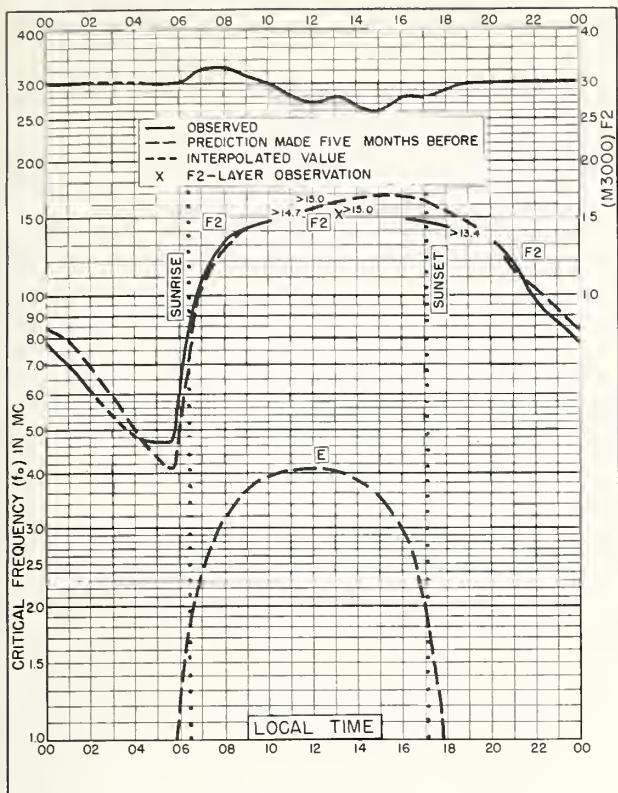


Fig. 128. KODAIKANAL, INDIA DECEMBER 1956



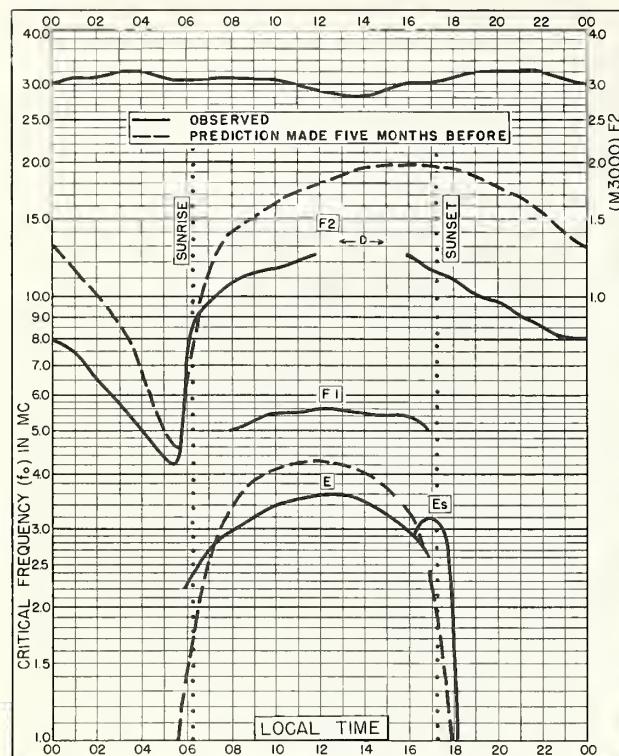


Fig. 133. CALCUTTA, INDIA
22.9°N, 88.5°E NOVEMBER 1956

