PART A

IONOSPHERIC DATA

ISSUED
AUGUST 1957

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

CRPL-F156
PART A

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Issued
22 Aug. 1957

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CONTENTS

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

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

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

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

1. If 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										
	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
December		150*	150	42	11	15	33	53	86	108	114
November		150*	147	35	10	16	38	52	87	112	115
October		150*	135	31	10	17	43	52	90	114	116
September		150*	119	30	8	18	46	54	91	115	117
August		150*	105	27	8	18	49	57	96	111	123
July		150*	95	22	8	20	51	60	101	108	125
June		150*	89	18	9	21	52	63	103	108	129
May		150*	77	16	10	22	52	68	102	108	130
April		150*	68	13	10	24	52	74	101	109	133
March		150*	60	14	11	27	52	78	103	111	133
February		150*	53	14	12	29	51	82	103	113	133
January	150*	150*	48	12	14	30	53	85	105	112	130

*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 1956.

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	145	148	149	154	157	162
1957	169											

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

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

Republica Argentina, Ministerio de Marina:
Buenos Aires, Argentina

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

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Geophysics:
Watheroo, Western Australia

University of Graz:
Graz, Austria

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

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

Defence Research Board, Canada:
Baker Lake, Canada
Churchill, Canada
Winnipeg, Canada

General Direction of Posts and Telegraphs, Helsinki, Finland:
Nurmijarvi, Finland

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Casablanca, Morocco

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

The Royal Netherlands Meteorological Institute:
De Bilt, Holland

Icelandic Post and Telegraph Administration:
Reykjavik, Iceland

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

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
Christchurch, New Zealand
Scott Base

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

Manila Observatory:
Baguio, P. I.

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

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

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

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

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Maui, Hawaii
Panama Canal Zone
Point Barrow, Alaska
Puerto Rico, W. I.
San Francisco, California (Stanford University)

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

Beginning with data for July 1957, detailed daily-hourly values of Washington data will be published monthly in separate booklets. They will no longer appear in the F series. Copies of these booklets will be mailed as issued to all scientists and scientific organizations which collaborate in the exchange of ionospheric data with the Central Radio Propagation Laboratory.

ERRATUM

CRPL-F154, Part A, p.6: St. Johns, Newfoundland, was incorrectly listed under Defence Research Board, Canada, as the source of the data. It should have appeared under United States Army Signal Corps on page 7.

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS
St. John's, Newfoundland, April 7, 1957

The following ionograms were obtained at the St. John's ionosphere vertical sounding station of the U. S. Signal Corps. They are typical of day and night conditions for April at this geomagnetic latitude (59°). Ionospheric data are scaled directly from these records onto the f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page.

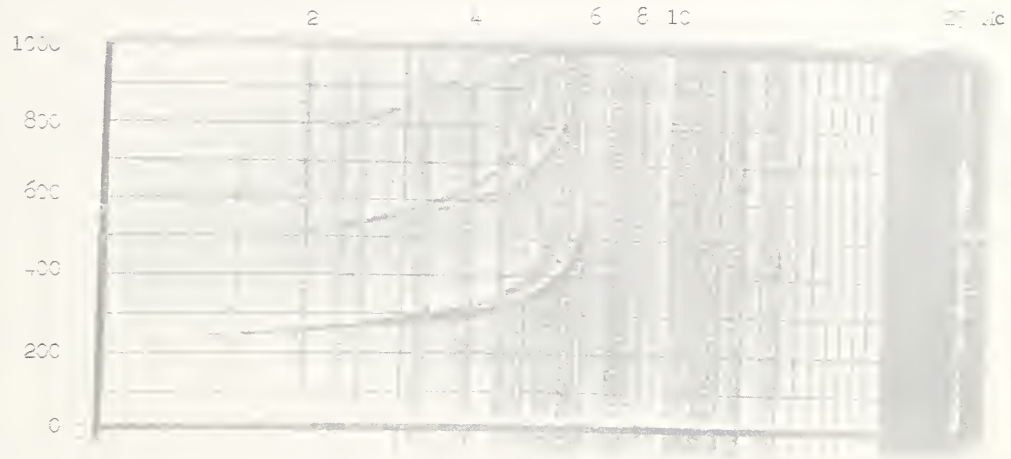


Fig. A. St. John's, April 7, 1957, 0245 hours, 52.5°W time.

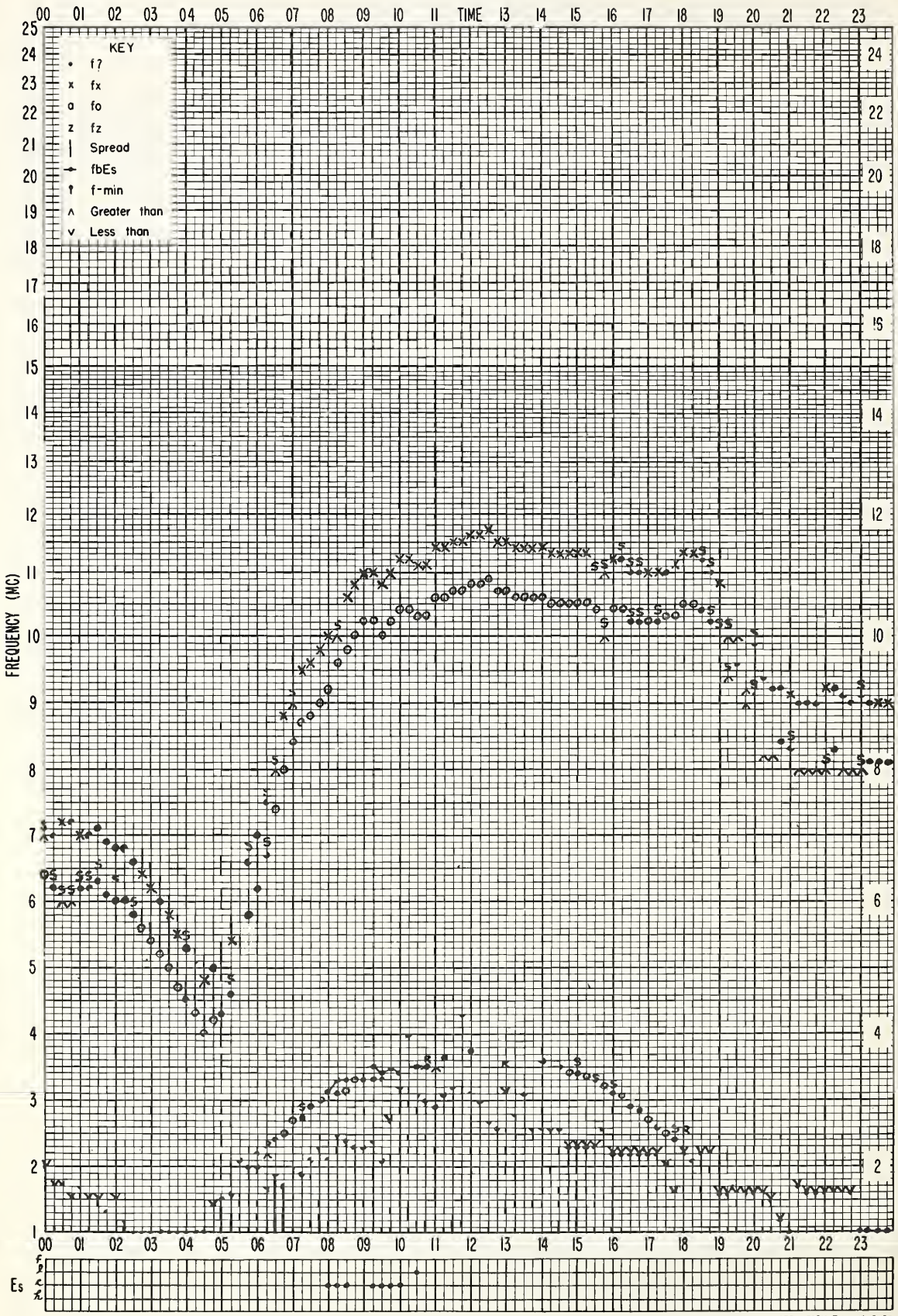
Fig. B. St. John's, April 7, 1957, 0845 hours, 52.5°W time.

ST. JOHN'S, NEWFOUNDLAND

STATION IONNF

f-PLOT OF IONOSPHERIC DATA

DATE April 7, 1957



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Radio Noise Data

The results of radio noise measurements are presented in the following graphs and tables. These are based on three parameters of the noise: (1) the mean power, (2) the mean envelope voltage, and (3) the mean logarithm of the envelope voltage. The mean power averaged over a period of several minutes is the basic parameter and is expressed as an effective antenna noise figure, F_a. F_a is defined as the noise power available from an equivalent lossless antenna in db above ktb (the thermal noise power available from a passive resistance) where

k = Boltzman's constant (1.38×10^{-23} joules per degree Kelvin)

t = Absolute room temperature (taken as 288° K)

b = Bandwidth in cycles per second.

The mean voltage and mean logarithm are expressed as deviations, V_d and L_d, respectively, in db below the mean power.

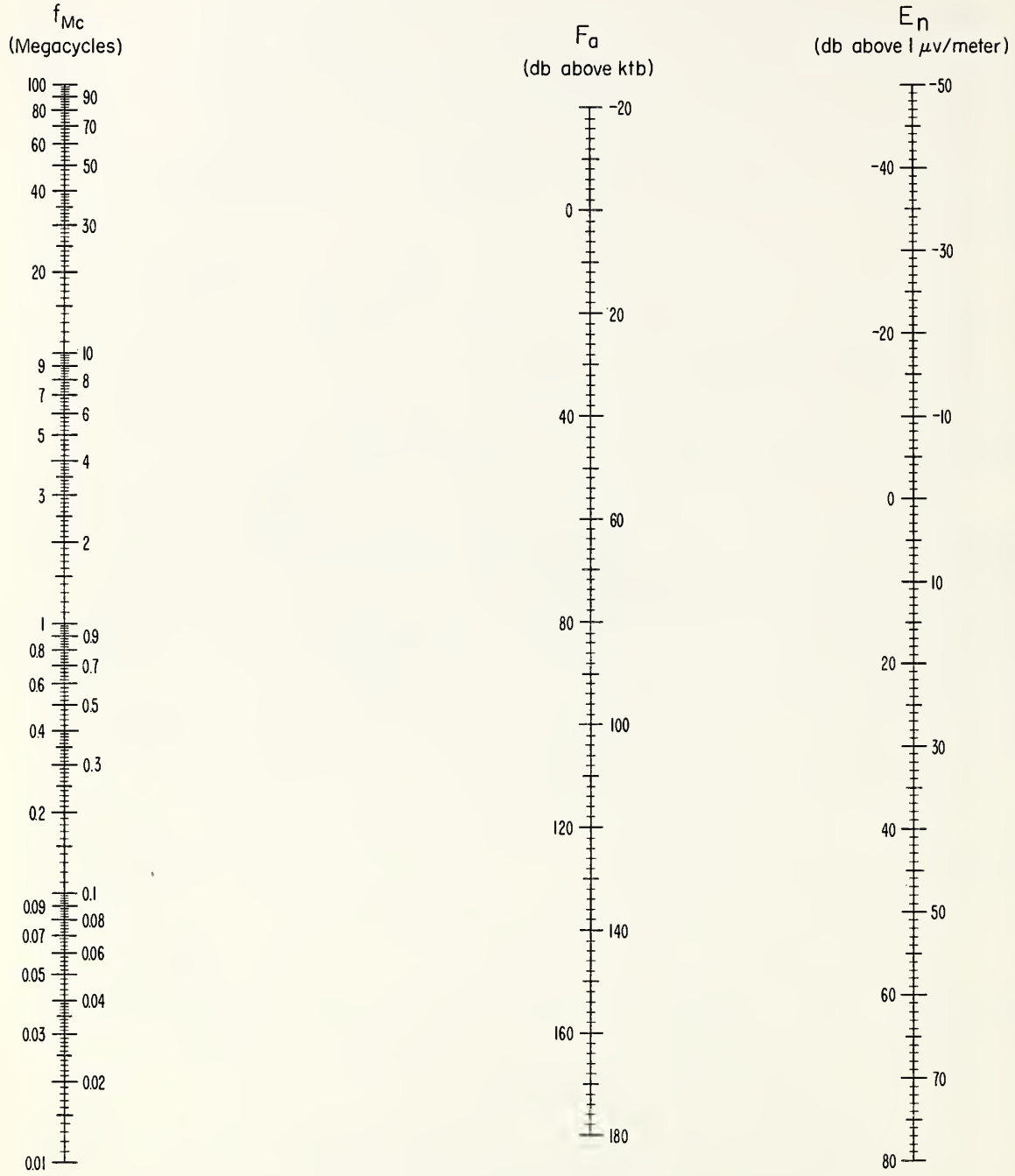
Measurements of these parameters were made with the National Bureau of Standards Radio Noise Recorder, Model ARN-2, which has an effective noise bandwidth of 280 cycles per second and uses a standard 21.75' vertical antenna. A 15-minute recording is made on each frequency each hour, and these 15-minute samples are taken as representing the noise conditions for the full hour. The month-hour medians, F_{am}, V_{dm}, and L_{dm} are determined from these hourly values for each of the corresponding parameters and the resulting medians are plotted at the half-hour point on the curves. Normally from 25 to 30 observations of the mean power are obtained monthly for each hour of the day, and from 10 to 15 observations of the voltage and logarithm deviations. When there are fewer than 15 observations of the mean power, or 7 observations of the voltage and logarithm deviations, the tabulated values are identified by an asterisk (*).

The upper and lower decile values of F_a are also reported in the following tabulation to give an indication of the extent of the variation of the noise power from day to day at a given time of day. These are expressed in db above and below the month-hour median, F_{am}, and designated by D_u and D_ℓ, respectively.

To convert F_a to an r.m.s. noise field strength, E_n, the nomogram or the equation on the following page may be used.

Information on expected worldwide noise levels and their application to systems problems is presented in NBS Circular 557 (available from the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.). More recent estimates of radio noise levels are given in CCIR Report No. 65, "Report on Revision of Atmospheric Radio Noise Data", Warsaw, 1956 (available from the International Telecommunication Union, Geneva).

NOMOGRAM FOR TRANSFORMING EFFECTIVE ANTENNA NOISE FIGURE TO NOISE FIELD STRENGTH AS A FUNCTION OF FREQUENCY



$$E_n = F_a + 20 \log_{10} f_{Mc} - 65.5$$

F_a = Effective Antenna Noise Figure = External Noise Power Relative to ktb Available from an Equivalent Short, Lossless, Vertical Antenna in db Above ktb.

E_n = Equivalent Vertically Polarized Ground Wave R.M.S. Noise Field Strength in db Above 1 μv/meter for a 1 kc Bandwidth.

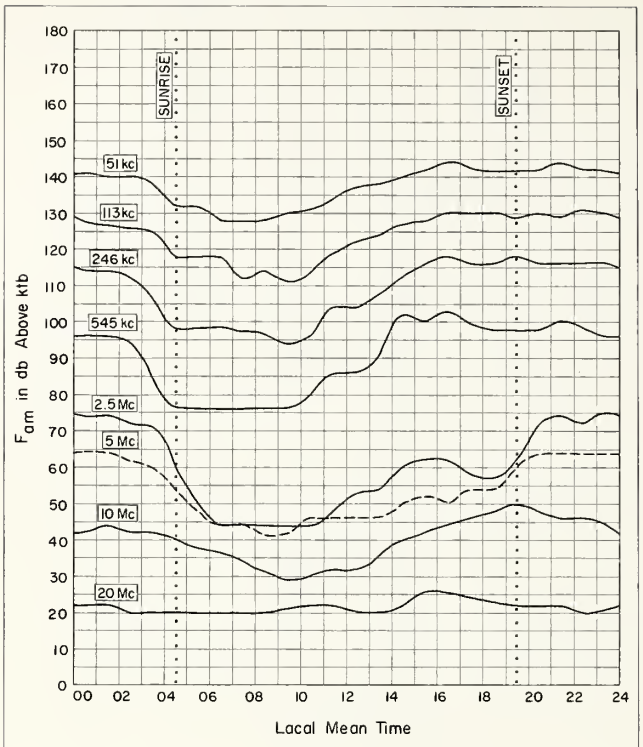
f_{Mc} = Frequency in Megacycles.

RADIO NOISE DATA

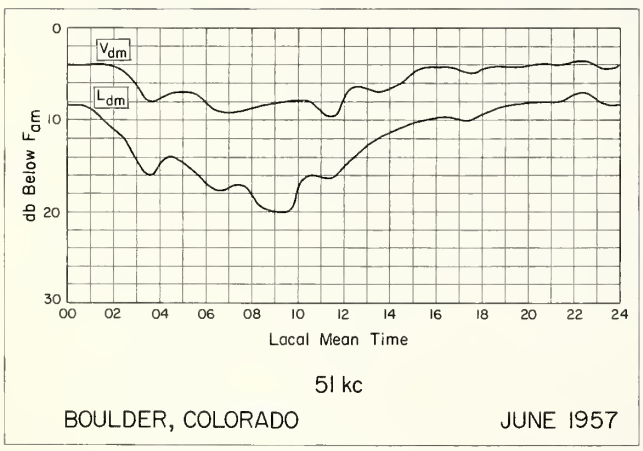
Station Boulder, Colorado Lat. 40.1 N Long. 105.1W Type Recorder ARN-2 Month June 19 57

	Local Mean Time																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	51kc																							
F_{am}	141	140	140	138	132	132	128	128	128*	130*	131*	134	137	138	140	142	144	142	142	142	142	144	142	142
D_u	7	7	8	9	10	6	7	8				6	8	9	13	9	6	9	7	7	8	7	8	7
D_ℓ	9	9	8	7	8	12	5	5				6	6	5	6	7	8	9	10	6	7	8	8	9
V_{dm}	4.0*	4.0*	5.0*	8.0*	7.0*	7.0*	9.0*	9.0*	8.5*	8.0*	8.0*	9.5*	6.5*	7.0*	6.0*	4.5	4.5	5.0	4.5	4.5	4.0	4.0	3.5	4.5
L_{dm}	8.5*	10.0*	12.0*	16.0*	14.0*	15.5*	17.5*	17.0*	19.5*	20.0*	16.0*	16.5*	14.0*	12.0*	11.0*	10.0	9.5	10.0	9.0	8.5	8.0	8.0	7.0	8.5
	113kc																							
F_{am}	128	127	126	125	118	118	118	112	114*	111*	114*	119	122	124	127	128	130	130	130	129	130	129	131	130
D_u	6	6	9	7	7	7	5	10				9	12	12	13	11	10	10	8	7	8	7	5	6
D_ℓ	7	9	12	10	12	15	15	9				12	10	10	12	14	18	14	10	10	12	9	11	9
V_{dm}	4.0*	4.0*	5.0*	7.5*	6.0*	8.0*	10.0*	10.0*	4.5*	8.0*	10.0*	10.0*	9.0*	9.5*	6.0*	5.0	5.0	4.0	4.0	4.0*	3.5*	3.5*	3.5	3.5
L_{dm}	8.5*	11.0*	10.0*	16.0*	14.0*	16.0*	20.0*	19.0*	18.0*	20.0*	17.5*	18.0*	17.0*	15.0*	12.0*	11.0	9.5	9.0	8.5	8.0*	8.0*	8.0*	8.0	8.0
	246kc																							
F_{am}	114	114	112	106	98	98	98	97	96*	94*	96*	104	104	108	112	116	118	116	116	118	116	116	116	116
D_u	7	8	10	14	13	12	12	8				12	19	20	17	12	10	12	10	6	6	7	8	6
D_ℓ	12	13	12	10	17	16	15	12				17	11	15	12	12	17	12	12	17	12	10	12	12
V_{dm}	4.0*	4.0*	5.0*	7.0*	6.0*	8.0*	9.0*	9.0*	8.5*	8.0*	9.0*	9.0*	10.0*	8.0*	7.0*	5.0	5.0	5.0	4.0	4.0*	3.0	3.0	3.5	3.0
L_{dm}	9.0*	11.0*	13.0*	15.5*	13.0*	15.0*	17.0*	18.5*	19.0*	17.0*	17.0*	16.0*	16.5*	18.0*	15.0*	11.0	9.0	9.0	8.0	8.0*	7.0	6.5	7.5	7.0
	545 kc																							
F_{am}	96	96	94	84	76	76	76	76*	76*	76*	80*	86	86	91	102	100	103	99	98	98	98	100	98	96
D_u	8	9	11	14	17	15	13					20	24	25	11	15	10	12	11	10	7	7	8	8
D_ℓ	9	10	12	9	12	4	2					10	12	16	18	16	26	16	19	12	11	14	10	7
V_{dm}	4.0*	5.5*	5.5*	7.0*	6.0*	7.0*	6.0*	3.0*	3.5*	3.0*	10.5*	7.5*	10.0*	8.0*	6.5*	6.0	5.0	4.5	4.0	4.0	3.0*	2.0*	3.0*	3.0*
L_{dm}	10.5*	11.0*	11.5*	15.0*	13.0*	12.0*	12.0*	10.0*	8.0*	8.0*	15.5*	15.0*	20.0*	16.0*	14.5*	11.0	9.5	9.0	9.0	8.0	7.0*	6.0*	7.5*	6.5*
	2.5 Mc																							
F_{am}	74*	74*	72*	71*	60*	50*	44*	44*	44*	44*	44*	48*	53*	54	60*	62*	62*	58	57	62	72	74*	72	75
D_u														18				14	10	6	2		6	3
D_ℓ														10				12	24	8	8		4	9
V_{dm}	4.0	4.5*	4.0	5.0	7.0	3.5	2.0*	2.0*	2.0*	1.5*	1.5*	3.5*	11.0*	9.0	8.0	6.0	7.0	6.0	6.0	4.0	2.5	4.0	3.5	4.0
L_{dm}	10.0	10.5*	11.0	11.5	11.0	8.0	5.0*	4.5*	4.5*	4.0*	6.0*	6.5*	16.0*	10.5	15.0	12.5	14.0	13.0	13.0	9.0	8.0	8.0	9.0	10.0
	5 Mc																							
F_{am}	64	64	62	60*	54*	48	44	44*	41*	42*	46*	46*	46*	46*	50*	52	50	54	54	60	64	64	64	64
D_u	2	2	4			8	4									12	12	6	7	6	4	6	6	4
D_ℓ	6	6	4			6	4									14	8	8	4	2	2	4	4	6
V_{dm}	4.5	4.5	5.0	5.5	5.5	4.0	2.5	1.5*	1.0*	2.0*	2.5*	3.0*	5.0	4.0	4.5	4.0	3.5	4.0	3.0	3.5	3.5	3.5	4.0	4.0
L_{dm}	10.0	10.0	10.0	11.0	10.5	9.5	7.0	4.5*	5.0*	5.0*	6.0*	6.0*	8.0	8.0	7.0	8.0	8.0	9.0	8.0	7.0	8.0	8.0	9.0	10.0
	10 Mc																							
F_{am}	42*	44	42*	42*	40	38*	36*	34*	31*	29*	30*	32*	32*	36*	40*	42	44	46	48	50	48	46	46	44
D_u		4			4											7	6	4	2	2	4	6	2	2
D_ℓ		4			2											4	6	4	5	6	4	4	6	2
V_{dm}	5.0	5.0	5.0	4.0	5.0	6.0*	6.0	5.0*	4.5*	4.0*	4.0*	4.5*	5.0	4.0	4.0	4.0	4.0*	3.5	3.5	4.5	5.0	4.0*	5.0	5.0
L_{dm}	10.0	8.5	10.0	9.0	10.0	10.0*	11.5	10.0*	8.0*	6.0*	7.0*	8.0*	10.0	7.5	8.0	8.0	8.0*	8.0	8.0	10.0	9.0	9.5*	10.0	10.5
	20 Mc																							
F_{am}	22	22	20	20	20*	20	20	20*	20*	21*	22*	22*	20*	20	22*	26	25	24	23	22	22	22	20	21
D_u	0	2	10	2		2	2							14		6	9	6	7	8	6	4	4	3
D_ℓ	4	4	2	2		2	2							2		4	5	4	3	2	2	4	0	3
V_{dm}	1.5*	1.0*	1.5*	1.5*	2.0*	1.5*	3.0*	2.5*	2.0*	2.5*	3.0*	3.5*	3.0*	2.5*	3.0*	5.5*	4.5	4.0	4.0*	3.0*	2.5*	2.0*	1.0*	2.0*
L_{dm}	4.0*	4.0*	4.0*	4.0*	3.0*	4.0*	4.5*	5.5*	5.0*	5.5*	7.0*	7.0*	6.0*	5.0*	6.0*	9.0*	7.0	7.0	6.5*	7.0*	6.5*	4.0*	3.0*	3.5*

GRAPHS OF RADIO NOISE DATA

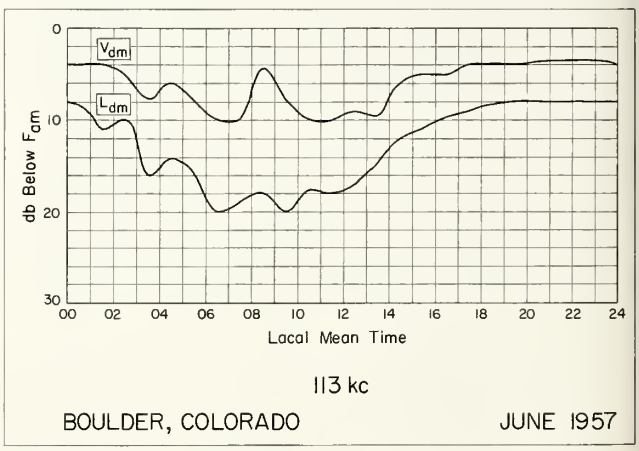


BOULDER, COLORADO JUNE 1957



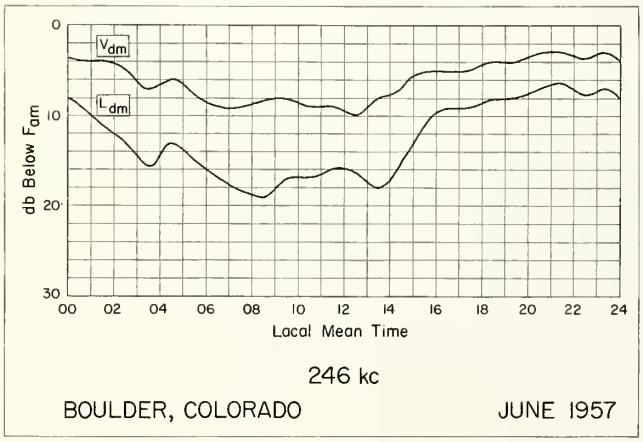
51 kc

BOULDER, COLORADO JUNE 1957



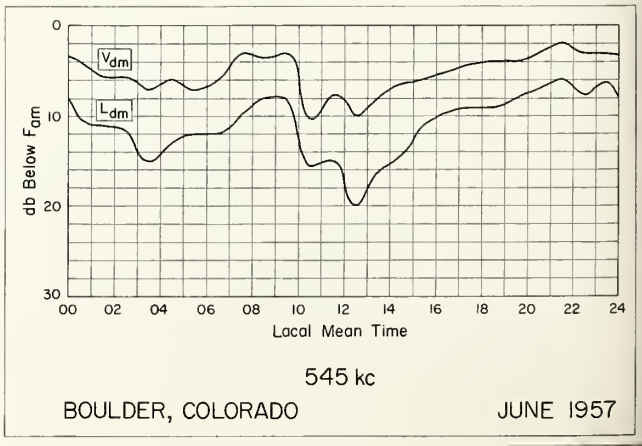
113 kc

BOULDER, COLORADO JUNE 1957



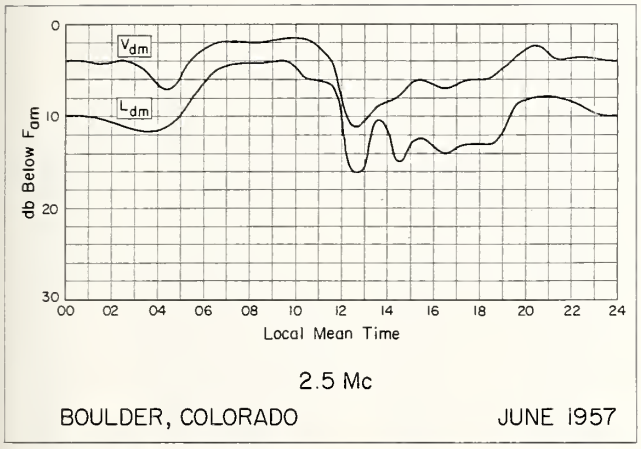
246 kc

BOULDER, COLORADO JUNE 1957



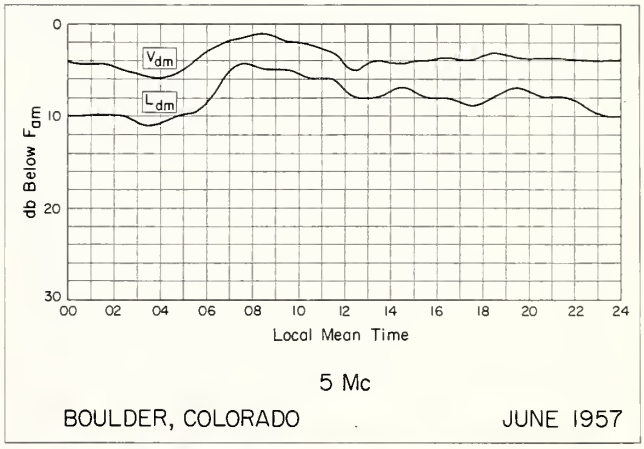
545 kc

BOULDER, COLORADO JUNE 1957



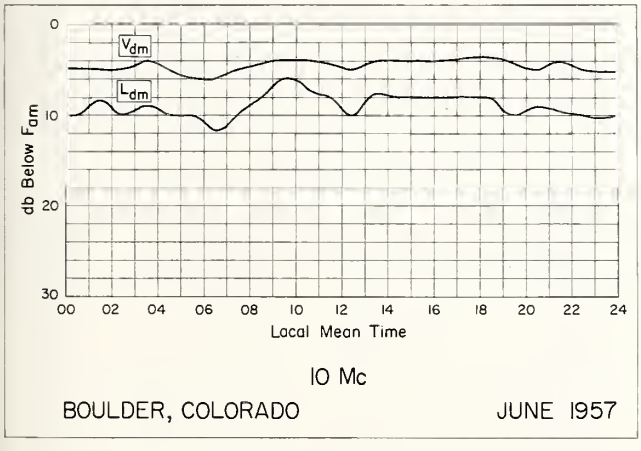
2.5 Mc

BOULDER, COLORADO JUNE 1957



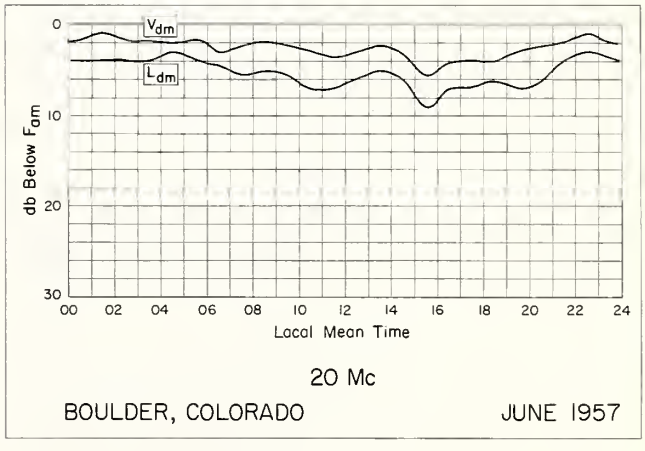
5 Mc

BOULDER, COLORADO JUNE 1957



10 Mc

BOULDER, COLORADO JUNE 1957



20 Mc

BOULDER, COLORADO JUNE 1957

Table 1

Maui, Hawaii (20.8°N, 156.5°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.4	320				(1.6)	2.70
01		8.8	300					2.70
02		8.5	200					2.70
03		8.2	300					2.60
04		7.6	305					2.55
05		7.4	310					2.60
06		7.2	280		133	2.00		2.60
07	---	8.0	250	---	115	2.80	3.2	2.80
08	(470)	8.8	230	---	111	3.40	3.8	2.50
09	535	9.6	230	5.7	111	3.70	4.2	2.30
10	500	10.2	225	5.7	111	4.00	4.5	2.30
11	460	11.0	220	6.0	111	(4.15)	4.6	2.40
12	435	11.5	220	6.1	111	(4.25)	4.6	2.40
13	420	12.0	225	6.2	109	(4.20)	4.5	2.50
14	410	12.8	220	6.0	111	4.10		2.50
15	400	11.9	230	6.0	111	4.00	4.2	2.55
16	380	12.2	235	5.7	109	3.80	3.9	2.60
17	355	11.8	245	---	111	3.30	3.5	2.65
18	335	11.4	260		115	2.70	(3.2)	2.70
19	---	10.8	295				(2.5)	2.70
20		10.2	300				(2.0)	2.65
21		9.7	300				(1.6)	2.60
22		9.4	320				(1.6)	2.50
23		9.0	330				1.8	2.55

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Puerto Rico, W. I. (18.5°N, 67.2°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.2	280				(2.6)	2.75
01		9.8	270				(2.5)	2.80
02		9.0	270				(2.2)	2.75
03		8.5	275				(2.5)	2.70
04		8.3	270				(2.7)	2.70
05		8.0	270				(2.3)	2.70
06	---	7.9	280		---	----	2.5	2.80
07	270	8.0	245	---	111	2.80	3.0	2.90
08	340	9.4	230	5.2	109	3.35	3.6	2.75
09	360	10.0	220	6.2	109	(3.75)	4.0	2.65
10	370	10.6	220	5.9	109	(4.00)	4.4	2.55
11	390	11.2	220	6.1	109	(4.20)	4.6	2.55
12	395	11.6	220	6.1	109	4.25	4.6	2.55
13	380	11.9	220	6.1	109	4.25	4.7	2.55
14	390	11.8	220	6.0	109	4.20	4.7	2.55
15	380	11.5	220	5.9	109	4.05	4.7	2.55
16	370	11.3	225	5.6	109	3.75	4.4	2.60
17	350	10.9	235	5.2	109	3.30	3.9	2.60
18	340	10.8	250	---	111	2.70	3.2	2.60
19		10.3	200		---	----	(3.3)	2.55
20		10.4	290				(3.6)	2.60
21		10.4	295				(2.9)	2.60
22		10.2	300				(2.5)	2.65
23		10.2	305				(2.0)	2.60

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Point Barrow, Alaska (71.3°N, 156.8°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.4)			129	(2.30)	2.6	(2.70)
01		(5.6)			---	----		(2.70)
02		(5.6)			---	----		(2.80)
03		(5.5)			119	----		(2.70)
04		(5.8)		---	121	----		(2.70)
05		(5.7)		(3.8)	113	(2.50)		(2.70)
06		(5.5)		4.0	107	2.80		2.45
07		5.5		(4.2)	108	2.95		2.45
00		5.8		(4.5)	105	----		2.45
09		6.3		4.8	103	3.55		2.50
10		6.1		4.8	105	3.45		2.50
11		6.1		4.7	101	3.35		2.50
12		6.2		4.8	103	(3.40)		2.50
13		6.2		5.0	105	3.45		2.55
14		6.3		5.0	109	(3.40)		2.50
15		6.4		4.8	106	3.30		2.55
16		6.6		4.6	101	3.20		2.60
17		6.5		4.5	105	3.00		2.60
18		6.2		---	106	2.88		2.70
19		6.1		---	109	2.65		2.75
20		5.8		---	111	(2.50)		2.80
21		5.4			119	2.75		2.85
22		5.0			125	(2.60)		2.90
23		5.7			129	(2.50)	4.2	2.80

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.6					2.4	2.45
01		5.1					2.9	2.40
02		(5.0)					1.8	(2.40)
03		5.3		---	119	----	1.8	2.45
04		5.8		3.5	119	1.95	2.2	2.45
05		6.3		4.0	115	2.40	2.5	2.40
06		6.7		4.4	111	2.00		2.40
07		7.0		4.7	109	3.05		2.40
00		7.0		4.9	109	(3.25)		2.40
09		6.9		5.0	107	(3.45)		2.40
10		6.9		5.0	107	(3.60)		2.40
11		6.8		5.2	109	3.70		2.40
12		6.8		5.3	109	3.65		2.35
13		6.8		5.4	107	(3.65)		2.40
14		7.0		5.3	107	(3.55)		2.40
15		6.9		5.2	109	3.50		2.45
16		6.8		5.0	109	3.25		2.50
17		6.7		4.8	111	3.00		2.60
18		6.8		4.6	113	2.80		2.65
19		6.7		---	122	2.35		2.65
20		6.7			139	(2.00)		2.70
21		6.4			---	----	1.7	2.70
22		5.8					1.7	2.65
23		5.1					1.8	2.60

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Oe Bilt, Holland (52.1°N, 5.2°E) May 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	7.0						2.5
01	310	6.8						2.4
02	310	6.5						2.4
03	300	6.3						2.5
04	290	6.7	---	---	---	2.0		2.6
05	255	7.0	245	---	110	2.4		2.7
06	280	7.6	240	5.0	110	2.9	3.4	2.7
07	355	8.0	220	5.3	110	3.3	3.7	2.7
08	385	8.0	215	5.7	100	3.5	4.2	2.6
09	400	8.2	210	5.7	100	3.6	4.6	2.6
10	400	8.6	210	5.8	100	3.7	4.3	2.6
11	380	8.7	210	5.8	100	3.8	4.3	2.6
12	405	8.7	220	5.9	100	3.8	4.4	2.5
13	390	9.0	210	5.8	100	3.6	4.4	2.6
14	380	9.0	220	5.8	100	3.8	4.2	2.6
15	380	8.7	220	5.5	100	3.6	4.0	2.6
16	370	8.6	220	5.3	100	3.4	3.7	2.7
17	250	8.5	230	---	110	3.0	3.6	2.7
18	250	8.5	250	---	---	2.5	3.3	2.7
19	270	9.0						2.75
20	270	8.3					3.0	2.7
21	290	8.0						2.6
22	300	(7.6)						(2.5)
23	300	7.3						2.5

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 6

Adak, Alaska (51.9°N, 176.6°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.4)	320					(2.50)
01		(6.4)	330					(2.50)
02		(6.0)	335					(2.45)
03		(5.7)	350					(2.40)
04	---	(5.7)	315	---	130	----	1.7	2.40
05	455	6.6	270	4.0	119	2.20	2.6	2.40
06	415	7.5	250	4.5	115	2.70	3.3	2.40
07	420	8.2	240	5.0	111	3.10	3.7	2.45
08	420	8.4	235	5.2	109	3.50	4.0	2.50
09	425	8.4	230	5.5	111	3.60	4.3	2.50
10	435	8.5	220	5.5	109	3.80	4.4	2.50
11	430	8.4	220	5.6	111	3.85	4.5	2.50
12	430	8.3	220	5.6	111	3.85	4.1	2.50
13	420	8.3	220	5.8	111	3.75	4.0	2.50
14	420	8.3	230	5.7	111	3.85	3.9	2.60
15	400	7.9	235	5.4	111	3.50	3.7	2.60
16	(400)	8.0	240	---	109	(3.35)	3.7	2.60
17	---	7.8	250		111	3.00	3.6	2.70
18		7.8	270		117	2.40	3.4	2.80
19		8.0	280		121	----	2.8	2.80
20		7.8	280		---	----	2.3	2.75
21		7.8	<280				2.3	2.65
22		(7.3)	285					(2.60)
23		(6.8)	300					(2.55)

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 7

Ft. Monmouth, New Jersey (40.3°N, 74.1°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	<300					2.60
01		6.4	290					2.55
02		6.0	<290					2.60
03		5.8	<295					2.60
04		5.5	280					2.65
05		5.6	275		119	1.95		2.80
06	---	6.3	245		111	2.60		2.90
07	(420)	6.6	230	---	106	3.10	3.3	2.85
08	440	7.0	220	5.2	105	3.50	3.7	2.80
09	480	7.2	210	5.3	105	(3.70)	3.9	2.60
10	480	7.4	205	5.6	105	3.90		2.55
11	440	7.8	200	5.7	103	4.00	4.0	2.60
12	450	8.0	205	5.8	105	4.10		2.55
13	440	7.9	215	5.6	105	4.05		2.55
14	425	8.0	220	5.6	107	3.95		2.55
15	425	8.1	220	5.4	105	3.80		2.55
16	400	8.2	225	5.2	107	3.50	3.5	2.60
17	(380)	8.2	240		109	3.10	3.2	2.65
18	---	8.2	255		111	2.50	2.6	2.70
19		8.2	270		119	----	2.2	2.75
20		8.0	265				2.6	2.65
21		7.8	<270				2.9	2.70
22		7.5	280				2.3	2.65
23		7.2	<280					2.60

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

San Francisco, California (37.4°N, 122.2°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	320				(3.0)	2.50
01		6.0	310				(2.3)	2.50
02		5.8	310				(2.9)	2.50
03		5.6	300				(1.8)	2.50
04		5.3	320				(2.6)	2.45
05	---	5.6	305				2.1	2.55
06	---	6.7	260		119	2.40	2.9	2.80
07	385	7.4	235	---	109	3.00	3.3	2.70
08	400	8.4	230	5.0	109	3.35	4.0	2.60
09	460	8.4	<230	>5.1	109	3.60	4.1	2.55
10	440	8.8	220	5.5	109	3.80	4.6	2.45
11	445	9.2	210	>5.4	107	>3.85	4.4	2.45
12	430	9.0	220	5.6	105	3.90	4.2	2.45
13	415	9.3	225	5.4	109	3.80	4.4	2.50
14	400	9.4	230	5.5	109	3.80	4.0	2.50
15	390	9.3	230	5.4	109	3.65	4.0	2.55
16	400	9.0	240	5.0	109	3.50	4.0	2.60
17	380	8.6	250		110	3.10	3.8	2.70
18		8.2	250		111	2.50	3.2	2.75
19		8.0	260		---	----	(3.0)	2.85
20		7.6	260				(2.9)	2.75
21		7.0	265				(3.3)	2.60
22		6.4	285				(3.1)	2.55
23		6.2	300				(2.5)	2.50

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

White Sands, New Mexico (32.3°N, 106.5°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.7	(300)				3.1	2.50
01		6.7	(280)				2.2	2.55
02		6.6	<275				2.1	2.60
03		6.2	280				(2.2)	2.60
04		5.7	290				2.2	2.60
05		5.9	295		---	----	2.0	2.65
06	---	7.1	260		113	(2.50)	2.8	2.80
07	(395)	7.7	230	---	109	(3.00)	3.5	2.70
08	460	8.3	220	5.2	107	3.40	4.0	2.60
09	455	8.6	215	(5.4)	107	3.70	4.4	2.55
10	460	9.4	210	5.5	107	3.95	4.5	2.45
11	440	9.8	210	5.7	107	4.05	4.3	2.50
12	410	10.1	215	5.9	107	4.15	4.4	2.45
13	400	10.6	220	5.9	107	4.10	4.4	2.50
14	410	10.6	230	5.7	107	4.00	4.2	2.50
15	420	10.2	230	5.5	107	3.80	4.3	2.55
16	415	10.0	235	5.2	107	3.50	4.4	2.60
17	(390)	9.4	240		109	3.10	3.8	2.65
18	---	9.3	<260		115	(2.50)	3.4	2.75
19		8.8	260				2.4	2.80
20		7.8	<250				(2.7)	2.70
21		7.4	<265				2.9	2.60
22		6.8	<295				3.0	2.60
23		6.7	<310				(3.2)	2.50

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Okinawa I. (26.3°N, 127.8°E) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		15.6	285				(2.7)	2.75
01		14.8	260				(2.2)	2.95
02		12.6	240				(2.6)	3.00
03		10.2	240				(2.5)	2.80
04		9.1	250				(2.1)	2.75
05		8.1	260				(2.4)	2.70
06		8.8	255		135	(2.10)	2.3	2.85
07		9.6	235		111	(2.80)	3.4	3.05
08		10.0	230		109	(3.40)	(4.4)	2.80
09		10.7	230		109	3.70	(5.2)	2.60
10	---	11.3	230		109	3.95	(5.2)	2.50
11	(390)	12.4	220	---	109	(4.10)	5.3	2.55
12	400	13.5	220	---	109	(4.20)	5.5	2.55
13	390	14.3	225	(6.3)	109	(4.20)	5.4	2.60
14	380	14.5	220	---	109	4.10	4.7	2.60
15	370	14.6	230	---	109	3.90	4.8	2.60
16	360	14.2	230		109	3.70	4.4	2.60
17	340	14.2	235		110	3.30	4.0	2.60
18	---	13.8	255		115	2.55	3.6	2.65
19		13.5	280				(3.6)	2.65
20		13.4	290				(3.0)	(2.55)
21		(14.4)	315				(3.1)	(2.50)
22		(14.8)	310				(3.2)	(2.60)
23		15.2	300				(2.5)	2.65

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Maui, Hawaii (20.8°N, 156.5°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.3	290				(2.4)	2.80
01		9.5	270				(2.5)	2.80
02		8.4	270					2.80
03		8.0	295					2.65
04		8.0	280				(1.7)	2.70
05		7.4	270				1.5	2.70
06		7.4	270		136	1.90	2.0	2.60
07		8.6	240		113	2.80	3.0	2.70
08	---	9.9	230	---	111	3.30	3.6	2.50
09	---	10.7	220	---	109	(3.60)	3.8	2.40
10	(425)	11.6	220	---	109	(3.90)	4.2	2.40
11	400	12.5	220	6.1	109	(4.10)	4.5	2.50
12	400	13.0	220	6.2	109	(4.20)	4.5	2.55
13	390	13.4	220	6.2	109	(4.20)	4.5	2.60
14	390	13.5	220	6.3	109	(4.10)		2.60
15	370	13.7	220	6.1	109	(3.90)	4.0	2.65
16	355	13.7	235	---	111	3.60	4.0	2.70
17	325	13.3	240		113	3.15	3.6	2.70
18	(300)	12.7	260		118	(2.40)	(3.1)	2.80
19		12.2	270		---	----	(2.6)	2.75
20		11.5	295				(2.8)	2.65
21		11.5	300				(3.0)	2.60
22		10.5	305				(2.5)	2.65
23		10.3	300				(2.3)	2.70

