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CRPL-F 154 PART A

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PART A  
IONOSPHERIC DATA

ISSUED  
JUNE 1957

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



CRPL-F154  
PART A

NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
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## IONOSPHERIC DATA

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## SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

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

In the Second Report of the Special Committee on World-Wide Ionospheric Soundings of the URSI/ACI 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 magnetooionic component.  
(2) (descriptive letter) Third magnetooionic 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'E's 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	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*	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

## 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:

República Argentina, Ministerio de Marina:  
Buenos Aires, Argentina

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

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

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

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

Defence Research Board, Canada:  
Baker Lake, Canada  
Churchill, Canada  
Ottawa, Canada  
Resolute Bay, Canada  
St. Johns, Newfoundland  
Winnipeg, Canada

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

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

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

The Royal Netherlands Meteorological Institute:  
De Bilt, Holland

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

Icelandic Post and Telegraph Administration:  
Reykjavik, Iceland

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

Christchurch Geophysical Observatory, New Zealand Department of  
Scientific and Industrial Research:  
Christchurch, New Zealand  
Rarotonga, Cook Is.

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

Manila Observatory:  
Baguio, P. I.

South African Council for Scientific and Industrial Research:  
Capetown, Union of South Africa  
Johannesburg, Union of South Africa

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

Royal Board of Swedish Telegraphs, Radio Department, Stockholm,  
Sweden:  
Lulea, Sweden

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

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

National Bureau of Standards (Central Radio Propagation Laboratory):

Maui, Hawaii

Panama Canal Zone

Point Barrow, Alaska

Puerto Rico, W. I.

Talara, Peru (Instituto Geofisico de Huancayo)

Washington, D. C.

### HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

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

The U is a qualifying symbol meaning doubtful. Other qualifying symbols are I, interpolated, D, greater than, E, less than, J, ordinary component deduced from extraordinary, and T, value determined by a sequence of observations. Absence of a letter in the upper left position means full weight is given to the observation.

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

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of  $f_{o1}$ . Thus at a later date it will be possible to register more closely scaled values of this characteristic, whenever such are reported.

### ERRATA

1. CRPL-F153 (Part A), p. 58, fig. 69: At 00 and 01, Es reading should be <1.5.
2. CRPL-F153 (Part A), p. 71, fig. 121: Delete Es label at 21 and 22.

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS  
White Sands, N.M., March 3, 1957

The following ionograms were obtained at the White Sands ionosphere vertical sounding station of the U. S. Signal Corps. They are typical of day and night conditions for March at this geomagnetic latitude ( $41^{\circ}$ ). 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.

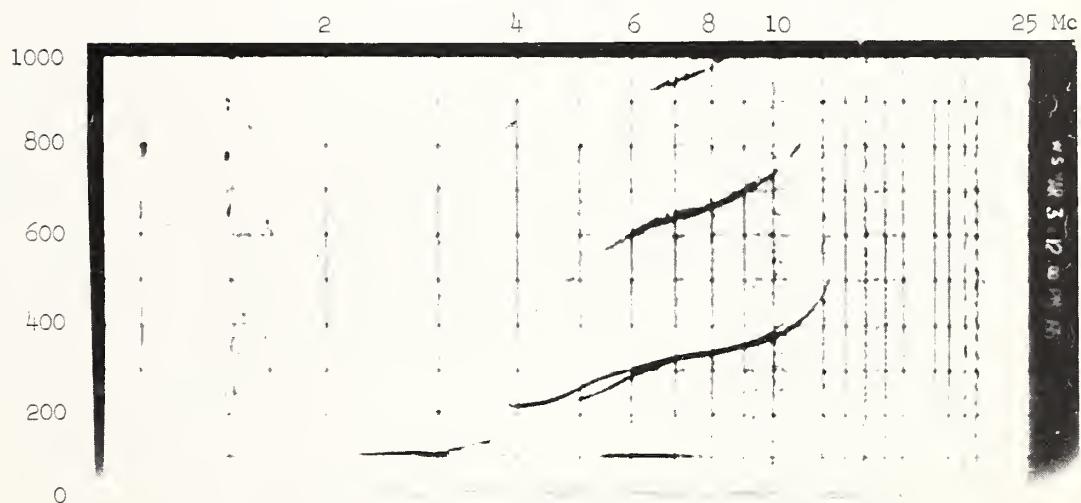


Fig. A. White Sands, March 3, 1957, 1200 hours,  $105^{\circ}\text{W}$  time.

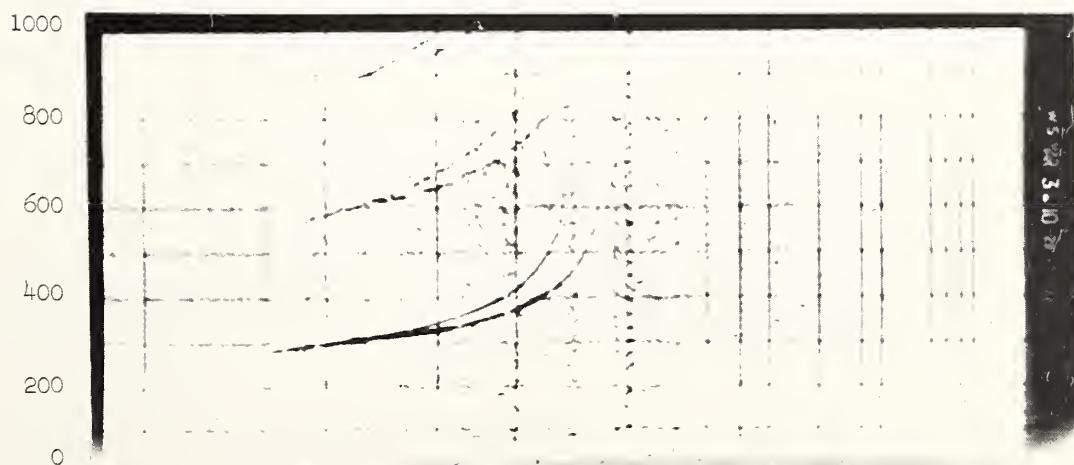
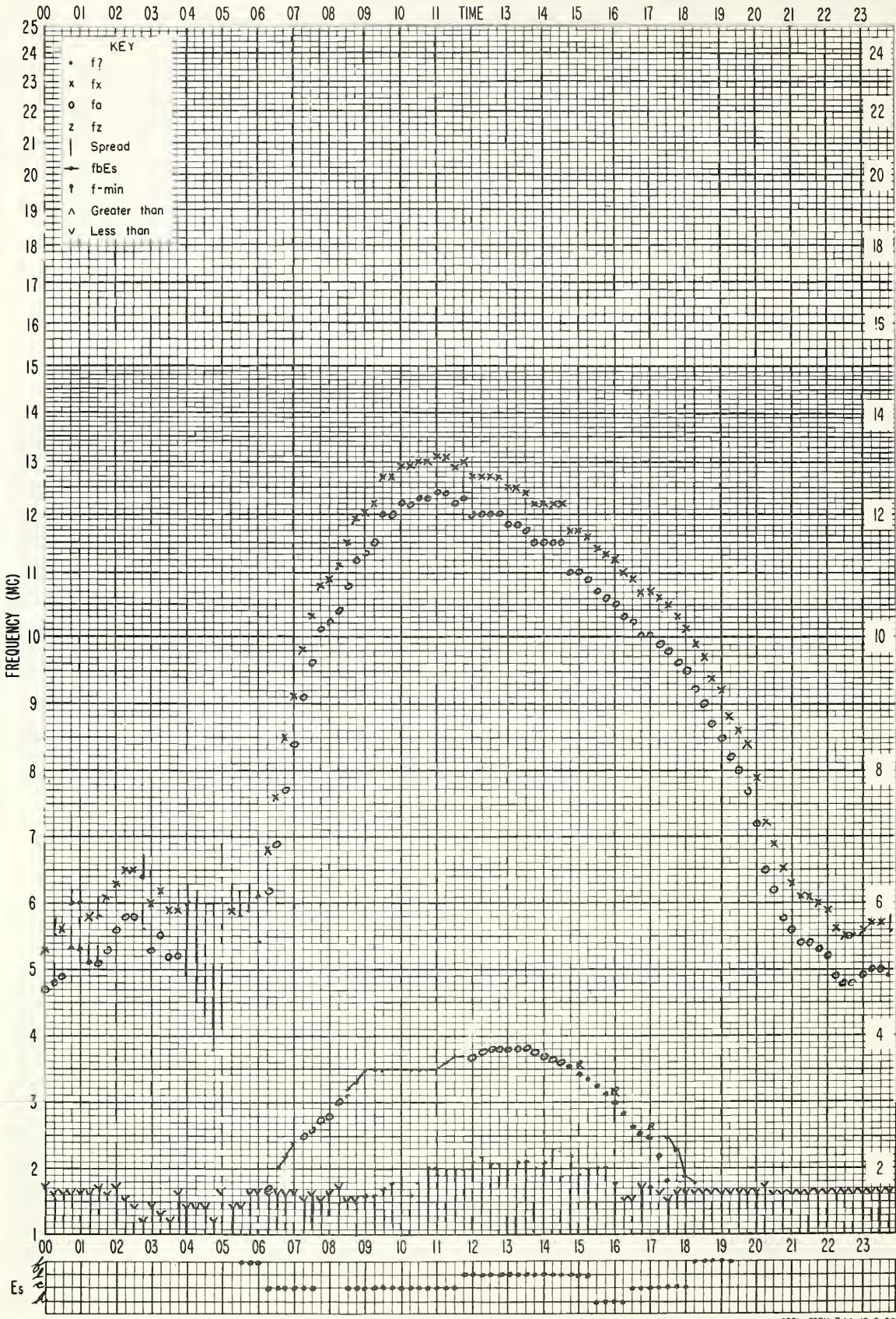


Fig. B. White Sands, March 3, 1957, 2229 hours,  $105^{\circ}\text{W}$  time.

STATION White Sands 105°W f - PLOT OF IONOSPHERIC DATA

DATE 3 March 1957



SCALED BY J.A.S.

### 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

$$k = \text{Boltzman's constant } (1.38 \times 10^{-23} \text{ joules per degree Kelvin})$$

$$t = \text{Absolute room temperature (taken as } 288^{\circ} \text{ K)}$$

$$b = \text{Bandwidth in cycles per second.}$$

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

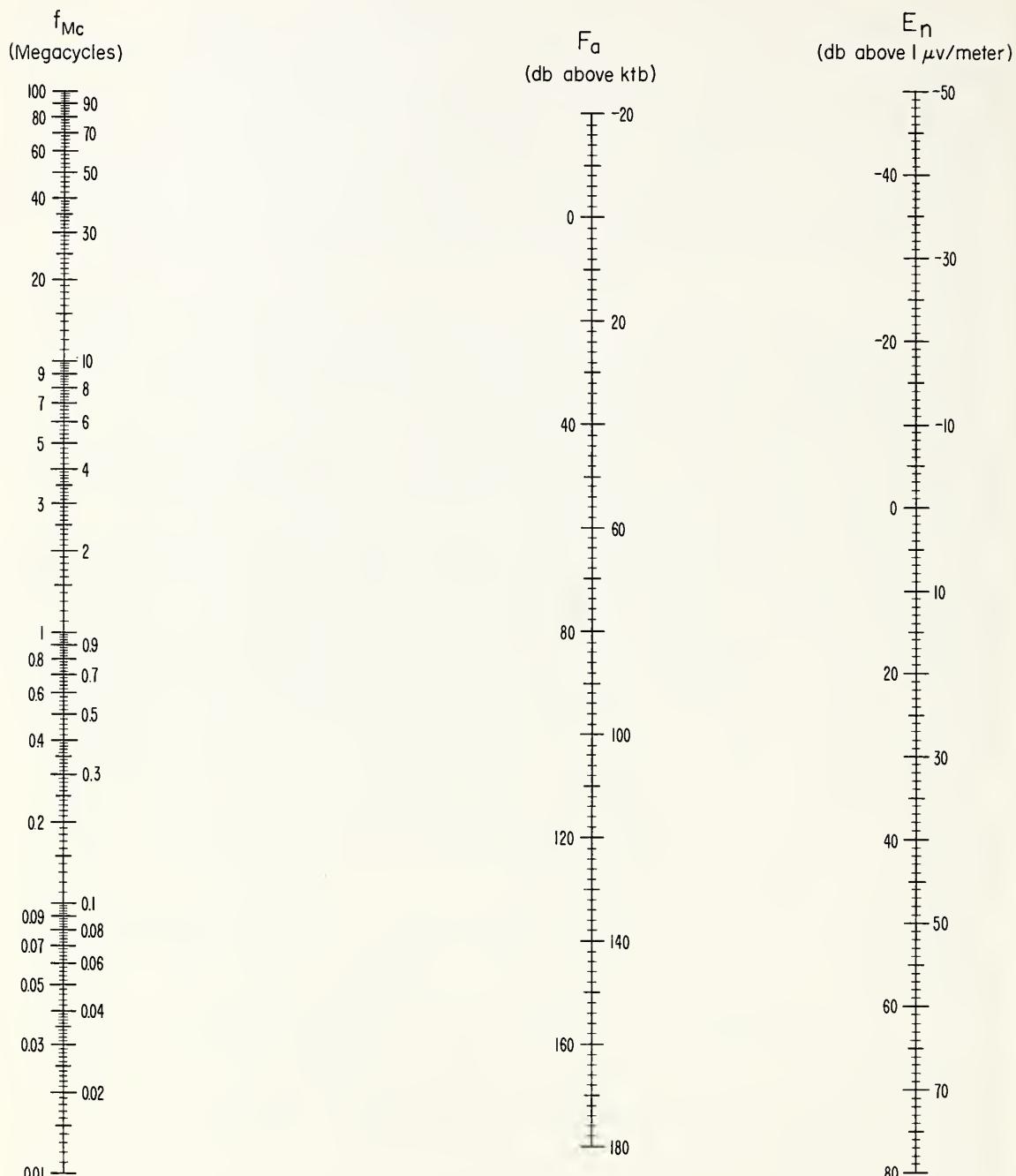
Measurements of these parameters were made with the National Bureau of Standards Radio Noise Recorder, Model ARN-2, which has an effective noise bandwidth of 280 cycles per second and uses a standard 21.75' vertical antenna. A 15 minute recording is made on each frequency each hour, and these 15 minute 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  $1\mu v/meter$  for a 1kc Bandwidth.

$f_{Mc}$  = Frequency in Megacycles.

## RADIO NOISE DATA

April 11

to

Station Bill, Wyoming. Lat.  $43.2^{\circ}$  N Long.  $105.2^{\circ}$  W Type Recorder ARN-2 Month May 3 1957

	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 <sub>om</sub>	137	137	136	136	135	132	130	126	124	128	128	130	130	134	132	134	134	134	134	134	137	137	138	136	
D <sub>u</sub>	5	4	4	4	8	3	3	5	6	4	7	9	7	5	15	14	14	11	8	8	7	9	7	8	
D <sub>ℓ</sub>	8	7	5	6	10	13	18	9	9	9	10	9	7	8	10	13	15	18	17	9	9	11	8	6	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[113kc]																									
F <sub>om</sub>	118	119	119	120	116	108	104	106	106	104	102	106	110	112	114	118	118	116	116	119	118	120	121	120	
D <sub>u</sub>	8	7	4	2	21	8	11	8	5	7	12	15	11	9	26	17	15	15	12	8	8	12	8	9	
D <sub>ℓ</sub>	8	8	6	6	12	14	17	19	19	22	13	10	8	10	26	24	20	19	18	12	8	10	13	9	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[246kc]																									
F <sub>om</sub>	105	105	103	104	93	84	83	83	83	83	89	95	96	99	100	97	97	103	105	105	103	107	103	103	
D <sub>u</sub>	8	5	5	5	12	15	14	12	12	12	14	14	11	16	31	17	24	19	10	7	11	15	8	11	
D <sub>ℓ</sub>	13	10	6	6	11	10	10	10	11	10	16	20	19	24	24	23	22	23	11	10	11	12	10	10	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[545kc]																									
F <sub>om</sub>	89	88	89	87	68	65	67	61	67	67	63	67	69	69	73	71	73	74	76	81	84	87	89	86	
D <sub>u</sub>	9	5	6	7	18	8	5	7	6	5	12	25	19	33	39	37	28	25	19	6	13	13	11	11	
D <sub>ℓ</sub>	8	6	7	7	8	6	4	3	4	6	3	6	8	4	10	5	8	12	10	8	7	4	5	4	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[2.5Mc]																									
F <sub>om</sub>	67	67	69	69	67	50	36	21	20	20	20	20	20	21	26	29	29	43	55	64	69	69	67	67	
D <sub>u</sub>	10	8	4	4	8	8	14	9	4	1	5	21	16	20	37	44	33	22	14	9	6	8	8	10	
D <sub>ℓ</sub>	7	7	10	10	12	12	13	2	3	3	3	1	2	7	9	7	13	16	12	12	14	11	11		
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[5 Mc]																									
F <sub>om</sub>	64	64	63	64	59	50	37	29	21	19	16	18	21	24	30	38	42	50	59	66	64	66	63	63	
D <sub>u</sub>	4	4	3	4	13	4	10	7	7	5	4	16	10	16	43	22	16	9	5	5	6	7	7		
D <sub>ℓ</sub>	7	5	6	8	5	4	5	5	1	3	2	3	6	9	10	19	18	15	13	5	11	12	8	8	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[10 Mc]																									
F <sub>om</sub>	50	50	49	46	47	44	41	36	30	28	28	29	29	35	40	42	46	50	52	54	52	51	51	52	
D <sub>u</sub>	4	4	5	8	5	4	3	5	8	10	8	7	8	5	10	8	7	4	4	3	6	5	3	4	
D <sub>ℓ</sub>	7	5	4	2	5	4	5	7	5	3	6	8	7	10	13	13	12	8	8	10	7	8	8	8	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
[20 Mc]																									
F <sub>om</sub>	25	25	25	24	25	25	27	25	25	26	*26	27	27	29	31	32	31	29	27	26	25	25	25	25	
D <sub>u</sub>	2	2	2	5	4	4	4	4	4	4	4	6	8	14	8	3	2	4	2	5	4	2	4		
D <sub>ℓ</sub>	1	1	3	2	3	2	3	1	3	2	4	3	4	4	7	6	4	2	4	3	3	2	1		
V <sub>dm</sub>																									
L <sub>dm</sub>																									

\*F<sub>am</sub> - less than 15 observations.

## RADIO NOISE DATA

Station Boulder, Colorado Lat.  $40.1^{\circ}$  N Long  $105.1^{\circ}$  W Type Recorder ARN-2 Month March 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	
51 kc																									
F <sub>am</sub>	127	129	131	127	127	125	123	116	116	118	117	113	115	117	118	119	117	115	123	126	127	127	125	127	
D <sub>u</sub>	6	8	4	10	10	10	10	13	11	10	5	13	12	10	8	10	12	14	6	7	8	8	10	6	
D <sub>ℓ</sub>	11	12	14	9	6	8	12	7	13	13	13	8	6	8	9	10	10	8	14	11	10	8	6	6	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
113 kc																									
F <sub>am</sub>	112	116	110	114	114	100	100	102	91	91	88	86	90	92	93	96	100	100	106	112	112	112	112	114	
D <sub>u</sub>	6	4	10	6	4	18	12	6	19	17	18	18	18	17	20	17	8	10	8	6	6	8	8	6	
D <sub>ℓ</sub>	13	14	8	12	14	10	15	20	11	11	10	6	8	8	10	13	18	16	16	22	8	8	10	12	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
246 kc																									
F <sub>am</sub>	98	101	97	95	97	89	81	85	79	83	80	81	79	81	80	83	83	83	87	91	95	95	97	101	
D <sub>u</sub>	18	6	14	14	13	13	22	13	16	11	13	12	10	11	9	7	10	10	14	14	10	10	6	6	
D <sub>ℓ</sub>	2	14	10	10	12	15	10	14	10	11	8	7	8	6	7	9	8	8	12	8	13	12	12	16	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
545 kc																									
F <sub>am</sub>	86	88	86	84	86	80	74	76	83	76	72	74	72	72	68	76	76	71	77	82	84	88	88	88	
D <sub>u</sub>	6	6	6	6	7	8	8	10	7	6	6	2	6	6	7	2	2	13	9	8	7	6	4	6	
D <sub>ℓ</sub>	17	11	8	8	10	12	6	8	9	16	7	9	10	6	7	10	9	3	13	9	12	14	14	9	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
2.5 Mc																									
F <sub>am</sub>	64	64	64	64	62	60	50	46	44	44	44	44	44	44	42	45	44	46	50	60	60	62	66		
D <sub>u</sub>	6	8	6	6	6	8	10	10	10	4	4	4	4	2	10	13	4	4	6	10	8	10	10	6	
D <sub>ℓ</sub>	8	6	10	8	8	12	4	4	4	2	4	4	2	2	0	3	4	4	11	12	8	6	8	6	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
5 Mc																									
F <sub>am</sub>	59	58	58	60	58	55	52	40	38	38	38	36	36	36	38	38	40	44	54	58	58	58	58	60	
D <sub>u</sub>	5	6	4	2	4	5	8	10	6	2	2	4	4	5	2	4	4	6	4	2	4	4	4	2	
D <sub>ℓ</sub>	7	4	2	4	4	7	10	6	4	4	6	4	4	4	6	4	6	7	13	6	4	4	4	6	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
10 Mc																									
F <sub>am</sub>	45	45	47	47	45	41	41	37	33	30	27	27	25	29	29	33	29	43	45	45	45	47	47	47	
D <sub>u</sub>	4	4	2	2	6	4	4	6	8	6	9	4	10	8	10	13	8	6	6	4	6	3	5	4	
D <sub>ℓ</sub>	7	4	6	4	4	4	6	4	6	4	3	4	2	6	6	7	10	6	4	4	2	4	4	6	
V <sub>dm</sub>																									
L <sub>dm</sub>																									
20 Mc																									
F <sub>am</sub>	22	22	22	22	23	24	26	28	28	27	28	28	26	28	30	30	32	32	32	30	28	26	22	22	
D <sub>u</sub>	3	2	2	2	1	4	6	4	4	5	3	4	6	4	5	6	4	4	4	12	9	10	14	6	
D <sub>ℓ</sub>	0	0	0	0	1	2	4	3	4	5	6	4	2	3	5	6	6	4	4	7	6	4	0	0	
V <sub>dm</sub>																									
L <sub>dm</sub>																									

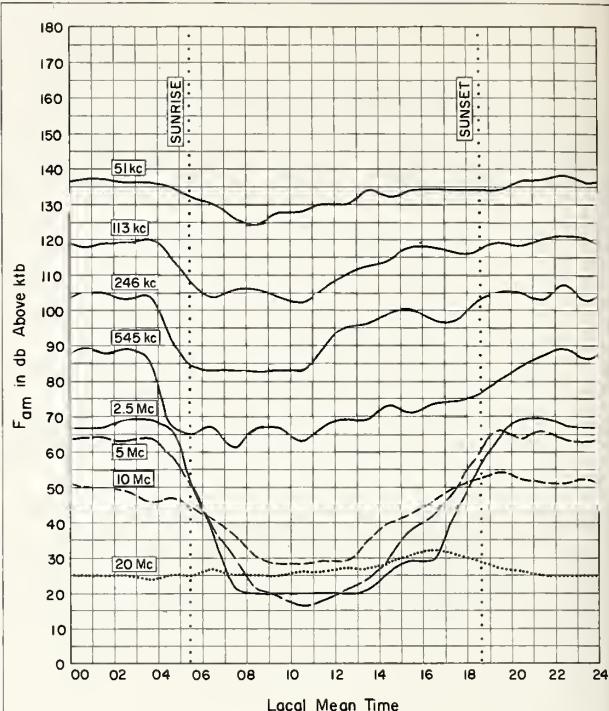
## RADIO NOISE DATA

Station Boulder, Colorado Lat. 40.1° N Long. 105.1° W Type Recorder ARN-2 Month April 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 <sub>am</sub>	134	136	136	136	136	128	128	123	121	126	127	128	128	130	132	132	128	130	132	132	132	134	134	134	
D <sub>u</sub>	6	4	4	4	4	4	15	8	11	8	6	13	9	7	7	8	9	12	10	9	12	15	12	8	
D <sub>l</sub>	6	8	9	6	10	11	14	17	14	18	17	14	10	12	13	13	13	1.1	10	6	6	8	6		
V <sub>dm*</sub>	7.0	8.0	8.5	8.5	9.5	8.0	7.5	8.0	8.0	9.0	8.0	7.5	9.0	6.5	7.5	8.0	8.0	8.5	8.0	7.0	7.5	9.0	7.0	8.5	
L <sub>dm*</sub>	14.0	15.0	16.0	16.0	17.0	13.5	12.0	12.5	13.0	15.5	14.5	13.5	15.5	12.5	13.0	13.5	14.0	14.5	15.0	14.0	14.0	16.5	13.0	15.5	
[113kc]																									
F <sub>am</sub>	120	122	122	122	122	110	108	105	*103	103	105	103	106	106	108	114	114	115	113	116	117	118	118	118	
D <sub>u</sub>	6	6	4	4	2	11	10	12		15	14	18	16	17	20	12	13	12	14	15	14	13	12	10	
D <sub>l</sub>	8	10	7	10	19	20	24	24		18	20	16	16	17	19	24	21	20	14	11	8	9	7	8	
V <sub>dm*</sub>	7.0	7.5	7.5	8.0	11.0	9.0	7.5	9.5	6.0	5.5	6.5	7.5	8.5	8.5	7.5	7.0	8.0	8.0	8.5	7.0	6.0	8.0	7.5	8.0	
L <sub>dm*</sub>	14.5	16.0	17.0	16.5	19.0	15.0	12.5	13.0	11.0	10.0	10.0	12.5	16.0	16.0	14.5	13.0	15.0	15.5	16.0	14.0	13.0	17.0	16.0	17.0	
[246kc]																									
F <sub>am</sub>	107	107	107	109	101	93	89	87	85	83	82	85	91	91	97	99	97	97	97	103	103	105	105	105	
D <sub>u</sub>	7	7	6	5	9	15	21	16	18	21	20	21	17	17	16	17	18	18	18	16	16	14	12	8	
D <sub>l</sub>	12	11	6	10	18	19	18	15	14	12	10	12	17	17	19	23	23	22	12	7	7	11	10	10	
V <sub>dm*</sub>	5.5	7.0	5.5	6.5	10.0	3.0	3.0	6.5	5.0	4.0	5.0	7.0	8.0	6.0	5.5	6.5	6.0	6.0	6.0	6.5	7.0	6.5	6.0	7.0	
L <sub>dm*</sub>	10.5	13.0	14.0	14.5	12.5	4.0	6.0	10.0	8.0	7.0	8.0	11.0	14.0	11.0	11.0	13.0	12.0	10.5	13.0	14.0	15.5	13.0	11.5	14.0	
[545kc]																									
F <sub>am</sub>	95	93	93	93	81	75	75	79	81	73	73	75	75	75	77	81	79	79	85	87	89	91	93	93	
D <sub>u</sub>	6	8	6	6	9	23	9	12	11	15	8	15	15	20	21	17	21	18	11	13	16	13	8	6	
D <sub>l</sub>	10	8	8	6	15	9	9	11	12	4	3	9	4	8	9	11	6	12	12	10	4	2	6	6	
V <sub>dm*</sub>	5.5	6.0	6.0	7.0	5.0		5.5			4.0	2.5	2.5	5.5	4.0	3.5	3.0	3.0	3.0	5.0	6.0	4.0	5.0	4.5	6.0	
L <sub>dm*</sub>	10.0	11.5	13.0	14.0	8.0			8.0			6.0	5.0	4.0	10.0	7.0	6.0	5.5	7.5	5.0	8.5	10.0	9.0	10.0	9.0	11.0
[2.5Mc]																									
F <sub>am</sub>	68	69	69	69	69	53	46	43	43	*44	43	45	45	45	45	47	47	49	57	67	67	69	67	67	
D <sub>u</sub>	7	6	5	5	4	9	9	6	4		5	21	3	4	10	8	12	8	7	8	11	8	12	8	
D <sub>l</sub>	6	8	8	5	8	6	4	3	2		4	3	4	2	3	6	5	7	13	12	8	11	8	7	
V <sub>dm</sub>	4.5	4.0	4.0	4.5	5.0	4.5	3.5	2.0	1.0	2.0	2.0	2.0	2.0	3.5	4.0	2.0	3.0	3.0	3.0	3.0	3.5	4.0	5.0	4.5	
L <sub>dm</sub>	8.5	8.0	9.0	8.5	8.5	7.5	4.5	3.0	2.0	2.5	3.0	3.0	3.0	4.0	6.5	4.0	6.0	5.0	5.5	7.0	7.0	7.0	8.0	8.5	
[5Mc]																									
F <sub>am</sub>	61	61	61	61	61	51	41	37	35	*36	37	37	37	37	39	42	45	51	57	63	61	61	61		
D <sub>u</sub>	4	5	3	4	2	11	14	4	5		4	5	4	5	6	5	8	8	9	6	8	7	7	4	
D <sub>l</sub>	4	4	4	4	7	5	4	2	2		6	6	4	3	2	5	9	11	8	10	8	7	7	6	
V <sub>dm</sub>	4.5	5.0	5.0	4.5	5.0	4.5	5.0	3.0	2.0	2.0	2.0	2.0	2.0	2.5	3.0	3.5	4.0	3.5	3.5	4.5	4.5	4.0	4.0	4.0	
L <sub>dm</sub>	8.0	9.0	9.0	9.0	9.0	8.0	6.5	3.0	2.5	3.0	3.0	2.0	3.0	4.0	5.0	5.0	4.5	7.0	7.0	7.5	7.0	8.0	9.0	8.5	
[10Mc]																									
F <sub>am</sub>	48	48	48	46	43	44	38	36	29	29	28	28	29	31	38	41	44	48	50	50	50	48	48		
D <sub>u</sub>	4	2	8	4	7	5	6	3	9	7	6	9	11	9	5	6	5	4	4	4	4	1	4	2	
D <sub>l</sub>	5	5	7	4	4	6	2	7	3	2	4	2	3	4	10	12	7	6	6	6	6	6	4	5	
V <sub>dm</sub>	4.0	4.0	5.0	4.0	6.0	5.0	4.0	4.5	4.0	4.0	4.5	4.5	3.5	4.0	4.0	4.5	4.5	4.0	3.0	4.0	4.0	4.0	4.0	4.5	
L <sub>dm</sub>	7.5	7.0	7.0	6.5	7.0	7.5	8.0	8.0	6.0	5.5	6.5	6.0	6.0	6.5	6.5	5.0	6.0	7.0	7.0	6.5	6.5	7.0			
[20Mc]																									
F <sub>am</sub>	22	22	22	22	22	22	24	22	22	22	24	24	25	25	28	28	28	30	30	28	24	22	22	22	
D <sub>u</sub>	2	2	2	2	2	6	8	8	10	10	2	7	8	7	5	7	8	5	6	5	10	6	2	2	
D <sub>l</sub>	2	2	2	2	2	4	2	2	2	5	3	5	5	7	6	6	5	5	3	2	2	2	2		
V <sub>dm</sub>	1.5	1.5	1.0	1.0	1.0	2.0	2.0	1.5	2.0	2.0	3.0	2.5	2.0	2.5	2.0	3.5	3.0	2.5	3.0	2.5	2.0	1.0	1.0	1.0	
L <sub>dm</sub>	2.0	3.0	2.0	2.0	2.0	2.5	3.0	2.5	3.0	3.0	4.5	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.5	4.5	3.5	3.0	2.5	2.0	

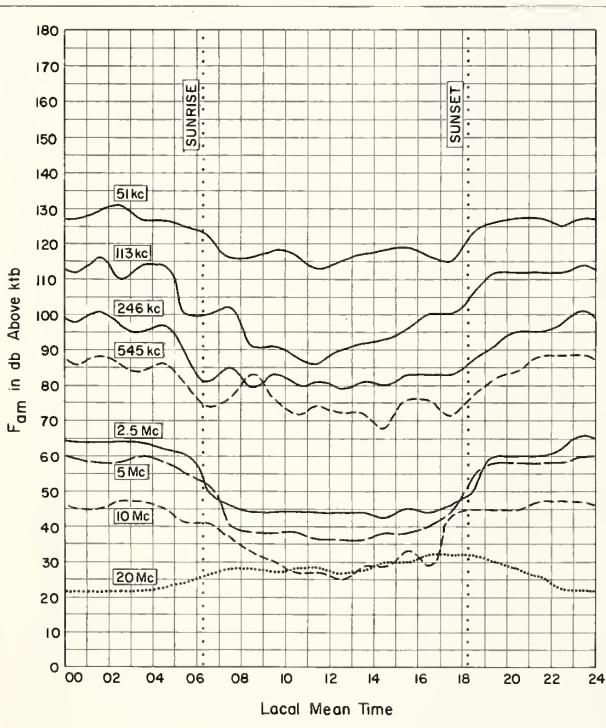
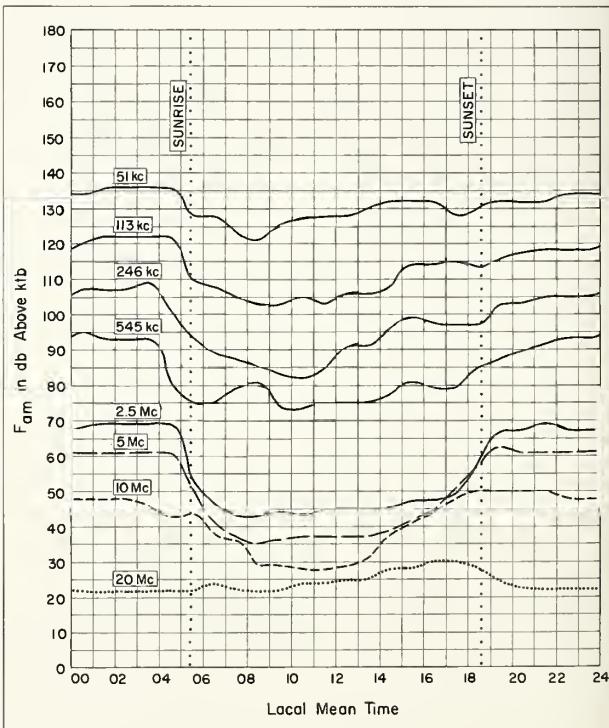
## GRAPHS OF RADIO NOISE DATA

Note: No March data available from Bill, Wyo. This station is operated 1 month per season.



BILL, WYOMING

APRIL 11 - MAY 3, 1957

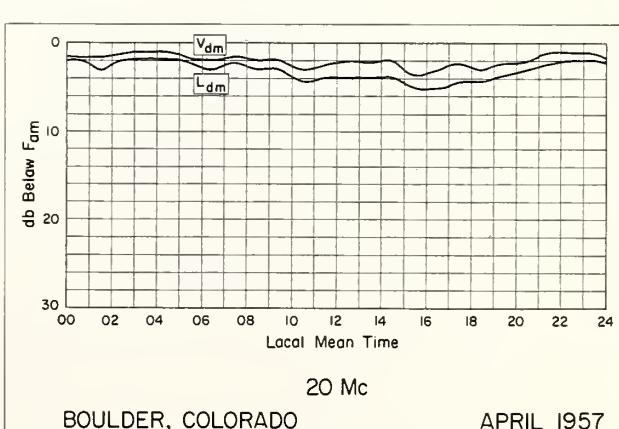
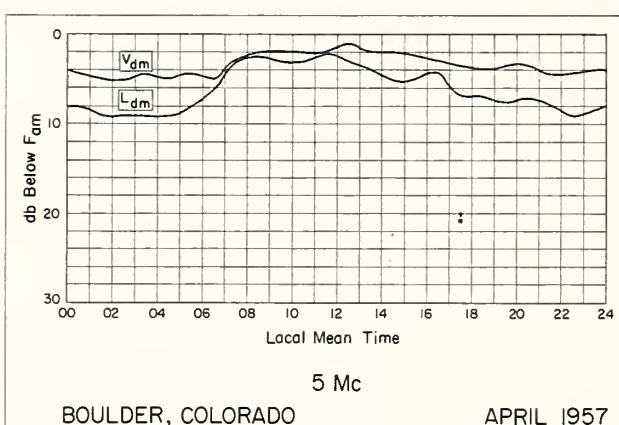
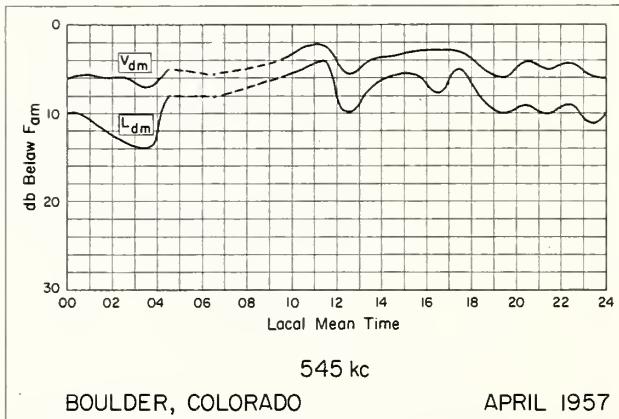
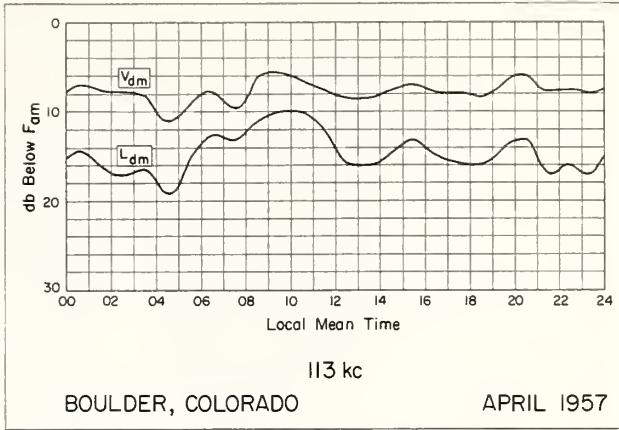
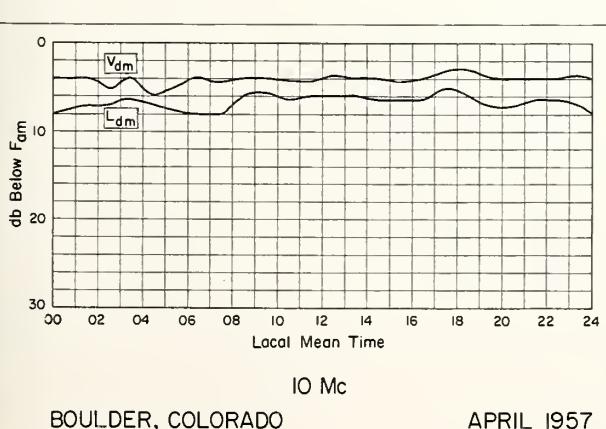
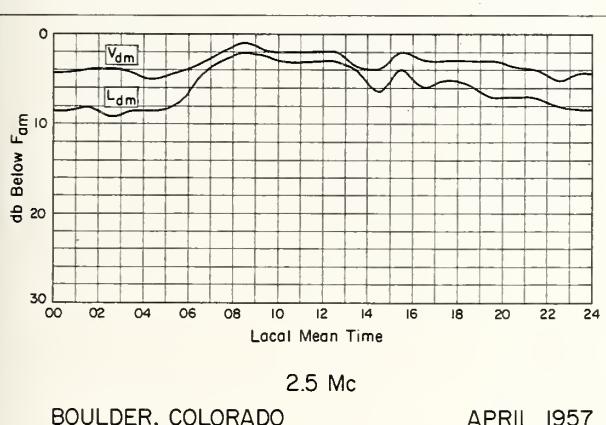
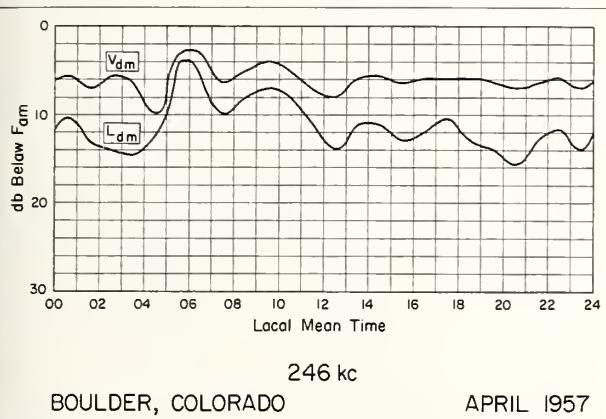
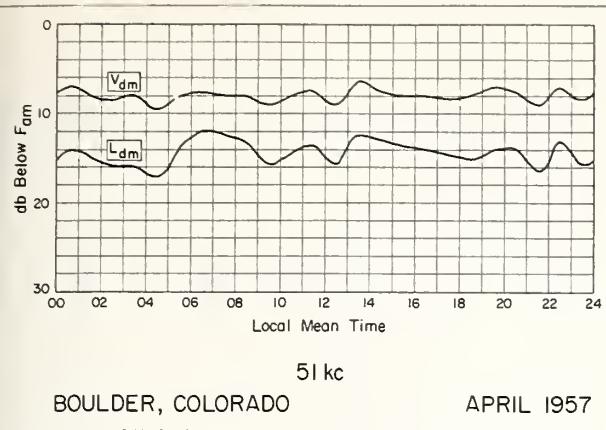


BOULDER, COLORADO

MARCH 1957

BOULDER, COLORADO

APRIL 1957



---- Data Missing



## TABLES OF IONOSPHERIC DATA

Table 1							May 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F1	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
00		6.9	290			(2.2)	2.60	
01		6.6	<300			(2.5)	2.50	
02		6.3	300			(2.6)	2.60	
03		6.0	290			(2.4)	2.60	
04		5.6	290			(2.0)	2.65	
05	---	5.6	280		125	1.70	2.80	
06	(300)	6.2	250	---	111	2.40	2.5	2.90
07	370	6.7	240	4.8	109	3.00	3.2	2.75
08	425	6.8	220	5.2	105	3.30	3.6	2.75
09	440	7.2	215	5.4	105	3.60	3.9	2.60
10	435	7.3	210	5.5	103	3.80	4.0	2.60
11	430	7.7	210	5.8	105	(3.90)	3.9	2.60
12	430	7.9	210	5.8	106	4.00		2.55
13	445	7.9	215	5.7	106	4.00	4.0	2.50
14	420	8.1	220	5.7	108	3.95		2.55
15	425	8.1	220	5.6	109	3.80		2.60
16	400	8.2	230	5.3	109	3.50	3.7	2.60
17	380	8.2	240	4.8	109	3.10	3.3	2.65
18	(300)	8.4	255		111	2.50	2.8	2.70
19		8.0	270		125	1.80	2.2	2.75
20		7.8	265			(2.4)	2.70	
21		7.6	270			(2.9)	2.65	
22		7.3	280			(2.8)	2.60	
23		7.0	285			(2.8)	2.60	

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

Table 3							March 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
'00		(6.6)	325					(2.55)
01		(6.2)	320					(2.60)
02		(6.0)	310					(2.60)
03		(5.3)	300					(2.60)
04		(5.0)	300					(2.60)
05		(4.5)	290					(2.60)
06		(5.2)	270	---	---	---		(2.90)
07		6.8	245	111	2.40	3.10		
08		8.0	230	109	2.90	3.10		
09		8.9	225	105	(3.20)	3.00		
10	---	9.4	220	---	109	(3.50)		2.85
11	---	10.0	220	---	109	(3.60)		2.80
12	(535)	10.3	220	---	109	(3.70)		2.75
13	---	10.6	220	---	109	3.70		2.75
14	---	10.8	230	---	107	3.60		2.70
15	---	10.8	230	---	109	3.30		2.70
16	---	10.8	235	---	111	3.00		2.75
17	---	11.4	240	---	115	(2.60)		2.80
18	(11.0)	245		---	---			(2.90)
19	(9.6)	240						(2.80)
20	(8.0)	250						(2.65)
21	(7.2)	280						(2.70)
22	(6.8)	310						(2.65)
23	(6.7)	320						(2.55)

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

Table 5							March 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
00		14.8	255					2.90
01		13.2	250					2.90
02		11.5	245					2.90
03		10.2	230					3.00
04		7.5	220					2.85
05		6.8	240					2.70
06		5.8	265					2.60
07		8.4	250	<135	2.20	2.95		
08		11.4	240	111	2.90	3.05		
09		13.1	230	109	3.40	3.6		2.90
10		14.0	230	109	3.70	3.9		2.85
11		14.4	220	109	3.85	4.2		2.70
12	(375)	15.5	220	109	(3.95)	4.3		2.65
13	(395)	16.2	220	---	109	(4.00)	4.2	2.60
14	380	17.0	230	---	109	3.95	4.3	2.55
15	365	16.6	230	(7.0)	111	3.80		2.60
16	350	16.5	230		111	3.55	3.6	2.60
17	---	16.4	245		113	3.05	3.3	2.65
18		15.3	260		119	(2.30)	3.0	2.70
19		15.5	270			(3.0)	2.65	
20		(16.8)	275			(2.5)	2.65	
21		17.4	260				2.65	
22		17.4	260				2.80	
23		16.3	255				2.90	

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

Table 2							March 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
00					(5.2)			3.8
01					(6.0)			3.6
02					---			---
03					---			2.6
04					---			---
05					(4.3)			(2.60)
06					(4.5)			(2.60)
07					(4.8)			(2.60)
08					(5.2)			(2.60)
09					6.0			(2.70)
10					6.4			2.80
11					6.7			2.80
12					7.0			2.70
13					7.2			2.75
14					(7.9)			2.75
15					(7.9)			2.80
16					(8.6)			2.80
17					(7.8)	<143	2.40	2.90
18					(6.8)	<141	(2.15)	2.70
19					(5.9)	135	(2.10)	(2.90)
20					(4.8)	---	2.4	---
21					(4.8)	---	2.4	(2.70)
22					(4.2)	---	2.9	(2.60)
23					(4.1)	---	3.0	(2.60)

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

Table 4							March 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
00					6.1	260		2.60
01					6.1	<270		2.60
02					6.1	250		(2.0)
03					6.0	<260		2.65
04					5.8	250		(2.0)
05					5.5	<255		(2.1)
06					5.9	<275		2.65
07					9.1	240	---	1.6
08					11.0	230	111	3.10
09					12.3	220	107	(3.35)
10					12.7	215	105	(3.65)
11					13.4	210	105	2.85
12					13.6	210	107	3.90
13					13.7	225	107	(3.90)
14					13.5	225	105	3.85
15					12.9	230	107	3.65
16					12.4	240	109	3.30
17					11.7	240	<111	2.70
18					10.2	<220	<123	2.1
19					8.9	230		(2.4)
20					8.1	<245		(2.3)
21					7.4	245		(2.2)
22					6.7	<260		2.70
23					6.7	260		(2.0)

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

Table 6							March 1957	
Time	h <sup>o</sup> F2	foF2	h <sup>o</sup> F	foF1	h <sup>o</sup> E	foE	foEs	(M3000)F2
00					10.0	240		3.00
01					8.8	240		3.00
02					7.6	240		2.95
03					6.4	240		2.90
04					5.4	250		2.75
05					5.0	265		2.70
06					5.0	305		2.60
07					8.3	260	125	2.10
08					10.3	240	111	2.95
09					12.0	225	111	3.35
10					13.3	220	109	3.70
11					14.0	215	109	3.90
12					(375)	14.5	215	4.00
13					390	15.0	215	4.0
14					380	15.5	230	7.1
15					370	15.5	235	109
16					350	15.3	230	111
17					---	14.9	240	115
18					---	14.2	250	2.15
19					---	13.5	250	2.6
20					---	13.8	260	2.80
21					---	13.0		

Table 7

Puerto Rico, W. I. (18.5°N, 67.2°W)								March 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.5	255					2.90
01		9.2	245			(2.4)		2.95
02		8.4	240			(2.9)		3.00
03		7.0	235			(2.2)		2.85
04		6.5	240			(2.2)		2.60
05		5.9	265			(2.0)		2.60
06		6.1	270			(2.3)		2.70
07		8.6	245	<129	(2.20)			3.10
08		11.0	235		109	2.95		3.10
09	---	12.6	230	---	109	3.40		3.00
10	---	13.5	225	---	109	(3.75)		2.90
11	---	13.7	220	---	109	(3.95)	4.1	2.85
12	---	13.7	220	---	109	(4.05)	4.3	2.70
13	---	13.7	230	---	109	(4.10)	4.5	2.70
14	(360)	13.7	225	6.7	109	4.05	4.5	2.65
15	---	13.4	240	---	109	3.90	4.5	2.60
16	---	13.0	(235)	---	109	3.60	4.4	2.60
17		12.6	245		111	(3.10)	3.9	2.65
18		11.9	250		117	(2.20)	3.1	2.70
19		11.4	245			(2.3)		2.75
20		10.6	255			(2.5)		2.75
21		10.3	265			(2.4)		2.70
22		10.2	275			(2.8)		2.75
23		10.3	275			2.6		2.65

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Adak, Alaska (51.9°N, 176.6°W)								February 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		3.1	320					2.50
01		3.1	330					2.55
02		3.2	325					2.60
03		3.2	<315					2.60
04		3.2	310					2.55
05		3.2	290					2.60
06		3.4	<300					2.70
07		6.0	250	115	----	1.6		3.10
08	---	9.0	230	---	119	2.30		3.20
09	---	10.9	230	---	119	2.70		3.20
10	---	12.1	225		117	3.00		3.10
11	---	12.8	225		115	3.20		3.05
12	---	13.0	230		115	3.30		3.00
13	---	12.6	230		115	3.20		3.00
14	12.0	230			115	2.95		2.95
15	11.8	230			117	(2.65)		3.00
16	11.2	225			123	2.15		3.00
17	10.6	230						3.00
18	8.9	215						3.10
19	6.7	215						3.20
20	4.7	230						3.10
21	3.7	250						2.90
22	3.3	270						2.80
23	3.2	<300						2.60

Time: 180.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 11

Ft. Monmouth, New Jersey (40.3°N, 74.1°W)								February 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	265					2.75
01		5.9	265					2.80
02		5.9	260			(1.4)		2.80
03		5.8	265			(2.3)		2.80
04		(5.8)	260			(2.4)		(2.80)
05		(5.6)	255			(3.7)		(2.80)
06		(5.0)	240					(2.85)
07		6.8	240	111	----			3.15
08		9.8	225	111	2.55			3.20
09	---	11.5	220		109	3.10		3.15
10	---	12.7	220		107	3.40		3.05
11	---	13.0	215		109	3.55		3.00
12	---	13.0	215		109	3.65		2.95
13	---	12.9	215		109	3.65		2.85
14	12.8	220			107	3.50		2.85
15	12.7	225			109	3.20		2.85
16	12.2	230			109	2.80		2.90
17	12.1	230			119	----		2.95
18	11.4	220				(1.9)		3.00
19	9.6	220						2.95
20	8.4	230				(2.3)		2.90
21	7.6	240						2.90
22	7.0	240						2.85
23	6.6	250						2.80

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Panama Canal Zone (9.4°N, 79.9°W)								March 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			11.0		240			(2.7)
01			9.7		230			(2.2)
02			7.3		210			2.95
03			6.2		230			2.75
04			5.5		260			2.70
05			5.0		270			2.70
06			5.3		280			2.70
07			9.1		250			3.05
08			11.8		240			3.00
09			13.0		230			2.85
10			13.8		220			2.80
11			14.0		215			2.70
12			(370)		14.5			2.60
13			385		15.0			2.55
14			380		15.3			2.55
15			385		215			2.55
16			370		15.0			2.60
17			14.7		240			2.60
18			14.1		250			2.65
19			13.5		255			2.70
20			(12.3)		260			2.70
21			(11.1)		240			(2.65)
22			11.7		245			2.80
23			11.6		250			2.90

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

St. Johns, Newfoundland (47.6°N, 52.7°W)								February 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			(6.2)		295			(2.65)
01			(5.4)		300			(2.65)
02			(4.6)		<300			(2.65)
03			(5.2)		300			(2.70)
04			(4.6)		270			(2.80)
05			(4.6)		260			(2.75)
06			(4.4)		260			(2.80)
07			5.4		250			3.00
08			8.2		235			3.20
09			10.0		230			3.10
10			11.2		230			3.05
11			12.0		230			3.00
12			12.2		230			2.95
13			12.2		230			2.90
14			12.1		230			2.90
15			12.2		230			2.90
16			11.5		240			2.90
17			10.4		230			2.90
18			9.0		230			2.90
19			8.0		240			2.80
20			(7.4)		260			2.80
21			(6.8)		270			(2.70)
22			(6.6)		290			(2.70)

Time: 52.5°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Panama Canal Zone (9.4°N, 79.9°W)								February 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00			9.4		240			(3.0)
01			7.8		230			3.10
02			6.0		220			2.95
03			4.4		230			2.95
04			3.8		255			2.70
05			4.2		290			2.55
06			4.3		295			2.55
07			8.4		260			3.00
08			--		12.0			3.00
09			260		13.5			3.00
10			270		14.4			2.85
11			--		14.5			2.80
12			(350)		15.0			2.70
13			365		15.3			2.65
14			360		15.8			2.65
15			345		15.0			2.65
16			320		14.8			2.70
17			--		14.5			2.70
18			13.3		245			2.70
19			(12.0)		230			(3.2)
20			10.5		240			2.75
21			10.5		255			2.70
22			10.6		245			(2.9)
23			9.9		240			(2.