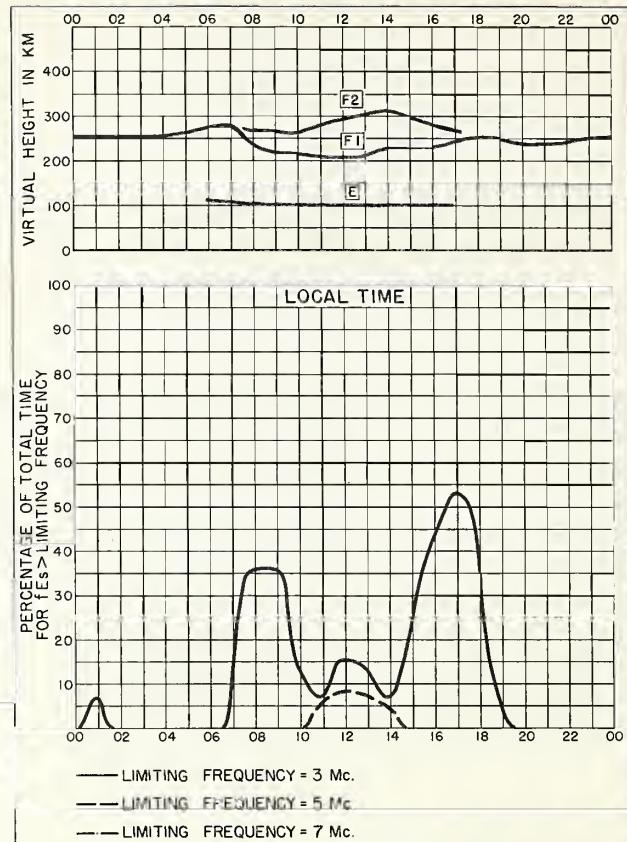


Fig. 134. CALCUTTA, INDIA NOVEMBER 1956

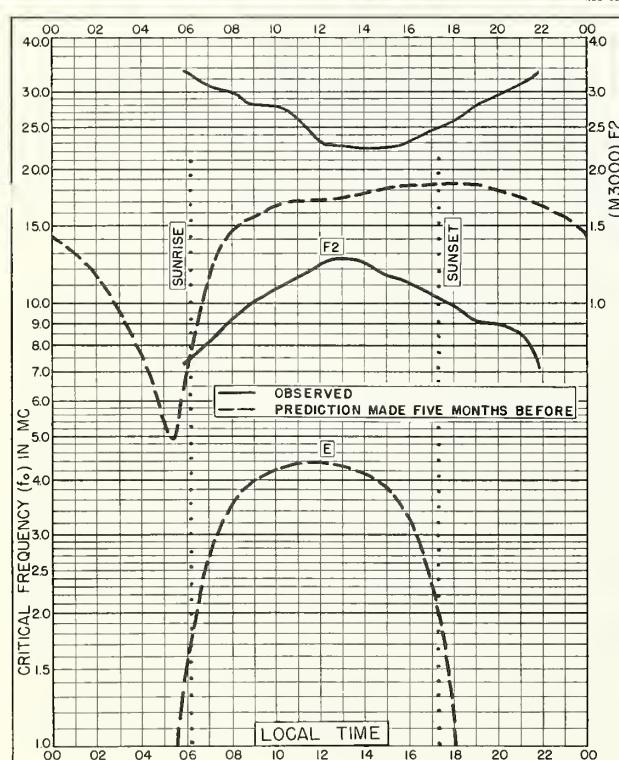


Fig. 135. BOMBAY, INDIA
19.0°N, 73.0°E NOVEMBER 1956

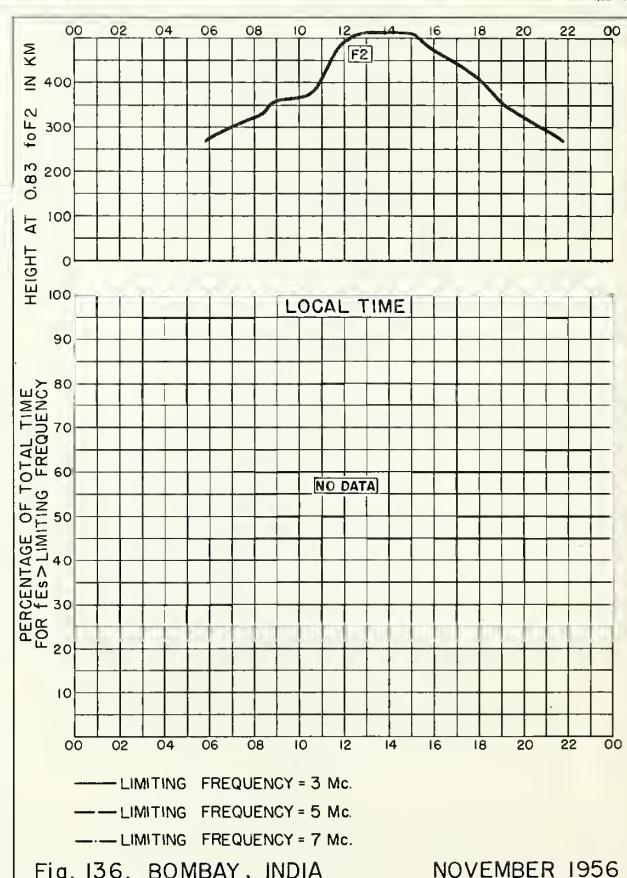