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Puerto Rico, W. I. (18.5°N, 67.2°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.6	280					2.80
01		9.9	260					2.85
02		9.1	255				(2.5)	2.75
03		8.6	265				(2.2)	2.75
04		8.2	265				(2.8)	2.75
05		7.8	250					2.80
06		7.9	260		---	----	(3.4)	2.85
07		9.0	235		109	(2.70)	(2.8)	3.00
08	---	9.9	225	---	109	3.25	3.4	2.90
09	---	10.7	220	---	109	3.70		2.70
10	330	11.6	220	(5.8)	109	(3.95)		2.70
11	350	12.1	220	6.3	109	(4.10)	4.4	2.65
12	350	12.4	220	(6.2)	109	(4.20)	4.4	2.65
13	360	12.7	220	6.1	109	(4.20)	4.5	2.65
14	365	12.6	220	6.3	109	(4.15)	4.6	2.60
15	355	12.4	225	5.8	109	(3.90)	4.4	2.60
16	345	12.0	235	---	109	(3.65)	4.3	2.65
17	(320)	11.5	240		111	(3.20)	3.7	2.65
18		11.1	250		111	(2.50)	2.8	2.65
19		10.7	270				2.4	2.65
20		10.5	280				2.6	2.60
21		10.8	300				(3.0)	2.60
22		10.7	300				(3.8)	2.60
23		10.6	290				(2.4)	2.70

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Panama Canal Zone (9.4°N, 79.9°W) May 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.0	275					2.70
01		9.6	270					2.70
02		9.0	270				(4.2)	2.65
03		9.0	270				(3.2)	2.80
04		8.0	240				(1.9)	2.80
05		7.1	240				(2.8)	2.70
06		6.8	275		---	----	(3.1)	2.70
07		8.0	245		115	2.70	(2.9)	2.85
08		9.6	235		113	3.30		2.70
09	---	10.8	225		111	3.70	4.0	2.60
10	---	11.4	220		109	4.00	4.3	2.45
11	---	12.0	220		111	4.15	4.4	2.45
12	425	12.6	220	6.3	111	4.20	4.6	2.45
13	400	13.1	220	6.2	111	4.25	4.6	2.50
14	390	13.2	220	---	111	4.10	4.3	2.50
15	390	13.0	230	---	111	3.90	4.3	2.55
16	370	12.5	230		111	(3.50)	4.0	2.55
17	---	11.8	240		111	3.00	3.5	2.50
18		11.2	270		131	----	(3.8)	2.50
19		10.5	290				(3.0)	2.55
20		10.5	310				(2.6)	2.45
21		10.7	315				(3.0)	2.50
22		10.6	295					2.60
23		10.4	290					2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Kiruna, Sweden (67.8°N, 20.3°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	390				(4.0)	2.4
01		5.6	(380)				(4.3)	2.3
02		5.4	360				(3.8)	2.45
03		5.6	340		---	---	(3.0)	2.5
04	---	5.3	310	---	---	1.9		2.6
05	---	6.0	280	---	110	2.0		2.7
06	---	6.2	260	4.2	115	2.3		2.6
07	(450)	6.6	245	4.4	115	2.7		2.6
08	(490)	7.0	245	4.8	110	3.0		2.55
09	470	7.4	240	5.0	105	3.1		2.6
10	480	7.5	240	5.0	110	3.2		2.5
11	460	8.0	230	5.2	110	3.3		2.6
12	450	8.0	230	5.1	110	3.3		2.6
13	480	8.0	235	5.1	110	3.2		2.6
14	490	8.2	240	5.0	110	3.1		2.6
15	(430)	7.8	245	4.5	110	3.0		2.6
16	(400)	7.4	250	4.8	110	2.8		2.7
17	---	6.9	260	4.3	115	2.5		2.7
18	---	6.8	275	---	115	2.2		2.7
19		6.5	300		115	2.1		2.7
20		6.0	340		---	1.6	2.6	2.6
21		5.8	360		---	---	3.0	2.6
22		(5.7)	365				(3.4)	2.4
23		5.9	405				(4.0)	(2.4)

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 15

Fairbanks, Alaska (64.9°N, 147.8°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.5)	380				4.3	(2.60)
01		(5.8)	350				4.0	(2.50)
02		(5.0)	400				3.8	(2.50)
03		(5.7)	370				3.8	(2.50)
04		(5.8)	400				3.6	(2.50)
05	---	(6.2)	290	---	---	----	4.0	(2.60)
06	(490)	(6.4)	<270	---	117	2.50	4.6	(2.50)
07	460	(6.6)	240	(4.4)	111	----	3.9	(2.50)
08	475	(6.2)	<245	(4.6)	111	3.20		(2.55)
09	495	(6.4)	235	4.8	111	3.40		(2.55)
10	490	6.2	230	4.8	111	3.40		2.50
11	500	6.4	230	5.0	110	3.55		2.50
12	515	6.6	230	5.1	111	3.55		2.50
13	485	7.0	230	5.1	111	3.50		2.50
14	470	7.4	240	(5.1)	111	3.40		2.55
15	430	7.8	240	(4.9)	111	3.30		2.60
16	---	7.9	240	---	111	3.10		2.70
17		8.0	250		119	2.70		2.75
18		(7.2)	260		111	2.50		(2.85)
19		(6.8)	280		---	----		(2.85)
20		(5.8)	275				2.2	(2.90)
21		(5.5)	325				3.2	(2.70)
22		(5.1)	300				3.7	(2.70)
23		(4.8)	330				3.5	(2.60)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Reykjavik, Iceland (64.1°N, 21.8°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---					2.8	----
01		(5.0)						(2.30)
02		(4.8)					3.4	(2.40)
03		(4.8)					3.5	(2.40)
04		(4.7)					3.3	(2.45)
05		(5.0)			---	----		(2.65)
06		5.8		---	---	----		2.70
07		6.0		---	111	2.80		2.70
08		6.8		---	109	----		2.75
09		7.0		5.0	---	----		2.70
10		7.5		4.9	111	3.50		2.60
11		7.9		5.4	111	3.60		2.65
12		8.1		5.5	111	3.65		2.60
13		8.1		5.3	109	(3.65)		2.55
14		8.1		5.4	109	3.50		2.60
15		7.9		4.9	109	3.45		2.70
16		7.0		---	111	3.30		2.70
17		6.6		---	110	----		2.70
18		6.5			112	----		2.80
19		6.5			---	----		2.70
20		(6.0)			---	----		2.70
21		(5.4)			---	----		(2.50)
22		(5.0)			---	----	3.5	----
23		---					3.7	----

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 17

Nurmijarvi, Finland (60.5°N, 24.6°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.9)						(2.70)
01		(5.4)						(2.75)
02		(5.0)						(2.70)
03		(5.1)						(2.70)
04		---				---		----
05		5.5				2.0		3.00
06		6.2				2.1		3.20
07		6.4		---		2.4		3.20
08		7.0		(4.9)		3.1		3.25
09		7.6		5.2		3.2		3.10
10		8.2		5.3		3.3		3.05
11		8.6		5.4		3.5		2.90
12		9.1		5.6		3.6		3.00
13		9.5		5.6		3.4		3.00
14		9.6		5.7		3.6		3.05
15		9.6		5.4		3.3		3.00
16		9.4		---		3.2		3.10
17		8.9		---		---		3.10
18		9.2				---		3.20
19		8.6				---		3.20
20		8.3						3.15
21		7.4						3.10
22		6.5						3.00
23		6.0						2.75

Time: 30.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 1 minute.

Table 18

Upsala, Sweden (59.8°N, 17.6°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.6	335					2.4
01		5.5	350					2.3
02		5.1	340					2.3
03		4.8	320		---	----		2.4
04		4.8	305		---	E		2.5
05	---	5.4	270	----	120	1.80	2.0	2.7
06	---	5.8	250	(4.10)	115	2.40	3.0	2.7
07	380	6.7	240	4.70	110	2.80	3.4	2.7
08	380	7.5	240	5.00	105	3.10	3.6	2.6
09	385	8.0	230	5.40	105	3.30		2.6
10	370	8.6	230	5.60	105	3.45		2.55
11	350	9.2	225	5.60	105	3.50		2.6
12	350	9.8	220	5.80	105	3.50		2.6
13	340	9.8	225	5.70	105	3.60		2.6
14	340	9.8	230	5.60	105	3.50		2.6
15	330	9.6	230	5.50	105	3.25		2.7
16	355	9.6	240	5.35	110	3.05		2.7
17	(330)	9.4	245	(4.80)	110	2.70		2.7
18	---	9.1	250	----	120	2.20	2.3	2.8
19		8.4	250		---	1.70		2.75
20		7.7	250		---	E		2.7
21		6.7	260					2.55
22		6.0	295					2.5
23		5.8	320					2.4

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 19

De Bilt, Holland (52.1°N, 5.2°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	6.3						2.4
01	340	6.0						2.4
02	320	5.6						2.5
03	310	5.2						2.5
04	290	5.2			---	1.3		2.6
05	270	5.6			---	1.9		2.8
06	230	6.5	---	---	110	2.6		2.9
07	230	7.4	220	---	110	3.0		2.9
08	300	8.2	210	5.6	105	3.3		2.8
09	380	9.2	220	5.3	100	3.5		2.8
10	360	9.6	210	5.5	100	3.8		2.75
11	400	10.3	210	5.8	100	3.8		2.8
12	380	10.2	210	5.9	100	3.8		2.7
13	(360)	10.5	220	5.8	100	3.8		2.7
14	(370)	10.2	220	6.0	100	3.6		2.75
15	310	10.0	220	6.0	105	3.4		2.8
16	230	9.8	230	---	105	3.1		2.8
17	240	9.8			110	2.8		2.9
18	260	9.6			---	2.2		2.9
19	240	9.2			---	E		2.9
20	260	8.5						2.8
21	280	7.3						2.6
22	300	7.0						2.5
23	320	6.7						2.5

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 20

St. Johns, Newfoundland (47.6°N, 52.7°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.4)	310					(2.55)
01		>5.7	300					(2.60)
02		(4.8)	310					(2.50)
03		(4.2)	310					(2.50)
04		(4.0)	310					(2.50)
05		(4.8)	300		---	----		(2.70)
06		(5.6)	270	---	115	2.30		(2.90)
07	---	6.2	250	---	109	2.85		2.90
08	---	6.4	235	---	109	(3.25)		2.90
09	(600)	6.8	225	5.0	107	(3.60)		2.70
10	(490)	7.4	225	5.4	105	(3.70)		2.65
11	505	7.9	225	5.4	101	(3.85)		2.60
12	(515)	8.3	220	5.4	105	(3.90)		2.60
13	500	8.2	220	5.4	104	(3.90)		2.60
14	510	8.4	230	5.4	105	(3.70)		2.60
15	470	8.6	230	5.2	105	3.60		2.60
16	(450)	8.8	235	5.0	109	(3.30)		2.60
17	---	8.8	245	---	112	2.90		2.65
18		9.0	270		119	(2.50)		2.65
19		(8.8)	275		---	----		2.70
20		(7.6)	280				(3.4)	(2.55)
21		>8.0	295					(2.60)
22		>7.0	300					(2.55)
23		(6.9)	300				(3.4)	(2.55)

Time: 52.5°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Graz, Austria (47.1°N, 15.5°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	7.0						
01	345	6.9						
02	340	6.6						
03	330	6.6						
04	310	6.1						
05	280	6.2						
06	240	6.9	---	---				
07	230	7.3	---	---	110	3.1	3.4	
08	220	8.0	215	(5.1)	110	3.5	3.8	
09	215	9.2	200	5.2	110	3.6	3.8	
10	220	10.9	200	6.2	110	3.7	4.0	
11	300	0	200	6.6	110	3.8	3.9	
12	300	D	200	6.5	110	3.9		
13	300	0	210	6.6	110	(3.7)	3.8	
14	300	11.2	230	6.4	110	3.7	3.8	
15	230	10.8	(210)	6.0	110	3.7		
16	230	10.8	---	---	110	3.4	3.8	
17	235	10.5	---	---	110	(3.1)	3.6	
18	240	(10.6)					3.6	
19	250	---						
20	250	8.7						
21	280	7.8						
22	300	7.4						
23	310	7.2						

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 22

White Sands, New Mexico (32.3°N, 106.5°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.9	<300				(2.4)	2.45
01		6.8	<290				(2.0)	2.50
02		6.8	280				(2.4)	2.55
03		6.4	270				(1.5)	2.55
04		6.3	<270					2.60
05		6.0	<285				(1.7)	2.55
06		7.1	265		<121	(2.10)	2.3	2.85
07	---	8.8	240	---	109	(2.75)	2.9	3.00
08	---	10.0	230	---	109	(3.25)	3.5	2.90
09	---	10.9	220	5.3	107	(3.60)	4.0	2.75
10	(480)	11.5	215	---	107	(3.90)	4.0	2.70
11	(435)	12.2	220	5.9	107	(4.00)	4.2	2.65
12	(415)	12.4	220	---	107	(4.00)	4.2	2.60
13	(410)	12.5	220	(6.3)	109	4.00	4.0	2.60
14	(380)	12.5	220	---	107	3.95		2.60
15	---	12.0	230	---	107	3.70		2.65
16		11.5	240		107	3.40		2.65
17		11.0	240		107	2.90	3.1	2.75
18		10.7	250		<119	(2.10)	2.5	2.80
19		9.9	240				(2.2)	2.80
20		8.6	<230				2.0	2.70
21		7.7	<255				(2.4)	2.65
22		7.3	<280				(2.6)	2.55
23		7.0	270				(2.1)	2.55

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 23

Puerto Rico, W. I. (18.5°N, 67.2°W) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.6	270					2.85
01		9.6	250					2.90
02		9.0	245				(2.3)	2.75
03		7.8	265				(2.6)	2.70
04		7.4	270				(2.0)	2.65
05		7.4	275				(1.8)	2.65
06		7.7	280					2.75
07	---	9.5	240		109	2.45		3.00
08	---	11.1	230		109	3.15		2.95
09	---	12.2	230		109	3.55		2.85
10	---	12.8	230	---	109	3.85		2.80
11	---	13.0	220	---	109	(4.05)		2.70
12	(350)	13.4	220	6.6	109	(4.15)		2.70
13	(380)	13.4	220	6.7	109	(4.20)	4.2	2.65
14	(390)	13.1	220	6.5	110	4.15	4.3	2.60
15	(380)	12.8	230	6.6	110	3.95	4.2	2.60
16		12.4	230	---	109	3.65	4.0	2.60
17		11.9	245		109	3.15	3.7	2.65
18		11.5	250		115	2.30	3.0	2.70
19		10.9	250				(2.5)	2.70
20		10.5	270				(2.5)	2.60
21		10.6	290				(2.4)	2.65
22		10.6	290				(2.8)	2.65
23		10.7	285				(2.1)	2.75

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 24

Baguio, P. I. (16.4°N, 120.6°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		15.0	265					2.95
01		13.6	240					3.10
02		10.4	220					2.95
03		9.2	240					2.80
04		8.8	250				1.6	2.75
05		8.2	250				1.9	2.85
06		9.0	270		139	(2.00)	2.3	2.80
07		11.0	250		115	(2.80)	3.6	2.85
08		12.7	245		114	(3.30)	(5.5)	2.60
09		13.8	240		115	(3.75)	(5.7)	2.50
10		14.2	225		111	(4.00)	4.6	2.30
11		14.4	220		113	(4.10)		2.15
12		13.8	220		<116	(4.20)		2.15
13		13.7	220		115	(4.15)		2.15
14	---	13.8	225		<119	4.00		2.15
15		14.0	240		115	3.75		2.25
16		14.0	250		115	3.35		2.30
17		14.1	260		119	(2.75)		2.30
18		13.7	295		146	1.90	2.2	2.25
19		>12.9	385				2.2	2.15
20		>13.0	400				1.8	2.20
21		13.4	335					2.40
22		13.6	290					(2.60)
23		14.4	270					2.80

Time: 120.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 25

Watheroo, W. Australia (30.3°S, 115.9°E) April 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	255				1.9	2.75
01		6.4	250				1.9	2.70
02		6.1	<250				2.0	2.80
03		5.8	250				1.9	2.90
04		(5.6)	<235				1.5	2.95
05		(5.0)	<260					2.75
06		(5.3)	250			----		2.80
07		(8.0)	230		115	2.20		(3.25)
08		10.8	225		100	2.90		3.20
09	---	>12.0	220	---	100	3.25	3.5	(3.20)
10	---	(13.0)	215	---	100	3.55	3.8	(2.95)
11	---	>12.0	210	---	110	3.75	4.0	----
12	---	(13.0)	210	---	110	3.80	4.1	(2.90)
13	---	>12.0	200	---	110	3.80	4.2	(2.90)
14	---	>12.0	220	---	110	3.75	3.9	<2.90
15		(12.2)	225		110	3.60	3.7	(2.75)
16		>12.0	230		110	3.20	3.4	(2.85)
17		12.0	225		110	2.60	2.8	(2.85)
18		>8.6	<230			----	(2.9)	----
19		>8.5	220				2.2	----
20		(9.0)	<235				1.8	(2.95)
21		7.5	<240				1.8	2.95
22		7.0	235				1.3	2.80
23		6.7	250				1.4	2.80

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 26

Tromso, Norway (69.7°N, 19.0°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---	---				(3.1)	----
01		---	---		---	----	(2.8)	----
02		---	(380)		---	----	(2.9)	----
03		(5.4)	(350)		---	----	3.0	----
04		(5.0)	(315)		---	----	2.9	----
05		(6.1)	(305)		---	----	2.0	----
06		(6.2)	(280)		---	1.70		(2.70)
07	---	6.8	255		125	2.05		2.70
08	---	7.8	250		120	2.45		2.70
09	---	8.5	250	---	125	2.70		2.75
10	---	9.2	250	---	120	2.90		2.70
11	(260)	9.9	245	---	120	2.95		2.70
12	---	9.6	245	---	120	3.00		2.70
13	(255)	9.7	250	---	135	3.00		2.70
14	(250)	9.2	250		125	2.85		2.70
15	---	8.3	250		135	2.80		2.70
16	---	7.1	260		130	2.40	2.4	2.90
17	---	7.0	260		125	2.15	2.7	2.70
18		6.8	260		125	1.60	3.1	2.70
19		6.0	280		130	2.60	(3.2)	2.60
20		6.4	300		125	2.70	3.0	(2.55)
21		(5.7)	(310)		---	----	(3.3)	(2.45)
22		---	(340)		---	----	(3.1)	----
23		(5.7)	---				(2.8)	(2.35)

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 27

Kiruna, Sweden (67.8°N, 20.3°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.2	345				3.3	2.5
01		6.0	345				2.8	2.4
02		5.3	355				2.2	2.4
03		5.9	360		---	---	2.3	2.5
04		5.8	315		---	---	2.0	2.6
05		5.5	290		---	E		2.7
06		6.0	270		130	1.8		2.8
07		6.8	260		115	2.1		2.75
08		7.5	250	---	115	2.6		2.7
09	---	8.2	250	---	115	2.8		2.75
10	---	9.0	245	4.8	115	2.9		2.7
11	(305)	9.1	240	5.0	110	3.0		2.7
12	---	9.3	240	5.0	110	3.0		2.7
13	---	9.4	240	5.1	115	3.0		2.7
14		9.2	245	4.2	115	2.8		2.75
15		8.8	250	---	115	2.7		2.8
16		8.0	250		115	2.4		2.8
17		6.8	275		120	1.9		2.8
18		6.2	270		---	1.4	3.0	2.8
19		6.0	300		---	E	3.0	2.7
20		5.9	330		---	---	3.0	2.6
21		5.5	350		---	---	3.4	2.6
22		(6.0)	380				(3.9)	(2.4)
23		5.9	370				3.4	2.45

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 28

Baker Lake, Canada (64.3°N, 96.0°W) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.0	260		---	---	3.5	
01		5.5	260		---	---	3.9	---
02		5.2	270		---	---	4.0	---
03		4.5	280		---	---	4.0	---
04		4.2	290		---	---	3.4	
05		4.3	300		120	1.5	<2.3	
06	---	4.5	300	---	120	1.8	3.6	
07	---	5.2	290	---	110	2.0		---
08	---	5.4	260	3.5	115	2.4		2.75
09	(370)	5.8	250	4.2	110	2.9		(2.8)
10	410	6.0	240	4.4	115	3.0		2.4
11	490	6.0	240	4.6	110	3.3		2.7
12	470	6.6	250	4.7	110	3.4		2.7
13	400	8.1	240	4.8	120	3.2		2.7
14	390	8.8	240	4.5	115	3.2		2.65
15	390	8.5	240	4.7	115	3.0		2.65
16	(420)	7.5	260	4.2	115	2.8		(2.7)
17	---	7.2	270	3.8	120	2.5		2.8
18	---	7.0	280	---	115	2.2	3.0	2.7
19		6.1	300		115	1.9	3.2	---
20		6.0	290		130	1.5	4.1	---
21		6.0	260		---	1.4	3.3	---
22		5.9	270		---	---	4.4	---
23		6.2	270		---	---	3.9	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 29

Nurmijarvi, Finland (60.5°N, 24.6°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.7						3.00
01		5.1						2.80
02		5.0						3.00
03		(4.8)						(2.80)
04		(4.5)						(3.00)
05		4.4						(3.00)
06		(5.4)						3.05
07		6.6				2.2		3.30
08		7.3				2.6		3.35
09		8.6				2.9		3.30
10		9.8		---		3.4		3.30
11		10.8		---		3.6		3.15
12		11.2		---		3.7		3.10
13		11.6		---		3.7		3.10
14		11.6		---		3.6		3.10
15		11.7		---		3.5		3.10
16		11.7				3.0		3.15
17		11.0				2.7		3.20
18		10.6				---		3.30
19		9.8						3.30
20		8.4						3.20
21		(7.3)						3.10
22		6.0						3.00
23		6.0						3.00

Time: 30.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 2 minutes.

Table 30

Churchill, Canada (58.8°N, 94.2°W) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.4	300		---	1.6	5.2	
01		5.8	300		120	2.6	4.5	---
02		5.2	330		130	2.0	4.8	
03		5.0	330		120	2.0	5.0	---
04		4.8	350		120	2.0	4.2	---
05		4.7	370		115	2.0	4.0	
06	---	4.8	360		120	2.7	3.9	
07	---	5.0	340		120	3.0	4.0	(2.7)
08	---	5.9	300	---	120	3.2	4.5	(2.8)
09	---	6.5	280	4.6	110	3.3	4.4	2.8
10	400	7.6	270	4.9	110	3.7		2.7
11	420	8.0	260	5.1	110	3.4		2.65
12	400	8.8	250	5.2	110	3.5	4.2	2.6
13	390	9.2	240	5.2	110	3.4		2.6
14	380	9.7	250	5.0	110	3.3		2.6
15	370	10.2	250	4.9	110	3.1		2.6
16	330	9.0	260	4.8	115	3.0		2.6
17	---	8.6	260	---	120	2.8		(2.6)
18		7.1	290		120	2.3	2.5	(2.7)
19		6.4	300		120	2.4	2.8	(2.75)
20		6.0	330		120	2.2	3.5	---
21		5.2	300		120	2.3	6.0	---
22		5.5	350		130	1.8	7.0	
23		5.6	320		125	1.5	5.7	

Time: 90.0°W.
Sweep: 1.0 Mc to 17.0 Mc in 16 seconds.

Table 31

De Bilt, Holland (52.1°N, 5.2°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.6						2.5
01	310	5.2						2.5
02	320	5.0						2.4
03	320	4.4						2.4
04	295	3.8						2.5
05	290	4.0						2.6
06	260	5.6			---	2.1		2.9
07	230	7.3	---	---	110	2.5	3.0	3.0
08	225	9.0	230	---	115	3.0	3.4	3.0
09	220	10.3	210	4.3	110	3.3		2.9
10	220	11.4	210	6.0	105	3.5		2.9
11	220	12.2	215	5.4	105	3.6		2.9
12	230	12.3	210	6.0	105	3.6		2.8
13	220	12.2	210	5.2	105	3.6		2.8
14	225	12.1	215	6.0	110	3.5		2.8
15	225	11.9	---	---	110	3.2		2.8
16	230	11.6	---	---	120	2.8	3.2	2.9
17	230	11.2			120	2.3		2.9
18	230	10.2						2.9
19	230	9.0						2.9
20	240	7.5						2.8
21	280	6.7						2.6
22	300	6.0						2.6
23	315	5.7						2.5

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 32

Lindau/Harz, Germany (51.6°N, 10.1°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.95					2.3	2.40
01	300	5.90					2.5	2.45
02	300	5.40					2.6	2.40
03	300	4.90			---	E	2.4	2.40
04	300	4.45			---	E	2.4	2.50
05	290	4.00			---	E	2.6	2.50
06	270	4.70	---		---	E	2.9	2.60
07	240	6.30	---		110	1.90	3.1	3.00
08	230	8.10	245		100	2.55	3.5	3.00
09	230	9.90	220		100	3.00	3.4	2.90
10	230	11.30	220		100	3.25	3.8	2.80
11	260	12.25	210		100	3.40	3.9	2.80
12	(225)	12.50	210		100	3.55	4.0	2.75
13	(230)	12.65	220		100	3.55	3.7	2.75
14	(255)	12.70	215		100	3.45	3.6	2.75
15	(225)	12.40	225		100	3.20	3.8	2.75
16	235	12.20	230		100	2.90	3.4	2.75
17	230	11.90	---		105	2.60	3.2	2.80
18	230	11.10	---		115	1.90	2.9	2.90
19	225	10.05	---		---	E	2.5	2.80
20	230	8.50			---	E	2.4	2.70
21	240	7.60					2.4	2.65
22	265	6.80					2.5	2.50
23	290	6.30					2.1	2.50

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 33

Winnipeg, Canada (49.9°N, 97.4°W) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.2	300				<1.5	(2.7)
01		4.8	340				3.0	(2.5)
02		4.8	350				3.0	2.5
03		4.9	330				2.2	2.5
04		4.6	350				<2.0	(2.5)
05		4.3	330				<1.5	2.5
06		4.5	320		---	---		2.6
07	---	5.4	290		125	1.9		2.9
08	(320)	7.0	260	---	120	2.7		2.9
09	290	8.0	240	---	110	3.0		2.9
10	280	8.9	240	---	115	3.2		2.8
11	300	9.9	230	---	110	3.5		2.8
12	300	10.5	240	---	110	3.6		2.7
13	290	11.2	240	---	110	3.6		2.7
14	280	11.0	240	5.2	115	3.5		2.7
15	280	11.8	240	---	115	3.3		2.7
16	300	11.4	250	---	120	3.0		2.7
17	(300)	11.0	260	---	120	2.8		2.7
18	---	10.6	260		130	2.2		2.8
19		9.3	260		---	1.5		2.8
20		8.2	270				<1.5	2.8
21		6.8	270				<1.5	2.8
22		5.9	280				<1.5	2.7
23		5.2	300				2.0	2.7

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 34

Graz, Austria (47.1°N, 15.5°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	6.4						
01	320	6.2						
02	320	5.9						
03	330	5.2						
04	330	5.1						
05	310	4.5						
06	270	5.1						
07	230	7.4				---		
08	210	8.8				3.1		
09	205	0	200			3.4	3.8	
10	220	0	200			3.6	3.8	
11	210	0	205			3.7	3.7	
12	210	0	210			3.6	3.7	
13	210	0	(230)			3.7	3.7	
14	210	0	210			3.6		
15	210	0	210			3.5		
16	230	0				3.3		
17	230	0				---		
18	220	11.2						
19	240	8.8						
20	250	8.0						
21	280	7.3						
22	300	6.8						
23	300	6.8						

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 35

Schwarzenburg, Switzerland (46.8°N, 7.3°E) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8						2.8
01	300	6.5						2.8
02	300	6.3						2.8
03	300	6.2						2.8
04	300	5.6						2.8
05	275	5.0						2.9
06	265	5.2						3.1
07	215	7.2			100	2.0		3.5
08	200	9.2			100	2.6		3.6
09	200	11.4			100	3.0	3.3	3.4
10	200	13.0			100	3.2		3.4
11	200	13.8			100	3.4		3.3
12	200	13.9			100	3.5		3.2
13	200	13.8			100	3.6		3.2
14	200	13.4			100	3.4		3.2
15	200	13.2			100	3.3		3.1
16	200	12.9			100	3.0		3.2
17	210	12.8			100	2.7		3.3
18	200	12.0			100	2.2		3.35
19	200	10.8						3.3
20	205	9.5						3.2
21	240	8.0						3.0
22	250	7.5						3.0
23	290	7.2						2.9

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 36

Nairobi, Kenya (1.3°S, 36.8°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		>14.2	200					(2.9)
01		>11.5	220					2.8
02		11.2	250					2.7
03		11.0	260					2.9
04		>11.2	240				1.5	3.0
05		10.0	220					3.2
06		7.1	220					3.3
07		8.2	250			---	2.6	<3.2
08	---	10.8	240			3.0		3.1
09	---	12.0	230			3.6	3.9	2.9
10	---	13.1	220			4.0		2.6
11	---	>14.0	210			4.2		2.5
12	---	15.0	200			4.3		2.4
13	---	(15.1)	(200)			---		(2.35)
14	---	(15.3)	(210)			---		(2.4)
15	(440)	>15.3	220	---		---		2.4
16	(430)	15.1	230	---		3.8		2.4
17	---	>15.0	240	---		3.3		2.3
18		---	270			2.6		---
19		---	320					
20		---	370					
21		---	290					
22		>11.6	250					
23		>13.0	220					---

Time: 45.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 37

Watheroo, W. Australia (30.3°S, 115.9°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	270				1.4	(2.80)
01		6.4	260					2.65
02		6.2	260				1.4	(2.80)
03		(5.8)	260					(2.80)
04		(5.7)	260					----
05		(5.6)	270					(2.65)
06		(5.8)	270		130	----		(2.85)
07	---	(6.5)	240	---	110	2.40		(3.10)
08	(350)	9.4	230	4.2	100	3.00	3.2	3.00
09	(260)	10.5	220	4.6	100	3.40	3.8	3.00
10	(360)	11.5	210	---	100	3.70	3.9	2.90
11	(400)	11.6	210	6.3	100	3.80	4.0	2.80
12	(320)	11.8	(220)	5.8	100	3.90	4.1	2.70
13	(350)	12.0	(220)	7.0	100	3.85	4.0	2.70
14	---	11.8	220	---	100	3.85	4.0	2.75
15	---	11.6	220	6.2	100	3.75	3.9	2.65
16	---	10.7	230	---	100	3.45	3.5	2.70
17	---	11.0	240	---	100	3.00		(2.80)
18		(9.2)	240		110	2.30		----
19		---	230				1.7	----
20		---	<250				1.7	----
21		---	250					----
22		(7.0)	260					(2.80)
23		6.8	260					2.70

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 38

Capetown, Union of S. Africa (34.1°S, 18.3°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.0	260					2.75
01		4.9	<270					2.7
02		4.6	<280					2.6
03		4.4	<270					2.6
04		4.1	<270					2.6
05		3.8	<280					2.5
06		3.6	<300					2.5
07		6.6	250			2.0		2.95
08	---	9.4	240			2.7		3.1
09	250	10.9	240			3.2		3.0
10	250	11.8	230	---		3.5	3.8	2.9
11	280	12.3	220	---		3.6	4.0	2.7
12	310	12.8	220	---		---		2.65
13	340	13.1	230	---		---		2.6
14	340	>13.0	230	---		---		2.6
15	350	12.9	240	---		---		2.6
16	---	12.8	240	---		3.6		2.6
17	---	12.3	250			3.2		2.7
18		11.8	250			2.8	3.0	2.8
19		10.9	240			2.0	2.1	2.9
20		9.9	230					2.9
21		>8.5	240					2.9
22		7.5	250					2.9
23		6.0	250					2.9

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

Table 39

Buenos Aires, Argentina (34.5°S, 58.5°W) March 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	12.0						2.8
01	270	11.4					3.8	2.9
02	250	11.5					4.7	3.0
03	220	9.4					4.8	3.0
04	240	8.0					5.0	2.6
05	300	7.5						2.6
06	240	8.8			---	---		2.9
07	210	11.2			---	---		3.1
08	210	12.2	200	---	100	4.2	4.8	3.05
09	220	13.2	200	(7.5)	100	4.4	5.3	3.0
10	280	14.0	200	(7.9)	100	4.7	6.0	2.9
11	(300)	14.5	(210)	(8.2)	---	---	6.3	2.8
12	320	14.6	(210)	(8.3)	---	---	6.3	2.8
13	350	15.1	(220)	(8.2)	---	---	6.5	2.8
14	320	15.5	220	(8.4)	---	---	6.5	2.8
15	310	15.6	220	(8.0)	---	---	6.5	2.9
16	300	15.5	220	(7.8)	---	---	5.5	3.0
17	270	15.2	220	(7.6)	---	---	6.1	3.0
18	230	15.0					5.6	3.0
19	250	(13.5)						(3.0)
20	270	(12.7)						(2.9)
21	270	(13.1)						(2.9)
22	270	13.3						2.9
23	270	12.4						2.9

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 40

Christchurch, New Zealand (43.6°S, 172.8°E) March 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.8	300				<1.8	2.5
01		7.2	300				<1.8	2.5
02		7.0	300				<1.4	2.5
03		6.7	300				2.9	2.4
04		6.1	<300				<1.9	2.5
05		5.7	290				3.0	2.6
06		6.3	260		---	2.0		2.8
07	---	8.0	250	---	105	2.7		2.9
08	---	9.8	250	---	100	3.1		2.9
09	---	10.9	240	---	105	3.4		2.9
10	---	11.6	230	---	100	3.7		2.85
11	---	11.6	230	---	105	3.8		2.8
12	---	11.4	220	---	100	3.9		2.65
13	---	11.2	230	---	100	3.9		2.6
14	---	10.9	240	---	100	3.8		2.6
15	---	10.5	240	---	100	3.5		2.65
16	---	10.1	240	---	110	3.2		2.6
17	---	9.8	250	---	110	2.8		2.7
18		10.0	260		---	2.1		2.7
19		9.9	250		---	---		2.7
20		9.3	(250)				2.6	2.6
21		8.5	(280)				3.0	2.6
22		8.2	300				3.1	2.5
23		8.0	300				2.8	2.5

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 41

Scott Base (77.8°S, 166.8°E) March 1957*

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---	(300)		---	E		
01		---	(300)		---	E	2.2	----
02		(6.0)	(320)		---	E	2.5	----
03	---	(5.9)	(300)		---	E		----
04		(6.0)	(300)		---	E	1.8	----
05		(7.2)	(290)		---	1.5	3.6	----
06		(8.5)	(300)		---	1.7	3.3	----
07	---	(5.9)	(280)		100	1.9		----
08		(6.1)	(280)		100	(2.2)		----
09		8.0	260		100	2.3		----
10		7.5	260		100	2.4		(3.10)
11		7.1	260		100	2.5		(3.00)
12	---	8.2	260		100	2.6		(3.00)
13	---	8.4	250	---	100	(2.5)	3.0	(3.00)
14	---	8.3	260	---	100	2.4		(2.95)
15	---	7.8	270	---	95	2.4		(2.90)
16	---	9.0	(280)	---	100	2.3		----
17		9.2	290		100	2.0		2.90
18		8.5	290		100	1.7		(2.90)
19		8.4	290		---	1.5		----
20		8.3	300		---	E		2.70
21		8.1	320		---	E		(2.95)
22		(6.8)	290		---	E	2.2	----
23		---	(350)		---	E		

Time: 165.0°E.
*Data observed from 1800 March 17 to March 31, inclusive.

Table 42

Buenos Aires, Argentina (34.5°S, 58.5°W) February 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	11.0						2.9
01	290	10.3						2.9
02	280	9.5					4.2	2.7
03	300	9.0					5.1	2.6
04	320	8.6					5.0	2.55
05	320	8.0						2.6
06	250	9.2						3.0
07	240	10.1	---	---	110	3.8	4.5	3.0
08	280	10.6	220	(7.5)	100	4.3	5.3	3.0
09	(300)	11.3	220	(7.4)	---	4.5	6.1	2.8
10	(300)	11.7	220	(7.4)	---	---	6.5	2.65
11	(350)	12.1	220	7.5	---	---	7.4	2.7
12	380	13.0	230	7.8	---	---	7.2	2.6
13	380	13.2	210	(7.6)	---	---	6.8	2.7
14	360	13.4	220	(7.4)	---	---	6.5	2.7
15	360	13.2	220	(7.3)	---	---	6.5	2.8
16	320	13.2	(220)	(7.0)	---	---	5.2	2.8
17	300	12.9	240	(6.8)	---	---	4.7	2.9
18	290	12.5	260	(6.3)				2.9
19	290	11.9						2.9
20	300	11.0						2.8
21	310	11.0						2.7
22	300	11.0						2.8
23	310	10.9						2.8

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 43*

Inverness, Scotland (57.4°N, 4.2°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	3.7						2.4
01	335	3.5						(2.4)
02	335	3.2						(2.3)
03	330	3.1						2.4
04	310	3.4						2.5
05	295	3.6						2.5
06	275	3.5						2.6
07	280	3.3						2.6
08	255	4.6			160	1.5		2.6
09	245	7.6			145	2.0	2.9	2.9
10	240	10.7			130	2.4	3.0	3.0
11	235	12.1			125	2.7	3.0	3.0
12	235	12.9			120	2.8	3.1	3.0
13	235	13.2			125	2.7	3.0	2.9
14	235	13.4			125	2.6	2.9	2.9
15	235	12.4			135	2.4	2.7	3.0
16	230	11.1			155	1.9	2.1	2.9
17	230	10.4			---	---		2.9
18	235	8.1						2.9
19	250	5.9						2.8
20	275	4.8						2.7
21	290	4.3						2.6
22	315	4.0						2.5
23	320	3.9						2.4

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 44*

Slough, England (51.5°N, 0.6°W) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.3					2.3	2.45
01	315	4.2					2.6	2.45
02	320	4.1					2.6	2.45
03	315	3.7					2.6	2.5
04	300	3.6					2.4	2.55
05	285	3.5					2.4	2.55
06	290	3.3					1.8	2.6
07	265	3.7					2.5	2.65
08	240	4.2			140	1.8	3.5	2.95
09	230	10.0			130	2.3	3.5	3.0
10	235	12.3			125	2.8	4.1	3.05
11	230	13.0			120	3.1	4.0	2.9
12	230	12.9			125	3.1	4.1	2.85
13	230	12.9			125	3.1	4.5	2.8
14	240	12.9			125	2.9	3.7	2.8
15	235	12.2			125	2.6	3.5	2.85
16	230	11.3			135	2.1	3.5	2.9
17	225	9.4					3.5	2.85
18	235	8.2					3.1	2.85
19	235	6.7					3.1	2.9
20	260	5.4					2.2	2.7
21	295	4.8					2.2	2.55
22	310	4.4					2.3	2.55
23	330	4.4					2.3	2.45

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 45

Tokyo, Japan (35.7°N, 139.5°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.5	310					2.60
01		4.4	300					2.65
02		4.2	305				1.5	2.60
03		4.1	285				1.5	2.70
04		3.8	270				(1.5)	2.65
05		3.4	320					2.55
06		3.7	300					2.70
07		7.1	255			2.00		3.05
08		10.5	240			2.70		3.10
09		11.9	245			3.25		3.05
10	---	12.4	245			3.45		2.90
11	275	12.8	245	---		3.65		2.80
12	(275)	12.1	250	---		3.70		2.80
13	(275)	11.7	250	---		3.60	4.2	2.75
14	275	11.4	250	---		3.30	4.0	2.75
15	(275)	11.1	250	---		3.10	3.2	2.80
16	---	10.4	250	---		2.50	2.7	2.85
17	---	9.1	245			1.80		2.85
18		8.2	245				1.8	2.85
19		7.2	250					2.90
20		6.3	240					2.85
21		5.1	260					2.75
22		4.8	300					2.60
23		4.8	320					2.65

Time: 135.0°E.
Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 46

Yamagawa, Japan (31.2°N, 130.6°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.3	275				(1.7)	2.60
01		5.7	270				(1.7)	2.65
02		5.4	270				(1.7)	2.70
03		5.0	270				(1.7)	2.65
04		4.3	255				(1.7)	2.85
05		3.8	255				(1.7)	2.60
06		3.5	300				(1.7)	2.60
07		5.6	290				(1.8)	2.70
08		10.2	245				1.8	3.10
09	---	12.2	240				3.4	3.10
10	(240)	13.0	240				3.8	3.00
11	245	12.5	240				4.0	2.90
12	240	12.6	240					2.75
13	245	12.7	240				4.2	2.70
14	250	12.4	240				4.2	2.65
15	250	12.5	240				3.8	2.70
16	250	12.3	240				(3.4)	2.70
17		11.6	245				2.6	2.80
18		10.6	235				(1.8)	2.90
19		9.4	230				(1.8)	2.80
20		9.2	235				(1.8)	2.80
21		8.5	230				(1.7)	2.80
22		7.3	240				(1.7)	2.75
23		6.7	250				(1.7)	2.65

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 47

Brisbane, Australia (27.5°S, 152.9°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.4	295				(3.4)	2.55
01		8.5	280				(3.4)	2.55
02		8.1	300				(1.8)	2.45
03		7.8	300				(2.8)	2.45
04		7.5	295			E	(2.0)	2.45
05		7.3	300			<1.3		2.55
06		7.8	250	---		2.7	2.9	2.70
07	(450)	7.6	230	4.9		3.4	3.8	2.65
08	495	8.2	230	5.5		3.8	4.4	2.50
09	505	9.0	220	5.9		4.0	4.7	2.45
10	460	9.5	220	6.0		>4.2	4.6	2.40
11	420	10.1	<230	6.3		4.4	4.8	2.40
12	410	10.6	230	6.4		4.4	5.0	2.45
13	410	10.9	230	6.3		4.3	4.5	2.45
14	400	10.8	230	6.1		4.3	4.4	2.45
15	390	10.2	230	5.9		4.0	4.4	2.45
16	(450)	9.7	240	5.6		3.7	4.4	2.50
17	---	9.0	245	---		3.2	4.4	2.55
18		8.5	260			2.5	3.6	2.50
19		8.4	290			E	(3.3)	2.45
20		8.6	310			E	(2.8)	2.45
21		9.0	325				(2.8)	2.45
22		9.0	330				(3.2)	2.45
23		9.5	310				(3.0)	2.45

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

Table 48*

Inverness, Scotland (57.4°N, 4.2°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	3.4						2.3
01	340	2.9						2.3
02	335	3.0						2.3
03	330	3.2						2.4
04	305	3.1						2.4
05	285	3.2						2.5
06	265	3.2					2.7	2.6
07	265	3.1						2.6
08	260	4.9			---	(1.4)	2.2	2.6
09	240	8.2			(150)	2.0	2.9	2.9
10	240	11.6			130	2.3	3.0	2.9
11	235	13.2			130	2.6	2.8	3.0
12	235	14.4			125	2.7	2.9	3.0
13	235	14.4			130	2.6	2.9	2.9
14	235	14.6			130	2.4	2.9	2.9
15	230	14.2			140	2.1	2.6	3.0
16	225	12.4			---	1.6		2.9
17	225	10.6					2.4	2.9
18	225	8.2						2.9
19	245	5.7						2.7
20	275	4.6						2.6
21	310	3.9						2.5
22	335	3.6						2.4
23	335	3.5						2.4

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 49*

Slough, England (51.5°N, 0.6°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.3					2.6	2.45
01	315	4.0					2.6	2.45
02	315	3.8					2.6	2.45
03	305	3.6					2.5	2.5
04	290	3.7					2.5	2.55
05	275	3.6					2.3	2.6
06	275	3.3					2.4	2.6
07	265	4.1					2.9	2.55
08	240	7.6			150	1.8	3.3	2.9
09	230	11.2			130	2.3	3.6	3.0
10	225	13.7			125	2.8	4.0	2.95
11	230	14.5			125	2.9	4.3	2.9
12	230	14.7			125	3.0	4.2	2.05
13	230	14.2			130	3.0	3.0	2.0
14	235	14.0			125	2.7	3.9	2.8
15	230	13.5			130	2.3	3.5	2.85
16	230	12.5			(155)	1.7	3.3	2.9
17	230	10.5					3.3	2.9
18	225	8.8					3.5	2.9
19	235	6.6					3.2	2.9
20	260	5.1					2.4	2.65
21	300	4.5					2.4	2.5
22	320	4.5					2.6	2.45
23	330	4.5					2.5	2.45

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 50*

Singapore, British Malaya (1.3°N, 103.8°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	10.4					1.3	2.4
01	305	10.6						2.4
02	300	10.5						2.5
03	290	9.7						2.6
04	270	8.9						2.7
05	260	7.7						2.0
06	285	7.2				1.7	2.6	2.6
07	260	8.8			125	2.8		2.7
08	245	9.9			115	3.5		2.4
09	240	10.7			110	3.9	4.0	2.1
10	235	11.4			110	4.1		2.0
11	230	12.0			110	4.2	4.2	1.9
12	225	12.6	(215)		110	4.3		1.9
13	230	12.8	(210)		110	4.3		1.9
14	235	12.8	(215)		110	4.1		1.9
15	235	12.7	(220)		110	3.8		1.9
16	245	>12.7			115	3.4		1.9
17	270	12.6			120	2.0	3.6	2.0
18	315	11.8			(170)	1.8	3.9	1.9
19	400	11.5					3.4	1.9
20	420	11.5					2.9	1.9
21	370	>11.5					2.8	2.1
22	310	11.4					2.9	2.2
23	275	10.6					2.9	2.3