Table 13

Resolute Bay, Canada (74.7°N, 94.9°W)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	5.2	240	---	---	---	---	---	
01	5.3	260	---	---	---	---	---	
02	5.4	250	---	---	---	(2.9)	---	
03	5.0	260	---	---	---	(2.6)	---	
04	5.0	260	---	---	---	---	---	
05	4.1	260	---	---	<1.3	(2.8)	---	
06	4.4	260	---	---	---	(2.85)	---	
07	4.2	260	---	---	---	---	---	
08	4.3	270	---	---	<1.4	---	---	
09	5.0	260	---	---	1.2	---	---	
10	5.2	250	---	135	1.4	(2.7)	---	
11	6.0	250	---	135	1.5	1.6	(2.8)	
12	6.7	250	---	130	1.6	(2.8)	---	
13	6.7	260	---	110	1.5	1.6	(2.9)	
14	6.6	250	---	130	1.5	1.5	(2.9)	
15	7.0	240	---	140	1.4	(2.65)	---	
16	6.4	240	---	1.3	---	---	---	
17	6.6	250	---	---	<1.1	---	---	
18	6.0	250	---	---	<1.1	---	---	
19	6.0	250	---	---	<1.4	(2.9)	---	
20	5.7	250	---	---	<1.2	(2.6)	---	
21	5.4	250	---	---	---	---	---	
22	5.1	260	---	---	---	---	---	
23	5.4	260	---	---	---	(2.9)	---	

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Kiruna, Sweden (67.8°N, 20.3°E)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	5.1	340	---	---	---	(3.2)	2.4	
01	6.0	345	---	---	---	(2.5)	2.5	
02	6.5	315	---	---	---	(2.3)	2.55	
03	6.3	310	---	---	---	(2.4)	2.6	
04	6.0	295	---	---	---	(2.3)	2.6	
05	6.0	265	---	---	---	(2.3)	2.8	
06	5.0	270	---	---	1.9	2.8	---	
07	4.0	260	---	---	---	2.8	---	
08	4.3	260	---	E	---	2.8	---	
09	6.6	250	---	1.3	1.8	2.9	---	
10	9.0	240	---	1.7	(2.0)	2.95	---	
11	10.9	240	---	2.0	(2.3)	2.9	---	
12	11.5	235	---	2.0	---	2.9	---	
13	11.5	230	---	1.9	---	3.0	---	
14	10.2	230	---	1.8	---	3.0	---	
15	9.0	230	---	1.2	---	3.0	---	
16	7.2	230	---	E	1.3	3.0	---	
17	5.4	245	---	---	(2.3)	2.75	---	
18	4.3	260	---	---	2.3	2.8	---	
19	4.0	290	---	---	(2.4)	2.8	---	
20	4.2	320	---	---	(3.3)	2.8	---	
21	(5.0)	310	---	---	(3.2)	(2.65)	---	
22	5.4	350	---	---	(3.2)	(2.5)	---	
23	(6.0)	345	---	---	(3.1)	2.5	---	

Time: 15.0°E.

Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 17

Baker Lake, Canada (64.3°N, 96.0°W)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	5.2	260	---	---	---	5.2	(2.9)	
01	5.2	260	---	---	---	4.9	---	
02	5.0	260	---	---	---	5.0	---	
03	5.0	270	---	---	---	5.0	---	
04	4.8	270	---	---	1.4	4.0	---	
05	4.4	290	---	---	1.4	4.3	---	
06	4.3	270	---	115	1.5	3.6	---	
07	4.3	280	---	115	2.0	4.0	---	
08	4.6	290	---	110	2.0	4.0	---	
09	5.2	280	---	110	2.1	4.0	---	
10	6.0	270	---	110	2.4	4.0	---	
11	7.0	260	---	110	2.5	3.4	(2.9)	
12	8.0	250	---	120	2.6	2.9	---	
13	10.4	250	---	120	2.6	2.9	---	
14	12.1	250	---	120	2.4	2.85	---	
15	9.0	250	---	110	2.1	2.9	---	
16	7.2	250	---	130	1.9	2.3	(2.85)	
17	6.2	270	---	120	2.0	2.9	(2.7)	
18	6.0	280	---	120	2.0	<3.5	---	
19	5.8	280	---	120	1.9	4.8	---	
20	6.0	260	---	120	2.0	4.1	---	
21	5.2	250	---	---	1.8	4.4	---	
22	5.2	270	---	---	---	6.0	---	
23	5.2	260	---	---	---	5.2	(2.7)	

Time: 90.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 14

Tromso, Norway (69.7°N, 19.0°E)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	---	---	---	---	125	2.35	3.3	
01	---	---	---	---	120	(2.05)	3.2	---
02	(5.3)	---	---	---	150	>3.2	---	
03	(6.0)	(290)	---	---	120	2.05	3.2	
04	(5.6)	(260)	---	---	115	2.10	2.9	(2.55)
05	(5.6)	260	---	---	120	(1.80)	2.7	(2.65)
06	5.2	255	---	---	120	1.50	2.7	(2.75)
07	4.7	265	---	---	135	1.35	2.1	2.70
08	4.8	255	---	---	130	1.30	1.6	2.70
09	6.2	255	---	---	120	1.20	2.80	
10	8.8	245	---	---	120	1.55	2.90	
11	11.0	245	---	---	115	1.70	2.90	
12	12.0	245	---	---	115	1.75	3.00	
13	11.3	245	---	---	115	1.70	3.05	
14	10.7	240	---	---	115	1.75	2.95	
15	9.0	230	---	---	120	1.60	1.8	(3.00)
16	(5.6)	240	---	---	145	1.60	1.8	(3.00)
17	(5.0)	240	---	---	145	2.4	2.4	(2.90)
18	(3.5)	(260)	---	---	115	(1.65)	2.6	(3.00)
19	3.3	---	---	---	120	1.70	2.6	(2.90)
20	(3.8)	---	---	---	115	2.45	2.6	(2.75)
21	(3.7)	---	---	---	110	2.50	2.8	---
22	(4.8)	---	---	---	115	2.30	3.0	---
23	(4.7)	---	---	---	115	3.0	---	---

Time: 15.0°E.

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

Table 16

Lulea, Sweden (65.6°N, 22.1°E)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	(300)	---	---	---	---	---	2.5	
01	300	(2.6)	---	---	---	---	2.0	
02	300	(3.3)	---	---	---	---	---	
03	300	(2.7)	---	---	---	---	---	
04	290	(3.0)	---	---	---	---	---	
05	250	(3.1)	---	---	---	---	---	
06	250	(3.6)	---	---	---	---	---	
07	260	(2.8)	---	---	---	---	---	
08	250	4.7	---	---	---	---	---	
09	240	7.0	---	---	---	1.6	---	
10	240	>7.9	---	---	140	2.0	---	
11	235	>8.0	---	---	115	2.2	---	
12	225	>8.0	---	---	110	2.5	---	
13	225	D	---	---	120	2.3	---	
14	220	>8.0	---	---	120	1.8	---	
15	215	>8.0	---	---	120	1.7	---	
16	210	>7.5	---	---	120	2.75	---	
17	210	(7.0)	---	---	120	2.90	---	
18	225	---	---	---	120	2.95	---	
19	250	(4.0)	---	---	120	3.00	---	
20	275	(3.5)	---	---	120	3.00	---	
21	(270)	---	---	---	120	3.00	2.6	
22	(300)	---	---	---	120	3.00	2.4	

Time: 15.0°E.

Sweep: 1.5 Mc to 10.0 Mc in 6 minutes, automatic operation.

Table 18

Reykjavik, Iceland (64.1°N, 21.8°W)								January 1957
Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00	---	---	---	---	---	3.6	---	
01	---	---	---	---	---	3.2	---	
02	---	---	---	---	---	3.5	---	
03	---	---	---	---	---	3.4	---	
04	(5.0)	---	---	---	---	2.8	(2.60)	
05	(5.4)	---	---	---	---	---	(2.70)	
06	(5.0)	---	---	---	---	---	(2.80)	
07	(4.7)	---	---	---	---	---	(2.75)	
08	(4.6)	---	---	---	---	---	2.75	
09	5.8	---	---	---	---	---	2.90	
10	8.0	---	---	---	---	---	2.95	
11	10.0	---	---	---	---	---	3.00	
12	11.4	---	---	---	---	---	3.00	
13	12.0	---	---	---	---	---	3.05	
14	11.9	---	---	---	---	---	3.00	
15	(10.5)	---	---	---	---	---		

Table 19  
Nurmijarvi, Finland (60.5°N, 24.6°E)

January 1957

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			(3.0)				(3.1)	
01			(3.0)				(3.1)	
02			(3.0)				(3.1)	
03			(2.9)				(3.1)	
04			(2.8)				(3.1)	
05			(2.8)				(3.15)	
06			(2.6)				(3.4)	
07			(2.8)				3.3	
08			(4.2)				(3.2)	
09			(7.0)				(3.4)	
10			10.0			2.2	3.5	
11			11.1			---	3.4	
12			12.5			---	3.5	
13			12.6			---	3.4	
14			13.0			---	3.5	
15			12.5			---	3.4	
16			11.3			---	3.4	
17			9.5			---	3.4	
18			7.7			---	3.4	
19			5.6			---	3.5	
20			(4.4)			---	(3.3)	
21			(3.8)			---	(3.2)	
22			(3.5)			---	3.1	
23			(3.4)			---	(3.1)	

Time: 30.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 1 minute (Jan. 1 through 15);  
in 2 minutes (Jan. 16 through 31).

Table 21

Churchill, Canada (58.8°N, 94.2°W)

January 1957

Time	h'F2	f0F2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00			5.5	300		125	2.6	6.0
01			5.0	320	---	125	2.4	5.5
02			4.6	320		130	2.2	5.0
03			5.1	310		120	2.3	4.8
04			4.8	310		130	2.2	5.0
05			4.6	320		120	2.7	4.4
06			5.2	310		120	2.9	4.5
07			5.2	320		110	2.9	4.5
08			5.3	300		110	2.6	4.5
09			6.8	280		110	2.8	(3.0)
10			9.0	260		110	3.0	3.0
11			10.6	250		115	2.9	3.0
12			11.9	250	---	120	2.9	3.0
13			12.6	250		120	2.9	2.9
14			13.0	240		125	2.8	2.9
15			13.1	240		130	2.6	2.9
16			12.6	240		130	2.0	2.9
17			11.2	260		130	1.8	2.2
18			7.8	270		130	2.0	2.6
19			6.4	280		120	2.1	2.9
20			5.8	300		120	2.1	2.6
21			5.6	300		120	2.4	3.5
22			5.2	310		130	2.2	4.2
23			(5.0)	310		130	2.5	6.2

Time: 90.0°W.

Sweep: 1.0 Mc to 17.0 Mc in 16 seconds.

Table 23

Lindau/Harz, Germany (51.6°N, 10.1°E)

January 1957

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			310	4.05			2.7	2.55
01			305	4.10			2.7	2.55
02			300	4.10			3.0	2.55
03			300	3.70			2.6	2.60
04			280	3.40	---	E	2.6	2.65
05			280	3.45	---	E	2.6	2.60
06			260	3.25	---	E	2.4	2.70
07			260	3.50	---	E	2.6	2.75
08			235	6.10	---	E	3.1	2.85
09			225	9.20	145	2.30	3.9	3.05
10			230	12.00	110	2.70	4.0	3.05
11			230	13.00	110	2.90	4.2	3.00
12			230	12.80	115	3.10	4.2	3.00
13			230	12.70	115	3.10	4.0	2.90
14			230	12.70	115	2.90	4.0	2.85
15			230	12.50	115	2.60	3.9	2.95
16			225	11.50	125	2.05	3.5	2.95
17			215	10.10	---	E	3.4	2.90
18			220	8.55	---	E	3.4	2.90
19			225	7.10	---	E	3.0	2.95
20			235	5.65			3.0	2.85
21			255	4.65			2.4	2.70
22			280	4.40			2.6	2.60
23			310	4.10			2.7	2.55

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 20

Upsala, Sweden (59.8°N, 17.6°E)

January 1957

Time	h'F2	f0F2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00			3.3	330				2.5
01			3.1	330				2.5
02			3.0	325				2.5
03			3.0	310				2.5
04			3.1	300				2.6
05			3.2	285				2.6
06			3.0	260				2.7
07			3.3	260				2.6
08			5.6	240				2.7
09			8.7	230				2.7
10			11.0	225				3.0
11			12.3	225	(4.1)	120	2.50	3.0
12			12.8	225		115	2.55	2.9
13			13.3	230		115	2.50	2.9
14			13.0	230		120	2.30	2.9
15			12.0	225		135	1.85	2.7
16			10.2	215				3.0
17			8.8	215				2.95
18			6.6	215				2.9
19			5.2	240				2.8
20			4.2	255				2.7
21			3.8	290				2.6
22			3.7	295				2.6
23			3.4	325				2.5

Time: 15.0°E.

Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 22

De Bilt, Holland (52.1°N, 5.2°E)

January 1957

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			300	4.2				2.6
01			300	4.1				2.6
02			305	4.0				2.5
03			300	3.6				2.7
04			<300	3.5				2.6
05			280	3.4				2.7
06			<260	3.3				2.8
07			240	4.6				2.8
08			220	7.9				3.2
09			210	10.7				3.2
10			215	12.4				3.1
11			220	12.9	---	115	3.0	3.3
12			220	12.8	---	120	3.0	3.6
13			220	13.0	---	120	3.0	3.0
14			220	12.5	---	120	2.8	3.0
15			210	11.9	---	120	2.5	3.0
16			210	10.8				3.1
17			210	9.2				3.0
18			220	7.5				3.0
19			220	5.8				3.0
20			<260	5.0				2.8
21			265	4.6				2.7
22			300	4.4				2.6
23			310	4.2				2.9

Time: 0.0°.

Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 24

Winnipeg, Canada (49.9°N, 97.4°W)

January 1957

Time	h'F2	f0F2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			4.7	260				2.8
01			4.5	290				2.8
02			4.3	290				2.8
03			4.4	300				2.8
04			4.3	300				2.75
05			4.2	300				2.75
06			4.0	290				2.8
07			3.9	290				2.9
08			5.2	270				2.9
09			8.0	240				3.0
10			10.3	240				3.0
11			12.1	240				3.0
12			12.6	240				3.0
13			13.0	230				3.0
14			13.0	230				2.9
15			13.2	240				2.9
16			12.9	230		120	2.5	2.9
17			12.0	230				2.9
18			11.0	230				2.9
19			9.2	230				3.0
20			7.6	230				2.95
21			6.0	240				2.9
22			5.2	260				2.9
23			5.0	270				2.9

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 25

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

January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.5					3.0	
01	290	4.4					2.9	
02	300	4.4					3.0	
03	300	4.3					3.0	
04	270	4.2					3.05	
05	270	3.8					3.05	
06	280	3.6					3.0	
07	250	3.8					3.1	
08	210	7.0			140	1.9	3.4	
09	200	9.8			100	2.4	3.5	
10	200	11.4			100	2.8	3.4	
11	210	13.2			100	3.1	3.4	
12	210	13.3			100	3.2	3.4	
13	205	13.0			100	3.2	3.3	
14	200	12.4			100	3.1	3.3	
15	210	12.2			100	2.8	(3.2)	
16	210	11.5			100	2.5	3.4	
17	200	9.8			---	---	2.3	3.5
18	205	8.3						3.3
19	210	7.6						3.35
20	210	6.0						3.4
21	230	4.6						3.2
22	300	4.4						3.0
23	300	4.4						2.9

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 27

Formosa, China (25.0°N, 121.5°E)

January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	9.7					2.8	
01	240	8.0					2.8	
02	260	6.6					2.8	
03	260	6.8					2.8	
04	260	6.9					2.8	
05	260	6.1				2.3	2.7	
06	270	7.8				(2.5)	2.8	
07	270	8.9			---	---	2.9	
08	260	12.1			130	2.9	3.0	
09	250	13.8	240	---	120	3.4	3.0	
10	(250)	13.8	240	---	120	3.7	2.9	
11	---	13.6	240	---	120	3.9	4.0	2.7
12	---	13.6	230	---	120	4.0	4.2	2.6
13	---	14.0	230	---	120	3.8	4.2	2.6
14	---	14.7	240	---	---	3.8	3.9	2.6
15	---	14.8	240	---	---	---	3.6	2.65
16	(270)	15.4	240	---	120	3.1	3.6	2.7
17	260	15.0			---	---	3.6	2.9
18	240	14.2			(3.2)		2.8	
19	240	13.8					(2.9)	2.9
20	260	15.7					(2.6)	2.8
21	240	14.9						2.9
22	240	13.9						2.9
23	240	10.7						2.8

Time: 120.0°E.

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

Table 29

Leopoldville, Belgian Congo (4.4°S, 15.2°E)

January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	10.5					2.48	
01	260	10.9					2.54	
02	240	9.2					2.63	
03	240	8.4					2.59	
04	225	6.8					2.70	
05	255	6.8			130	<2.0	2.3	2.69
06	260	8.6	245	---	110	2.9	3.1	2.68
07	280	9.4	230	---	105	3.5	2.50	
08	305	10.0	225	---	105	3.9	2.29	
09	390	10.5	220	---	105	4.1	2.14	
10	490	11.0	220	---	105	4.2	2.01	
11	490	11.8	230	---	105	4.2	2.06	
12	465	12.7	230	---	105	4.2	2.10	
13	450	12.6	220	---	105	4.1	2.15	
14	465	12.6	225	---	105	4.0	2.10	
15	445	13.0	240	---	110	3.7	2.14	
16	405	13.0	255	---	110	3.0	3.6	2.18
17	360	11.5	290	---	---	---	3.1	2.27
18	345	>11.2					2.6	2.21
19	360	(12.5)					<2.30	
20	290	14.0					(2.39)	
21	240	14.3						2.62
22	225	13.0						2.77
23	240	10.7						2.42

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 26

Ottawa, Canada (45.4°N, 75.9°W)

January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00			5.5		280			<1.6
01			5.3		290			<1.5
02			5.0		290			2.7
03			4.9		280			<1.6
04			4.7		270			<1.5
05			4.6		270			2.8
06			4.4		270			<1.5
07			4.6		250			2.8
08			7.9		240		130	2.1
09			10.6		240		110	2.8
10			12.0		230		110	3.1
11			13.1		230		110	3.3
12			13.3		230		110	3.3
13			13.5		230		110	3.3
14			13.0		240		110	3.1
15			13.0		240		115	2.9
16			12.8		230		120	2.4
17			11.9		230		---	1.8
18			10.6		230			<1.6
19			9.2		230			<1.6
20			8.0		230			<1.6
21			7.0		250			3.0
22			6.0		260			<1.5
23			5.8		260			2.8

Time: 75.0°W.

Sweep: 1.0 Mc to 20.0 Mc in 15 seconds.

Table 28

Baguio, P. I. (16.4°N, 120.6°E)

January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00			10.8		230			(1.8)
01			9.8		225			(1.4)
02			9.2		230			3.00
03			7.4		230			2.95
04			6.4		230			2.90
05			5.6		240			2.95
06			5.2		250			2.90
07			8.6		270		131	2.25
08			12.0		250		115	(3.05)
09			14.1		240		111	(3.50)
10			14.0		230		111	3.85
11			13.7		225		111	2.65
12			13.5		220		111	4.00
13			(485)		215		111	(4.00)
14			(455)		220		111	3.85
15			13.2		230		111	3.60
16			13.2		245		113	(3.10)
17			13.0		265		119	2.45
18			12.7		290			(3.5)
19			12.1		325			(2.5)
20			11.9		320			(1.7)
21			11.5		285			2.40
22			11.6		250			(2.8)
23			11.2		235			(1.7)

Time: 120.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 30

Elisabethville, Belgian Congo (11.6°S, 27.5°E)

January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			275		8.4			2.36
01			270		7.9			2.41
02			265		7.2			2.41
03			265		6.5			1.7
04			280		6.8	---	110	2.4
05			255		8.5	250	105	3.0
06			(265)		9.0	240	105	3.5
07			(340)		9.9	230	105	3.9
08			375		10.4	225	105	4.0
09			430		10.7	220	105	4.1
10			445		11.2	220	105	4.3
11			435		11.5	225	105	4.2
12			420		11.6	225	105	4.1
13			410		11.2	230	5.4	4.0
14			410		11.0	235	105	4.0
15			385		10.8	240	105	3.7
16			335		10.6	270	115	3.3
17			300		10.4			2.7
18			315		10.4			2.5
19			300		11.0			2.4
20			275		11.1			2.31
21			260		10.5			2.47
22			255		9.3			2.37
23			260		8.9			2.36

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 31

Rarotonga I. (21,2°S, 159,8°W)							January 1957
Time	h°F2	fo°F2	h°F	fo°F1	h°E	fo°E	f°Es (M3000)F2
00		(9,8)	300				(2,50)
01		(9,2)	300				(2,50)
02		(9,0)	<340			2,0	(2,50)
03		(9,4)	<350			2,3	(2,40)
04		(8,8)	330			2,3	(2,50)
05		(8,7)	310			2,6	(2,60)
06		9,0	290		---	2,7	2,60
07	---	9,6	250	---	110	2,9	3,6
08	---	10,2	250	---	110	3,5	4,8
09	400	11,1	250	7,1	---	---	4,9
10	400	12,2	240	7,1	---	---	5,1
11	410	13,2	230	7,0	---	---	4,6
12	420	13,8	240	7,2	105	(4,5)	2,50
13	420	14,1	250	7,0	104	(4,5)	4,6
14	410	14,3	235	6,7	---	4,4	5,0
15	400	13,8	235	6,5	103	(4,1)	4,5
16	400	13,2	250	6,5	115	3,7	4,9
17	400	12,1	<260	6,3	116	3,3	5,0
18	---	(11,2)	280	---	---	---	4,5
19		(10,3)	320				3,4
20		(9,5)	<350				3,4
21		(9,7)	<360				(2,40)
22		(9,7)	<350				(2,40)
23		(9,8)	320				(2,45)

Time: 157.5°W.  
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 33

Watheroo, W. Australia (30.3°S, 115.9°E)						January 1957	
Time	h°F2	foF2	h°F	foF1	h°E	foE	foEs (M3000)F2
00		7.0	290			3.0	2.60
01		6.7	280			2.8	2.60
02		6.5	300			(2.8)	2.50
03		6.0	300			1.4	2.50
04		5.7	300			1.4	2.55
05	---	5.7	300	---	---	1.50	1.7
06	(360)	6.2	270	3.5	110	2.20	2.7
07	(440)	7.1	250	4.5	100	3.00	3.3
08	460	8.0	230	5.1	100	3.50	4.2
09	440	8.4	(220)	5.5	100	3.80	5.0
10	450	9.0	(210)	6.0	100	4.00	5.6
11	430	9.2	(240)	6.0	100	4.10	5.3
12	450	9.0	(230)	6.1	100	4.20	4.8
13	440	9.1	(240)	6.1	100	4.20	5.1
14	450	9.2	240	6.2	100	4.20	5.1
15	430	9.0	250	6.0	100	4.10	4.8
16	420	8.9	240	5.7	100	3.85	4.3
17	430	8.6	240	5.5	105	3.50	4.2
18	---	8.4	260	---	105	2.90	3.5
19		(8.5)	280		115	2.00	2.8
20		8.2	270			(2.8)	(2.55)
21		(8.0)	280			(2.2)	(2.55)
22		7.3	300			(3.0)	(2.55)
23		7.2	300			2.6	2.55

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

Table 35

Buenos Aires, Argentina (34.5°S, 58.5°W)						January 1957	
Time	h°F2	foF2	h°F1	foF1	h'E	foE	f'Es (M3000)F2
00	380	10.8					2.5
01	350	10.4					2.6
02	320	10.0					2.6
03	320	9.3					2.5
04	360	9.0					2.5
05	300	9.3					2.5
06	270	9.6			---	---	4.5
07	280	9.9	250	---	---	---	5.3
08	400	10.3	250	---	---	---	5.4
09	410	10.9	240	(7.4)			2.4
10	450	11.6	230	(7.5)			2.4
11	430	11.5	250	(7.6)			2.6
12	410	11.5	250	7.6			2.7
13	420	11.8	240	7.4			2.6
14	410	11.5	240	7.0			2.7
15	410	11.5	250	7.0			2.7
16	400	11.4	260	6.8		5.8	2.75
17	380	11.0	270	(6.7)		5.0	2.8
18	350	10.8	280	---		5.6	2.6
19	330	10.7	---	---		5.0	2.6
20	400	10.6				4.5	2.5
21	410	10.2					2.4
22	400	10.2					2.5
23	400	10.6					2.5

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

Table 32

Johannesburg, Union of S. Africa (26.2°S, 28.1°E)							January 1957
Time	h°F2	foF2	h°F	foF1	h°E	foE	foEs (M3000)F2
00		7.0	280			1.6	2.6
01		6.6	270			2.4	2.6
02		6.0	260			2.1	2.6
03		5.6	280			1.8	2.6
04		5.4	280				2.5
05		5.3	290				2.6
06	---	7.0	260	---	2.3	2.7	2.9
07	(260)	6.7	240	---	3.0	3.4	2.7
08		320	9.8	240	4.8	3.6	2.6
09		380	10.3	220	5.8	3.9	2.5
10		400	10.7	210	5.9	4.1	2.5
11		420	11.0	210	6.0	---	4.5
12		430	11.2	220	6.0	---	2.4
13		430	11.1	210	6.1	---	2.4
14		420	10.9	220	6.1	---	4.6
15		420	10.6	220	6.0	---	4.2
16		400	10.2	220	5.8	3.8	4.1
17		370	9.5	240	5.2	3.5	3.8
18	---	9.2	250	---	2.8	3.4	2.6
19		9.2	280		---	2.4	2.6
20		9.0	270			2.2	2.6
21		8.6	270			1.8	2.7
22		7.9	270				2.6
23		7.4	290				2.6

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

**Table 34**

Capetown, Union of S. Africa (34°25' S, 18°30'E)							January 1957
Time	h°F2	foF2	h°F	foF1	h°E	foE	foEs (M3000)F2
00		6.1	290			2.2	2.6
01		5.8	<300			2.1	2.5
02		5.6	290			2.1	2.5
03		5.2	280			2.0	2.5
04		4.9	<310			2.0	2.5
05		4.8	<300				2.5
06		6.0	290			2.1	2.4
07	---	7.7	260	---		2.7	2.8
08	(390)	9.0	250	---		3.3	2.6
09	380	10.0	240	5.6		3.7	3.8
10	400	10.6	230	6.1		4.4	2.4
11	420	10.9	---	6.2		4.6	2.4
12	440	10.7	---	6.1		4.6	2.4
13	440	10.7	---	6.2			2.4
14	450	10.5	---	6.1		4.6	2.4
15	450	10.1	240	6.0			2.4
16	430	9.9	230	5.9			2.5
17	410	9.3	250	5.7		3.6	3.6
18	400	9.0	250	5.0		3.3	3.4
19	---	8.7	270			2.5	3.1
20		8.5	280			---	2.6
21		8.2	270			2.1	2.65
22		7.4	260			2.0	2.6
23		6.6	270			1.8	2.6

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

Table 36

Christchurch, New Zealand (43.6°S, 172.8°E)							January 1957
Time	h°F2	foF2	h°F	foF1	h°E	foE	foEs (M3000)F2
00		8.1	<340			<2.4	2.5
01		7.3	320			<2.2	2.5
02		6.9	340			<1.9	2.4
03		6.6	<330			<2.0	2.3
04		6.2	300				2.5
05	---	6.4	280	---	---	---	2.6
06	---	6.9	250	---	---	(2.7)	3.4
07	(400)	7.5	250	4.8	---	3.2	3.9
08	(440)	8.0	250	5.4	---	3.4	4.2
09	(450)	8.5	(240)	6.0	---	3.9	5.0
10	(400)	9.0	---	---	---	---	(6.0)
11	---	8.8	---	---	---	---	(6.5)
12	(470)	8.8	(250)	---	---	---	(5.0)
13	(470)	8.6	---	---	---	---	2.5
14	470	8.4	(250)	6.0	---	---	(5.5)
15	470	8.2	(250)	6.0	---	---	(5.0)
16	430	8.2	250	5.5	---	3.9	4.6
17	(450)	8.3	250	5.3	---	3.4	3.9
18	---	8.1	250	---	---	(3.0)	4.0
19		8.1	300	---	---	---	4.3
20		8.2	300	---	---	---	3.4
21		8.5	300				<2.7
22		8.5	330				<2.5
23		8.2	340				<2.5

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

Table 37

Resolute Bay, Canada (74.7°N, 94.9°W)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	5.3	---	---	---	1.5	---	---	---	
01	5.4	---	---	---	1.5	---	---	---	
02	5.0	---	---	---	1.4	---	---	(2.8)	
03	5.0	---	---	---	1.4	---	---	---	
04	5.0	---	---	---	---	---	---	---	
05	4.0	---	---	---	---	---	---	---	
06	4.6	---	---	---	---	---	---	(2.9)	
07	4.7	---	---	---	---	---	---	---	
08	5.0	---	---	---	1.3	---	---	(2.6)	
09	5.1	---	---	---	---	---	---	---	
10	5.9	---	---	---	1.4	<1.6	---	(2.9)	
11	6.2	---	130	1.3	---	---	---	(2.9)	
12	6.7	---	170	1.4	1.4	---	---	(2.9)	
13	7.6	---	---	---	1.3	---	---	(2.8)	
14	7.0	---	---	---	1.4	---	---	---	
15	6.3	---	---	---	1.2	---	---	---	
16	6.4	---	---	---	---	<1.1	---	(2.75)	
17	6.2	---	---	---	---	---	---	(2.9)	
18	6.0	---	---	---	---	---	---	---	
19	6.1	---	---	---	---	---	---	---	
20	6.0	---	---	---	---	---	---	---	
21	5.6	---	---	---	---	---	---	(2.9)	
22	5.4	---	---	---	---	---	---	---	
23	5.7	---	---	---	---	---	---	---	

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 39

Baker Lake, Canada (64.3°N, 96.0°W)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	5.2	---	---	---	5.0	---	---	---	
01	5.3	---	---	---	4.0	---	---	---	
02	5.1	---	---	---	1.5	3.4	---	---	
03	4.6	---	---	---	---	4.2	---	---	
04	4.5	---	---	---	4.5	---	---	---	
05	4.7	---	---	(1.4)	3.3	---	---	---	
06	4.5	---	130	2.0	3.3	---	---	---	
07	4.4	---	120	2.0	3.3	---	---	---	
08	5.0	---	115	2.0	4.0	---	---	---	
09	5.4	---	115	2.1	4.0	---	---	---	
10	6.4	---	110	2.2	2.5	---	---	---	
11	8.0	---	110	2.4	---	(2.8)	---	---	
12	9.0	---	105	2.4	2.9	---	---	---	
13	11.4	---	110	2.3	2.85	---	---	---	
14	12.0	---	110	2.2	2.9	---	---	---	
15	7.4	---	115	2.0	2.0	2.8	---	---	
16	7.0	---	120	1.8	2.3	(2.8)	---	---	
17	6.4	---	125	2.0	3.5	---	---	---	
18	5.2	---	120	2.0	4.0	(2.9)	---	---	
19	5.2	---	120	1.6	5.0	---	---	---	
20	6.0	---	120	1.9	5.7	---	---	---	
21	5.4	---	---	(1.5)	5.4	---	---	---	
22	5.2	---	---	---	6.2	---	---	---	
23	5.2	---	---	---	5.2	(2.8)	---	---	

Time: 90.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 41

Churchill, Canada (58.8°N, 94.2°W)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	(4.9)	---	130	(2.0)	6.0	---	---	---	
01	5.2	---	130	2.0	6.0	---	---	---	
02	4.9	---	140	1.9	5.0	---	---	---	
03	5.0	---	130	2.0	4.6	---	---	---	
04	5.0	---	125	2.0	4.5	---	---	---	
05	4.8	---	120	2.8	4.0	---	---	---	
06	5.0	---	120	2.8	4.8	---	---	---	
07	(5.0)	---	110	(2.7)	4.7	---	---	---	
08	5.2	---	120	2.6	4.6	---	---	---	
09	7.2	---	110	2.6	3.0	---	---	---	
10	9.4	---	110	2.8	3.05	---	---	---	
11	11.1	---	120	2.8	3.0	---	---	---	
12	13.0	---	120	2.8	3.0	---	---	---	
13	13.6	---	120	2.8	2.9	---	---	---	
14	14.2	---	130	2.5	2.9	---	---	---	
15	13.5	---	130	2.1	2.9	---	---	---	
16	13.0	---	130	1.8	2.9	---	---	---	
17	10.1	---	130	1.8	2.4	(2.9)	---	---	
18	6.4	---	130	1.8	2.9	(3.0)	---	---	
19	5.6	---	120	(2.1)	3.0	---	---	---	
20	(5.6)	---	120	2.2	3.0	---	---	---	
21	(5.1)	---	120	2.5	4.2	---	---	---	
22	(5.3)	---	130	2.2	4.5	---	---	---	
23	(5.0)	---	125	2.0	7.0	---	---	---	

Time: 90.0°W.

Sweep: 1.0 Mc to 17.0 Mc in 16 seconds.

Table 38

Kiruna, Sweden (67.8°N, 20.3°E)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	350	6.0	---	---	---	---	---	3.6	2.6
01	350	6.0	---	---	---	---	---	3.6	2.6
02	340	6.0	---	---	---	---	---	3.2	2.6
03	320	6.2	---	---	---	---	---	3.2	2.7
04	300	6.0	---	---	---	---	---	3.0	2.7
05	275	6.0	---	---	---	---	---	3.0	2.7
06	260	5.2	---	---	---	---	---	<2.4	2.8
07	260	4.5	---	---	---	---	---	<1.6	2.8
08	265	5.0	---	---	---	---	---	<1.3	2.8
09	260	6.4	---	---	---	---	---	E	2.8
10	250	8.8	---	---	---	---	---	E	2.95
11	245	10.8	---	---	---	---	---	1.8	3.0
12	240	12.0	---	---	---	---	---	1.9	3.0
13	235	12.0	---	---	---	---	---	1.6	2.9
14	225	11.2	---	---	---	---	---	1.2	1.8
15	230	9.2	---	---	---	---	---	E	3.0
16	240	6.5	---	---	---	---	---	<2.6	2.95
17	255	5.2	---	---	---	---	---	<2.4	3.0
18	265	5.0	---	---	---	---	---	3.0	3.0
19	280	4.6	---	---	---	---	---	3.8	2.75
20	295	4.6	---	---	---	---	---	3.0	2.7
21	310	(5.0)	---	---	---	---	---	3.7	2.65
22	340	(5.6)	---	---	---	---	---	4.0	2.55
23	350	6.0	---	---	---	---	---	4.0	2.65

Time: 15.0°E.

Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 40

Oslo, Norway (60.0°N, 11.1°E)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	335	3.00	---	---	---	---	---	2.40	
01	330	2.85	---	---	---	---	---	2.50	
02	325	2.85	---	---	---	---	---	2.40	
03	310	3.05	---	---	---	---	---	2.40	
04	300	3.05	---	---	---	---	---	2.55	
05	270	3.00	---	---	---	---	---	1.1	
06	250	3.00	---	---	---	---	---	2.60	
07	245	2.90	---	---	---	---	---	2.70	
08	250	4.20	---	---	---	---	---	2.60	
09	245	7.60	---	---	---	---	1.80	2.90	
10	240	10.90	---	---	---	---	2.20	2.4	3.00
11	235	12.65	---	---	---	---	2.40	2.9	3.10
12	230	13.70	---	---	---	---	2.50	2.7	3.10
13	230	13.20	---	---	---	---	2.40	3.05	
14	230	>13.80	---	---	---	---	2.25	3.10	
15	220	13.20	---	---	---	---	1.95	3.10	
16	220	11.90	---	---	---	---	---	1.4	
17	220	10.10	---	---	---	---	---	3.10	
18	220	7.85	---	---	---	---	---	3.10	
19	225	5.85	---	---	---	---	---	2.85	
20	250	4.35	---	---	---	---	---	2.80	
21	280	3.60	---	---	---	---	---	2.65	
22	280	3.40	---	---	---	---	---	2.55	
23	320	3.15	---	---	---	---	---	2.40	

Time: 15.0°E.

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

Table 42

Winnipeg, Canada (49.0°N, 97.4°W)								December 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	4.4	---	---	---	---	---	---	<1.5	(2.9)
01	4.4	---	---	---	---	---	---	<1.5	2.7
02	4.5	---	---	---	---	---	---	<1.5	2.6

Table 43

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00					<1.5		2.7	
01	5.7		5.2		<1.5		2.6	
02	5.3		5.3		<1.5		2.65	
03	5.2		5.2		<1.5		2.7	
04	5.0		5.0		<1.5		2.7	
05	5.0		5.0		<1.5		2.7	
06	4.7		4.7		<1.5		2.8	
07	5.1	---	5.1	---	<1.6		2.8	
08	8.3		120	2.2			3.0	
09	11.1		110	2.8			3.05	
10	13.0		110	3.1			3.0	
11	14.0		110	3.2			(2.9)	
12	14.1		110	3.3			--	
13	13.9		110	3.2			(2.9)	
14	13.8		110	3.0			(2.9)	
15	13.5		115	2.8			(2.9)	
16	13.0		130	2.1			(2.95)	
17	12.0	---	---	---	<1.6		2.9	
18	10.8				<1.5		2.95	
19	9.2				<1.5		2.9	
20	7.9				<1.5		2.9	
21	6.9				<1.5		2.8	
22	6.1				<1.5		2.8	
23	5.7				<1.5		2.75	

Time: 75.0°W.

Sweep: 1.0 Mc to 20.0 Mc in 15 seconds.

Table 45

Time	Talara, Peru (4.6°S, 81.3°W)		December 1956					
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	10.6				5.4	2.60	
01	290	(10.0)				5.0	(2.70)	
02	270	9.3				6.2	2.70	
03	250	9.3				6.1	2.85	
04	240	8.6				5.0	3.00	
05	230	7.2				5.2	3.00	
06	270	7.6				4.4	2.85	
07	270	11.0	121	2.7		4.7	2.80	
08	250	13.5	245	---	---	6.0	2.85	
09	14.9	235	---	---	---	3.9	6.3	2.75
10	14.8	230	---	---	114	4.2	6.4	2.60
11	14.7	220	---	---	117	4.3	5.0	2.50
12	14.6	215	---	---	114	4.4	5.4	2.40
13	14.2	220	---	---	114	(4.4)	5.5	2.30
14	13.7	220	---	---	113	4.3	7.2	2.20
15	13.4	215	---	---	111	4.0	6.1	2.20
16	(240)	(13.1)	230	---	---	7.0	(2.20)	
17	260	(12.8)	---	---	---	6.8	(2.20)	
18	280	(13.0)				7.0	(2.25)	
19	320	(12.9)				4.7	(2.40)	
20	340	(12.4)				4.3	(2.40)	
21	330	(12.0)				3.6	(2.40)	
22	300	(12.5)				3.7	2.45	
23	300	(12.0)				5.2	(2.50)	

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 47

Time	Rarotonga I. (21.2°S, 159.8°W)		December 1956					
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	(9.2)				2.0	(2.6)	
01	320	(9.2)				2.8	(2.65)	
02	330	(6.8)				2.0	(2.5)	
03	340	(9.3)					(2.45)	
04	300	(9.2)					(2.5)	
05	300	(9.2)				1.8	(2.6)	
06	280	(9.4)	---	---	---	2.4	2.6	(2.9)
07	260	10.3	260	4.5	120	3.1	3.7	(2.8)
08	280	10.6	250	7.4	115	3.5	4.5	2.7
09	360	10.8	250	7.0	110	3.8	4.8	2.5
10	430	11.8	250	7.4	110	---	5.2	2.4
11	450	12.5	250	7.5	110	4.0		2.4
12	450	13.0	250	7.0	110	4.0		2.4
13	450	13.2	250	7.0	110	4.0		2.4
14	440	13.2	250	6.7	110	4.0		2.4
15	425	12.7	240	6.5	110	3.9		2.4
16	415	11.8	250	6.5	110	3.7		2.5
17	400	11.0	270	6.5	115	3.2	4.9	2.5
18	370	(10.3)	---	---	120	2.3	3.9	(2.5)
19	350	(9.8)				3.8	(2.4)	
20	380	(9.4)				3.8	(2.3)	
21	390	(9.2)				3.5	(2.35)	
22	370	(9.5)				2.8	(2.4)	
23	350	(9.2)				3.0	(2.5)	

Time: 157.5°W.

Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 44

Leopoldville, Belgian Congo (4.4°S, 15.2°E)

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265		12.4					
01	265		11.4					
02	250		9.2					
03	235		8.4					
04	230		6.7					
05	260		7.9					
06	245		9.0	240	---	110	3.0	
07	250		9.4	230	---	105	3.6	
08	---		10.2	225	---	105	4.1	
09	---		11.0	220	---	105	4.2	
10	(500)		11.8	225	---	105	4.2	<2.01
11	490		12.5	220	---	105	4.2	2.06
12	470		13.1	230	---	105	4.2	2.11
13	465		13.6	235	---	105	4.0	4.4
14	460		13.5	230	---	105	3.9	4.2
15	440		13.8	245	---	105	3.5	4.0
16	415		13.9	270	---	110	3.0	4.0
17	310		>13.0	300	---	---	---	3.3
18	370		>13.0					3.2
19	370		>13.0					2.15
20	310		(15.0)					<2.34
21	260		15.0					<2.52
22	245		13.5					2.57
23	255		13.0					2.48

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 46

Time	Elisabethville, Belgian Congo (11.6°S, 27.5°E)		December 1956					
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275		8.8					
01	270		8.4					
02	260		7.6					
03	260		6.8					
04	270		7.6	---	---	120	2.0	
05	260		9.0	250	---	115	3.0	
06	(260)		9.5	240	---	110	3.6	
07	(365)		10.0	235	---	110	3.8	
08	(405)		10.6	230	---	105	4.0	
09	440		11.0	220	---	110	---	
10	460		11.3	220	---	105	---	
11	445		11.6	225	---	105	---	
12	435		11.6	230	---	110	4.0	
13	425		11.5	240	---	110	4.0	
14	415		11.3	240	---	110	3.6	
15	390		11.2	255	---	110	3.1	
16	320		11.1	280	---	120	2.4	
17	315		10.7					
18	325		11.1					
19	300		11.4					
20	280		>11.4					
21	275		11.0					
22	270		9.8					
23	280		9.2					

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 48

Time	Watheroo, W. Australia (30.3°S, 115.9°E)		December 1956					
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300		7.2					
01	<300		7.0					
02	300		6.7					
03	320		6.4					
04	<310		6.0					
05	320		6.0	320	3.1	1.8	2.6	2.45
06	280		6.7	270	4.0	2.6	3.3	2.5
07	410		7.7	250	5.0	3.3	4.2	2.5
08	460		8.1	250	5.4	3.7	4.7	2.5
09	470		8.4	240	5.7	4.0	4.8	2.4
10	460		9.1	240	6.0	4.1	5.0	2.4
11	450		9.8	240	6.4	4.2	6.2	2.3
12	450		10.0	240	6.3	4.3	5.4	2.35
13	450		10.0	240	6.2	4.3	4.9	2.3
14	450		9.8	240	6.0	4.2	4.9	2.3
15	440		9.5	240	6.0	4.1	4.8	2.4
16	430		9.0	240	5.8	3.8	4.6	2.4
17	400		9.0	250	5.5	3.4	5.5	2.4
18	(340)		8.5	260	---	2.7	4.0	2.5

Table 49

Buenos Aires, Argentina (34.5°S, 58.5°W)						December 1956	
Time	h°F2	foF2	h°F1	foF1	h°E	f°E	(M3000)F2
00	380	10.3				6.5	2.5
01	360	10.1				6.5	2.5
02	330	9.8				5.3	2.5
03	350	9.2					2.5
04	350	9.2					2.5
05	280	9.8					2.4
06	260	10.0	280	---	---	---	2.7
07	300	10.5	230	---	---	4.5	2.5
08	410	10.8	220	---	---	5.8	2.4
09	460	11.1	220	7.6	---	---	2.3
10	500	11.3	220	7.4	---	---	2.4
11	480	11.6	220	7.6	---	---	2.45
12	450	12.0	230	7.5			2.5
13	460	11.5	220	7.7			2.55
14	440	11.6	230	7.0			2.5
15	420	11.2	230	7.1		6.1	2.6
16	410	11.1	250	6.8		6.6	2.6
17	400	11.0	240	---		6.1	2.6
18	380	10.6	270	---		5.5	2.6
19	(350)	10.2				6.5	2.5
20	(400)	(10.2)				5.4	(2.4)
21	420	(10.1)				5.1	(2.3)
22	420	(10.4)				5.6	(2.3)
23	400	10.5				5.0	2.4

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 51

Schwarzenburg, Switzerland (46.8°N, 7.3°E)							November 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	295	5.3					2.9
01	300	5.2					2.8
02	300	5.0					2.8
03	305	4.9					2.8
04	280	4.8					3.0
05	260	4.3					3.0
06	250	3.8					3.0
07	250	4.6					3.1
08	220	8.7			120	2.1	3.45
09	210	11.0			100	2.5	3.2
10	210	13.4			100	2.8	3.4
11	210	14.0			100	3.0	3.3
12	220	14.2			100	3.1	3.2
13	210	13.9			100	3.1	3.2
14	220	13.8			100	3.1	3.2
15	220	13.1			100	2.8	3.2
16	220	12.4			100	2.6	3.35
17	210	9.9			---	2.2	(3.3)
18	220	9.0			---	3.0	3.3
19	210	8.5			---	---	3.3
20	220	7.1			---	---	3.2
21	250	6.0			---	---	3.1
22	280	6.1			---	---	2.9
23	280	6.0			---	---	3.0

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 53

Elisabethville, Belgian Congo (11.6°S, 27.5°E)							November 1956
Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs (M3000)F2
00	260	9.1					2.40
01	270	8.5					2.36
02	270	7.8					2.38
03	250	7.2					2.39
04	260	8.3	---	---	130	2.0	2.59
05	250	10.0	245	---	110	3.0	2.64
06	(250)	10.8	235	---	110	3.5	2.51
07	---	11.4	235	---	110	3.8	2.38
08	---	11.8	235	---	110	---	2.25
09	(415)	>11.6	240	---	---	---	2.22
10	420	12.2	235	---	---	---	2.18
11	425	12.9	240	6.0	110	---	2.18
12	415	12.1	240	6.2	110	---	2.21
13	415	12.6	240	6.3	115	4.0	2.19
14	380	12.0	250	---	115	3.6	4.0
15	(350)	11.8	260	---	115	3.0	3.6
16	285	11.7	---	---	---	---	2.24
17	305	11.6				2.4	2.31
18	300	12.0					<2.37
19	280	13.0					2.42
20	260	12.4					2.52
21	255	>11.8					2.48
22	260	11.0					2.45
23	255	10.0					2.45

Time: 0,0°,

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 50

Christchurch, New Zealand (43.6°S, 172.0°E)							December 1956
Time	h <sup>h</sup> F2	foF2	h <sup>h</sup> F1	foF1	h <sup>h</sup> E	foE	fEs (M3000)F2
00	340	8.1				<2.7	2.4
01	340	7.6				<2.2	2.4
02	330	6.9				<2.1	2.4
03	340	6.5				<2.0	2.4
04	320	6.3			---	---	2.4
05	280	6.1			---	---	2.5
06	250	7.0	250	---	(3.0)	4.7	2.6
07	(440)	7.6	250	5.2	---	3.4	5.2
08	450	7.9	250	5.8	---	3.7	5.4
09	(450)	8.2	---	---	---	---	5.4
10	450	8.6	230	6.1	---	---	(5.8)
11	450	9.0	240	6.5	---	---	(4.8)
12	(450)	9.0	---	---	---	---	2.45
13	450	9.0	---	6.3	---	---	(5.1)
14	(460)	8.6	---	---	---	---	(6.5)
15	(450)	8.3	---	6.0	---	---	(5.0)
16	440	8.2	250	6.0	---	3.7	2.5
17	(420)	8.2	250	---	---	3.4	2.5
18	(280)	8.2	---	---	2.9	5.0	2.6
19	(300)	8.2				4.4	2.5
20	(300)	8.3				3.8	2.5
21	(310)	8.6				4.7	2.4
22	(340)	8.9				<3.2	(2.4)
23	340	8.6				3.6	2.4

Time: 172.5

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

Table 52

Leopoldville, Belgian Congo (4.4°S, 15.2°E)						November 1956	
Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs (M3000) F2
00	255	13.3					2.52
01	255	12.0					2.60
02	240	11.0					2.58
03	225	8.6					2.68
04	220	7.0					2.73
05	255	8.4	---	---	125	2.3	3.0
06	240	10.1	240	---	110	3.1	
07	250	11.0	235	---	105	3.7	
08	---	11.7	225	---	105	4.0	
09	---	12.6	220	---	110	4.2	
10	(430)	13.2	230	---	110	4.2	
11	460	14.0	240	---	110	---	
12	460	14.6	240	---	105	4.1	
13	440	15.0	240	---	110	4.1	
14	440	14.7	235	---	110	3.8	
15	430	14.5	250	---	110	3.3	
16	410	>14.4	260	---	115	2.6	3.0
17	310	>13.5	310	---			<2.31
18	370	15.0					2.8 (2.13)
19	340	>14.0					<2.42
20	275	>15.0					<2.68
21	240	>15.3					<2.73
22	230	14.5					2.54
23	240	13.7					2.48

**Time:**

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 54

Time	h°F2	foF2	h°F1	foF1	h°E	foE	fEs	(M3000)F2
00	280	---					2.5	
01	295	(5.0)			---	---		
02	310	(5.0)			---	1.8	2.4	
03	290	5.3	275	---	---	1.9	2.3	
04	350	5.6	250	3.7	110	2.3		---
05	360	6.0	240	3.9	110	2.6		
06	360	6.2	230	4.5	100	3.0		---
07	365	6.4	230	4.5	100	---		---
08	380	6.8	210	4.7	100	---		---
09	385	7.2	225	4.9	100	---		---
10	365	7.3	210	5.0	100	---		(2.7)
11	380	7.3	210	5.0	100	---		(2.6)
12	390	7.2	---	5.0	100	---		---
13	(405)	7.4	230	4.9	100	---		---
14	(360)	7.2	210	4.9	100	---		(2.8)
15	(450)	7.0	---	4.6	100	---		---
16	(400)	6.8	---	4.5	100	---		---
17	(250)	6.0	230	---	110	2.8		---
18	250	6.0	240	---	110	2.5		---
19	250	5.8	245	---	120	2.2		---
20	260	(5.5)			125	1.9		
21	260	(5.7)			---	1.7	2.2	
22	275	(5.4)			---	---	2.4	
23	285	---					2.3	

Time: 15.0° E

Sweep: 1.5 Mc to 10.0 Mc in 9 minutes, automatic operation.