Fig. 136. BOMBAY, INDIA NOVEMBER 1956

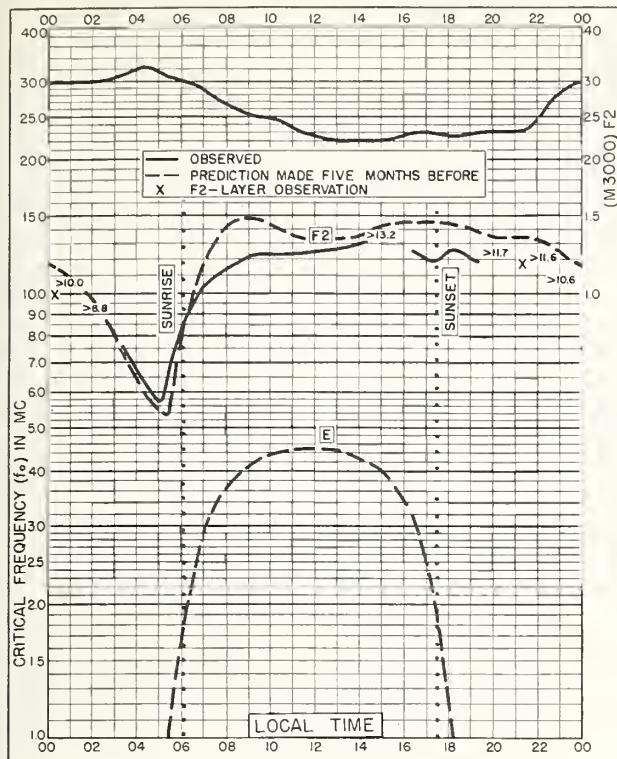


Fig. 137. MADRAS, INDIA
13.0°N, 80.2°E NOVEMBER 1956

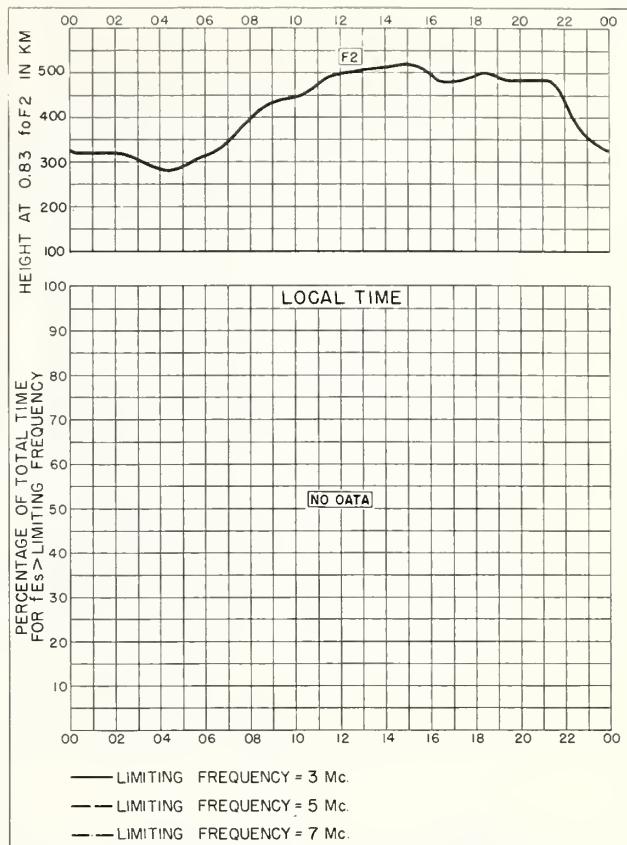