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 51*

Falkland Is. (51.7°S, 57.8°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	355	10.0					3.1	2.2
01	340	10.3					2.6	2.3
02	335	10.0					2.7	2.3
03	355	9.9					2.7	2.2
04		10.5	300		145	1.9	3.1	2.2
05		11.3	265		110	2.6	3.9	2.2
06	(455)	11.0	250		105	3.1	5.4	2.2
07	440	11.0	250	(5.7)	100	3.5	5.7	2.2
08	435	11.6	(240)	(5.8)	100	3.7	6.9	2.2
09	435	11.4	(240)	6.1	100	3.9	7.2	2.3
10	440	11.0	(235)	6.1	100	4.0	5.9	2.3
11	440	10.0	(225)	6.1	100	4.0	5.9	2.3
12	450	10.4	240	6.1	100	4.1	5.8	2.3
13	445	9.0	240	6.1	100	4.1	5.7	2.3
14	445	9.3	(245)	6.1	100	4.1	6.4	2.4
15	445	8.9	(245)	5.9	100	3.9	6.8	2.4
16	420	0.5	(250)	(5.7)	100	3.7	6.4	2.5
17		8.6			105	3.4	7.4	2.5
18		8.3			110	2.9	6.5	2.5
19		0.3			125	2.2	5.0	2.5
20	(305)	8.6					5.3	2.3
21	345	9.2					4.6	2.2
22	350	9.7					3.1	2.2
23	350	10.1					3.1	2.2

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 52*

Inverness, Scotland (57.4°N, 4.2°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	4.7						(2.3)
01	365	4.4						(2.3)
02	345	4.5					2.0	(2.4)
03	340	4.6						(2.4)
04	320	4.6						2.4
05	310	4.2						2.4
06	290	4.3						(2.4)
07	285	4.4						(2.4)
08	260	6.1			135	1.8		2.7
09	255	9.2			125	2.3		2.8
10	250	11.8			120	2.6		2.9
11	245	13.3			120	2.8		2.8
12	240	14.1			115	2.9	2.7	2.8
13	240	14.2			120	2.9	2.7	2.8
14	245	14.0			130	2.6	2.8	2.8
15	240	13.7			135	2.3	2.7	2.9
16	240	12.9			155	1.9	2.4	2.9
17	245	11.6						2.9
18	235	8.2						2.0
19	260	6.0						2.6
20	290	5.8						2.6
21	290	5.2						2.4
22	315	4.7						2.4
23	330	4.6						(2.4)

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 53*

Slough, England (51.5°N, 0.6°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	325	4.7					2.6	2.4
01	340	4.6					3.0	2.35
02	335	4.6					3.0	2.4
03	315	4.3					3.0	2.45
04	305	4.3					3.0	2.55
05	290	3.7					2.7	2.5
06	295	3.7					2.9	2.5
07	265	5.7			155	1.7	3.1	2.65
00	245	9.0			135	2.1	3.5	2.9
09	240	12.0			125	2.7	3.8	2.9
10	240	13.9			125	2.9	3.0	2.9
11	240	14.5			125	3.1	4.1	2.0
12	240	14.6			125	3.2	3.8	2.75
13	235	14.2			125	3.2	3.8	2.75
14	240	13.9			125	2.9	3.6	2.75
15	240	13.6			130	2.5	3.7	2.75
16	240	12.9			130	1.9	3.4	2.8
17	235	11.4					3.5	2.8
18	235	9.4					3.2	2.85
19	245	7.3					3.0	2.7
20	255	6.0					2.2	2.55
21	235	5.6					2.3	2.5
22	295	5.2					2.4	2.45
23	320	4.9					2.4	2.4

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 54*

Singapore, British Malaya (1.3°N, 103.0°E) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	11.4						2.5
01	280	11.4						2.5
02	280	10.9						2.6
03	275	9.8						2.6
04	265	9.1						2.7
05	250	7.8						2.8
06	275	0.3				1.9	2.5	2.7
07	255	10.3			120	3.0		2.7
08	245	11.6			115	3.6		2.4
09	240	12.0			110	3.9		2.1
10	235	12.6	(230)		110	4.2		2.0
11	(230)	12.9	(220)		110	4.2		1.9
12	(225)	12.0	(215)		110	4.3		1.9
13	(230)	12.7	(210)		110	4.2		1.9
14	(240)	13.0	(220)		110	4.1		1.9
15	245	>13.4	(230)		110	3.8	3.0	2.0
16	250	13.3			115	3.3		2.0
17	275	13.1			130	2.7	4.0	2.0
18	330	13.0				1.6	4.2	1.9
19	400	12.8					3.0	1.9
20	390	>13.4					2.2	(2.1)
21	325	13.6					2.5	2.3
22	270	>12.6					1.7	(2.4)
23	255	>11.2						2.4

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 55*

Falkland Is. (51.7°S, 57.8°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	9.6					2.0	2.3
01	335	9.5					1.9	2.3
02	340	9.2						2.3
03	360	9.0						2.2
04	365	9.5	330		(165)	1.8	2.2	2.2
05	(425)	10.4	270	(4.3)	115	2.3	3.2	(2.2)
06	515	11.1	255	4.9	105	2.9	3.7	(2.2)
07	460	11.3	250	5.7	100	3.3	4.5	(2.3)
08	480	11.2	245	5.8	100	3.7	4.6	2.3
09	470	11.5	245	6.0	100	3.9	5.1	2.3
10	460	11.5	240	6.2	100	4.0	5.5	2.3
11	460	11.6	240	6.4	100	4.0	5.2	2.3
12	460	11.5	240	6.3	100	4.0	5.0	2.4
13	430	11.5	245	6.2	100	4.0	4.6	2.4
14	430	10.8	240	6.1	100	3.9	4.8	2.5
15	(425)	9.9	250	(6.1)	105	3.7	4.6	2.5
16	(395)	9.8	250		105	3.4	3.6	2.5
17		9.7	255		110	3.1	4.0	2.6
18	(265)	9.2	265		120	2.5	3.8	2.6
19	290	8.8			145	1.9	4.2	2.5
20	320	9.0					3.6	2.3
21	345	9.2					3.1	2.2
22	350	9.5					2.9	2.2
23	345	9.8					2.3	2.3

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 56*

Inverness, Scotland (57.4°N, 4.2°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.6						2.4
01	325	5.2						2.5
02	330	5.2					2.3	2.5
03	335	4.8					1.2	2.5
04	315	4.8					2.5	(2.5)
05	285	4.5					2.5	2.5
06	275	4.5			---	---	2.0	(2.6)
07	255	6.1			145	1.8	2.7	2.9
08	245	8.3			120	2.3	3.1	3.0
09	245	10.0			115	2.7		3.0
10	240	11.8			110	3.0		2.9
11	245	12.4	(245)	(4.8)	110	3.1		2.8
12	245	13.2	---	---	110	3.2		2.8
13	250	13.3			110	3.1		2.8
14	250	13.2			115	3.0		2.8
15	245	12.8			115	2.7		2.8
16	245	12.4			125	2.4		2.8
17	240	11.6			135	1.9	2.5	2.9
18	240	10.8			---	---		2.9
19	245	9.2						2.8
20	250	7.6						2.7
21	270	6.5						2.5
22	290	6.0						2.5
23	300	5.8						2.4

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 57*

Slough, England (51.5°N, 0.6°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.3					2.3	2.45
01	310	6.0					2.6	2.45
02	305	5.8					2.5	2.5
03	310	5.5					2.6	2.45
04	290	5.2					2.7	2.55
05	275	4.8					2.9	2.55
06	275	5.2			(165)	(1.6)	3.2	2.6
07	250	7.9			135	2.0	3.2	2.9
08	245	10.3	(250)		125	2.6	3.5	2.95
09	245	12.2	(245)		120	2.9	3.9	2.9
10	245	13.1	(235)		115	3.1	4.2	2.8
11	250	13.5	(245)	(5.1)	120	3.3	4.1	2.75
12	240	13.6	(245)	(5.2)	120	3.3	4.2	2.7
13	245	13.4	(240)		120	3.3	3.5	2.7
14	250	13.2			120	3.2	3.5	2.7
15	250	12.9			120	2.9	3.5	2.75
16	245	12.8			125	2.4	3.5	2.8
17	240	11.9			135	1.9	3.2	2.8
18	240	10.5					3.2	2.9
19	240	9.2					3.1	2.8
20	245	8.1					2.6	2.7
21	270	7.0					2.6	2.55
22	285	6.8					2.3	2.55
23	300	6.5					2.5	2.5

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 58*

Singapore, British Malaya (1.3°N, 103.8°E) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	11.4					1.7	2.5
01	260	>11.4					1.8	2.6
02	255	10.8					2.4	2.7
03	245	10.2						2.8
04	240	9.4					1.0	3.0
05	235	7.6					1.0	3.1
06	265	8.2				1.9	1.9	2.9
07	250	11.0			125	2.9	3.0	2.8
08	240	11.9			115	3.5	3.8	2.5
09	235	12.8	(225)		110	3.8	4.2	2.2
10	(240)	13.0	220		110	4.1	4.4	2.0
11		>13.0	(210)		110	4.2		(1.9)
12		12.3	205		110	4.2		1.9
13		12.6	205		110	4.2		2.0
14		13.0	210		110	4.0		2.0
15	(240)	13.4	210		110	3.6		2.0
16	245	13.7			115	3.2		2.0
17	265	13.6			120	2.6	3.1	2.0
18	310	13.5				1.6	2.9	2.0
19	410	13.4						(1.9)
20	375	>12.7					2.3	---
21	305	>12.8					2.5	---
22	250	>12.6					2.9	---
23	225	>11.4					2.8	(2.4)

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 59*

Falkland Is. (51.7°S, 57.8°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	325	9.0						2.4
01	325	8.8						2.4
02	320	8.6						2.4
03	310	8.4						2.4
04	310	8.2						2.4
05	265	8.9			150	1.7		2.5
06	240	10.2	(250)		120	2.4	3.2	2.7
07	240	11.6	235		110	3.0	3.8	2.7
08	(240)	12.9	235		105	3.3	4.1	2.7
09		13.6	230		105	3.6	4.4	2.6
10		13.9	230		105	3.7	4.5	2.6
11		14.0	225		105	3.8	4.6	2.6
12		14.0	230		105	3.8	4.4	2.6
13		13.6	235		100	3.7	3.8	2.6
14		13.4	230		105	3.6		2.6
15		12.5	240		105	3.4	3.0	2.6
16	250	12.1	245		105	3.1		2.7
17	250	11.2	(250)		115	2.6	3.1	2.7
18	255	10.6			135	1.9	2.8	2.8
19	260	10.1					2.1	2.7
20	270	9.2						2.6
21	280	9.0						2.5
22	305	9.0						2.4
23	320	9.0						2.4

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 60*

Port Lockroy (64.8°S, 63.5°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---						---
01	---	---						---
02	---	---						---
03	---	---						---
04	---	---						---
05	---	---						---
06	---	---						---
07	---	---						---
08	---	---			---	(2.4)		---
09	---	9.9	230	(5.1)	(115)	2.8	4.0	---
10	(260)	10.6	230	(4.9)	(115)	3.1	4.2	3.1
11		11.9	235	(5.0)	(115)	3.1	4.8	3.0
12		12.2	235		(115)	3.2	4.4	2.9
13		12.0	235		(110)	3.2		2.9
14		11.8	235		110	3.1		---
15		(11.1)	235		(115)	2.7	5.0	---
16		(10.5)	240		120	2.6		---
17		(10.2)	240		130	2.2		---
18	240	(9.3)			(135)	1.8		---
19	240	(8.4)					1.2	---
20	240	(7.9)						---
21	(255)	(7.3)						---
22	(285)	(6.4)						---
23	(245)	(5.8)						---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 61*

Slough, England (51.5°N, 0.6°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	6.5					2.8	2.45
01	310	6.2					2.9	2.45
02	310	5.7					3.0	2.45
03	305	5.3					3.1	2.5
04	305	>5.0					3.1	2.5
05	305	5.3	275	3.7	130	1.7	3.3	2.7
06	305	6.3	255	4.0	125	2.4	3.6	2.85
07	320	7.2	245	4.5	125	2.9	4.6	2.8
08	345	7.5	240	5.0	115	3.2	5.0	2.8
09	350	7.8	235	5.4	115	3.4	4.9	2.7
10	350	7.8	235	5.4	115	3.5	5.0	2.7
11	375	8.0	225	5.6	115	3.7	5.0	2.7
12	375	7.8	225	5.6	115	3.7	5.0	2.65
13	375	7.9	230	5.7	115	3.7	4.8	2.65
14	370	7.8	235	5.6	115	3.6	4.3	2.65
15	350	8.0	240	5.4	115	3.6	3.6	2.65
16	335	8.2	245	5.2	115	3.3	4.4	2.7
17	300	8.2	250	4.6	115	2.9	4.6	2.7
18	285	8.4	260	4.1	120	2.5	4.4	2.75
19	275	8.5			(130)	(1.9)	3.7	2.8
20	270	8.0					3.9	2.7
21	265	7.6					3.0	2.7
22	285	7.2					2.8	2.55
23	305	6.8					3.0	2.5

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 62*

Ibadan, Nigeria (7.4°N, 4.0°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	345	---					4.3	---
01	320	---					4.6	---
02	290	(7.6)					5.0	---
03	265	(5.4)					5.4	(3.2)
04	235	(5.6)					5.5	3.3
05	230	(4.2)					5.2	3.3
06	255	7.5			130	2.1	7.0	3.1
07		10.5	235		119	3.0	9.6	3.1
08		12.4	220		116	3.5	12.8	3.0
09		12.8	210		(112)	3.9	14.0	2.7
10		12.9	205			4.1	15.0	2.2
11		12.6	205			4.2	15.3	2.2
12		11.5	205			4.2	15.0	2.1
13		11.3	200			4.2	15.0	2.1
14		11.0	200		(111)	4.0	14.4	2.1
15		11.0	205		(115)	3.6	13.2	2.1
16		11.2	215		(114)	3.3	11.1	2.2
17	250	11.9			(117)	2.7	8.4	2.2
18	290	11.2			141	1.7	6.8	2.2
19	390	(10.3)					4.6	(2.1)
20	390	(9.4)					2.0	---
21	370	---					2.7	---
22	370	---					3.6	---
23	360	---					3.0	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 63*

Singapore, British Malaya (1.3°N, 103.8°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	10.8					3.3	2.9
01	230	9.4					2.9	3.0
02	230	8.1					2.3	2.9
03	240	7.0					2.6	3.0
04	245	6.0					1.5	2.9
05	245	5.3					1.9	3.0
06	280	5.8				1.5	2.4	2.9
07	255	9.8			120	2.6	3.5	2.9
08	(270)	12.4	245		110	3.3	3.6	2.8
09	(290)	13.4	225		110	3.7	4.6	2.6
10	(300)	13.9	215		105	3.9	4.4	2.4
11	(330)	13.6	210		110	4.1	4.4	2.2
12	(320)	11.8	205		110	4.1		2.0
13		11.7	200		110	4.1		1.9
14		11.2	205		110	4.0		1.9
15		11.2	210		110	3.7		1.9
16		11.2	220		110	3.3	3.4	2.0
17	250	11.5	(230)		120	2.8	3.4	2.1
18	280	11.6				2.1	2.5	2.2
19	330	>11.8					2.9	2.2
20	330	>12.8					1.7	(2.4)
21	260	>13.5					2.0	(2.7)
22	230	13.1					2.8	2.9
23	215	11.6					3.2	2.9

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 64*

Falkland Is. (51.7°S, 57.8°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	345	4.2						2.4
01	345	4.0						2.4
02	335	3.8						2.4
03	325	3.9						2.5
04	310	3.9						2.6
05	260	3.6					2.0	2.7
06	260	3.6						2.8
07	235	5.8			160	1.8	2.0	3.1
08	225	8.0			130	2.2	3.0	---
09	225	>8.5			115	2.7	3.9	---
10	235	>9.4			110	3.1	4.2	(3.3)
11	235	9.5			110	3.2	4.8	(3.1)
12	245	10.6	235		105	3.3	4.8	3.1
13	235	9.6	230		105	3.3	4.7	3.1
14	245	9.0			110	3.1	4.9	---
15	230	8.3			115	2.7	4.2	(3.3)
16	230	7.2			135	2.2	3.1	---
17	225	6.2					3.0	(3.2)
18	230	5.0					2.5	3.2
19	240	4.4					2.5	3.1
20	240	3.9					2.4	2.8
21	275	3.7					2.5	2.6
22	305	3.9					2.1	2.5
23	330	4.2						2.4

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 65*

Slough, England (51.5°N, 0.6°W) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.7					2.8	2.5
01	300	6.4					2.9	2.55
02	295	6.1					3.0	2.55
03	290	5.6					3.1	2.55
04	310	5.3	(290)	(3.5)	125	1.5	3.2	2.6
05	345	6.0	260	3.8	125	2.0	3.7	2.65
06	350	6.4	245	4.3	115	2.6	3.9	2.7
07	365	6.5	230	4.6	115	3.0	4.4	2.75
08	370	6.9	245	5.0	115	3.3	4.7	2.7
09	375	7.0	240	5.1	115	3.5	5.0	2.7
10	390	7.3	225	5.3	110	3.6	5.3	2.65
11	380	7.3	225	5.4	110	3.7	5.0	2.65
12	395	7.1	220	5.5	110	3.8	5.0	2.7
13	390	7.2	220	5.4	110	3.7	5.0	2.65
14	395	7.1	225	5.4	115	3.7	4.7	2.65
15	375	7.1	230	5.3	115	3.6	4.8	2.7
16	360	7.1	240	5.2	115	3.4	4.7	2.7
17	335	7.3	245	4.8	115	3.1	4.4	2.75
18	310	7.6	250	4.3	120	2.7	4.7	2.8
19	285	7.6	260	3.8	120	2.2	3.7	2.8
20	270	7.6			(155)	(1.7)	3.2	2.8
21	270	7.5					3.3	2.65
22	290	7.3					2.7	2.6
23	300	7.2					2.8	2.6

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 66*

Ibadan, Nigeria (7.4°N, 4.0°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	380	---					4.7	---
01	360	---					5.8	---
02	340	(5.1)					5.6	---
03	305	(5.1)					6.0	3.1
04	270	(4.6)					5.7	3.3
05	250	(3.8)					6.9	3.1
06	250	(7.4)			(126)	1.9	>8.8	3.0
07		9.8	235		120	2.9	10.5	3.0
08		11.2	220		117	3.4	13.0	2.9
09		11.7	215		116	3.8	15.0	2.6
10		11.8	205		114	3.9	15.0	2.4
11		11.6	205		113	4.1	15.0	2.2
12		10.6	200		113	4.1	15.0	2.2
13		10.4	200		113	4.0	15.0	2.2
14		10.0	205		115	3.8	15.0	2.2
15		10.2	210		117	3.7	13.9	2.3
16		10.5	215		119	3.3	12.7	2.3
17	(245)	10.9	245		129	2.7	7.0	2.3
18	275	10.5			(151)	1.8	6.8	2.3
19	345	(9.7)					5.0	2.3
20	370	(8.8)						---
21	420	---						---
22	425	---					2.3	---
23	400	---					4.4	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 67*

Falkland Is. (51.7°S, 57.8°W) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	2.0					2.6	2.5
01	340	2.8					2.0	2.6
02	330	2.8						2.6
03	325	2.8						2.6
04	300	2.0						2.7
05	275	2.6					2.2	2.8
06	250	2.5						2.9
07	255	2.9					2.2	---
08	215	5.2			155	1.9	2.7	---
09	215	(6.0)			120	2.2	3.5	---
10	225	7.5			120	2.5	4.2	(3.4)
11	225	(7.8)			115	(2.7)	4.0	(3.3)
12	230	0.2			(115)	2.8	4.4	---
13	230	0.0			(120)	---	4.5	---
14	230	7.5			120	2.6	4.2	---
15	225	7.7			(130)	2.2	3.6	(3.5)
16	215	5.7			---	(2.0)	2.6	(3.5)
17	215	4.4					2.4	3.2
18	235	3.9						3.2
19	240	3.3					2.3	3.2
20	255	2.8					2.4	2.0
21	---	2.5					2.4	2.6
22	335	2.6					2.4	2.5
23	370	2.7					2.4	2.6

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 68*

Port Lockroy (64.8°S, 63.5°W) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	2.3					4.0	---
01	340	2.3					2.7	---
02	340	2.4					2.0	---
03	330	2.4					4.7	---
04	315	2.4					2.7	---
05	290	2.3					4.4	---
06	255	(2.4)			(195)	(1.0)	5.3	---
07	260	(2.3)			(175)	(1.0)	5.4	---
08	250	(2.6)			(165)	(1.2)	4.7	---
09	225	(4.6)			(140)	1.3	5.6	---
10	215	(5.8)			(125)	1.0	5.5	---
11	220	(6.4)			135	2.0	5.5	---
12	215	(6.6)			135	2.1	5.6	---
13	220	7.4			(150)	2.1	5.5	---
14	210	(6.8)			(140)	1.9	5.5	---
15	220	(6.3)				1.8	5.5	---
16	215	(5.4)				1.3	4.6	---
17	225	(4.4)					4.4	---
18	220	3.2					3.4	---
19	280	2.2					2.8	---
20	320	2.0					2.1	2.5
21	325	2.0					2.6	2.4
22	345	2.2					2.9	2.5
23	340	2.3					2.2	---

Time: 60.0°W.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 69*

Ibadan, Nigeria (7.4°N, 4.0°E) April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(9.8)						---
01	295	(9.4)						(2.8)
02	270	(8.5)					4.0	2.9
03	250	(7.8)					4.0	2.8
04	250	6.0					4.0	3.2
05	250	4.4					5.0	3.2
06	255	7.9			138	2.0	(6.0)	3.0
07		11.0	245		117	2.9	7.0	2.9
08		12.9	225		112	3.4	10.5	2.7
09		13.6	220		110	3.8	13.2	2.4
10		13.6	210		108	4.0	14.0	2.2
11		12.8	205		108	4.1	14.0	2.2
12		12.6	205		108	4.1	14.0	2.2
13		12.4	200		109	4.1	14.0	2.1
14		12.6	205		110	3.9	13.6	2.1
15		12.6	210		110	3.5	13.0	2.1
16		12.5	235		111	3.2	10.7	2.1
17		(13.1)	255		122	2.6	6.0	2.1
18	305	>11.9			140	1.6	3.8	2.0
19	420	(10.3)						(1.8)
20	440	(9.8)						(1.9)
21	400	(9.3)						---
22	355	(9.6)						---
23	325	(9.5)						---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 70

Casablanca, Morocco (33.6°N, 7.6°W) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	7.80						2.60
01	<290	7.75						2.70
02	<280	7.20						2.75
03	<260	6.85						2.90
04	<255	6.30						2.80
05	<255	5.40						2.75
06	<270	4.90						2.80
07	250	6.40	---	----	130	1.90		3.05
08	240	9.00	240	3.50	115	2.60		3.25
09	250	10.00	230	4.00	110	3.10		3.15
10	255	11.30	225	(5.20)	110	3.40		3.10
11	265	11.60	225	(4.90)	105	3.60		3.00
12	270	12.00	230	(5.10)	110	(3.70)		2.90
13	295	12.10	230	----	110	(3.65)		2.90
14	290	12.00	235	----	110	(3.70)		2.90
15	(265)	12.00	235	----	110	(3.60)		2.90
16	(260)	11.70	240	----	115	3.30		2.90
17	265	11.10	240	----	115	2.90	3.5	3.00
18	250	11.00	---	----	130	2.00	3.3	3.05
19	235	9.40					2.5	3.10
20	<250	8.40					2.1	2.75
21	<275	8.30						2.65
22	<280	8.20						2.80
23	<285	8.00						2.70

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 71*

Ibadan, Nigeria (7.4°N, 4.0°E) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.5					1.7	(2.8)
01	260	(9.5)					3.8	(2.9)
02	255	9.3					3.8	(2.9)
03	250	8.4						(3.0)
04	245	7.1					1.8	(3.4)
05	240	(4.3)					3.6	(3.4)
06	260	6.7			145	1.8	6.5	(3.1)
07		10.2	245		120	2.8	8.8	3.0
08		12.0	230		115	3.3	11.2	2.7
09		12.7	220		110	3.7	14.0	2.3
10		12.3	210		110	3.9	14.6	2.2
11		11.9	205		110	4.1	14.5	2.2
12		12.2	205		110	4.1	14.0	2.2
13		12.4	205		110	4.0	14.0	2.2
14		12.6	205		110	3.8	13.5	2.2
15		12.9	215		110	3.6	13.2	2.1
16		13.0	230		115	3.2	10.8	2.2
17		12.8	255		125	2.6	6.8	2.0
18	305	>11.1			(170)	1.5	4.2	(1.9)
19	430	(9.3)						(1.8)
20	415	---						---
21	365	(8.8)						---
22	315	---						---
23	285	---						---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.
*Average values except foF2 and fEs, which are median values.

Table 72

Leopoldville, Belgian Congo (4.3°S, 15.3°E) March 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M2000)F2
00	235	5.4						2.4
01	250	4.6						2.2
02	250	4.5						2.4
03	235	3.4					1.8	2.6
04	235	2.8					2.1	2.7
05	245	3.6					2.1	2.6
06	240	6.2	230	---	120	2.2	3.1	2.75
07	260	7.1	225	---	110	2.8	3.6	2.6
08	280	7.8	220	4.3	110	3.1	3.8	2.4
09	310	8.6	210	4.5	110	3.4	4.0	2.1
10	350	9.8	210	4.6	110	3.6	4.0	2.1
11	370	10.8	200	4.6	110	3.6		2.1
12	360	12.1	220	4.6	110	3.6		2.1
13	320	13.2	220	4.5	110	3.4	4.0	2.2
14	310	>13.1	220	4.4	110	3.2	3.8	2.2
15	310	12.8	225	---	110	3.0	3.6	2.2
16	305	12.7	240	---	115	2.4	3.4	2.2
17	260	>13.0	250	---	---	---	2.6	2.3
18	250	>13.0					2.2	2.3
19	230	12.6						<2.5
20	210	11.8						2.6
21	210	9.3						2.5
22	220	7.8						2.55
23	230	6.0						2.4