Table 55

Budapest, Hungary (47.6°N, 19.0°E)							May 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	6.8						
01	300	6.6						
02	300	6.0						
03	295	6.0			130	1.6		
04	260	6.1			130	2.2	3.0	
05	270	6.8			115	2.7	3.5	
06	295	7.2			115	3.1	3.8	
07	310	8.0			110	3.2	4.6	
08	290	8.4			110	3.4	5.0	
09	330	8.4			110	3.4	4.6	
10	340	9.2			110	3.4	4.4	
11	345	9.0			110	3.4	4.5	
12	335	9.0			110	3.4	4.0	
13	335	9.1			110	3.4		
14	320	9.0			110	3.3	3.8	
15	300	8.6			110	3.2	4.0	
16	280	8.6			115	2.9	4.6	
17	275	8.6			120	2.4	4.2	
18	270	8.4			---	---	4.4	
19	270	8.4					3.8	
20	280	8.0					3.2	
21	290	6.9					2.6	
22	310	6.6					2.5	
23	310	6.7						

Time: 0.0°.

Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 57

Ahmedabad, India (23.0°N, 72.6°E)							May 1956	
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.4					3.3	2.66
01	285	8.7					3.5	2.79
02	290	8.3					3.2	2.80
03	260	7.8					3.2	2.80
04	250	7.2					3.2	2.85
05	250	6.8					3.2	2.95
06	250	7.4	---	---	120	2.0	3.4	3.10
07	250	8.6	230	(4.2)	110	2.7	4.0	3.15
08	255	9.4	225	4.8	107	3.2	4.4	2.85
09	280	10.2	240	5.2	105	3.4	4.3	2.76
10	325	11.4	250	5.5	105	---	4.0	2.72
11	400	12.3	---	5.8	105	---	3.7	2.61
12	400	13.9	---	5.8	105	---	3.8	2.62
13	375	15.2	---	5.9	105	---	3.7	2.66
14	360	15.3	---	5.7	105	3.8		2.70
15	340	15.3	250	5.5	107	3.6		2.74
16	325	15.3	240	5.3	110	3.4		2.80
17	300	>15.0	250	4.8	110	2.9	3.2	<2.80
18	280	15.0	250	4.4	125	2.2	3.8	2.78
19	270	13.9					3.3	2.78
20	280	12.2					3.2	2.70
21	305	11.0					3.2	2.61
22	320	9.8					3.6	2.56
23	325	9.4					3.5	2.62

Time: 75.0°E.

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

Table 59

Bombay, India (19.0°N, 73.0°E)							May 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	7.5					2.80	
07	420	9.1					2.55	
08:30	420	10.2					2.50	
09	480	10.8					2.30	
10	510	11.5					2.25	
11	540	12.2					2.15	
12	630	12.6					2.00	
13	640	13.0					1.95	
14	630	12.9					2.00	
15	600	12.8					2.00	
16	540	12.3					2.15	
17	510	11.5					2.25	
18	480	10.9					2.30	
19	450	10.5					2.50	
20	(400)	(9.8)					(2.60)	
21	400	9.0					2.60	
22	360	8.1					2.80	

Time: 75.0°E.

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

\*Height at 0.83 foF2.

Table 55

Table 56

Delhi, India (28.6°N, 77.1°E)							May 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		320	8.6					3.00
01		320	8.8					3.00
02		---	---					---
03								
04		320	7.8					3.00
05		300	7.9					3.10
06		280	8.9					3.25
07		290	9.5					3.25
08		280	9.5					3.25
09		320	10.5					3.00
10		360	11.4					2.90
11		360	12.4					2.80
12		360	13.2					2.80
13		360	14.1					2.80
14		330	14.6					2.95
15		320	14.2					3.00
16		320	13.5					3.00
17		320	13.0					3.00
18		300	12.4					3.10
19		320	11.4					3.00
20		320	10.0					3.00
21		340	9.4					2.90
22		360	9.2					2.80
23		340	>8.7					2.90

Time: 75.0°E.

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

\*Height at 0.83 foF2.

Table 59

Table 60

Madras, India (13.0°N, 80.2°E)							May 1956	
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06		320	9.1					3.00
07		360	10.5					2.90
08		400	11.4					2.60
09		460	11.8					2.40
10		460	11.9					2.30
11		460	12.1					2.30
12		520	12.1					2.20
13		520	12.2					2.20
14		500	12.2					2.25
15		460	12.2					2.30
16		460	12.1					2.30
17		460	12.8					2.40
18		440	12.5					2.50
19		440	12.0					2.50
20		440	11.5					2.50
21		(440)	>11.1					(2.45)
22		(380)	10.5					(2.70)

Time: 75.0°E.

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

\*Height at 0.83 foF2.

Table 61

Tiruchi, India (10.8°N, 78.8°E)	May 1956						
Time	* foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							
01							
02							
03							
04							
05							
06	320	8.5					3.0
07	360	10.7					2.8
08	400	11.2					2.6
09	460	11.4					2.4
10	480	11.2					2.3
11	480	11.1					2.3
12	480	11.1					2.3
13	520	11.2					2.2
14	(480)	(11.7)					(2.3)
15	520	11.3					2.2
16	480	11.0					2.3
17	480	10.8					2.3
18	480	10.6					2.3
19	480	10.3					2.3
20	480	10.2					2.3
21:30	480	9.7					2.3
22	---	---					---
23							

Time: 75.0°E.

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

\*Height at 0.83 foF2.

Table 63

Townsville, Australia (19.3°S, 146.7°E)	May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	255	5.1					2.1	3.0
01	250	5.0					2.1	2.9
02	265	5.0					1.8	2.9
03	250	4.3						3.25
04	250	3.6					2.1	2.9
05	295	3.7					2.1	2.8
06	260	4.0					2.1	2.95
07	240	8.0					2.1	2.9
08	240	>10.6	235	---			2.8	(3.3)
09	250	11.8	230	4.6			3.2	5.3
10	250	11.6	210	4.9			3.5	6.0
11	(250)	11.1	205	4.9			3.6	6.2
12	270	11.2	210	5.5			3.6	5.8
13	(280)	11.1	---	5.3			3.7	5.4
14	(250)	11.0	210	---			3.6	4.7
15	(275)	10.8	220	4.4			3.4	6.5
16	(250)	10.8	240	---			3.1	5.8
17	250	>10.8					2.4	5.8
18	230	>8.5					3.7	---
19	225	>8.0					3.5	(3.1)
20	240	7.0					2.1	3.0
21	250	6.5					2.1	2.95
22	250	6.3					3.1	
23	250	6.0					2.1	(2.9)

Time: 150.0°E.

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

Table 65

Canberra, Australia (35.3°S, 149.0°E)	May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<290	4.4						2.7
01	<260	4.6						(2.75)
02	<270	4.2						2.7
03	<280	4.1						2.8
04	<265	4.0						2.8
05	(225)	3.7						2.85
06	---	3.3						2.85
07	240	(5.5)		(1.9)			3.2	
08	230	7.9	---	---			2.4	3.1
09	245	8.6	240	---			3.0	3.4
10	245	8.6	230	---			3.2	3.35
11	240	(8.8)	220	(4.6)			3.3	(3.4)
12	250	(8.6)	220	(4.6)			3.4	(3.45)
13	260	(8.6)	215	(4.6)			3.4	4.0
14	250	---	220	(4.3)			3.2	3.6
15	240	(8.6)	230	---			3.0	3.2
16	240	(8.5)	240	---			2.4	3.6
17	220	8.4					2.1	3.4
18	210	7.8					3.1	3.1
19	(230)	6.8					2.4	3.0
20	---	5.9					2.9	
21	---	5.2					2.8	
22	---	4.7					2.9	
23	---	4.4					2.9	

Time: 150.0°E.

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

Table 62

Kodaikanal, India (10.2°N, 77.5°E)	May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01	300	10.1						2.75
02	300	9.0						2.90
03	300	8.7						2.80
04	280	7.6						3.00
05	240	6.5						3.15
06	240	5.0						3.20
07	265	7.9	---	---	---	---	---	3.00
08	255	10.3	245	---	115	3.0	---	2.90
09	(270)	11.4	235	---	115	---	7.5	2.70
10	(290)	11.8	225	---	---	---	9.0	2.35
11	(300)	11.2	220	---	---	---	10.2	2.30
12	(305)	10.8	220	---	---	---	10.5	2.25
13	(310)	10.9	220	---	---	---	10.6	2.20
14	(300)	11.0	220	---	---	---	10.4	2.20
15	(320)	11.0	220	---	110	---	10.4	2.20
16	---	11.6	225	---	115	3.7	9.8	2.25
17	250	11.8	240	---	120	---	8.0	2.30
18	300	12.1						2.40
19	365	11.1						2.30
20	360	10.8						2.30
21	360	10.5						2.50
22	360	11.2						2.60
23	320	10.2						2.80

Time: 75.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 63

Brisbane, Australia (27.5°S, 152.9°E)	May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.0						2.8
01	265	5.0						2.8
02	270	4.6						2.8
03	260	4.7						2.75
04	260	4.5						2.7
05	250	4.4						2.8
06	250	4.7	230	8.2	220	2.0	2.9	2.9
07	230	9.9	---	---	---	2.8	3.2	3.2
08	(230)	11.0	220	---	---	3.2	3.8	3.1
09	(250)	11.1	220	---	---	3.5	4.3	3.1
10	(250)	11.0	220	4.7	220	3.6	4.5	3.1
11	(250)	11.0	220	4.7	210	3.6	4.6	2.9
12	(250)	10.6	210	4.7	210	3.6	4.6	2.9
13	260	10.6	210	4.6	210	3.5	4.2	2.9
14	260	11.0	220	4.5	220	3.4	4.4	2.9
15	240	11.5	225	---	---	3.1	4.4	2.9
16	240	10.9	225	---	---	2.5	3.6	3.0
17	230	9.5	---	---	---	2.0	3.6	3.0
18	230	7.6					3.5	2.8
19	240	6.6					2.8	
20	250	6.5						2.8
21	250	5.9						2.8
22	240	5.5						2.8
23	250	5.0						2.8

Time: 150.0°E.

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

Table 66

Hobart, Tasmania (42.9°S, 147.2°E)	May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.5						2.6
01	300	3.5						2.6
02	300	3.2						2.6
03	300	3.0						2.6
04	300	3.0						2.7
05	270	3.0						2.8
06	270	2.8						2.7
07	270	3.8	250	7.0	240	2.7	3.2	3.2
08	250	8.4	240	9.5	240	3.0	3.2	3.2
09	240	8.4	240	10.4	230	3.2	3.1	3.05
10	240	8.4	240	11.5	230	3.2	3.05	3.05
11	230	10.4	230	11.5	230	3.2	3.05	3.05
12	230	11.5	230	11.5	230	3.2	3.05	3.05
13	230	11.5	230	11.5	230	3.2	3.05	3.05
14	240	11.8	230	12.2	230	3.0	3.0	3.0
15	240	11.5	230	12.2	230	2.7	3.0	3.0
16	240	11.5	230	12.2	230	2.2	3.0	3.0
17	230	10.0	230	12.2	230	2.2	3.0	3.0
18	230	8.2	230	12.2	230	2.2	3.0	3.0
19	250	6.						

Table 67

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	May 1956
00	280	4.2							2.7
01	290	4.1							2.7
02	290	4.0							2.7
03	280	3.6							2.75
04	280	3.7							2.85
05	260	3.7							2.9
06	260	3.2							2.9
07	260	4.8			1.7				3.1
08	240	7.2	---	---	120	2.2			3.25
09	230	8.6	240	3.7	110	2.6			3.3
10	230	9.3	230	4.2	110	2.9			3.3
11	250	9.8	230	4.3	105	3.1			3.2
12	250	10.4	220	4.7	105	3.2			3.15
13	260	10.4	230	4.7	105	3.2			3.1
14	250	10.3	240	4.3	105	3.0			3.1
15	240	10.4	240	3.7	105	2.6			3.1
16	230	9.8	---	---	110	2.1			3.2
17	230	8.6	---	---	---	---			3.05
18	240	7.4							2.9
19	240	6.4							2.9
20	250	5.6							2.9
21	260	4.9							2.8
22	270	4.6							2.8
23	(280)	4.2							2.8

Time: 172.5°E.

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

Table 69

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	April 1956
00	270	7.2							1.7
01	260	7.0							2.7
02	255	6.7							2.8
03	240	5.8							2.7
04	270	5.5							2.6
05	260	5.5							2.7
06	250	6.5			<1.6				2.9
07	230	9.5			(2.3)				3.2
08	230	11.6	---	---	3.0	3.5			3.0
09	(240)	13.0	225	---	3.4	4.6			3.0
10	(250)	13.1	225	---	3.7	4.8			2.9
11	(250)	13.0	210	4.8	3.8	4.9			2.8
12	(250)	13.0	210	---	3.7	4.7			2.8
13	---	13.0	225	---	3.8	4.6			2.8
14	(250)	12.8	220	---	3.6	4.3			2.8
15	240	12.0	230	---	3.4	5.2			2.8
16	240	11.8	---	---	2.9	4.3			2.8
17	240	11.2			E	3.5			2.8
18	240	10.2			---	3.5			2.8
19	250	9.0				2.6			2.7
20	260	8.5							2.8
21	260	8.4				2.6			2.8
22	275	7.4				3.4			2.7
23	260	7.2				2.9			2.7

Time: 150.0°E.

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

Table 71

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	April 1956
00	290	5.5							2.75
01	290	5.3							2.7
02	300	5.0							2.8
03	300	4.8							2.7
04	280	4.2							2.8
05	280	3.7							2.8
06	280	3.5							2.8
07	250	6.2			---				2.8
08	250	8.0			2.5				3.2
09	240	9.4			3.0				3.2
10	240	10.8			3.3				3.2
11	240	11.8			3.4				3.2
12	240	11.8			3.4				3.2
13	240	11.8			3.4				3.2
14	240	11.5			3.3				3.2
15	240	11.4			3.1				3.15
16	250	11.2			2.7				3.15
17	250	11.0			2.2				3.1
18	250	11.0			---				3.1
19	250	9.5							3.0
20	250	8.0							3.0
21	250	6.8							2.9
22	280	6.0							2.8
23	280	5.8							2.8

Time: 150.0°E.

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

Table 68

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	April 1956
00	250								(2.75)
01	250								(2.85)
02	250								(3.0)
03	240								2.9
04	275								(2.7)
05	290								(2.8)
06	250								2.1
07	240								3.0
08	240								2.1
09	250								2.9
10	(250)								3.3
11	250								3.6
12	(250)								3.8
13	---								3.8
14	---								5.5
15	---								---
16	---								4.2
17	250								3.8
18	250								3.7
19	250								3.6
20	240								2.1
21	250								2.0
22	255								---
23	250								(2.8)

Time: 150.0°E.

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

\*Data observed from April 15 to 30, inclusive.

Table 72

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	March 1956
00	315	(4.8)							
01	320	(4.8)							1.8
02	310	(4.5)							
03	300	(4.4)							
04	300	(4.3)							
05	290	4.1							
06	260	5.0							
07	250	5.5							
08	250	6.2							
09	240	6.8							
10	(245)	(7.6)							
11	---	7.8							
12	(250)	8.2							
13	240	8.2							
14	240	8.2							
15	240	8.0							
16	240	7.8							
17	250	7.6							
18	240	6.2							
19	250	(5.5)							
20	250	---							
21	260	(4.8)							
22	300	(4.5)							
23	305	---							

Time: 15.0°E.

Sweep: 1.5 Mc to 10.0 Mc in 9 minutes, automatic operation.

TABLE 73  
IONOSPHERIC DATA

foF2, 0.1 Mc, May 1957

Station WASHINGTON

Lat. 38° 7N

Long. 77° 1W

Sweep 1.0 Mc to 25.0

Mc in 13.5 Sec.

75.0W	Mean Time
Manual <input type="checkbox"/>	Automatic <input checked="" type="checkbox"/>

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	73	70	68	66	64	60	60	U F	57	J R	J R	U R	B											U S
02	57	57	53	49	50	56	70	76	86	88	92	94	95	94	93	91	90	87	88	85	84	78	79	76
03	74	70	67	63	60	59	59	61	62	63	67	66	67	71	75	76	77	75	75	77	76	74	67	68
04	63	62	57	57	55	55	60	67	68	67	66	65	63	60	60	63	67	65	64	61	63	60	55	57
05	53	50	48	45	40	42	50	52	55	59	60	63	64	65	66	68	68	69	69	67	66	67	68	66
06	62	63	60	58	52	53	57	64	68	70	75	78	75	79	80	80	82	82	84	80	78	77	73	73
07	69	62	63	64	62	63	70	75	88	94	100	99	103	102	101	104	102	96	96	100	93	80	78	76
08	74	69	68	64	62	63	69	78	77	83	89	89	88	92	93	93	93	93	90	87	85	80	74	68
09	64	66	61	62	52	48	51	60	63	74	72	77	79	79	79	83	84	86	87	80	75	73	68	
10	62	59	55	55	50	49	61	65	68	72	73	75	79	80	81	81	80	83	87	95	90	82	71	67
11	65	64	61	57	54	55	65	69	67	69	68	69	71	72	75	74	73	75	76	80	80	78	73	68
12	67	64	59	55	53	53	62	67	69	71	72	76	78	81	81	82	84	85	84	87	84	79	77	77
13	76	71	70	68	65	59	67	67	71	75	78	78	80	79	82	85	87	88	84	81	77	76	73	70
14	68	65	64	64	61	62	67	69	68	71	72	72	72	74	73	72	71	71	69	68	69	65	63	
15	58	60	57	56	55	60	72	68	75	77	86	89	93	92	89	86	87	85	86	84	79	74	71	69
16	66	66	64	60	56	60	70	71	73	75	U S	U S									U S	U S		U S
17	68	68	67	65	63	63	68	75	80	82	85	87	85	79	82	82	80	82	78	76	77	75	71	69
18	70	67	62	57	50	51	54	63	65	69	72	76	74	77	78	79	80	79	76	76	74	72	70	
19	68	65	63	63	55	54	59	63	67	69	71	74	74	77	78	79	79	87	83	76	75	71	68	
20	67	67	64	63	56	52	58	59	62	63	61	67	70	70	72	72	72	73	73	75	75	76	73	74
21	74	64	63	62	62	58	61	71	79	86	92	96	97	97	98	94	91	90	87	87	90	78	74	71
22	64	61	60	60	58	58	63	66	64	64	62	61	64	63	64	65	67	68	70	70	68	70	70	69
23	U S	76	73	60	59	55	60	69	75	70	73	76	79	80	82	85	85	87	83	84	81	79	76	75
24	F	71	75	72	68	58	58	68	78	84	92	94	99	94	92	90	89	87	87	85	87	83	78	75
25	75	73	69	64	62	62	70	84	85	88	89	88	89	90	88	86	84	86	87	87	92	90	85	73
26	75	70	67	57	49	43	47	45	48	E G	E G	F U F								U S	F U F			
27	69	64	57	57	50	50	56	64	72	76	83	86	86	85	86	87	88	88	86	89	88	85	86	82
28	74	74	68	60	57	53	67	77	82	86	90	92	90	91	90	87	85	85	86	86	83	84	84	80
29	75	70	68	63	58	57	64	66	70	72	77	79	82	86	88	86	82	78	78	76	80	77	76	76
30	72	71	62	59	52	54	56	55	63	68	76	80	86	90	89	94	88	85	76	74	76	75	74	
31	69	65	61	55	52	52	56	59	63	63	59	61	62	62	63	64	63	63	66	64	66	66	66	
MED	69	66	63	60	56	56	62	67	68	72	73	77	79	79	81	81	82	82	84	80	78	76	73	70
NO	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31

TABLE 74  
IONOSPHERIC DATA

foF2, O.1 Mc, May 1957

Station WASHINGTON Lat. 38° 7' N Long. 77° 1' W Sweep 1.0 Mc to 25.0 Mc in 13.5 Sec.

75°OW Mean Time  
Manual  Automatic 

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330			
01	75	68	67	68	62	59	62	60	J 59	R 63	J 61	U R 62	U R 62	64	64	66	66	67	66	67	U S 65	64	59	58			
02	U S 55	J F 52	U F 48	U F 50	J F 51	F 59	74	78	79	91	93	94	94	94	91	90	88	88	88	85	U S 79	U S 79	U S 77	72			
03	70	67	65	62	60	57	60	61	64	64	66	65	70	73	75	76	75	73	75	77	74	69	67	66			
04	63	58	58	57	56	60	64	70	67	64	65	I C 63	I B 62	60	62	63	64	65	62	61	61	59	56	54			
05	52	48	46	43	41	46	52	53	56	59	61	63	64	65	67	69	68	69	69	66	66	67	67	64			
06	62	62	58	54	53	54	63	69	70	70	77	76	77	80	80	81	83	81	82	76	76	U S 76	U S 75	70			
07	F	66	63	64	63	63	67	70	82	92	96	97	101	101	100	100	105	100	97	98	100	88	79	78	75		
08	72	68	67	62	63	67	70	79	80	85	89	89	90	92	92	94	94	92	88	85	79	77	68	67	F		
09	64	62	61	60	49	50	54	61	68	71	73	78	80	77	79	82	84	85	86	87	77	72	70	67			
10	61	57	56	53	48	55	63	68	72	72	75	78	79	80	82	80	81	86	92	92	85	74	70	65			
11	67	63	58	56	53	60	69	68	67	69	69	70	72	71	75	73	74	76	77	83	78	72	72	68			
12	66	61	58	57	53	60	64	69	70	71	75	78	80	82	81	83	85	86	87	82	78	78	76				
13	74	74	70	65	63	62	65	70	75	75	79	V 78	79	82	82	87	87	88	80	83	76	74	72	67			
14	68	64	64	63	59	64	69	68	I 67	72	72	72	72	73	73	73	71	71	69	69	67	64	60				
15	U F 60	U F 58	U F 55	55	57	67	72	73	76	I C 82	I C 88	90	91	90	85	87	86	85	84	U S 82	U S 75	72	69	67			
16	67	66	63	58	55	63	70	71	74	75	72	79	77	80	79	80	79	77	77	70	69	67	70	70			
17	68	67	64	66	60	64	71	76	80	84	86	86	84	81	82	80	80	77	78	76	75	72	69	70			
18	70	64	57	53	55	53	57	63	69	69	75	75	75	77	78	80	80	78	77	76	74	73	70	70			
19	66	63	62	57	52	57	60	65	69	71	71	73	75	I A 77	78	78	80	82	86	79	75	72	69	69			
20	67	65	63	59	53	54	61	59	I A 62	63	63	72	69	I C 71	73	72	72	73	74	76	76	73	72	76			
21	69	65	61	64	56	58	66	72	85	87	97	97	96	97	98	92	91	89	88	90	84	76	69	68			
22	64	60	62	58	55	62	63	63	64	64	63	I R 62	63	63	U A 64	I A 66	I A 68	I A 68	I A 69	I A 68	I A 69	69	69	69	70		
23	76	66	59	56	56	67	70	80	73	72	79	79	82	83	85	86	85	86	83	77	78	75	75	74			
24	F 75	72	71	64	57	63	75	85	H 91	95	98	94	93	92	89	88	87	87	86	86	80	78	73	75			
25	73	71	67	62	61	66	75	80	92	89	87	88	90	89	87	85	85	86	87	87	90	87	78	74			
26	J S 73	67	64	55	46	44	46	54	55	59	61	57	60	68	68	68	68	73	70	69	72	70	79	70			
27	65	62	57	50	50	53	59	67	74	82	84	86	85	84	86	88	88	86	87	87	84	85	85	78			
28	74	69	63	58	51	61	73	79	84	88	92	91	90	92	89	86	84	85	86	85	84	84	83	78			
29	73	68	64	61	58	64	64	69	70	77	78	80	84	86	86	83	78	78	76	79	76	78	74				
30	70	65	63	60	56	50	54	58	J S 56	F 67	72	79	84	88	92	88	90	86	84	73	77	76	76	69			
31	U S 65	63	60	52	50	55	59	60	64	61	62	60	62	63	64	63	64	66	66	63	66	68	66	66			
MED	67	64	62	58	55	60	64	69	70	72	75	78	79	80	81	81	81	82	82	77	76	73	70	70			
NU	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31			

TABLE 75  
IONOSPHERIC DATA

foF1, O.I Mc, May 1957

Station WASHINGTON Lat. 38° 7N Long. 77° 1W Sweep 1° 0 Mc to 25° 0 Mc in 13° 5 Sec. 75° OW Mean Time

Manual  Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01							L	500	U L	U S	540	B	B	B	U R	540	540	500	L	L					
02							L	L	L	H	H	U H	H	U L	U H	540	520		L						
03							L	L	500	520	530	540	H	H	H			H	L						
04							L	U L	U S		530	550	530	530	520	520	520	520	470	L					
05							L	H	H	H	H U S	H U S	H U S	H U S	H	H	H	H	L						
06							L	L	H U L	H U L	H	550	550	550	550	550	550	550	550	L	L				
07								L	L	570	560	630	620	590	560			L	L	L					
08							L	L	H	600	590	600	620	590	590	590	590	L	L	L					
09							L	H	U L	480	540	560	590	560	600	600	580	530	470	L					
10							L	U L	U L	500	580	590	590	580	590	600	550	550	L	L					
11							L	L	520	520	540	550	550	570	550	550	530	480	L						
12							L	460	530	550	550	580	590	590	590	580	550	L	L						
13							L	L	L	580	580	600	580	600	590	580	540	L	L						
14							L	L	520	530	560	570	590	570	570	550	540	490	A						
15							L	U L	U L	500	630	610	630	600	600	630	610	550	L	L					
16							L	U L	U L	480	550	560	510	580	590	570	560	570	530	L	L				
17							L	H	L	490	550	600	590	620	600	570	570	540	L	A					
18								L	500	580	580	580	580	580	560	580	550	570	530	L					
19							L	L	U L	460	550	550	550	570	590	600	550	520	U S	L	L				
20							L	L	H I A	520	530	540	540	540	610	560	570	560	530	550	U L	L			
21							L	L	L	400	670	670	630	630	600	620	570		H U L	A	L				
22							L	H	U L	U S	490	550	530	550	540	540	550	540	H U R	A	A	A	A	A	
23							L	L	U R	H	620	560	570	560	580	570	600	590	550	U L	L	L			
24							L	L	H	600	600	640	620	600	580	580	530		H	L	L				
25							L	L	H	540	530	670	620	600	600	580	600	550	480	L					
26							U F	420	450	480	500	500	540	520	520	530	520	520	460	L					
27							F	400	490	620	580	600	600	600	580	580	550	550	L	L					
28							L	L	L	560	590	590	570	570	540	550	530	490	L						
29							F	420	450	510	520	580	590	590	590	590	580	530	490	L					
30							L	H	H	500	500	530	540	530	550	530	530	520	500	L					
31							48	52	54	55	58	58	57	57	56	53	48								
MED							4	13	21	27	27	28	30	30	31	29	27	14							
NU																									

TABLE 76  
IONOSPHERIC DATA

foE, 0.05 Mc, May 1957

Station WASHINGTON Lat. 38° 7' N Long. 77° 1' W Sweep 1° 0' Mc to 25° 0' Mc in 13° 5' Sec.

75° 0' W Mean Time  
Manual  Automatic 

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
01							U R	B	R	R	B	B	B	R	R	B	R	R	R							
							230																			
02							H	H	U R	U R	U R	I B	U R	H	H				H							
							240	300	320	360	380	390	400	400	370	360	330	310	240							
03							H					H														
							230	290	320	355	370	390	390	395	390	370	340	300	245							
04							B																			
							295	340	365	380	390	390	390	390	380	360	340	310	245							
05							U A												I A							
							230	275	230	370	390	405	390	395					355	330	295	200				
06								245	290	325	350	390	395	400	385					300	240					
07								230	285	330	350	360	380	390	390	385	370	340	310	265						
08												U A	A	A	A	A	A	A			350	300	240			
09												H	U R	A	I R	H	U R				S					
												240	280	325	355	360	380	390	370	360	340	300	245			
10												H	I A													
												240	295	255	370	390	400	400	400	395	380	340	300	250		
11													I A U R									U A				
												240	300	340	360	375	390	400	400	390	370	345	305	245	160	
12													160	230	285	330	A	A	A	H			310	260		
																	400	400	290	375	345					
13																	H	U R		H	H	U A	S			
													240	290	335	375	380	390	390	385	380	370	345	310	250	
14													H U A	U R	I A	H	U A					U S		S		
													240	310	330	370	390	400	400	400	390	380	315	240		
15																	H	U R	H	H	315	265				
																	245	310	350	370	385	400	400			
16																	H	I R	H	I A			S			
																	245	310	355	375	400	400	410	395		
17																	170	245	310	330	360	400	400	395	370	
																				330	315	250				
18																	A	A	I A	A	I A	A	S			
																	230		370	380	400	420	410	400	390	
19																	U R	165	245	305	345	360	390	400	395	
																				350	315	260	185			
20																	245	290	330	355	350	400	415	410	400	
																				365	325	270	175			
21																	U R	250	310	A	A	U A	A	A	A	
																				375						
22																	A	310	360	360	A	400	400	380	365	
																				320						
23																	S	A	300	A	A	H	I R			
24																	A	245	305	310	330	355	400	420	405	
25																	H	180	255	A	375	375	A	395	385	
26																	U R	145	245	310	350	A	A	R	395	
27																	I A	175	245	300	350	380	385	390	390	
28																	U A	240	290	320	330	380	390	400	390	
29																	U A	185	250	310	330	335	355			
30																	I R	250	310	345	R	A	A	A	A	
31																		170	245	295	325	R	A	A	A	A
MED																		170	240	300	330	360	380	390	390	350
NO																		8	28	28	25	23	24	20	24	315

TABLE 77  
IONOSPHERIC DATA

foEs, 0.1 Mc, May 1957

 Station WASHINGTON Lat. 38° 7' N Long. 77° 1' W Sweep 1° 0 Mc to 25° 0 Mc in 13° 5 Sec. 75° 0 W Manual  Automatic  Mean Time

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
01	S	S	S	S	S	B	G	B	G	G	B	B	B	G	G	B	G	J	28	26	18	S	S	S						
02	S	S	S	S	S	B		25	G	G	G	G	B	B	G			J		S	S	S	S	S						
03	S	S	S	S	S	J	G	G	G	39	43	40	41	41	G	38	39	41	44	22	S	S	S	S						
04	J	J	J	U	B	28	19	B	24	30	37	G	J	G	41	44	42	35	36	26	J	J	J	J	22					
05	J	J	J	J	J	J	21	28	22	23	22	31	25	28	G	G	G	39	42	35	24	18	S	S	S	S				
06	S	12	S	S	S		G		J	G	G	G	G	J	44	37	35	28	27	J	24	S	S	S	S					
07	J	34	S	26	24	S	18	25	G	36	G	G	G	G	G	38	33	27	20		S	S	S	S						
08	S	S	S	S	S	J	J	31	30	30	34	44	G	B	42	40	58	36	36	35	32	58	S	S	S	S				
09	S	S	S	S	S	S	G	29	G	G	39	38	B	41	G	G	G	J	32	30	22	24	S	S	S	S				
10	S	S	S	S	S	S	G	G	G	G	45		G	G	G	G	G	G	J	25		23								
11	S	S	S	S	S	S	J	25	33	38	37	40	J	G	G	G	G	G	28	24	22	19	S	S	S	S				
12	S	S	S	J	G		25	31	35	41	39	42	G	G	G	J	J	41	35	28	17	S	S	S	S					
13	S	S	S	S	S		16	30	32	38	39	39	G	G	G	G	G	37	34	34		21	26	23						
14	S	S	S	S	S	S	J	26	33	34	38	40	G	G	42	G	G	40	42	34	20	S	S	S	S					
15	S	S	S	S	S	B	G	G	38	43	45	42	G	41	G	G	G	28	33			22								
16	S	S	S	S	S	B		27	34	38	42	62	64	45	42	G	G	G	28	18	S	S	S	S						
17	S	S	S	S	S	G		25	32	35	G	G	G	G	47	92	63	47	42	76	37	36	29	17	38					
18	S	J	S	S	S	J	J	22	30	50	39	39	40	42	44	44	72	40	44	36	18	S	J	J	S					
19	S	S	J	B	S	G		26	32	40	43	41	43	G	G	42	39	38	27	G	S	S	S	B						
20	S	S	S	S	S	B	G	J	33	66	39	40	38	43	G	C	G	40	37	38	34	30	22	31	S					
21	S	S	S	S	J	J	18	31	26	33	46	70	47	57	H	G	G	41	46	39	G	J	J	J	S					
22	B	B	S	J	J	J	17	32	34	33	43	53	53	82	56	44	58	58	73	87	72	62	68	74	40	28				
23	J	J	J	J	J	J	38	39	54	24	20	25	30	40	40	40	47	46	49	50	48	43	36	54	19	24	19	40		
24	J	J	J	J	J	J	67	64	37	31	18	23	36	44	40	39	43	G	G	41	43	30	19	24	58	45	32			
25	J	J	S	S	S	G	G		32	39	42	48	50	50	48	44	42	40	30	76	24	J	J	S	S	S				
26	S	J	17	17	S	S	G	G	G	G	44	54	41	G	47	42	49	44	39	G	21	17	20	J	S					
27	S	S	S	J	S	G		37	26	32	40	40	42	40	40	39	36		6	G		29	21	30	34	30	23			
28	S	S	S	S	S	B		31	32	38	35	37	42	41	43	45	38	36	26	G		J	J	J	J	J				
29	J	22	S	S	S	S	G	27	S	35	38	38	41	41	40	37	34	31	G	G	21	S	S	28						
30	S	S	S	S	S	G	G	G	39	48	50	43	44	41	39	36	G	G	23	S	S	19	J	29						
31	S	J	19	S	S	S	G		27	31	36	39	38	39	36	41	42	36	28	G	G	22	S	29	21	S				
MED	U	22	U	25	U	26	U	24	U	20	25	32	36	39	40	39		40		37	33	28	22	U	24	U	29	U	28	
NU	9	10	8	9	7	27	31	30	31	31	31	31	31	31	31	30	31	31	31	31	31	31	15	15	15	15	11			

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

TABLE 78  
IONOSPHERIC DATA

f<sub>min</sub>, 0.1 Mc, May 1957

Station WASHINGTON Lat. 38° 7' N Long. 77° 1' W Sweep 1.0 Mc to 25.0 Mc in 13.5 Sec.

75° 0' W Mean Time  
Manual  Automatic 

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Q1	E S	E S	E S	E S	E S	15	16	16	16	23	16	30	23	27	38	40	42	31	27	40	26	24	17	16	16			
Q2	E S	E S	E S	E S	E S	17	16	13	13	16	17	16	19	23	29	22	45	44	34	27	26	16	17	15	16	16		
Q3	E S	E S	E S	E S	E S	16	13	11	12	16	16	16	20	18	18	24	20	25	27	25	19	16	17	16	17	16		
Q4	E S	E S	E S	E S	E S	16	17	16	21	16	20	18	26	30	27	24	26	28	28	16	20	20	16	16	16	16	16	
Q5	E S	E S	E S	E S	E S	16	16	12	14	12	11	16	16	16	19	19	23	23	24	16	18	16	16	16	16	16	16	
Q6	E S	E S	E S	E S	E S	16	12	12	13	16	16	22	17	20	25	23	26	22	24	21	20	18	16	16	16	16	16	
Q7	E S	E S	E S	E S	E S	16	16	16	16	13	16	16	16	19	20	22	22	24	25	23	21	20	20	16	16	16	16	
Q8	E S	E S	E S	E S	E S	16	16	14	16	13	16	16	17	16	23	27	40	30	31	30	28	19	18	16	15	16	16	16
Q9	E S	E S	E S	E S	E S	16	16	16	16	13	15	16	18	19	25	24	28	41	32	30	22	20	16	16	16	16	16	
Q10	E S	E S	E S	E S	E S	16	14	14	16	16	16	16	17	16	22	20	20	22	22	16	16	16	16	16	16	16	16	
Q11	E S	E S	E S	E S	E S	16	16	16	16	16	17	16	20	25	20	17	21	22	21	22	19	18	19	16	15	16	16	
Q12	E S	E S	E S	E S	E S	16	16	16	16	17	15	15	16	16	18	18	20	19	22	20	18	21	19	17	16	15	16	
Q13	E S	E S	E S	E S	E S	12'	16	18	11	16	16	16	16	20	18	18	19	22	20	19	16	19	16	15	16	16	16	
Q14	E S	E S	E S	E S	E S	16	16	16	17	16	18	16	16	16	26	25	21	26	21	28	27	20	20	16	16	16	16	
Q15	E S	E S	E S	E S	E S	16	12	13	16	13	17	16	16	18	19	19	20	29	28	25	19	17	18	18	16	15	16	
Q16	E S	E S	E S	E S	E S	16	14	16	16	16	17	16	16	20	18	20	23	20	20	24	28	18	20	19	16	16	16	
Q17	E S	E S	E S	E S	E S	17	15	16	16	16	16	17	16	20	18	20	20	20	22	21	19	30	22	17	16	16	16	
Q18	E S	E S	E S	E S	E S	19	16	21	16	16	16	16	16	20	21	21	21	22	19	20	27	16	16	16	16	16	16	
Q19	E S	E S	E S	E S	E S	16	16	14	19	19	15	16	16	19	20	19	16	16	24	25	23	21	23	16	16	15	16	
Q20	E S	E S	E S	E S	E S	16	15	15	11	13	19	14	17	16	24	20	23	27	28	27	21	24	20	16	15	16	16	
Q21	E S	E S	E S	E S	E S	16	16	16	16	13	15	19	16	26	17	22	16	26	24	23	21	16	19	16	16	16	16	
Q22	E S	E S	E S	E S	E S	25	20	16	16	12	16	17	16	16	17	19	25	21	26	20	20	18	21	20	16	16	16	
Q23	E S	E S	E S	E S	E S	16	13	14	16	13	16	16	20	16	19	19	29	21	23	19	19	19	21	17	16	16	16	
Q24	E S	E S	E S	E S	E S	16	12	13	16	13	15	16	16	16	18	20	24	24	23	26	25	19	20	16	15	16	16	
Q25	E S	E S	E S	E S	E S	14	16	16	16	16	16	16	16	19	16	17	24	30	22	28	24	19	16	20	16	16	16	
Q26	E S	E S	E S	E S	E S	16	13	12	15	16	12	13	16	16	20	17	20	22	20	20	20	19	20	16	15	16	16	
Q27	E S	E S	E S	E S	E S	15	15	15	11	13	16	16	20	20	21	22	20	24	28	23	22	17	20	16	16	16	16	
Q28	E S	E S	E S	E S	E S	16	16	16	16	13	18	16	16	16	18	19	21	21	20	18	18	17	16	16	16	16		
Q29	E S	E S	E S	E S	E S	16	16	16	16	16	16	22	18	25	20	19	25	26	28	27	21	20	22	18	16	16	16	
Q30	E S	E S	E S	E S	E S	16	16	16	16	16	17	21	20	19	29	25	32	33	25	27	24	21	22	20	16	16	16	
Q31	E S	E S	E S	E S	E S	16	16	16	22	16	16	22	20	27	24	32	26	27	27	26	23	21	31	16	16	16	16	
MED																												
RAN																												

TABLE 79  
IONOSPHERIC DATA

h'F2, Km, May 1957

Station WASHINGTON Lat. 38° 7N

Long. 77° 1W

Sweep 1.0

Mc to 25.0

Mc in 13.5 Sec.

75° 0W  
Manual  Automatic 

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
01							L	430	365	U F	500	535	500	B	545	510	475	455	420	L											
02							L	L	L	L	295	360	370	370	370		L	L	355												
03							L	L	420	470	465	540	525	505	465	430	410	390	L												
04							L	L	470	550	560		550	590	615	560	470	400	L												
05							L	L	500	585	495	510	535	515	470	435	390	L													
06							L	L	330	305	435	405	420	410	400	385	375	L	L												
07							L	L			315	355	370	370	330				260												
08							L	L			355	340	360	405	375	360	365	335	310	275											
09							L	L	440	400		425	350	395	420	425	370	335	L												
10							L	L	395	390	390	380	390		L		360	L	L												
11							L	295	435	430	470	470	465	480	430	425	410	380	305												
12							L	300	350	U L	420	425	460	430	410	390	390	370	330	L											
13							L	325	305	295	365	390	425	410	450	410	390	350	L	L											
14							L	L			380	440	425	460	470	480	475	440	430	390	300										
15							L	L			325	450	375	410	380	390	415	410	390	360	L										
16							L	295	330	380		330	430	440	460	450	440	435	395	L											
17							L	330		370	435	415	435	490	420	410	410	380	A												
18							L		375	455	490	495	455	480	465	465	430	435	400	L											
19							L	275	280	370	455		490	480	580	500	440	455	460		340										
20							L	360	505	535	530	640	540	570	510	495	480	455		L	L										
21							L	375		L	L	L	365	380	420	380	390	360		L	L										
22							L		375		490	580	630	560	635	560		A	A	A E A	410										
23							L	295	270	430	380	420		435	440	435	435	400	370	L											
24							L			H				405	410	425	390		360												
25							L		410	290	280	435	435	400	405	400	400	400	340		L										
26							L		G	G		F U F	615	530	530	660	590	510	490	440	420	320									
27							L			L	400		360	405	435	400	370	360		295											
28							L		275	350		L	365	370	380	380		350	335	305											
29							L	305		425	390	400	290	380	390	360	350	340	L												
30							L	400	340	U F	450	500	460	425	435	445	410	385	365	330		L									
31							L				440	470	605	560	560	610	540	515	450	420											
MED							L		300	370	425	440	435	430	430	445	420	425	400	380	U 300										
NO							L		4	9	12	18	23	26	29	30	31	30	27	28	21	8									

TABLE 80  
IONOSPHERIC DATA

**h'F, Km, May 1957**

Station WASHINGTON Lat. 38° 7N Long. 77° 1W Sweep 1° 0 Mc to 25° 0 Mc in 13° 5 Sec. 75° 0W Mean Time

Manual  Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
									U F			B	B	B	E B											
01	315	300	300	305	295	300	270	255	250	200	210		H	H	215	230	240	250	275	280	275	280	295	305		
	U S												H			H		U A	U A							
02	315	330	330	320	300	290	250	235	230	220	205	205	205	210	210	215	230	260	290	260	250	280	290	285		
													H	H	H			H								
03	290	295	270	290	280	280	260	245	240	240	215	230	210	200	240	240	245	245	270	285	265	255	275	305		
													A					U A	U A							
04	305	335	350	330	295	315	285	250	235	225		220	230	225	240	245	245	250	270	330	290	300	305	320		
													H	H		H	H									
05	330	345	335	320	315	290	250	225	215	210	225	225	210	205	205	240	225	250	250	275	290	310	315	320		
													H	I A	H		H	H	H	H						
06	325	315	290	300	280	250	250	215	210	220	225	200	215	215	235	210	225	235	250	260	265	290	285	285		
													H		H	H										
07	285	320	315	305	280	260	240	220	210	230	215	210	210	200	210	220	230	235	250	260	240	245	265	270		
																		U A								
08	285	290	300	290	300	300	250	240	225	220	185	200	200	200	220	235	230	220	240	260	265	250	255	290	350	
													H			H	H									
09	330	325	340	300	260	290	250	250	210	240	220	220	220	220	220	225	220	235	265	280	240	270	270	270		
10	280	290	300	290	290	290	260	240	220	210	210	215	210	220	210	230	230	220	250	265	240	250	265	270		
11	290	280	280	280	305	260	240	230	230	205	210	220	215	220	220	230	240	260	275	260	265	265	250			
													H		H	H	H									
12	270	280	290	280	295	300	250	240	230	210	205	205	200	215	210	225	250	240	255	265	250	250	270	290	295	
														H	H		H									
13	310	305	285	285	300	315	260	240	230	200	200	180	215	215	230	220	230	225	250	260	260	280	270	260		
														H			A	A								
14	290	300	300	290	280	285	250	230	215	220	210	210	200	210	220	240	230			275	270	270	280	280		
	F	F												U A		H										
15	280	270	270	265	265	270	245	245	215	225	220	210	215	210	220	220	220	220	245	250	270	245	255	280	280	
16	280	280	275	260	275	295	250	245	235	215	210	240	220	210	210	200	230	230	240	280	260	270	300	300		
													H	H	H		U A	U A	U A	I A						
17	300	310	310	290	260	270	240	215	210	215	200	205	200	220	220	260	250	255	265	275	280	280	280	310		
18	300	300	305	315	290	290	235	215	210	215	215	210	220	220	220	225	215	230	240	265	275	250	275	300	305	
	E S	E S	E S E A										H	H	H	H									E S	
19	270	290	340	305	270	275	230	215	210	200	205	200	200	230	220	230	230	230	240	265	250	265	275	300		
	E S												I A	H			I C		A							
20	285	315	295	270	290	280	270	245	230	210	190	210	220	220	215	230	240	205	285	290	310	200				
													H		I A	H	H	I A	U A							
21	300	325	325	305	300	325	240	235	245	200	210	210	210	230	210	215	240	250	260	280	270	260	250	280		
	E B	E B	E S										A	A	A U A	I A U A	A U A	A	A	A E A I A U A U A U A						
22	295	300	300	290	300	280	245	240	235					240	200	225				320	310	300	320	320		
	U A	U A	U A	U A																						
23	320	300	330	315	310	280	250	245	215	190	190	250	240	205	220	245	250	280	260	270	290	290	290	290		
	U A	U A	U A	U A																						
24	340	330	290	250	270	265	250	250	230	210	200	210	210	220	220	215	225	240	250	275	260	325	315	225		
	U A																									
25	320	320	300	315	290	270	240	225	215	195	250	215	205	215	210	225	235	260	270	270	265	270	250			
26	310	290	275	280	315	310	250	220	215	240	220	220	220	225		240	270	255	300	275	290	200	255			
27	270	290	300	310	275	270	250	220	205	220	200	215	220	200	215	220	230	235	250	270	285	290	260			
	U S																									
28	260	270	270	290	275	270	250	235	215	210	200	185	230	230	230	215	220	235	260	270	260	300	295	290		
29	280	280	300	310	295	270	250	230	220	210	200	210	210	200	220	225	220	245	270	265	270	290	300			
30	285	270	280	300	270	280	270	240	225	215	230	220	215	230	215	225	225	235	265	260	270	270	280	275		
31	290	280	270	275	285	270	245	250	240	225	240	220	220	205	220	270	220	230	240	270	275	290	290	280		
MED	290	E	300	300	290	290	280	250	240	220	215	210	210	210	215	220	220	230	240	255	270	265	270	280	285	
NO	30	30	30	31	31	31	31	31	31	30	28	30	30	30	30	30	28	29	28	28	30	31	30	30	29	

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

TABLE 81  
IONOSPHERIC DATA

hE, Km, May 1957

Station WASHINGTON

Lat. 38° 7N

Long. 77° 1W

Sweep 1° 0

Mc

to

25° 0

Mc in

13° 5

Sec.