Fig. 138. MADRAS, INDIA NOVEMBER 1956

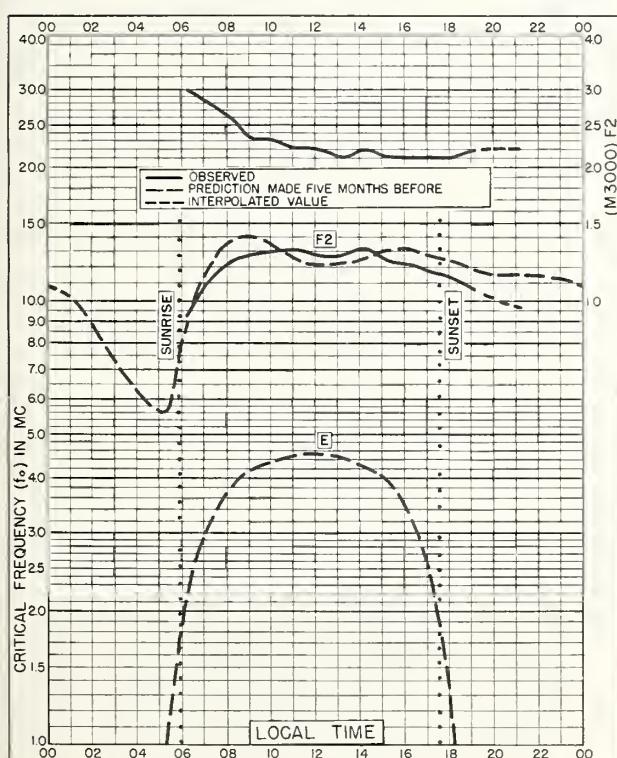


Fig. 139. TIRUCHY, INDIA
10.8°N, 78.8°E NOVEMBER 1956

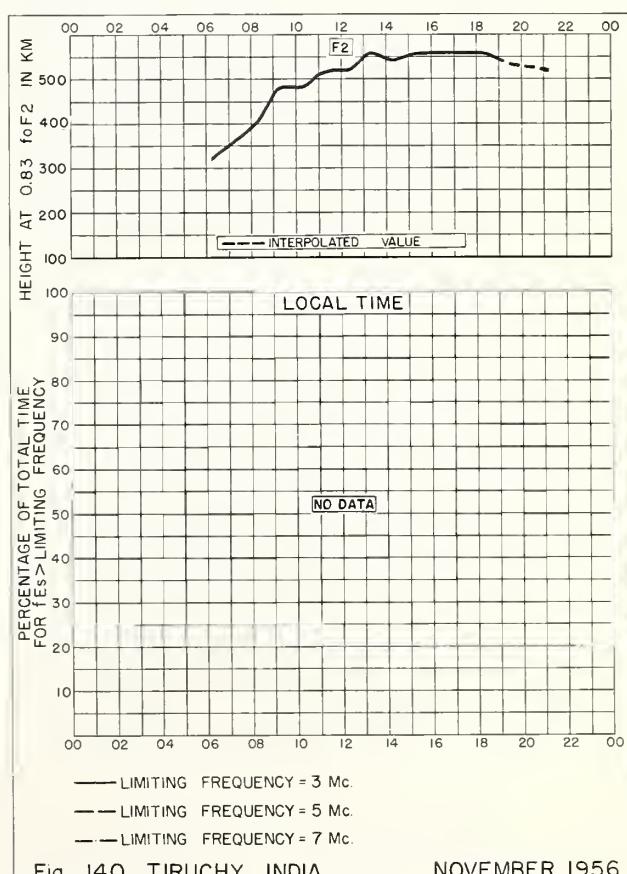


Fig. 140. TIRUCHY, INDIA NOVEMBER 1956