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

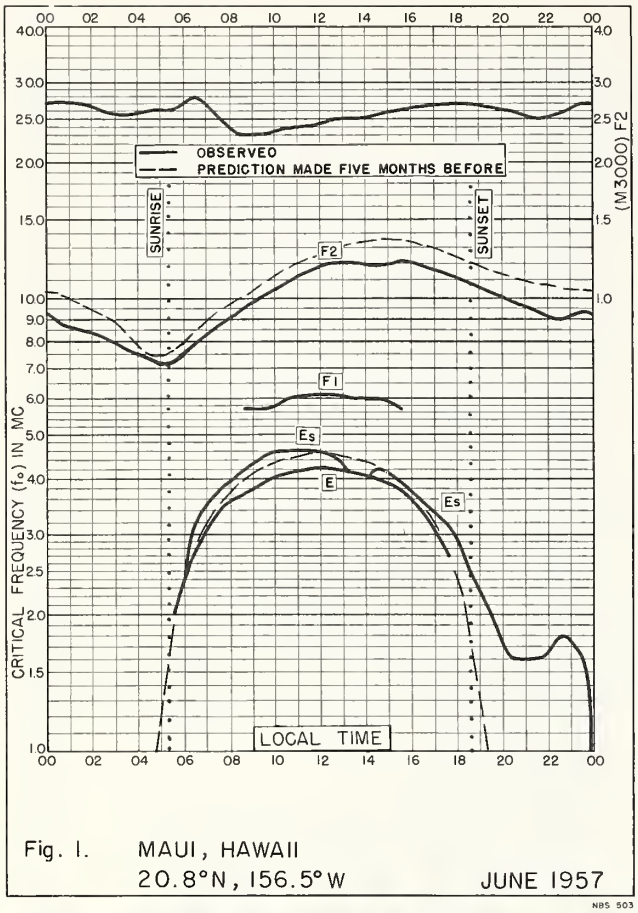


Fig. 1. MAUI, HAWAII
20.8°N, 156.5°W JUNE 1957

NBS 503

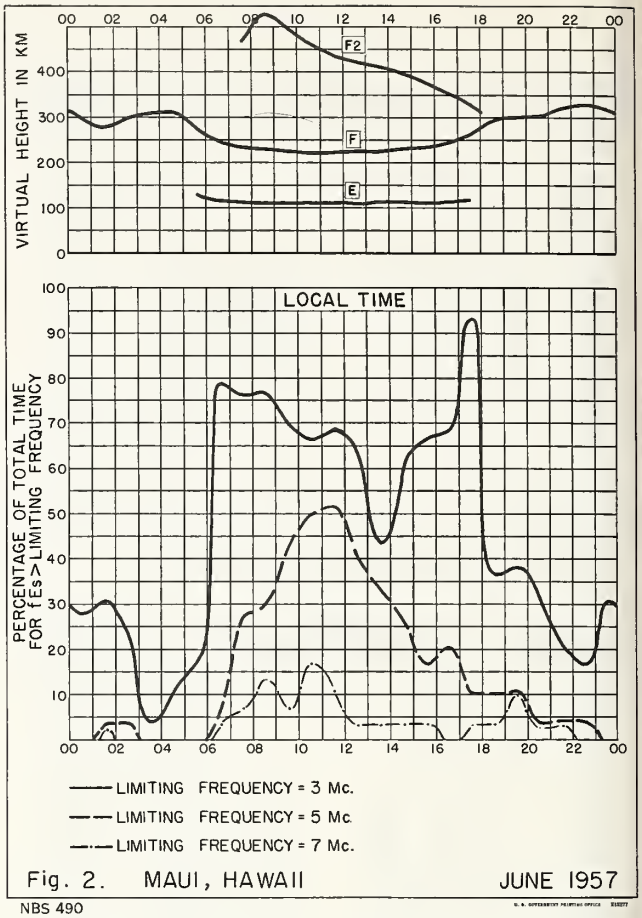


Fig. 2. MAUI, HAWAII JUNE 1957

NBS 490

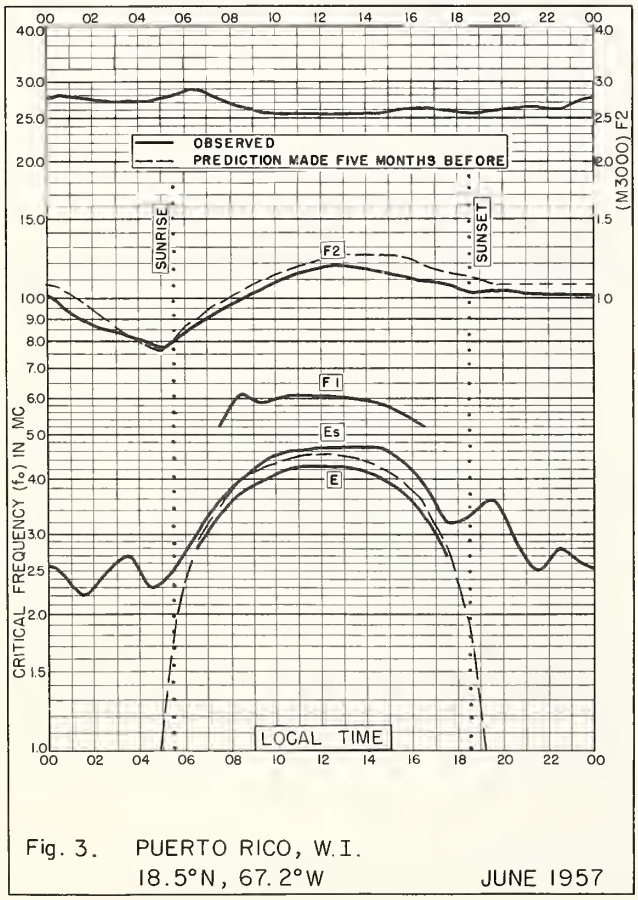


Fig. 3. PUERTO RICO, W.I.
18.5°N, 67.2°W JUNE 1957

NBS 503

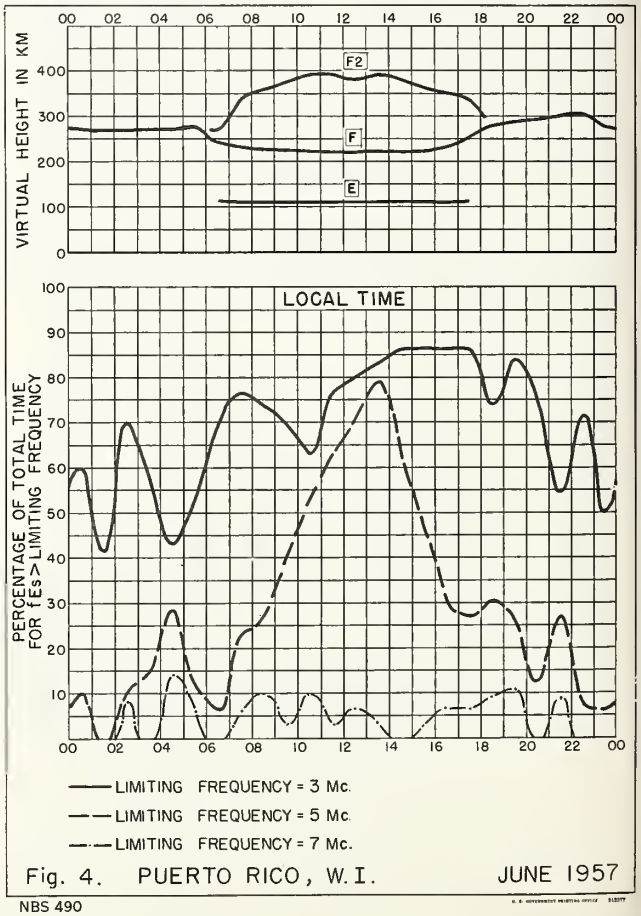


Fig. 4. PUERTO RICO, W.I. JUNE 1957

NBS 490

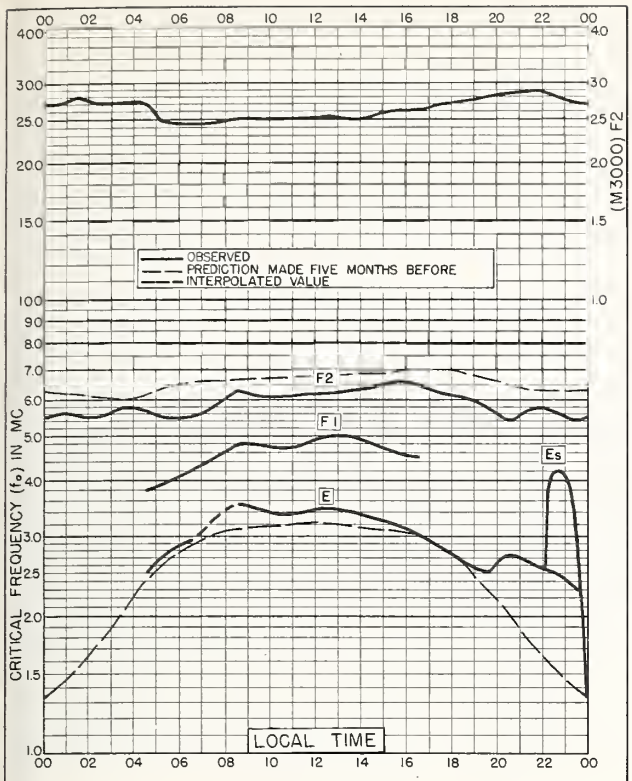


Fig. 5. POINT BARROW, ALASKA
71.3°N, 156.8°W MAY 1957

NBS 503

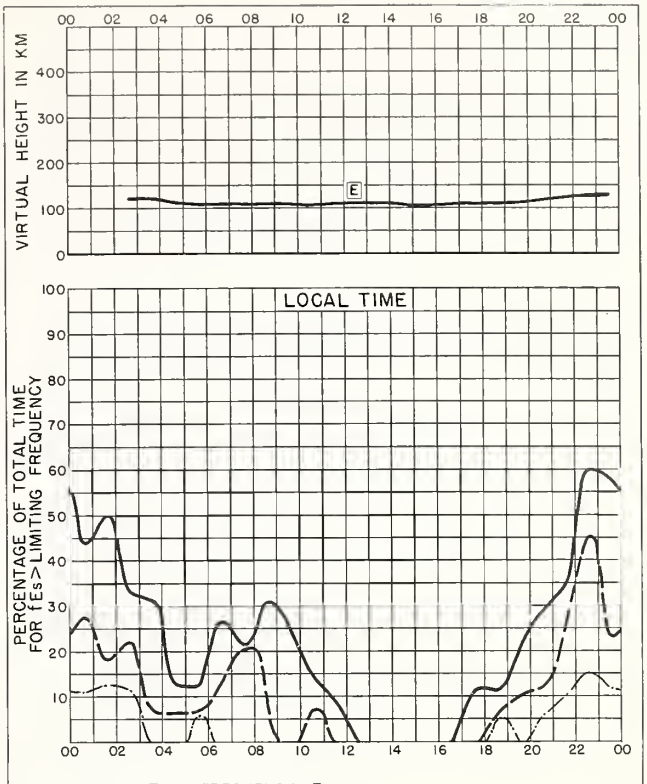


Fig. 6. POINT BARROW, ALASKA MAY 1957

NBS 490

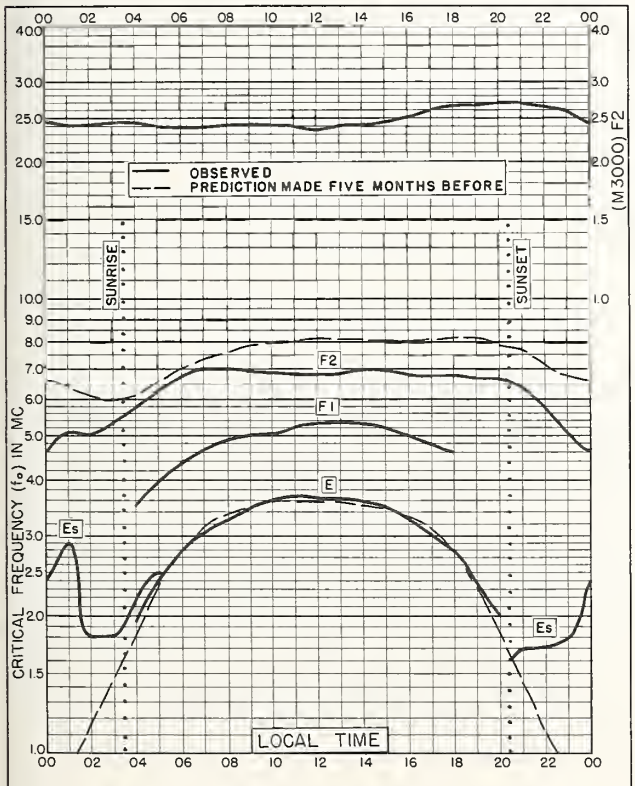


Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W MAY 1957

NBS 503

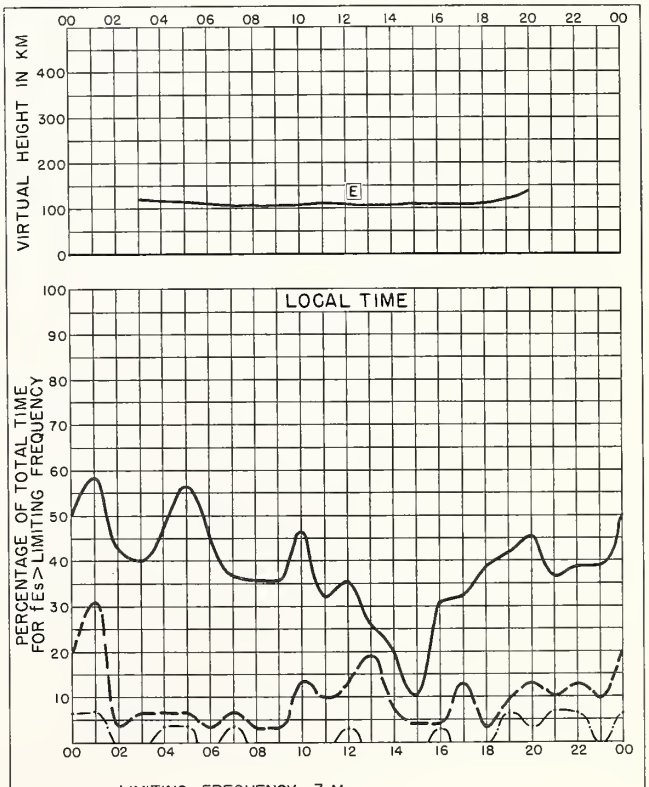


Fig. 8. ANCHORAGE, ALASKA MAY 1957

NBS 490

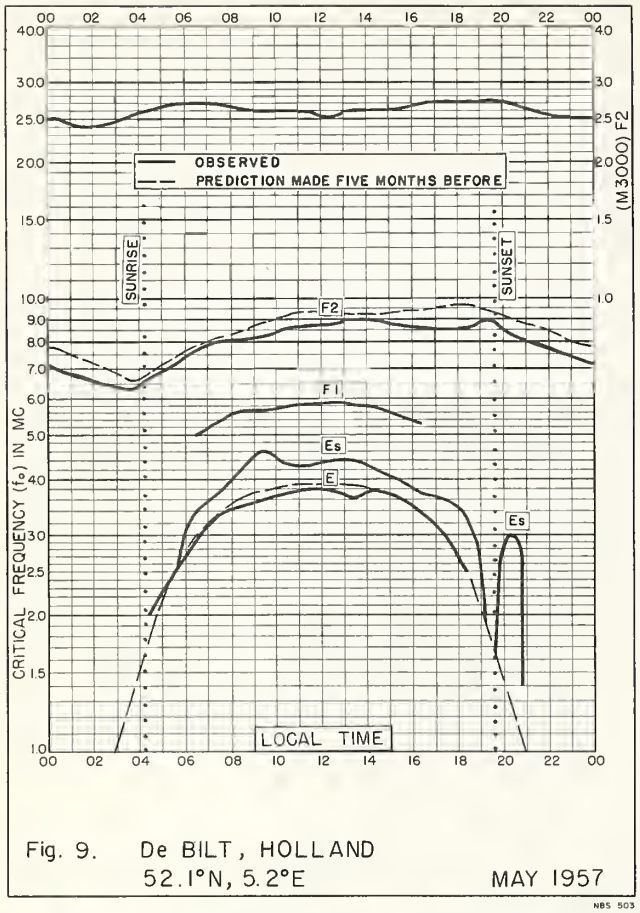


Fig. 9. De BILT, HOLLAND
52.1°N, 5.2°E MAY 1957

NBS 503

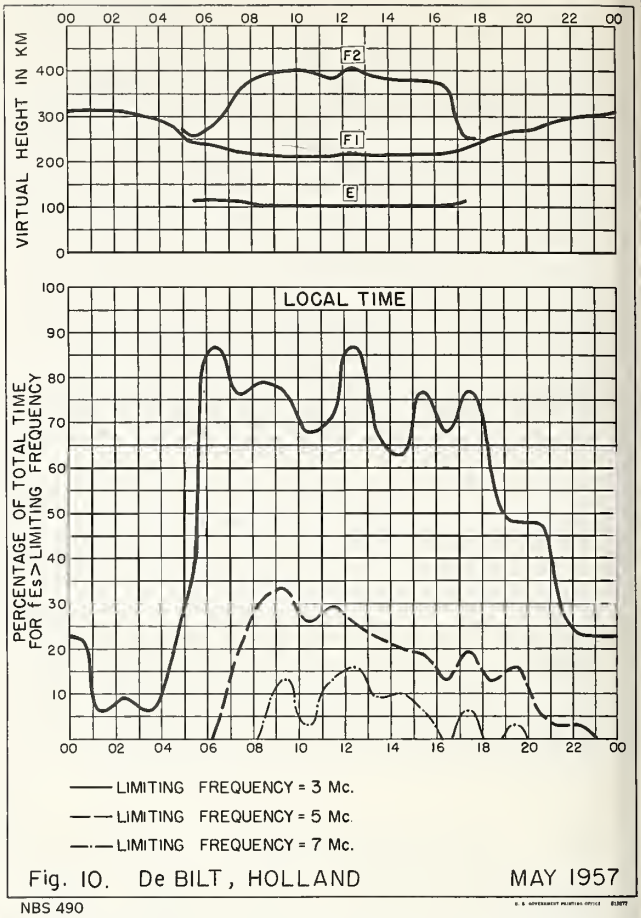


Fig. 10. De BILT, HOLLAND MAY 1957

NBS 490

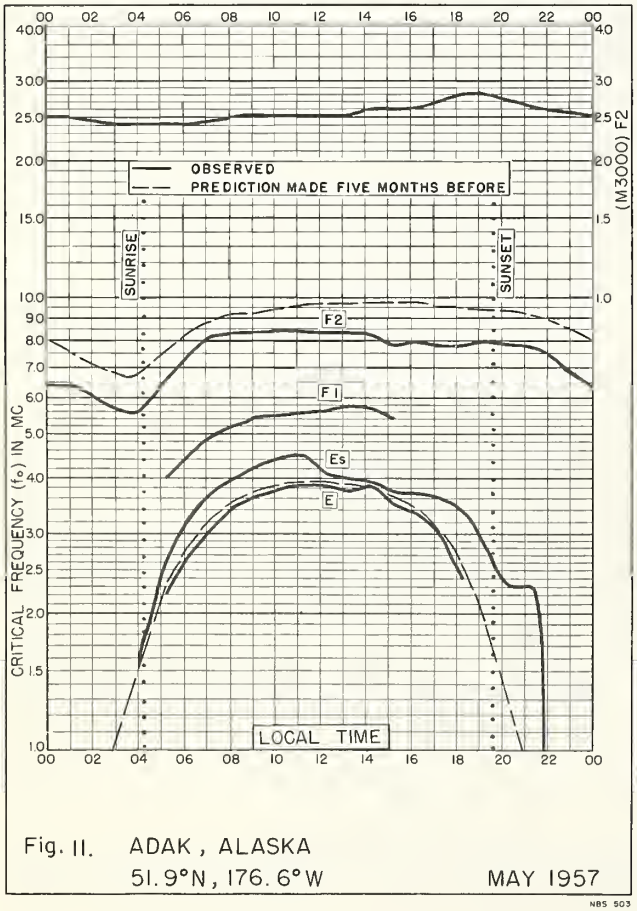


Fig. 11. ADAK, ALASKA
51.9°N, 176.6°W MAY 1957

NBS 503

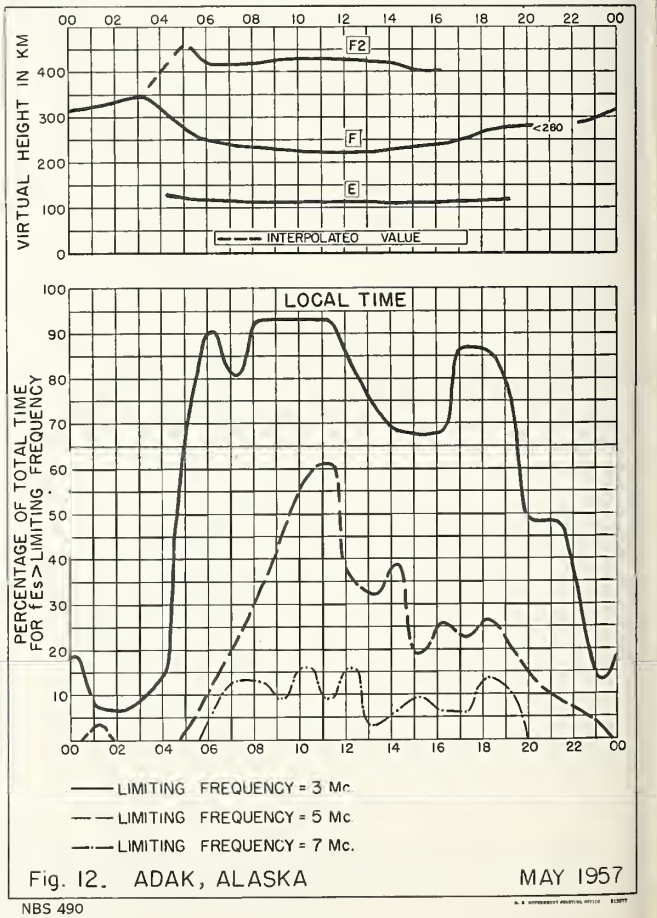


Fig. 12. ADAK, ALASKA MAY 1957

NBS 490

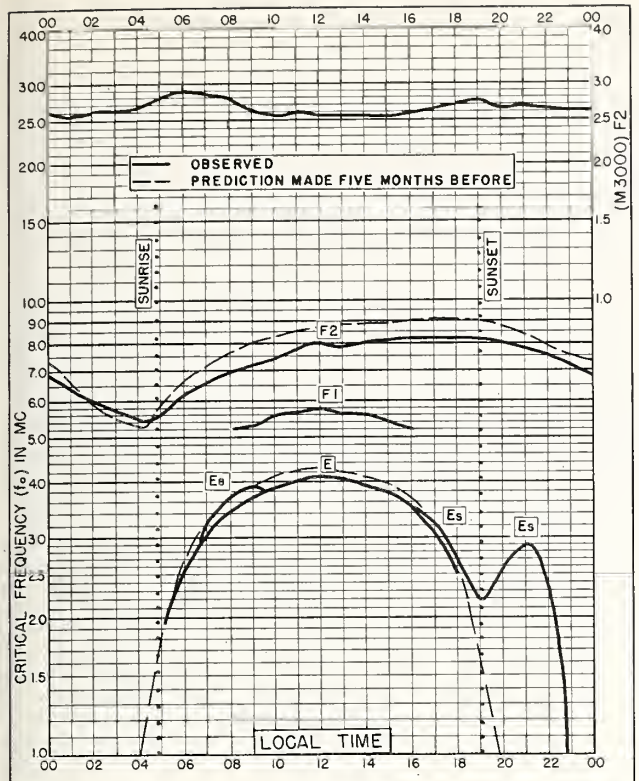


Fig. 13. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1° W MAY 1957

NBS 503

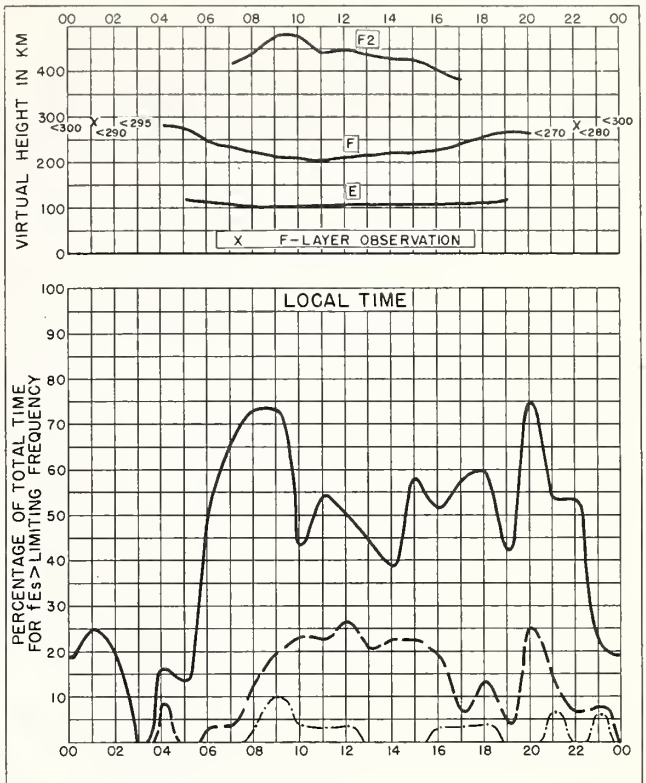


Fig. 14. FT. MONMOUTH, NEW JERSEY MAY 1957

NBS 490

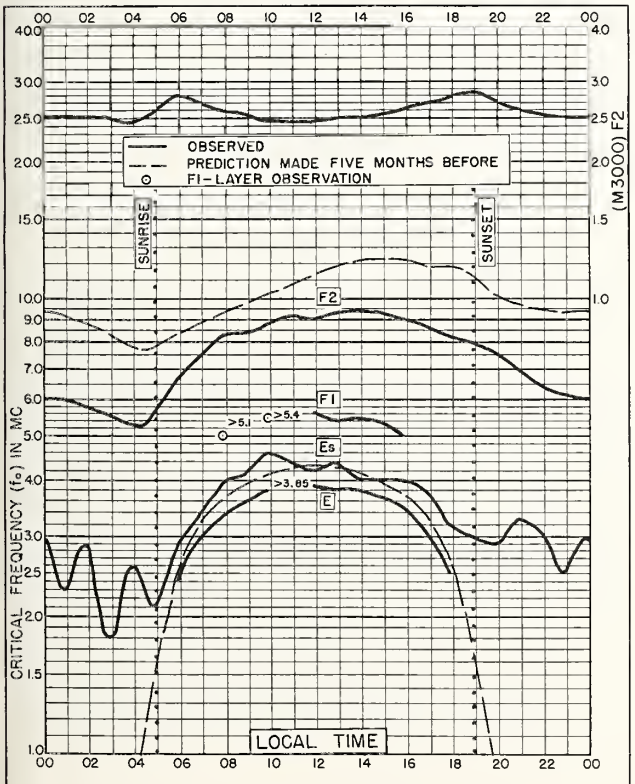


Fig. 15. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2° W MAY 1957

NBS 503

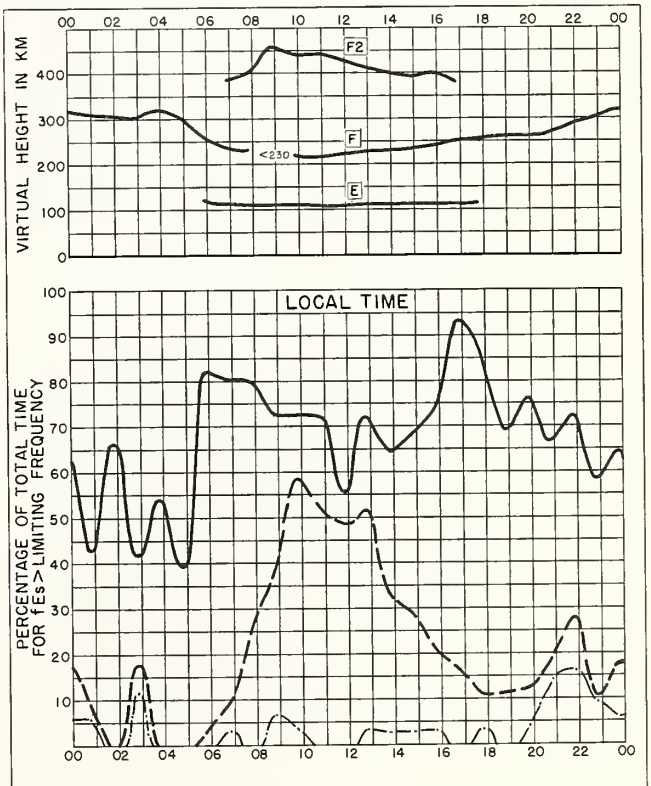


Fig. 16. SAN FRANCISCO, CALIFORNIA MAY 1957

NBS 490

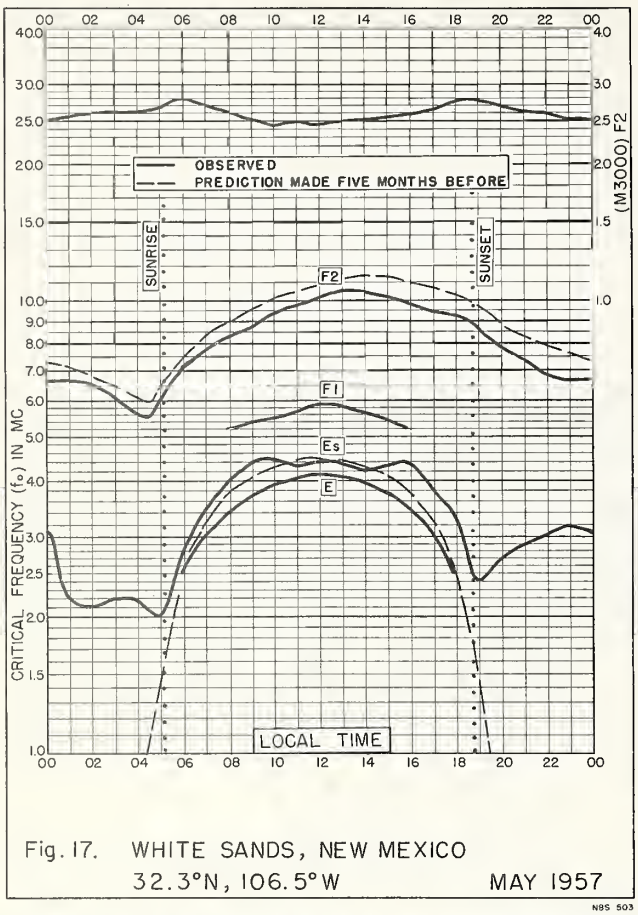


Fig. 17. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W MAY 1957

NBS 503

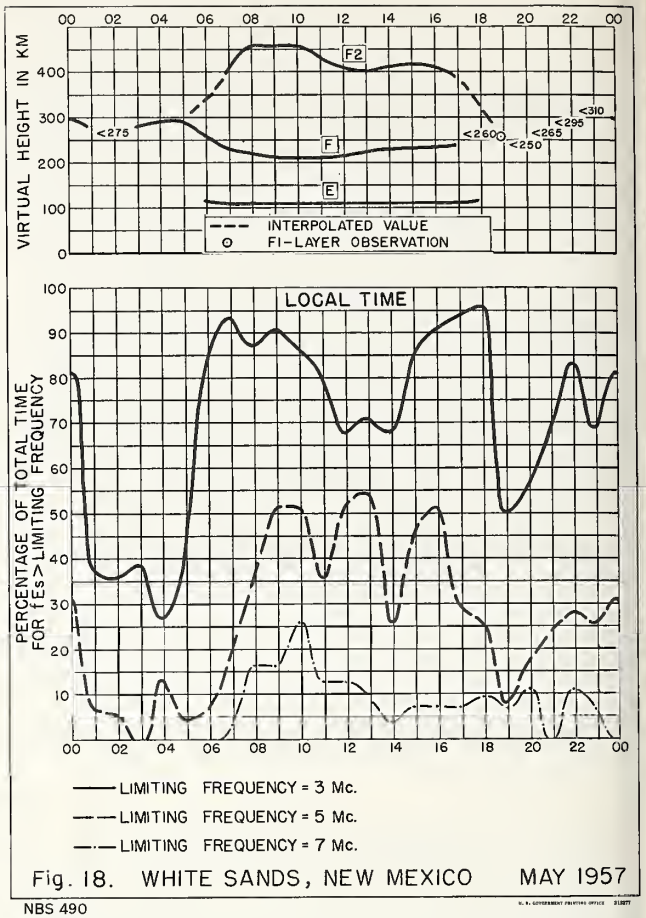


Fig. 18. WHITE SANDS, NEW MEXICO MAY 1957

NBS 490

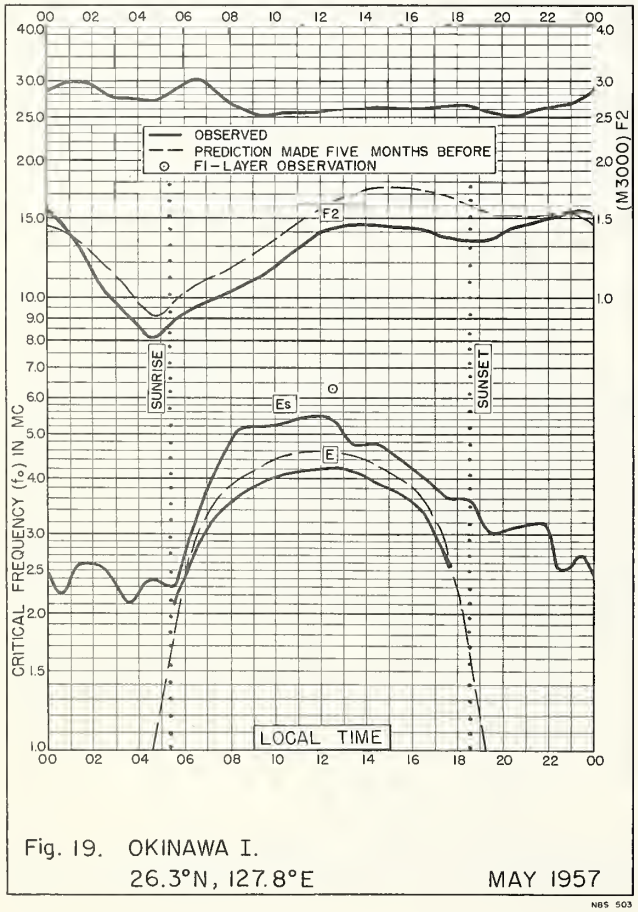


Fig. 19. OKINAWA I.
26.3°N, 127.8°E MAY 1957

NBS 503

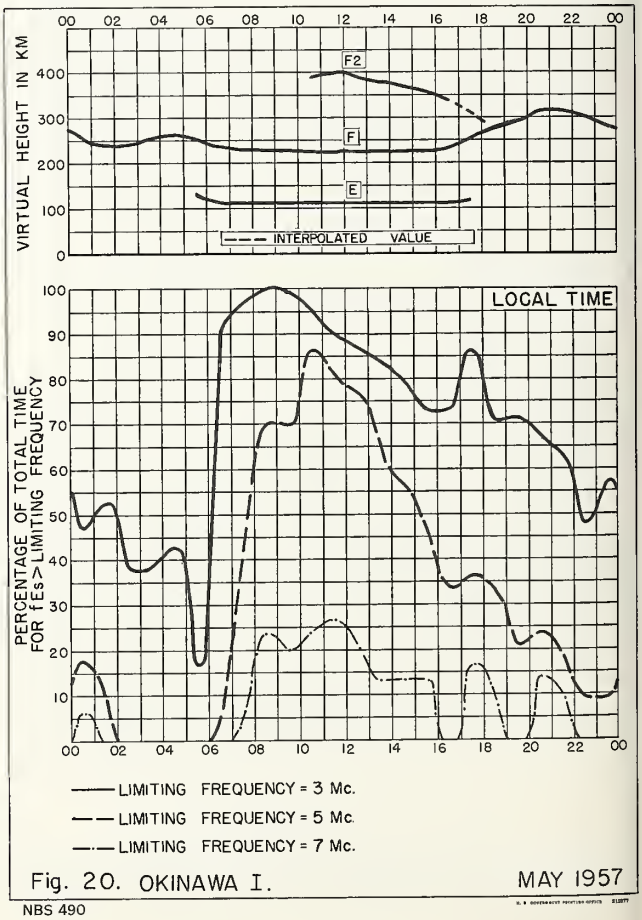


Fig. 20. OKINAWA I. MAY 1957

NBS 490

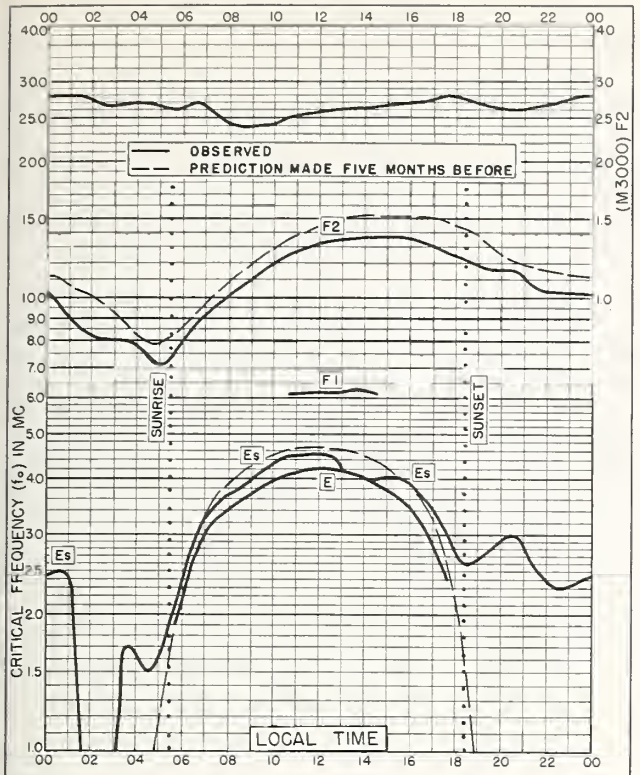


Fig. 21. MAUI, HAWAII
20.8°N, 156.5°W MAY 1957

NBS 503

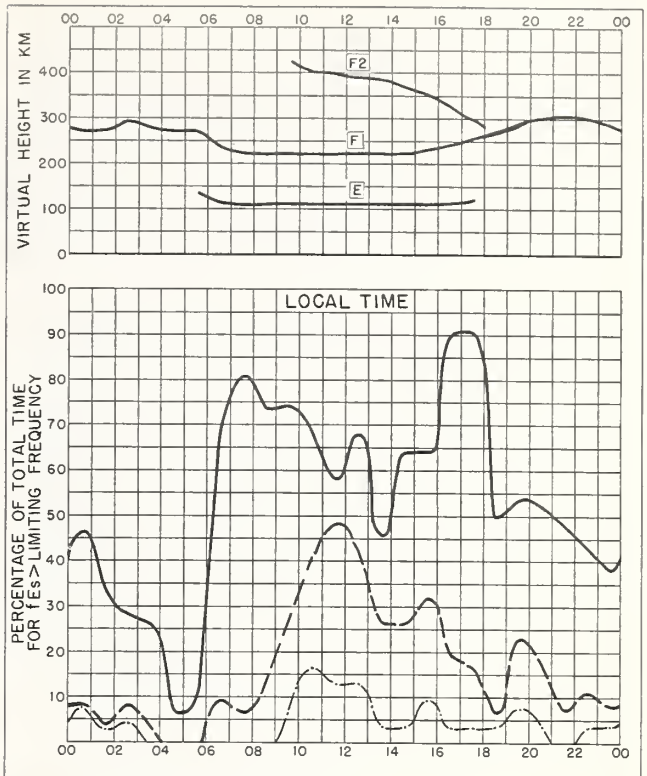


Fig. 22. MAUI, HAWAII MAY 1957

NBS 490

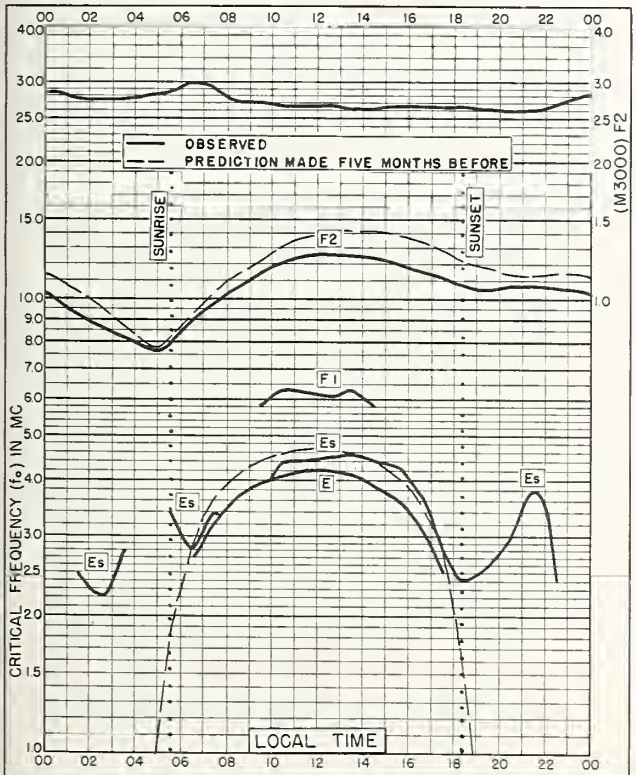


Fig. 23. PUERTO RICO, W. I.
18.5°N, 67.2°W MAY 1957

NBS 503

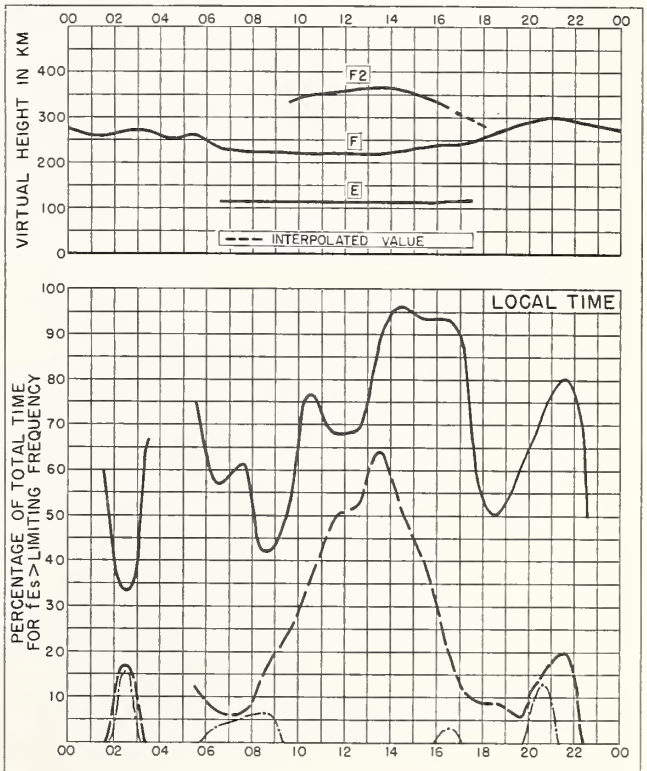


Fig. 24. PUERTO RICO, W. I. MAY 1957

NBS 490

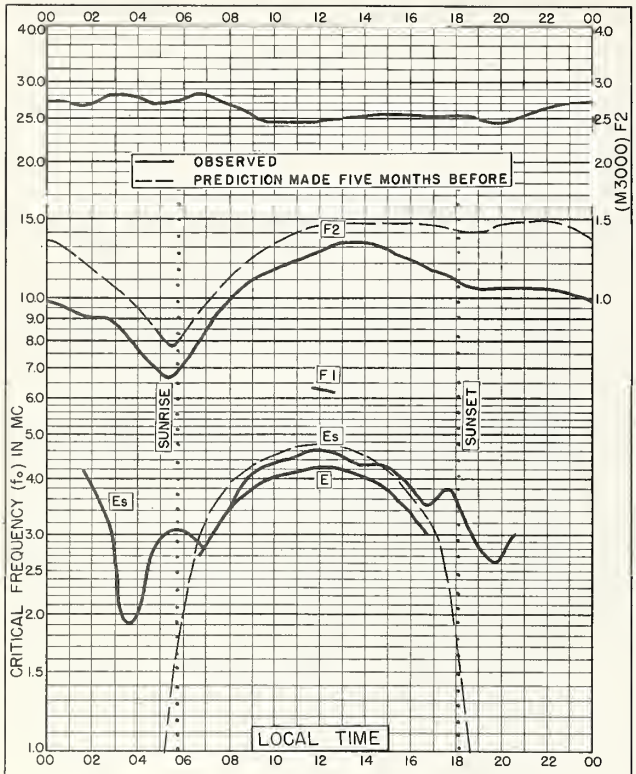


Fig. 25. PANAMA CANAL ZONE
9.4°N, 79.9°W MAY 1957

NBS 503

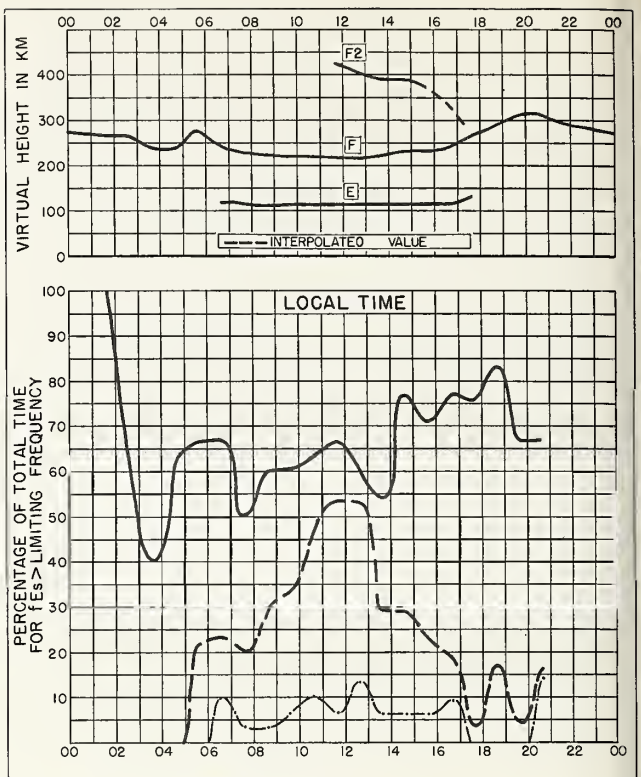


Fig. 26. PANAMA CANAL ZONE MAY 1957

NBS 490

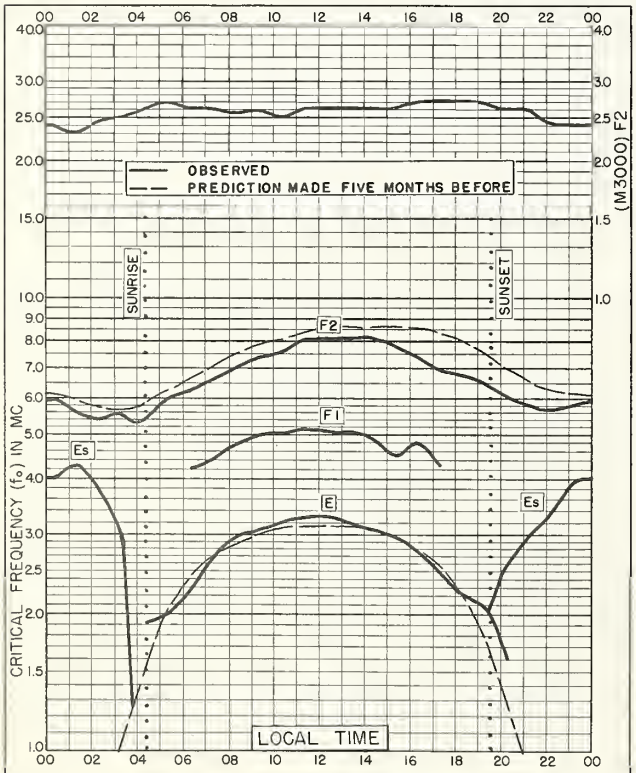


Fig. 27. KIRUNA, SWEDEN
67.8°N, 20.3°E APRIL 1957

NBS 503

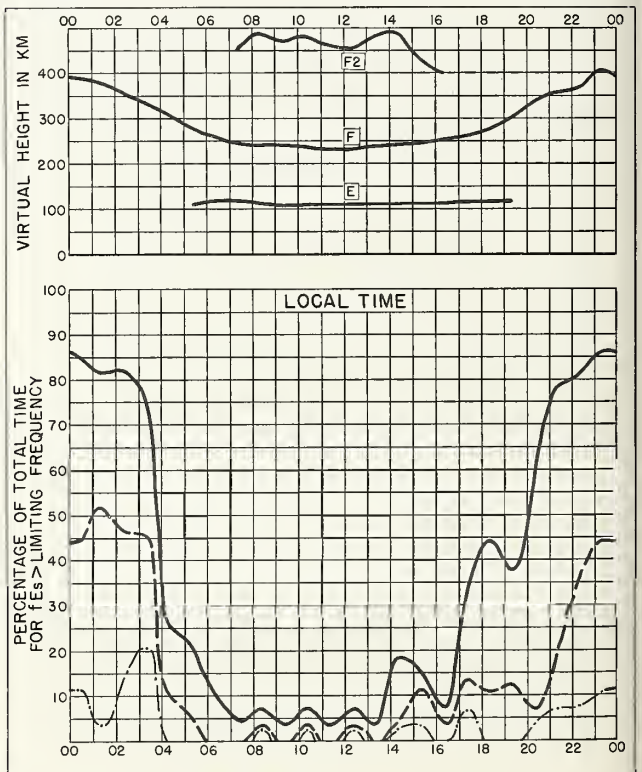


Fig. 28. KIRUNA, SWEDEN APRIL 1957

NBS 490

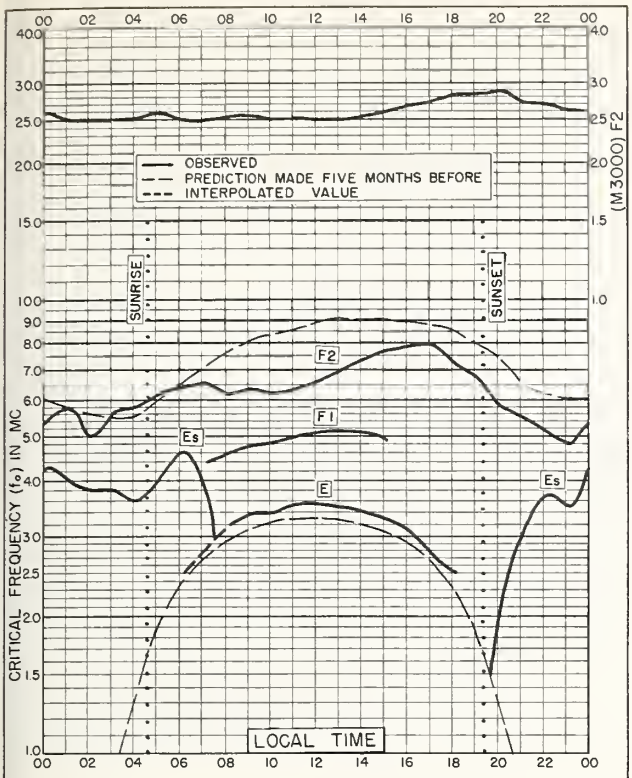


Fig. 29. FAIRBANKS, ALASKA
64.9°N, 147.8°W APRIL 1957

NBS 503

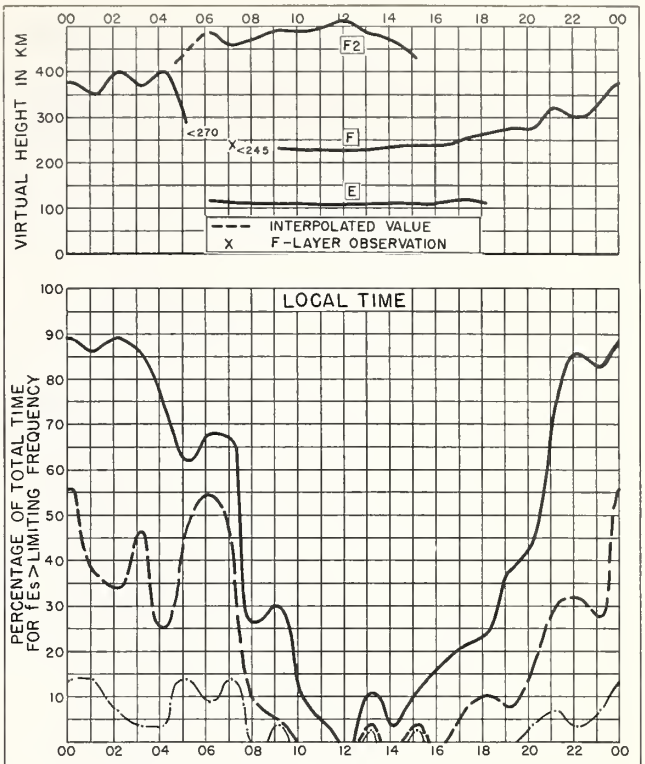


Fig. 30. FAIRBANKS, ALASKA APRIL 1957

NBS 490

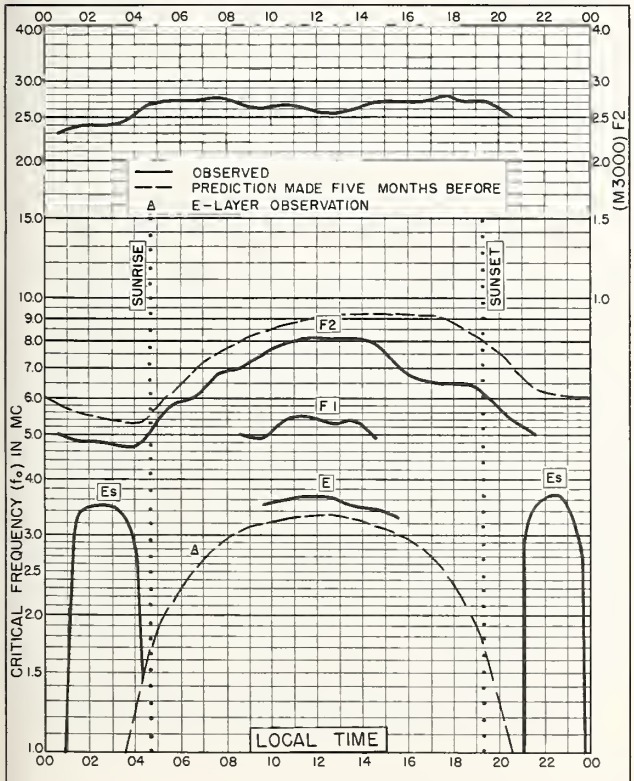


Fig. 31. REYKJAVIK, ICELAND
64.1°N, 21.8° W APRIL 1957

NBS 503

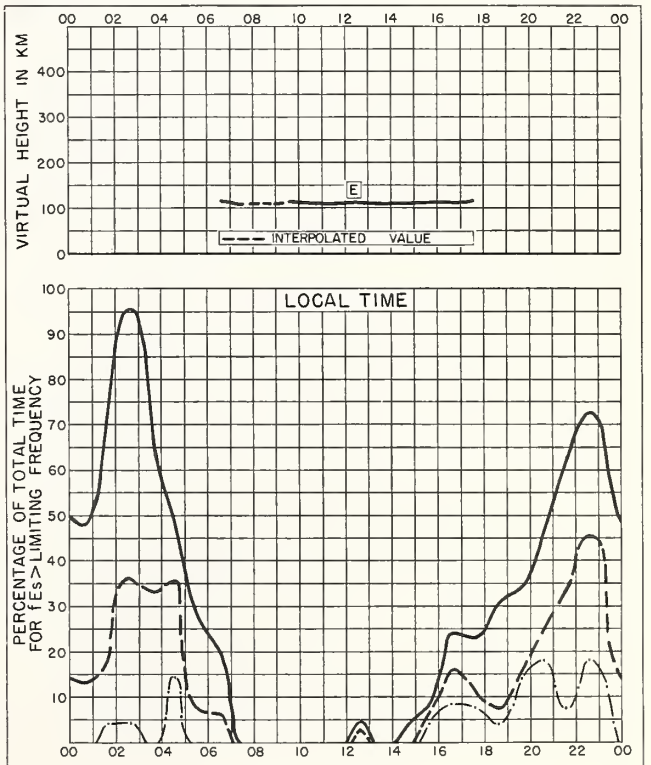


Fig. 32. REYKJAVIK, ICELAND APRIL 1957

NBS 490

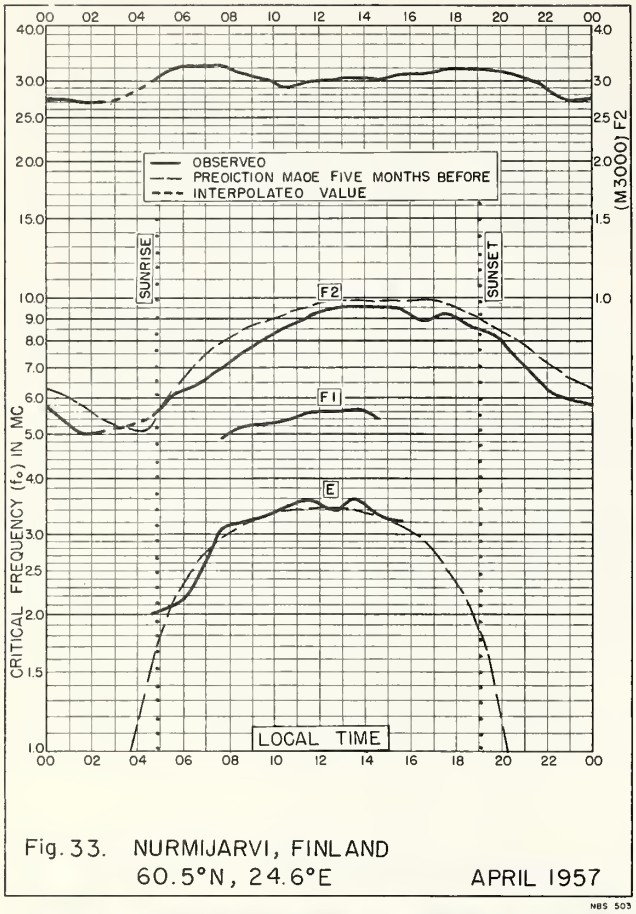


Fig. 33. NURMIJARVI, FINLAND
60.5°N, 24.6°E APRIL 1957

NBS 503

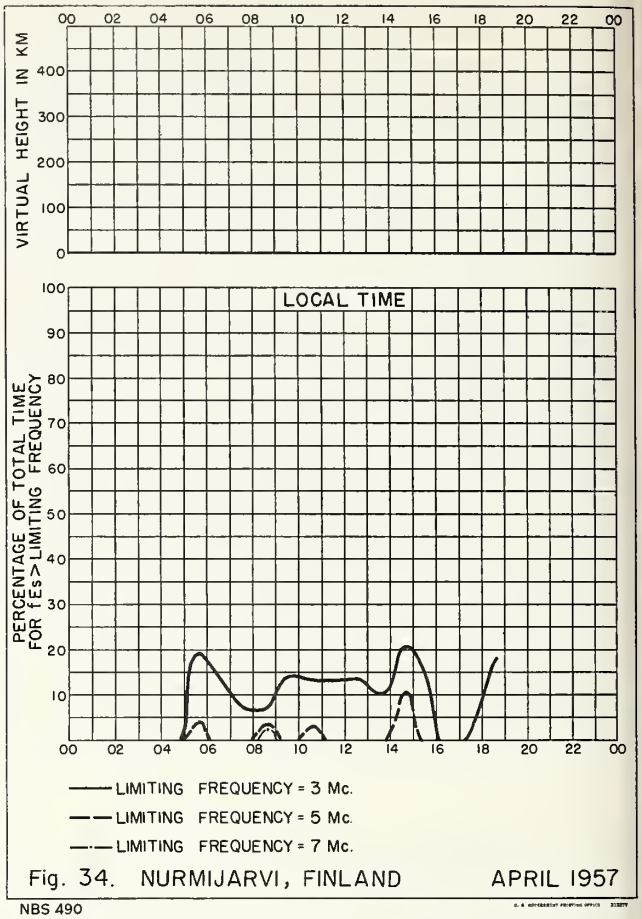


Fig. 34. NURMIJARVI, FINLAND APRIL 1957

NBS 490

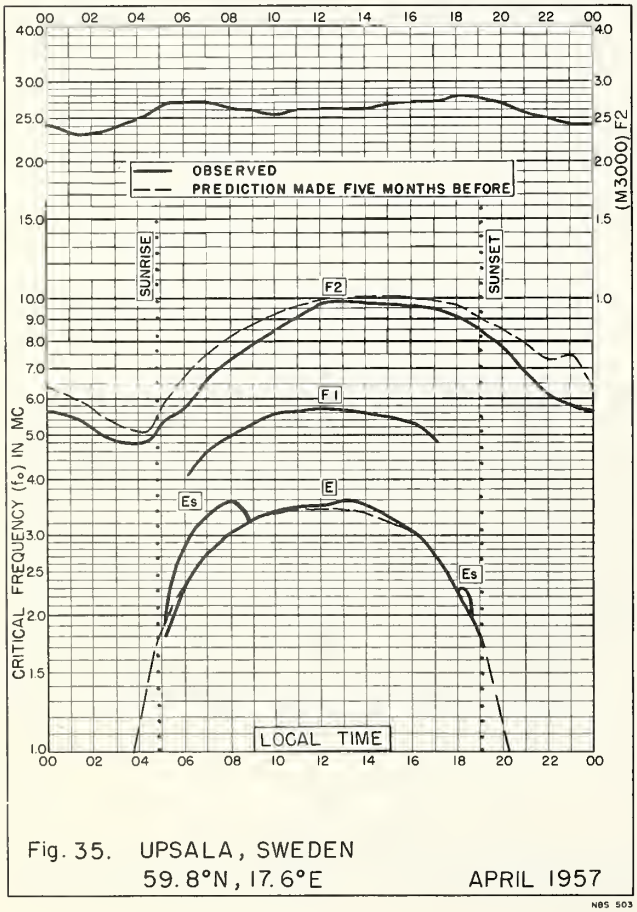


Fig. 35. UPSALA, SWEDEN
59.8°N, 17.6°E APRIL 1957

NBS 503

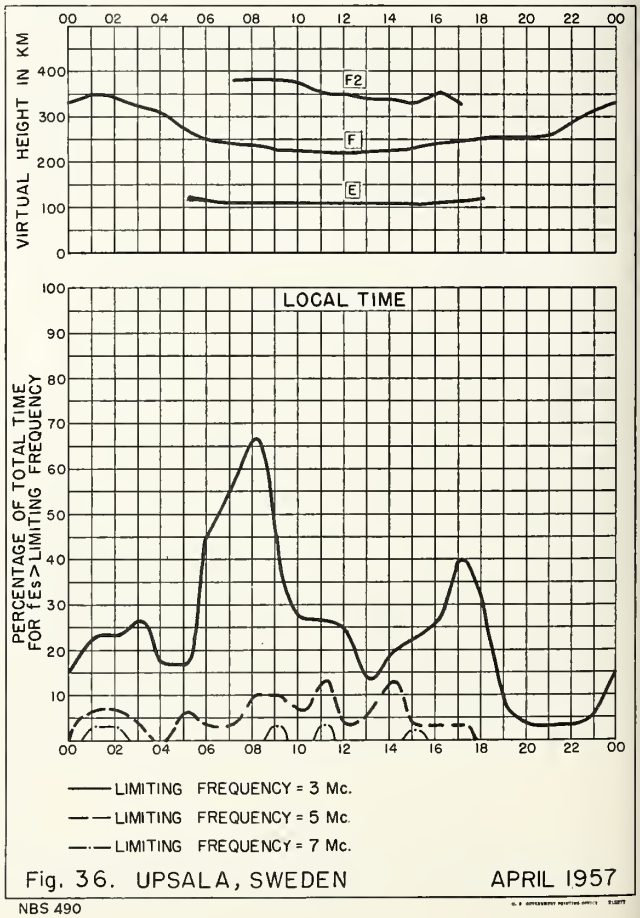


Fig. 36. UPSALA, SWEDEN APRIL 1957

NBS 490

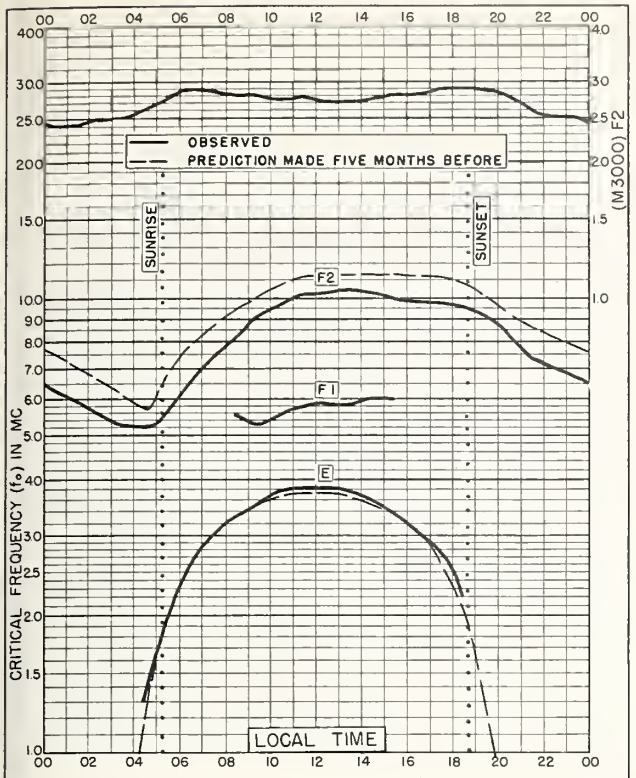


Fig. 37. De BILT, HOLLAND
52.1°N, 5.2°E APRIL 1957

NBS 503

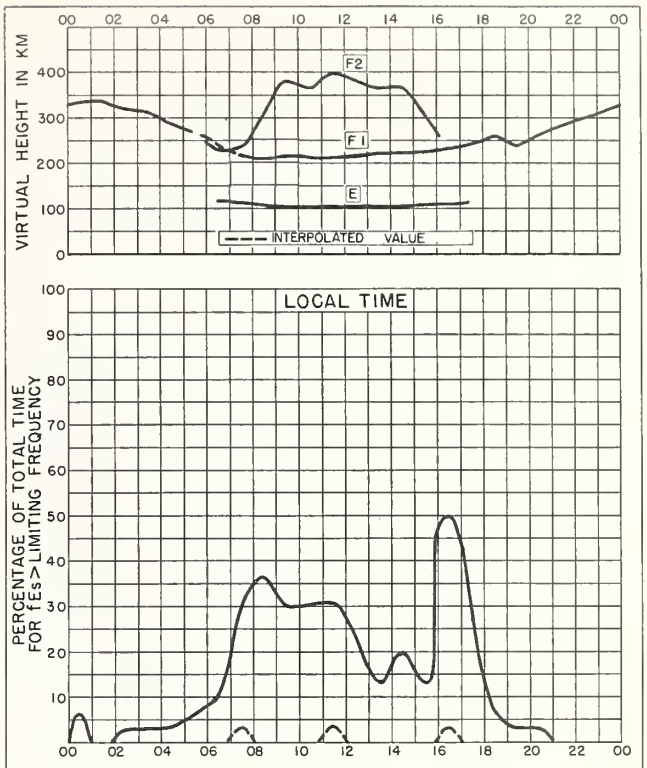


Fig. 38. De BILT, HOLLAND APRIL 1957

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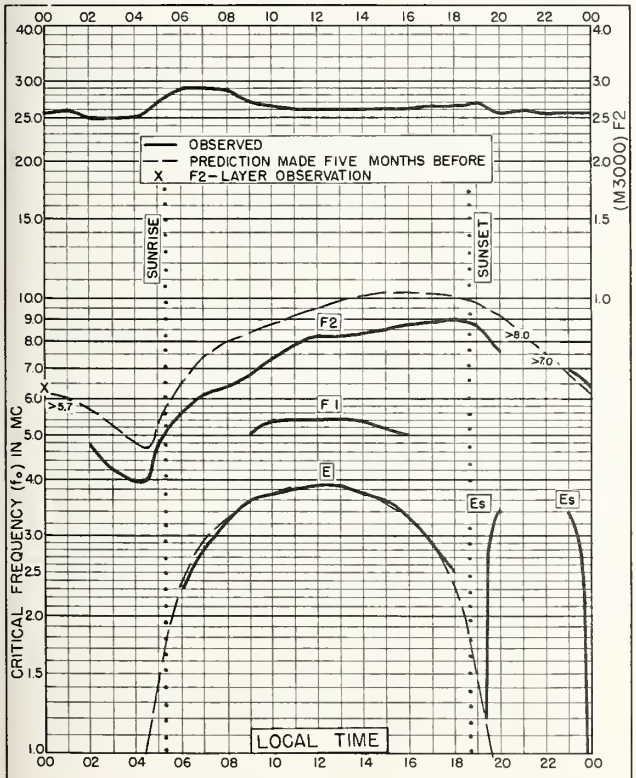