75° 0W  
Manual  Automatic 

Mean Time

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
01								119	B	111	109	B	B	B	B	B	B	119	121	119								
02								113	U B	109	109	107	107	109	I B	U B	H	H										
03												H	113	117	107	109	105	105	109	113								
04								111	105	105	103	103	105	101	107	109	109	109	109	109	115							
05								B	U B	121	109	109	105	109	U B	U B	H	H										
06								115	109	105	109	105	109	109	105	105	107	105	107	109	111							
07									U B	119	119	109	109	109	105	109	U B	107	109	111	109							
08										119	109	109	107	103	109	109	105	109	109	109	109	111						
09										H	119	109	109	109	105	109	U B	U B	I A			S						
10										115	109	109	109	105	109	109	105	105	105	109	111							
11										H	113	109	105	105	101	109	109	107	105	105	109	111	115	125				
12								U S	119	115	115	109	103	101	101	101	105	105	105	105	109	111						
13									H	115	109	105	109	101	101	101	101	105	101	105	H	H		S				
14									H	109	105	101	109	109	101	109	U B	101	109	109	109	109	U B					
15										109	103	103	101	101	101	101	109	109	101	105	109	117						
16									H	119	117	109	101	A	A	A	H	101	101	109	105	109	115					
17										U S	139	115	109	105	103	101	101	101	101	105	103	109	109	111				
18										U A	109	101	101	101	101	101	101	U S	101	101	109	105	111		S			
19										119	105	101	101	101	101	101	U B	U B	U B	U B	U B	U B	121					
20										109	105	101	105	101	101	101	H	109	109	109	105	105	109	129				
21											111	101	103	101	101	101	101	U A	I A	101	101	109	111	115	111			
22											A	109	109	103	105	105	109	U B	U B	105	110	109	111	119				
23											S	111	109	105	103	101	105	105	105	105	109	111	119					
24											A	111	109	103	105	103	103	101	109	109	111	103	109	111				
25												U S	125	111	109	105	103	105	111	U B	U B	U B	109	109	115			
26												H	115	111	109	109	103	105	109	109	109	109	115	119				
27													149	113	111	105	109	107	105	109	109	109	109	109	125			
28													111	109	103	101	101	103	105	101	A	A	A	A	113	145		
29													130	111	105	109	105	101	105	105	109	A	A	A	A			
30													129	111	109	109	101	107	103	111	115	109	109	109	111			
31														U S	119	109	103	103	109	101	109	107	109	101	119	111	109	
MED															125	111	109	105	105	103	105	106	106	108	109	109	111	125
NO															9	29	30	31	30	29	29	30	30	28	28	29	30	7

TABLE 82  
IONOSPHERIC DATA

$h^{\prime}Es$ , Km, May 1957

Station	WASHINGTON					Lat. 38° 7' N					Long. 77° 1' W					Sweep 1.0	Mc to 25.0	Mc in	13.5 Sec.	75.0 W	Mean Time				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	S	S	S	S	S	B	G	B	G	G	B	B	B	G	G	B	G	G	155	125	121	S	S	S	
02	S	S	S	S	S	B	E G 145	G	G	G	G	G	B	B	G E G 149	127	121	121	125	S	S	S	S	S	
03	S	S	S	S	S	S	119	G	G	119	119	135	135	131	G	131	G	G	G	119	S	S	S	S	
04	129	121	U 8	119	111	B	119	129	121	109	141	129	109	131	119	121	121	121	121	119	119	119	119	119	
05	125	119	121	115	111	111	119	139	G	G	G	G	109	129	109	115	115	119	S	S	S	S	S		
06	S	125	S	S	S	S	169	G	123	111	111	G	G	G	109	107	107	109	125	125	S	S	S	S	
07	111	S	129	129	S	135	121	G	129	G	G	G	G	G	127	123	119	111	S	S	S	S	S	S	
08	S	S	S	S	S	S	119	119	139	121	109	G	B	109	109	105	109	135	119	115	109	S	S	S	S
09	S	S	S	S	S	S	G	139	G	G	109	111	B	135	G	G	145	119	111	111	S	S	S	S	
10	S	S	S	S	S	S	G	G	G	G	111	G	G	G	G	G	G	135	117	S	109	S	S		
11	S	S	S	S	S	S	131	119	111	115	105	G	G	G	G	G	G	139	119	109	109	S	S	S	
12	S	S	S	121	119	G	119	115	109	109	107	G	G	G	125	123	119	119	S	S	S	S	S		
13	S	S	S	S	S	S	141	141	129	111	111	121	G	G	G	G	119	127	113	G	119	119	121	S	
14	139	S	S	S	S	S	125	109	115	119	109	G	G	111	G	121	115	109	115	S	S	S	S	S	
15	S	S	S	S	S	B	G	G	119	115	111	115	G	G	135	G	G	G	121	111	S	S	S	111	
16	S	S	S	S	S	B	131	119	121	117	119	105	139	G	115	G	G	G	121	115	S	S	S	S	
17	S	S	S	S	S	S	G	141	129	119	G	G	G	131	119	121	121	117	111	111	109	109	101	S	
18	S	105	117	S	S	S	119	115	109	111	125	121	139	129	131	119	G	119	111	109	111	S	107	109	S
19	S	111	B	S	G	121	111	111	109	109	107	G	G	G	121	119	119	117	G	S	S	S	B		
20	S	S	S	S	S	B	G	149	109	109	109	111	129	H	G	G	125	119	111	113	109	109	105	S	
21	B	B	S	109	109	119	121	105	105	103	101	101	101	G	125	119	111	G	109	109	109	109	109	S	
22	105	103	109	109	119	111	111	109	109	G	105	105	105	121	131	121	123	117	115	111	109	109	109	109	
23	109	103	105	109	109	119	111	111	109	109	161	149	G	129	121	115	115	111	109	109	109	109	109	107	
24	109	109	103	105	119	115	115	109	109	109	115	G	G	115	109	109	109	109	125	119	113	109	109	109	
25	109	109	S	S	S	G	G	131	119	111	109	109	111	111	111	111	111	119	111	111	S	S	S	S	
26	S	119	121	S	S	G	G	G	109	111	115	G	125	129	119	119	119	119	G	121	139	135	129	S	
27	S	S	S	129	S	G	149	121	G	111	115	109	109	109	105	109	G	G	131	119	111	109	109	105	
28	S	S	S	S	S	B	115	121	109	111	101	101	139	129	121	107	105	105	G	140	115	101	109	107	
29	105	S	S	S	S	G	130	S	119	111	109	103	109	107	105	103	103	101	G	109	S	S	109	B	
30	S	S	S	S	S	G	G	G	119	109	109	115	119	109	109	111	G	G	129	S	S	125	119		
31	S	119	S	S	S	G	121	129	119	119	115	109	105	101	101	101	G	G	119	S	109	109	S	S	
MED	110	119	117	117	111	119	121	121	113	111	109	109	118	117	117	110	119	119	119	118	111	109	109	109	
NU	8	9	7	8	7	11	19	22	22	23	23	18	16	16	16	16	24	19	24	28	14	15	15	9	

TABLE 83  
IONOSPHERIC DATA

(M3000)F2, May 1957

Station WASHINGTON Lat. 38°N Long. 77°W Sweep 1°0 Mc to 25°0 Mc in 13°5 Sec. 75°W Mean Time

Manual  Automatic

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	260	260	245	250	265	265	275	U F	J R	R	U R	B	240	245	255	260	260	275	275	265	260	260	255	U S	
	U F	U F	U F	U F	U F	F	F	275	280	250		255												U S	
02	245	245	250	260	265	275	305	310	300	285	275	275	270	270	265	265	275	280	280	285	270	270	265	265	
	U S	F	F	F	F	F	F																		
03	260	260	260	260	270	280	290	275	260	250	255	235	240	235	245	250	255	255	260	270	275	270	250	250	
												H													
04	250	245	245	255	260	275	290	275	260	250	225	230	235	230	220	230	245	255	270	265	260	255	250	250	
	U S	F	F	F	F	F	F																		F
05	245	245	245	260	260	285	280	265	250	250	230	250	245	240	240	245	250	260	270	285	250	245	255	245	
																									U S
06	240	255	245	265	265	300	290	305	295	280	250	265	260	265	265	270	270	280	280	265	270	260	265	265	
07	275	250	250	255	270	290	310	285	290	275	280	270	270	265	260	270	275	275	280	280	285	280	275	265	
												F													U S
08	265	260	260	250	255	265	290	300	295	275	275	275	265	265	270	270	270	280	285	275	275	245	260	230	
09	240	240	240	250	270	280	280	270	245	270	255	260	265	270	265	260	270	275	270	285	290	265	255	260	
					F	F	F	F																	U S
10	260	260	265	270	270	285	290	290	290	265	270	275	270	270	270	265	265	260	270	275	275	275	265	265	
11	255	265	265	250	260	275	295	270	255	260	255	250	255	250	260	260	260	265	270	265	265	270	265	265	
12	270	270	260	255	265	270	285	270	270	265	265	255	265	260	265	260	265	270	270	270	270	265	255	255	
13	250	245	260	250	235	260	280	275	290	265	270	260	270	255	260	260	265	270	275	270	275	270	260	270	
14	270	250	260	260	265	275	300	285	270	260	260	255	250	250	260	260	255	260	275	275	280			270	
					F	F	F	F																	
15	280	275	280	265	290	300	285	295	295	260	260	260	260	260	260	260	260	265	260	285	275	265	260	255	
16	260	265	275	280	275	290	305	290	275	260	270	260	270	250	250	255	255	255	260	270	280	265	265	260	255
17	260	250	250	250	270	280	300	280	280	270	245	260	250	245	255	260	260	265	270	285	275	265	265	270	
											H														U S
18	255	265	260	255	260	300	275	280	255	240	245	250	245	250	250	255	255	265	270	270	270	260	250	260	
19	250	250	250	265	265	280	290	270	245	245	245	245	255	240	250	250	240	260	265	275	260	255	245		
														U S	C										
20	245	250	265	260	260	280	260	245	235	240	225	240	230	245	240	250	250	260	265	265	260	265	260	260	
21	260	235	240	250	265	265	270	270	290	260	255	260	255	250	250	255	255	265	265	265	275	280	270	260	
																A	A	A							
22	260	245	255	265	270	280	275	275	250	250	230	225	235	220	235					260	270		250	250	255
23	260	260	260	255	245	275	270	265	270	275	265	245	250	250	250	245	255	260	265	270	270	265	265	265	
24	265	275	275	285	260	280	270	285	280	255	265	245	250	255	255	265	260	260	260	270	280	265	265	255	
25	255	250	255	255	255	280	280	285	270	320	255	260	255	255	260	255	255	260	260	255	270	270	260	265	
26	245	250	255	265	255	260	270																		
27	260	250	250	265	270	225																			
28	275	275	280	270	280	290	295	295	280	280	270	270	265	265	270	275	275	275	285	275	275	270	275	275	
29	275	265	260	250	265	280	300	270	290	270	270	265	270	270	265	275	270	290	285	290	280	285	270	260	
30	270	280	265	280	280	290	280	300	280	250	260	260	255	245	250	255	265	270	265	280	265	265	275	275	
31	250	250	255	265	265	265	290	290	265	260	255	230	240	240	230	240	250	265	265	270	270	270	270	270	
MED	260	250	260	260	265	280	290	275	275	260	260	260	255	250	255	260	260	265	265	270	270	270	265	260	
NO	30	31	31	31	31	30	31	31	31	30	31	30	31	30	31	30	30	30	30	31	31	30	30	31	

TABLE 84  
IONOSPHERIC DATA

(M3000) FI, May 1957

Station WASHINGTON Lat. 38° 7' N Long. 77° 1' W Sweep 1.0 Mc to 25.0 Mc in 13.5 Sec.

75°W Mean Time  
Manual  Automatic 

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01							L	U L	U S	335	B	B	B	U R			L	L							
02							L	L	L	370	H	H	H	H			L								
03							L	L	330	330	350	350	310	350	345	340	325	345	H	L					
04							L	U L	U S	320	340	335	335	340	350	360	340	330	340	L					
05							L	H	H	325	350	350	350	360	360	365	350	340	330	320	L				
06							L	L	H U L	335	345	340	330	340	350	335	350	330	H	H	L	L			
07								L	L	350	360	330	330	340	340	340	L	L	L						
08							L	L	330	340	330	325	340	330	330	330	L	L	L						
09							L	H	U L	350	340	335	330	345	325	325	325	335	335	L					
10							L	L	U L U L	340	320	320	330	345	345	320	335	335	L	L					
11							L	L	330	350	345	350	350	330	345	335	325	325	L						
12							L	340	330	335	360	345	335	340	320	325	330	L	L						
13							L	L	L	335	335	325	345	330	330	325	330	325	L	L					
14							L	L	330	360	350	350	340	350	340	335	330	320	U L	A					
15							L	L	U L	350	325	330	320	340	330	315	325	330	L	L					
16							L	U L	340	330	340	340	350	360	350	360	350	315	U L	L					
17							L	H	L	355	365	325	340	330	330	355	330	340	L	A					
18								L	340	350	320	330	350	350	350	340	350	320	325	L					
19							L	L	U L	350	340	335	360	355	345	325	345	335	330	U S	L	L			
20							L	L	H	305	340	360	365	320	300	C	330	340	310	U L	L				
21							L	355	L	L	L	320	315	330	330	325	325	A	L						
22							L	H	U L	U S	310	360	350	350	380	350	H U R	A	A	A	A				
23							L	L	L	360	370	380	360	345	340	320	320	330	U L	L	L				
24							L	L	H	340	L	L	H	H	H	H	H	L	L	L					
25							L	L	H	350	370	340	325	340	330	340	315	335	340	L					
26							U F	310	340	370	350	360	360	370	370	360	355	340	340	330	L				
27							F	340	330	310	L	H	L	340	345	340	325	325	330	L	L				
28							L	L	L	330	330	345	345	345	360	350	340	345	L						
29							L	L	L	340	325	325	330	345	325	325	325	320	335	330	L				
30							L	H	310	350	350	350	325	330	345	325	325	320	335	330	L				
31							L	H	310	340	345	355	325	355	355	360	360	340	330	315	L				
MED							340	340	340	340	340	340	340	345	340	340	335	330	325						
NU							4	12	20	27	27	28	30	30	29	29	27	14							

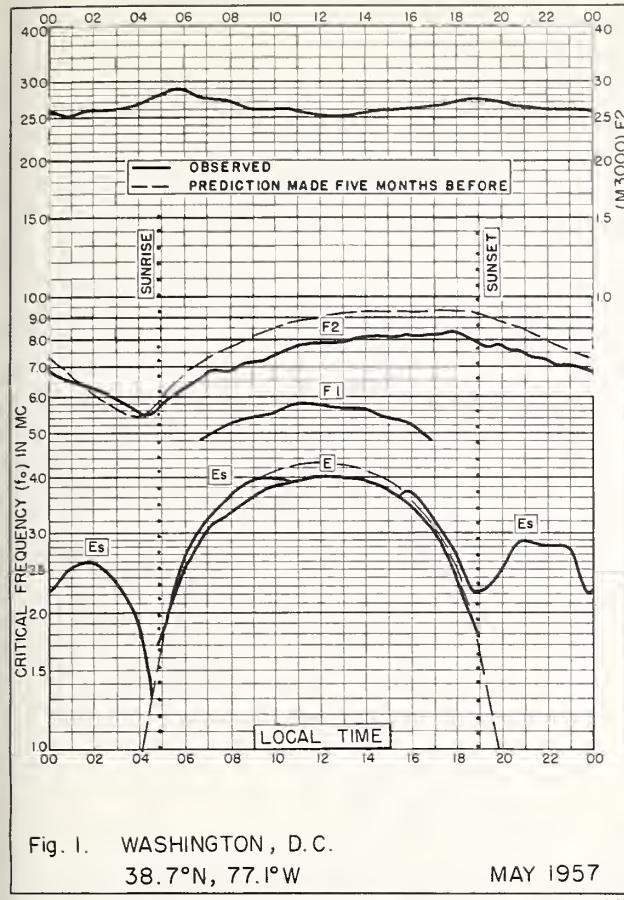


Fig. 1. WASHINGTON, D.C.  
38.7°N, 77.1°W

MAY 1957

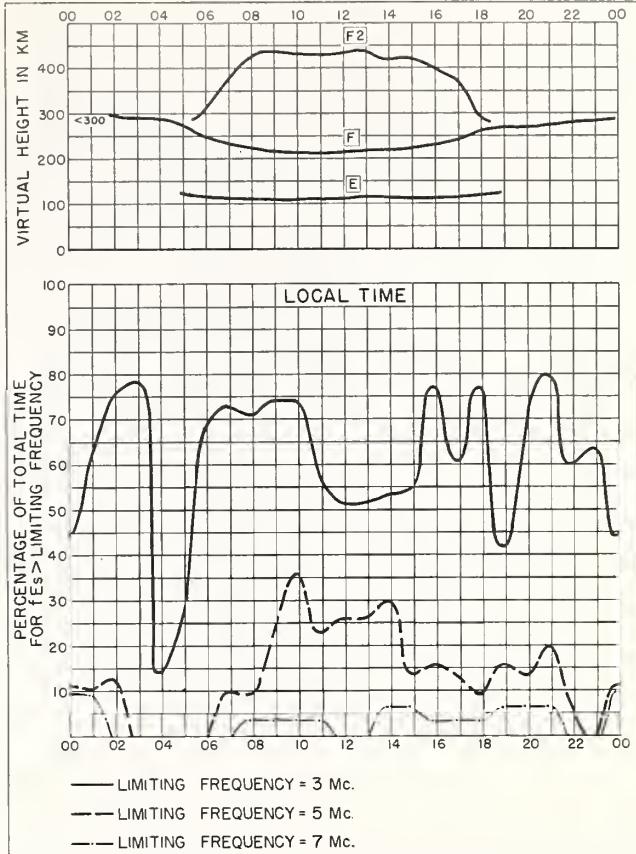


Fig. 2. WASHINGTON, D.C.

MAY 1957

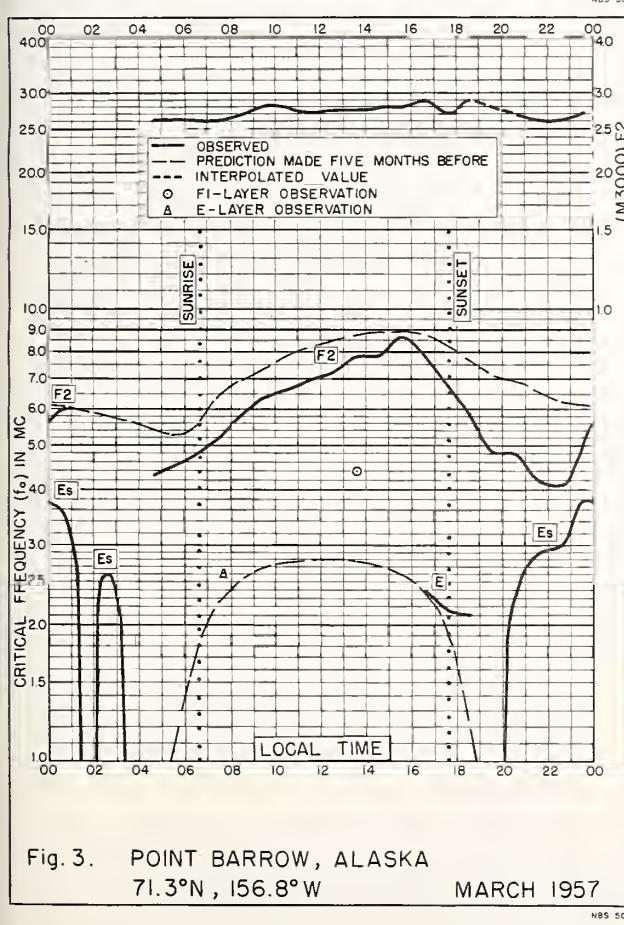


Fig. 3. POINT BARROW, ALASKA  
71.3°N, 156.8°W

MARCH 1957

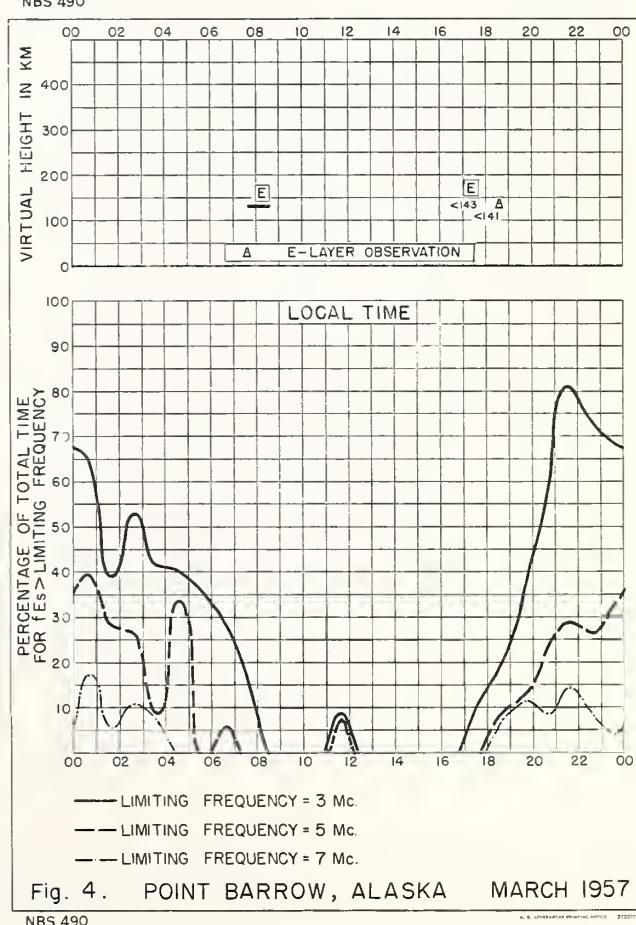


Fig. 4. POINT BARROW, ALASKA

MARCH 1957

NBS 503

U.S. GOVERNMENT PRINTING OFFICE 210277

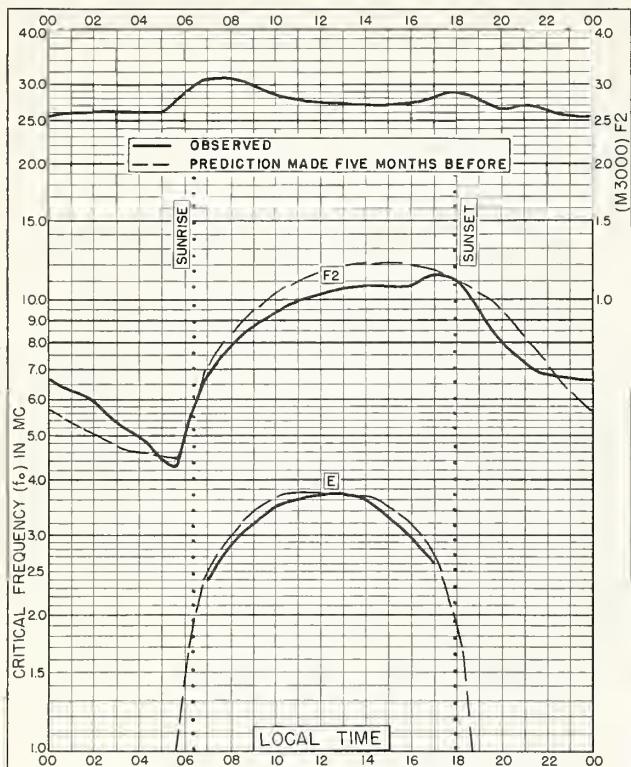


Fig. 5. ST. JOHN'S, NEWFOUNDLAND  
47.6°N, 52.7°W MARCH 1957

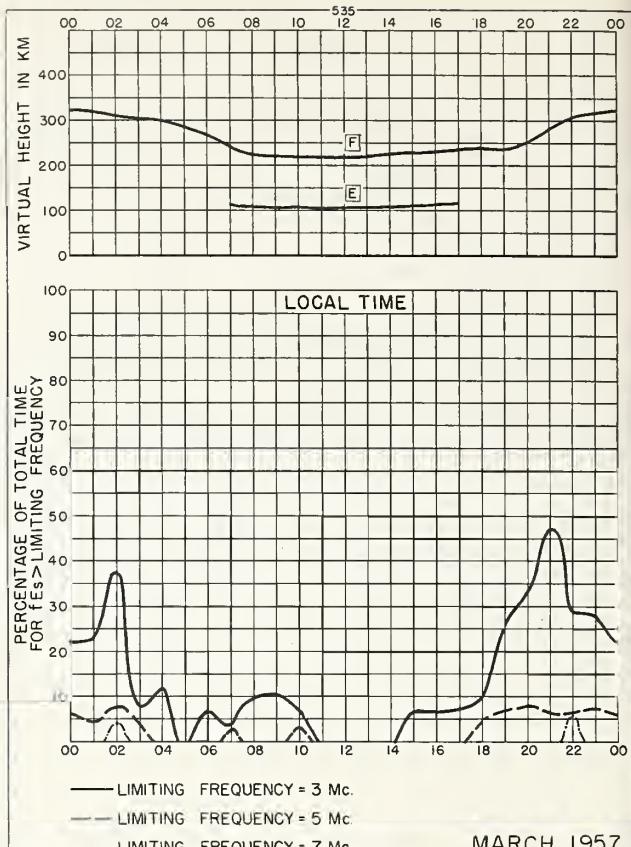


Fig. 6. ST. JOHN'S, NEWFOUNDLAND

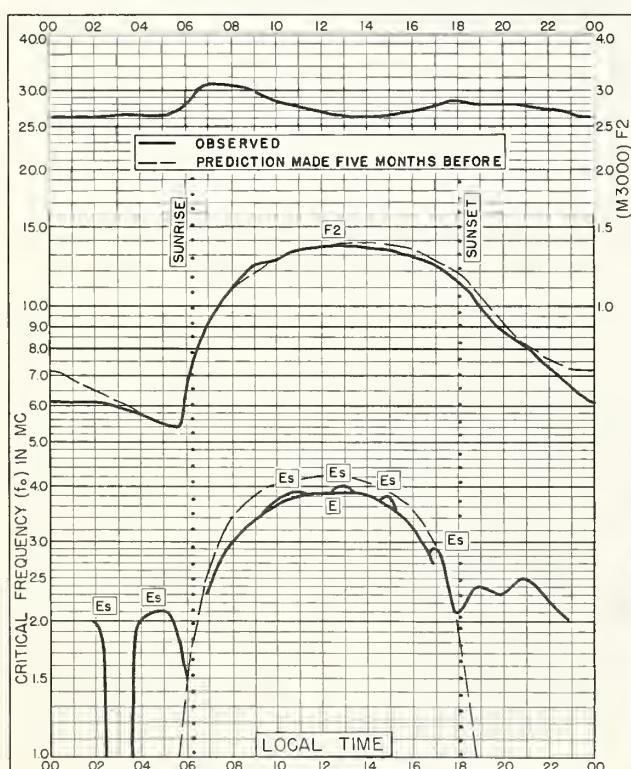


Fig. 7. WHITE SANDS, NEW MEXICO  
32.3°N, 106.5°W MARCH 1957

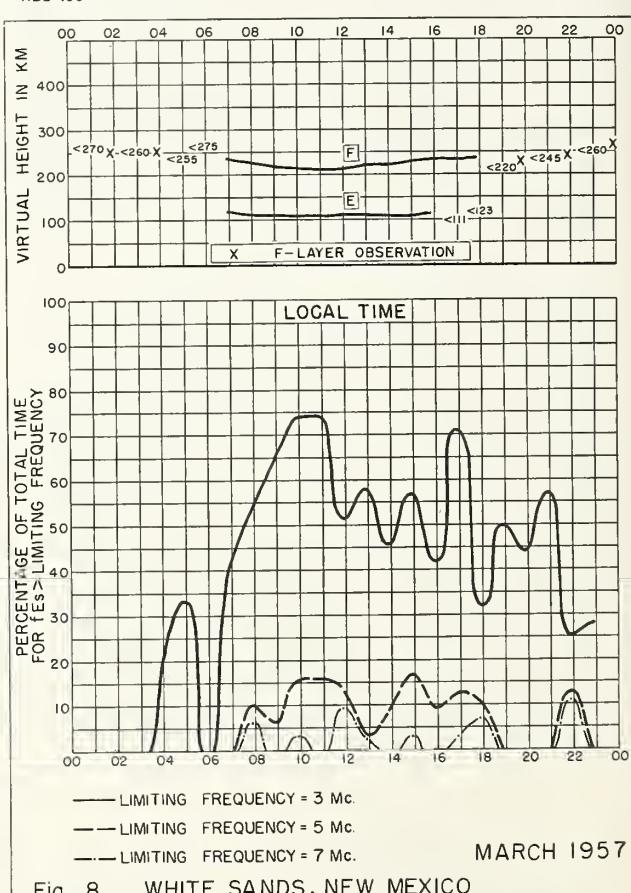


Fig. 8. WHITE SANDS, NEW MEXICO

NBS 503

U. S. GOVERNMENT PRINTING OFFICE 50-5077

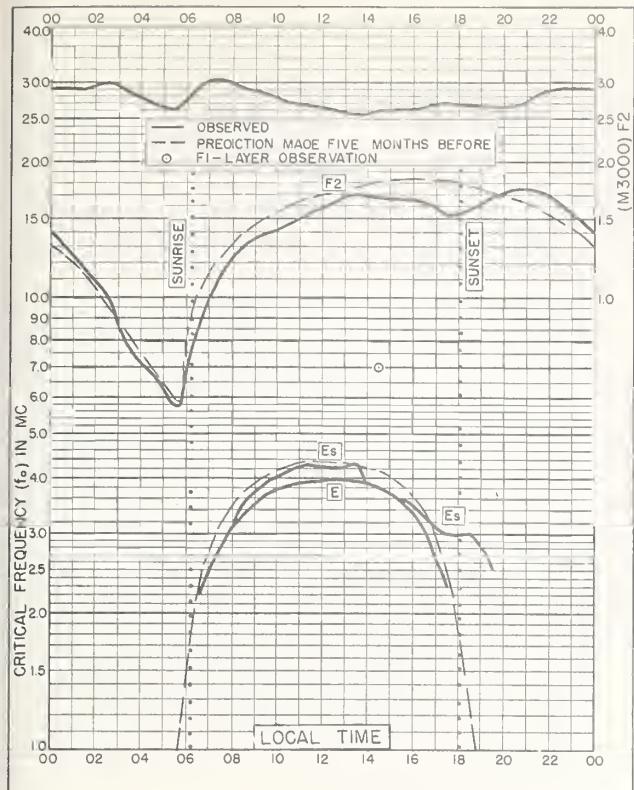


Fig. 9. OKINAWA I.  
26.3°N, 127.8°E

MARCH 1957

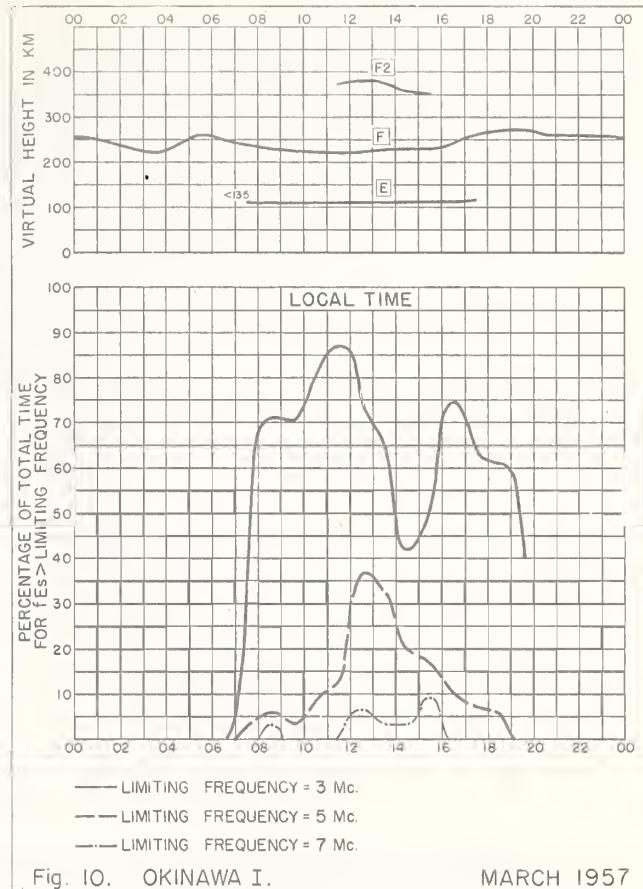


Fig. 10. OKINAWA I.

MARCH 1957

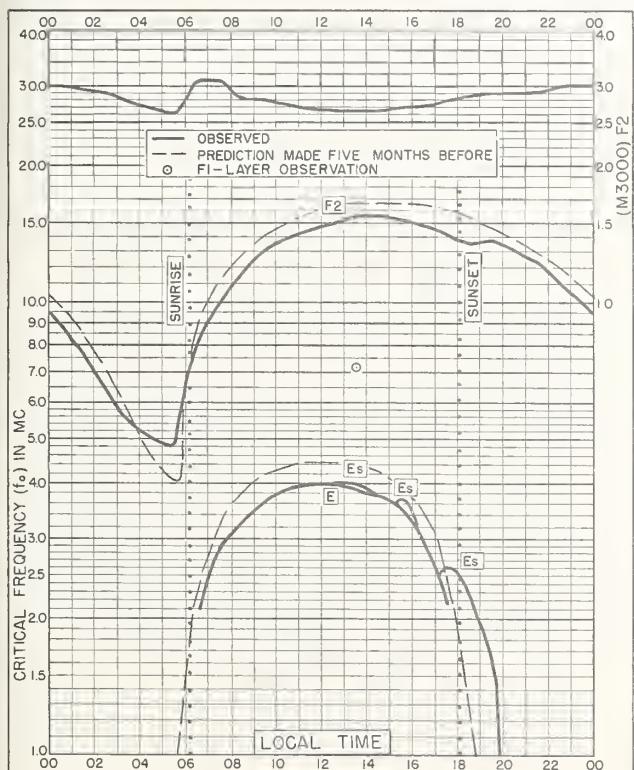


Fig. 11. MAUI, HAWAII  
20.8°N, 156.5°W

MARCH 1957

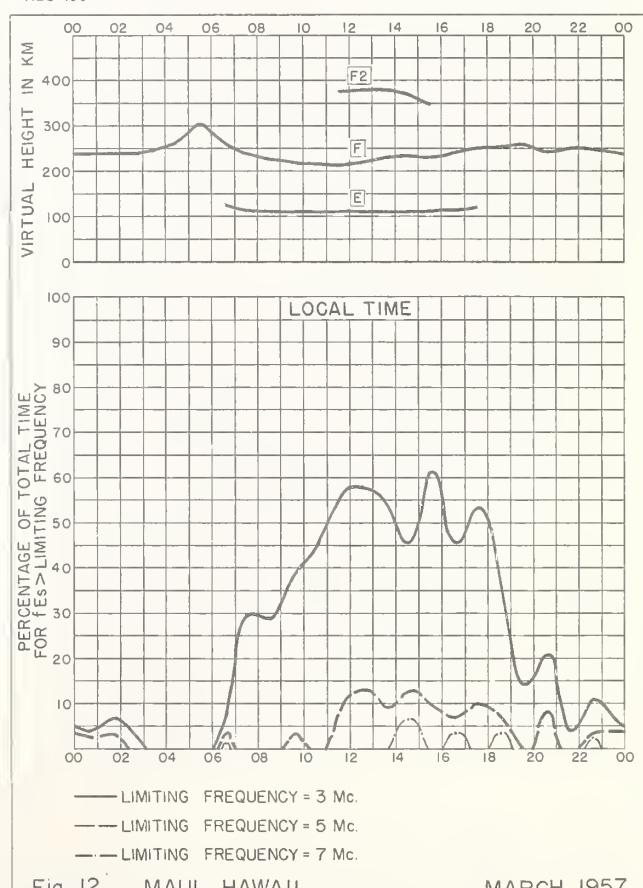


Fig. 12. MAUI, HAWAII

MARCH 1957

NBS 503

U. S. GOVERNMENT PRINTING OFFICE 12-5277

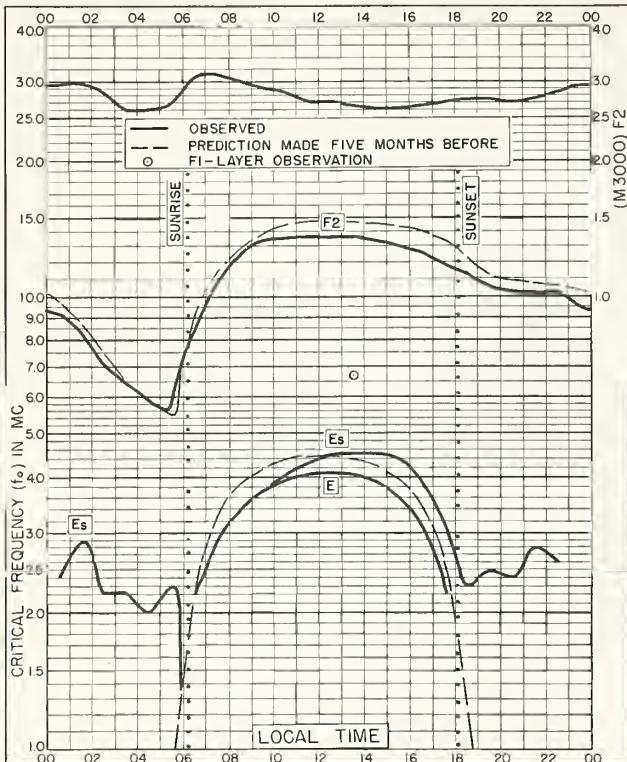


Fig. 13. PUERTO RICO, W.I.

18.5°N, 67.2°W

MARCH 1957

NBS 503

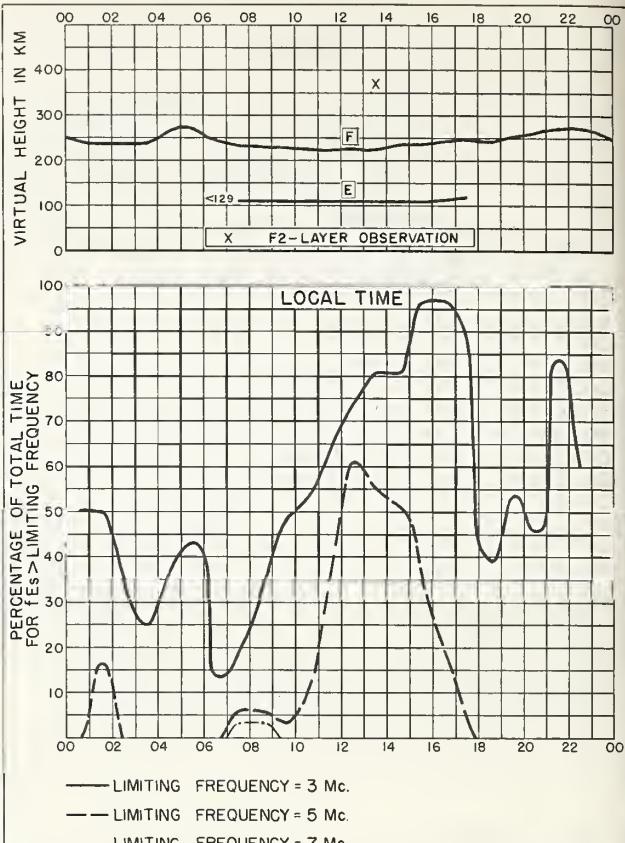


Fig. 14. PUERTO RICO, W.I.

MARCH 1957

NBS 490

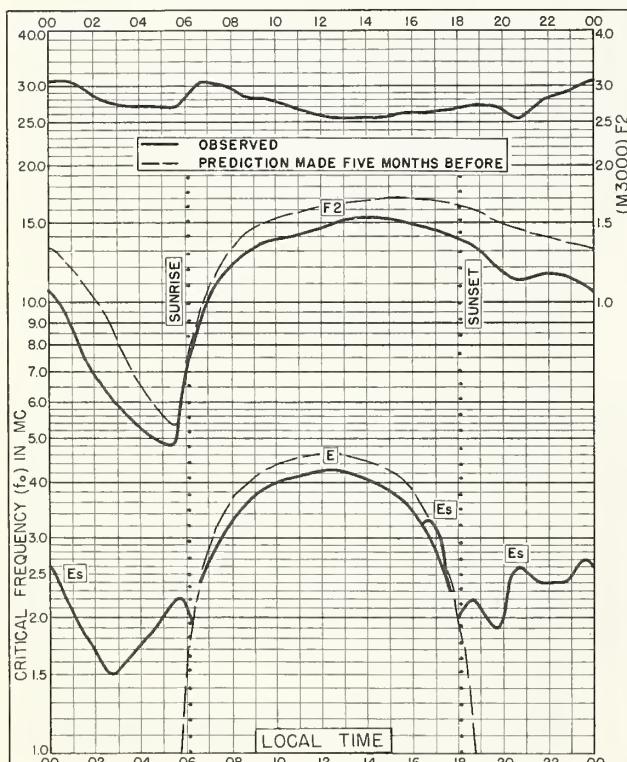


Fig. 15. PANAMA CANAL ZONE

9.4°N, 79.9°W

MARCH 1957

NBS 503

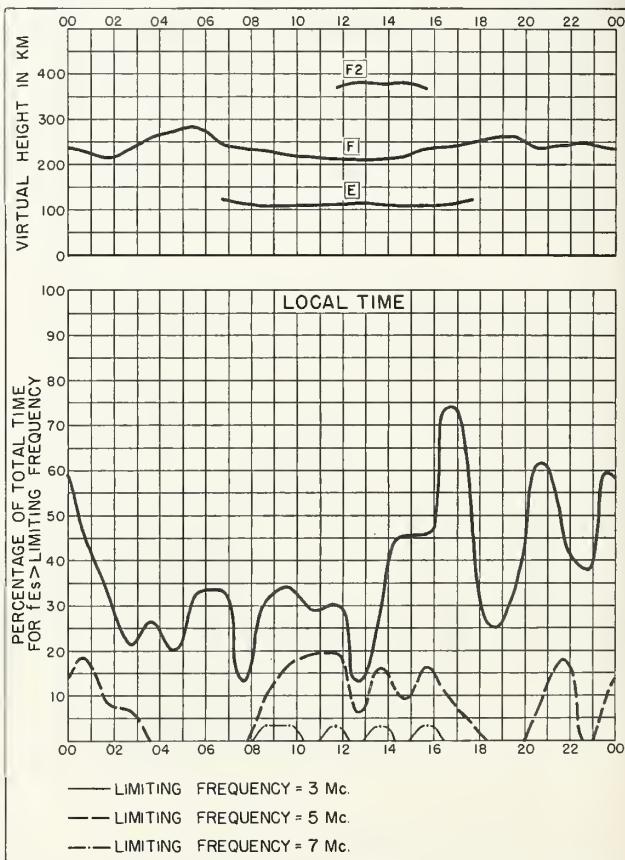
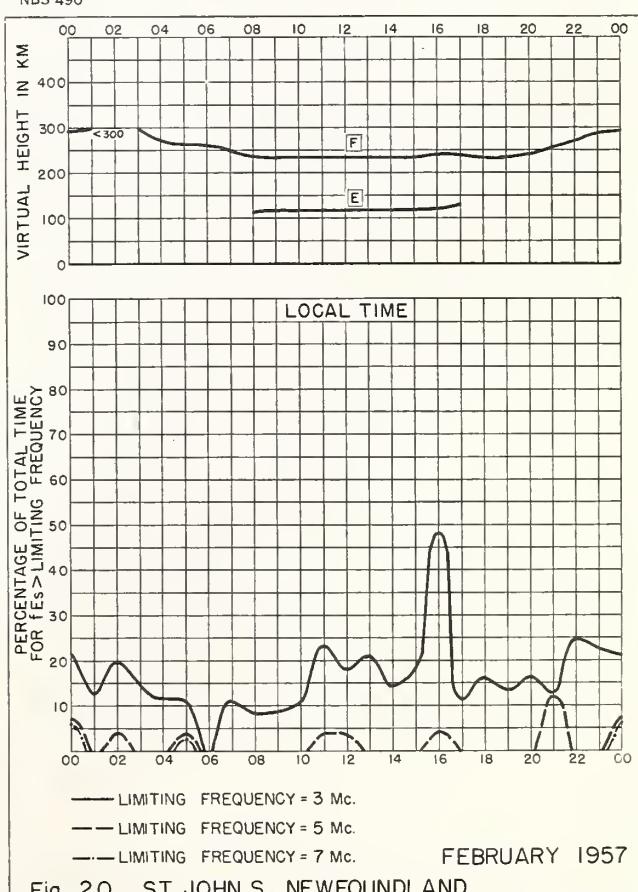
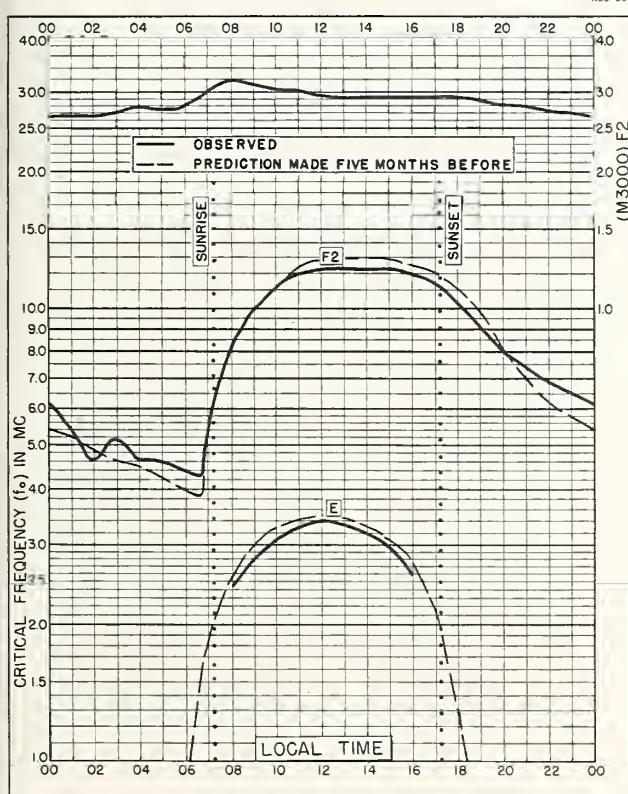
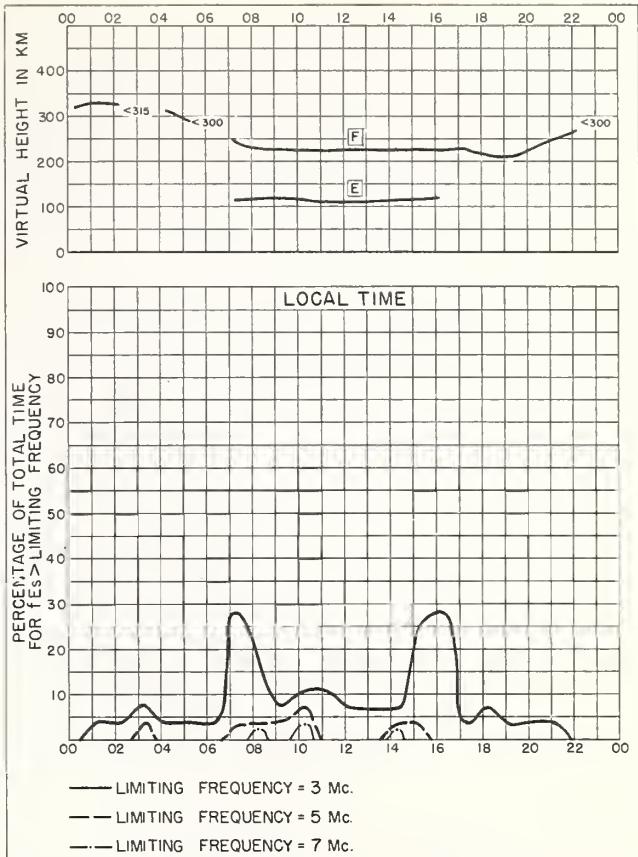
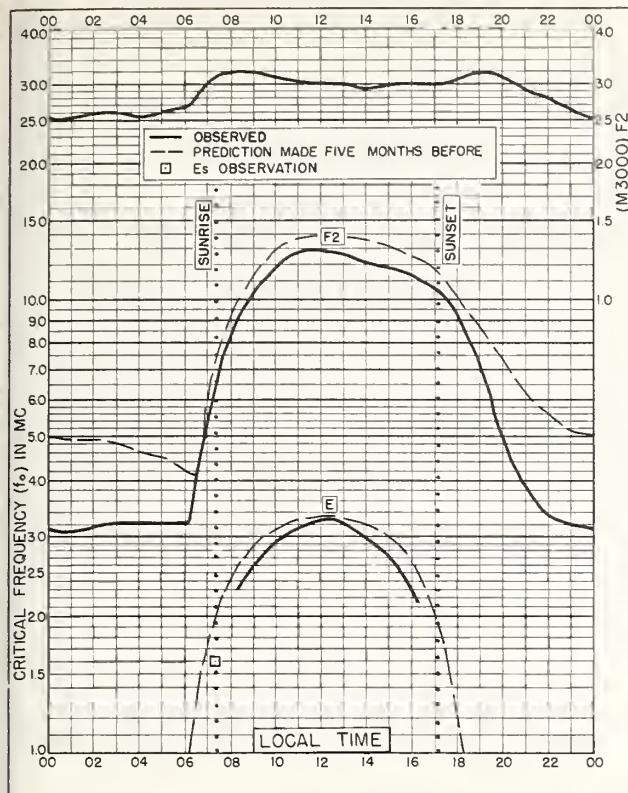
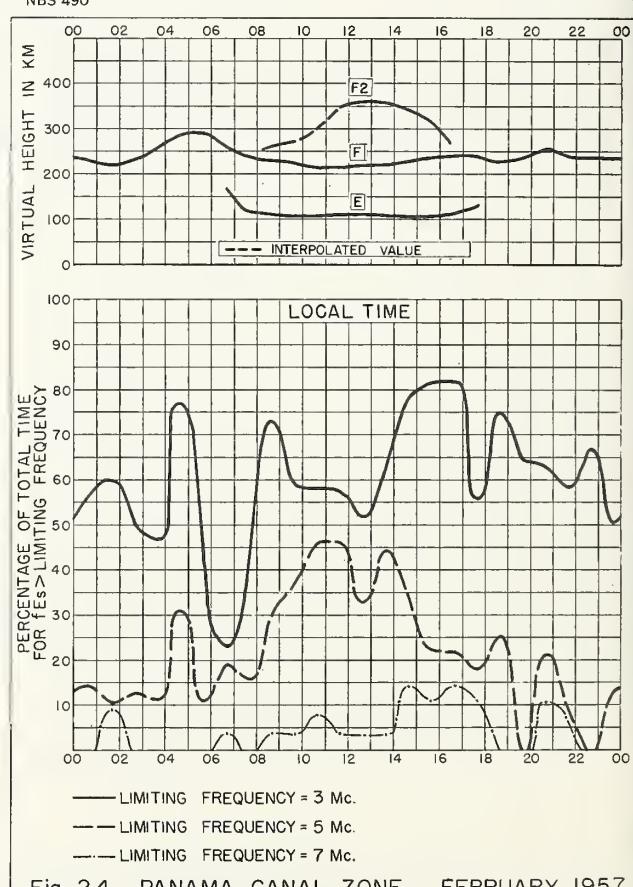
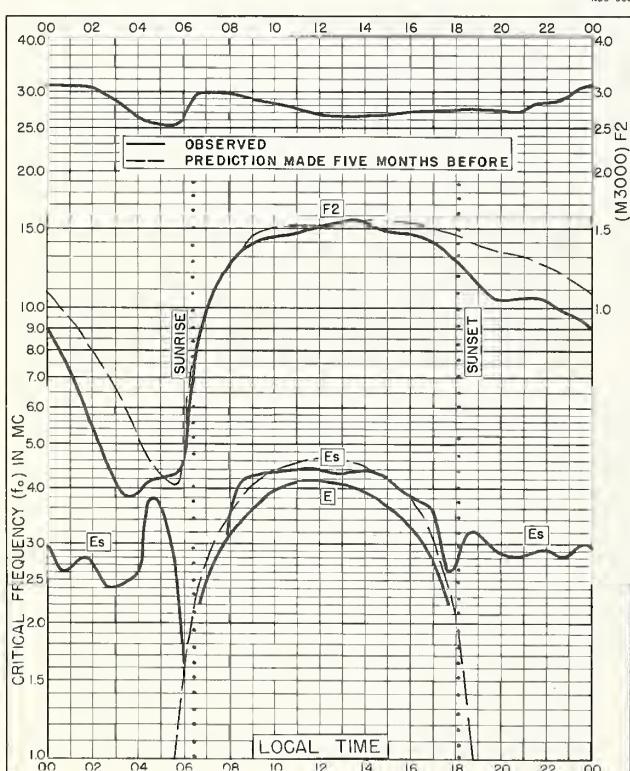
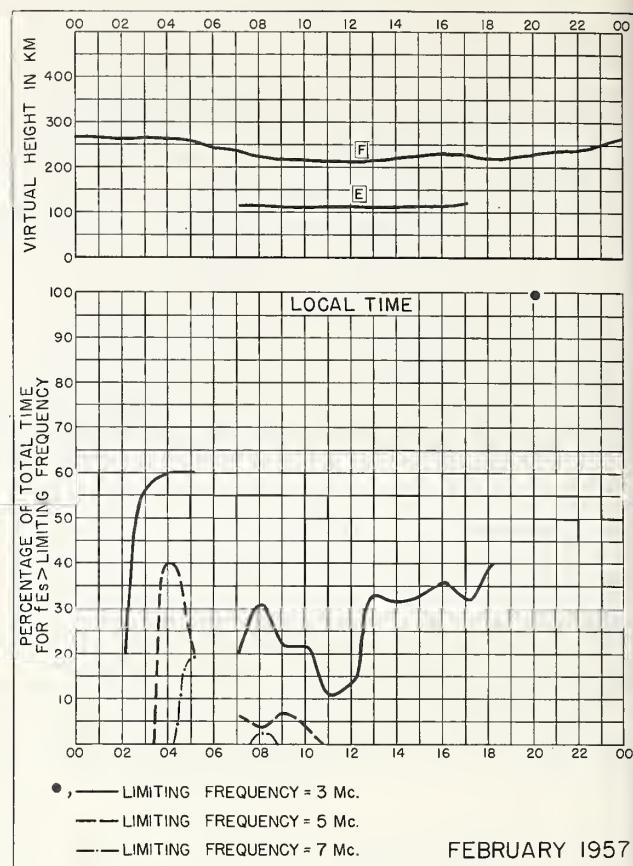
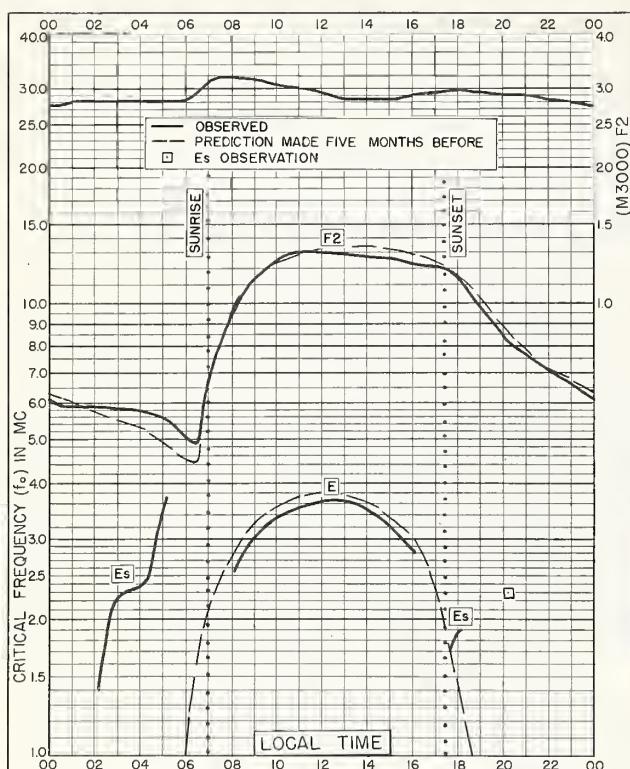


