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CRPL-F 224 PART A

FOR OFFICIAL USE

PART A
IONOSPHERIC DATA

ISSUED
APRIL 1963

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

CRPL-F 224
PART A

**NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO**

**Issued
26 April 1963**

IONOSPHERIC DATA

CONTENTS

	<u>Page</u>
Ionospheric Data (revised text)	ii
Table of Smoothed Observed Zurich Sunspot Numbers	iii
World-Wide Sources of Ionospheric Data	iv
Tables of Ionospheric Data	1
Graphs of Ionospheric Data	26
Index of Tables and Graphs of Ionospheric Data in CRPL-F224 (Part A)	51

IONOSPHERIC DATA

The CRPL-F series bulletins are issued as part of the responsibility of the Central Radio Propagation Laboratory for the exchange and distribution of ionospheric and related geophysical data. Part A, "Ionospheric Data," and Part B, "Solar-Geophysical Data," of the CRPL-F series present a variety of data in convenient form for use in research in radio propagation and the ionosphere and in other geophysical problems.

The current form of the tables of ionospheric data provides the monthly medians and, in addition, the number of values entering into the median determination (count) for all ionospheric characteristics listed. Also, when available, the upper and lower quartile values indicated by UQ and LQ in the tables, are listed for foF2, h'F2, h'F, and M(3000)F2. Quartile values are not listed for the other characteristics because of space limitations. The tables are prepared by IBM machine methods.

Beginning with CRPL-F221, Part A, "Ionospheric Data," the hourly median values for the graphs of critical frequencies and M(3000)F2 were plotted by machine methods instead of manually, as in earlier issues. Graphs of critical frequencies and M(3000)F2 will continue to appear. Graphs of percentage of time of occurrence for fEs and virtual heights of the regular ionospheric layers are no longer included. Data on percentage of time of occurrence of fEs above 3, 5, and 7 Mc are available from the CRPL and the IGY World Data Center for Airglow and Ionosphere.

For many years, the tables of ionospheric data appearing in the F series, Part A, listed values of medians recomputed at CRPL. While this practice enforced a certain uniformity, it was subject to some valid criticism for tampering with the original data. The tables and graphs now show the ionospheric data as they are provided by the originating laboratory. Responsibility for the accuracy and reliability of the data rests entirely with the originator.

Medians of data for the U.S. stations are computed in accordance with the recommendations of the World-Wide Soundings Committee. Data will appear in the F series, Part A, only when the complete daily-hourly tabulations have been received by the CRPL or the IGY World Data Center A for Airglow and Ionosphere.

Information on symbols, terminology, and conventions may be found in the "URSI Handbook of Ionogram Interpretation and Reduction, of the World-Wide Soundings Committee," edited by W. R. Piggott and K. Rawer (Elsevier, 1961), which supersedes previous documents. A list of symbols is available from CRPL on request.

The following table contains the latest available information on smoothed observed Zurich sunspot numbers, beginning with the minimum of April 1954. Final numbers are listed through June 1961, the succeeding values being based on provisional data.

Smoothed Observed Zurich Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	146	150	151	156	160	164
1957	170	172	174	181	186	188	191	194	197	200	201	200
1958	199	201	201	197	191	187	185	185	184	182	181	180
1959	179	177	174	169	165	161	156	151	146	141	137	132
1960	129	125	122	120	117	114	109	102	98	93	88	84
1961	80	75	69	64	60	56	53	52	52	51	50	48
1962	44	41	39	38	38	37	36	34	32			

Units of Ionospheric Data Tables

foF2, foEs - - - Tenth of a megacycle
 foF1, FoE - - - Hundredths of a megacycle
 h'F2, h'F, h'E- Kilometers
 (M3000)F2 - - - Hundredths

NOTE: Occasionally, when the median falls between two of the observed values, the median is carried an extra decimal place beyond these units. Those cases are easily identifiable by the extra digit appearing to the right of the number, in a column usually left blank.

MED - Median
 CNT - Count
 UQ - Upper Quartile
 LQ - Lower Quartile

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

THE IONOSPHERIC DATA GIVEN IN TABLES 1 TO 100 AND FIGURES 1 TO 100 WERE ASSEMBLED BY THE CENTRAL RADIO PROPAGATION LABORATORY FOR ANALYSIS, CORRELATION AND DISTRIBUTION. THE FOLLOWING ARE THE SOURCES OF THE DATA IN THIS ISSUE:

REPUBLICA ARGENTINA, MINISTERIO DE MARINA.
BUENOS AIRES, ARGENTINA

COMMONWEALTH OF AUSTRALIA, DEPARTMENT OF THE INTERIOR.
COCOS IS.

COMMONWEALTH OF AUSTRALIA, IONOSPHERIC PREDICTION SERVICE OF
THE COMMONWEALTH OBSERVATORY.
CANBERRA, AUSTRALIA
MAWSON, ANTARCTICA
TOWNSVILLE, AUSTRALIA
WILKES STATION, ANTARCTICA

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MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.
MUNDARING, WESTERN AUSTRALIA
PORT MORESBY, PAPUA

BELGIAN ROYAL METEOROLOGICAL INSTITUTE.
DOURBES, BELGIUM

ELECTRONICS DIRECTORATE OF THE BRAZILIAN NAVY.
NATAL, BRAZIL

ESCOLA POLITECNICA, UNIVERSITY OF SAO PAULO.
SAO PAULO, BRAZIL

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RADIO WAVE RESEARCH LABORATORIES, NATIONAL TAIWAN UNIVERSITY,
TAIPEH, FORMOSA, CHINA.
FORMOSA, CHINA

CENTRAL AFRICAN INSTITUTE FOR SCIENTIFIC RESEARCH.
LWIRO, CONGO

METEOROLOGICAL SERVICE OF CONGO.
BUNIA, CONGO
ELIZABETHVILLE, CONGO
LEOPOLDVILLE, CONGO

CZECHOSLOVAK ACADEMY OF SCIENCES.
PRUHONICE, CZECHOSLOVAKIA

DANISH NATIONAL COMMITTEE OF URSI.
GODHAVN, GREENLAND
NARSSARSSUAQ, GREENLAND

IONOSPHERIC RESEARCH GROUP (GRI), FRANCE.
DAKAR, SENEGAL
DJIBOUTI, FRENCH SOMALILAND
TAHITI, SOCIETY IS.
TANANARIVE, MALAGASY REPUBLIC

HEINRICH HERTZ INSTITUTE, GERMAN ACADEMY OF SCIENCES,
BERLIN, GERMANY.
JULIUSRUH/RUGEN, GERMANY

INSTITUTE FOR IONOSPHERIC RESEARCH, LINDAU UBER NORTHEIM,
HANNOVER, GERMANY.
LINDAU/HARZ, GERMANY
TSUMEB, SOUTH WEST AFRICA