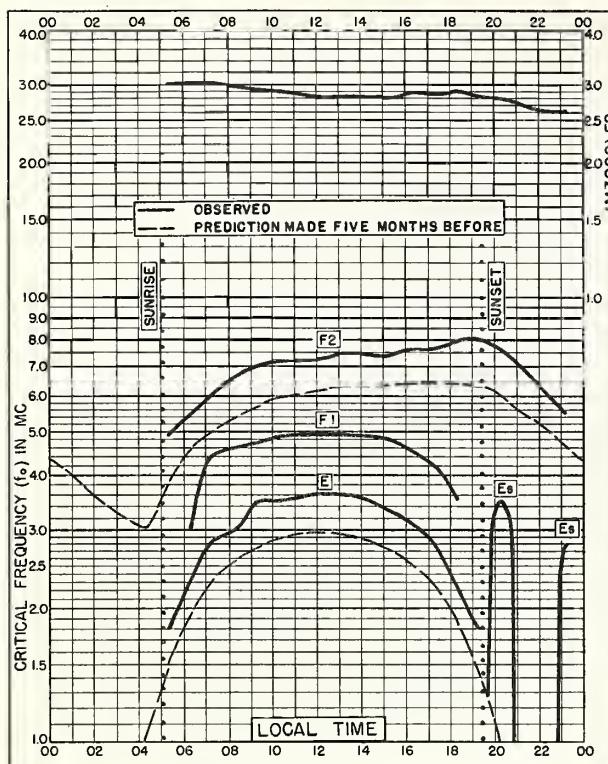


Fig. 141. CAMPBELL I.
52.5°S, 169.2°E FEBRUARY 1956

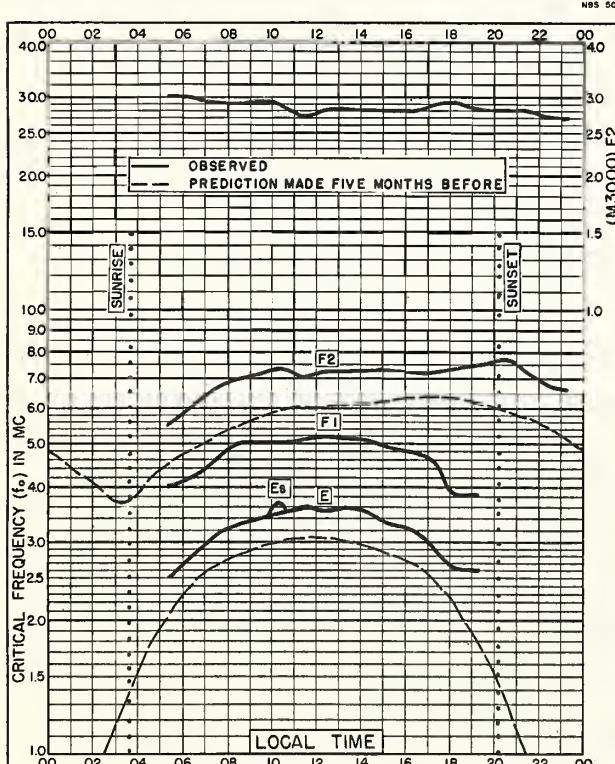


Fig. 143. CAMPBELL I.
52.5°S, 169.2°E DECEMBER 1955