Fig. 16. PANAMA CANAL ZONE

MARCH 1957

NBS 490





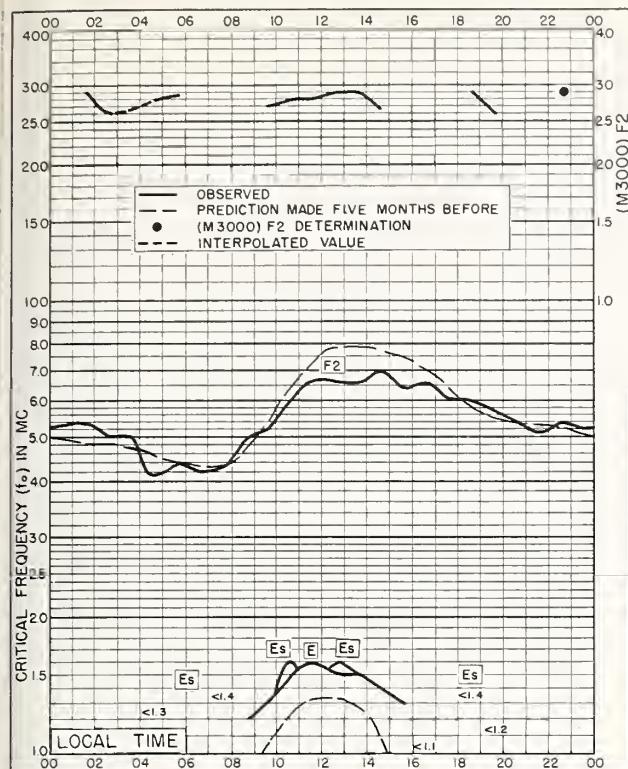


Fig. 25. RESOLUTE BAY, CANADA  
74.7°N, 94.9°W JANUARY 1957

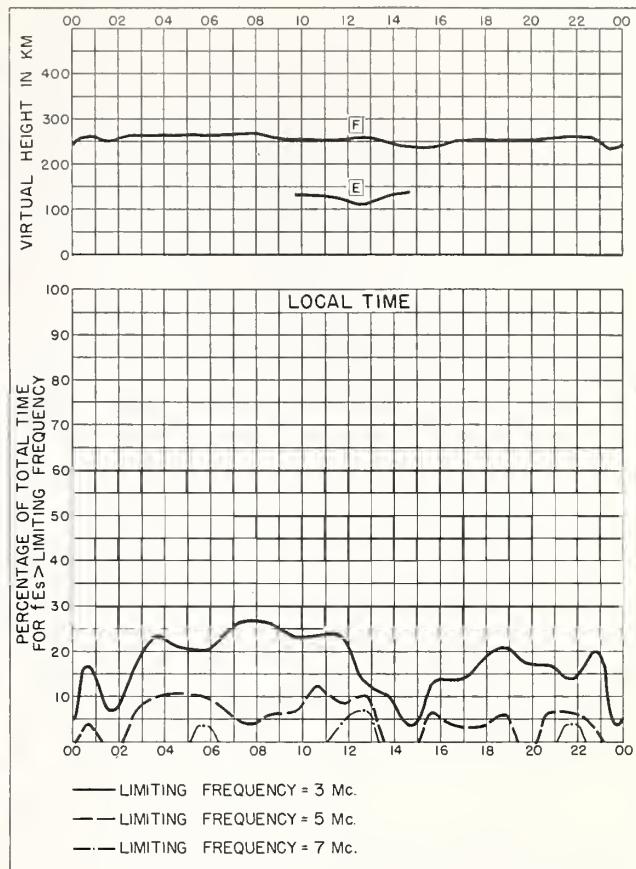


Fig. 26. RESOLUTE BAY, CANADA JANUARY 1957

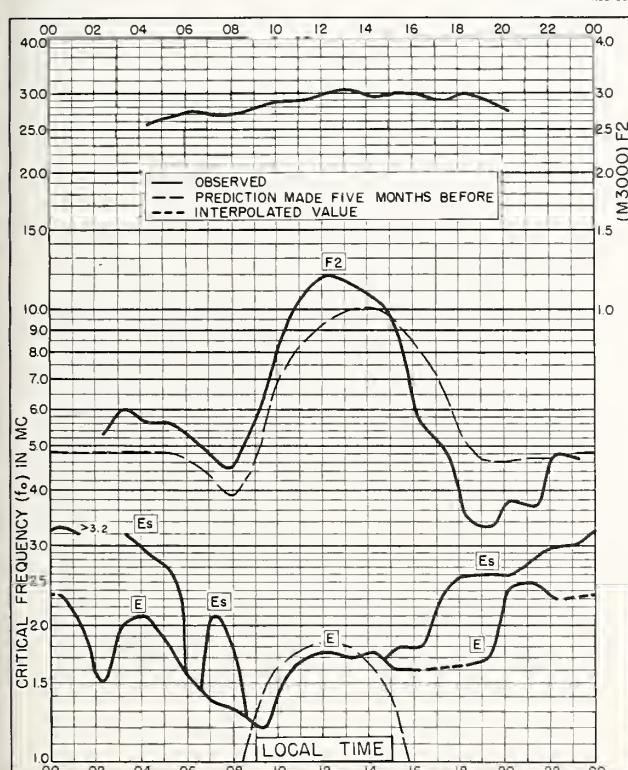


Fig. 27. TROMSO, NORWAY  
69.7°N, 19.0°E JANUARY 1957

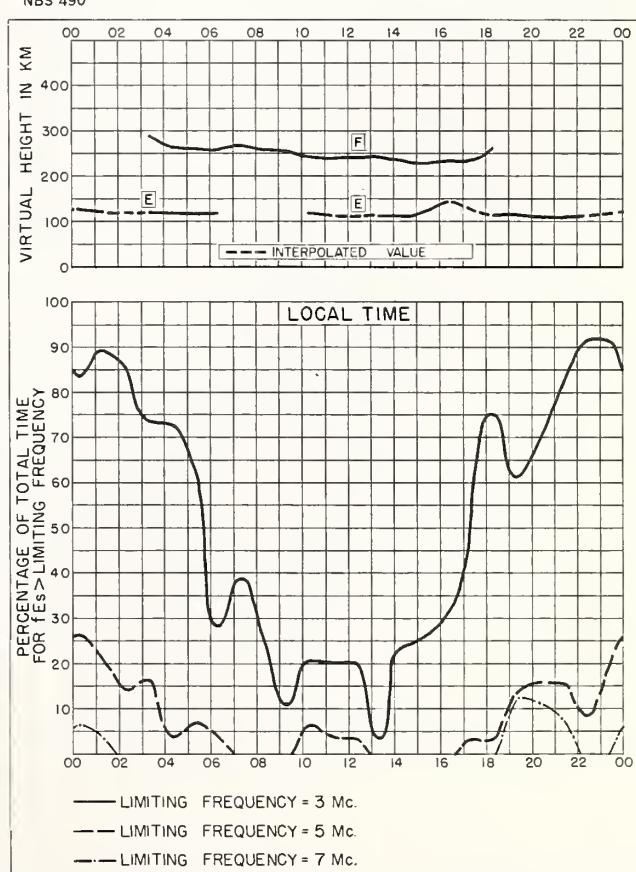


Fig. 28. TROMSO, NORWAY JANUARY 1957

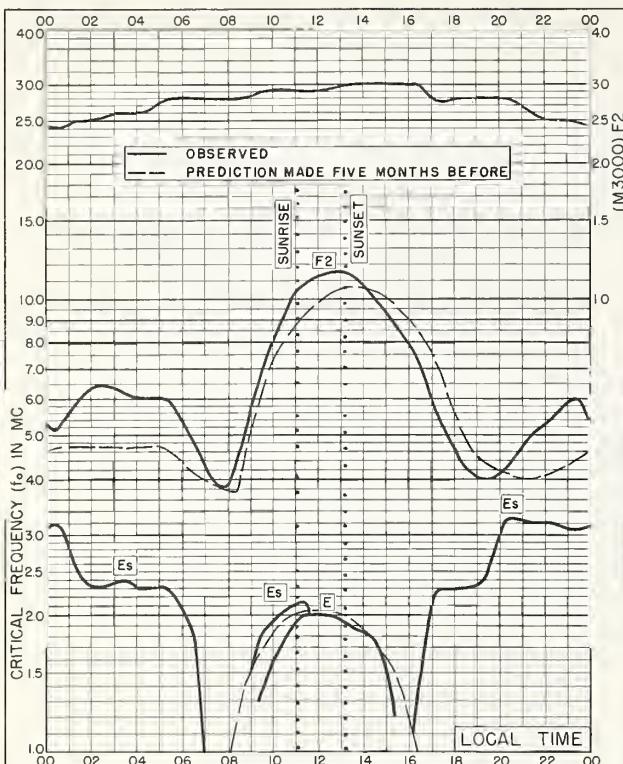


Fig. 29. KIRUNA, SWEDEN  
67.8°N, 20.3°E JANUARY 1957

NBS 503

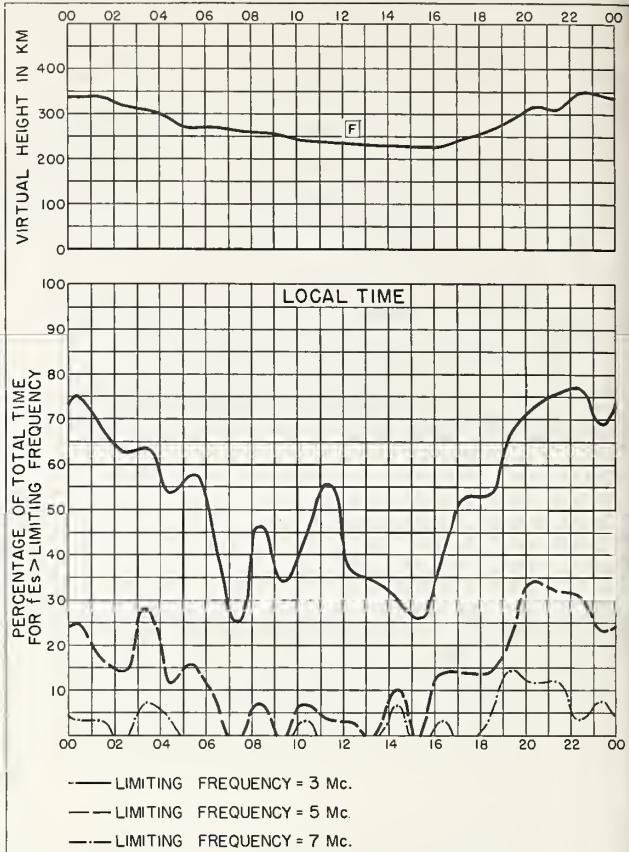


Fig. 30. KIRUNA, SWEDEN JANUARY 1957

NBS 490

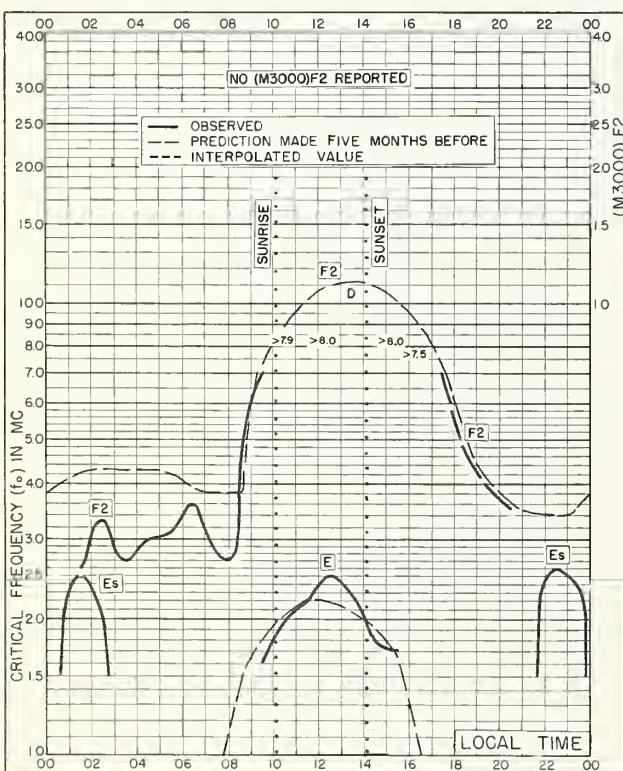


Fig. 31. LULEA, SWEDEN  
65.6°N, 22.1°E JANUARY 1957

NBS 503

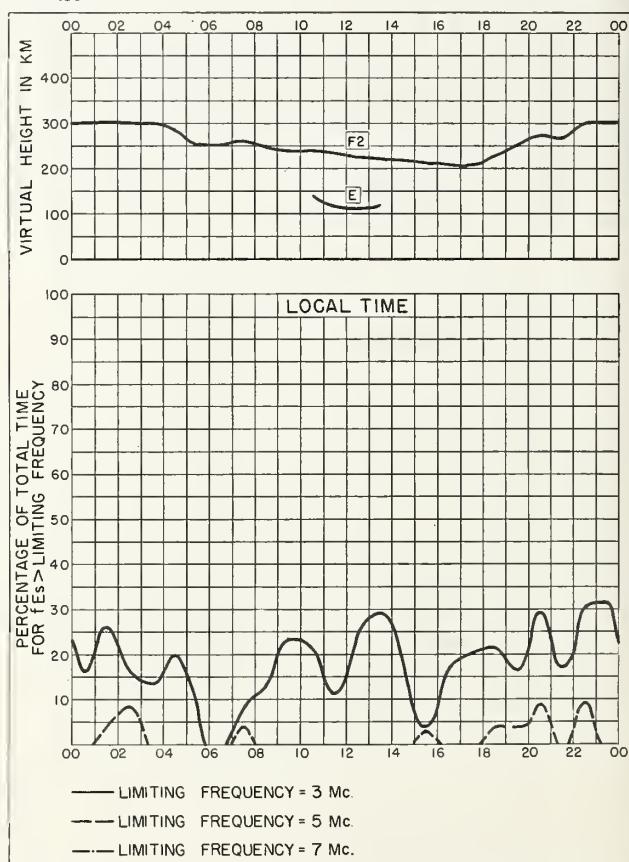


Fig. 32. LULEA, SWEDEN JANUARY 1957

NBS 490

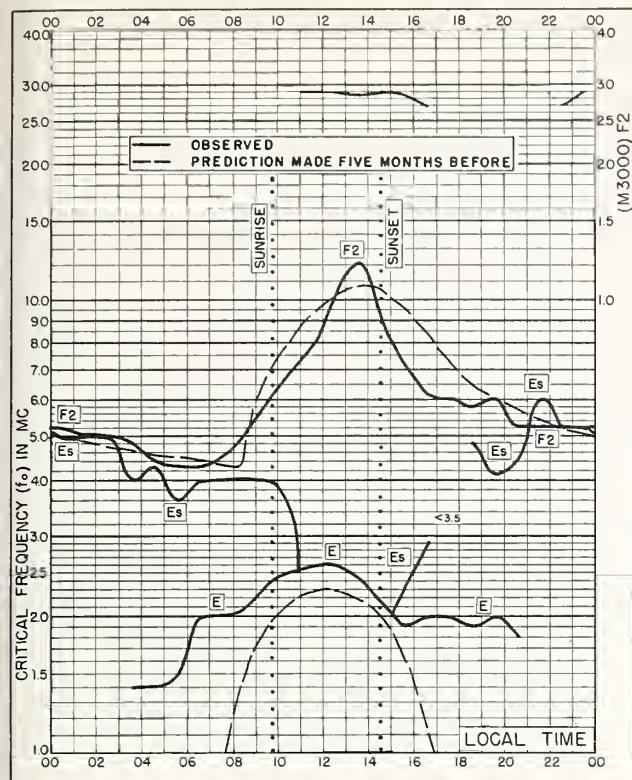


Fig. 33. BAKER LAKE, CANADA  
64.3°N, 96.0°W JANUARY 1957

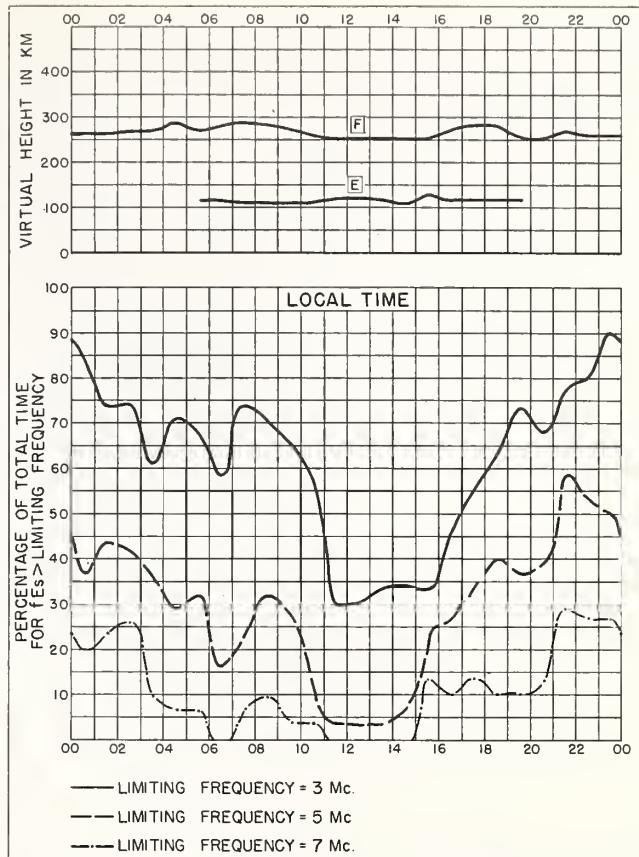


Fig. 34. BAKER LAKE, CANADA JANUARY 1957

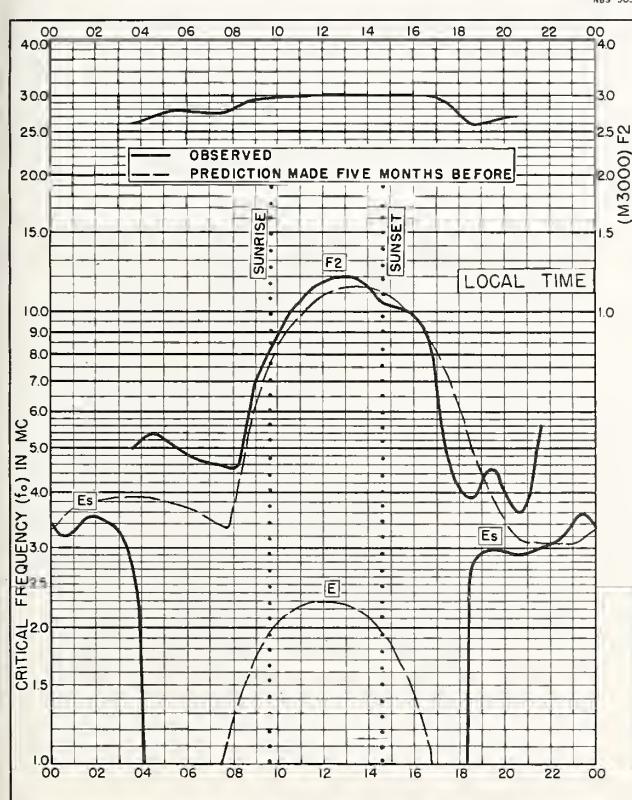


Fig. 35. REYKJAVIK, ICELAND  
64.1°N, 21.8°W JANUARY 1957

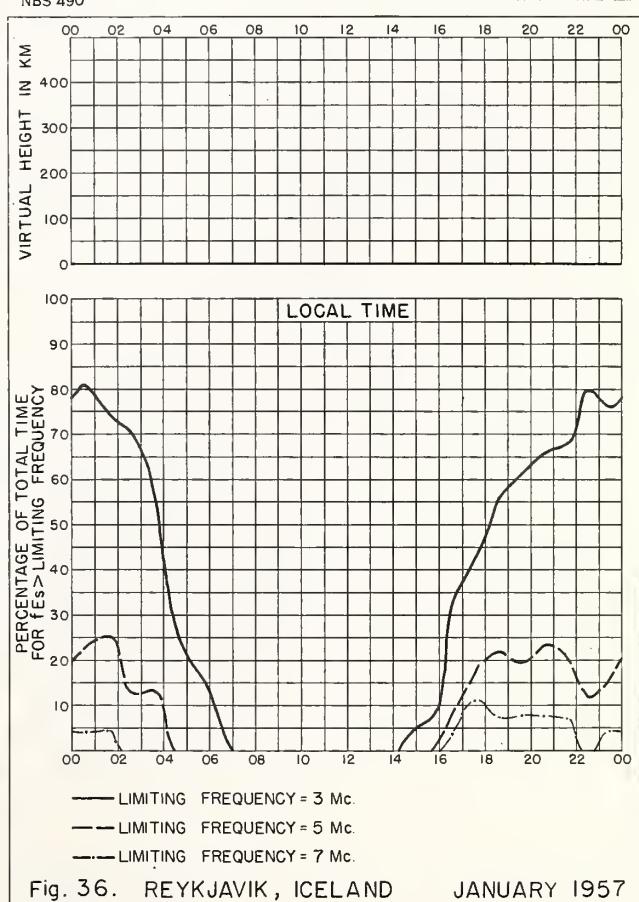
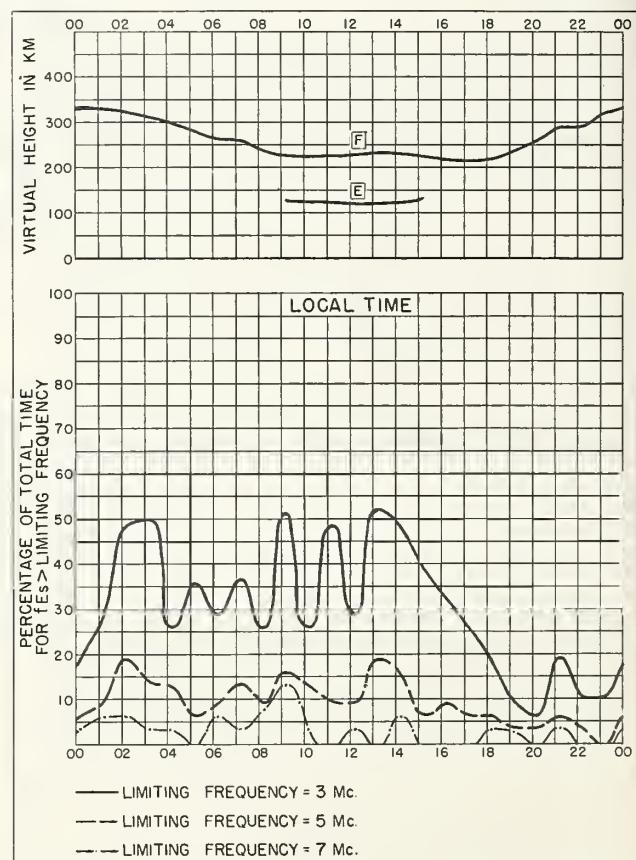
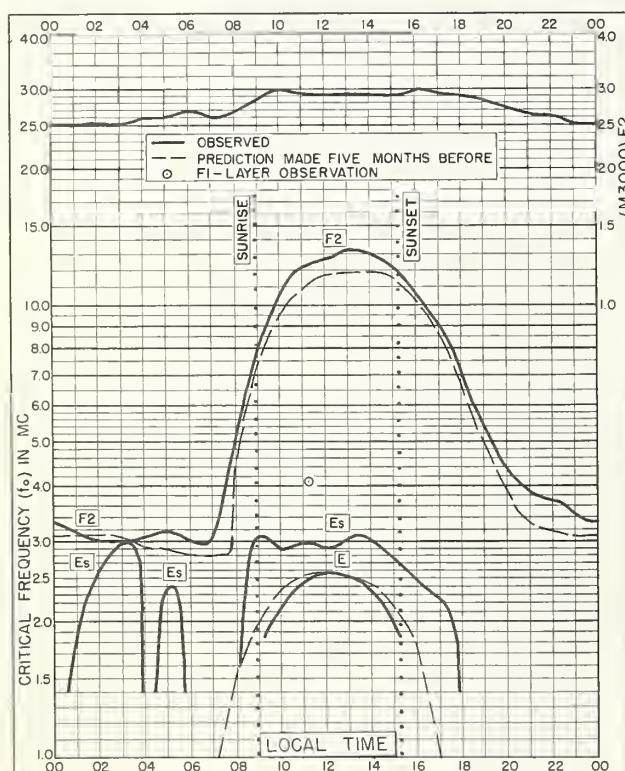
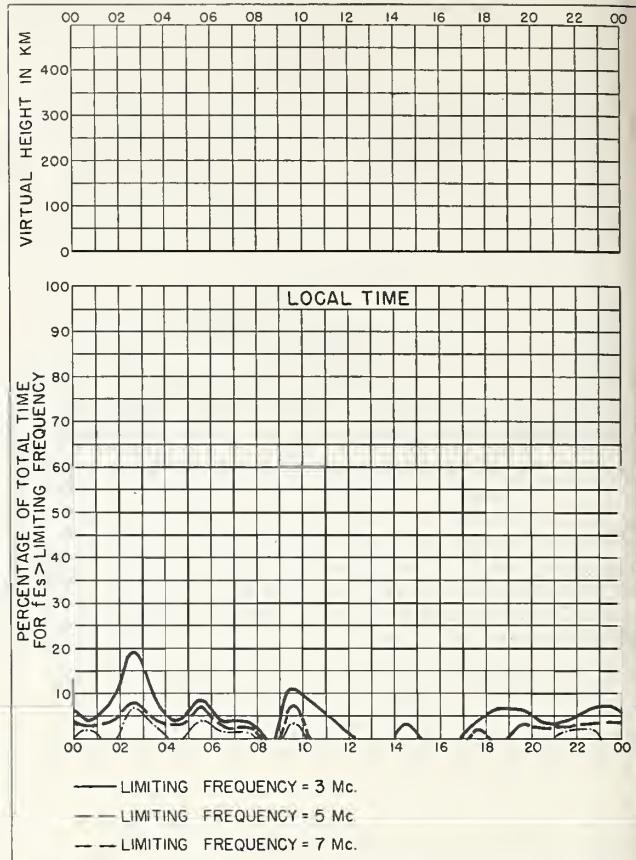
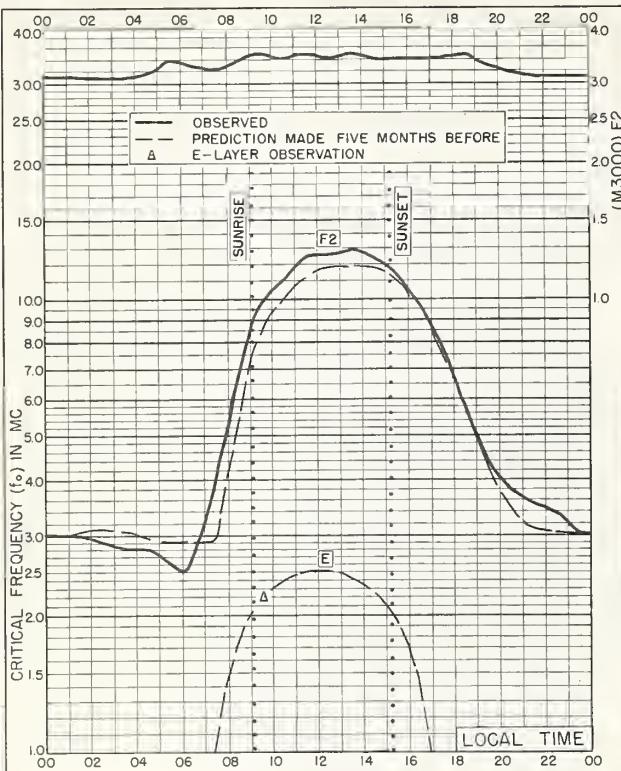


Fig. 36. REYKJAVIK, ICELAND JANUARY 1957



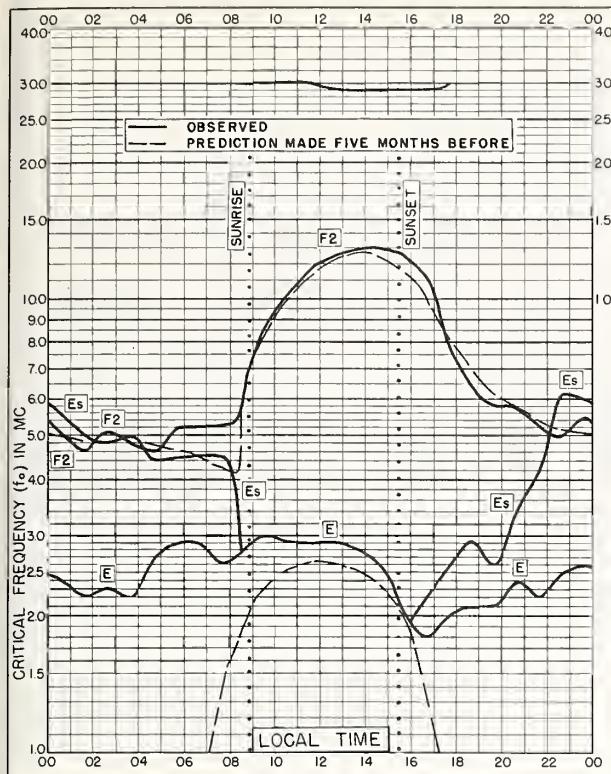


Fig. 41. CHURCHILL, CANADA  
58.8°N, 94.2°W      JANUARY 1957

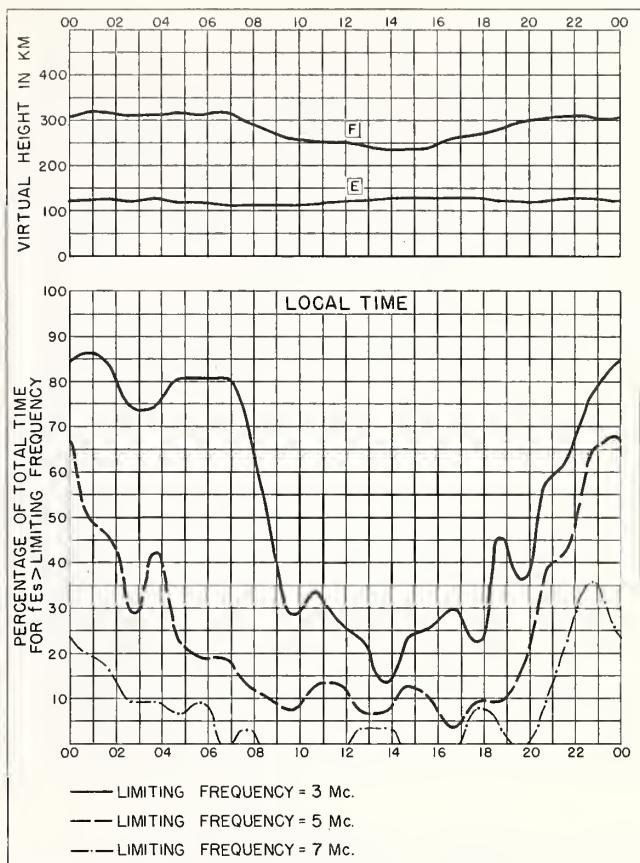


Fig. 42. CHURCHILL, CANADA      JANUARY 1957

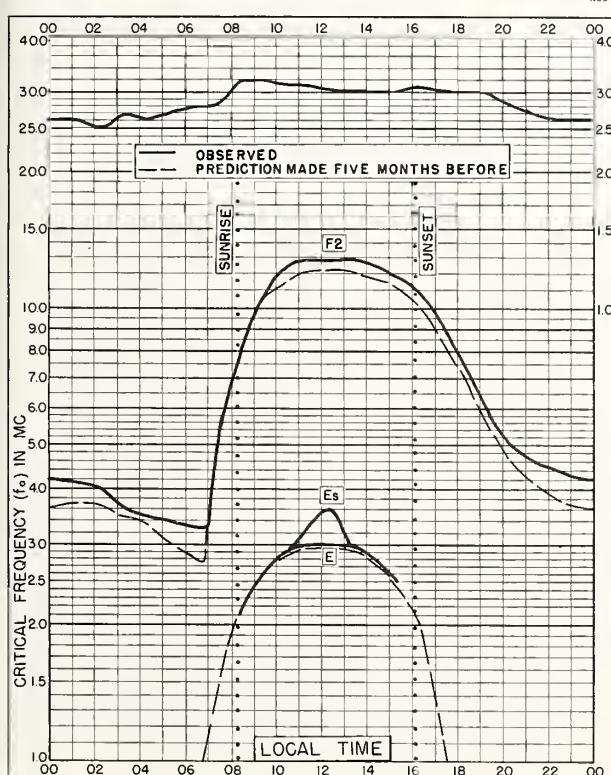


Fig. 43. De BILT, HOLLAND  
52.1°N, 5.2°E      JANUARY 1957

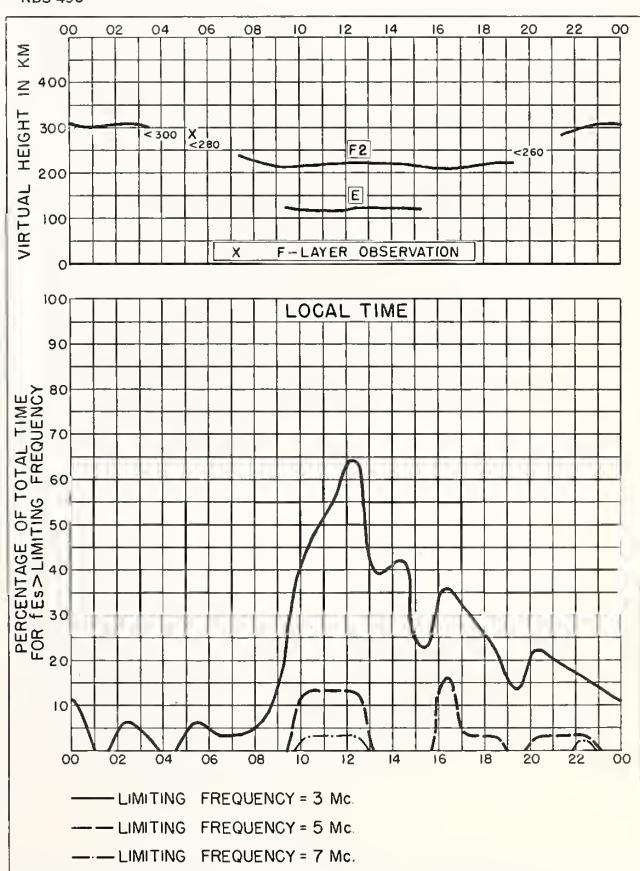
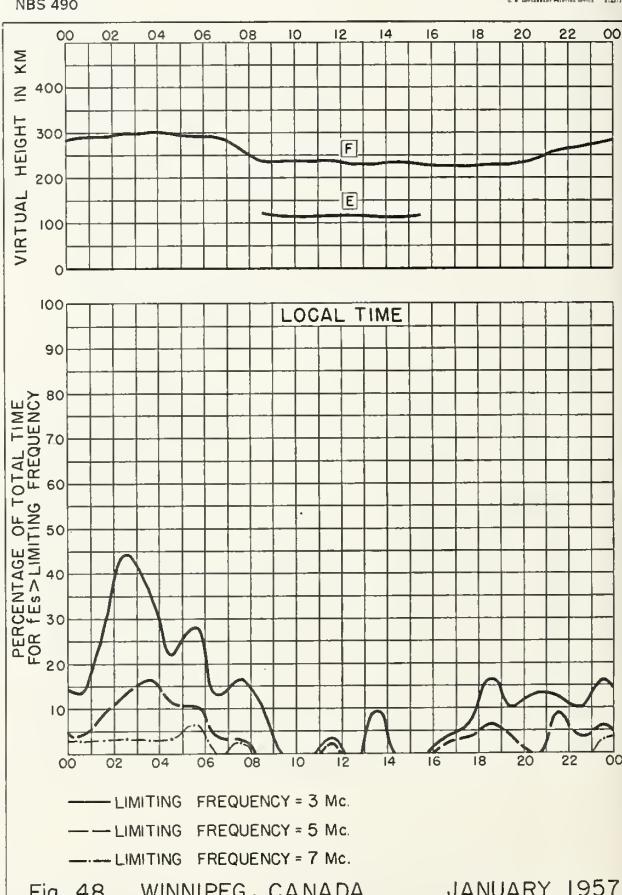
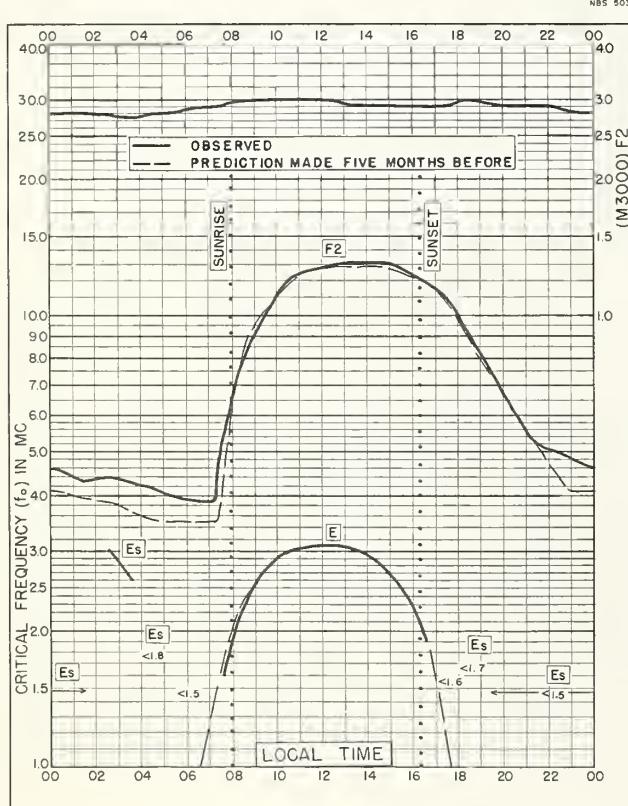
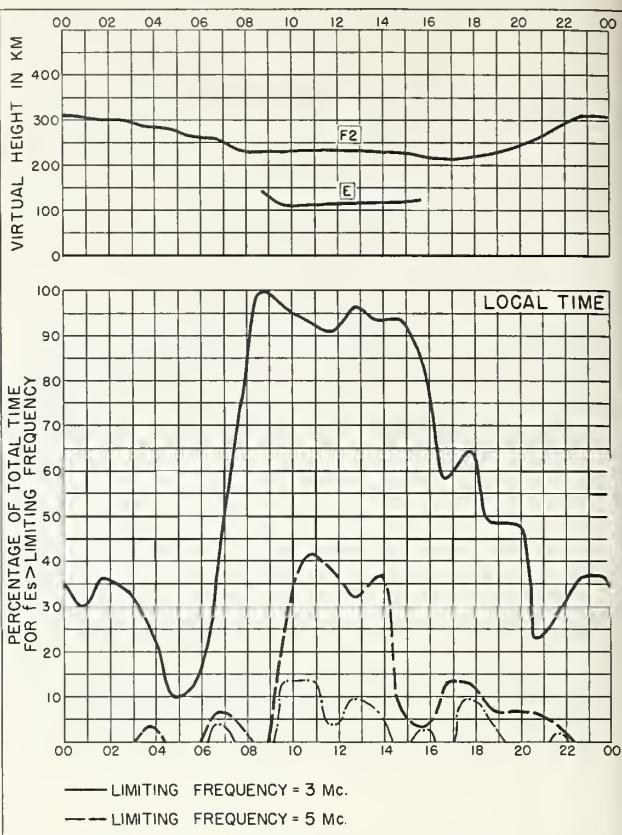
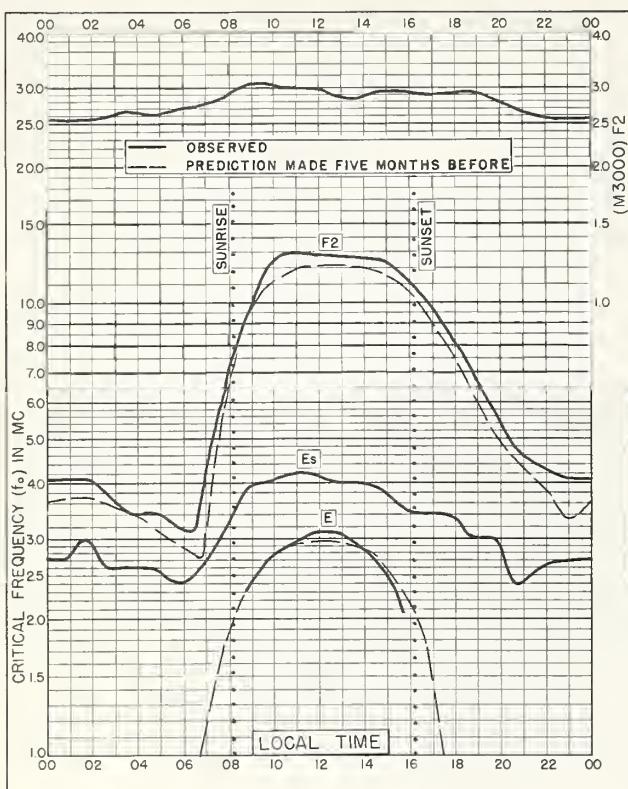
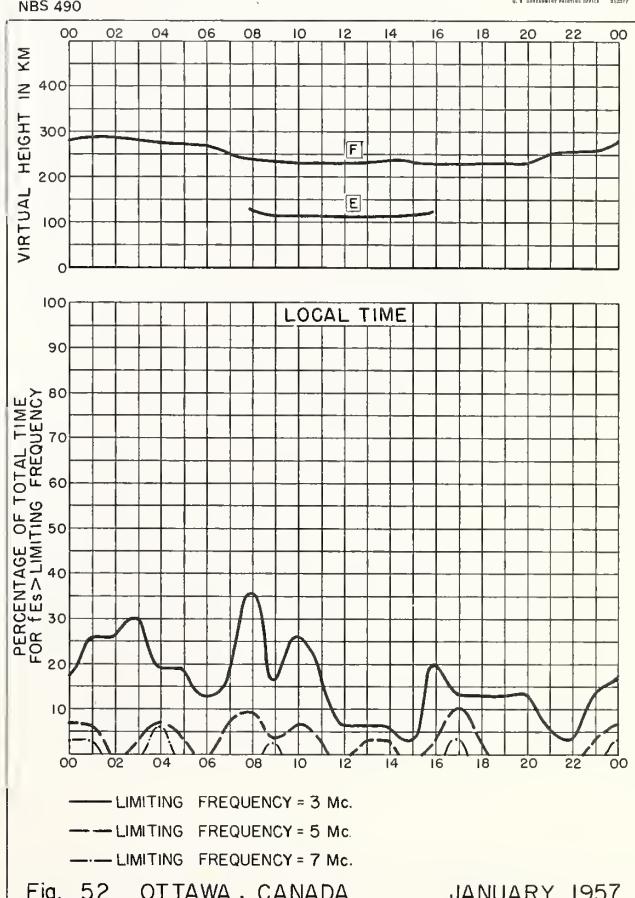
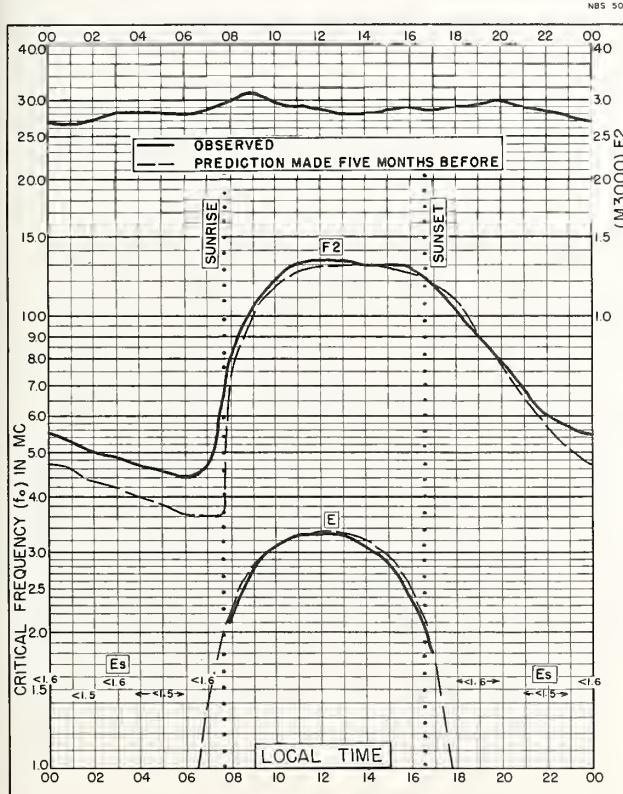
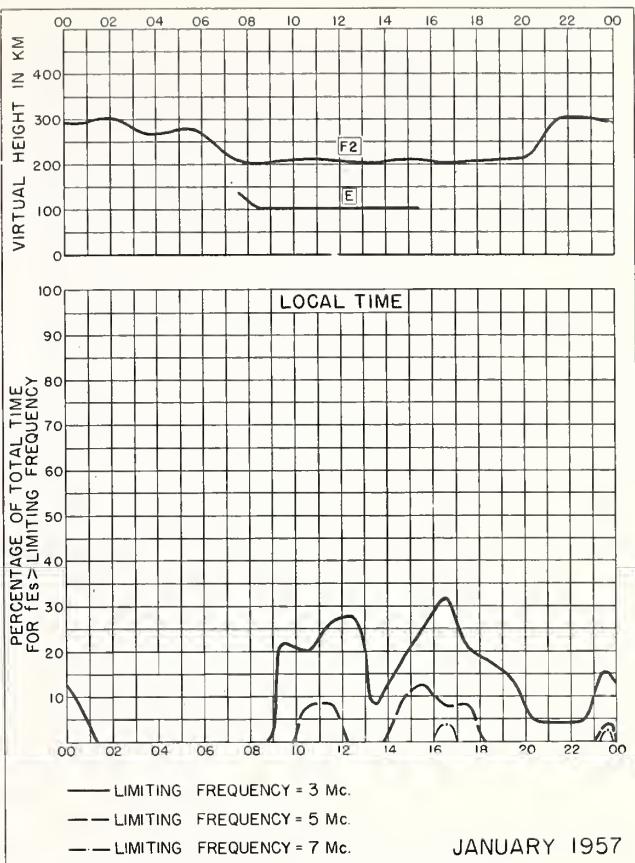
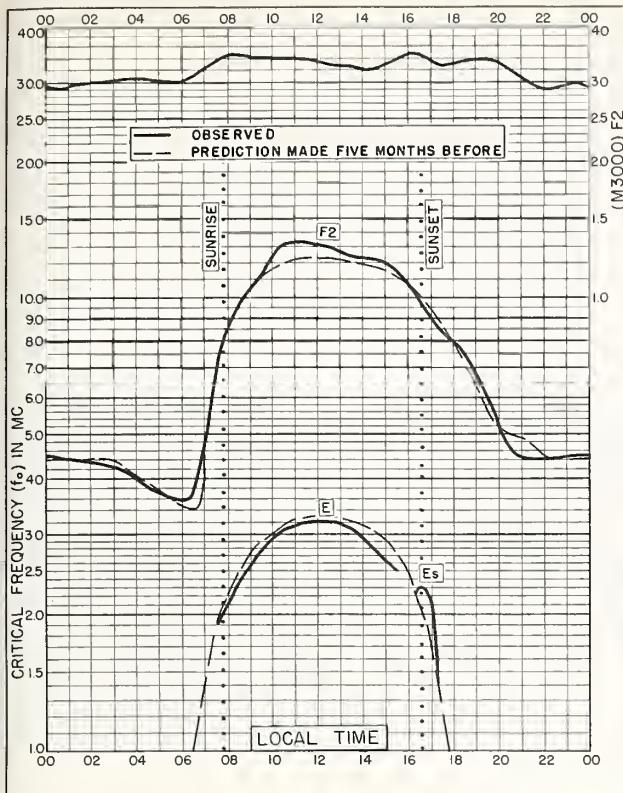
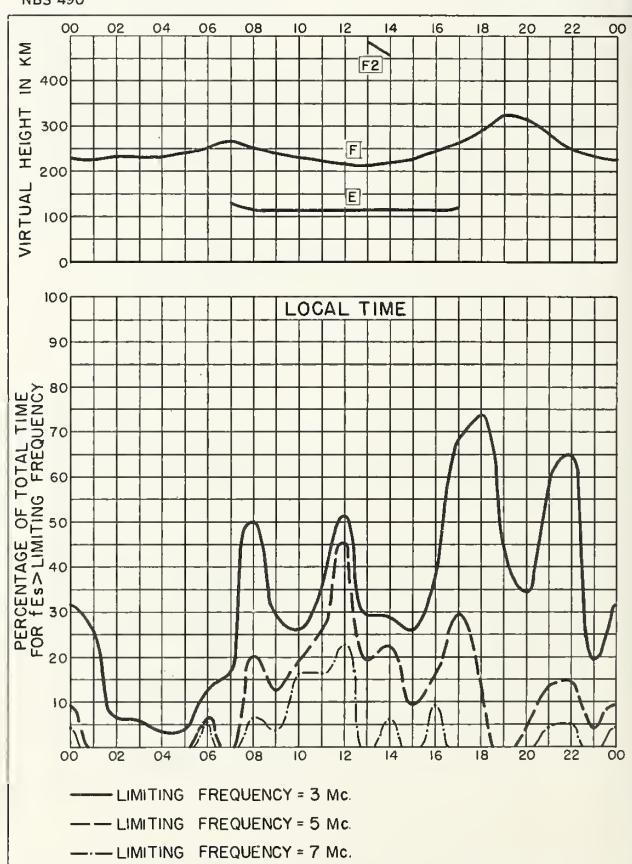
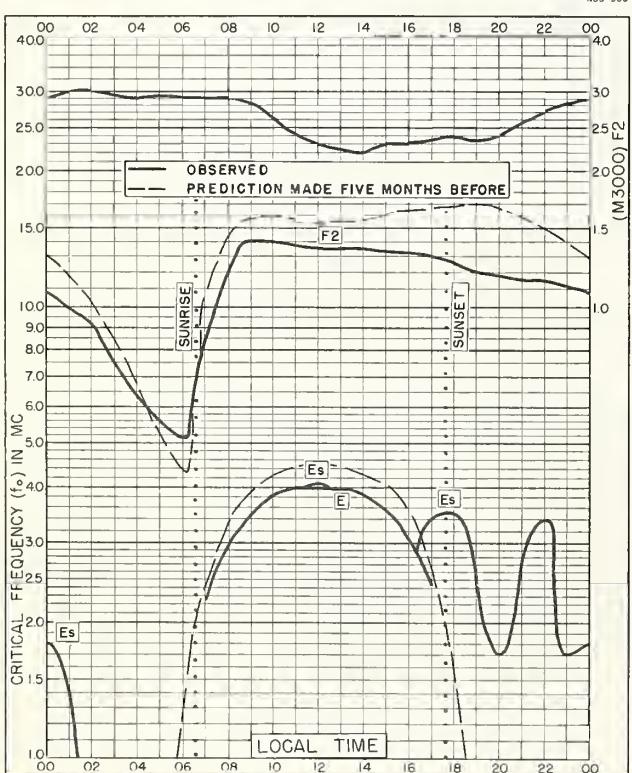
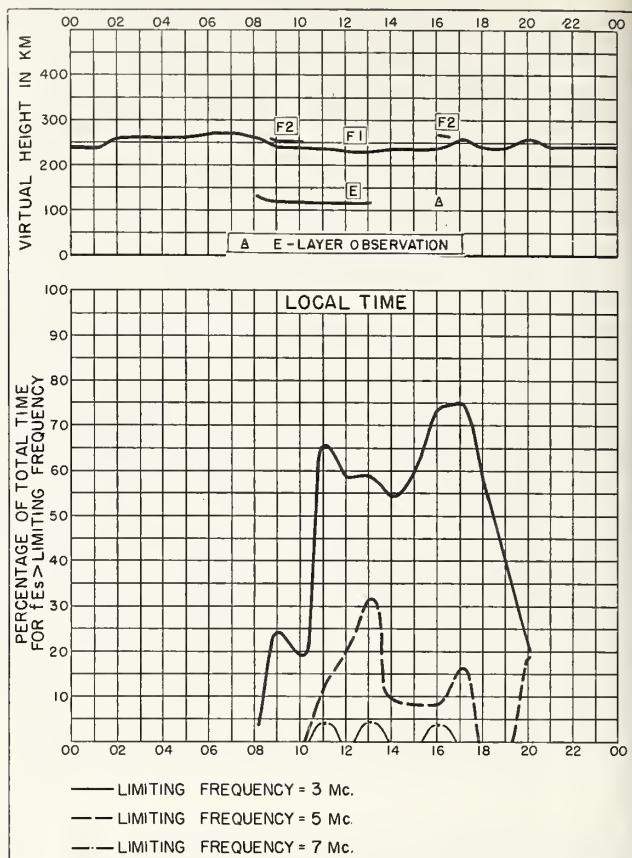
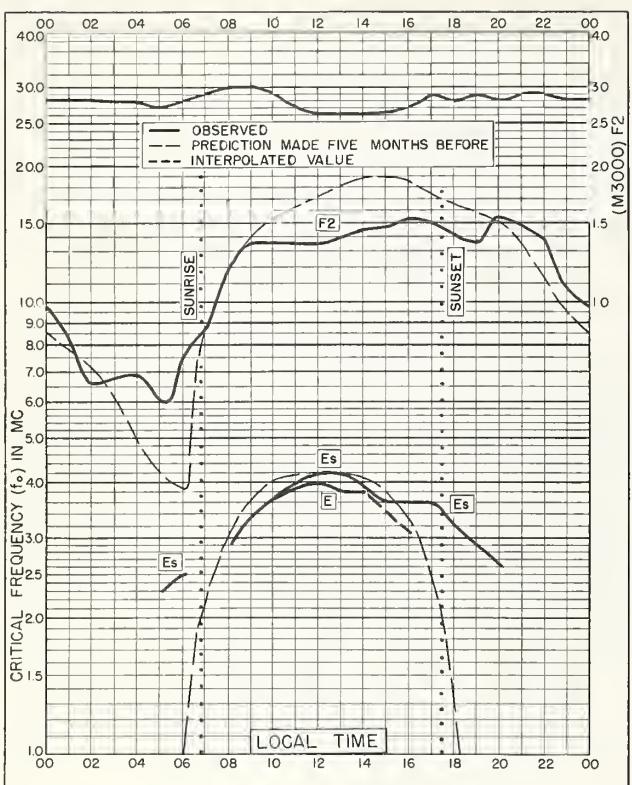