IONOSPHERE INSTITUTE, NATIONAL OBSERVATORY OF ATHENS.
ATHENS (SCARAMANGA), GREECE

INDIAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH,
RADIO RESEARCH COMMITTEE, NEW DELHI, INDIA.
AHMEDABAD, INDIA (PHYSICAL RESEARCH LABORATORY)
BOMBAY, INDIA (ALL INDIA RADIO)
CALCUTTA, INDIA (INSTITUTE OF RADIO PHYSICS AND ELECTRONICS)
DELHI, INDIA (ALL INDIA RADIO)
KODAIKANAL, INDIA (INDIA METEOROLOGICAL DEPARTMENT)
MADRAS, INDIA (ALL INDIA RADIO)
TIRUCHY, INDIA (ALL INDIA RADIO)
TRIVANDRUM, INDIA (ALL INDIA RADIO)

GEOPHYSICAL AND GEODETIC INSTITUTE, GENOA, ITALY.
GENOA (MONTE CAPELLINO), ITALY

THE ROYAL NETHERLANDS METEOROLOGICAL INSTITUTE.
PARAMARIBO, SURINAM

MANILA OBSERVATORY, PHILIPPINES.
BAGUIO, LUZON

INSTITUTE OF TELECOMMUNICATION, WARSAW, POLAND.
WARSAW, POLAND

UNITED STATES ARMY SIGNAL CORPS., UNITED STATES OF AMERICA.
FT. MONMOUTH, NEW JERSEY
GRAND BAHAMA I.
OKINAWA I.
THULE, GREENLAND

NATIONAL BUREAU OF STANDARDS, UNITED STATES OF AMERICA.
(CENTRAL RADIO PROPAGATION LABORATORY).

ANCHORAGE, ALASKA

HUANCAYO, PERU (INSTITUTO GEOFISICO DEL PERU)

POLE STATION, ANTARCTICA

WASHINGTON, D.C.

TABLE 6

TIME: 1500* SEC. 15*											
HOUR	00	01	02	03	04	05	06	07	08	09	10
16 F2	MED	14	14	14	14	14	14	14	14	14	14
	CNT	5	5	5	5	5	5	5	5	5	5
	UQ	5	5	5	5	5	5	5	5	5	5
	LQ	5	5	5	5	5	5	5	5	5	5
16 F2	MED										
	CNT										
	UQ										
	LQ										
16 F	MED										
	CNT										
	UQ										
	LQ										
16 F2	MED										
	CNT										
	UQ										
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16 F2	MED										
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TABLE 9

THULE • GREENLAND												TIME: 754.0W														
HOUR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
fo F2	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CNT	U	16	16	13	16	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
U	26	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	
U	19	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
U	41	42	46	46	43	43	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
U	29	34	26	24	28	32	34	32	34	32	34	32	34	32	34	32	34	32	34	32	34	32	34	32	34	
U	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
U	285	290	280	295	300	295	300	295	300	295	300	295	300	295	300	295	300	295	300	295	300	295	300	295	300	
h' F2	MED																									
CNT																										
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SEP 10 M. TO 25.0 MC IN 15 SECONDS.

EEBP 1.0 MCG TO 25.0 MC IN 30 SECONDS

ABLE 25

TABLE 26

1.00 MC TO 20.0 MC IN 30 SECONDS.

JANUARY 1961

RCH, 1961

JANUARY 1961

JANUARY 1961

TABLE 3

P 1.0 MC TO 25.0 MC IN 15 SECONDS.

TABLE 34

OCTOBER • 1960

TABLE 34

SEPTEMBER, 196

35

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1

1

1

TABLE 38

1.0 MC 10 20+0 MC 1M 1A 55 COND.

EP 1.0 MC 10 25.0 MC 15 SECONDS.

AUSTRALIA

SWEEP 1.0 MC 10 20.0 MC 1M 15 SECONDS.

July 1981

TABLE 4C

TABLE 41

TIME 15.05

TABLE C

KEEP 0.5 MC TO 2000 MC IN 25 SECONDS.

July • 1990

TABLE I
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TABLE 4

SLEEP 1+0 MC TO 16+0 MC IN 4 MINUTES.

JULY 4 1960

TABLE 44

JULY 4 1960

1960 *

TABLE 48

JULY • 1960

TABLE 47

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TABLE I

TABLE 50

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MEETINGS

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TABLE 57

TABLE 58

ANSWER 104. We do 2540 miles in 7 seconds.

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TABLE 58

SWEEP 1.0 MC TIME-DIVISION MODE

TIME 100 9

TABLE 6

63

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MEERB 1.0 MC 10 25.0 SECNDZ

JUNE • 196

23

TABLE 65

HOUR	JULIAN + SENSITIVE												JULIAN + PSSY + 144000												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
16 F2	MED CNT LQ	159 15 15	160 21 21	161 12 12	162 17 17	163 13 13	164 12 12	165 11 11	166 10 10	167 9 9	168 8 8	169 7 7	170 6 6	171 5 5	172 4 4	173 3 3	174 2 2	175 1 1	176 0 0	177 1 1	178 1 1	179 1 1	180 1 1	181 1 1	182 1 1
17 F2	MED CNT LQ	160 14 14	161 31 31	162 31 31	163 31 31	164 31 31	165 31 31	166 31 31	167 31 31	168 31 31	169 31 31	170 31 31	171 31 31	172 31 31	173 31 31	174 31 31	175 31 31	176 31 31	177 31 31	178 31 31	179 31 31	180 31 31	181 31 31	182 31 31	183 31 31
18 F	MED CNT LQ	161 13 13	162 31 31	163 31 31	164 31 31	165 31 31	166 31 31	167 31 31	168 31 31	169 31 31	170 31 31	171 31 31	172 31 31	173 31 31	174 31 31	175 31 31	176 31 31	177 31 31	178 31 31	179 31 31	180 31 31	181 31 31	182 31 31	183 31 31	184 31 31
19 F2	MED CNT LQ	162 12 12	163 31 31	164 31 31	165 31 31	166 31 31	167 31 31	168 31 31	169 31 31	170 31 31	171 31 31	172 31 31	173 31 31	174 31 31	175 31 31	176 31 31	177 31 31	178 31 31	179 31 31	180 31 31	181 31 31	182 31 31	183 31 31	184 31 31	185 31 31
20 M3000)F2	MED CNT LQ	163 11 11	164 31 31	165 31 31	166 31 31	167 31 31	168 31 31	169 31 31	170 31 31	171 31 31	172 31 31	173 31 31	174 31 31	175 31 31	176 31 31	177 31 31	178 31 31	179 31 31	180 31 31	181 31 31	182 31 31	183 31 31	184 31 31	185 31 31	186 31 31
21 F1	MED CNT	164 10	165 31	166 31	167 31	168 31	169 31	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	
22 F6	MED CNT	165 9	166 31	167 31	168 31	169 31	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	
23 F6	MED CNT	166 8	167 31	168 31	169 31	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	
24 F6	MED CNT	167 7	168 31	169 31	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	
25 F6	MED CNT	168 6	169 31	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	
26 F6	MED CNT	169 5	170 31	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	
27 F6	MED CNT	170 4	171 31	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	192 31	
28 F6	MED CNT	171 3	172 31	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	192 31	193 31	
29 F6	MED CNT	172 2	173 31	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	192 31	193 31	194 31	
30 F6	MED CNT	173 1	174 31	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	192 31	193 31	194 31	195 31	
31 F6	MED CNT	174 0	175 31	176 31	177 31	178 31	179 31	180 31	181 31	182 31	183 31	184 31	185 31	186 31	187 31	188 31	189 31	190 31	191 31	192 31	193 31	194 31	195 31	196 31	