Fig. 39. ST. JOHNS, NEWFOUNDLAND
47.6°N, 52.7°W APRIL 1957

NBS 503

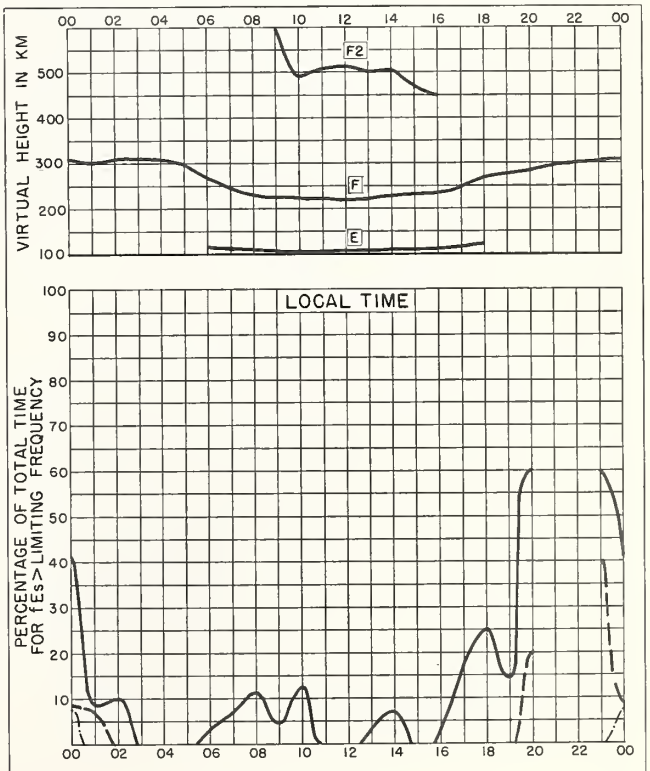


Fig. 40. ST. JOHNS, NEWFOUNDLAND APRIL 1957

NBS 490

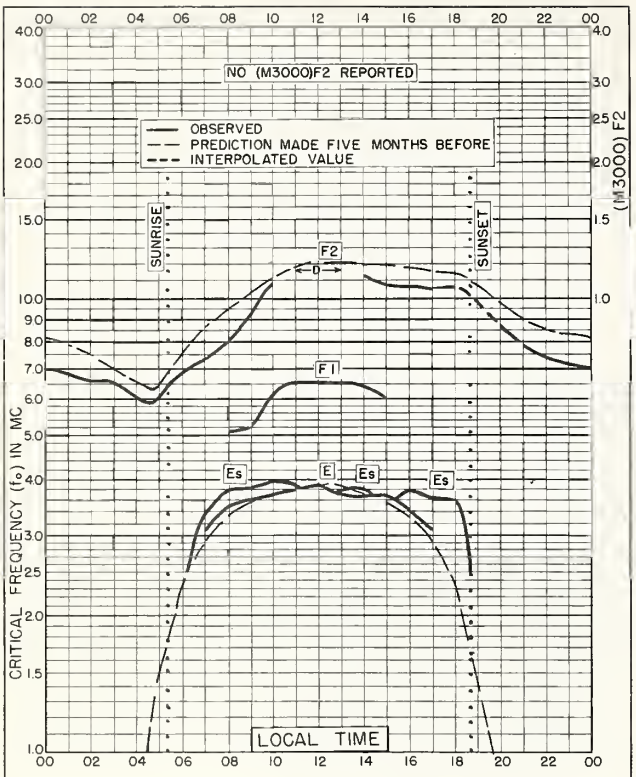


Fig. 41. GRAZ, AUSTRIA
47.1°N, 15.5°E APRIL 1957

NBS 503

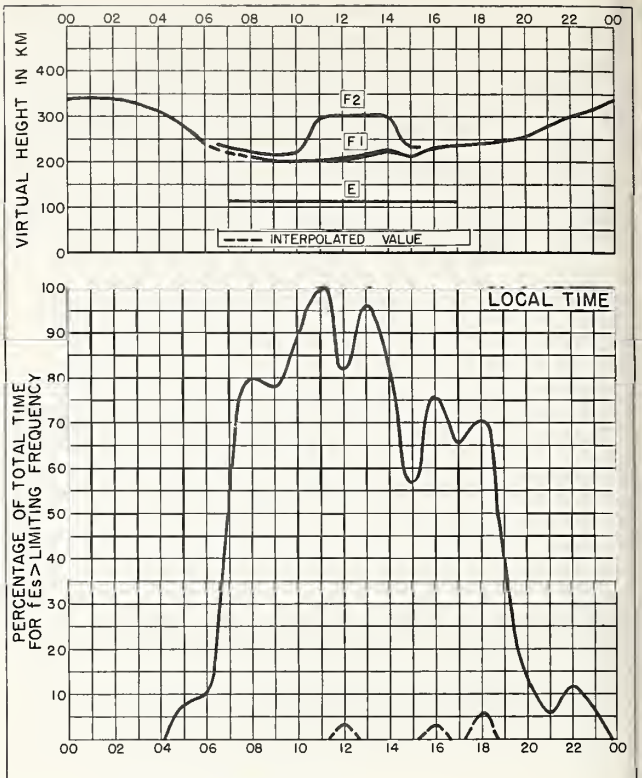


Fig. 42. GRAZ, AUSTRIA APRIL 1957

NBS 490

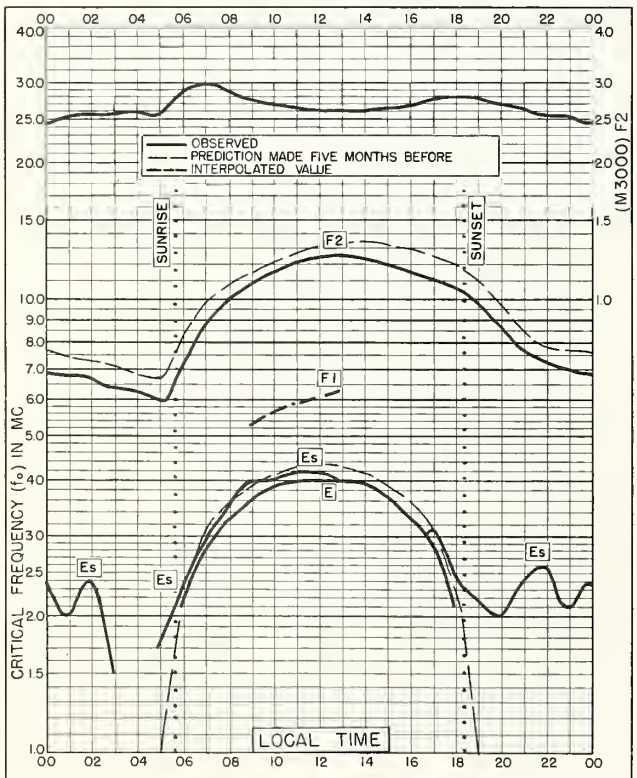


Fig. 43. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W APRIL 1957

NBS 503

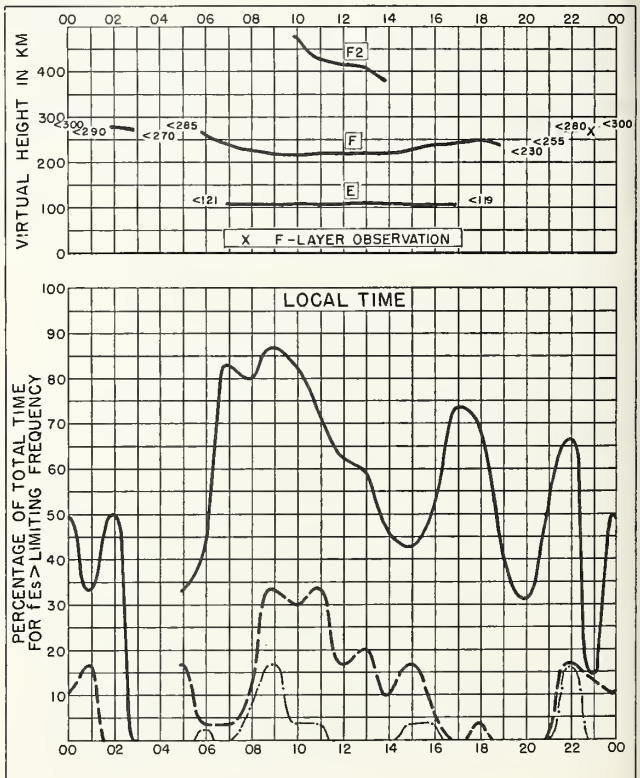


Fig. 44. WHITE SANDS, NEW MEXICO APRIL 1957

NBS 490

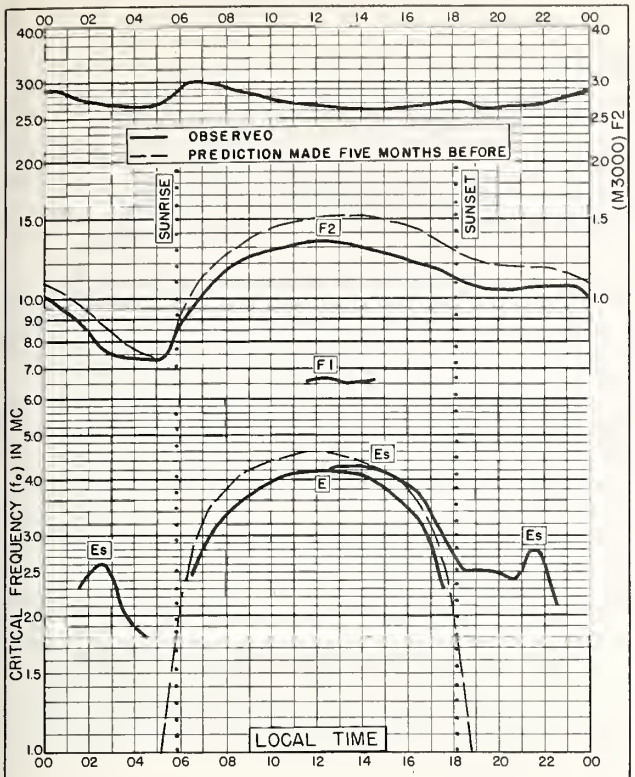


Fig. 45. PUERTO RICO, W. I.
18.5°N, 67.2°W APRIL 1957

NBS 503

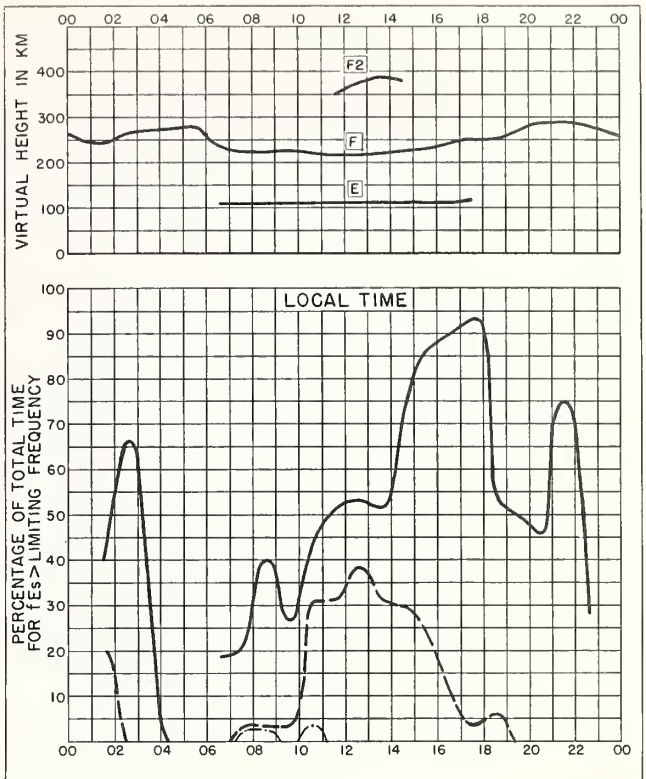


Fig. 46. PUERTO RICO, W.I. APRIL 1957

NBS 490

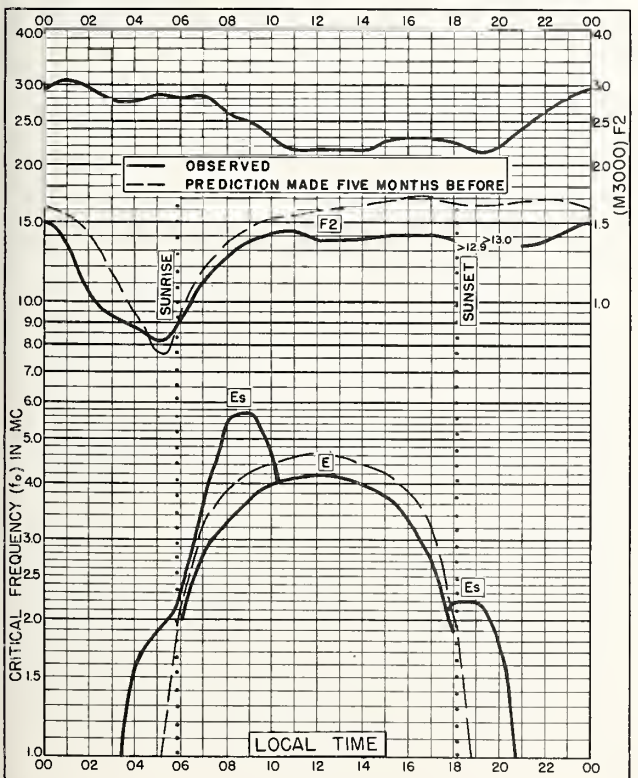


Fig. 47. BAGUIO, P.I.
16.4°N, 120.6°E APRIL 1957

NBS 503

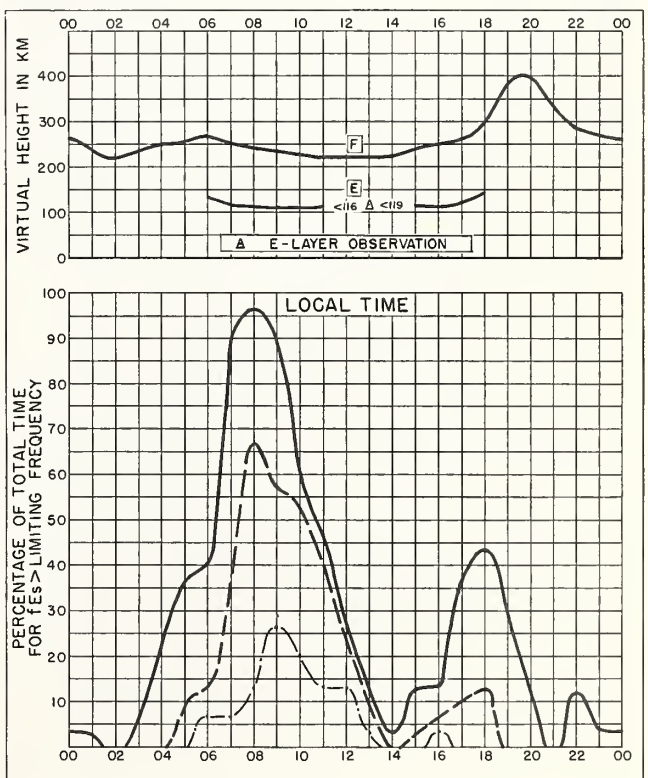


Fig. 48. BAGUIO, P.I. APRIL 1957

NBS 490

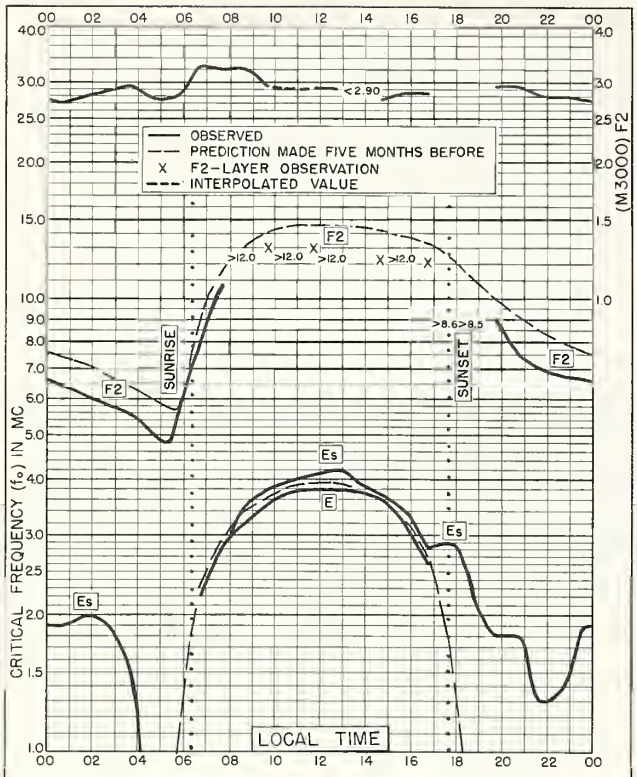


Fig. 49. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E APRIL 1957

NBS 503

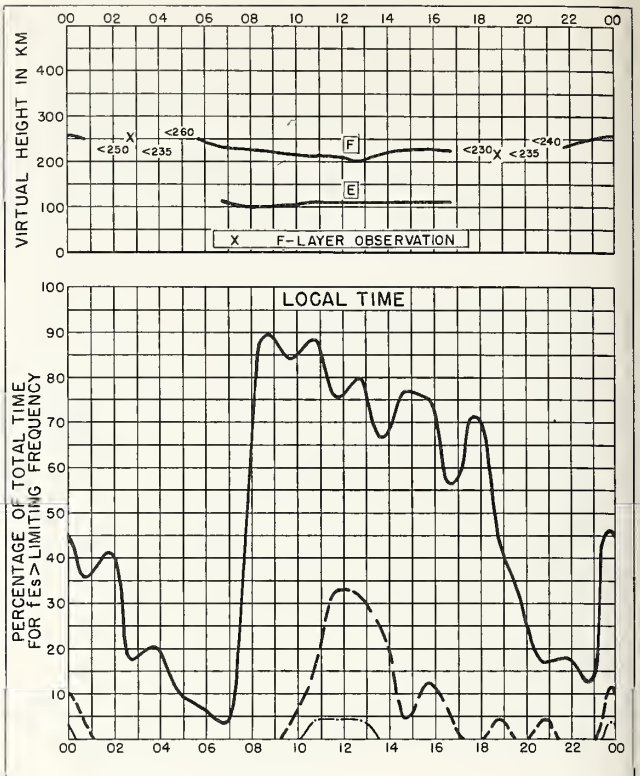


Fig. 50. WATHEROO, W. AUSTRALIA APRIL 1957

NBS 490

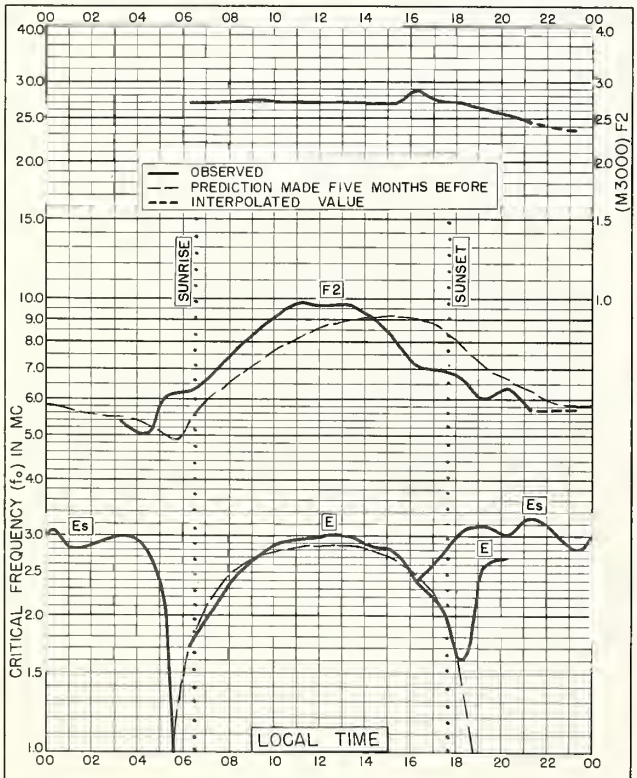


Fig. 51. TROMSO, NORWAY
69.7°N, 19.0°E MARCH 1957

NBS 503

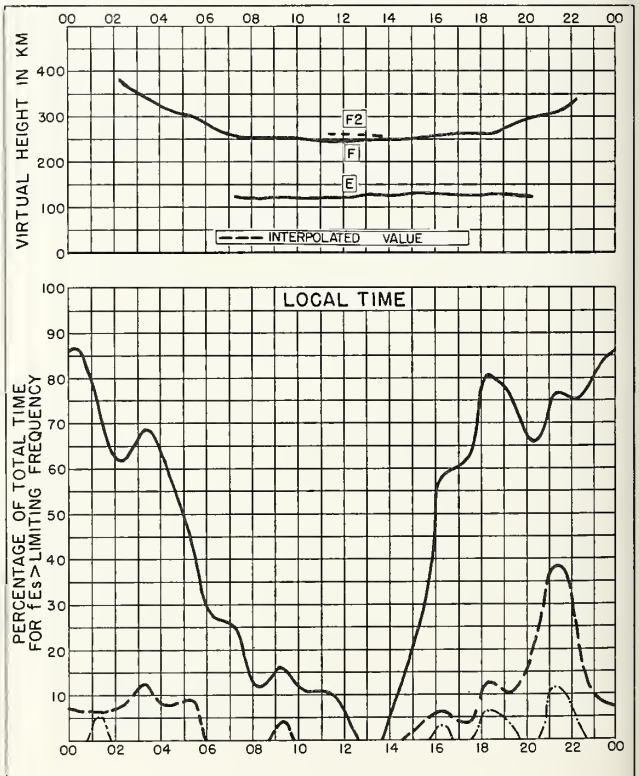


Fig. 52. TROMSO, NORWAY MARCH 1957

NBS 490

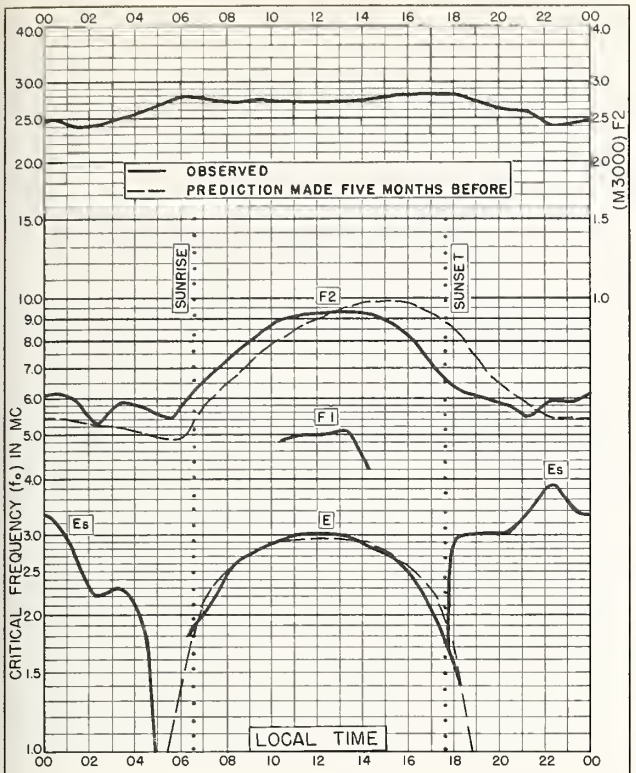


Fig. 53. KIRUNA, SWEDEN
67.8°N, 20.3°E MARCH 1957

NBS 503

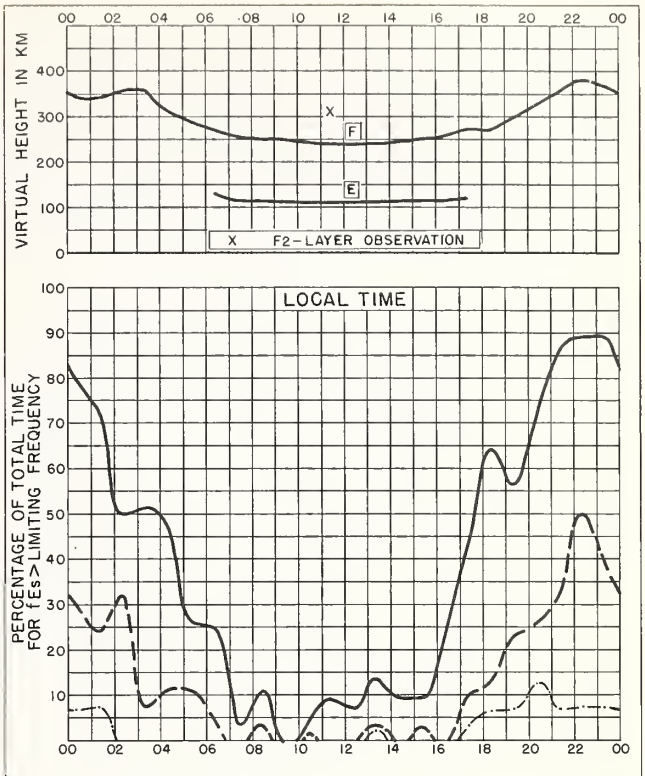


Fig. 54. KIRUNA, SWEDEN MARCH 1957

NBS 490

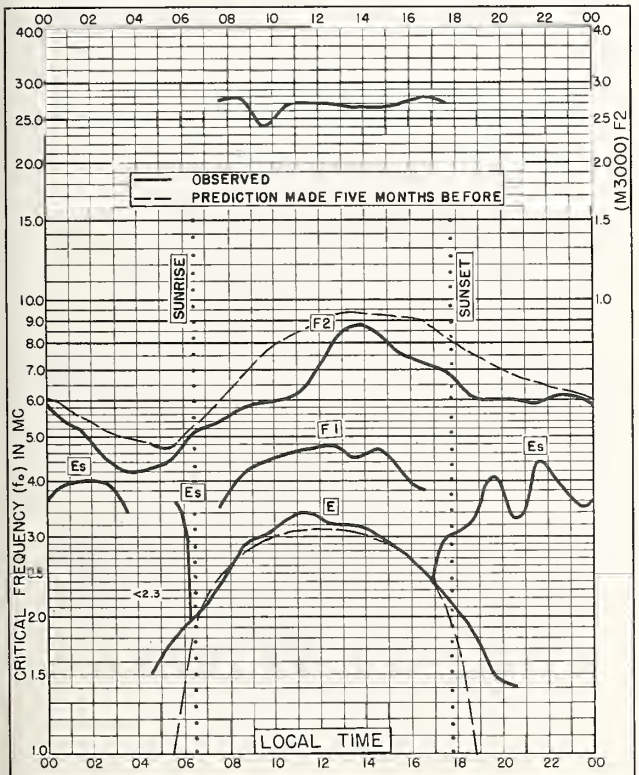


Fig. 55. BAKER LAKE, CANADA
64.3°N, 96.0°W MARCH 1957

NBS 503

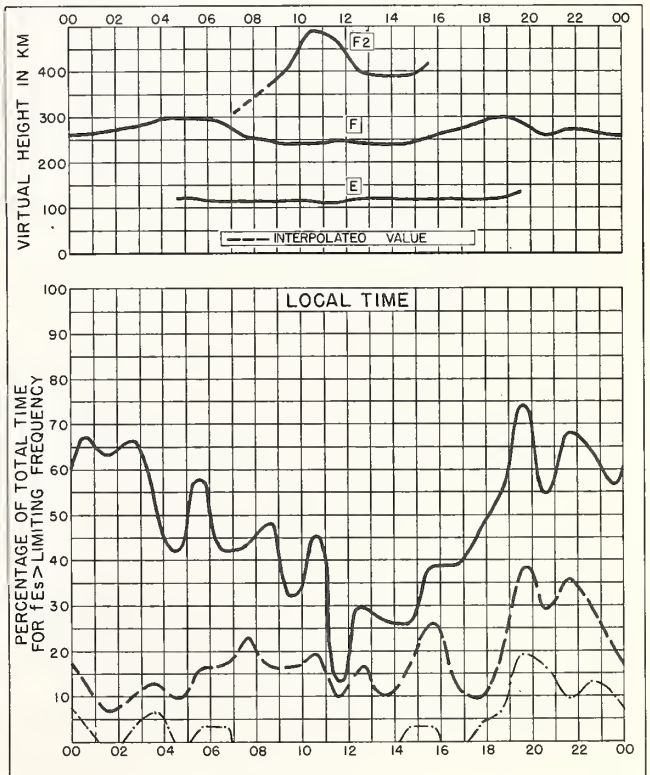


Fig. 56. BAKER LAKE, CANADA MARCH 1957

NBS 490

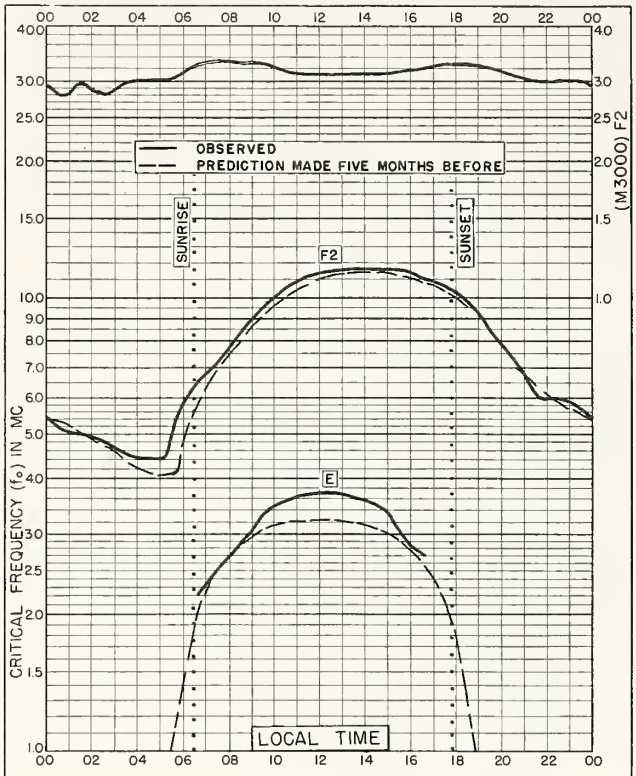


Fig. 57. NURMIJARVI, FINLAND
60.5°N, 24.6°E MARCH 1957

NBS 503

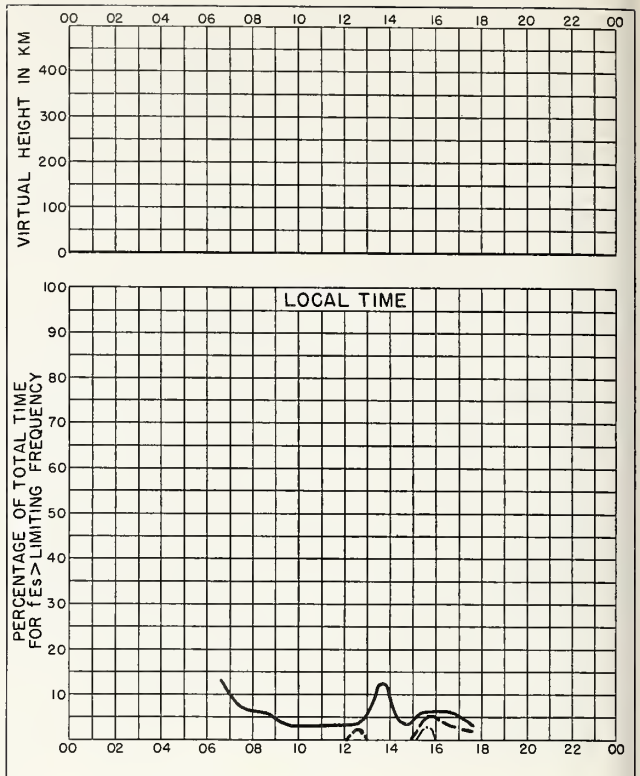


Fig. 58. NURMIJARVI, FINLAND MARCH 1957

NBS 490

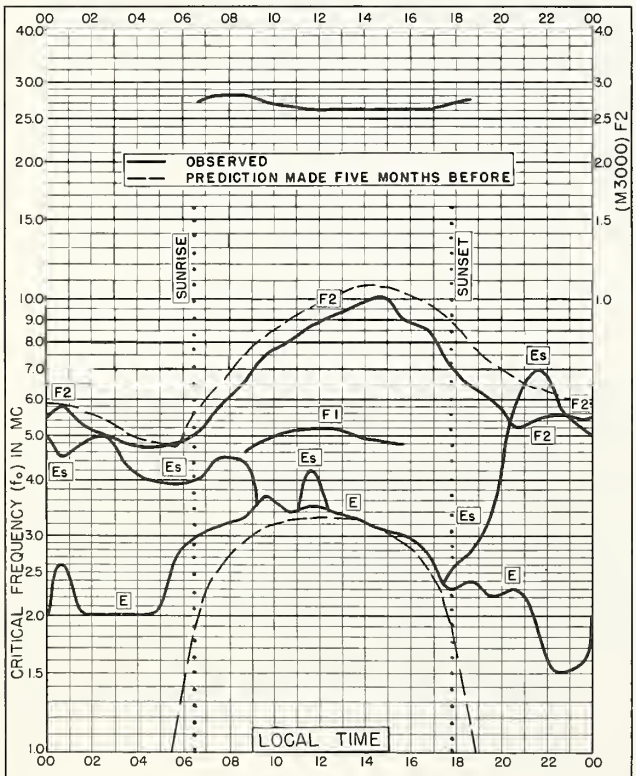


Fig. 59. CHURCHILL, CANADA
58.8°N, 94.2°W MARCH 1957

NBS 503

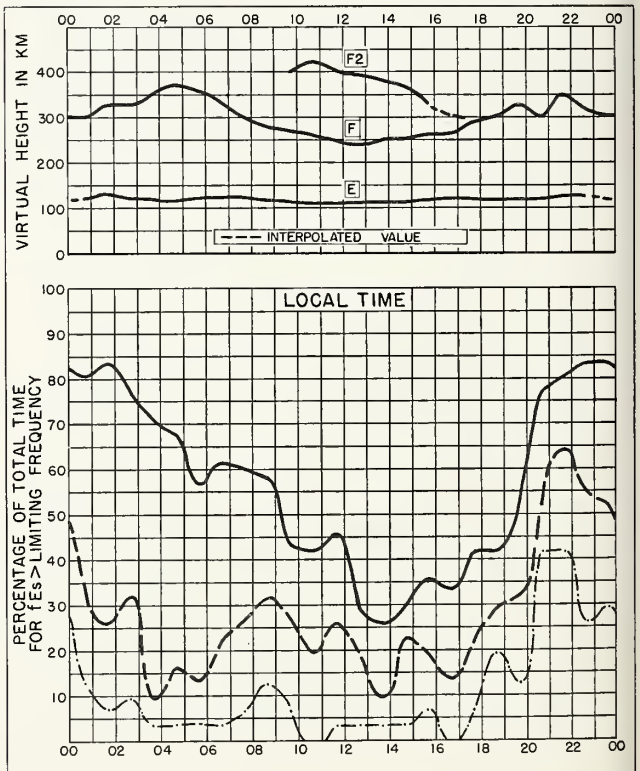


Fig. 60. CHURCHILL, CANADA MARCH 1957

NBS 490

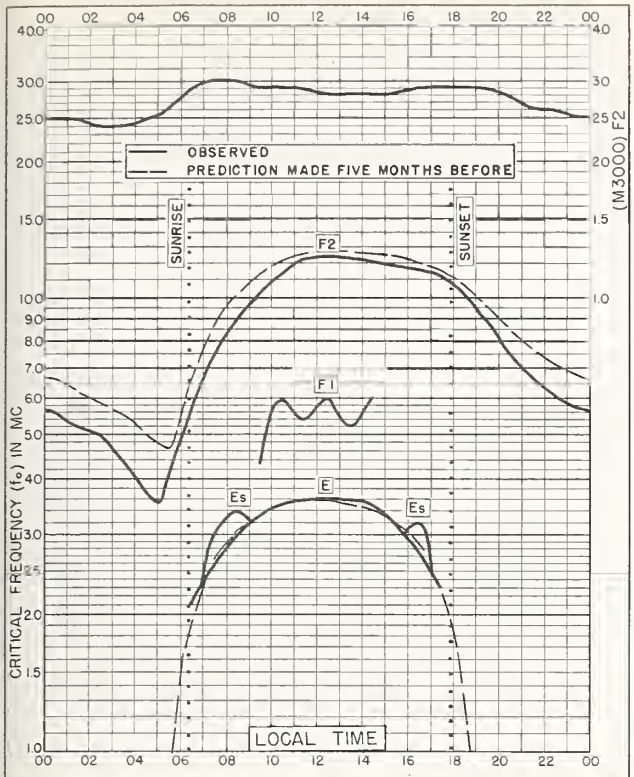


Fig. 61. De BILT, HOLLAND
52.1°N, 5.2°E MARCH 1957

NBS 503

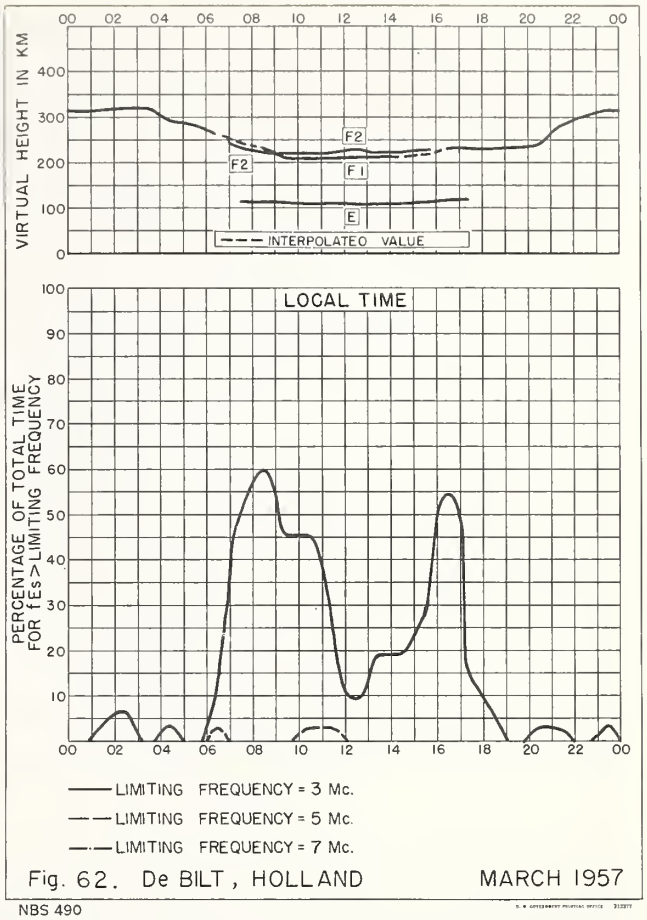


Fig. 62. De BILT, HOLLAND MARCH 1957

NBS 490

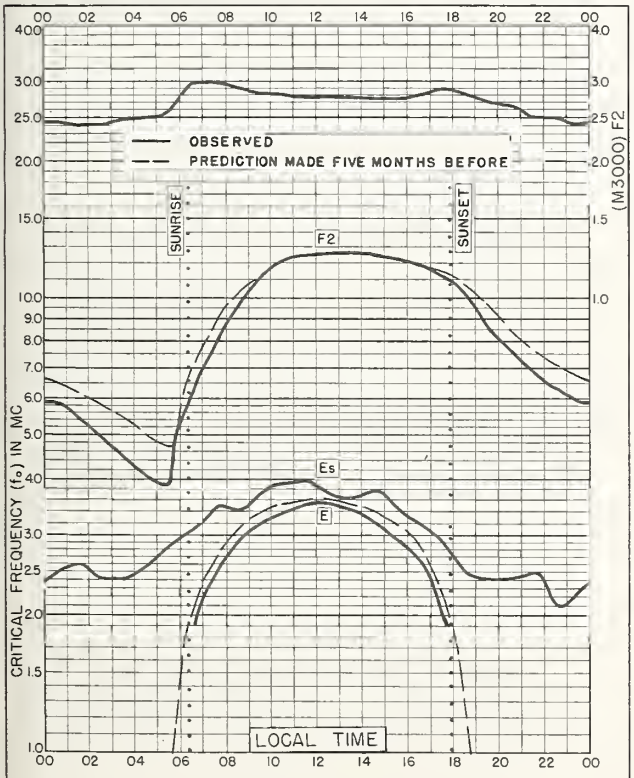


Fig. 63. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E MARCH 1957

NBS 503

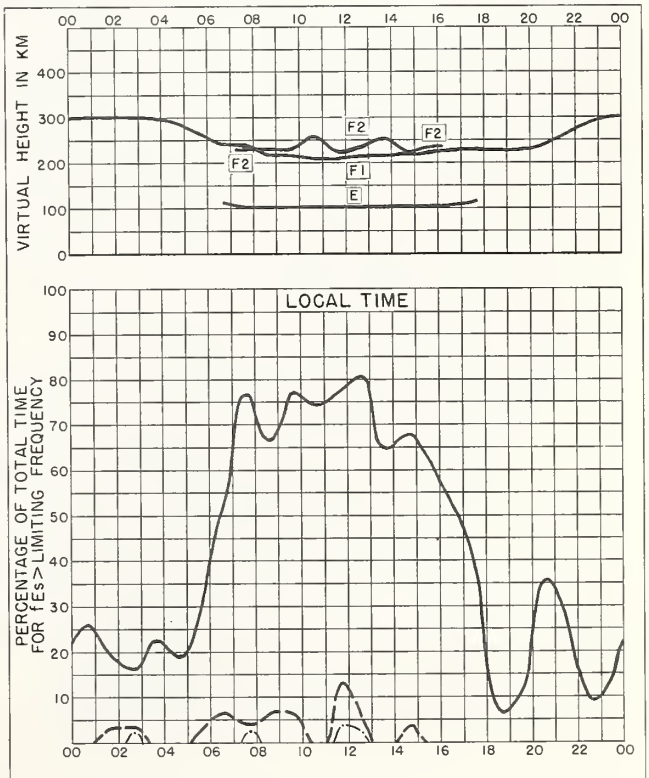


Fig. 64. LINDAU/HARZ, GERMANY MARCH 1957

NBS 490

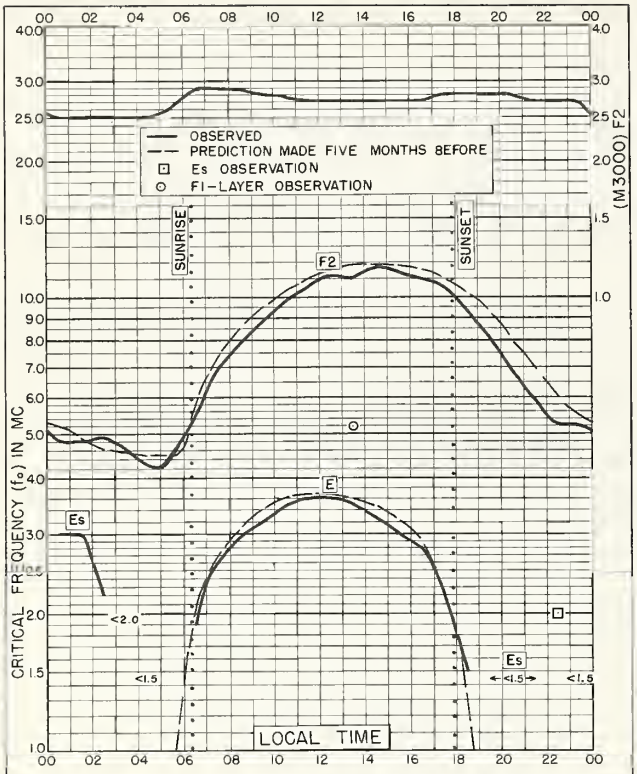


Fig. 65. WINNIPEG, CANADA
49.9°N, 97.4°W MARCH 1957

NBS 503

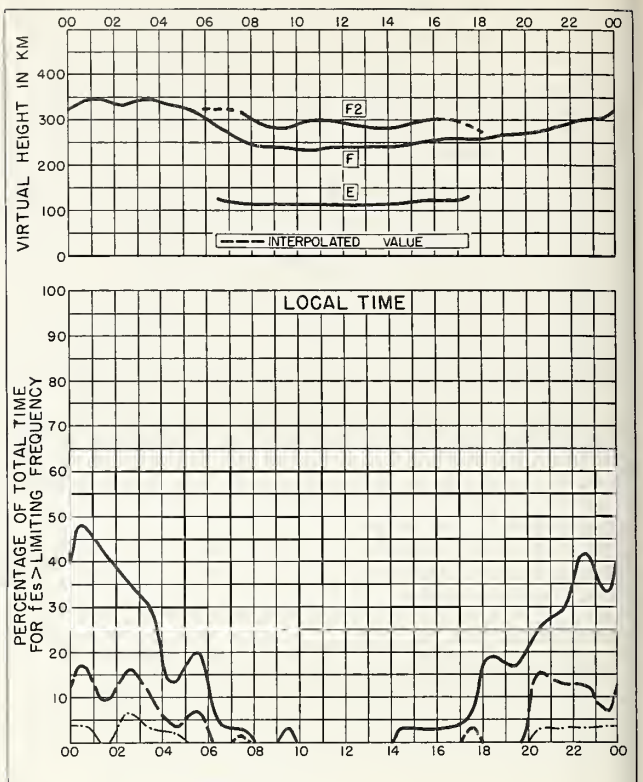


Fig. 66. WINNIPEG, CANADA MARCH 1957

NBS 490

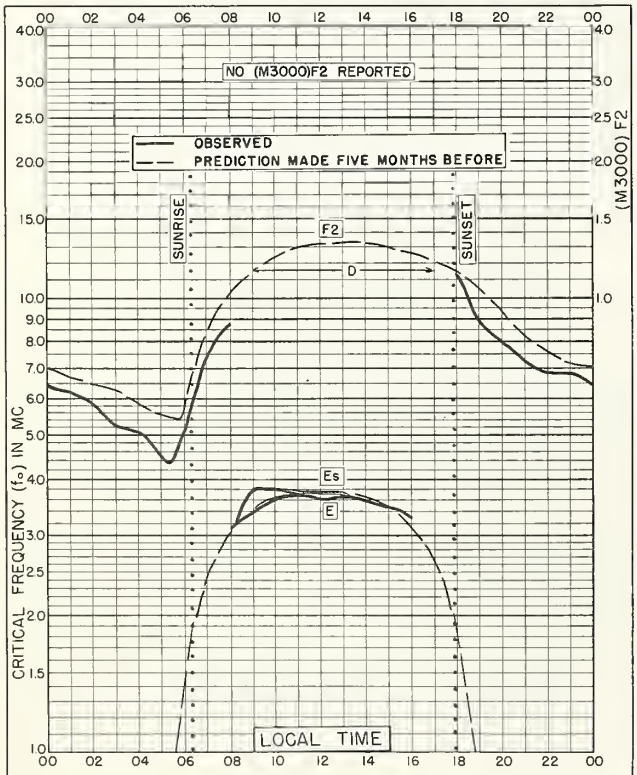


Fig. 67. GRAZ, AUSTRIA
47.1°N, 15.5°E MARCH 1957

NBS 503

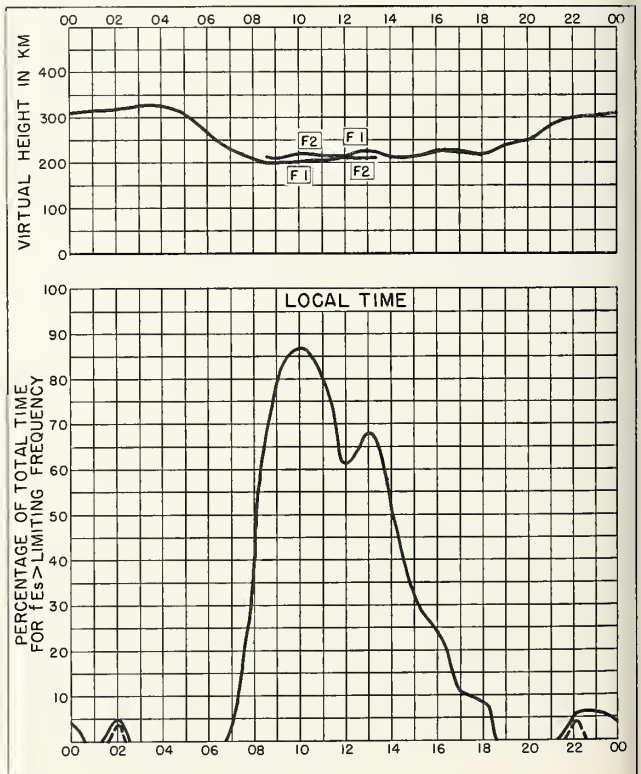


Fig. 68. GRAZ, AUSTRIA MARCH 1957

NBS 490

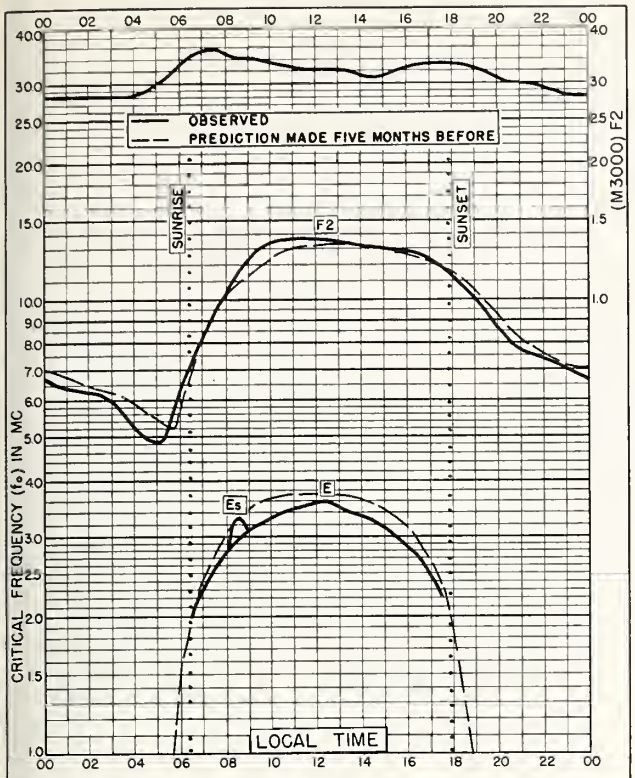
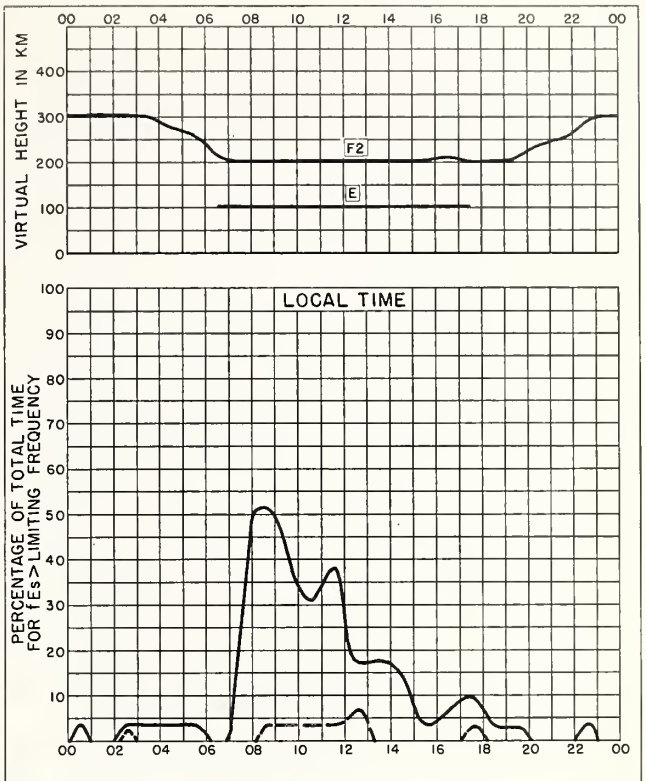