Fig. 44. De BILT, HOLLAND      JANUARY 1957







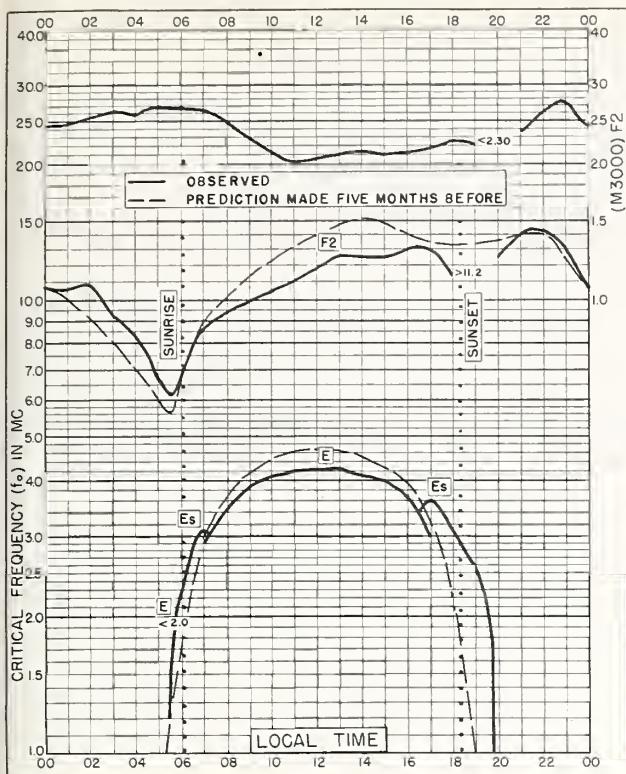


Fig. 57. LEOPOLDVILLE, BELGIAN CONGO  
4.4°S, 15.2°E JANUARY 1957

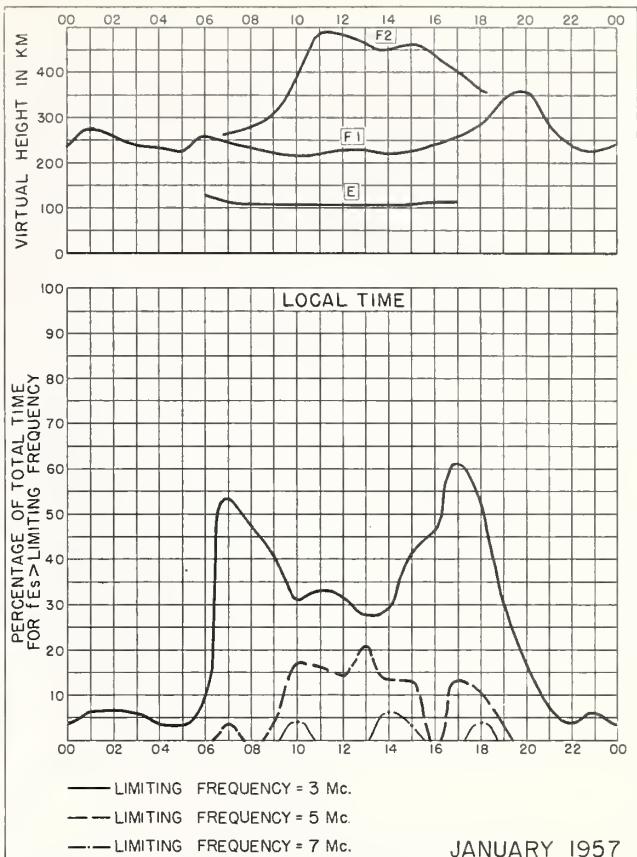


Fig. 58. LEOPOLDVILLE, BELGIAN CONGO JANUARY 1957

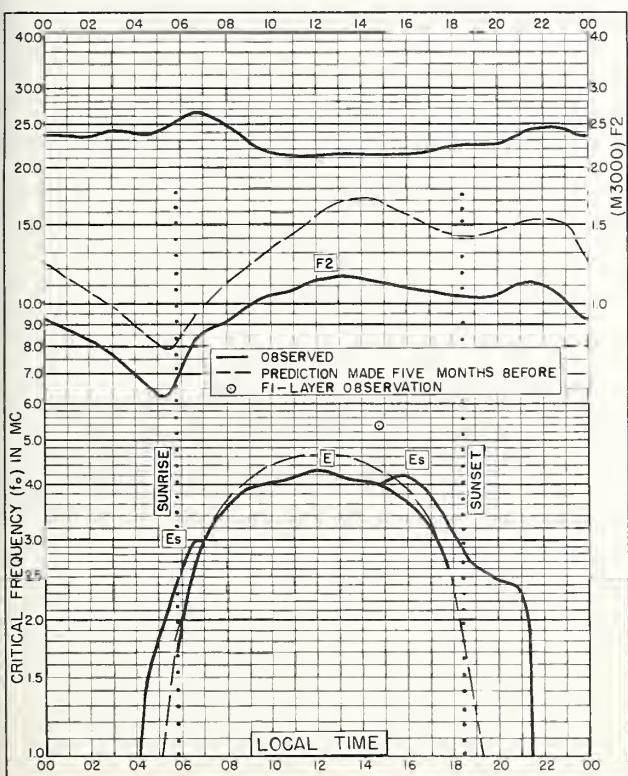


Fig. 59. ELISABETHVILLE, BELGIAN CONGO  
II.6°S, 27.5°E JANUARY 1957

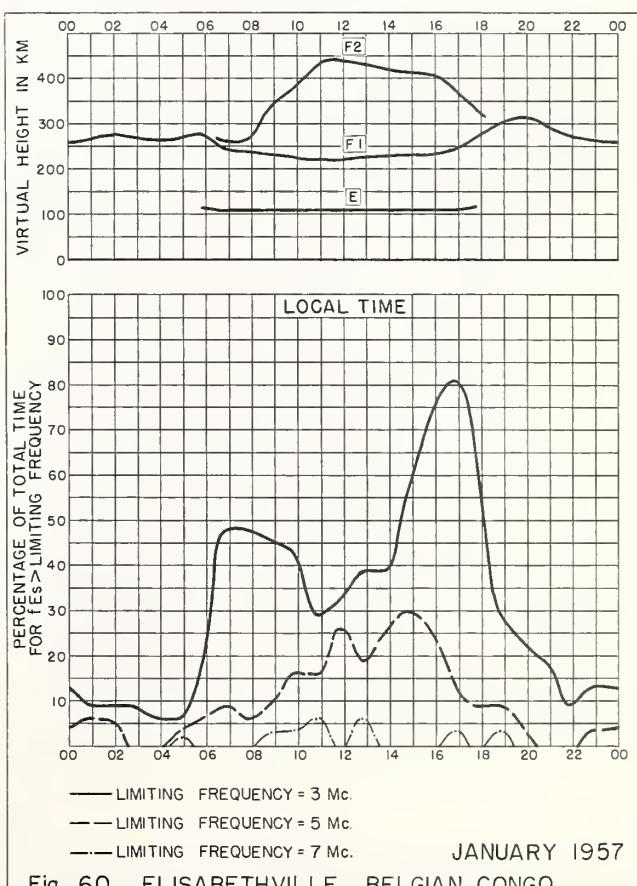
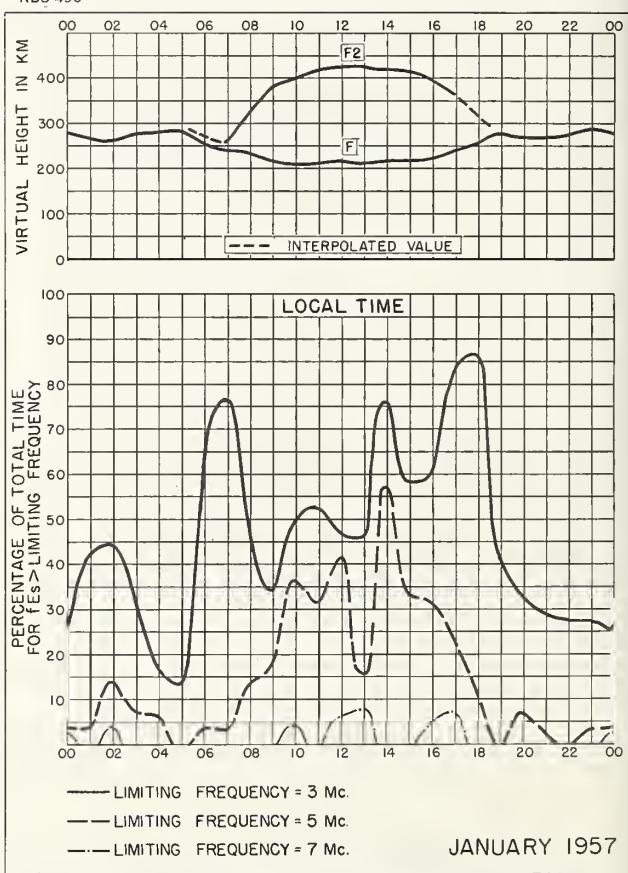
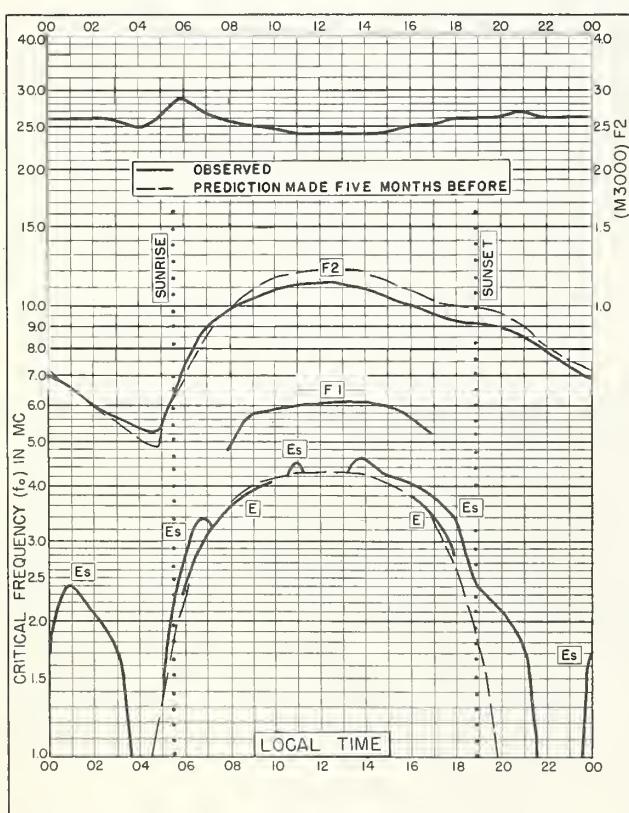
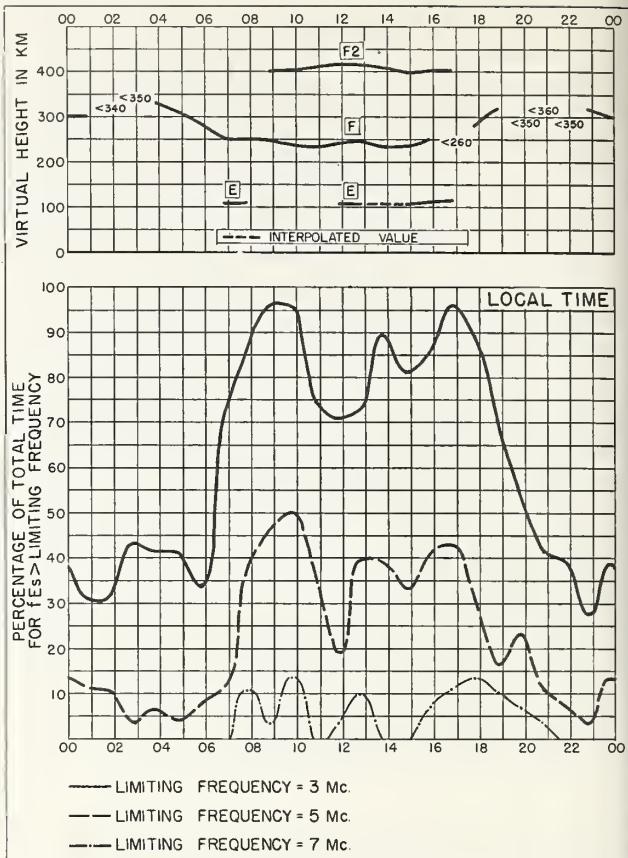
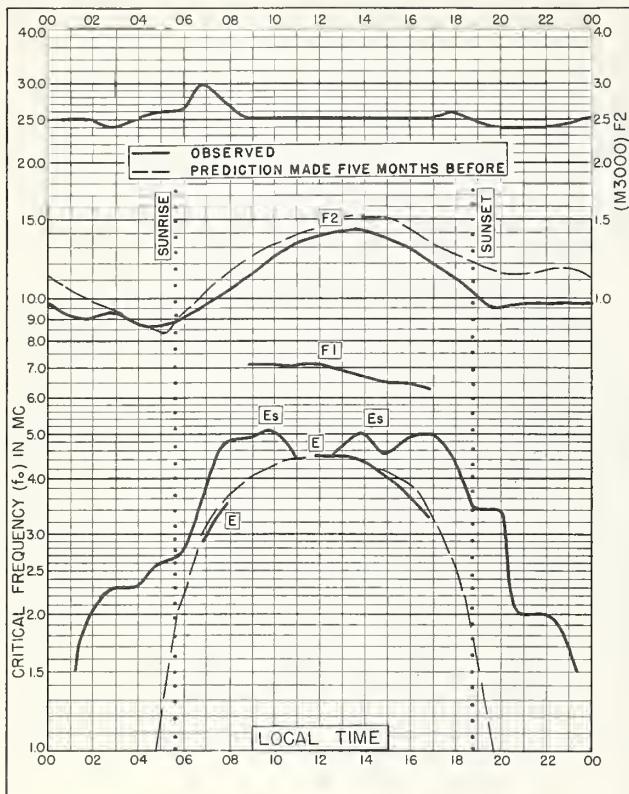


Fig. 60. ELISABETHVILLE, BELGIAN CONGO JANUARY 1957



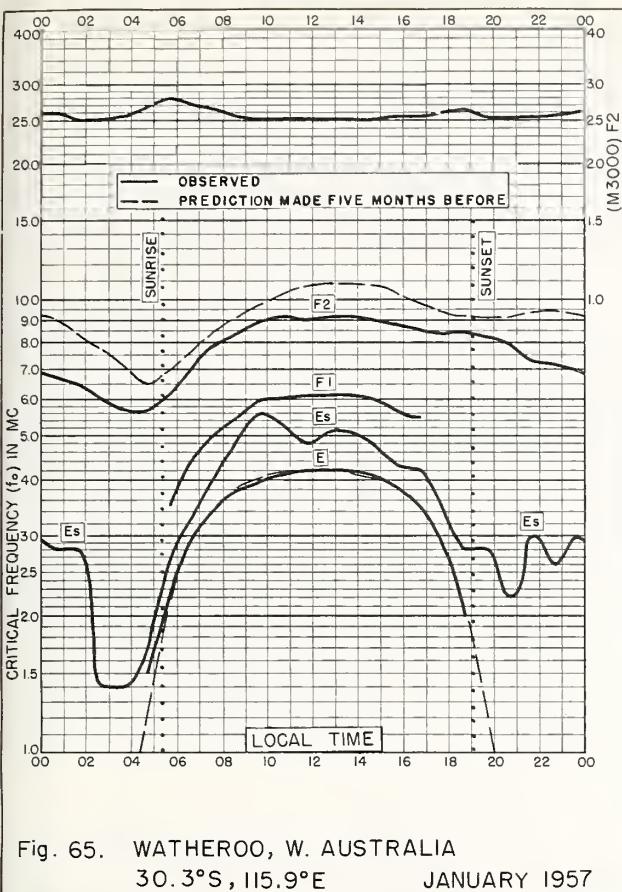
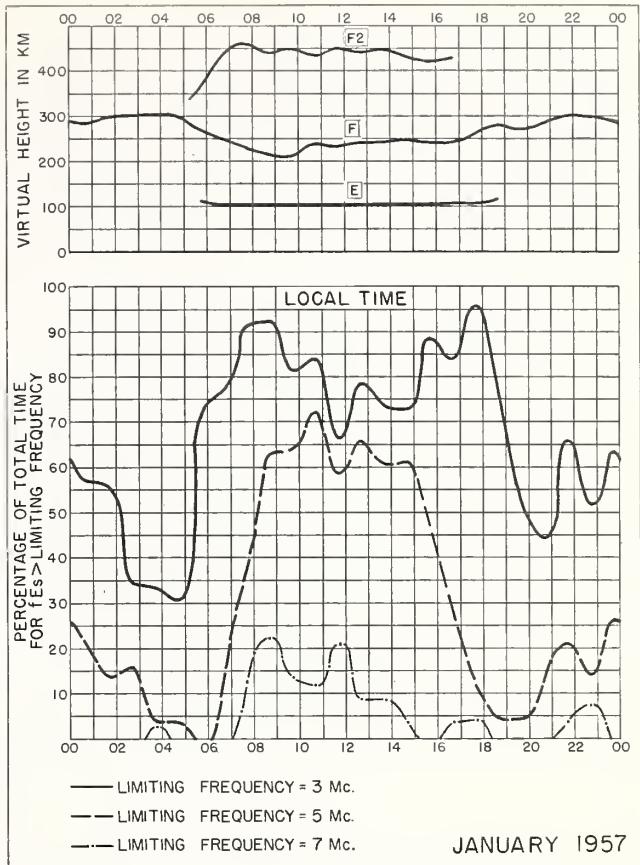


Fig. 65. WATHEROO, W. AUSTRALIA  
30.3°S, 115.9°E JANUARY 1957



JANUARY 1957  
Fig. 66. WATHEROO, W. AUSTRALIA

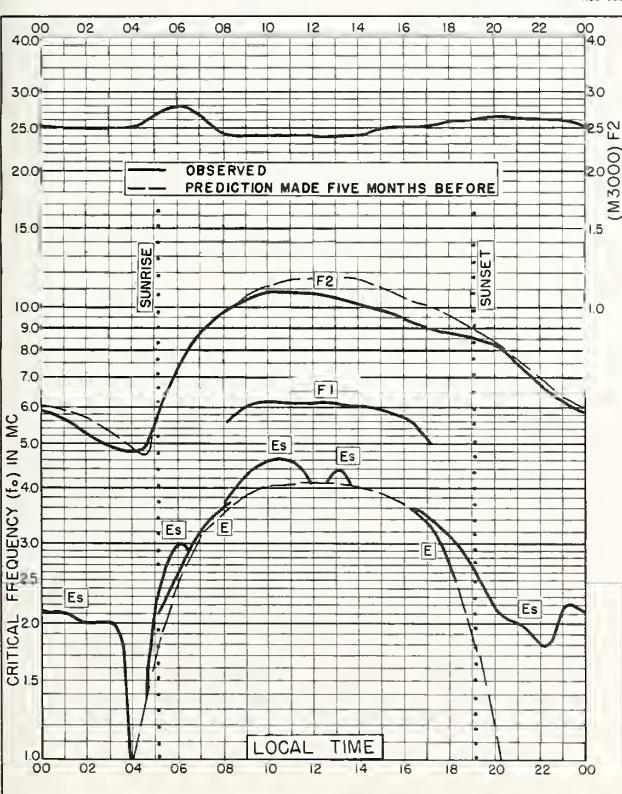
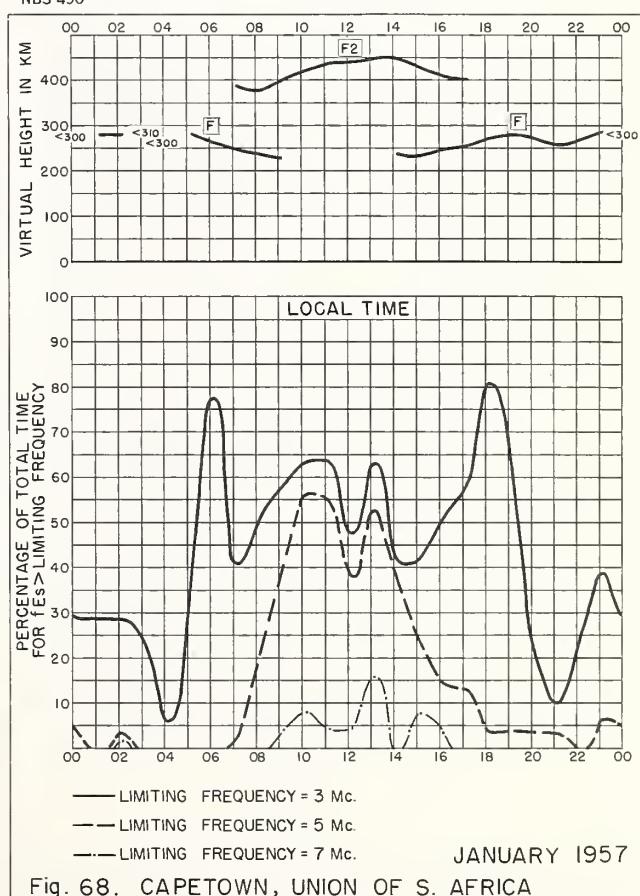
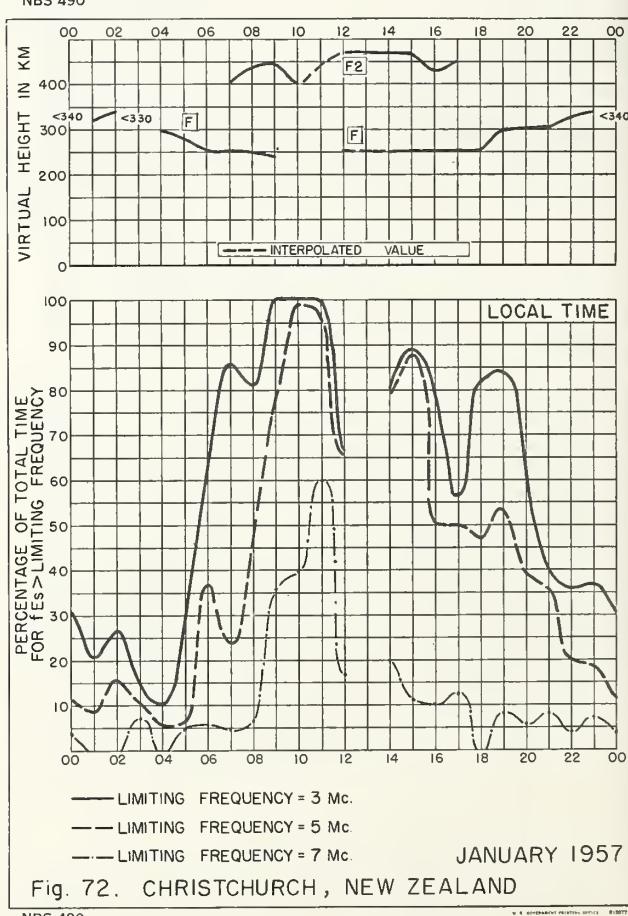
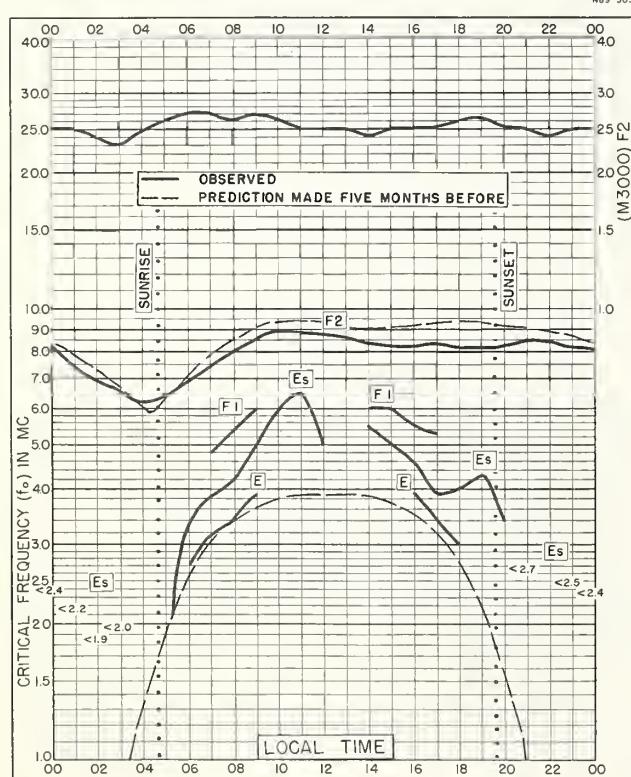
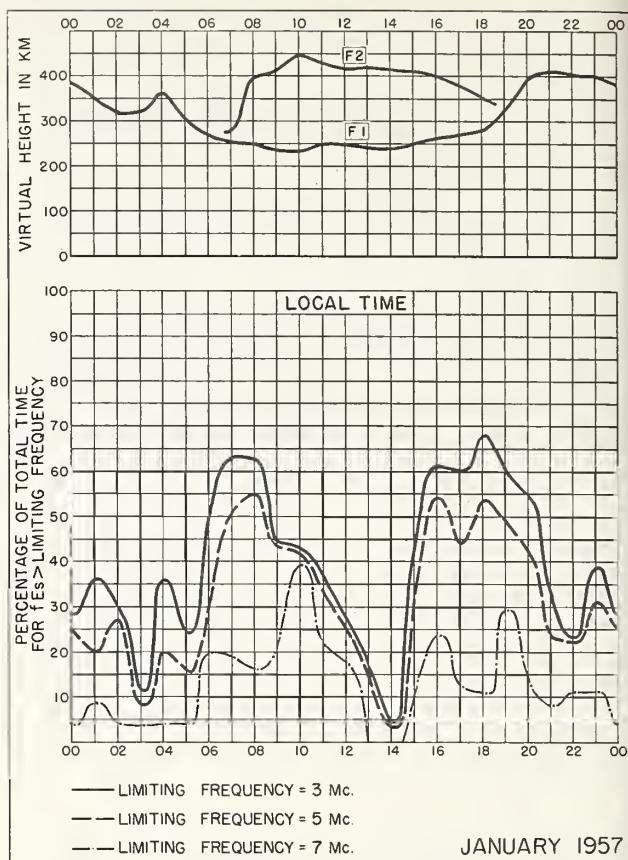
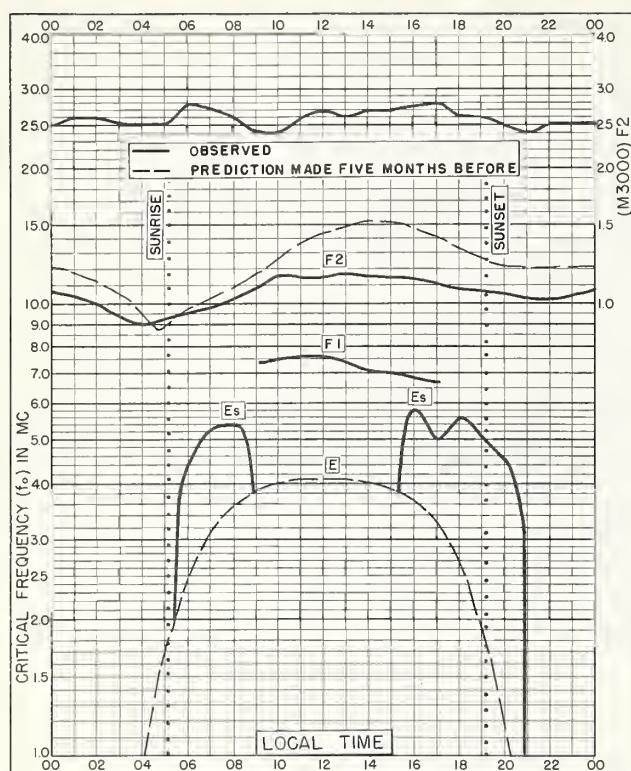
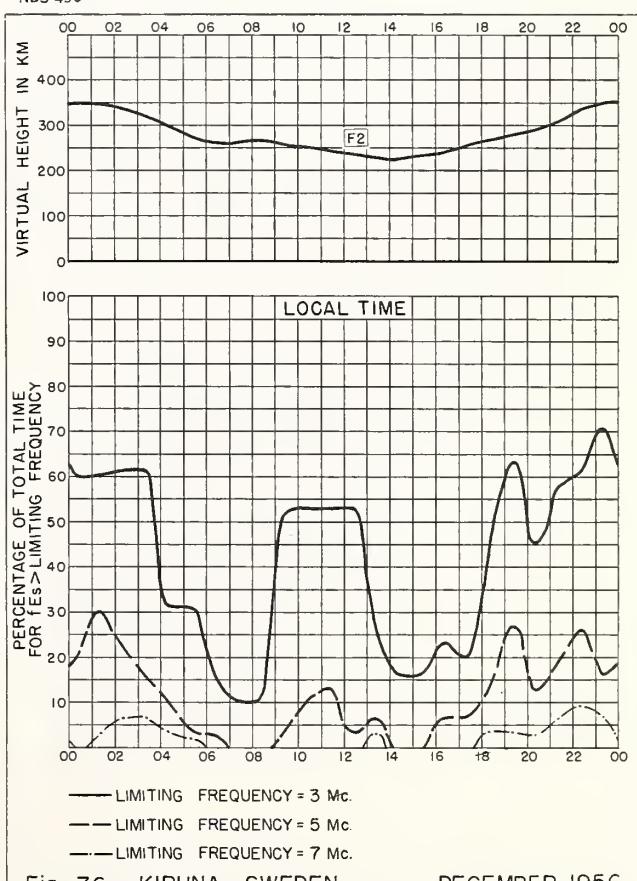
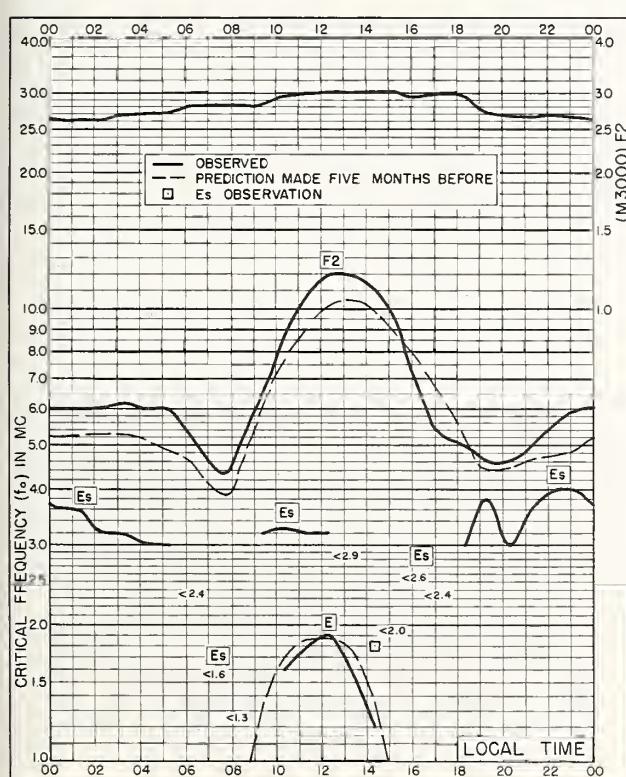
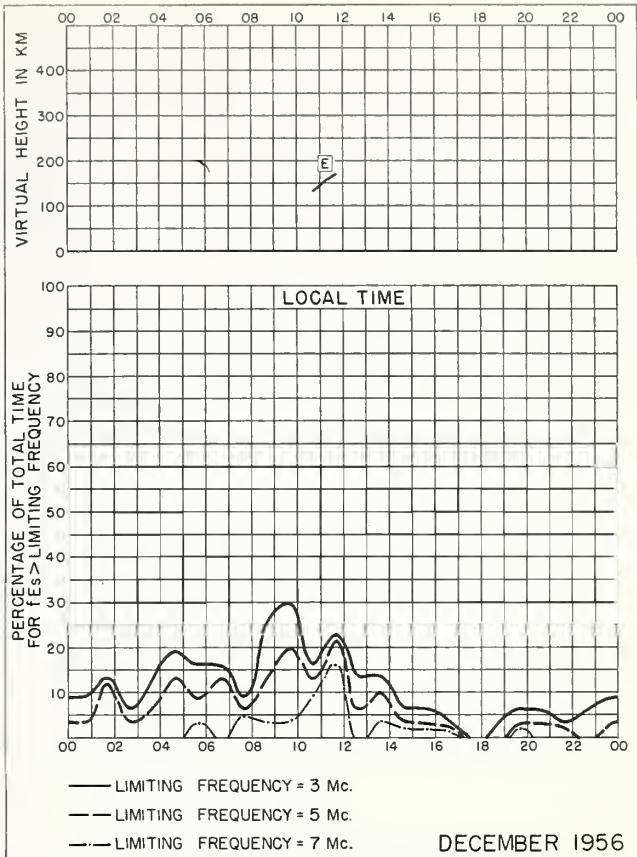
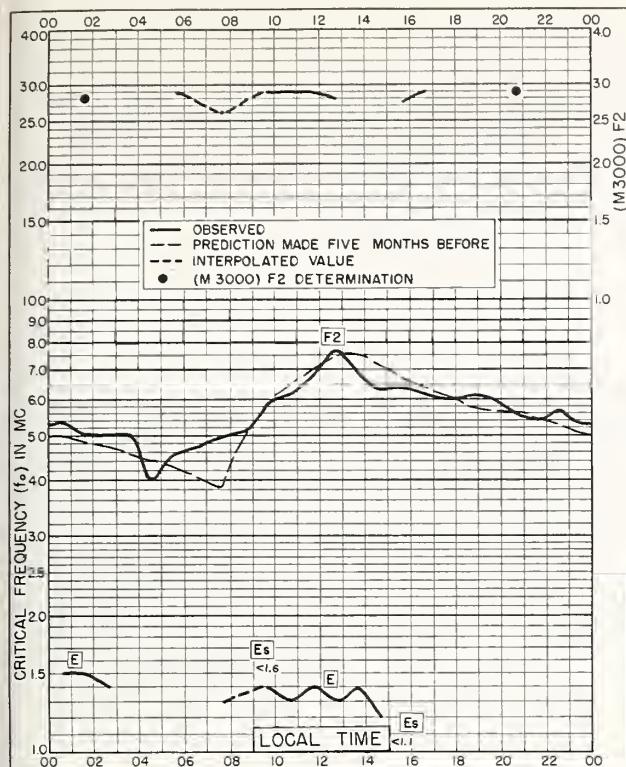


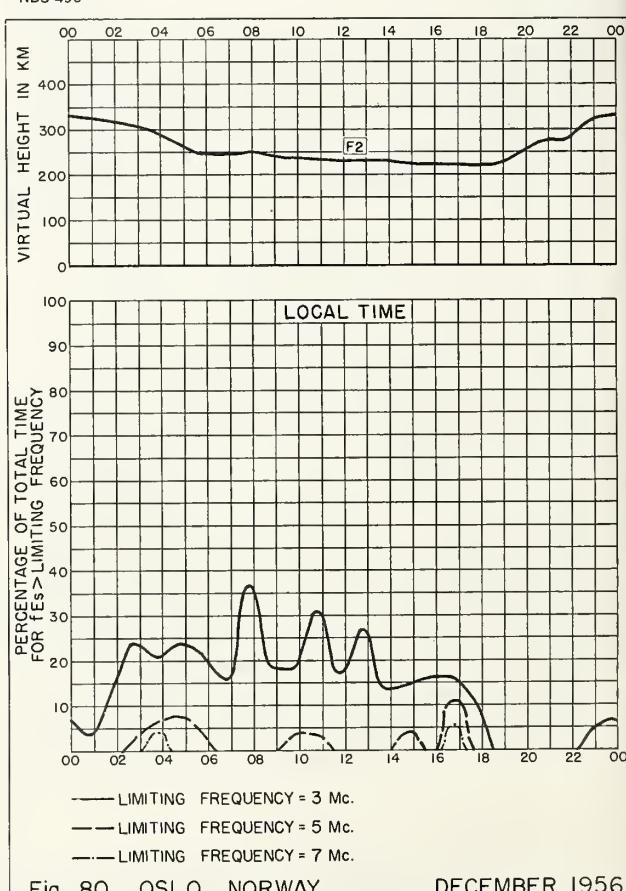
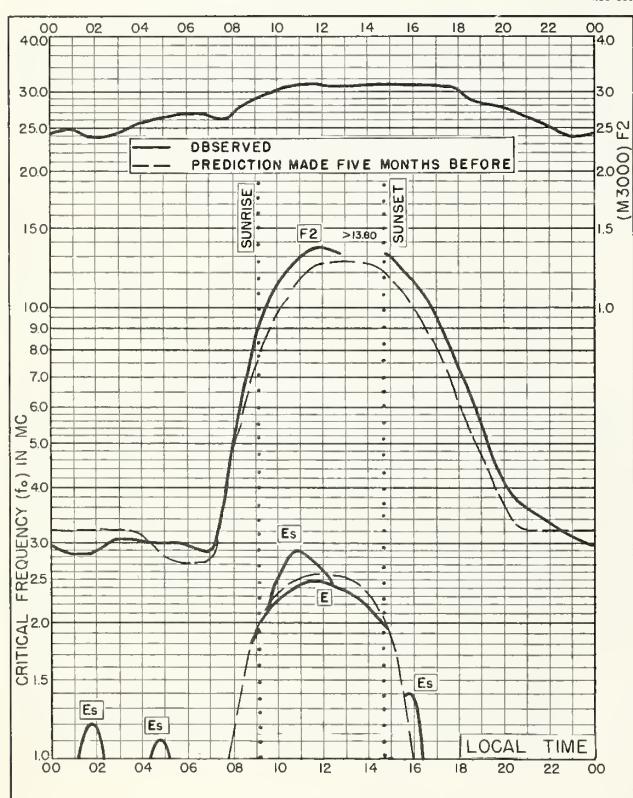
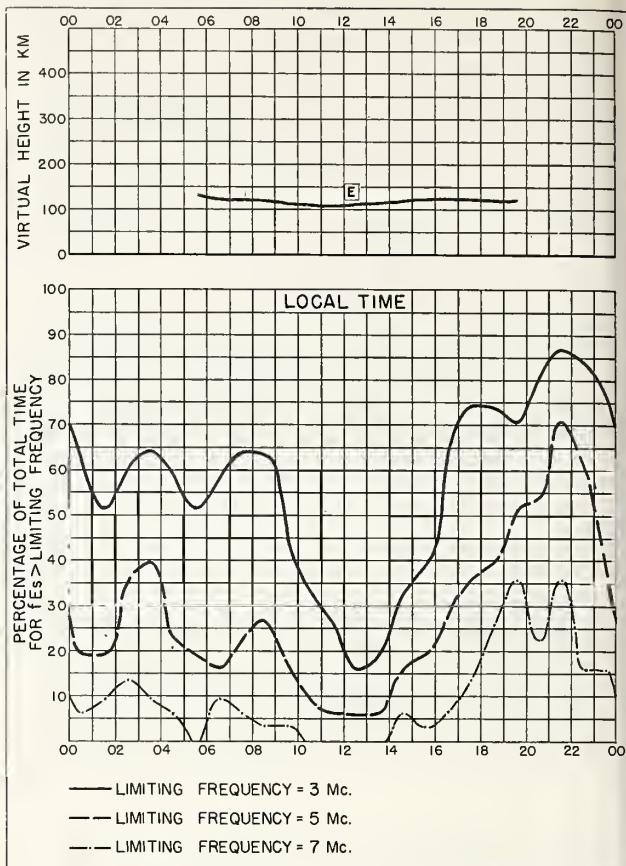
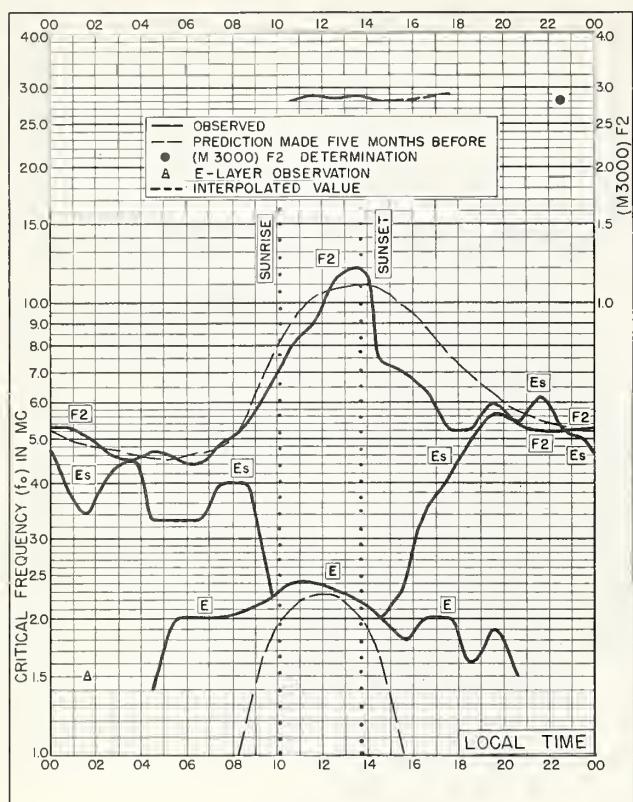
Fig. 67. CAPE TOWN, UNION OF S. AFRICA  
34.2°S, 18.3°E JANUARY 1957



JANUARY 1957  
Fig. 68. CAPE TOWN, UNION OF S. AFRICA







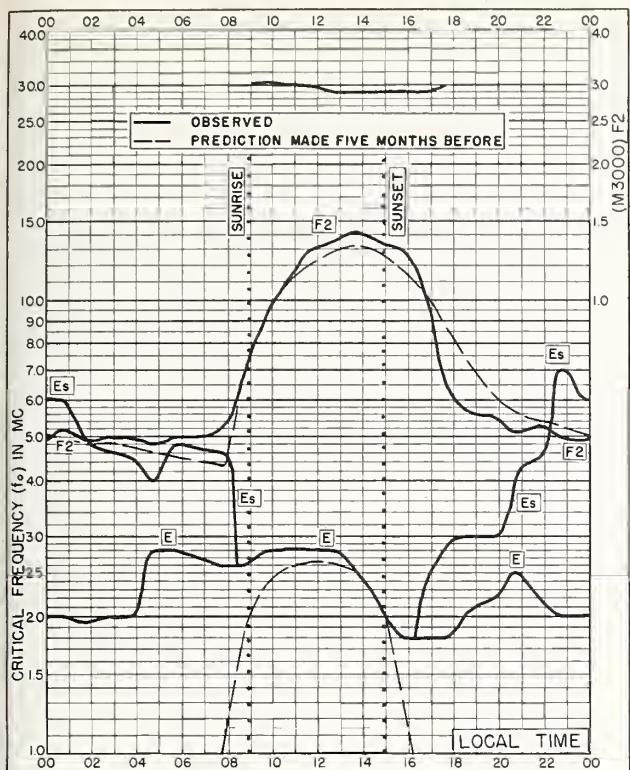


Fig. 81. CHURCHILL, CANADA  
 58.8°N, 94.2°W DECEMBER 1956

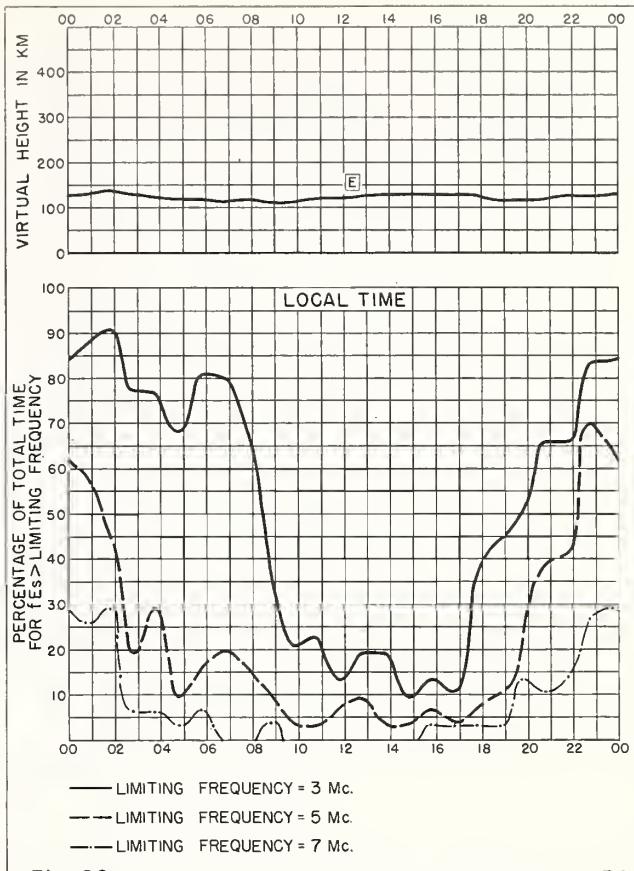


Fig. 82. CHURCHILL, CANADA DECEMBER 1956

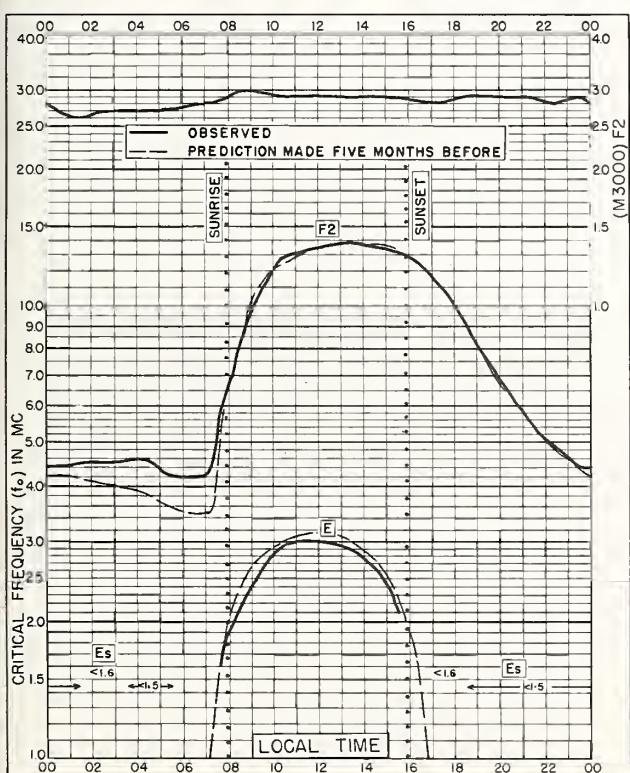


Fig. 83. WINNIPEG, CANADA  
49.9°N, 97.4°W DECEMBER 1956

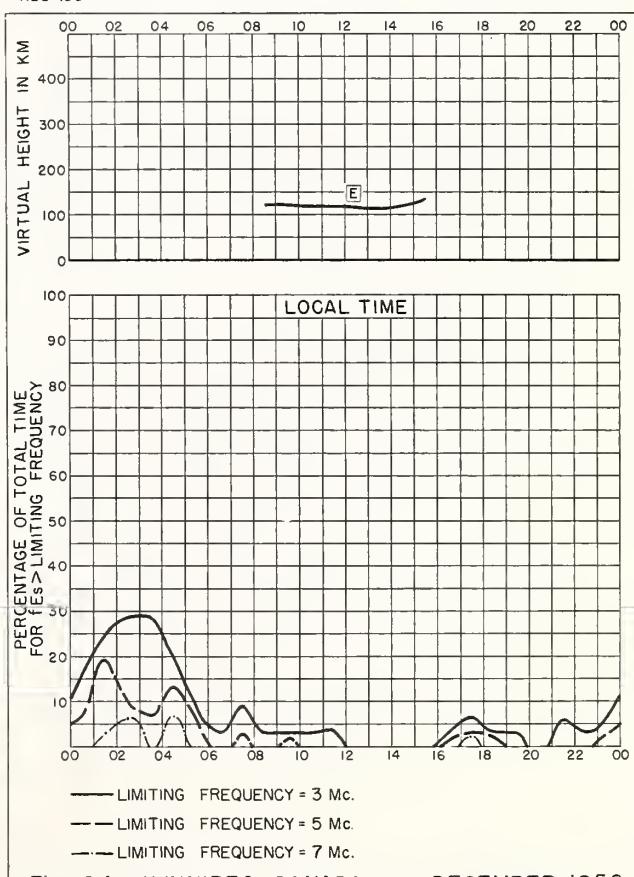
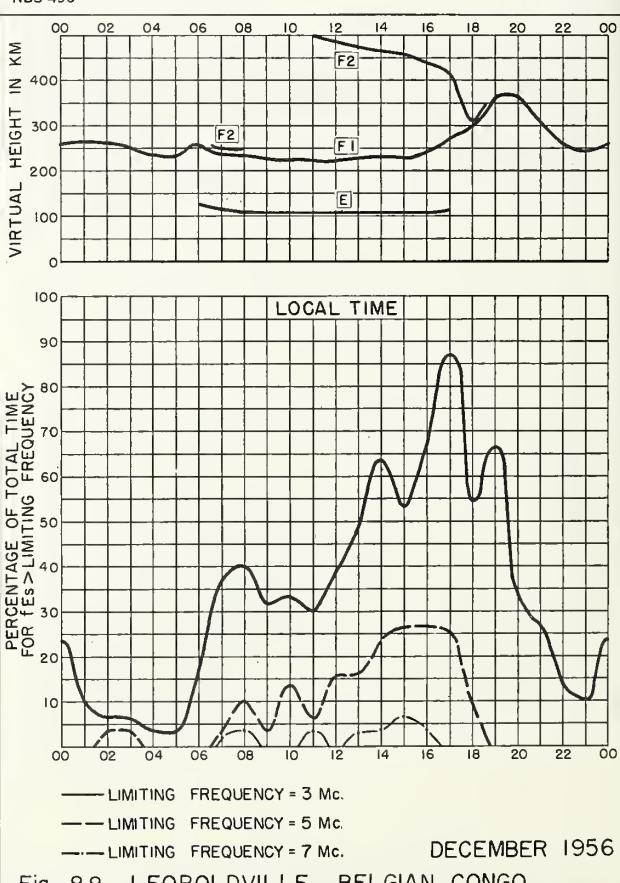
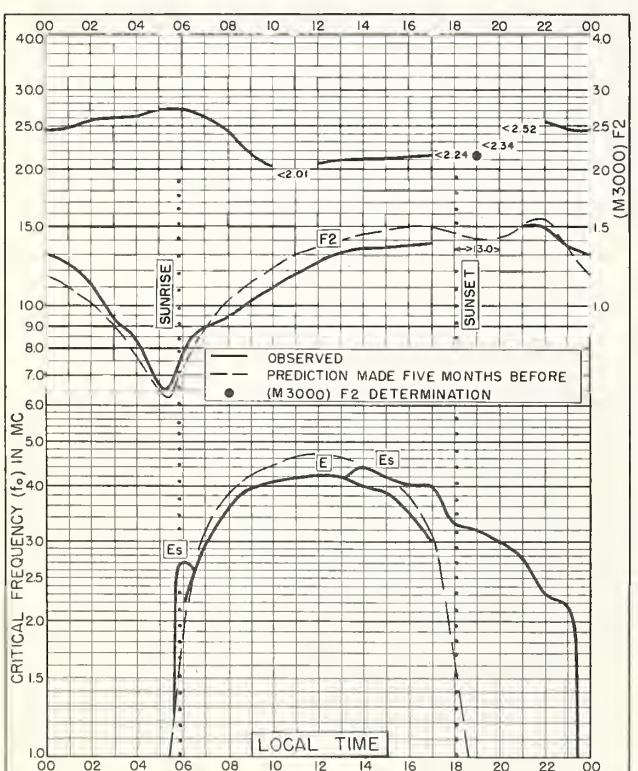
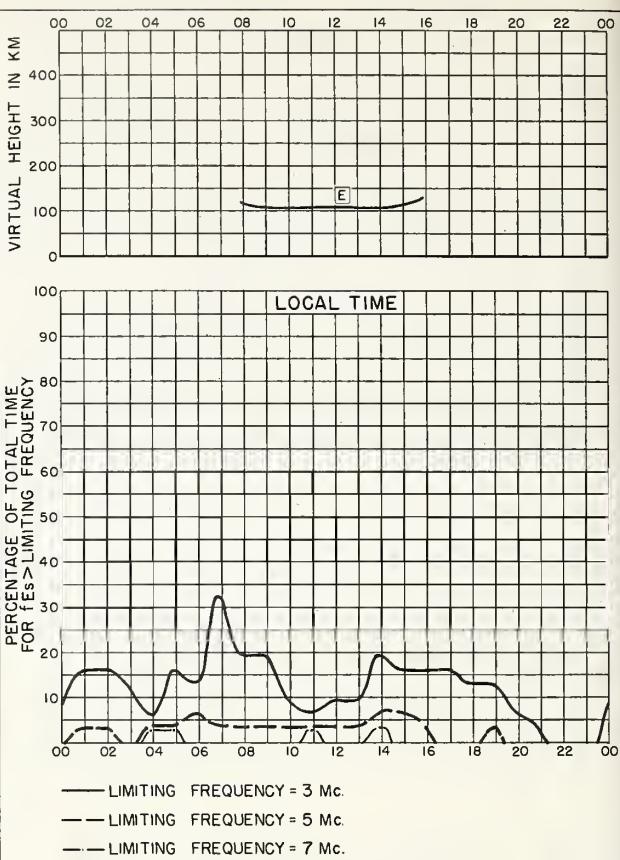
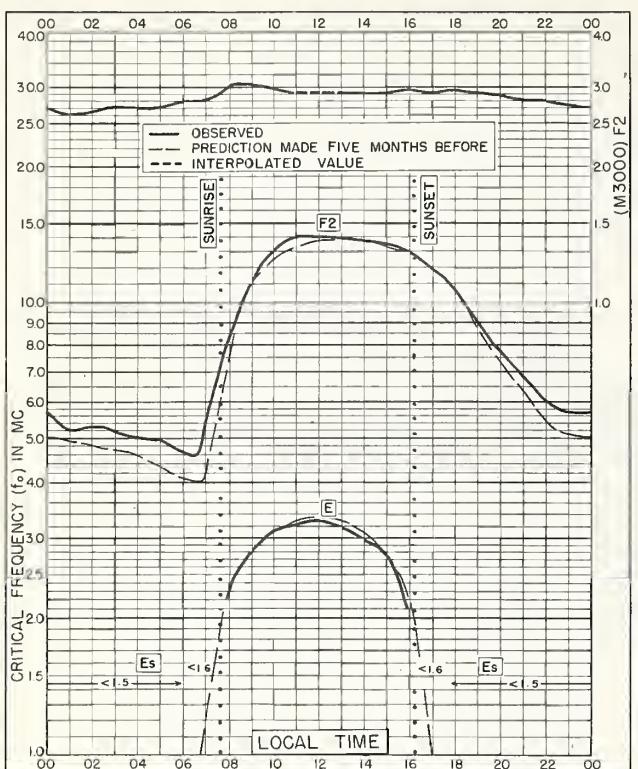