TA01.E 66

MARCH 1960

MECEP 1-2 MC TO 170 MC IN 1 MINUTE.

GENOVA (MONTE CAPELLINO) - TAL 1445 N.

WEEP 1.4 MC TO 20.0 MC IN 40 SECONDS.

NOVEMBER, 1959

TIME 1500 DE

DECEMBER • 1999

TABLE 7

TABLE 73

TABLE 74

CEP 144 MC TO 200 MC IN 40 SECONDS.

SWEET 160 MC TO 160 MC IN 4 MINUTES.

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100

TABLE 81
PARAMARIBO, SURINAM

TIME: 120*0H												TIME: 0+0H														
15+0N, 55+4W												148+4N, 123+4W														
VICTORIA, CANADA												VICTORIA, CANADA														
HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
fo F2	MED	160	162	158	153	149	146	144	141	139	132	130	126	120	116	112	106	100	96	94	90	87	83	79	75	
CNT	UD	170	170	158	155	153	150	148	146	144	139	137	135	133	130	128	125	122	119	117	114	111	108	105	102	
LD	UD	151	148	148	139	135	132	130	128	126	121	119	116	113	110	108	105	102	100	98	95	92	89	86	83	
h' F2	MED	145	148	148	148	145	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110	108	106	
CH	UD																									
LD	UD																									
h' F	MED	300	280	250	250	240	230	210	200	200	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	
CNT	UD	311	301	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	
LD	UD																									
M13000F2	MED	210	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
CNT	UD	211	19	216	215	205	208	201	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	
fo F1	MED																									
CNT																										
fo E	MED																									
h' E	MED																									
fo Es	MED																									

SWEEP 1+0 MC TO 20+0 MC IN 40 SECONDS.

SEPTEMBER 1958

TABLE 82
PARAMARIBO, SURINAM

TIME: 0+0H												TIME: 0+0H														
150+0N, 14+5E												148+4N, 123+4W														
PRAGUE, CZECHOSLOVAKIA												PRAGUE, CZECHOSLOVAKIA														
HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
fo F2	MED	69	65	65	65	70	76	73	83	80	83	81	80	83	80	78	80	78	75	74	72	70	68	66	64	
CNT	UD	25	26	25	26	26	26	25	22	18	18	18	22	23	25	21	25	22	26	24	22	21	20	20	20	
LD	UD																									
h' F2	MED	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	
CH	UD																									
LD	UD																									
h' F	MED	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	
CNT	UD	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
LD	UD																									
fo F1	MED																									
CNT																										
fo E	MED																									
h' E	MED																									
fo Es	MED																									

SWEEP 1+0 MC TO 20+0 MC IN 40 SECONDS.

SEPTEMBER 1958

TIME: 0+0H												TIME: 0+0H														
148+4N, 123+4W												148+4N, 123+4W														
PRAGUE, CZECHOSLOVAKIA												PRAGUE, CZECHOSLOVAKIA														
HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
fo F2	MED	69	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
CNT	UD	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	
LD	UD																									
h' F2	MED	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	
CH	UD																									
LD	UD																									
h' F	MED	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	
CNT	UD	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	
LD	UD																									
fo F1	MED																									
CNT																										
fo E	MED																									
h' E	MED																									
fo Es	MED																									

SEPTEMBER 1958

SWEEP 1+0 MC TO 18+0 MC*

SEPTEMBER 1958

SWEEP 1+0 MC TO 18+0 MC*

SEPTEMBER 1958

TABLE 85

STEP 1.5 MC TO 18.0 MC IN 5 MINUTES • MANUAL

TABLE 86

APRIL 1958

TABLE 87

STEP 1.5 MC TO 18.0 MC IN 5 MINUTES • MANUAL

TABLE 88

APRIL 1951

APRIL * 1958

EEP 1.00 MC TO 13.0 MC IN 1 MINUTE 55 SECONDS.

SWEEP 1.5 MC TO 18.0 MC IN 5 MINUTES. MANUAL.

אָבִלֵּג 89

TABLE 90

REFEP 1.05 MC TO 18.0 MC IN 5 MINUTES. MANUAL.