Fig. 69. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E MARCH 1957

NBS 503



MARCH 1957

Fig. 70. SCHWARZENBURG, SWITZERLAND

NBS 490

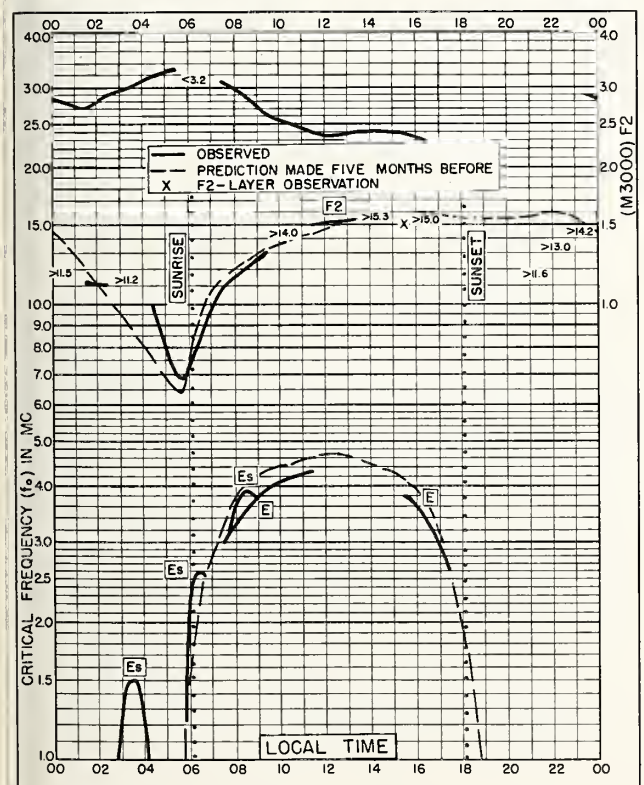


Fig. 71. NAIROBI, KENYA
1.3°S, 36.8°E MARCH 1957

NBS 503

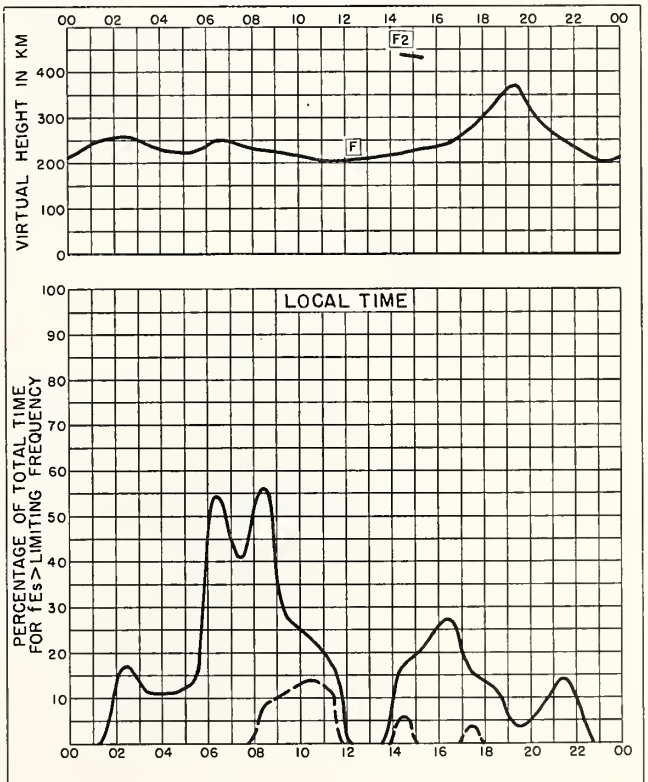


Fig. 72. NAIROBI, KENYA MARCH 1957

NBS 490

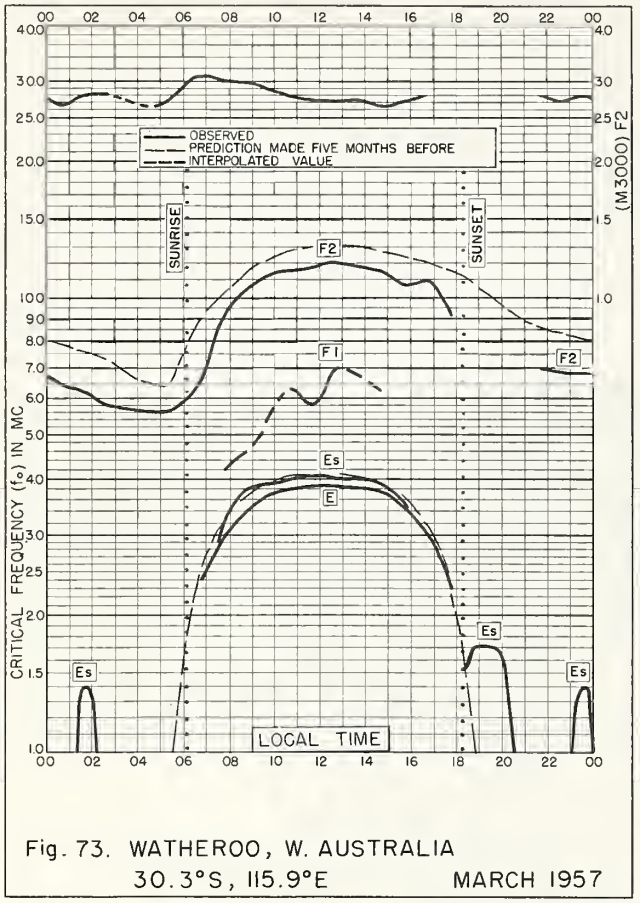


Fig. 73. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MARCH 1957

NBS 503

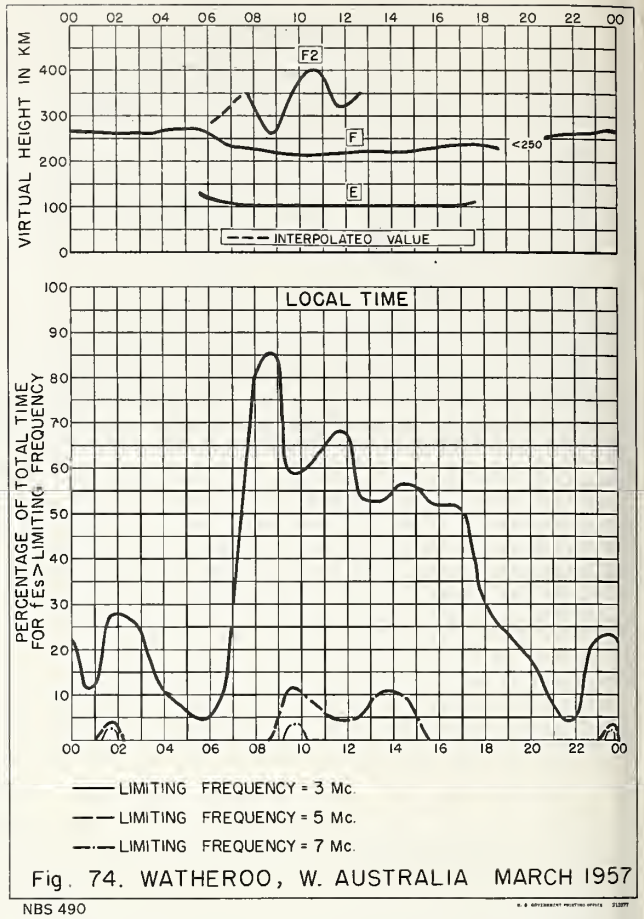


Fig. 74. WATHEROO, W. AUSTRALIA MARCH 1957

NBS 490

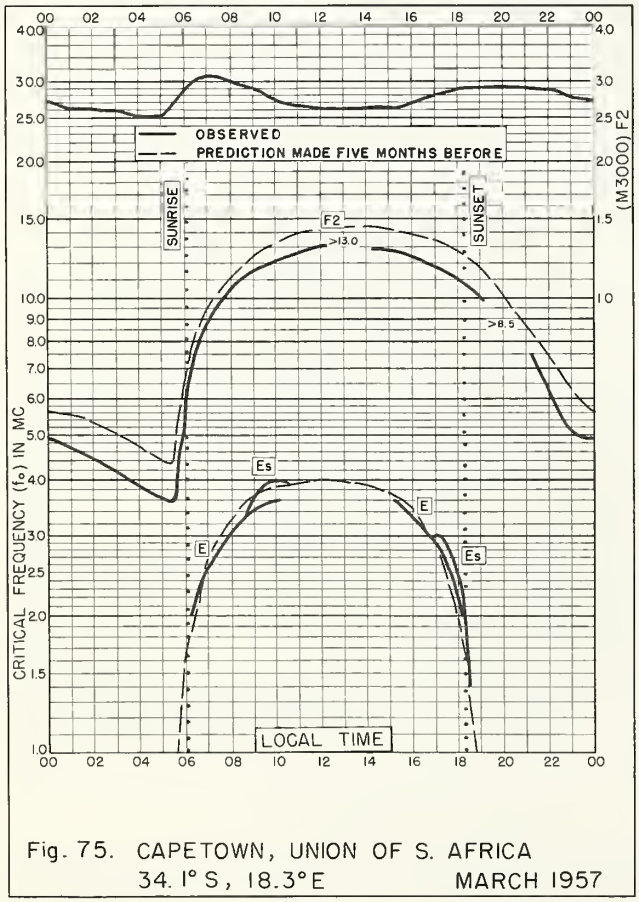


Fig. 75. CAPETOWN, UNION OF S. AFRICA
34.1°S, 18.3°E MARCH 1957

NBS 503

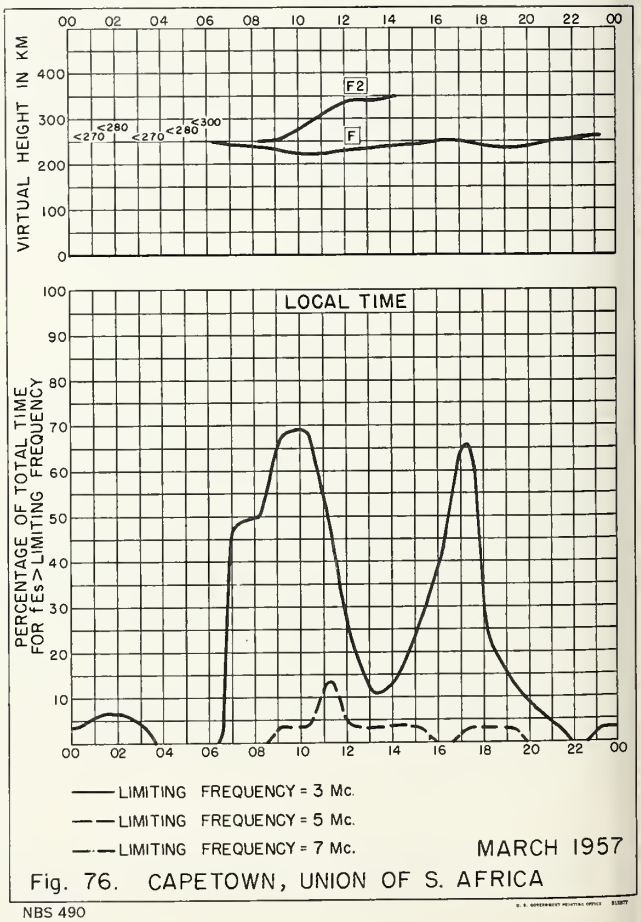


Fig. 76. CAPETOWN, UNION OF S. AFRICA MARCH 1957

NBS 490

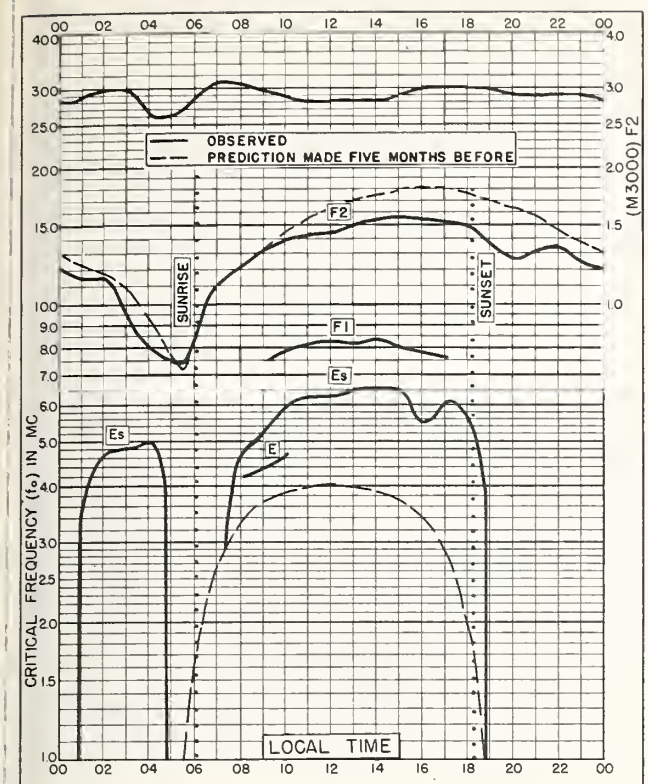


Fig. 77. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W MARCH 1957

NBS 503

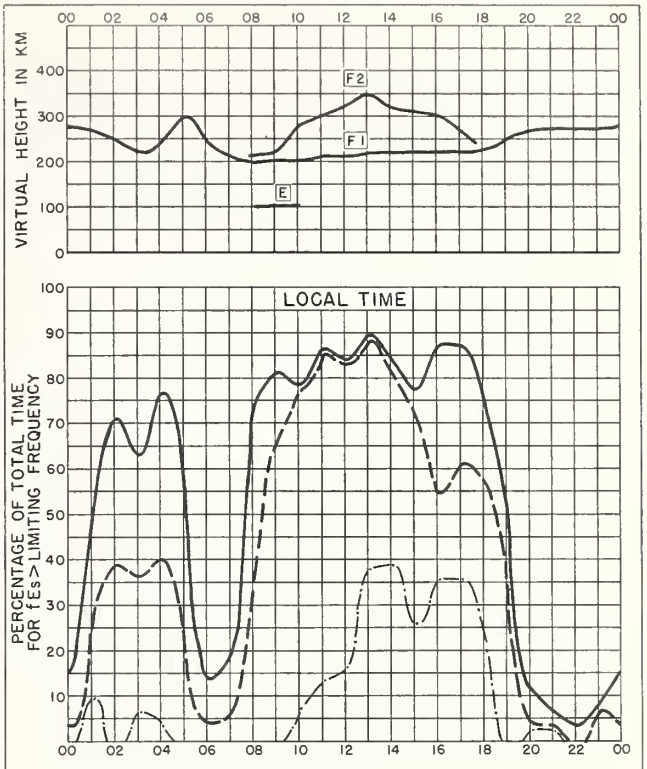


Fig. 78. BUENOS AIRES, ARGENTINA

NBS 490

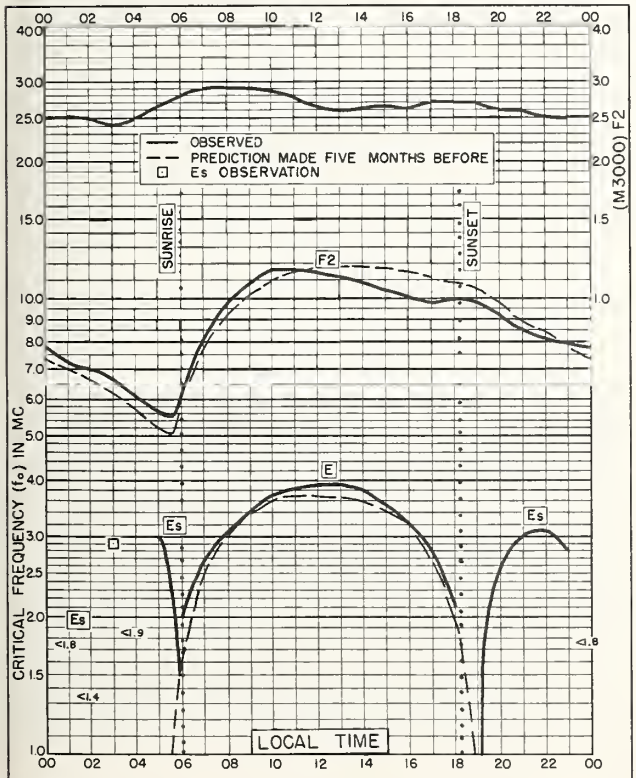


Fig. 79. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E MARCH 1957

NBS 503

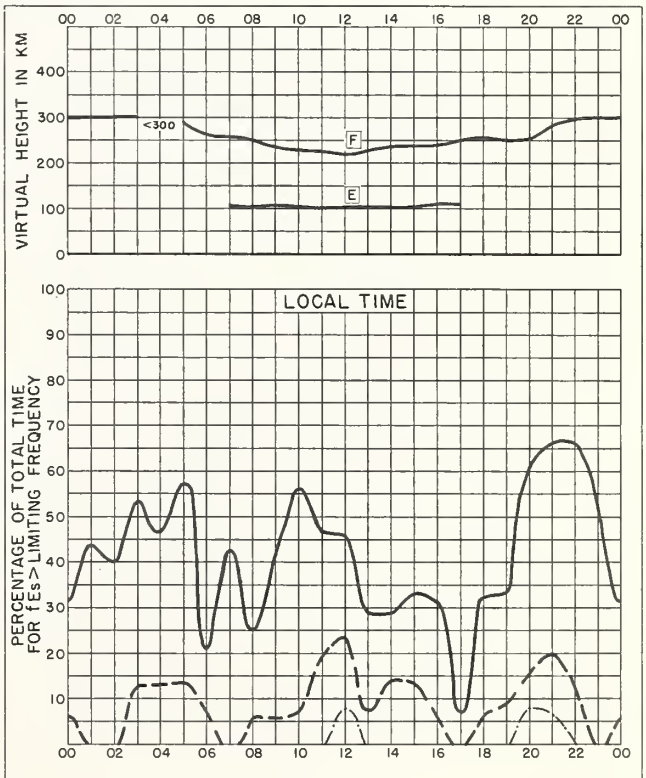


Fig. 80. CHRISTCHURCH, NEW ZEALAND

NBS 490

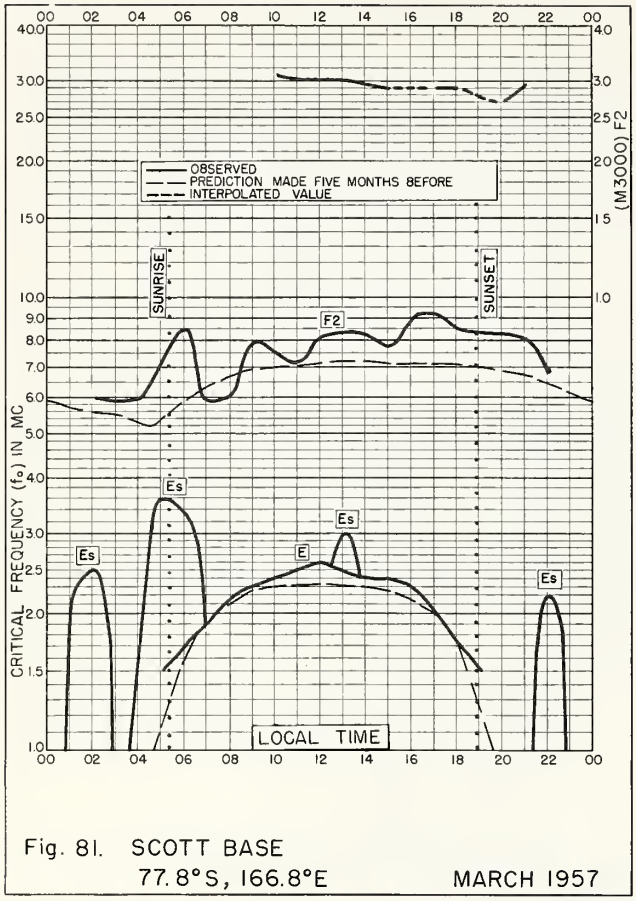


Fig. 81. SCOTT BASE
77.8°S, 166.8°E MARCH 1957

NBS 503

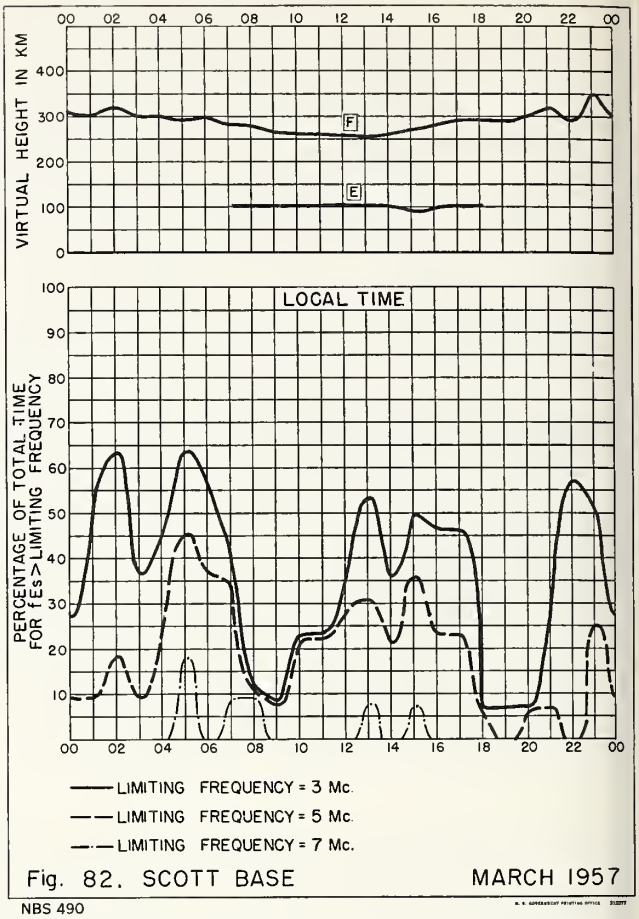


Fig. 82. SCOTT BASE MARCH 1957

NBS 490

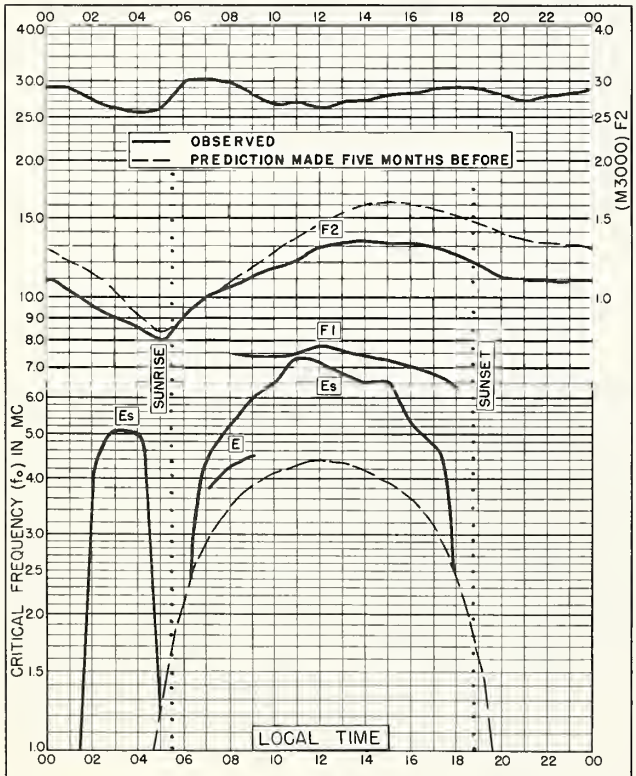


Fig. 83. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W FEBRUARY 1957

NBS 503

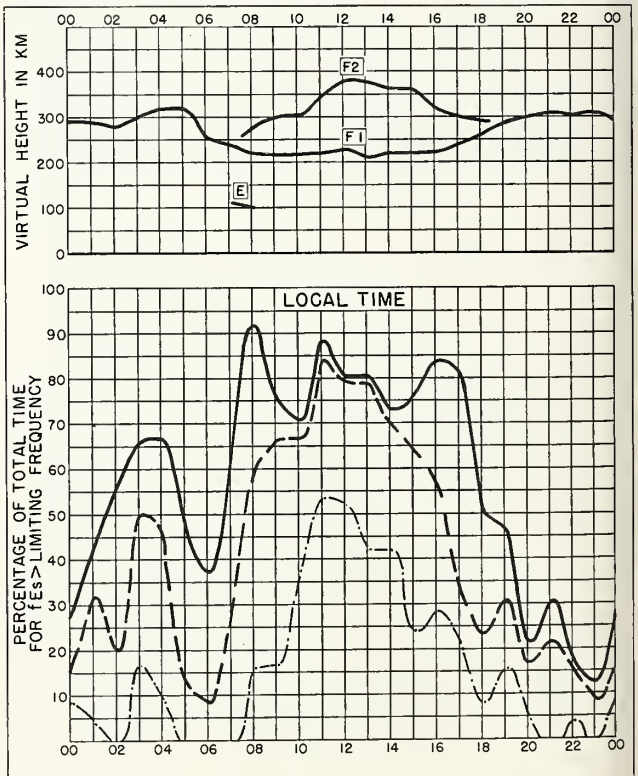


Fig. 84. BUENOS AIRES, ARGENTINA FEBRUARY 1957

NBS 490

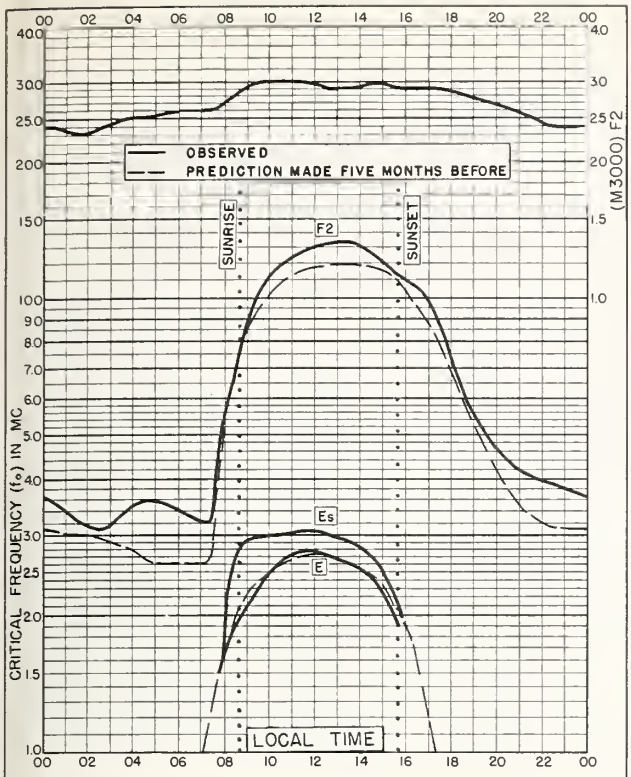


Fig. 85. INVERNESS, SCOTLAND
57.4°N, 4.2°W JANUARY 1957

NBS 503

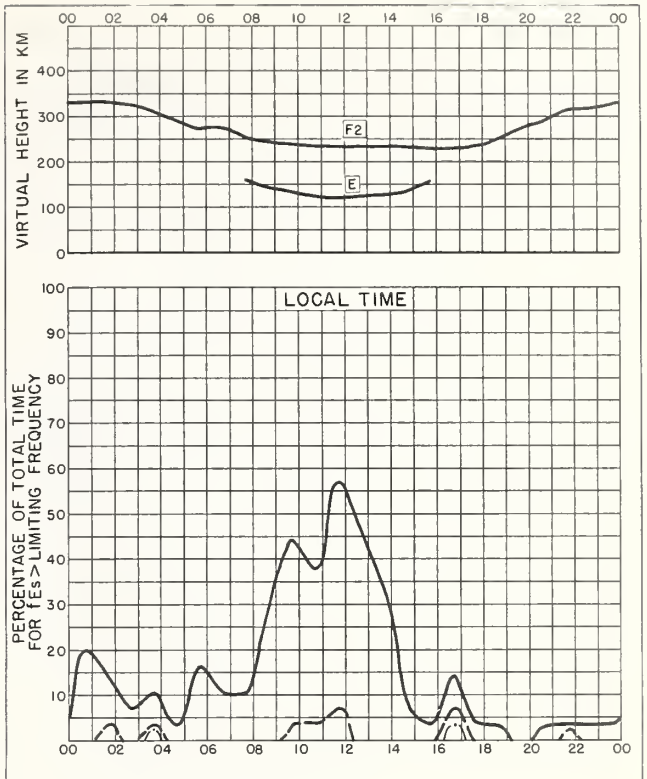


Fig. 86. INVERNESS, SCOTLAND JANUARY 1957

NBS 490

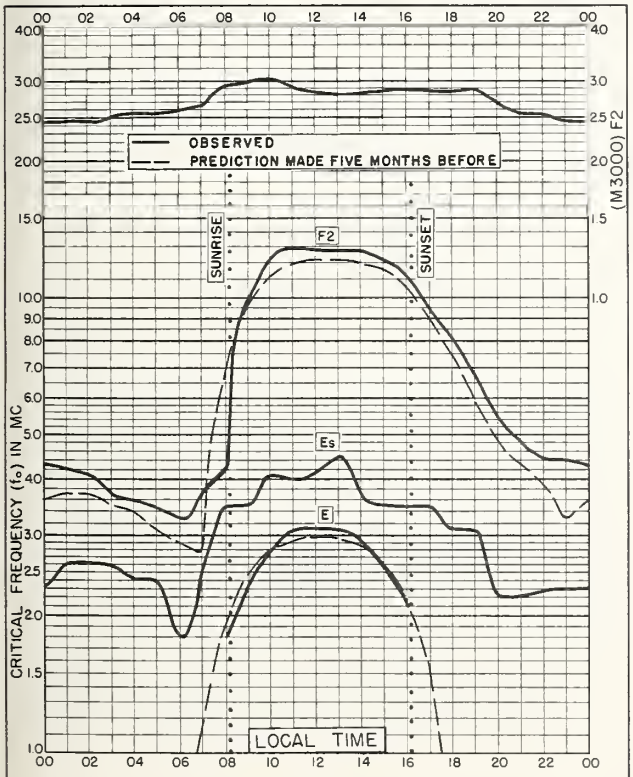


Fig. 87. SLOUGH, ENGLAND
51.5°N, 0.6°W JANUARY 1957

NBS 503

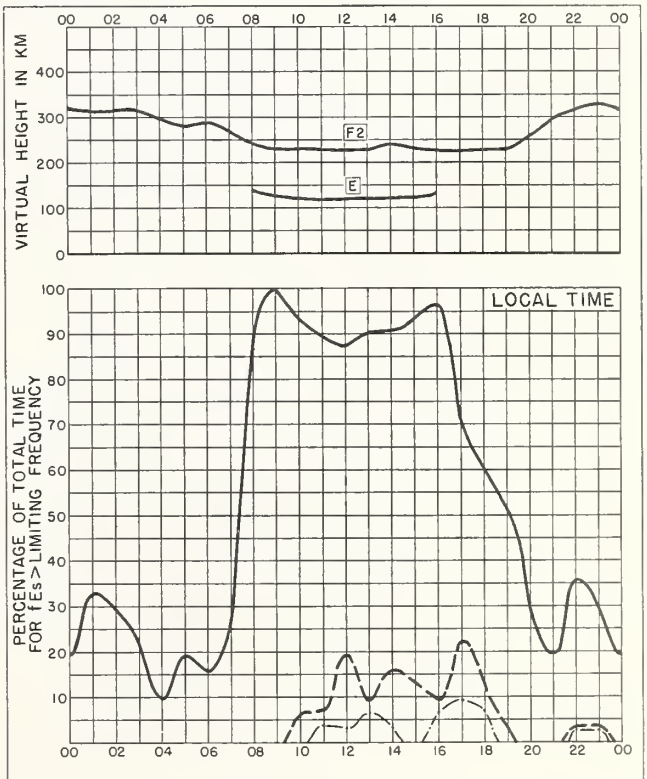


Fig. 88. SLOUGH, ENGLAND JANUARY 1957

NBS 490

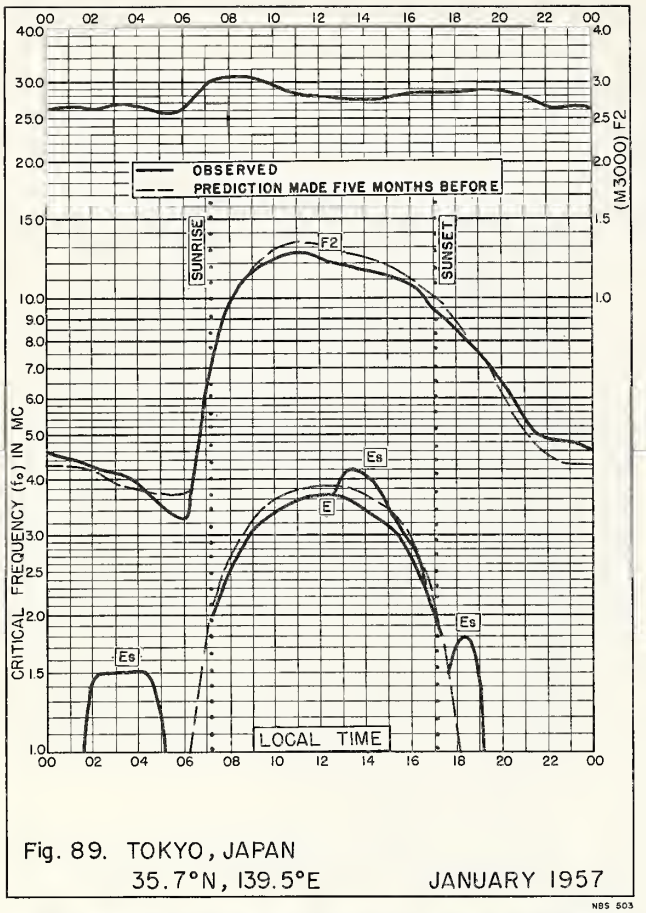


Fig. 89. TOKYO, JAPAN
35.7°N, 139.5°E JANUARY 1957

NBS 503

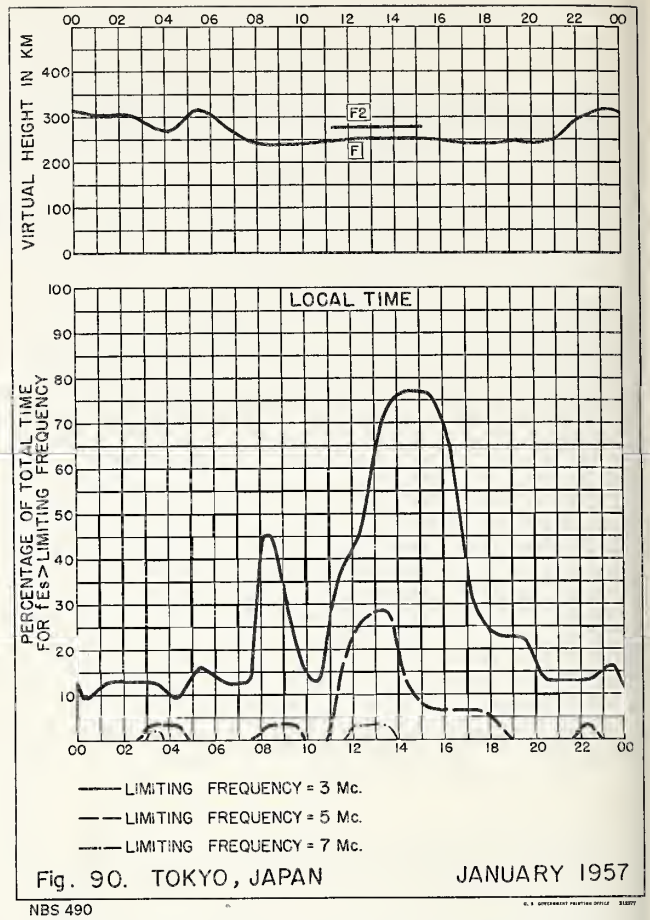


Fig. 90. TOKYO, JAPAN JANUARY 1957

NBS 490

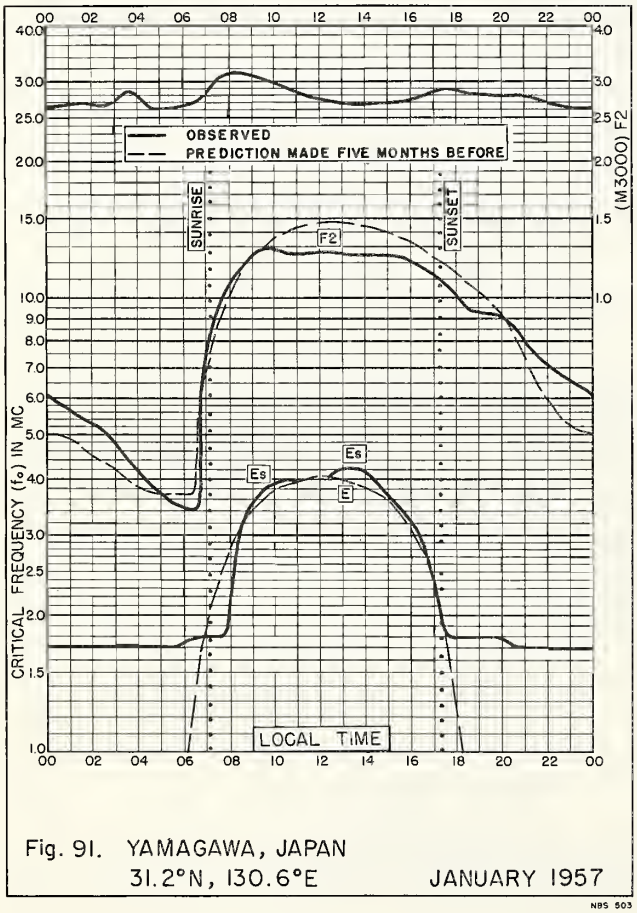


Fig. 91. YAMAGAWA, JAPAN
31.2°N, 130.6°E JANUARY 1957

NBS 503

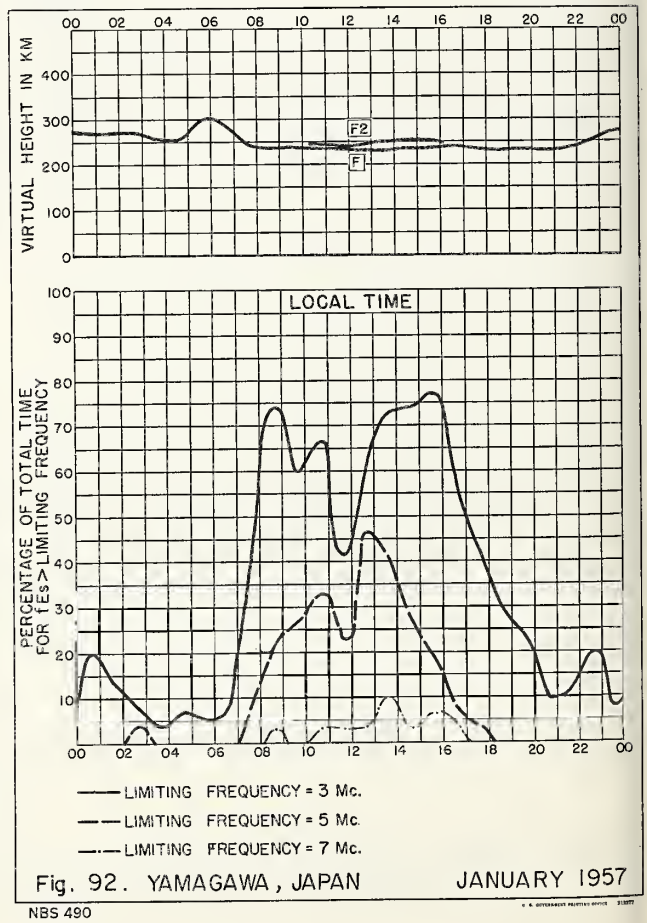


Fig. 92. YAMAGAWA, JAPAN JANUARY 1957

NBS 490

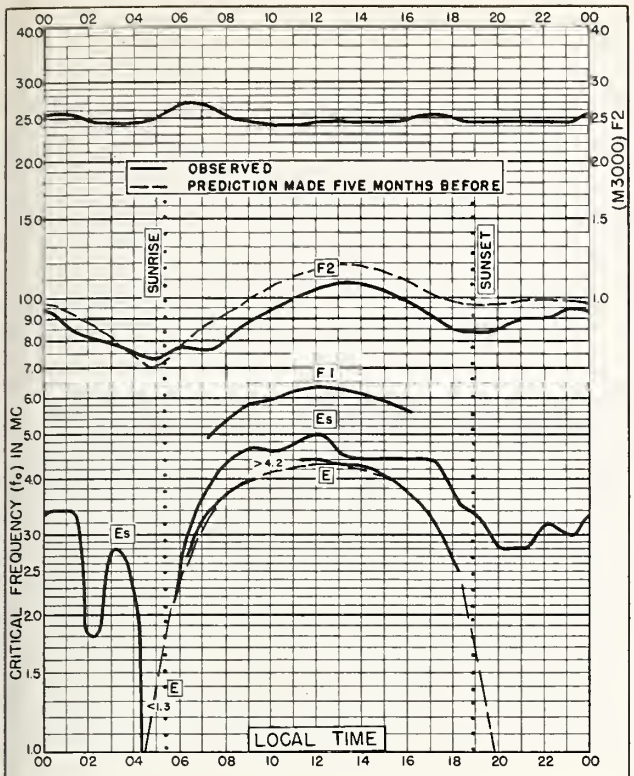


Fig. 93. BRISBANE, AUSTRALIA
27.5°S, 152.9°E JANUARY 1957

NBS 503

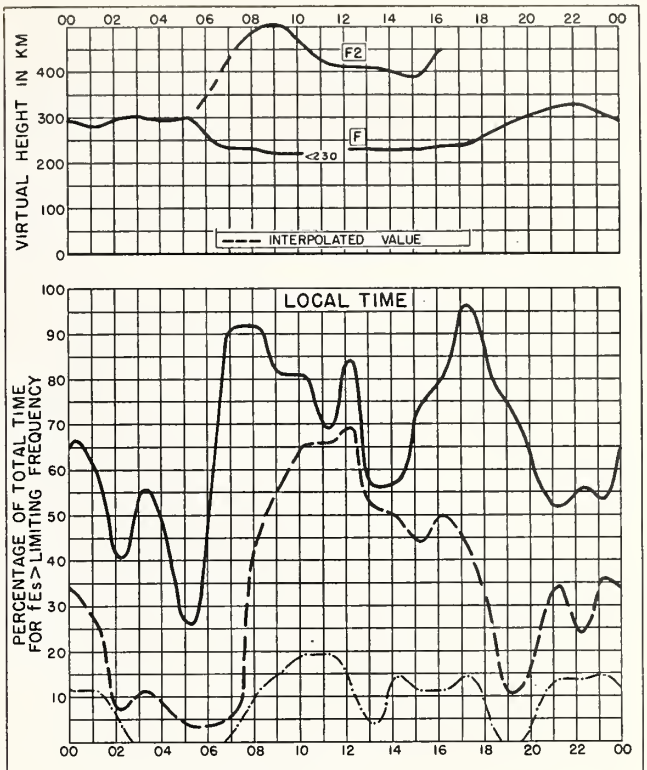


Fig. 94. BRISBANE, AUSTRALIA JANUARY 1957