Fig. 84. WINNIPEG, CANADA DECEMBER 1956



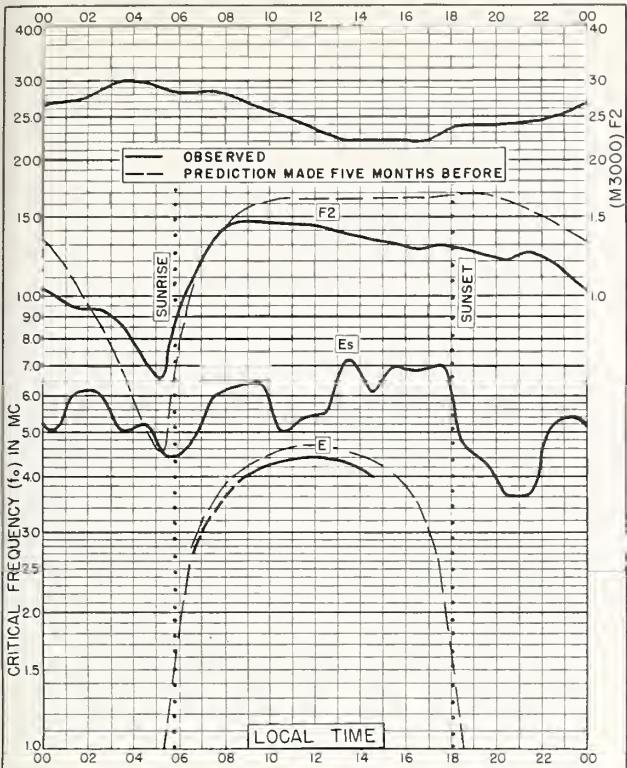


Fig. 89. TALARA, PERU

4.6°S, 81.3°W

DECEMBER 1956

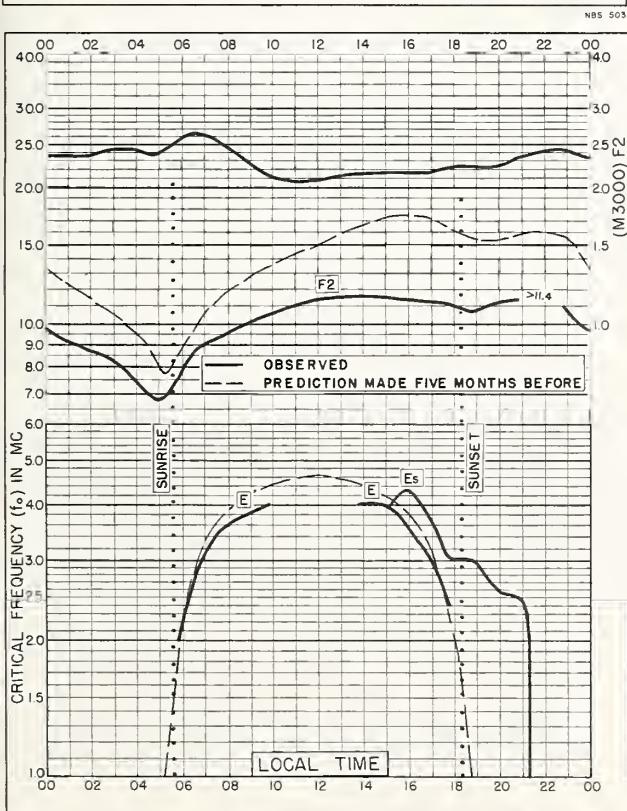


Fig. 91. ELISABETHVILLE, BELGIAN CONGO

11.6°S, 27.5°E

DECEMBER 1956

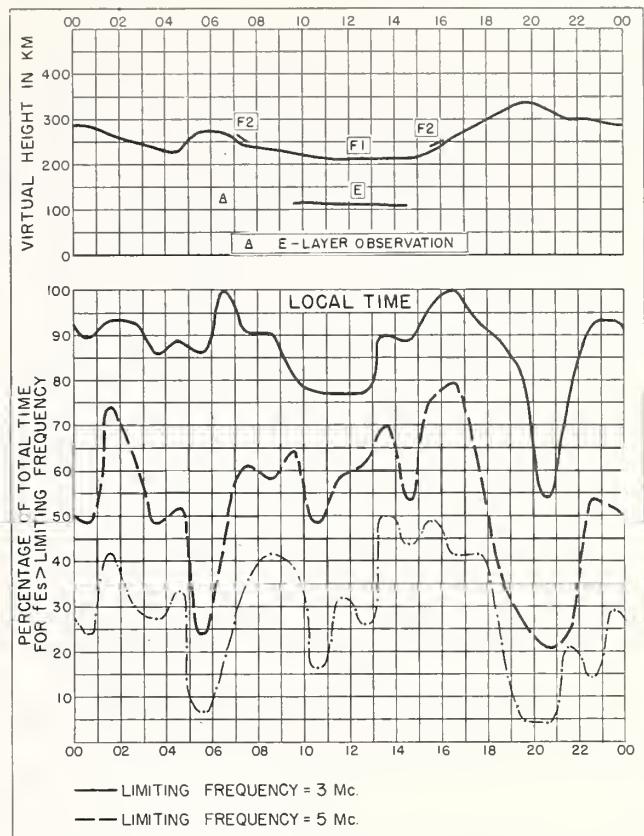


Fig. 90. TALARA, PERU

DECEMBER 1956

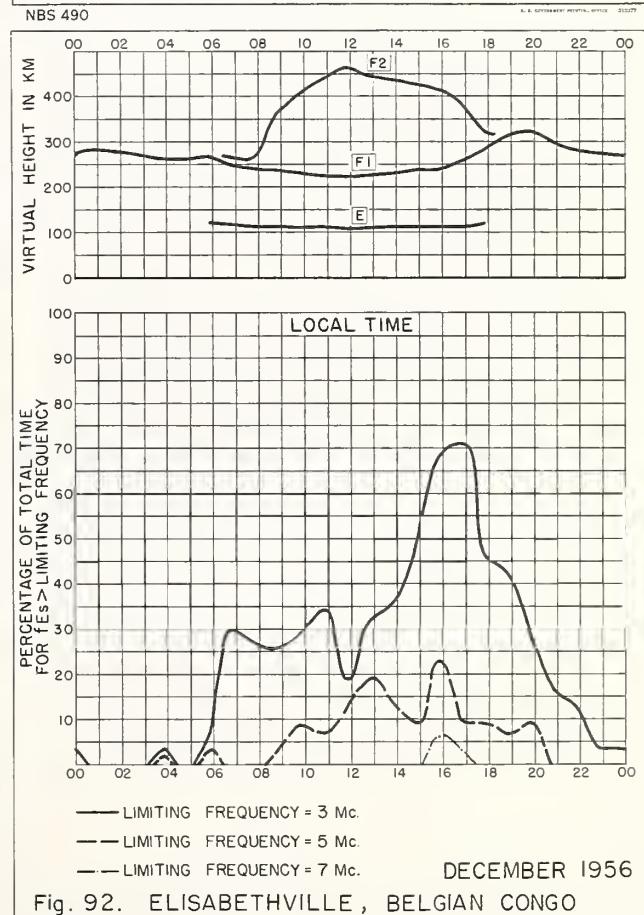
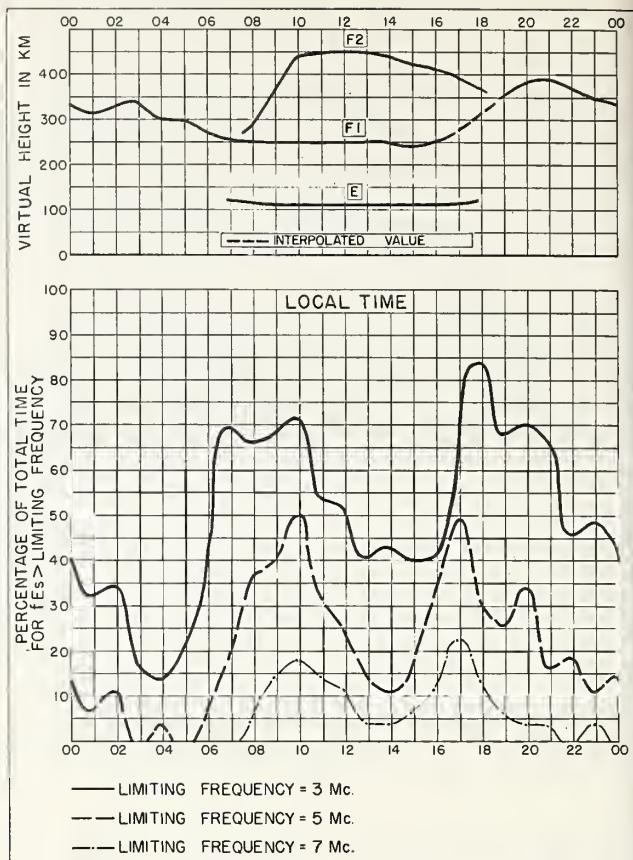
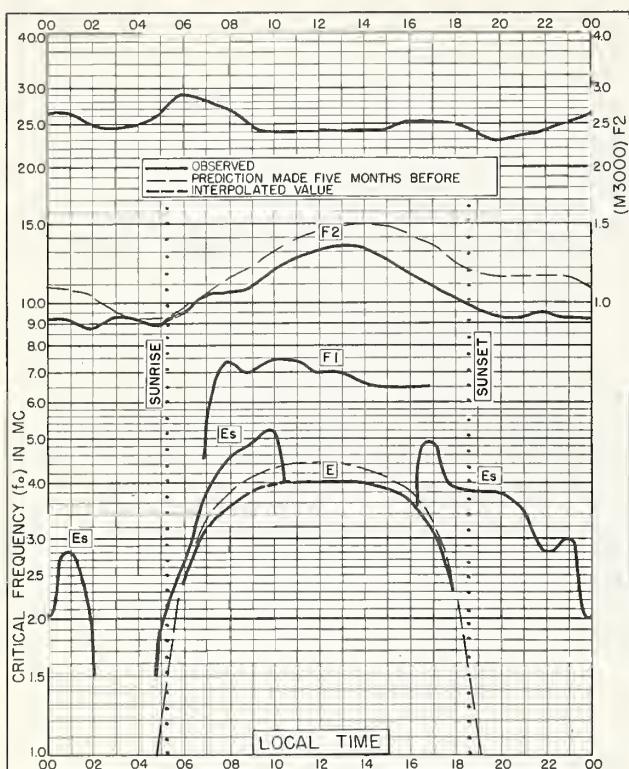
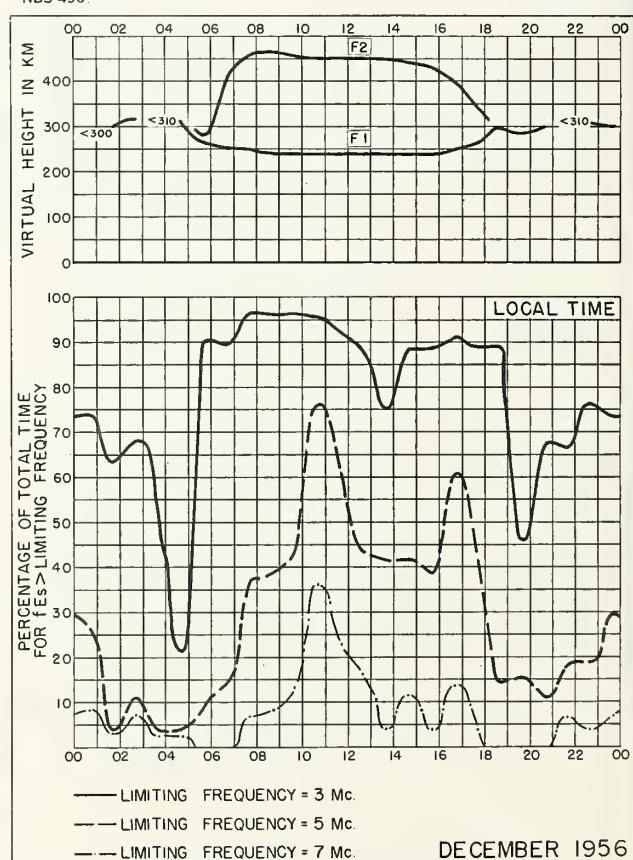
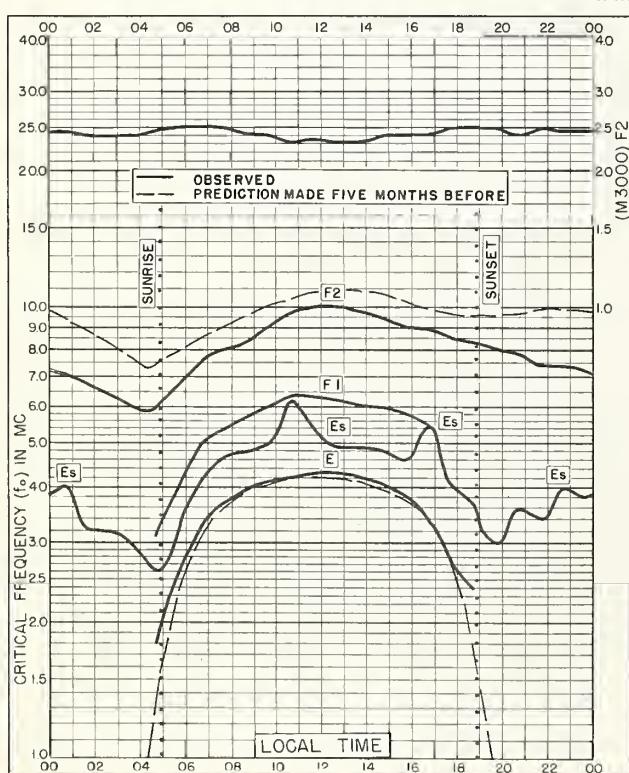


Fig. 92. ELISABETHVILLE, BELGIAN CONGO

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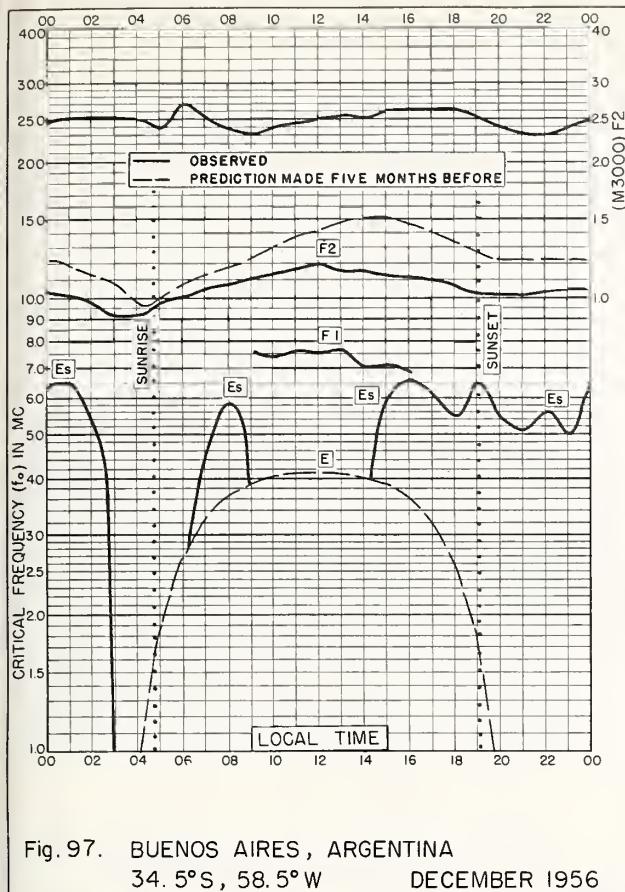
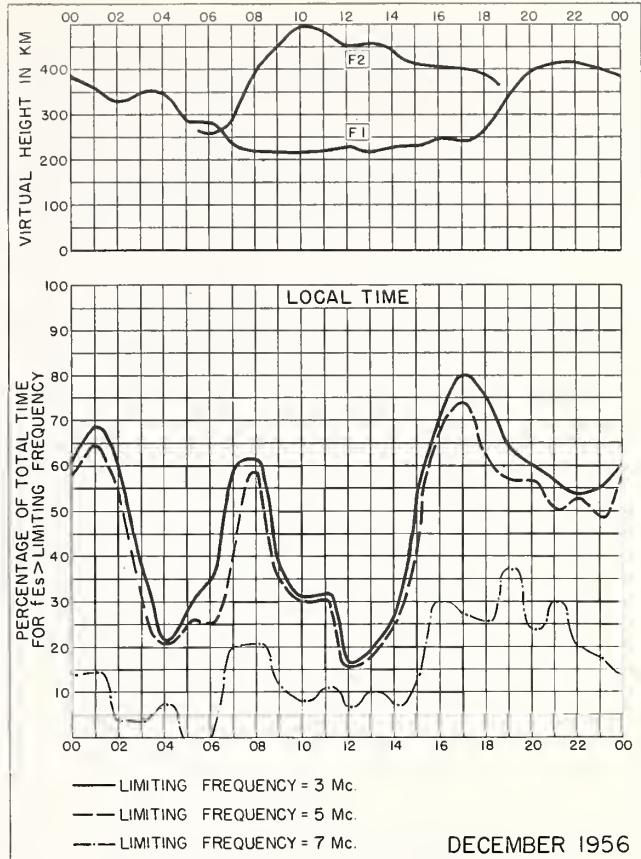


Fig. 97. BUENOS AIRES, ARGENTINA  
34. 5°S, 58. 5°W      DECEMBER 1956



DECEMBER 1956

Fig. 98. BUENOS AIRES, ARGENTINA

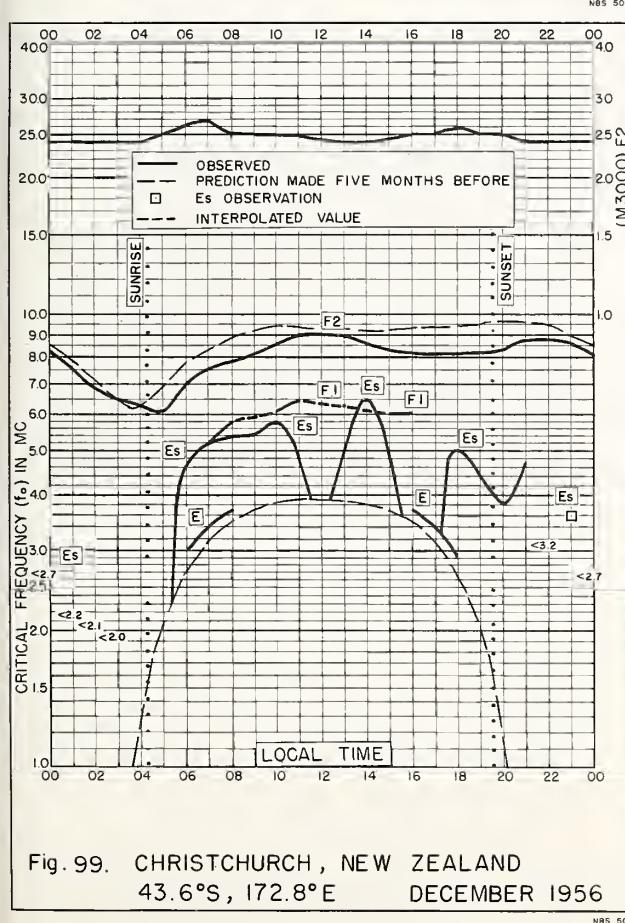
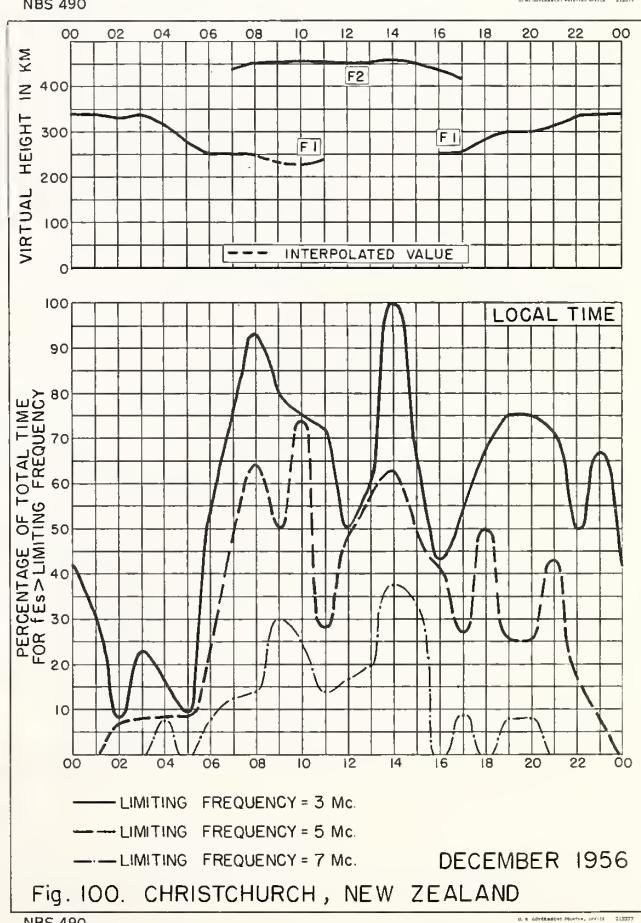
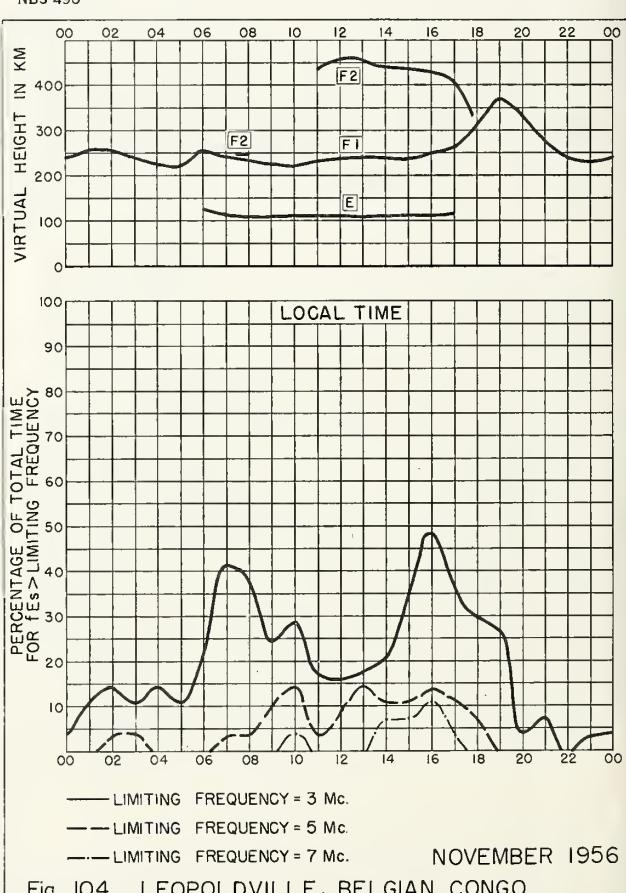
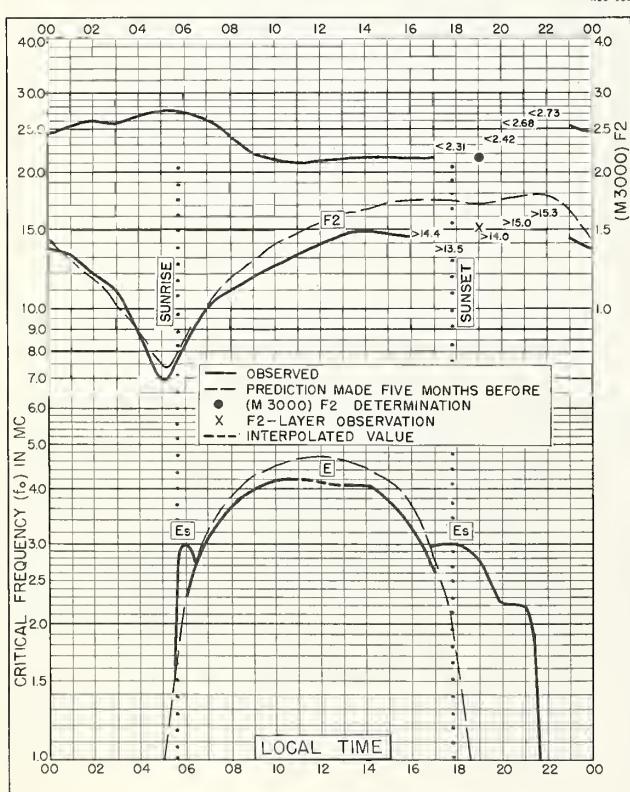
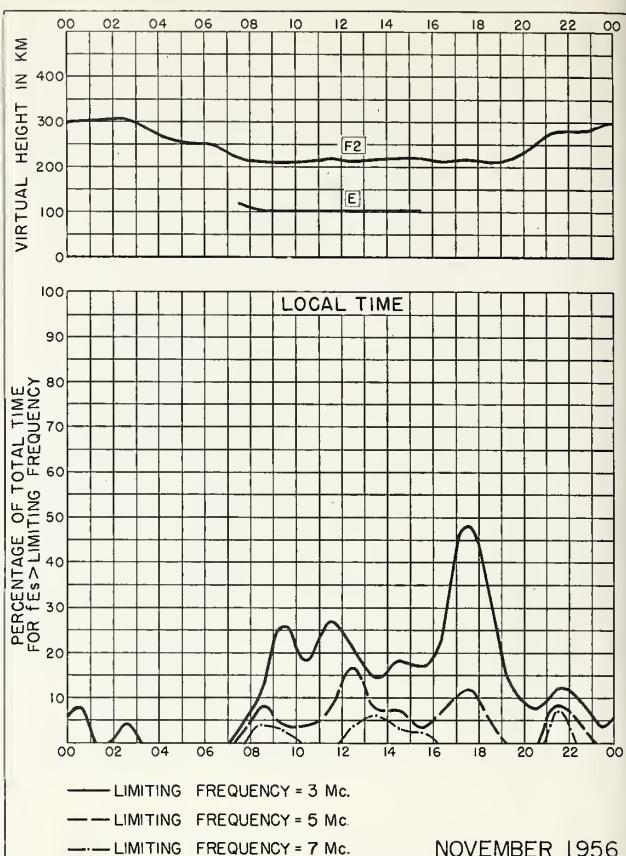
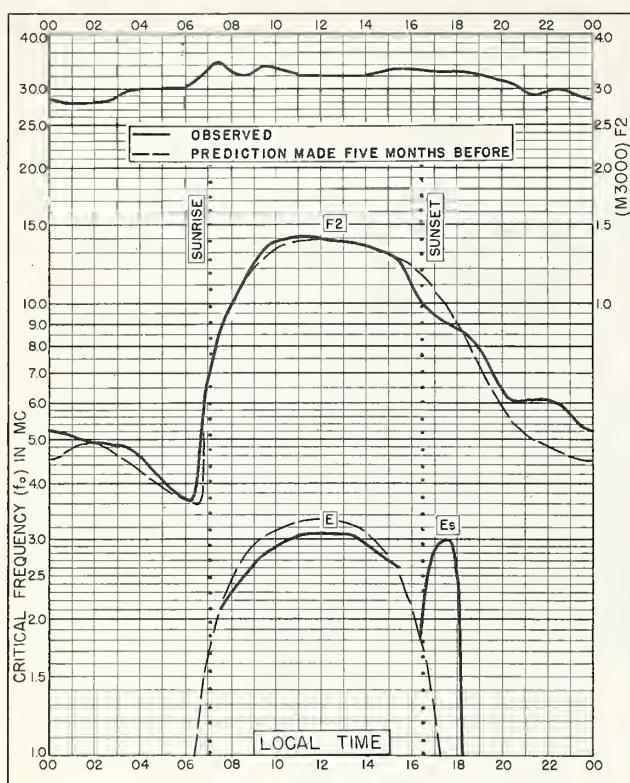


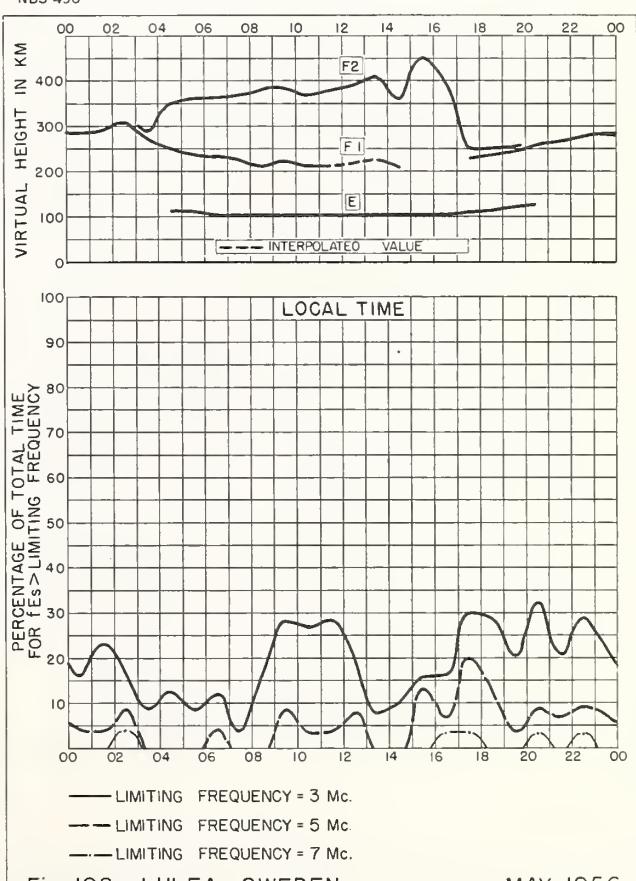
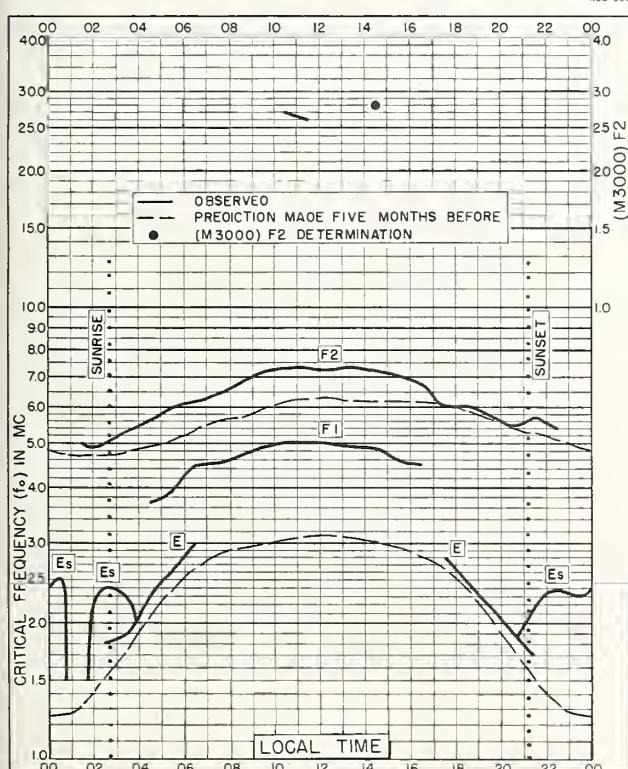
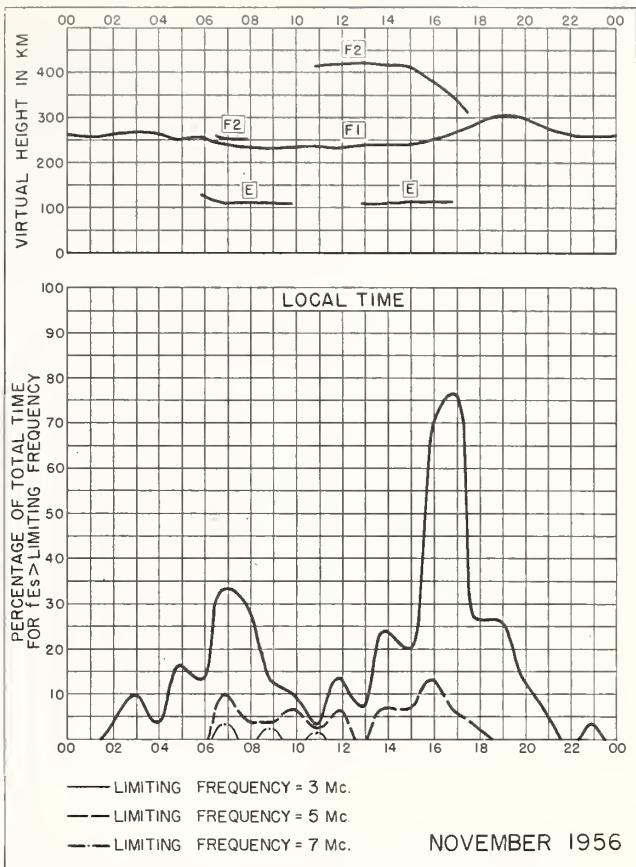
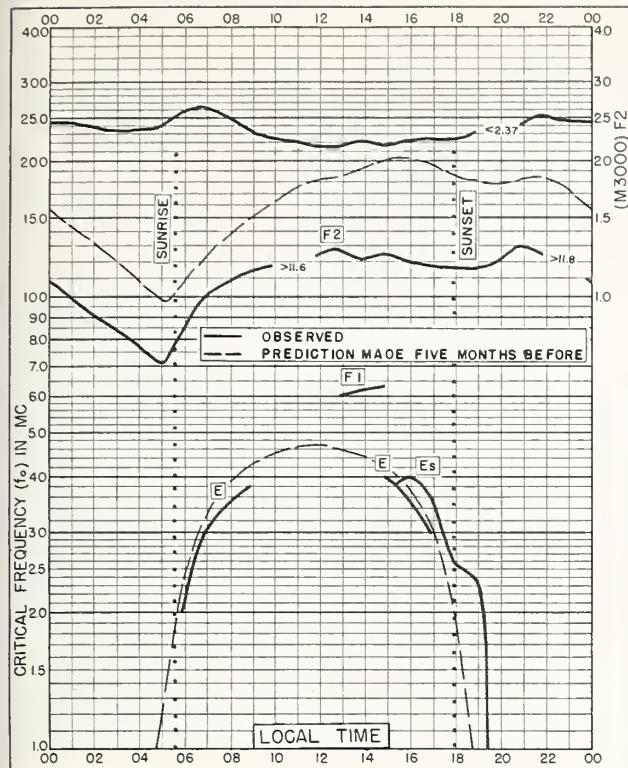
Fig. 99. CHRISTCHURCH, NEW ZEALAND  
43. 6°S, 172. 8°E      DECEMBER 1956



DECEMBER 1956

Fig. 100. CHRISTCHURCH, NEW ZEALAND





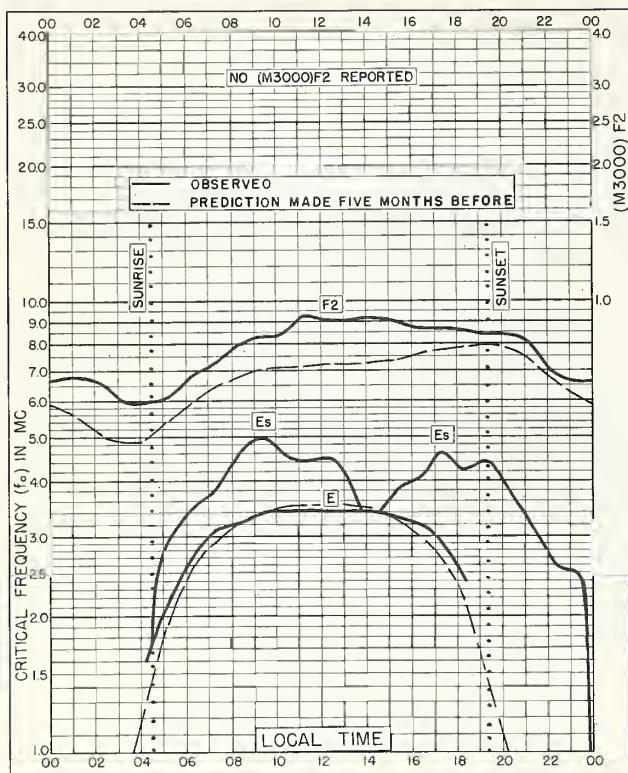
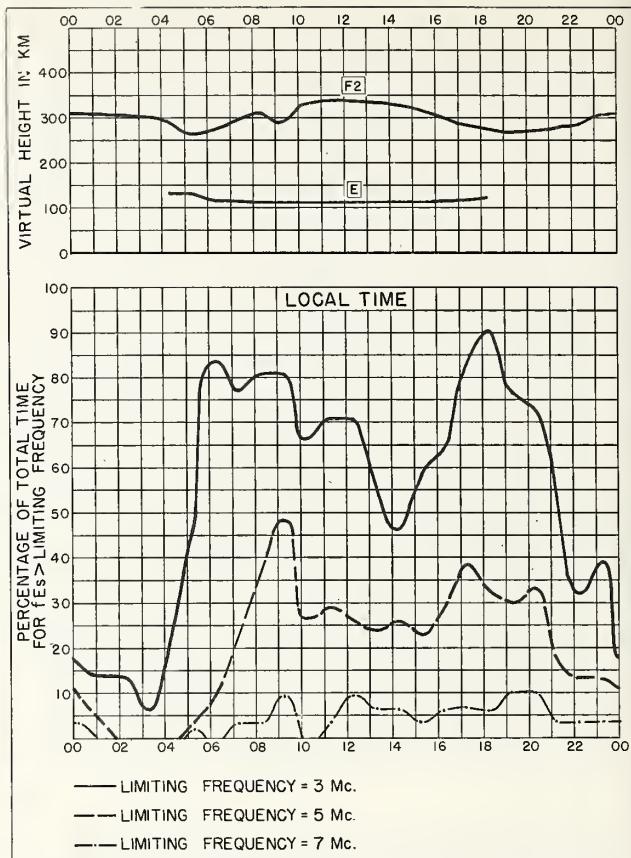


Fig. 109. BUDAPEST, HUNGARY

47.6°N, 19.0°E

MAY 1956

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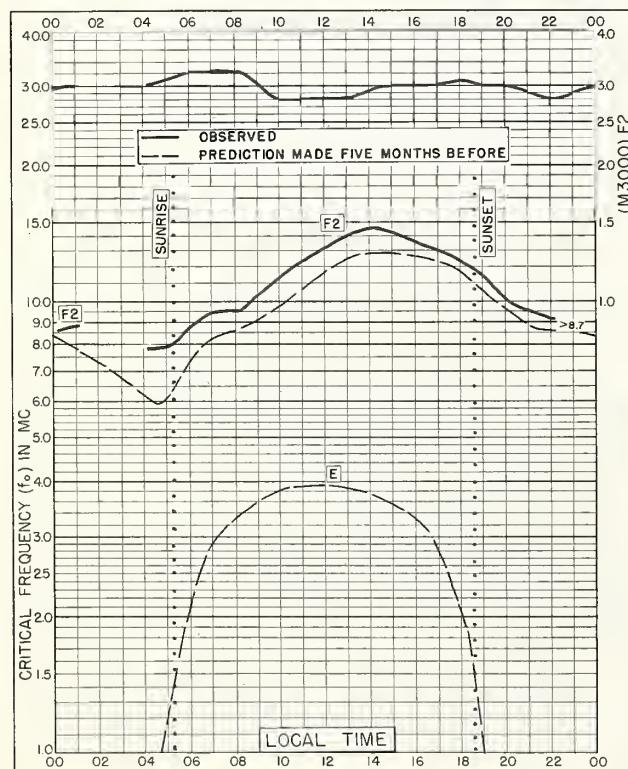
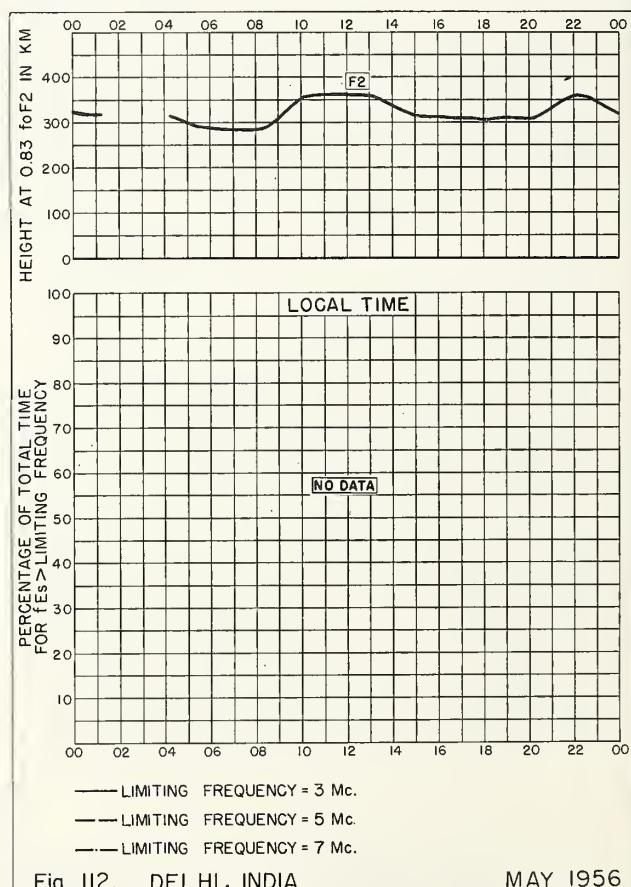


Fig. 111. DELHI, INDIA

28.6°N, 77.1°E

MAY 1956

NBS 503



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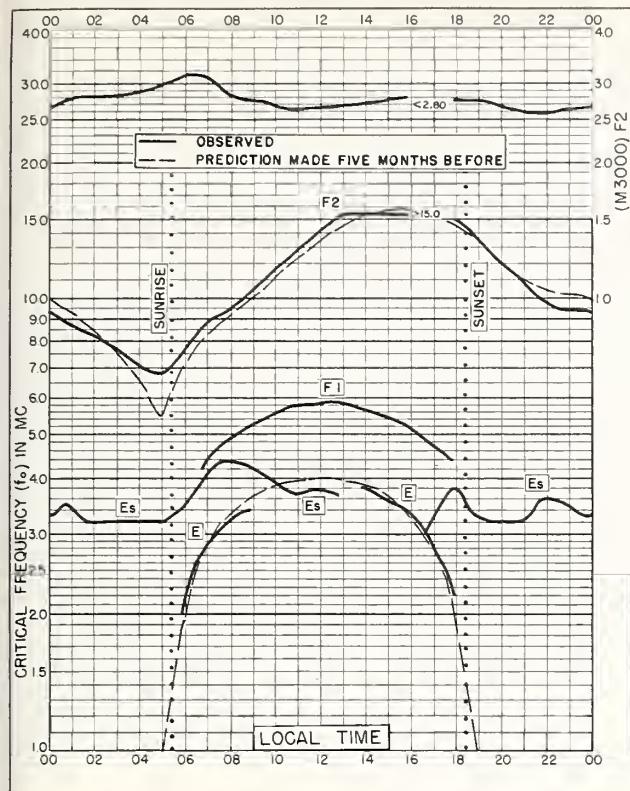