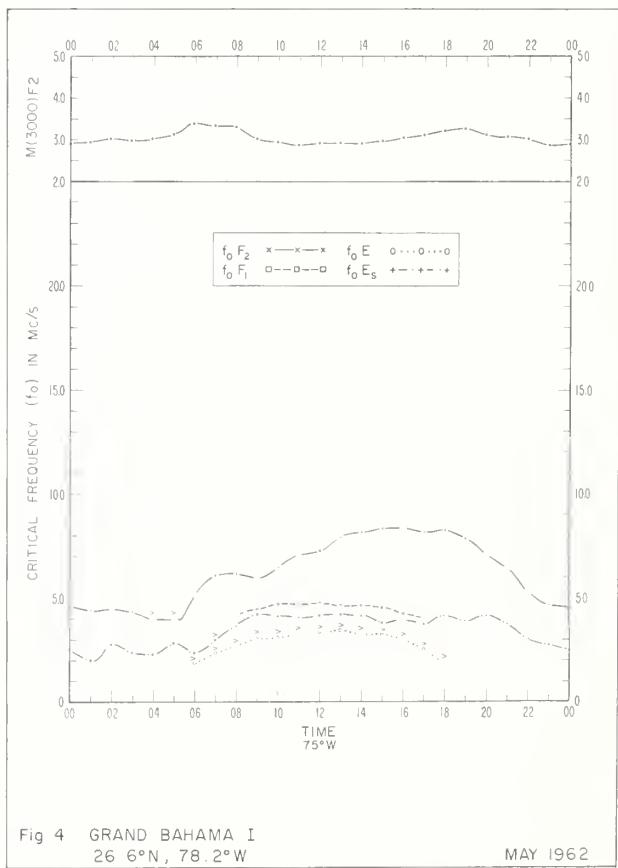
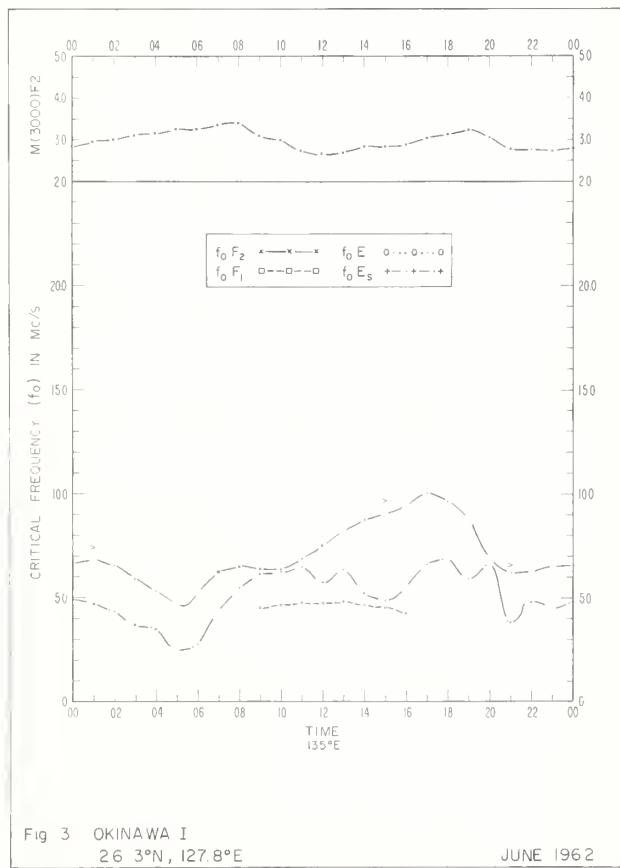
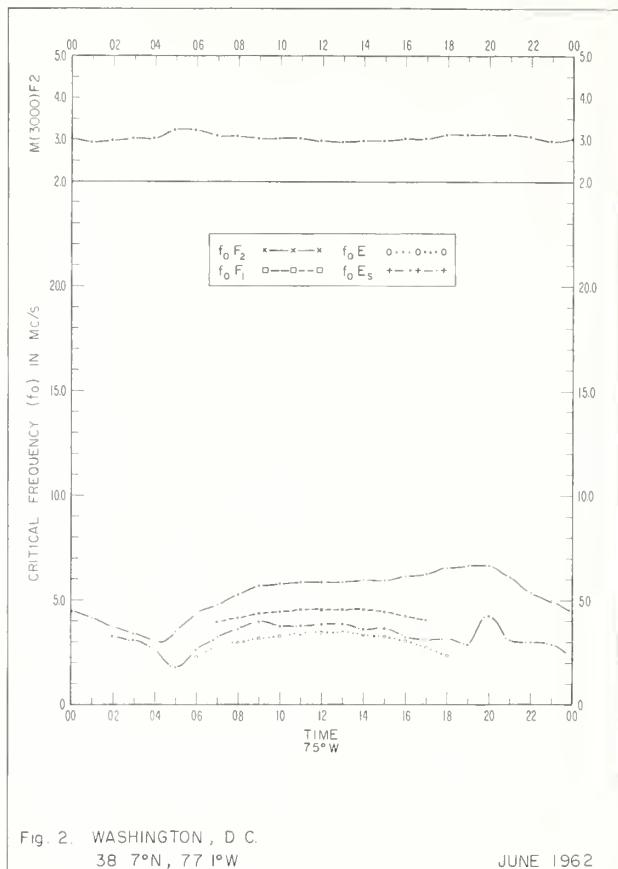
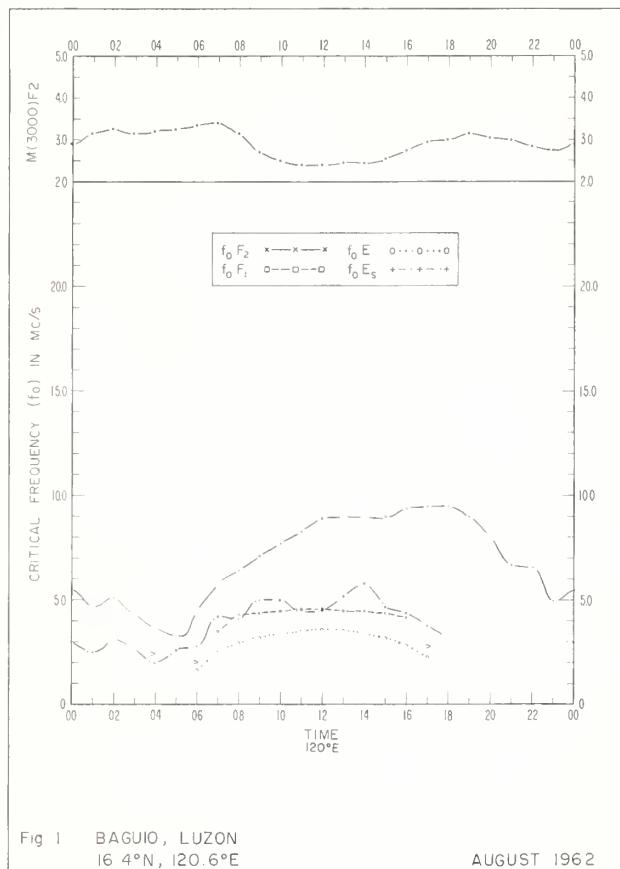
91