NBS 490

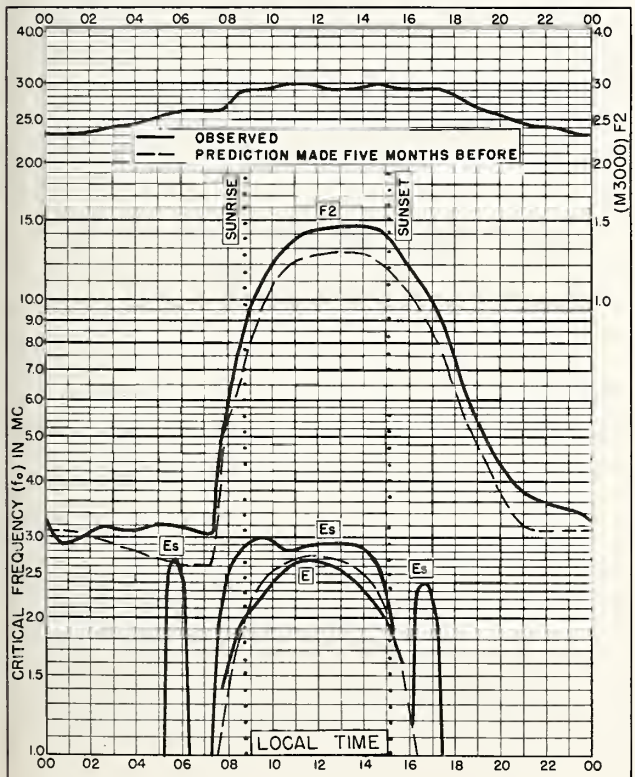


Fig. 95. INVERNESS, SCOTLAND
57.4°N, 4.2°W DECEMBER 1956

NBS 503

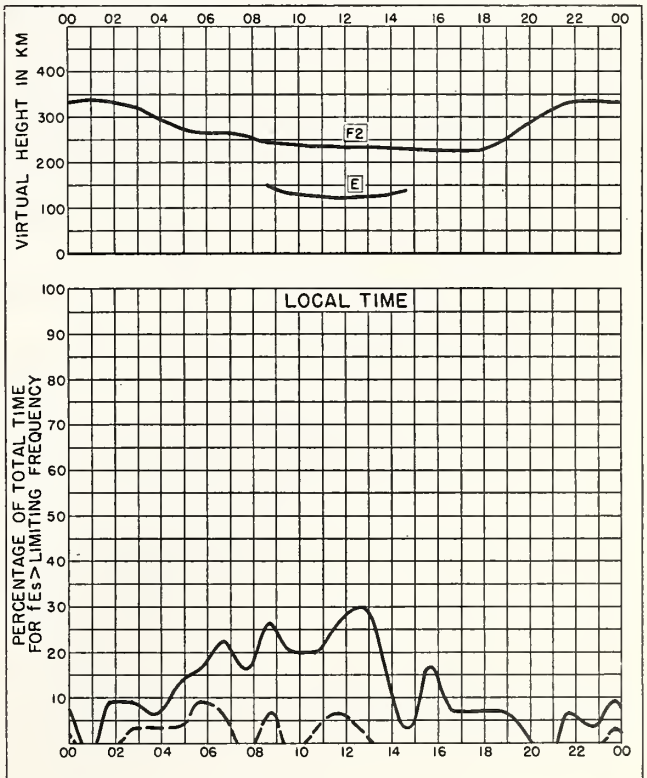


Fig. 96. INVERNESS, SCOTLAND DECEMBER 1956

NBS 490

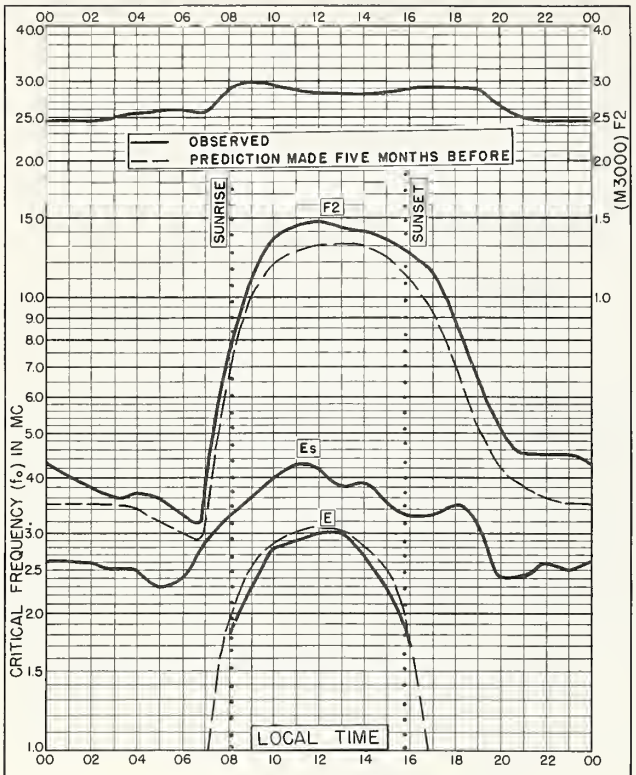


Fig. 97. SLOUGH, ENGLAND
51.5°N, 0.6°W DECEMBER 1956

NBS 503

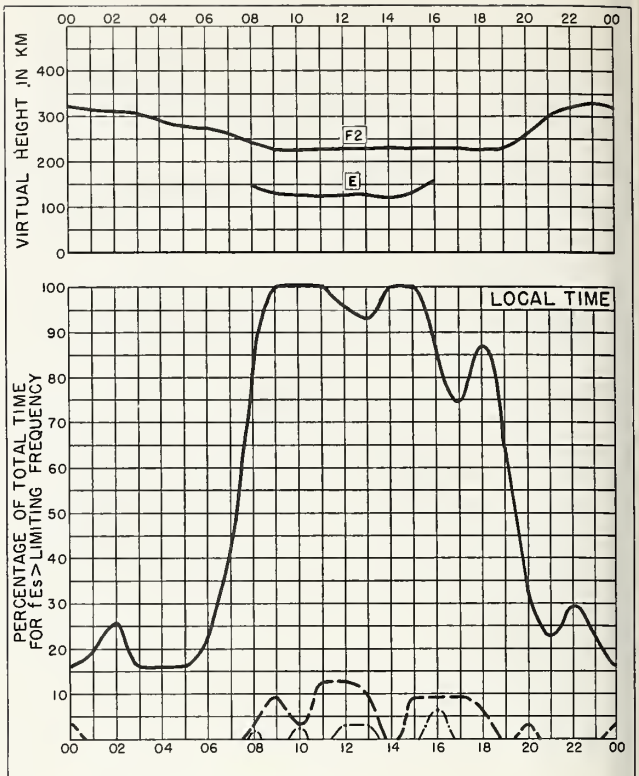


Fig. 98. SLOUGH, ENGLAND DECEMBER 1956

NBS 490

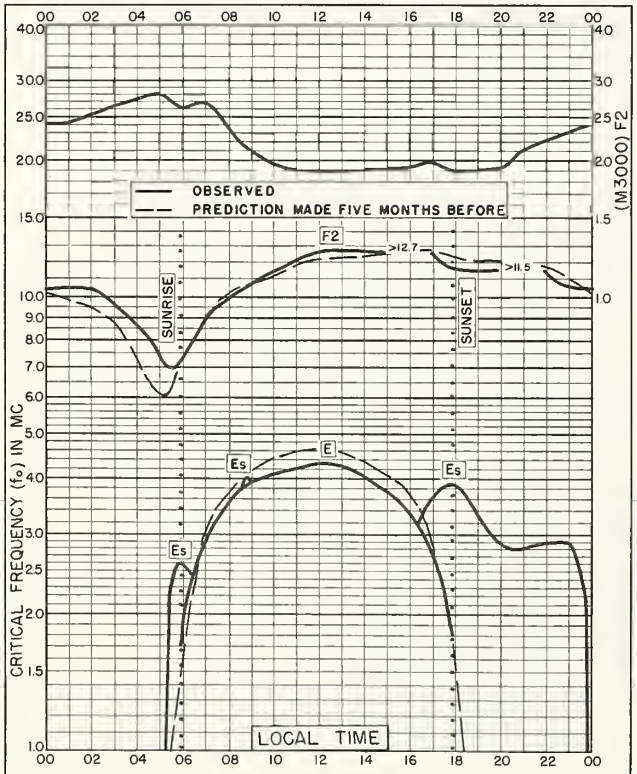


Fig. 99. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E DECEMBER 1956

NBS 503

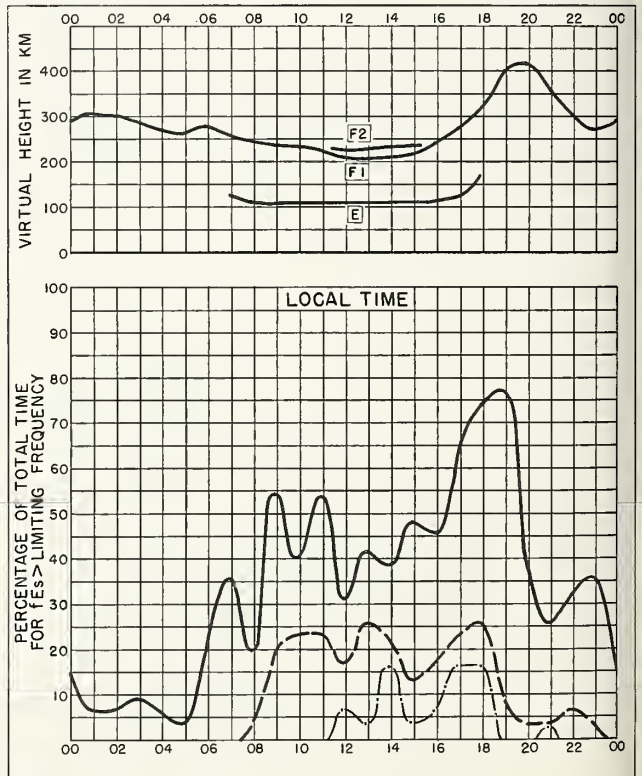


Fig. 100. SINGAPORE, BRITISH MALAYA DECEMBER 1956

NBS 490

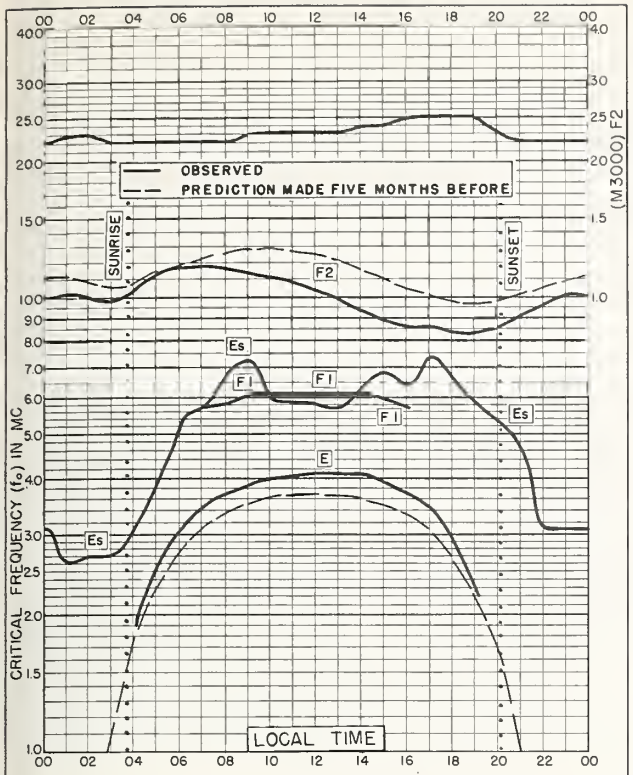


Fig. 101. FALKLAND IS.
51.7°S, 57.8°W DECEMBER 1956

NBS 503

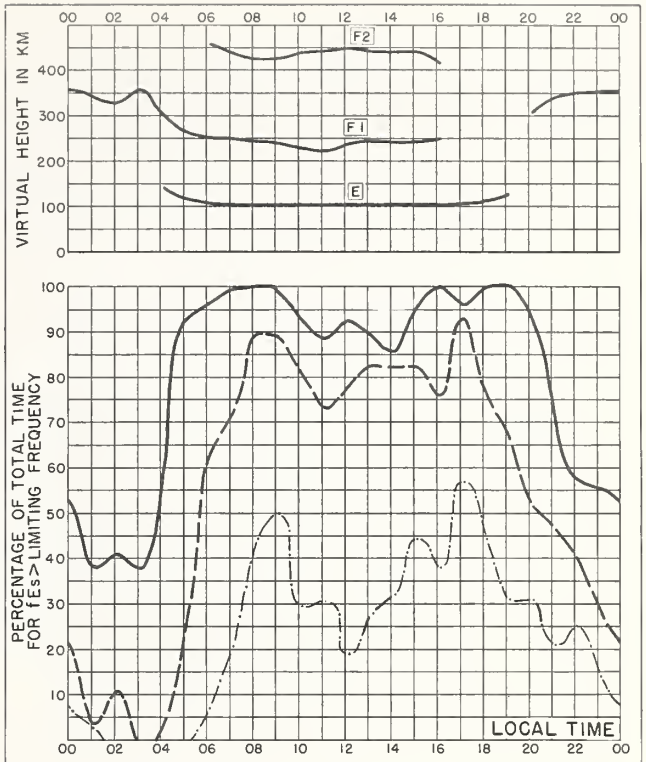


Fig. 102. FALKLAND IS. DECEMBER 1956

NBS 490

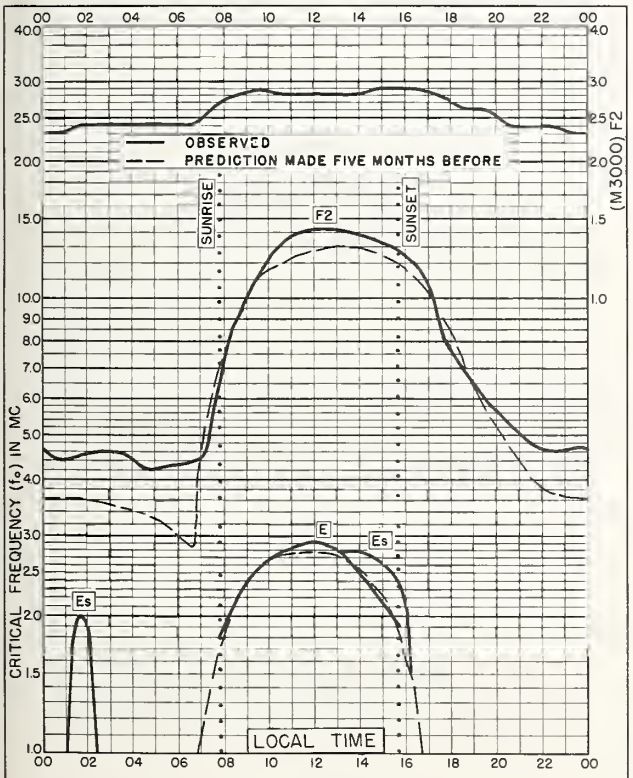


Fig. 103. INVERNESS, SCOTLAND
57.4°N, 4.2°W NOVEMBER 1956

NBS 503

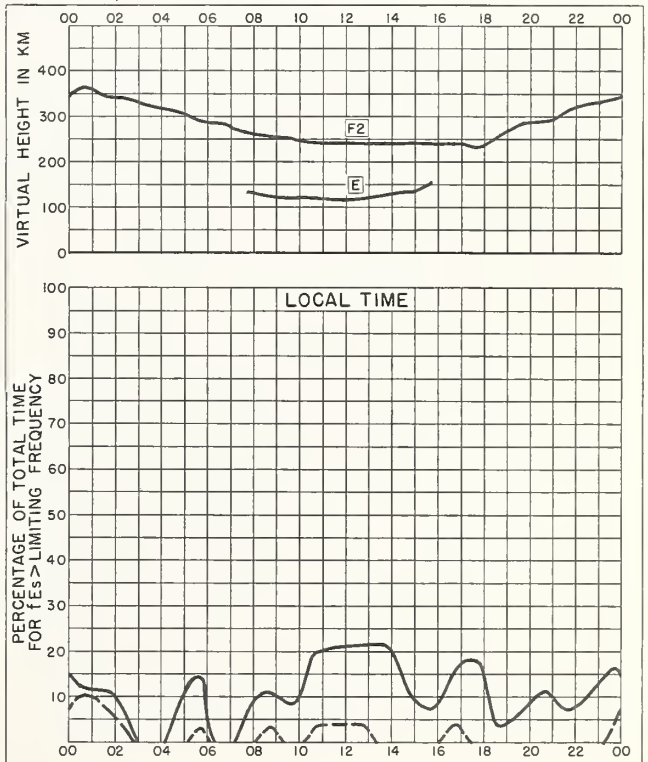


Fig. 104. INVERNESS, SCOTLAND NOVEMBER 1956

NBS 490

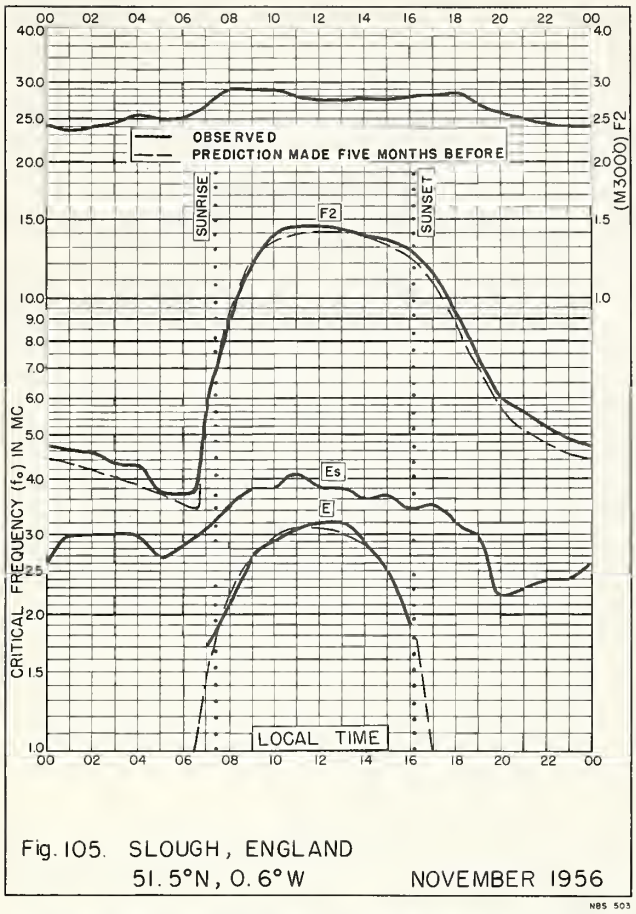


Fig. 105. SLOUGH, ENGLAND
51.5°N, 0.6°W NOVEMBER 1956

NBS 503

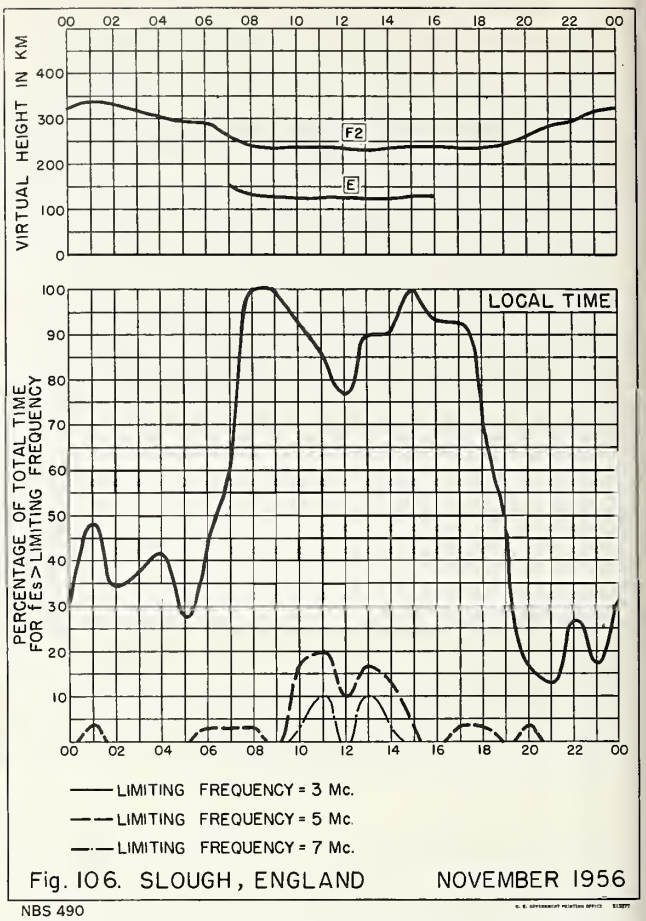


Fig. 106. SLOUGH, ENGLAND NOVEMBER 1956

NBS 490

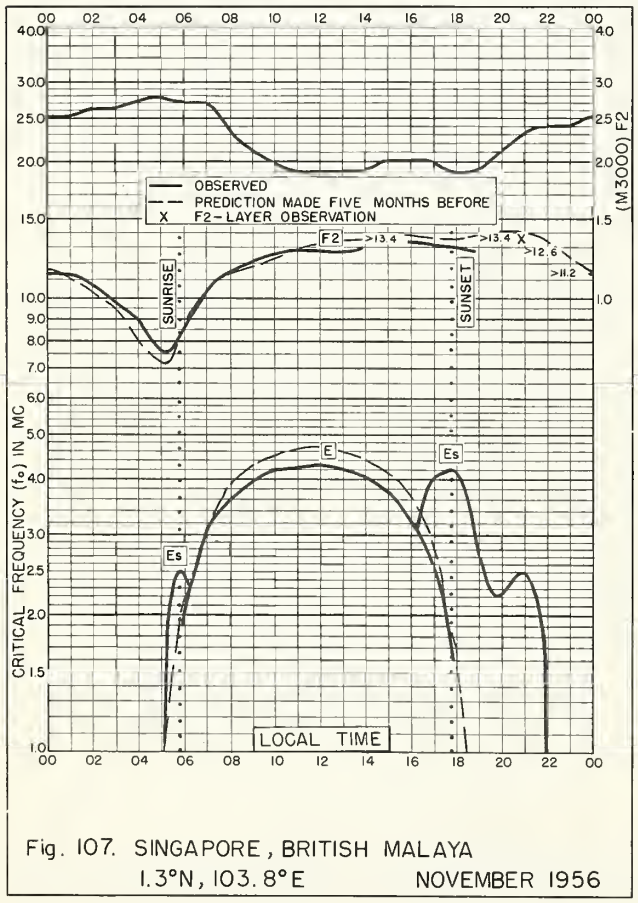


Fig. 107. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E NOVEMBER 1956

NBS 503

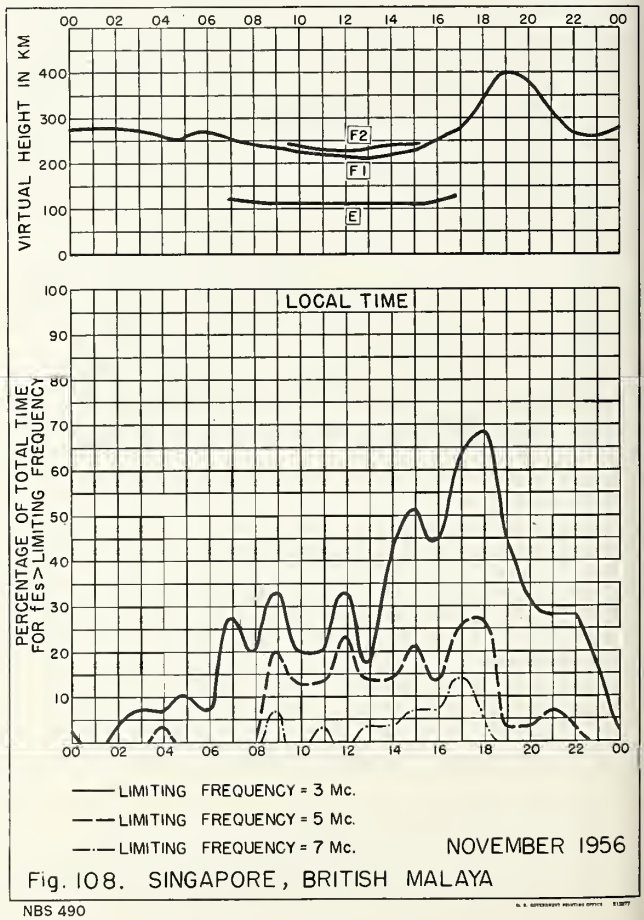


Fig. 108. SINGAPORE, BRITISH MALAYA NOVEMBER 1956

NBS 490

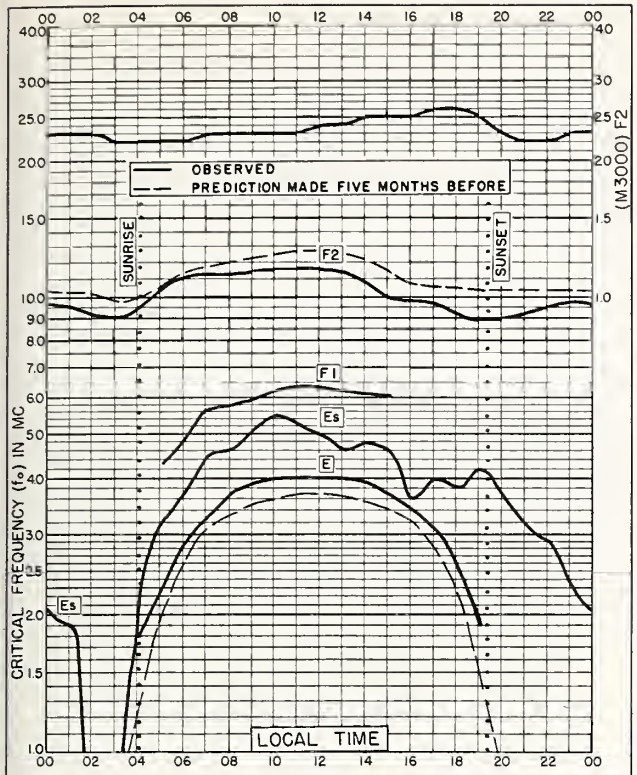


Fig. 109. FALKLAND IS.
51.7°S, 57.8°W NOVEMBER 1956

NBS 503

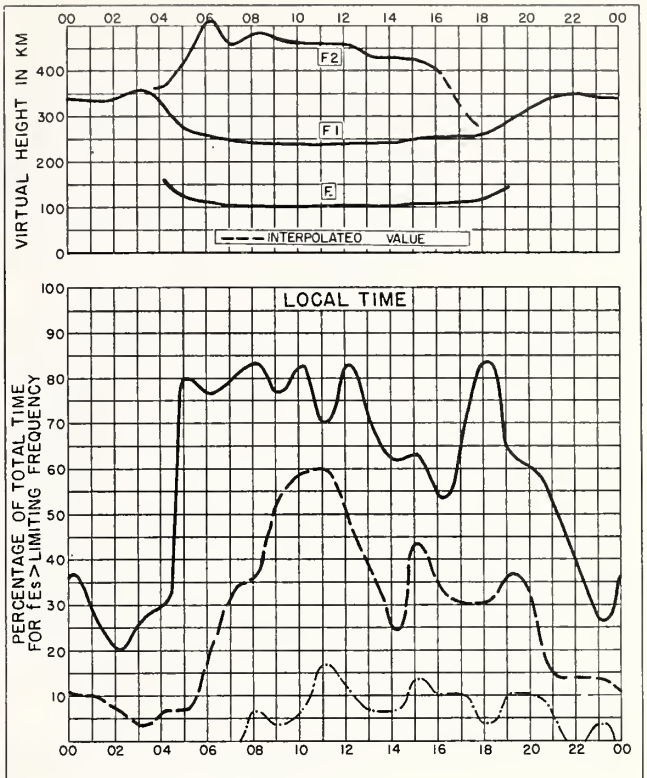


Fig. 110. FALKLAND IS. NOVEMBER 1956

NBS 490

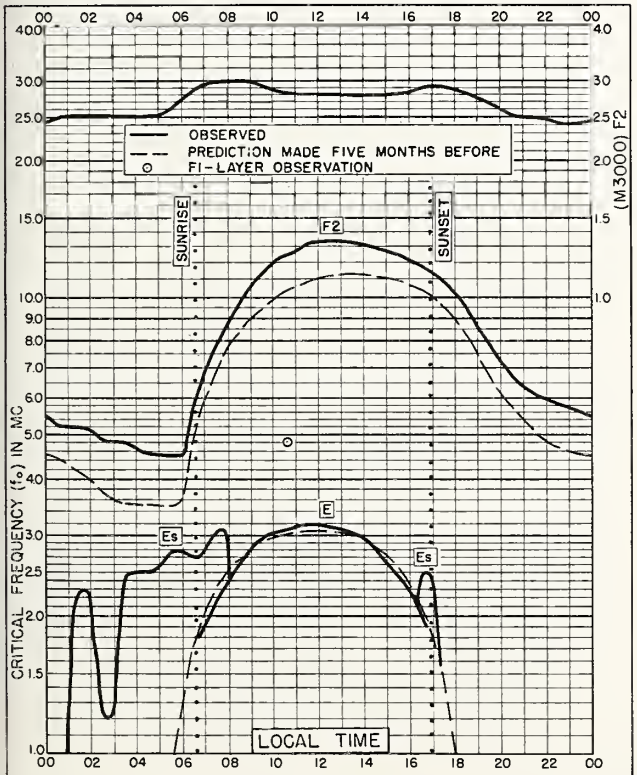


Fig. 111. INVERNESS, SCOTLAND
57.4°N, 4.2°W OCTOBER 1956

NBS 503

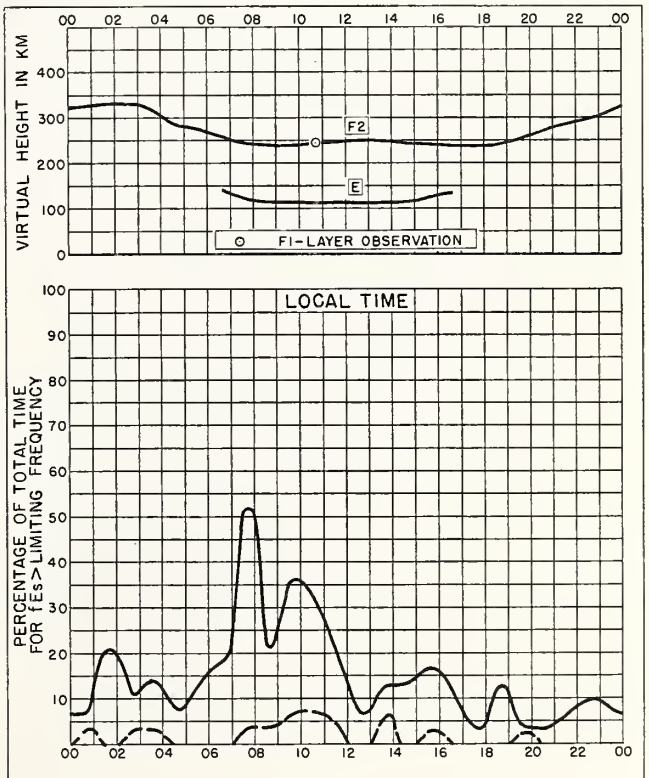


Fig. 112. INVERNESS, SCOTLAND OCTOBER 1956

NBS 490

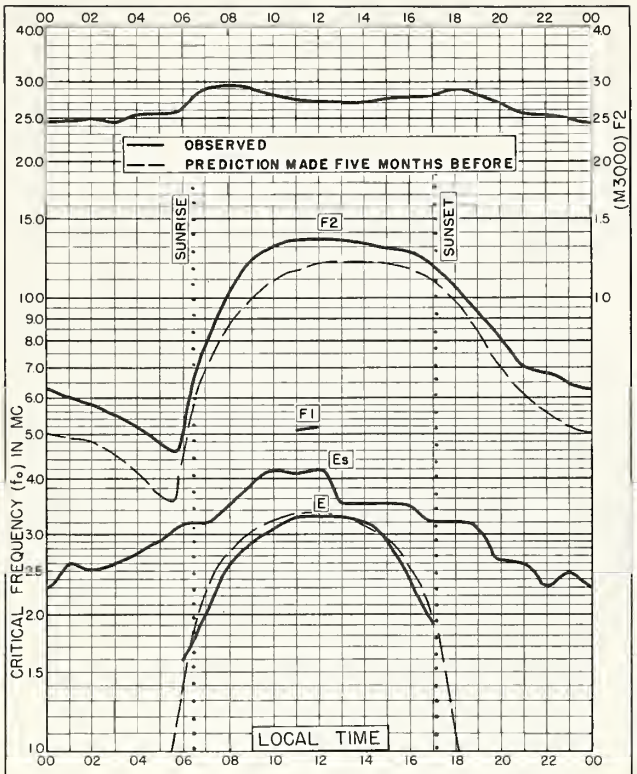


Fig. 113. SLOUGH, ENGLAND
51.5°N, 0.6°W OCTOBER 1956

NBS 503

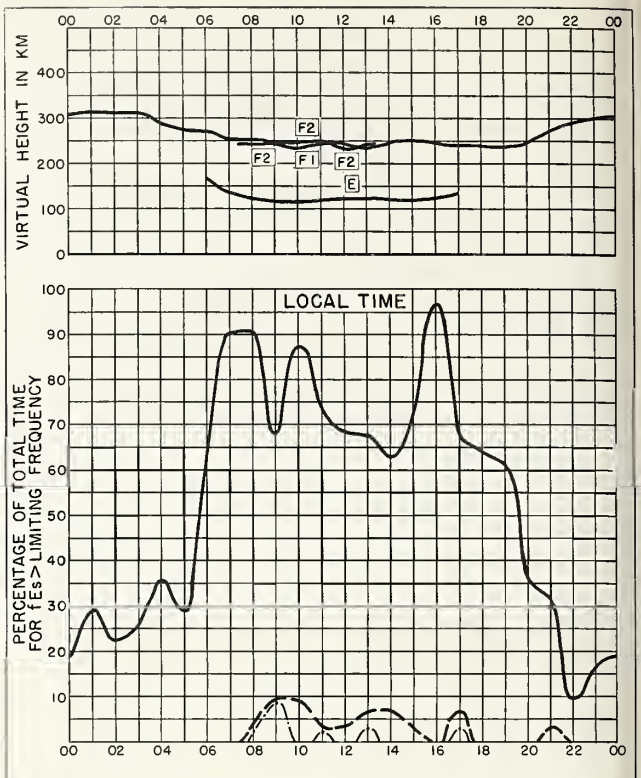


Fig. 114. SLOUGH, ENGLAND OCTOBER 1956

NBS 490

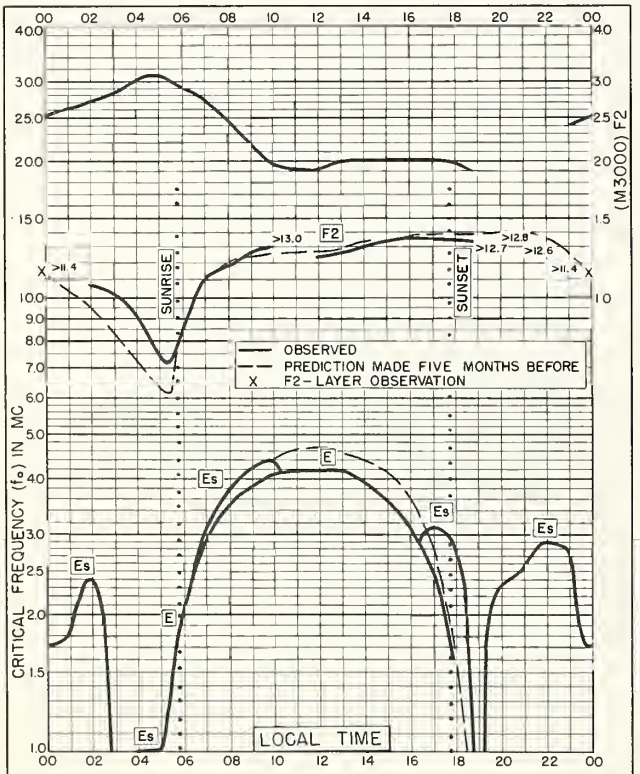


Fig. 115. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E OCTOBER 1956

NBS 503

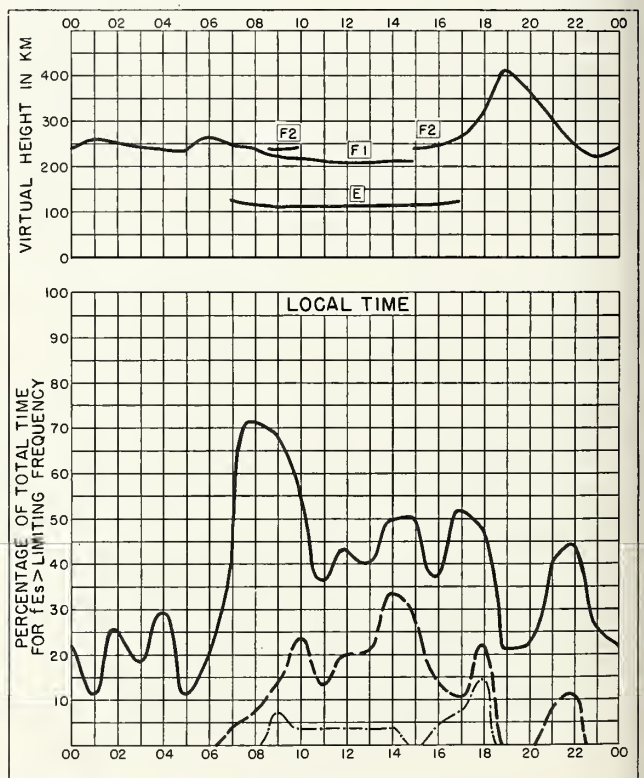


Fig. 116. SINGAPORE, BRITISH MALAYA OCTOBER 1956

NBS 490

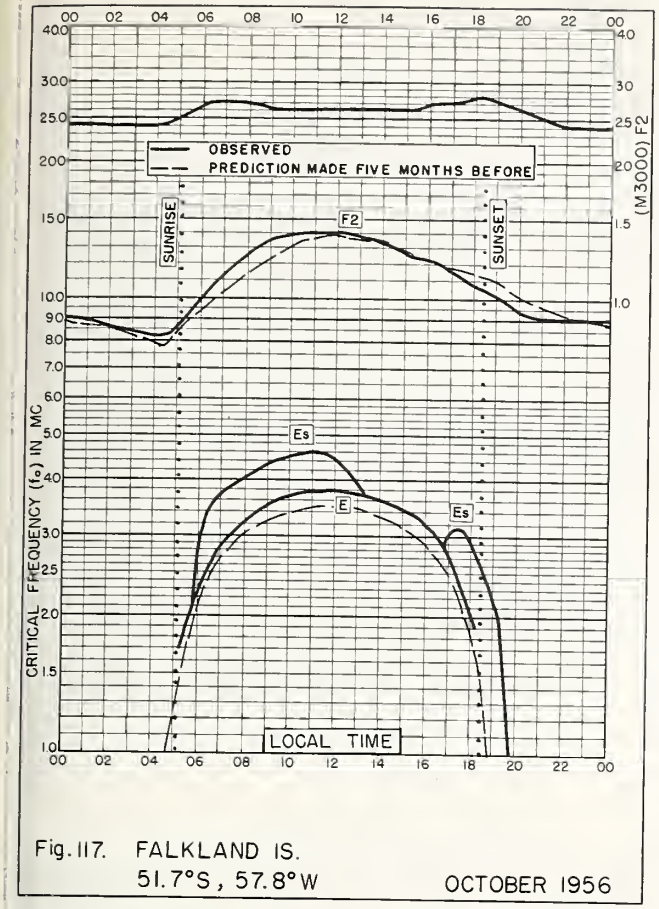


Fig. 117. FALKLAND IS.
51.7°S, 57.8°W OCTOBER 1956

NBS 503

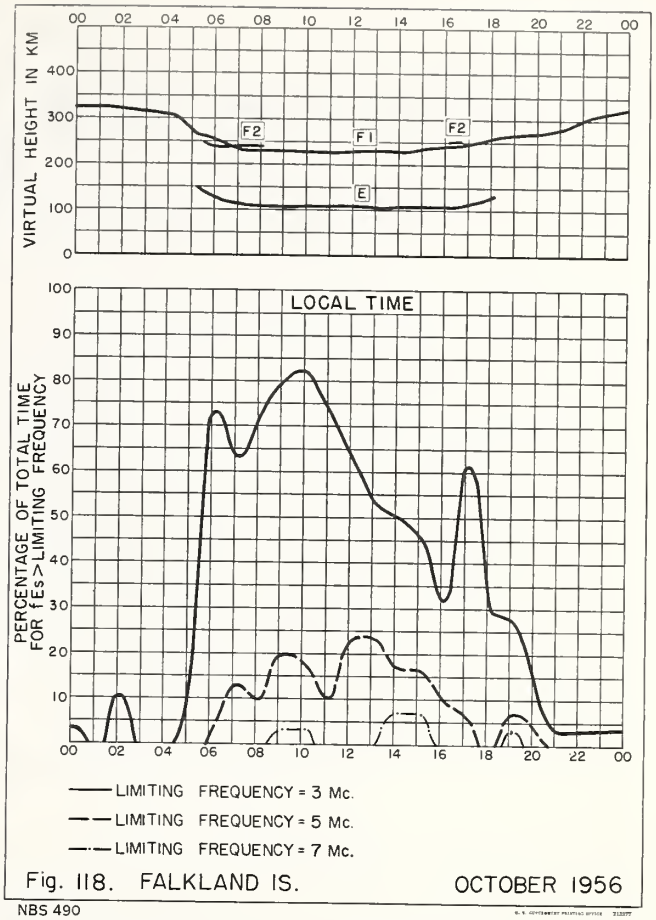


Fig. 118. FALKLAND IS. OCTOBER 1956

NBS 490

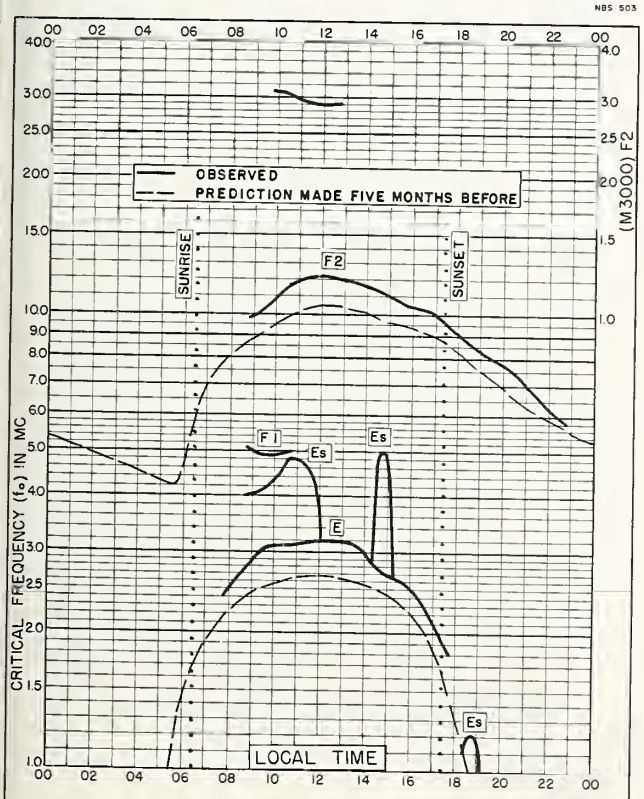


Fig. 119. PORT LOCKROY