Fig. 113. AHMEDABAD, INDIA  
23.0°N, 72.6°E MAY 1956

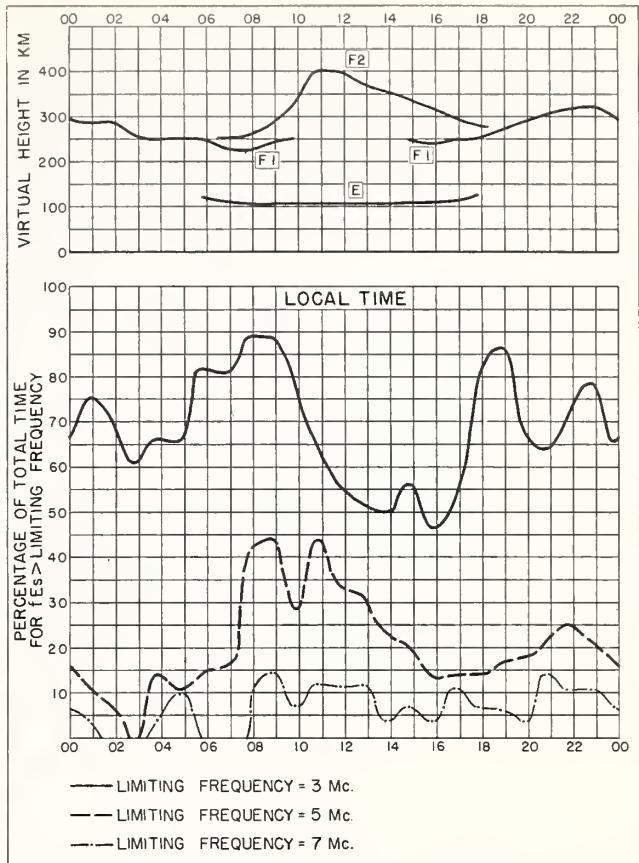


Fig. 114. AHMEDABAD, INDIA MAY 1956

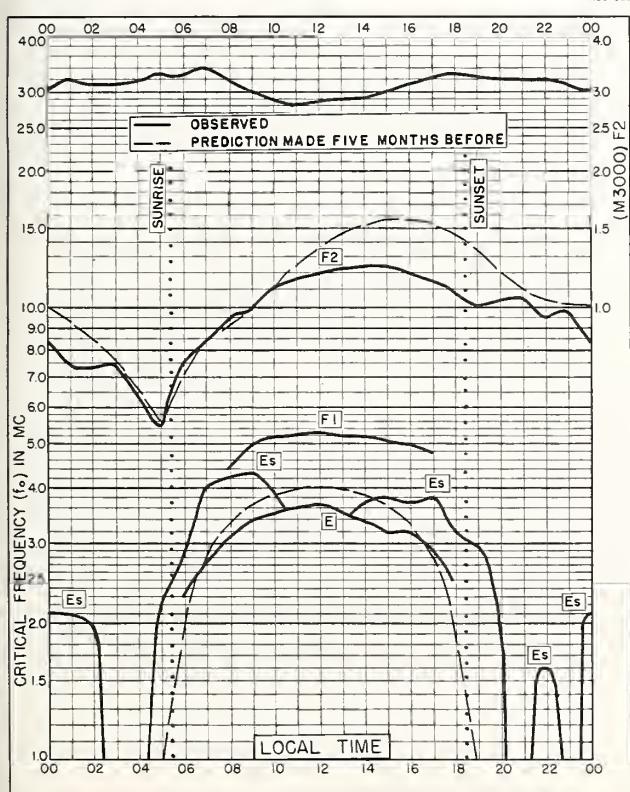


Fig. 115. CALCUTTA, INDIA  
22.9°N, 88.5°E MAY 1956

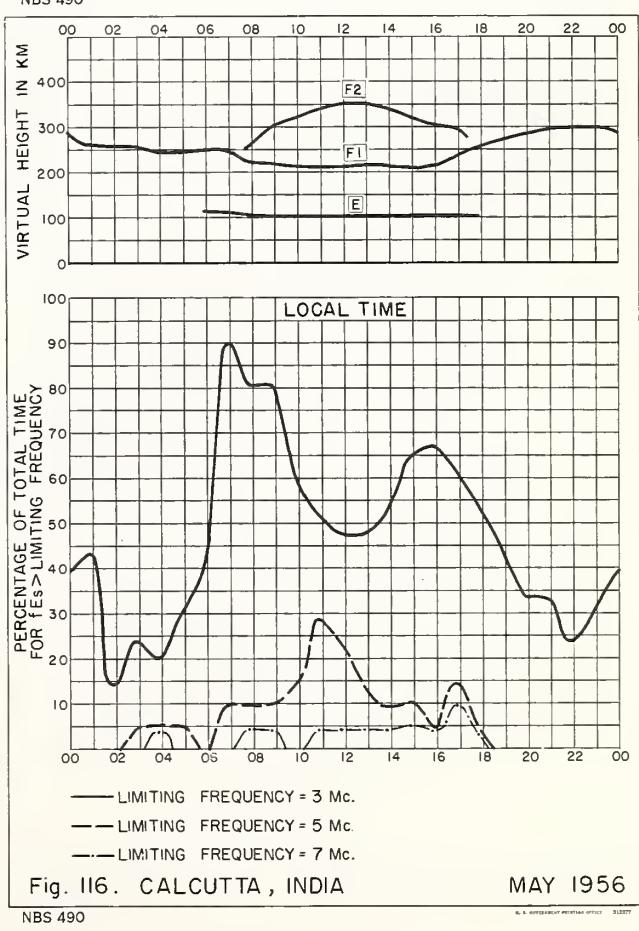
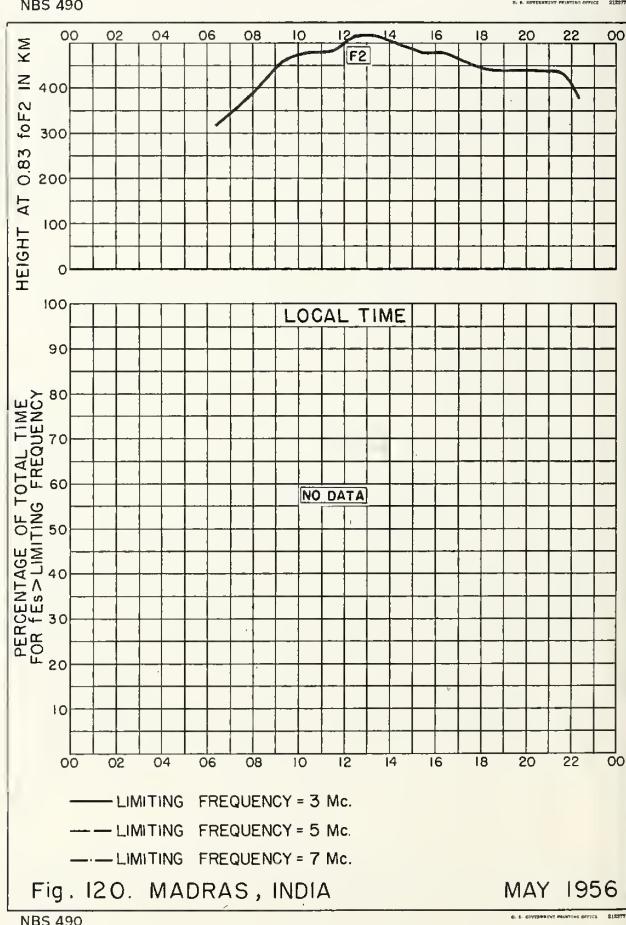
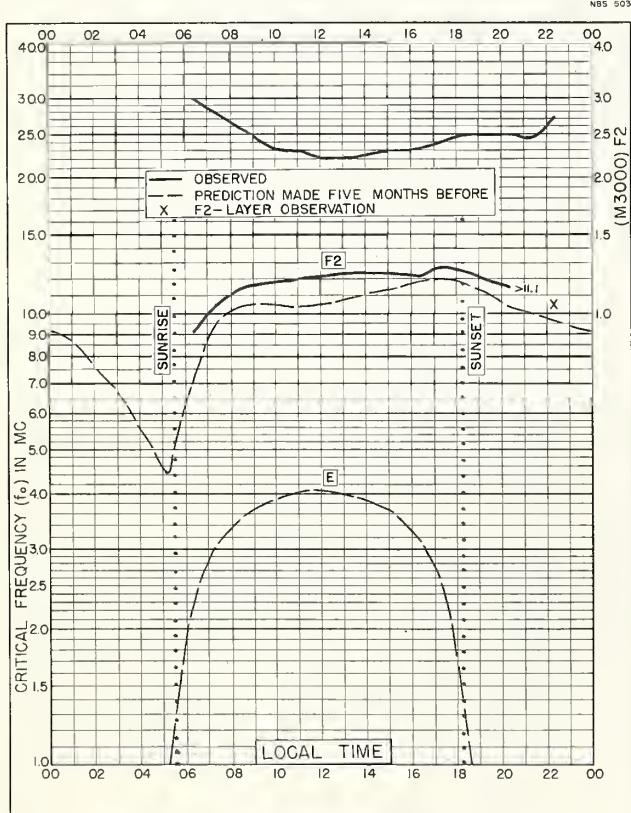
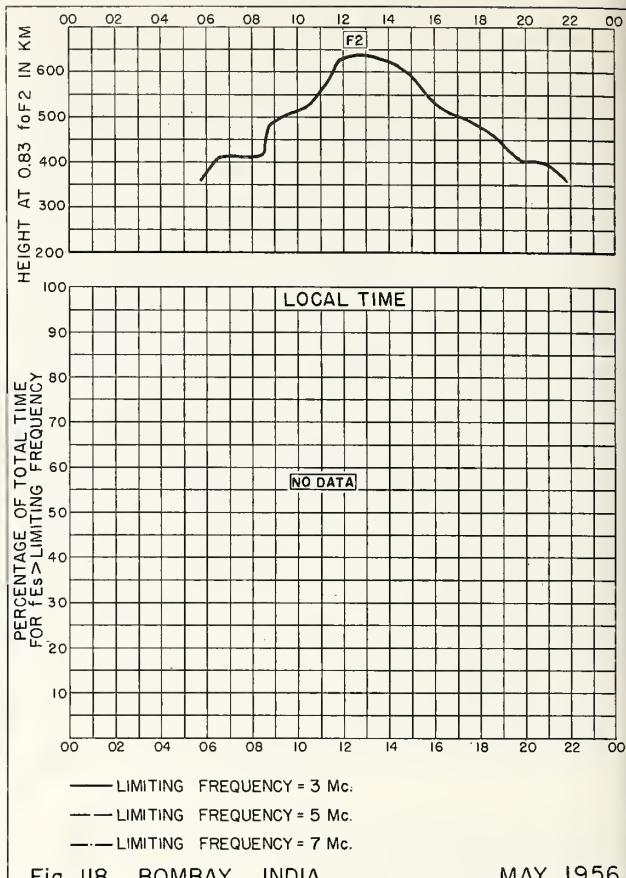
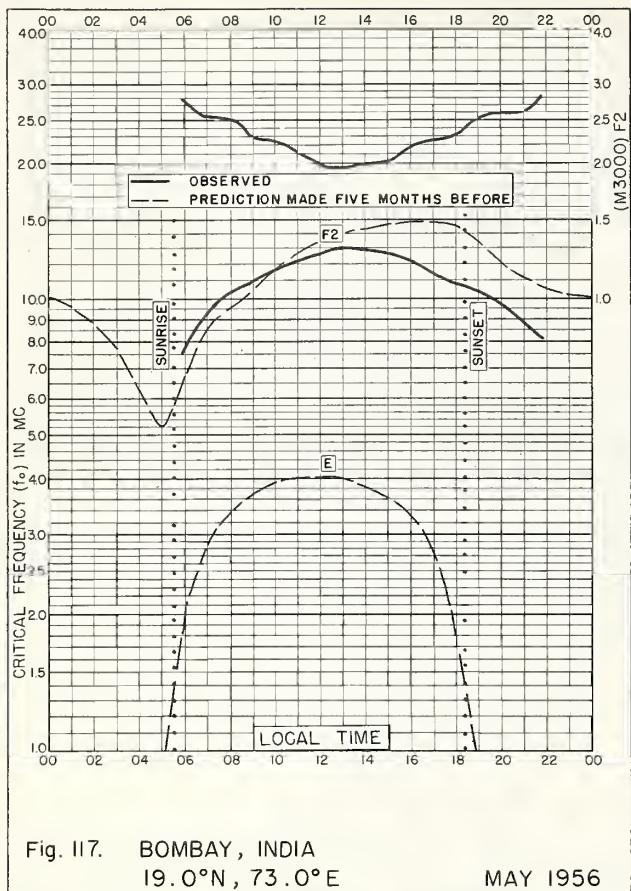


Fig. 116. CALCUTTA, INDIA MAY 1956



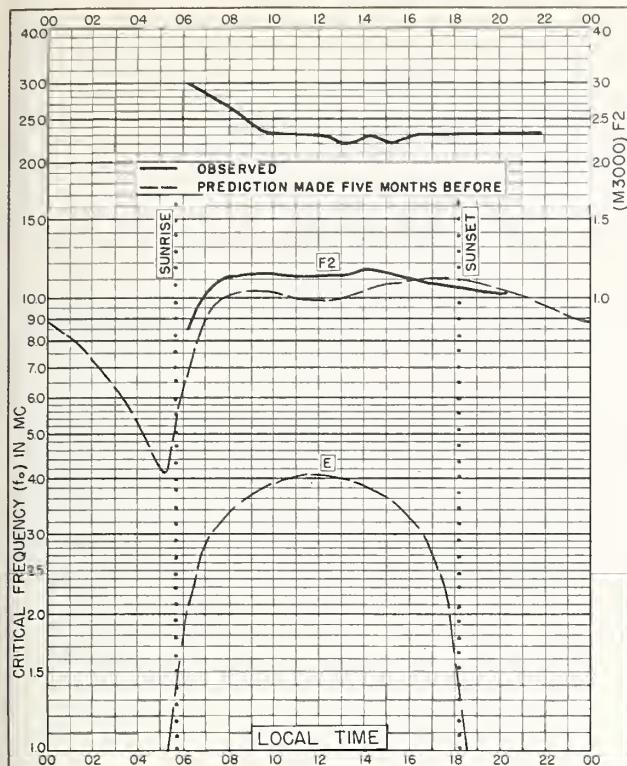


Fig. 121. TIRUCHY, INDIA  
10.8°N, 78.8°E

MAY 1956

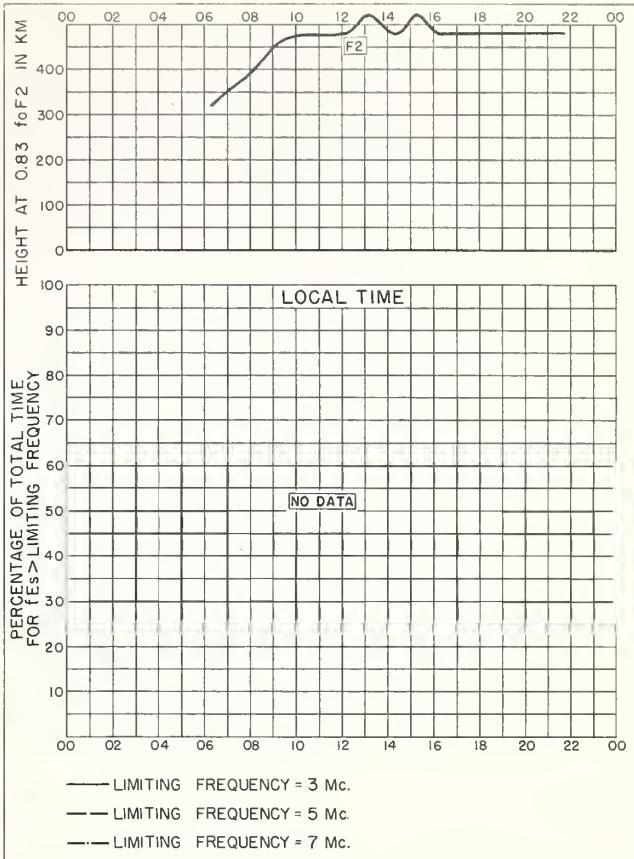


Fig. 122. TIRUCHY, INDIA

MAY 1956

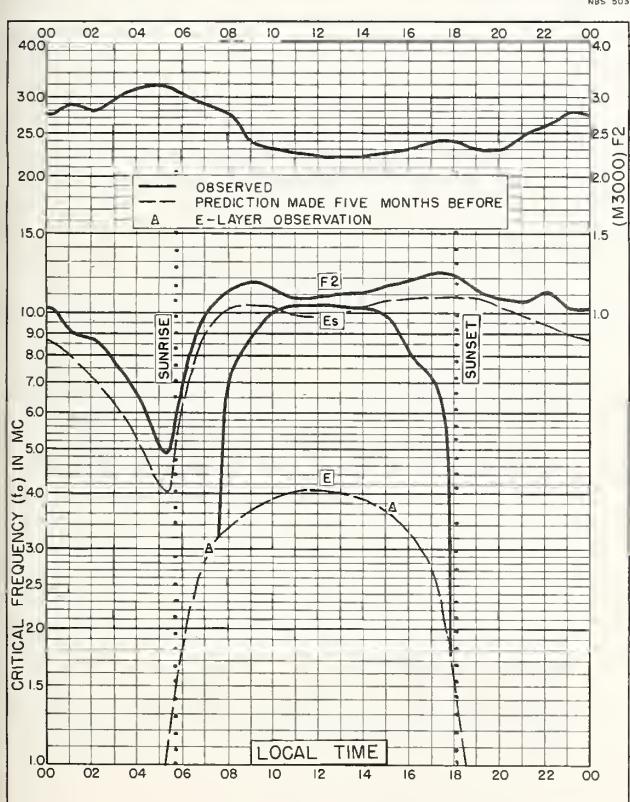


Fig. 123. KODAIKANAL, INDIA  
10.2°N, 77.5°E

MAY 1956

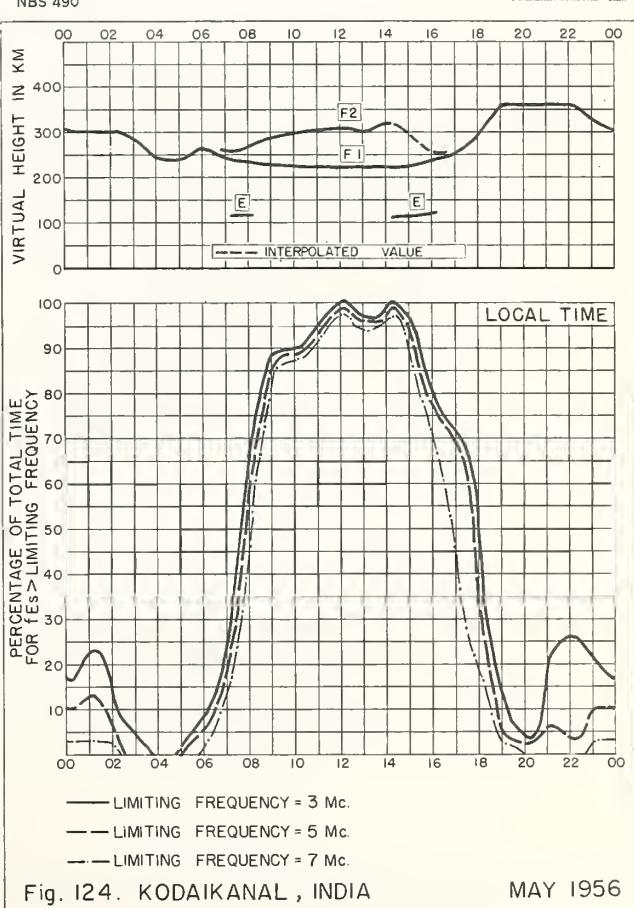


Fig. 124. KODAIKANAL, INDIA

MAY 1956

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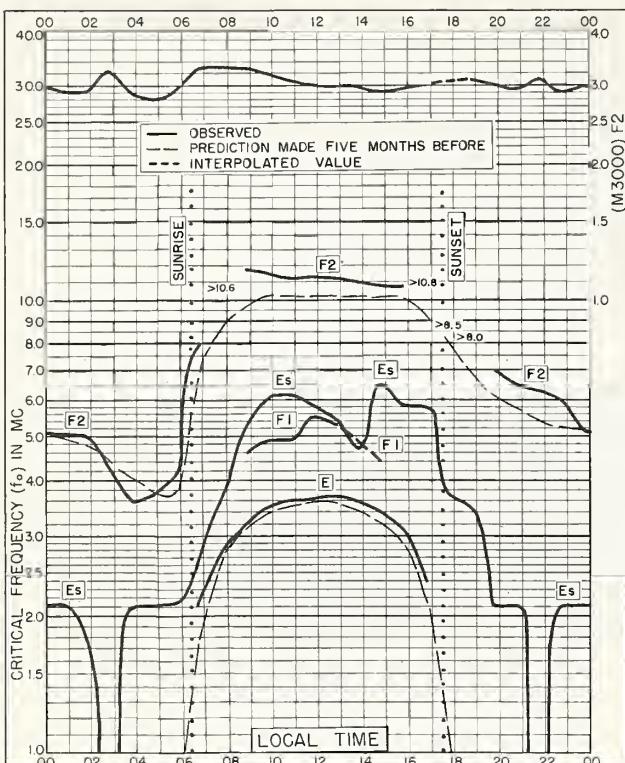


Fig. 125. TOWNSVILLE, AUSTRALIA  
19.3°S, 146.7°E MAY 1956

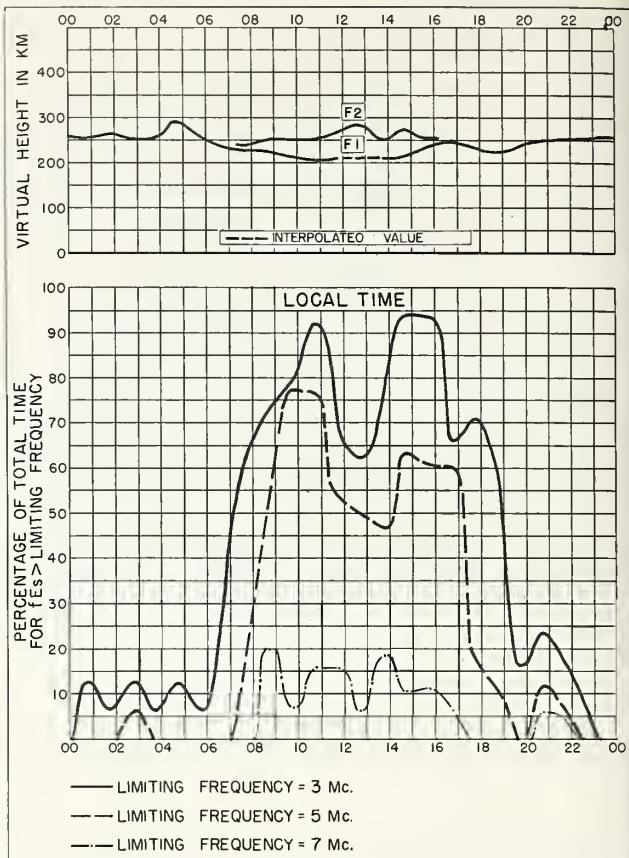


Fig. 126. TOWNSVILLE, AUSTRALIA MAY 1956

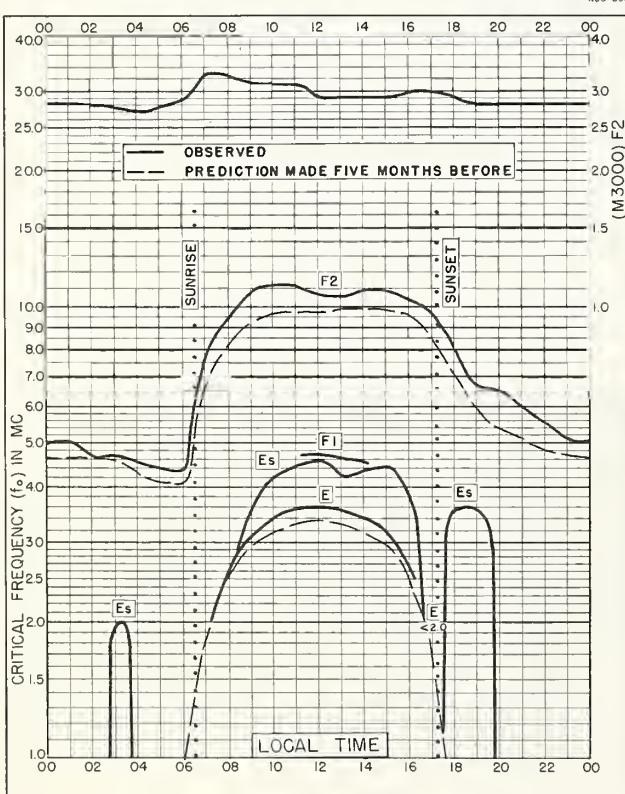


Fig. 127. BRISBANE, AUSTRALIA  
27.5°S, 152.9°E MAY 1956

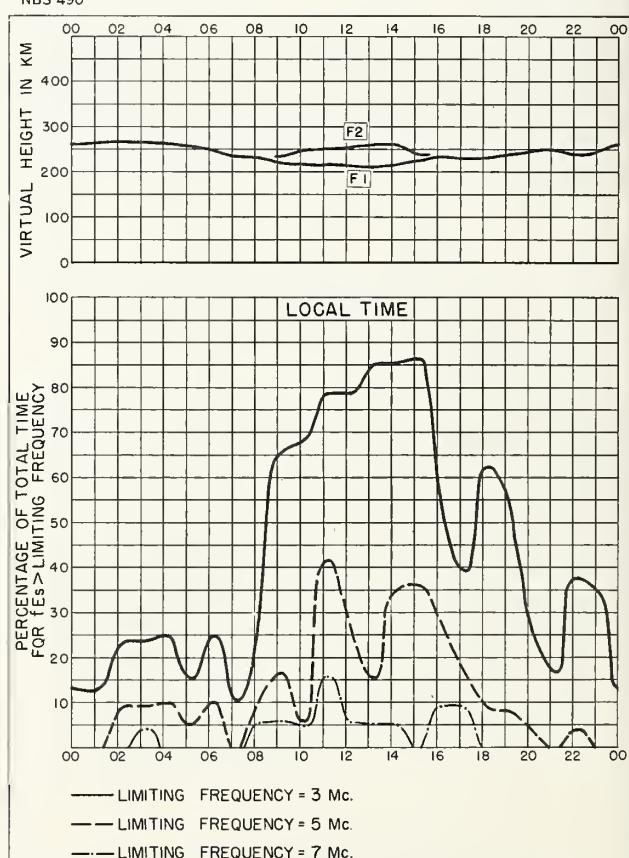


Fig. 128. BRISBANE, AUSTRALIA MAY 1956

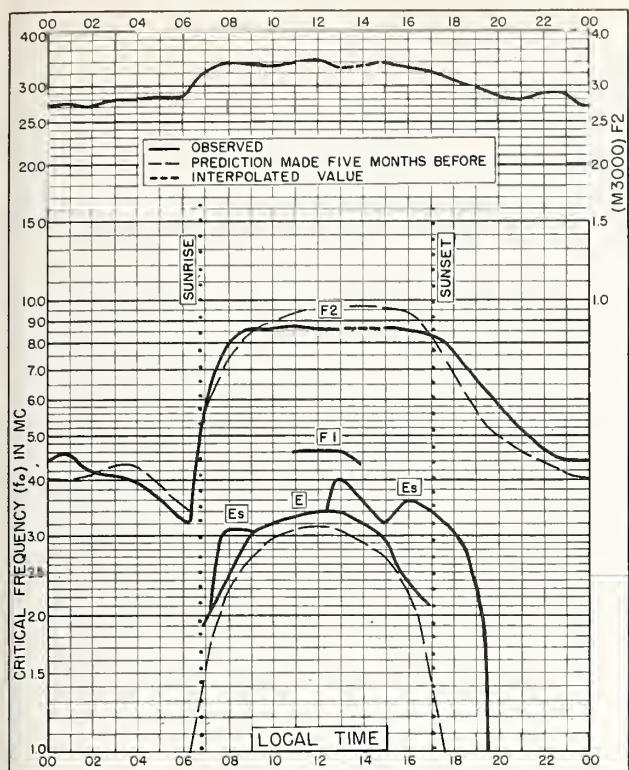


Fig. 129. CANBERRA, AUSTRALIA  
35.3°S, 149.0°E MAY 1956

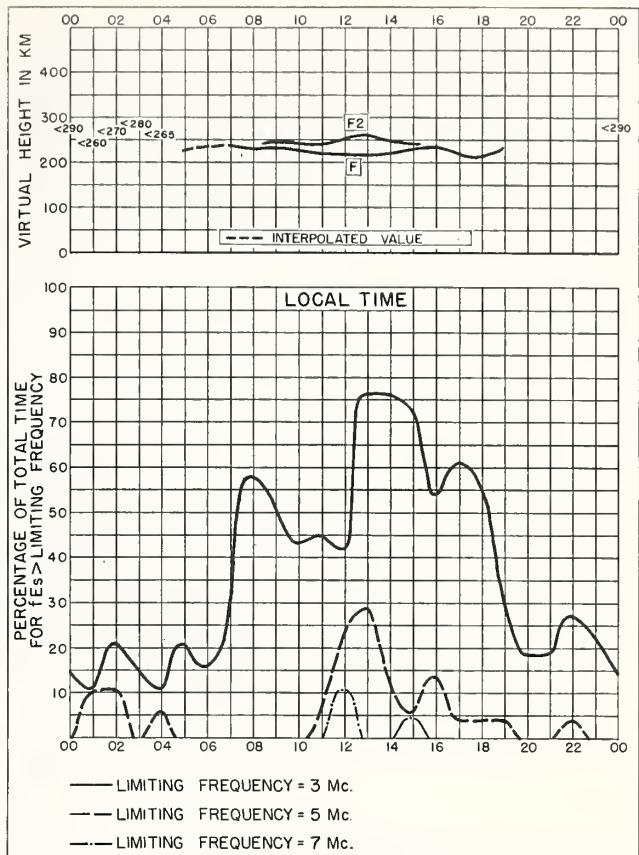


Fig. 130. CANBERRA, AUSTRALIA MAY 1956

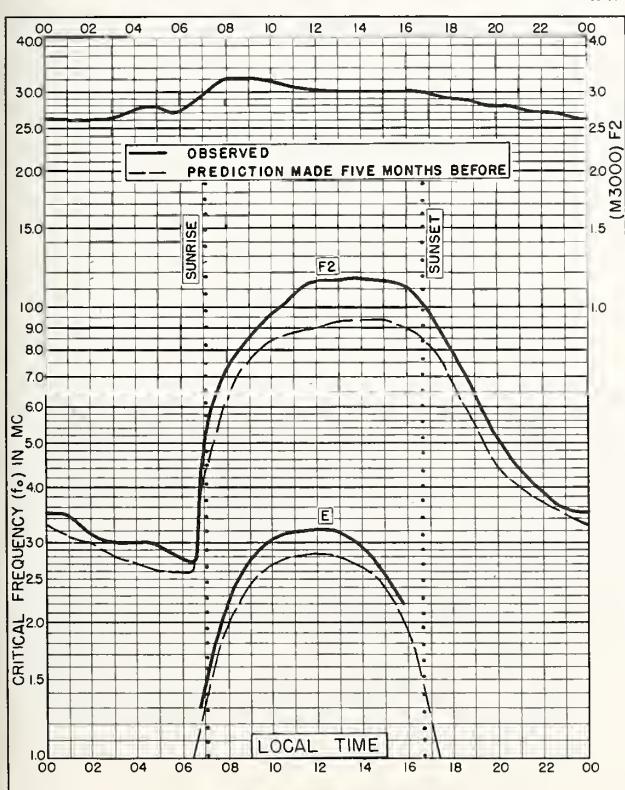


Fig. 131. HOBART, TASMANIA  
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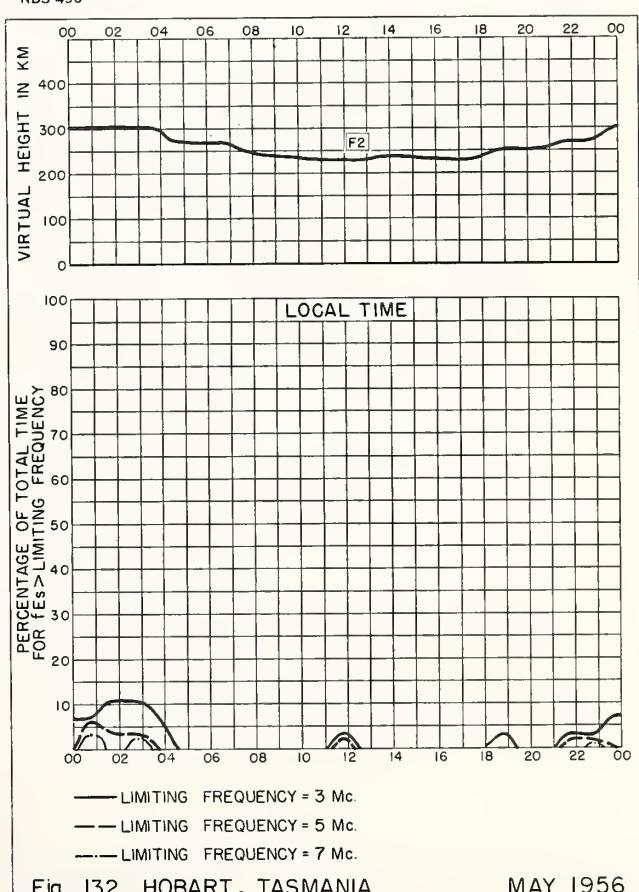


Fig. 132. HOBART, TASMANIA MAY 1956

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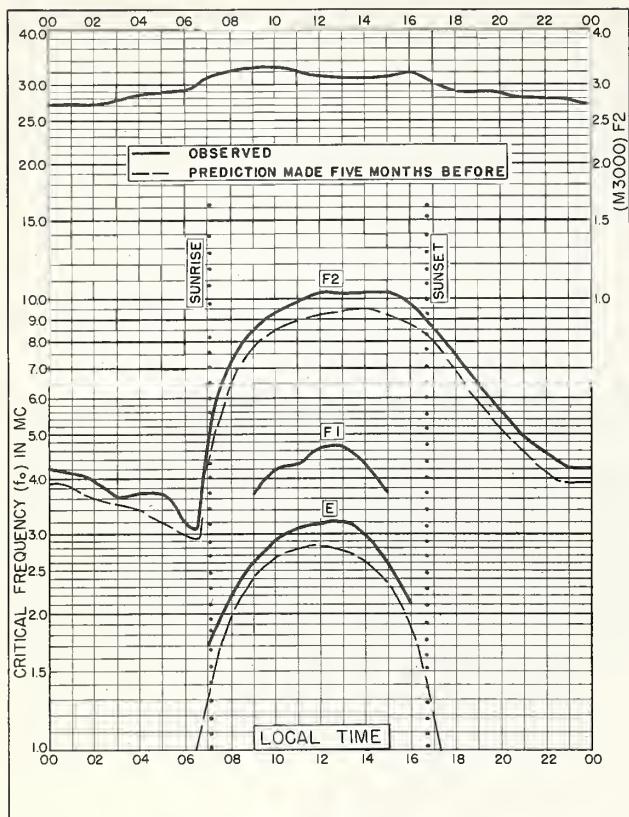


Fig. 133. CHRISTCHURCH, NEW ZEALAND  
43.6°S, 172.8°E MAY 1956

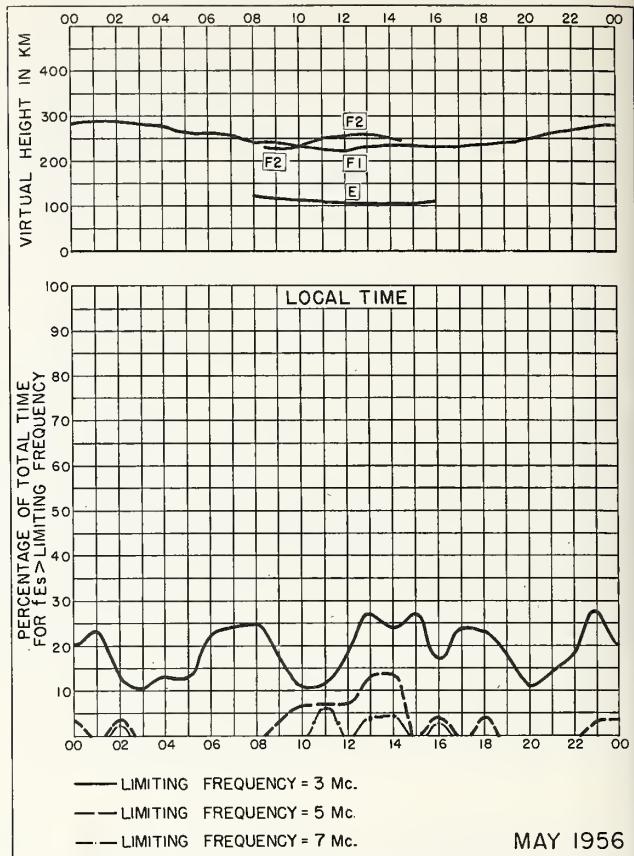


Fig. 134. CHRISTCHURCH, NEW ZEALAND

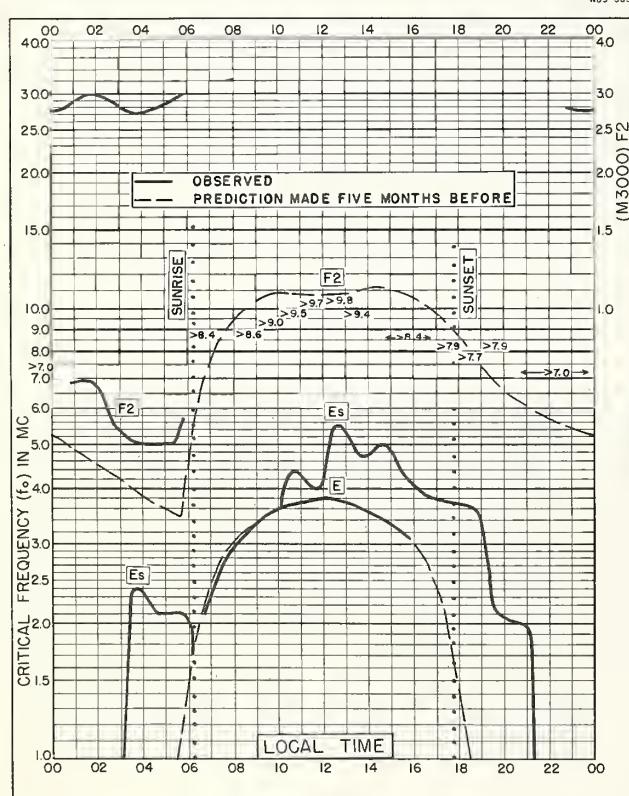


Fig. 135. TOWNSVILLE, AUSTRALIA  
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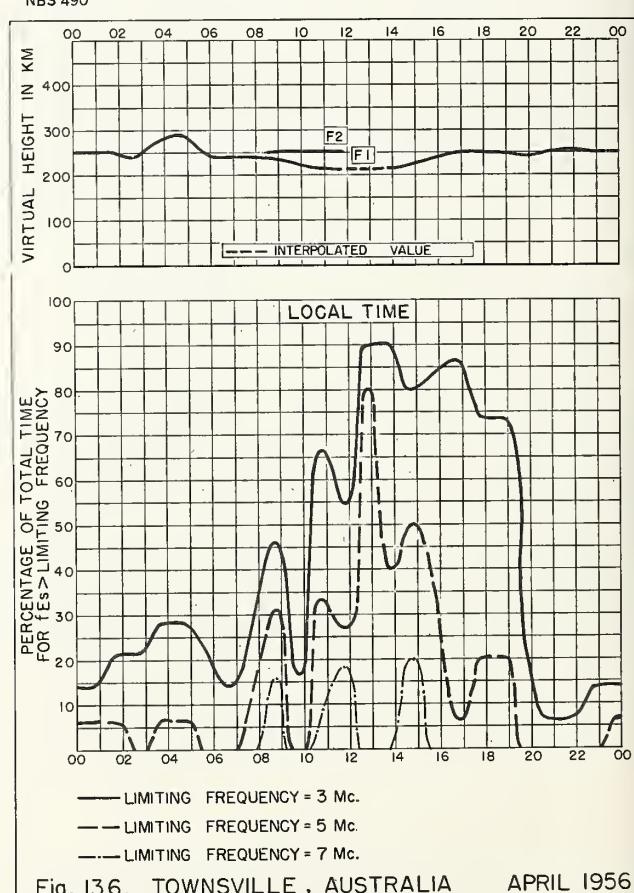


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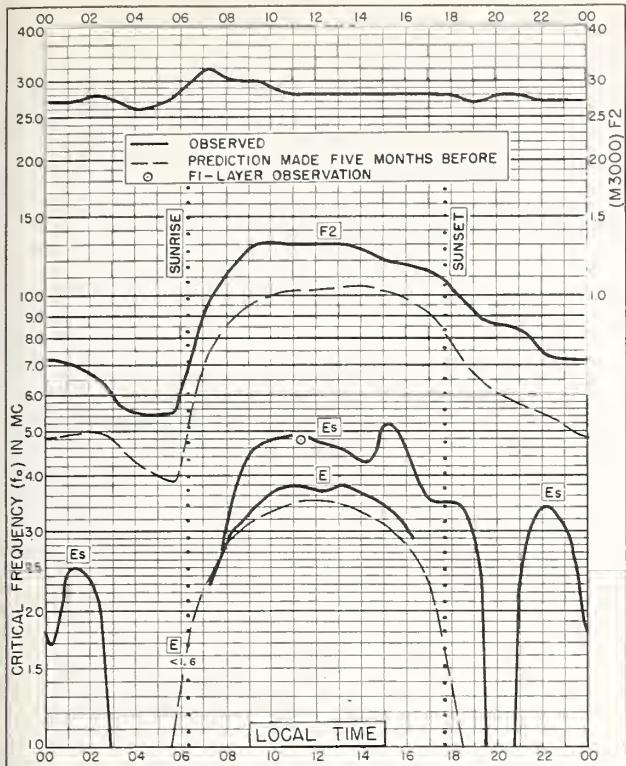


Fig. 137. BRISBANE, AUSTRALIA  
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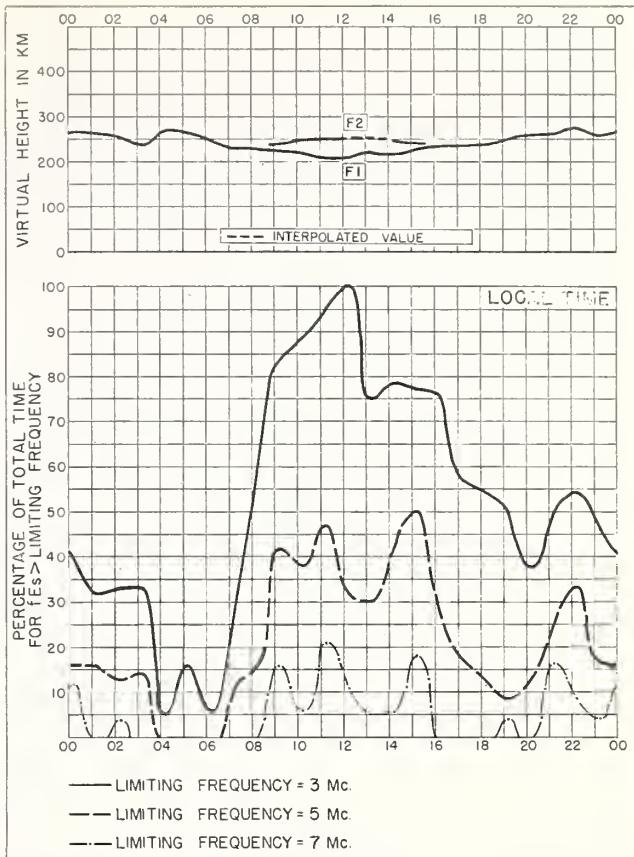


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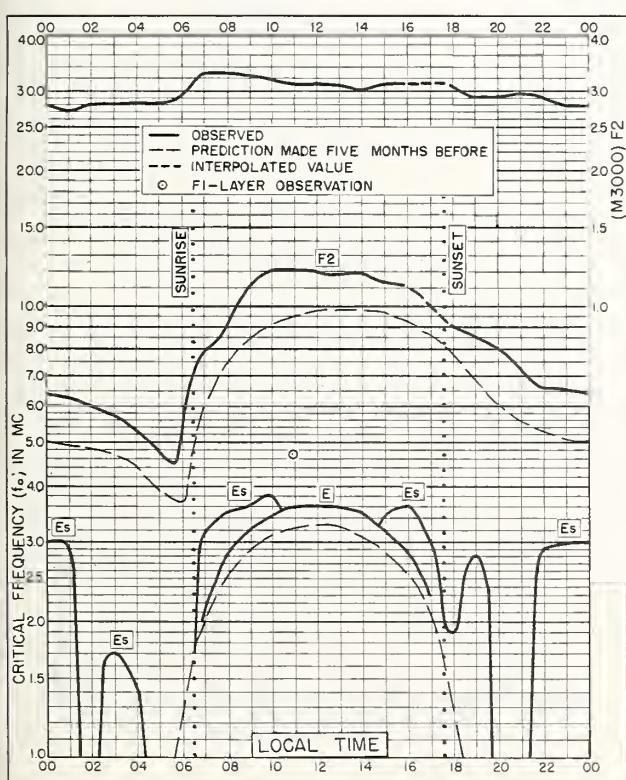


Fig. 139. CANBERRA, AUSTRALIA  
35.3°S, 149.0°E      APRIL 1956

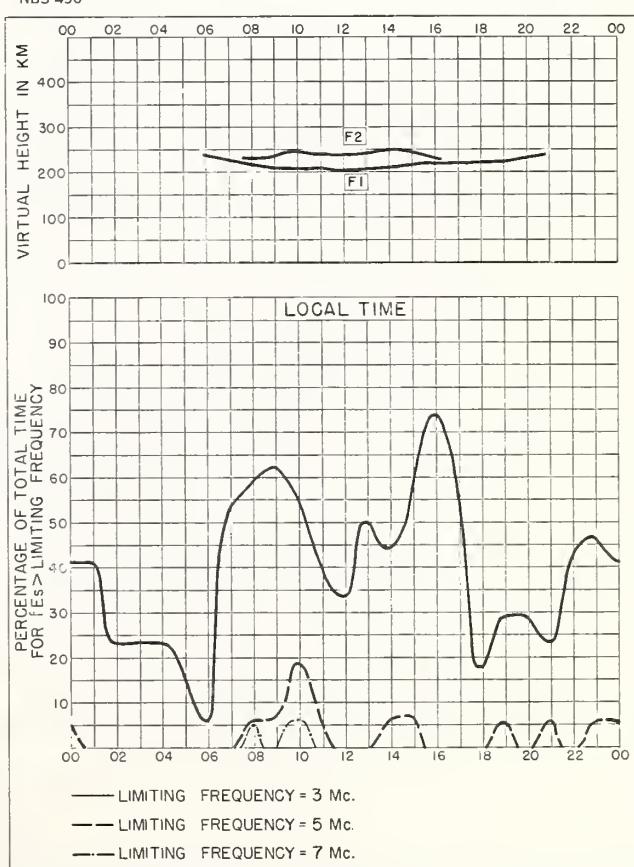
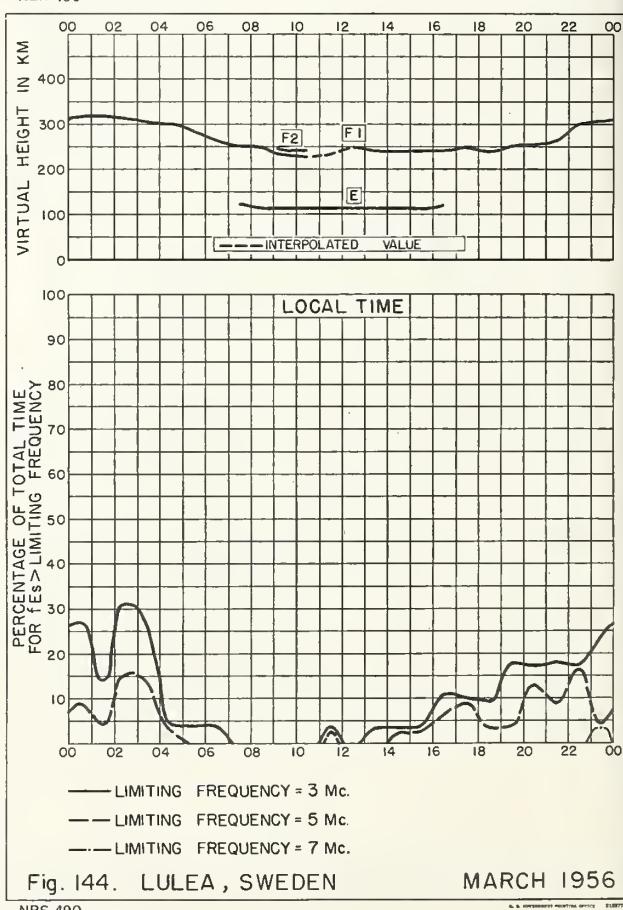
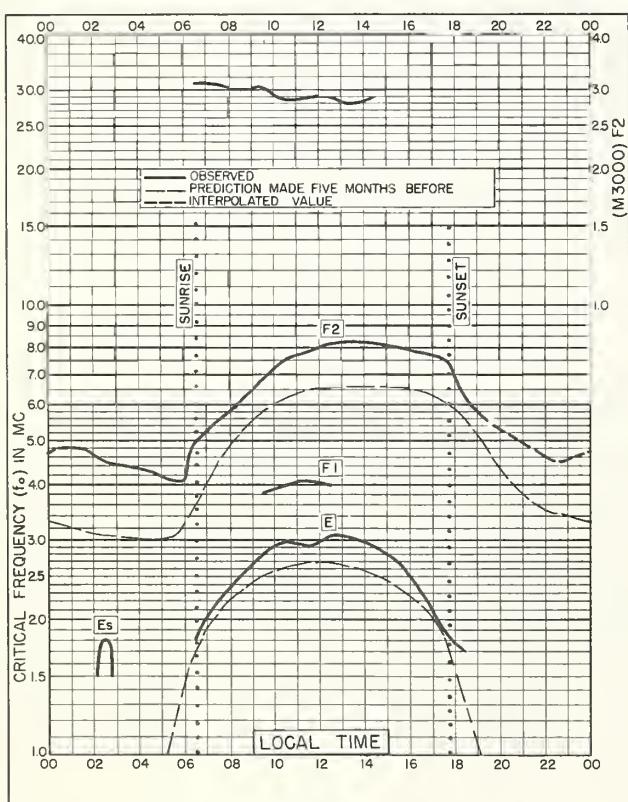
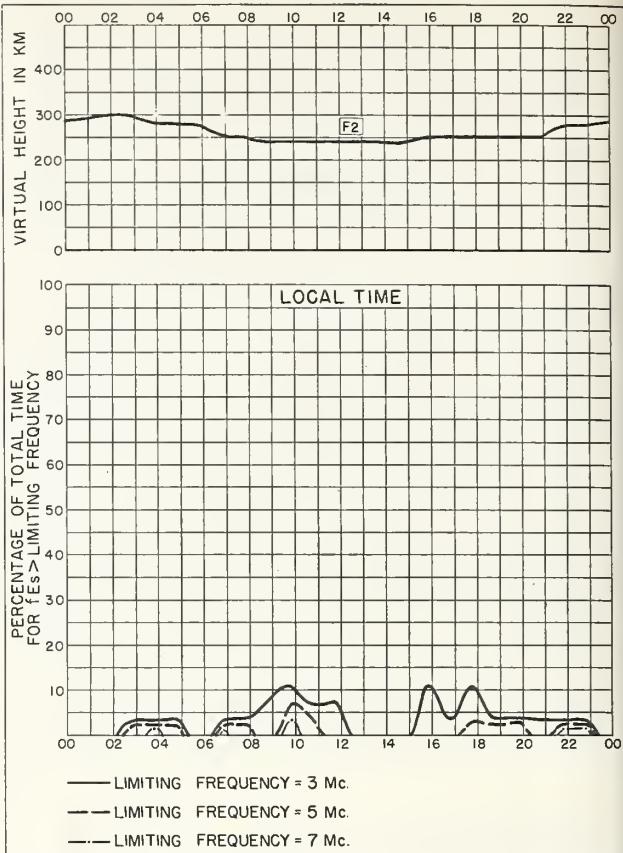
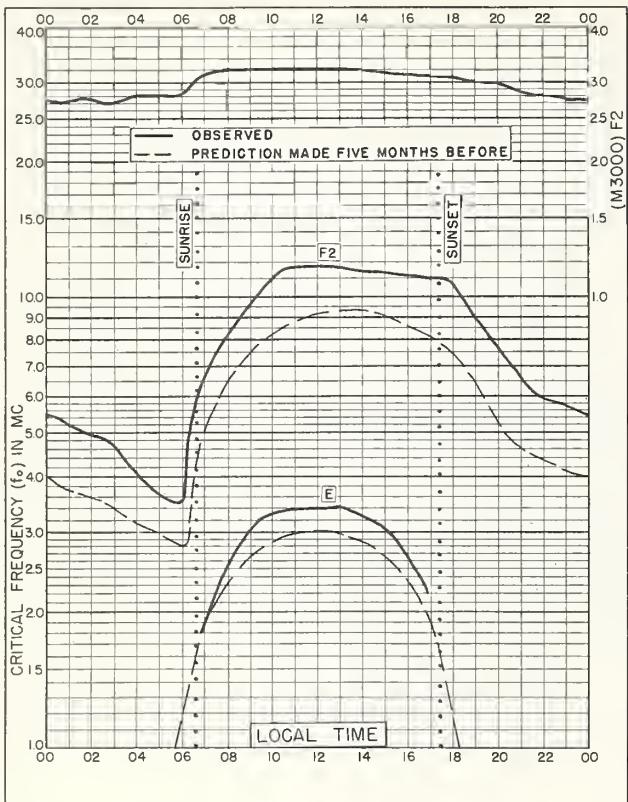


Fig. 140. CANBERRA, AUSTRALIA      APRIL 1956



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[A detailed list of CRPL publications is available from the Central Radio Propagation Laboratory upon request]

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Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

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CRPL—Jp. North Pacific Radio Propagation Forecast (of days most likely to be disturbed during following month).

*Semimonthly:*

CRPL—Ja. Semimonthly Frequency Revision Factors For CRPL Basic Radio Propagation Prediction Reports.

*Monthly:*

CRPL—D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499-, monthly supplements to TM 11-499; Dept. of the Air Force, TO 31-3-28 series). On sale by Superintendent of Documents.\* Members of the Armed Forces should address cognizant military office.

CRPL—F. (Part A). Ionospheric Data.

(Part B). Solar-Geophysical Data.

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NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions. 30 cents.

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