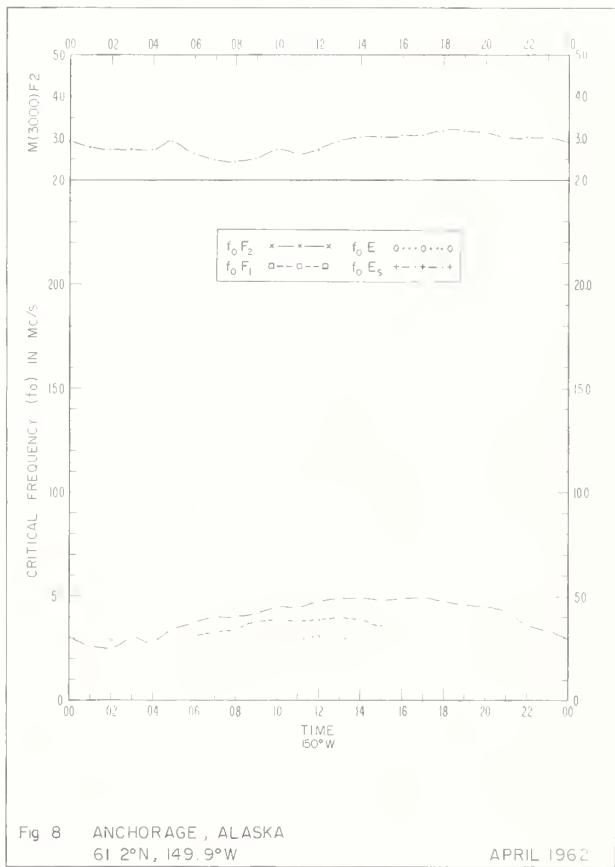
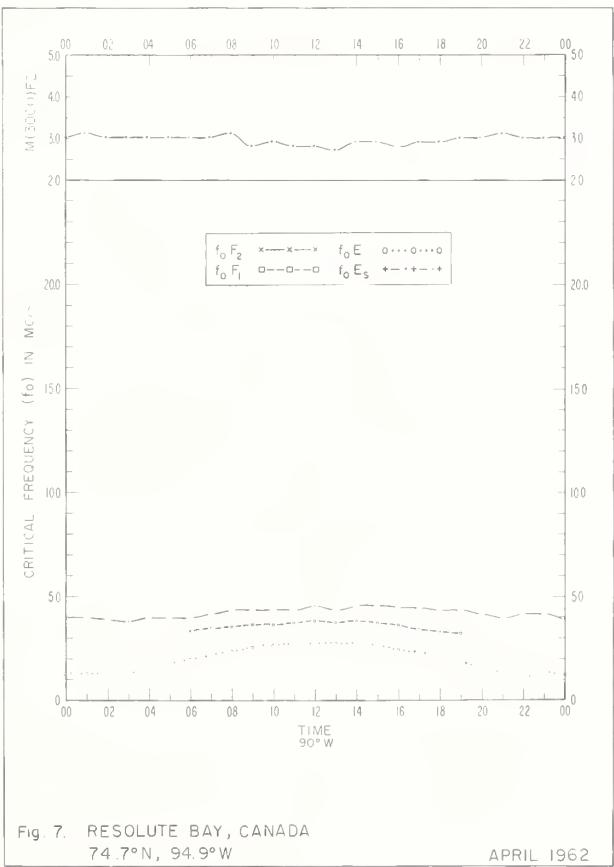
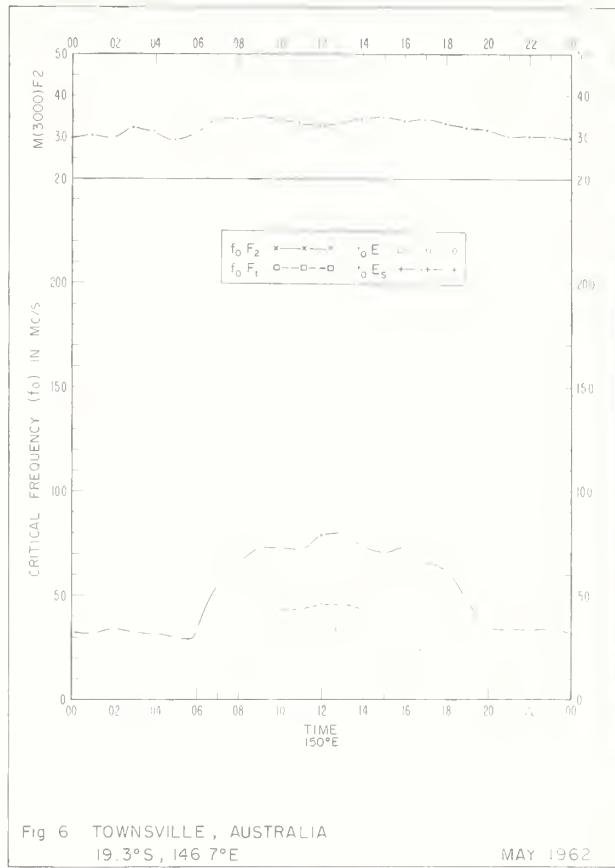
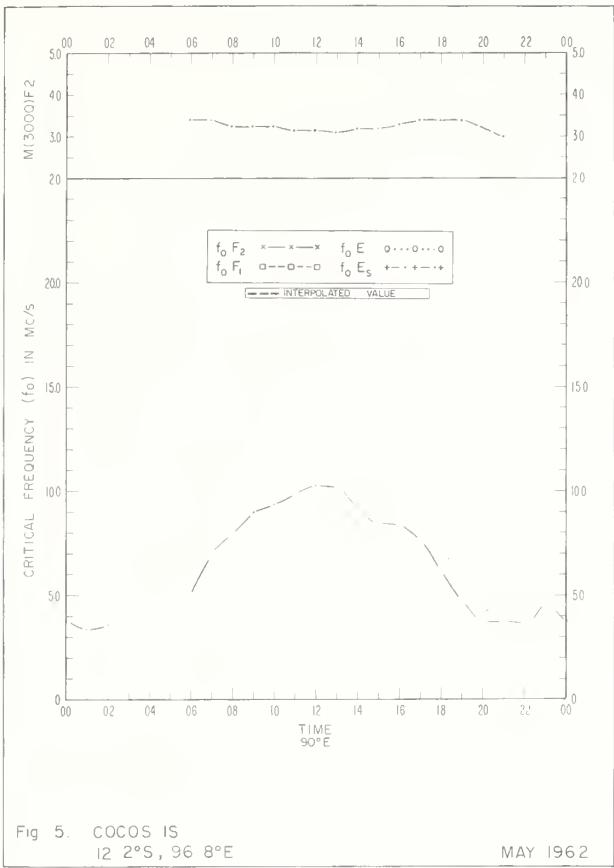
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REF ID: A3334