64.8°S, 63.5°W SEPTEMBER 1956

NBS 503

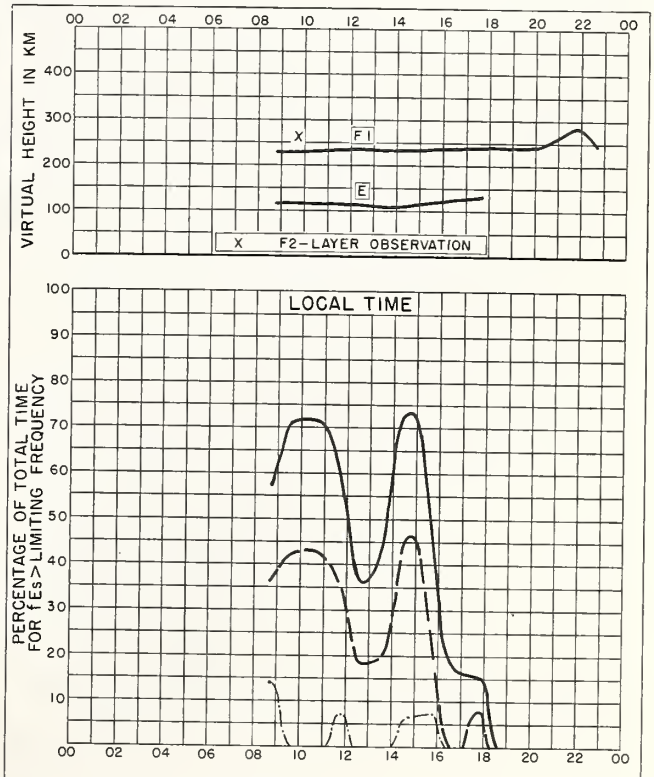


Fig. 120. PORT LOCKROY SEPTEMBER 1956

NBS 490

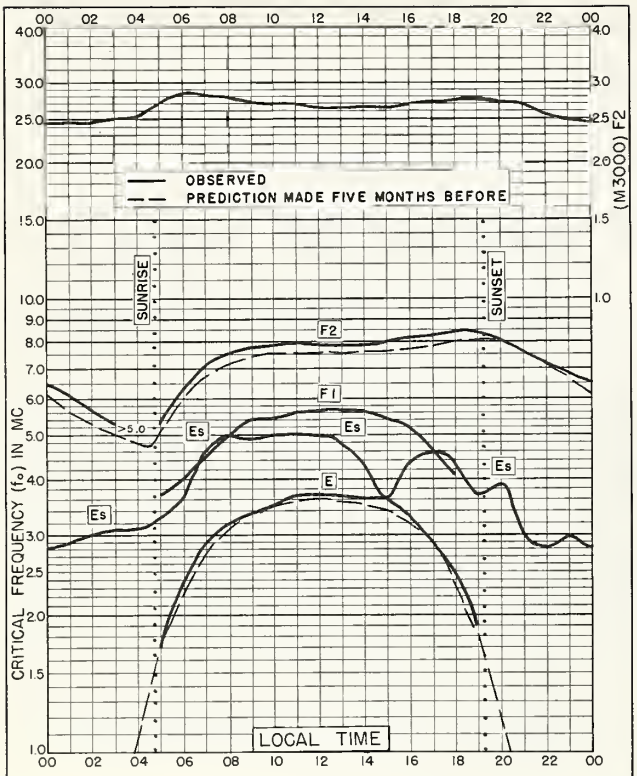


Fig. 121. SLOUGH, ENGLAND
51.5°N, 0.6°W AUGUST 1956

NBS 503

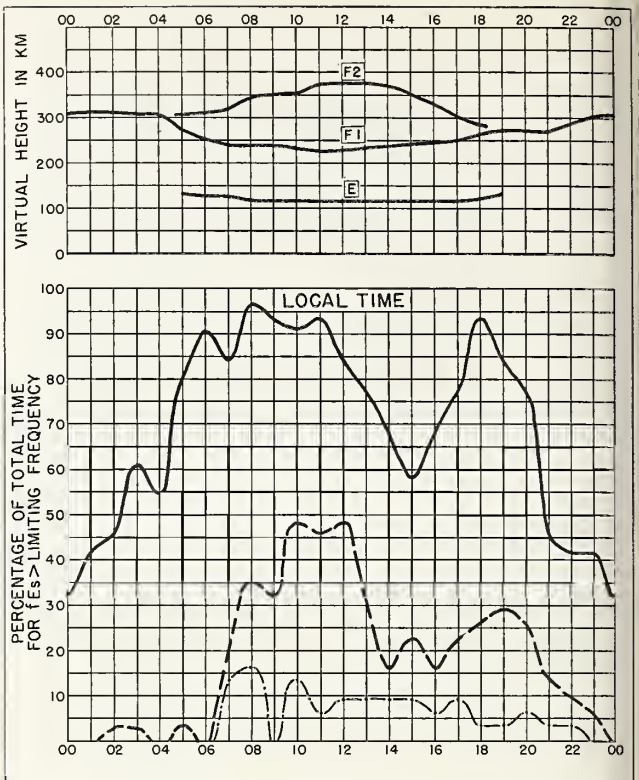


Fig. 122. SLOUGH, ENGLAND AUGUST 1956

NBS 490

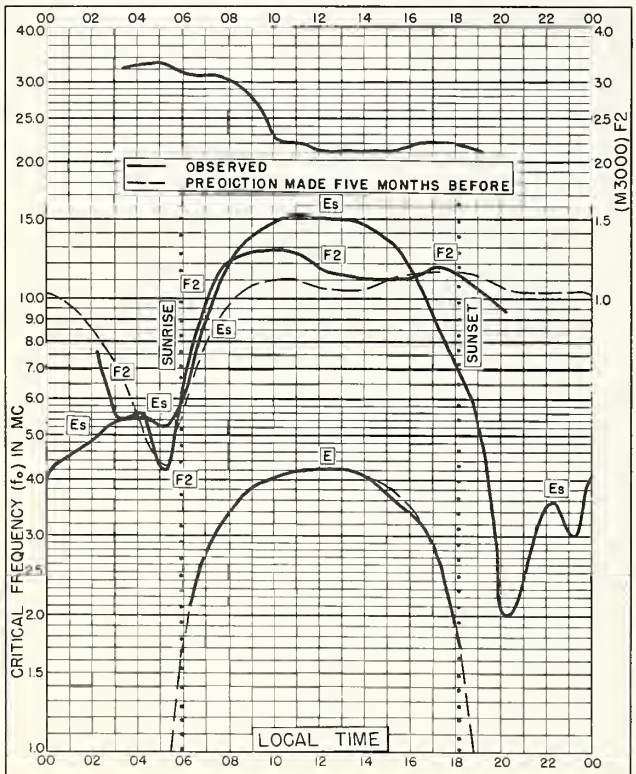


Fig. 123. IBADAN, NIGERIA
7.4°N, 4.0°E AUGUST 1956

NBS 503

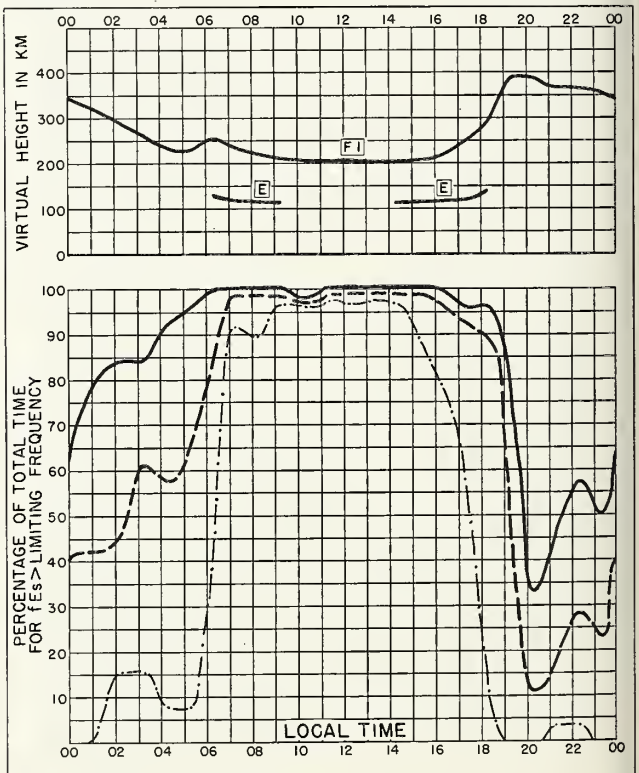


Fig. 124. IBADAN, NIGERIA AUGUST 1956

NBS 490

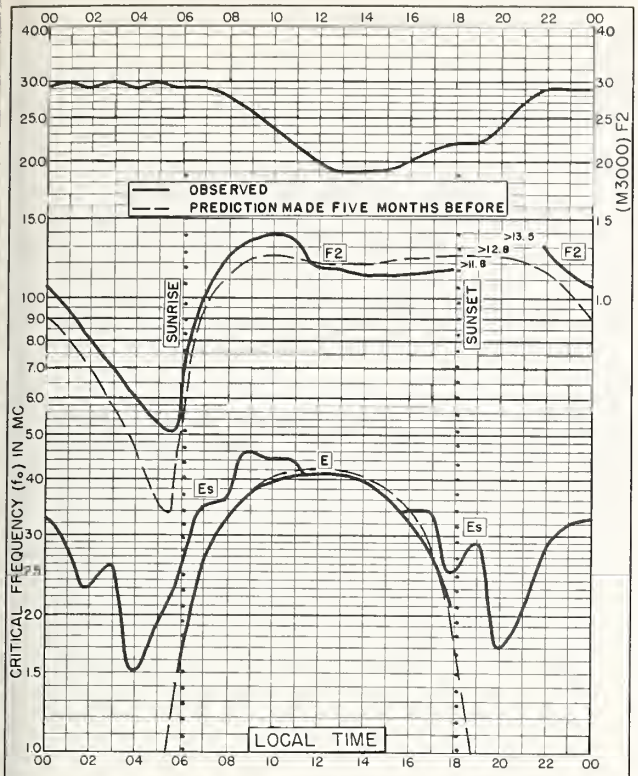


Fig. 125. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E AUGUST 1956

NBS 503

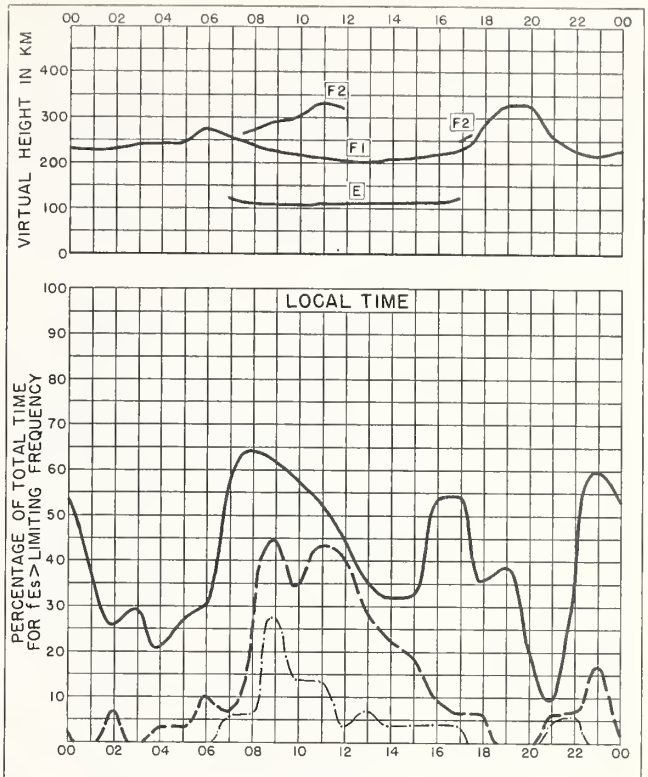


Fig. 126. SINGAPORE, BRITISH MALAYA AUGUST 1956

NBS 490

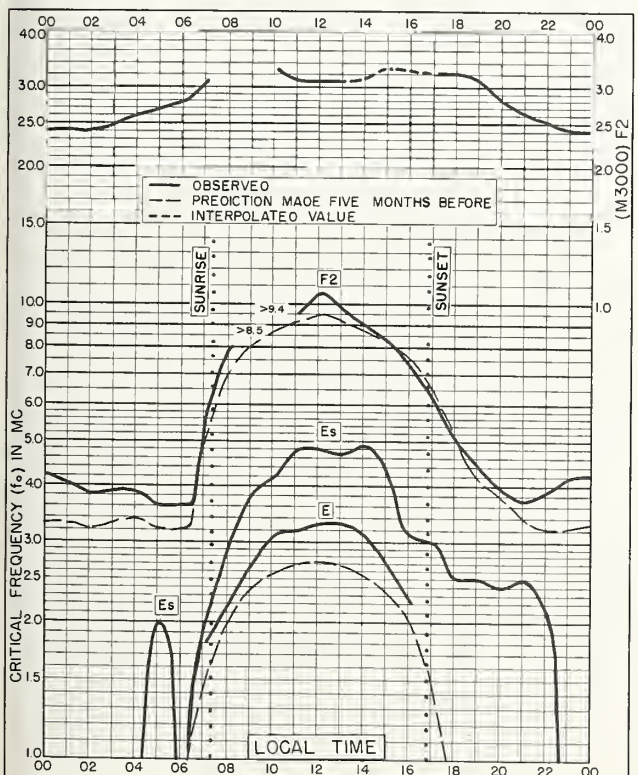


Fig. 127. FALKLAND IS.
51.7°S, 57.8°W AUGUST 1956

NBS 503

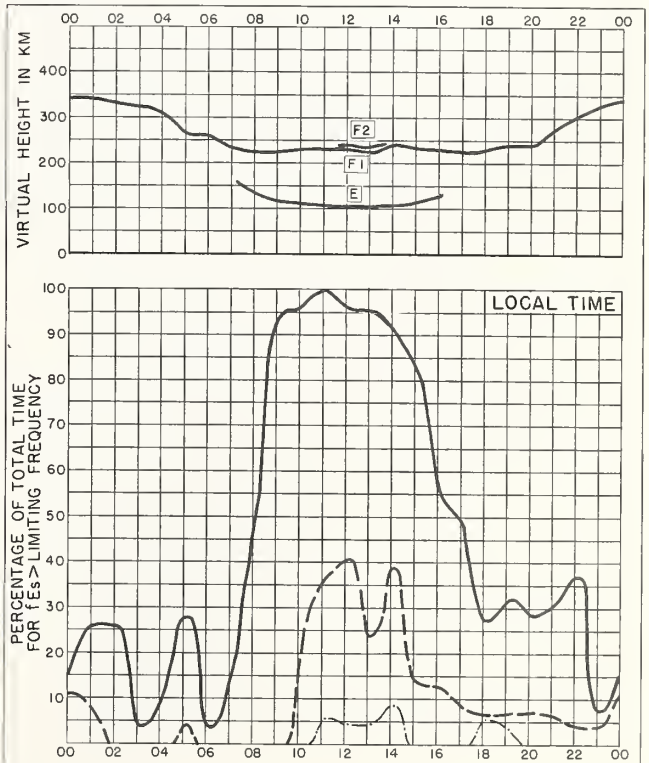


Fig. 128. FALKLAND IS. AUGUST 1956

NBS 490

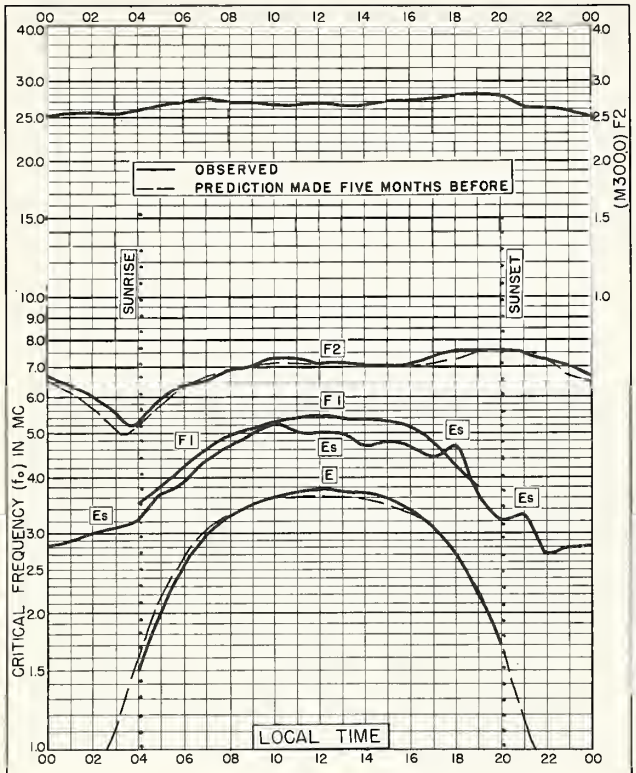


Fig. 129. SLOUGH, ENGLAND
51.5°N, 0.6°W JULY 1956

NBS 503

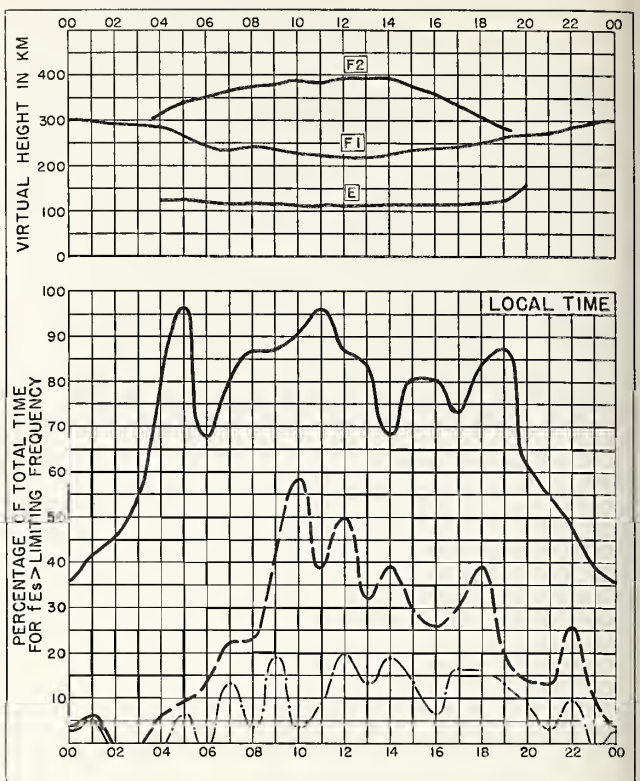


Fig. 130. SLOUGH, ENGLAND JULY 1956

NBS 490

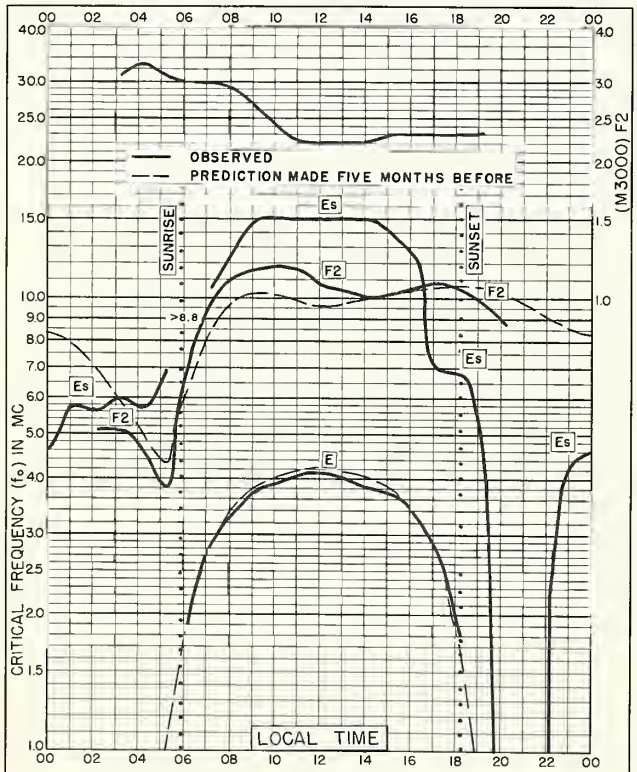


Fig. 131. IBADAN, NIGERIA
7.4°N, 4.0°E JULY 1956

NBS 503

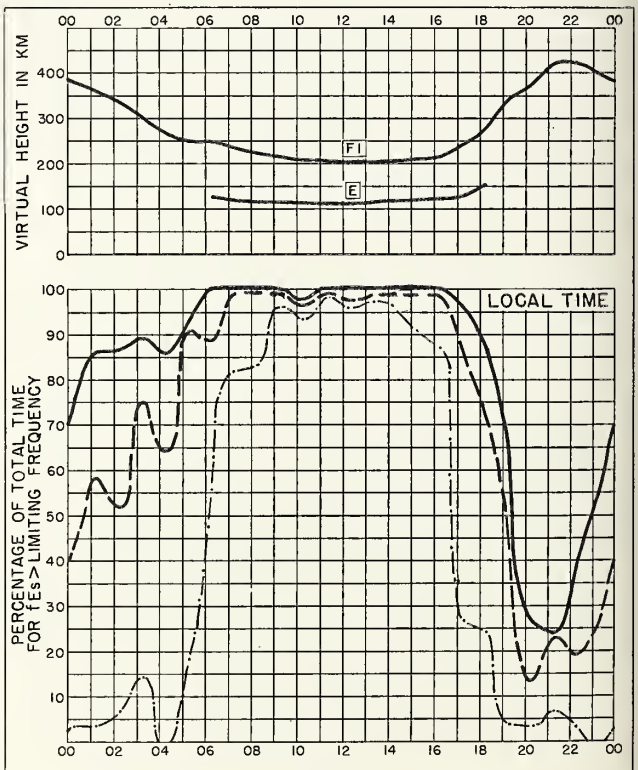


Fig. 132. IBADAN, NIGERIA JULY 1956

NBS 490

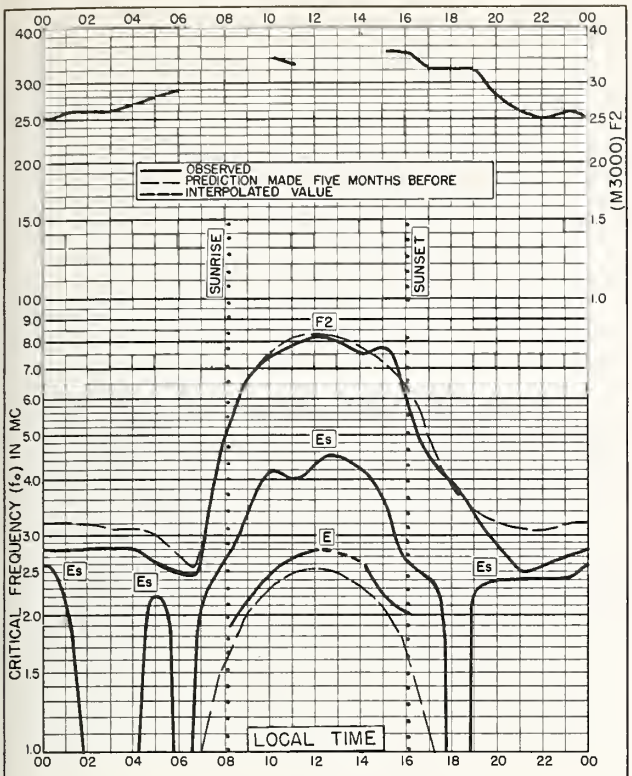


Fig. 133. FALKLAND IS.
51.7°S, 57.8° W JULY 1956

NBS 503

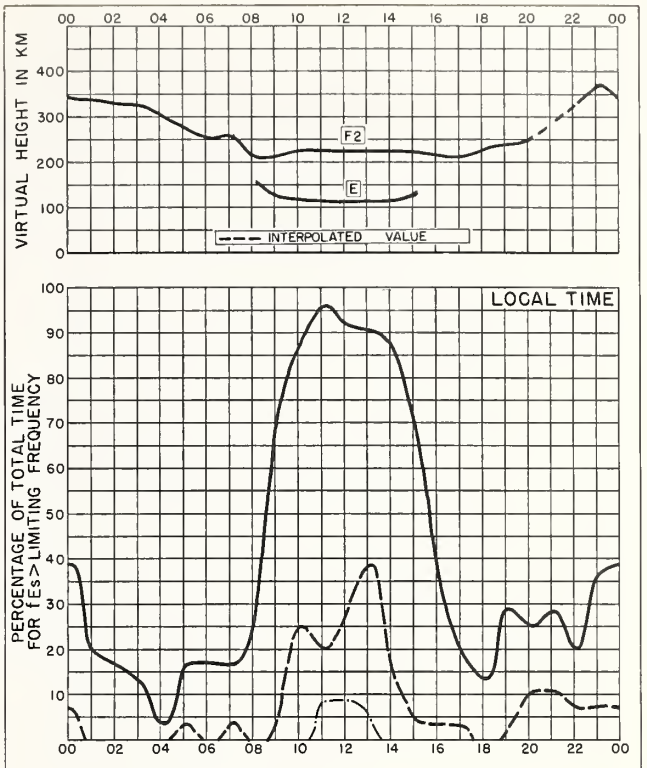


Fig. 134. FALKLAND IS. JULY 1956

NBS 490

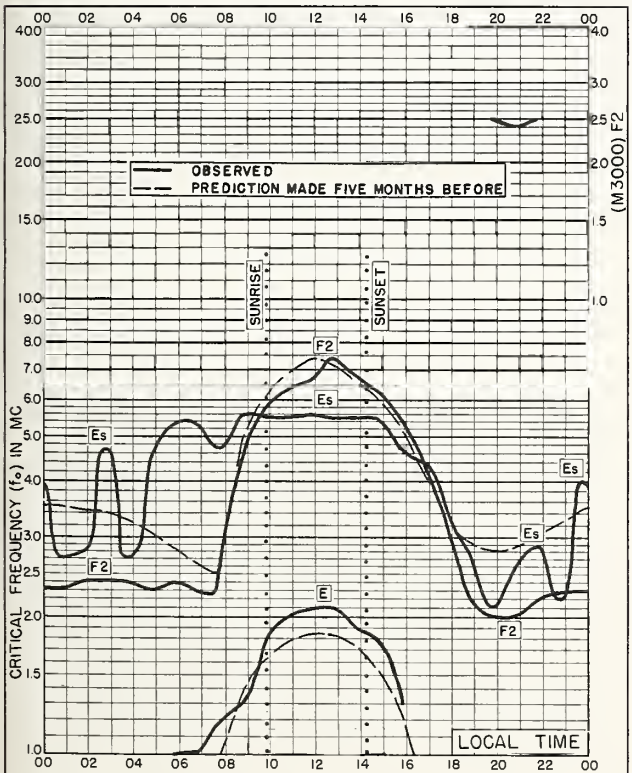


Fig. 135. PORT LOCKROY
64.8°S, 63.5°W JULY 1956

NBS 503

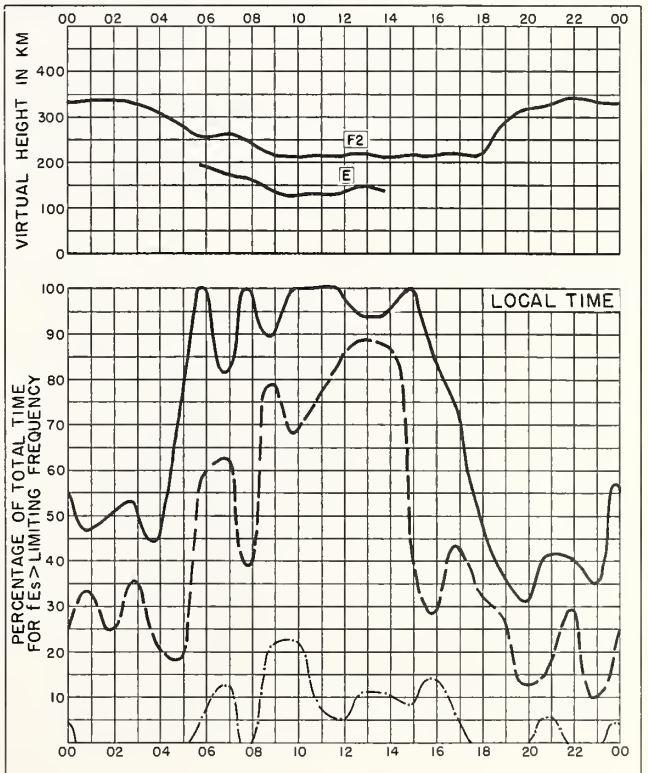


Fig. 136. PORT LOCKROY JULY 1956

NBS 490

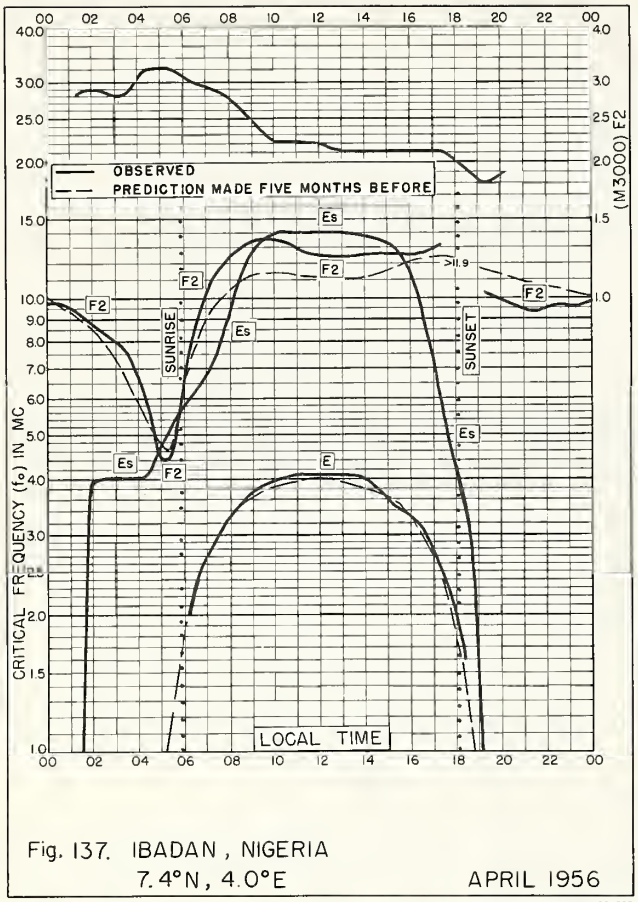


Fig. 137. IBADAN, NIGERIA
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NBS 503

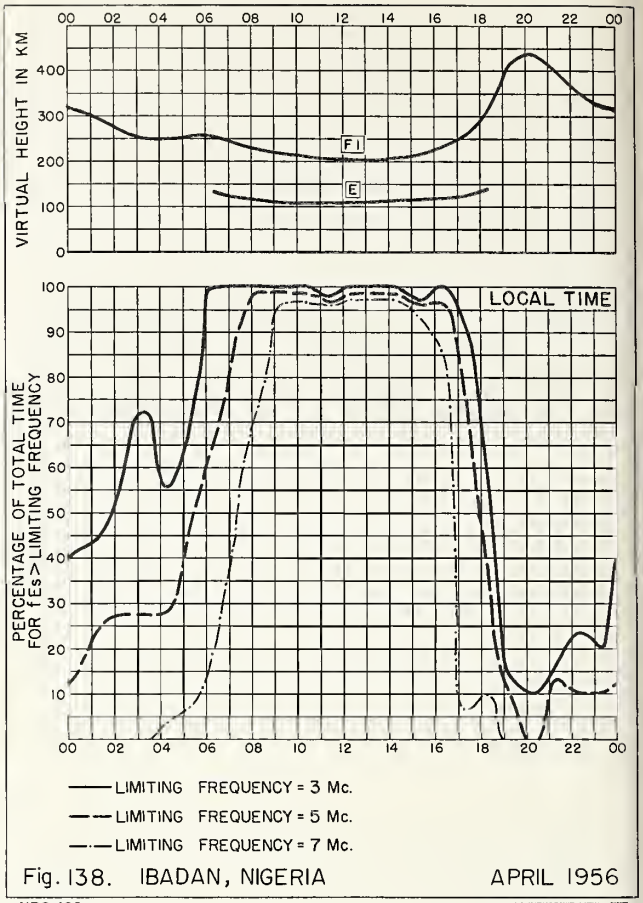

Fig. 138. IBADAN, NIGERIA APRIL 1956

NBS 490

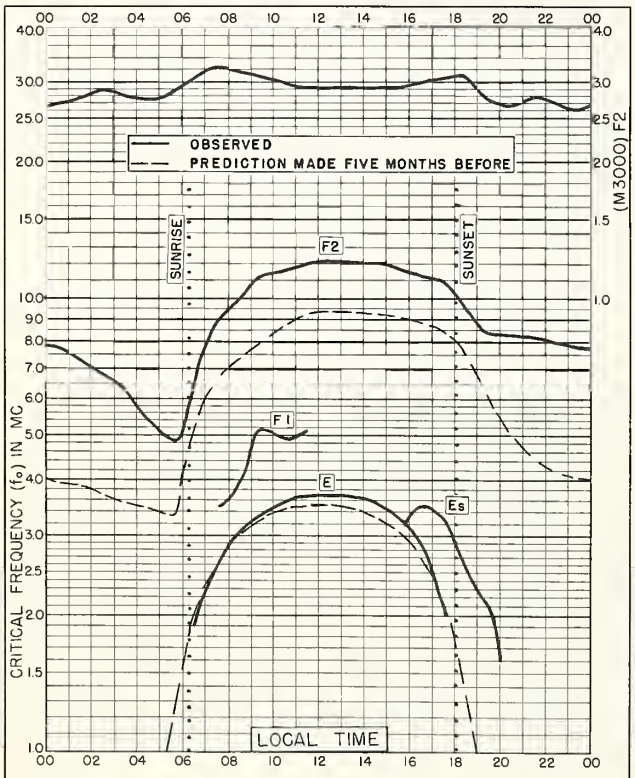

Fig. 139. CASABLANCA, MOROCCO
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NBS 503

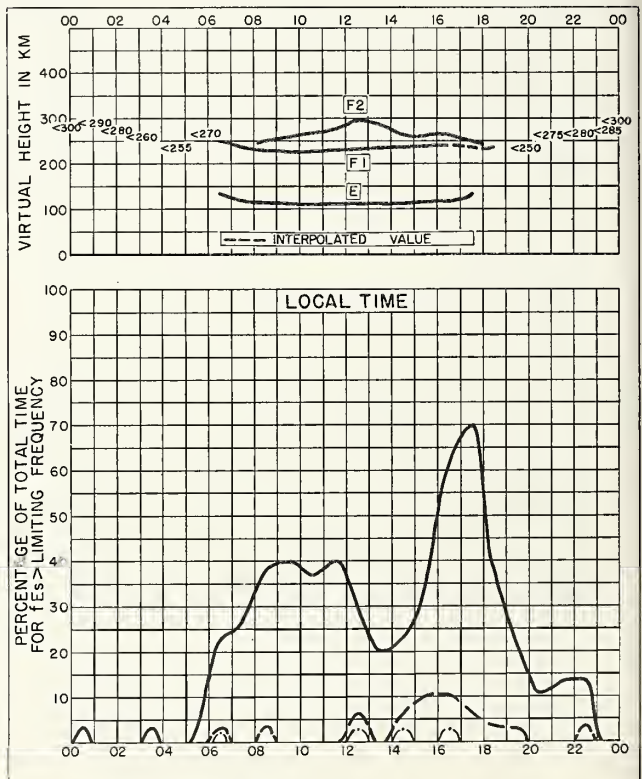

Fig. 140. CASABLANCA, MOROCCO MARCH 1956

NBS 490

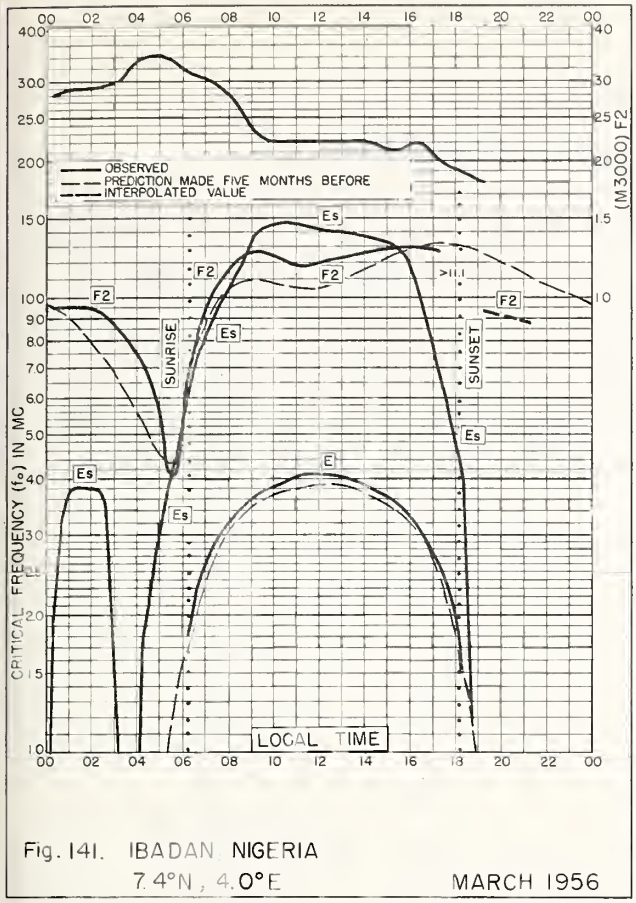

Fig. 141. IBADAN NIGERIA
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NBS 503

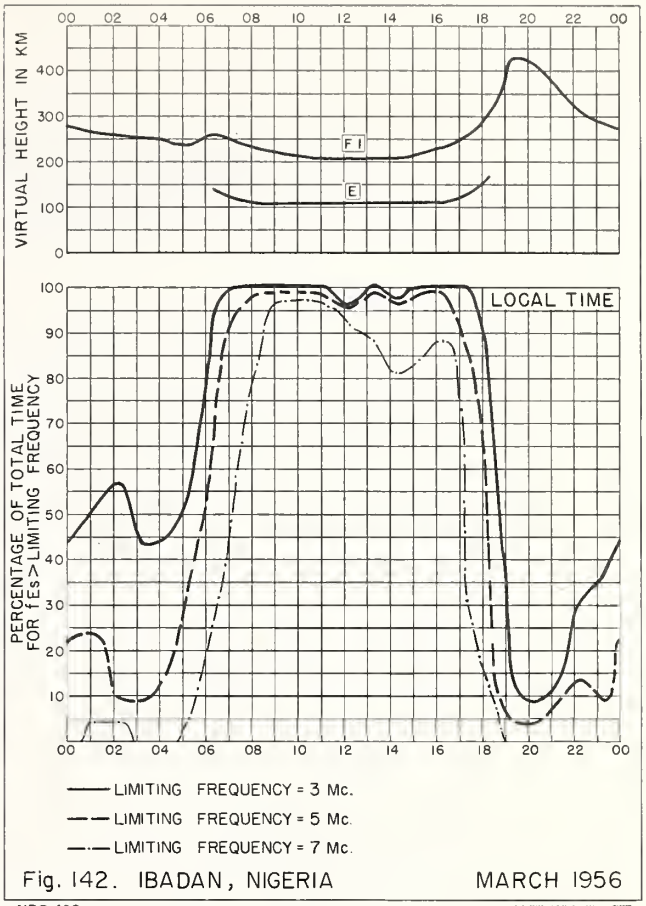

Fig. 142. IBADAN, NIGERIA MARCH 1956

NBS 490

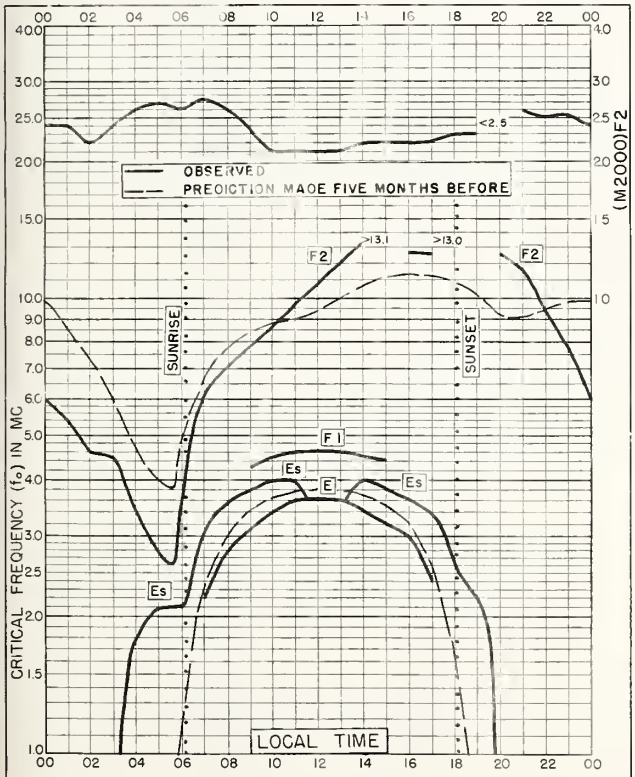

Fig. 143. LEOPOLDVILLE, BELGIAN CONGO
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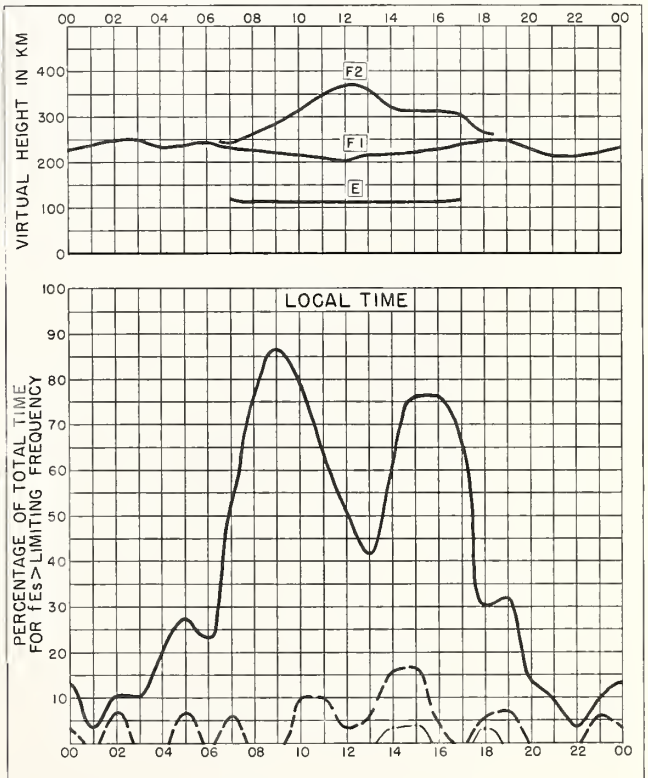
NBS 503



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