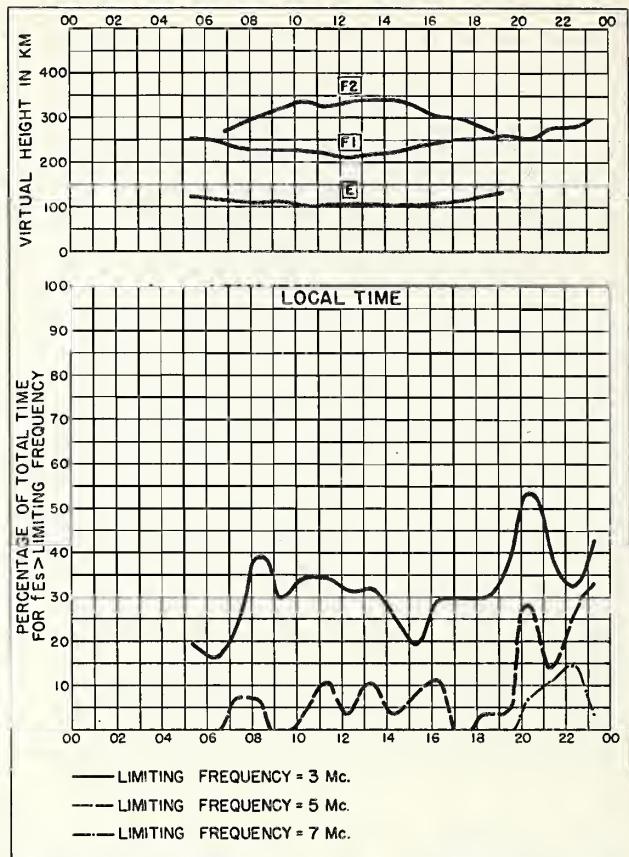


Fig. 142. CAMPBELL I. FEBRUARY 1956

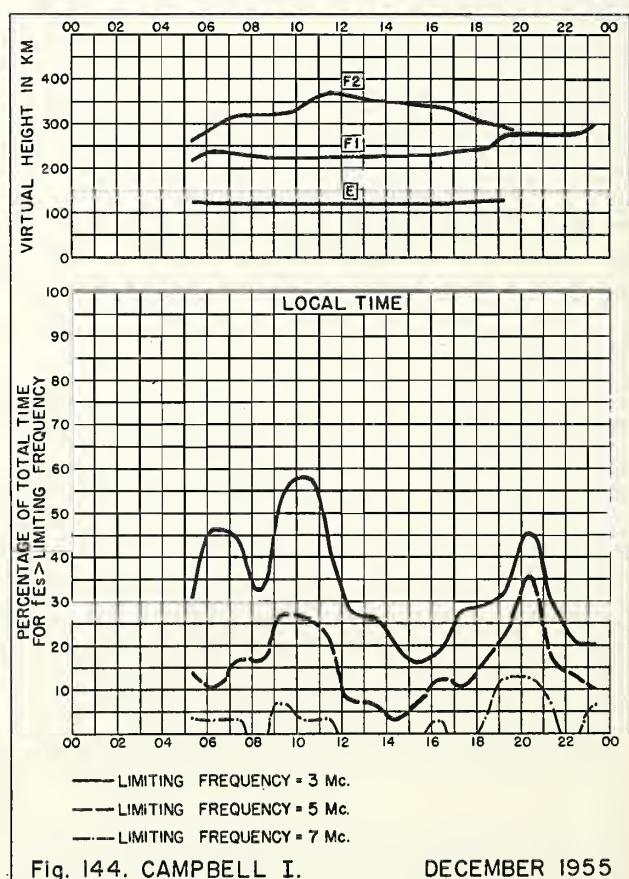


Fig. 144. CAMPBELL I. DECEMBER 1955

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