THE JOURNAL OF CLIMATE

pp. 111 - 1958





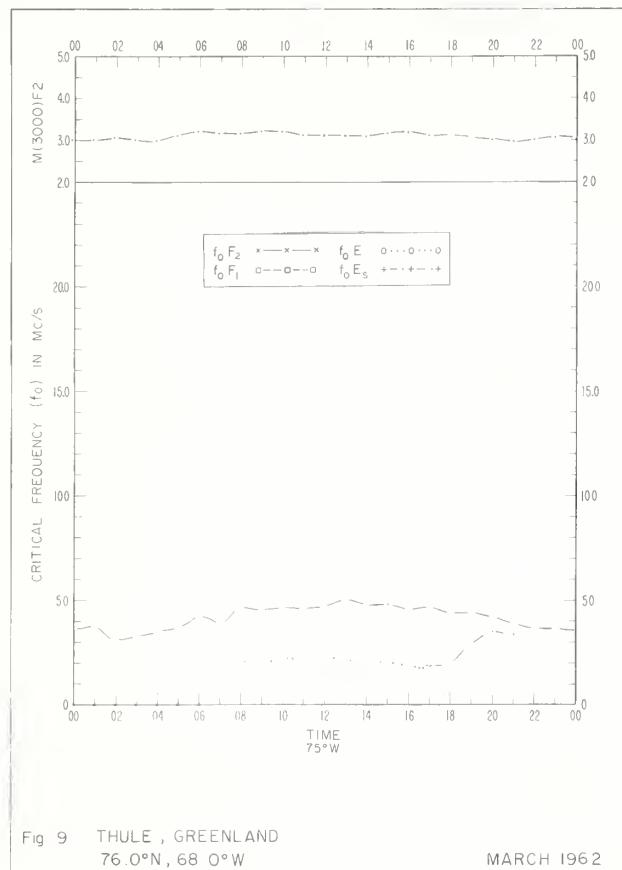


Fig. 9 THULE , GREENLAND
76.0°N, 68.0°W

MARCH 1962

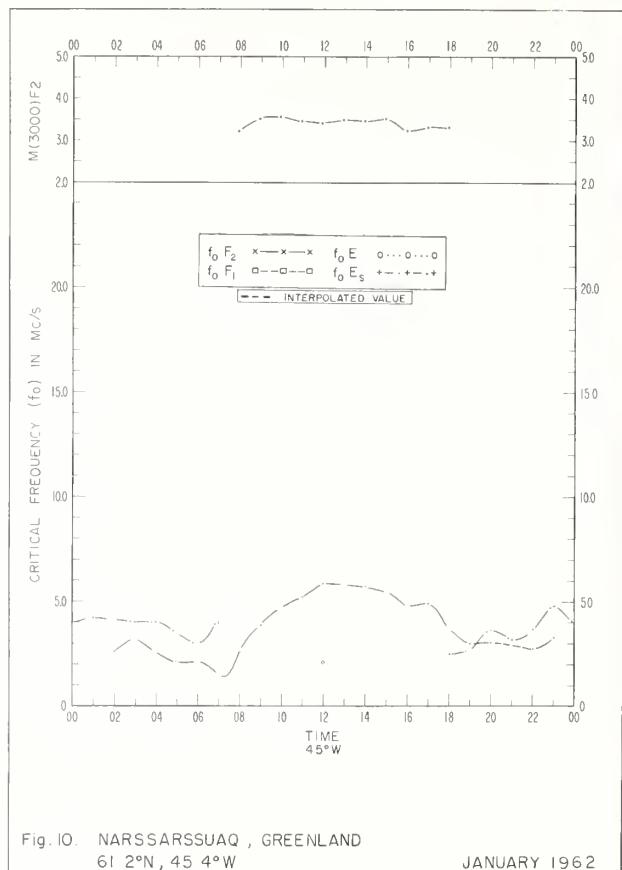


Fig. 10. NARSSARSSUAQ , GREENLAND
61.2°N, 45.4°W

JANUARY 1962

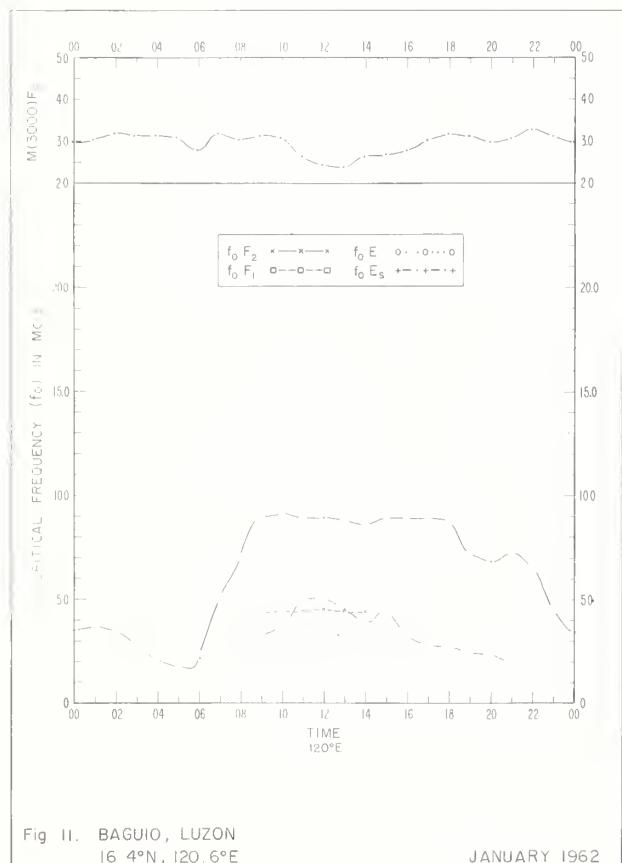


Fig. 11. BAGUIO , LUZON
16.4°N, 120.6°E

JANUARY 1962

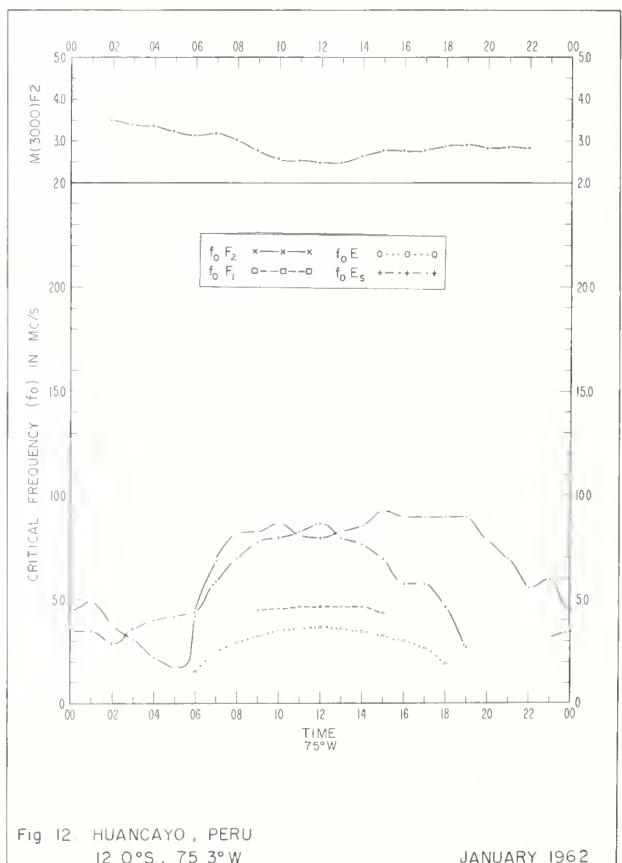
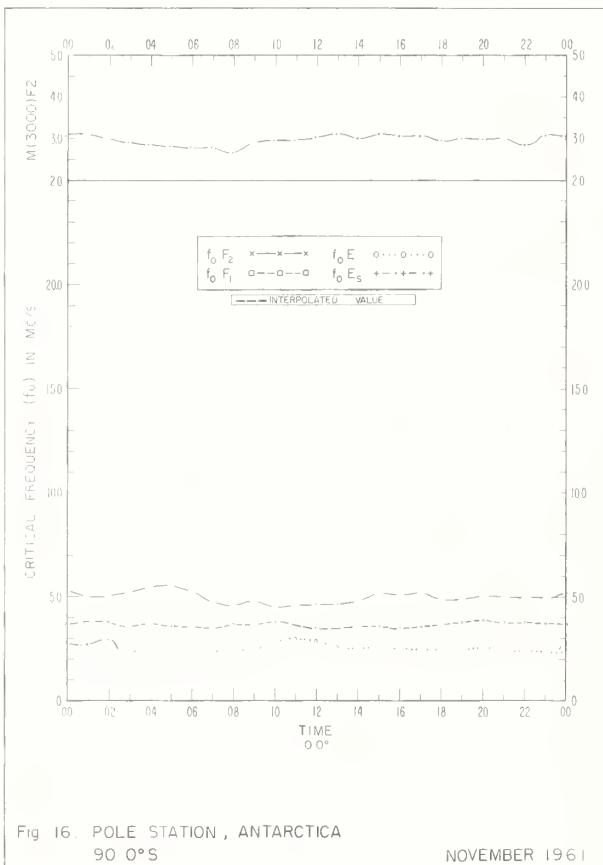
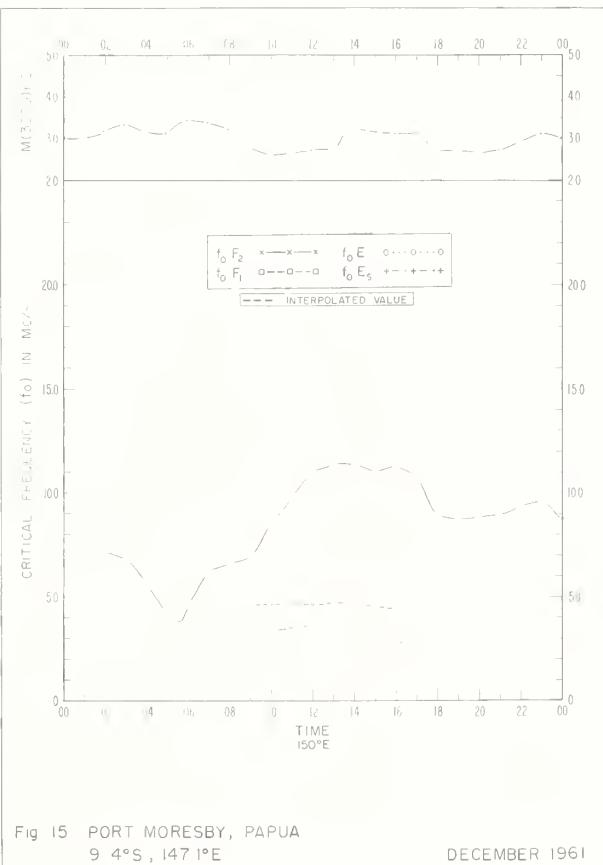
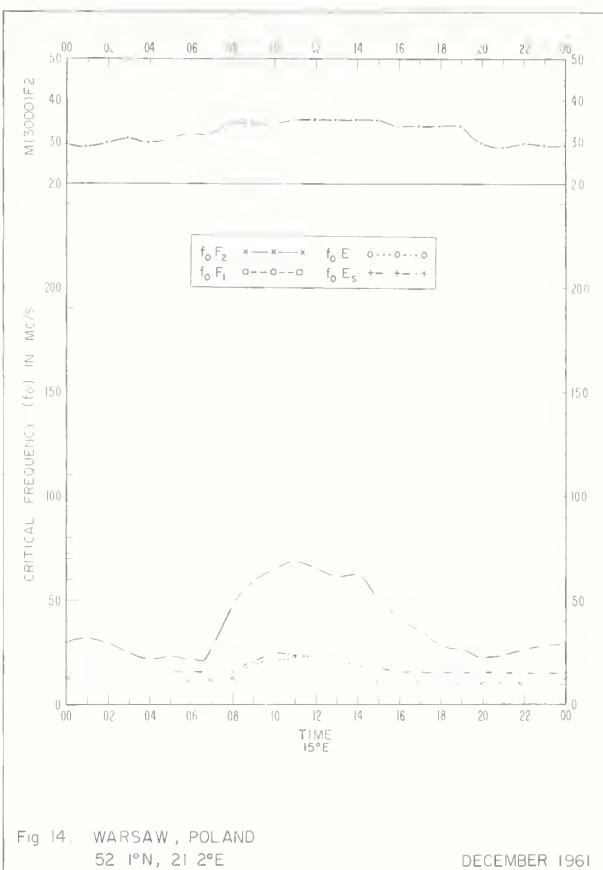
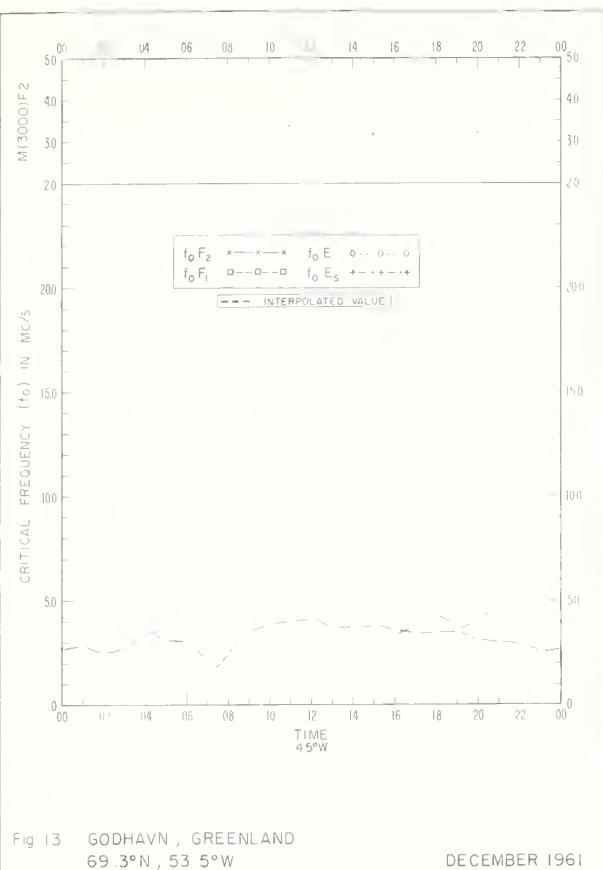


Fig. 12. HUANCAYO , PERU
12.0°S, 75.3°W

JANUARY 1962



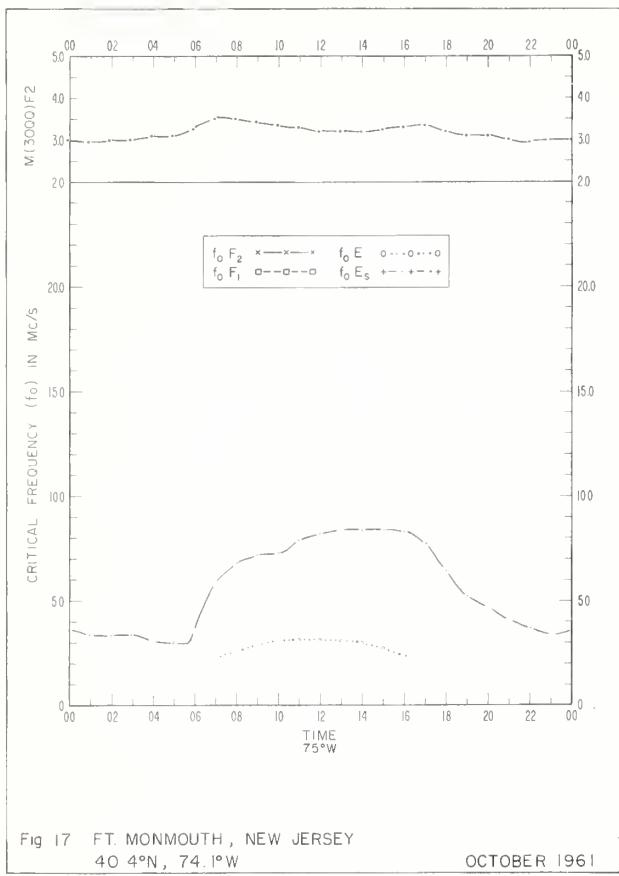


Fig 17 FT. MONMOUTH , NEW JERSEY
40 4°N, 74. 1°W

OCTOBER 1961

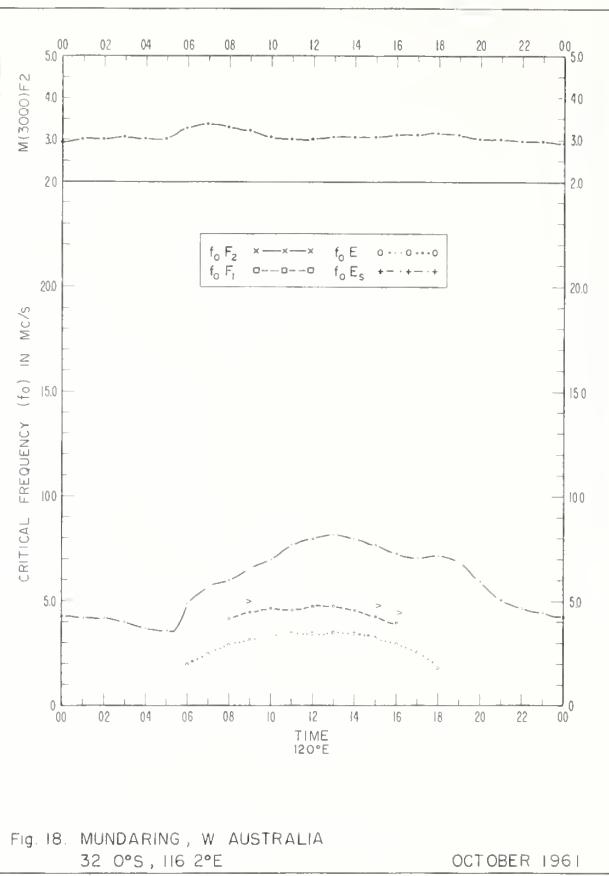


Fig 18. MUNDARING , W AUSTRALIA
32 0°S, 116 2°E

OCTOBER 1961

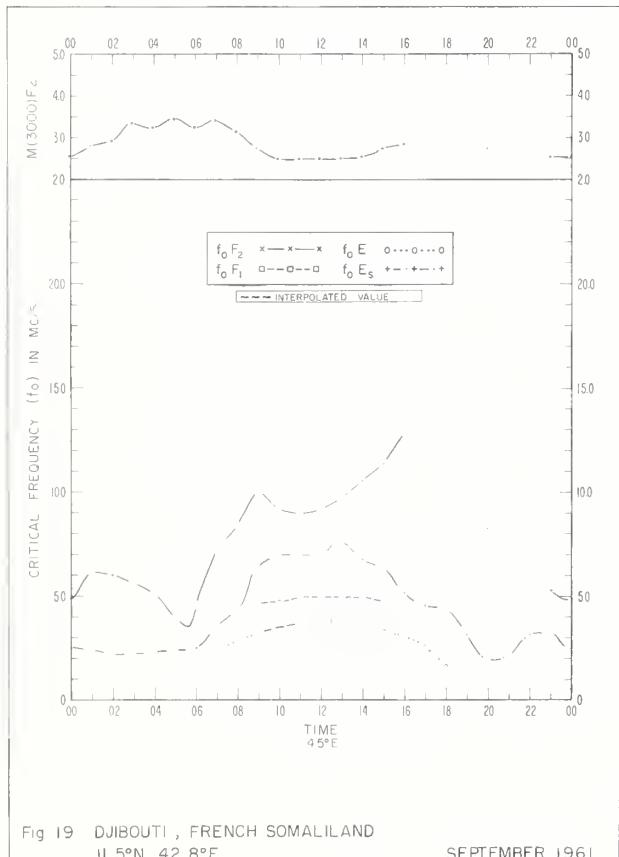


Fig 19 DJIBOUTI , FRENCH SOMALILAND
11 5°N, 42 8°E

SEPTEMBER 1961

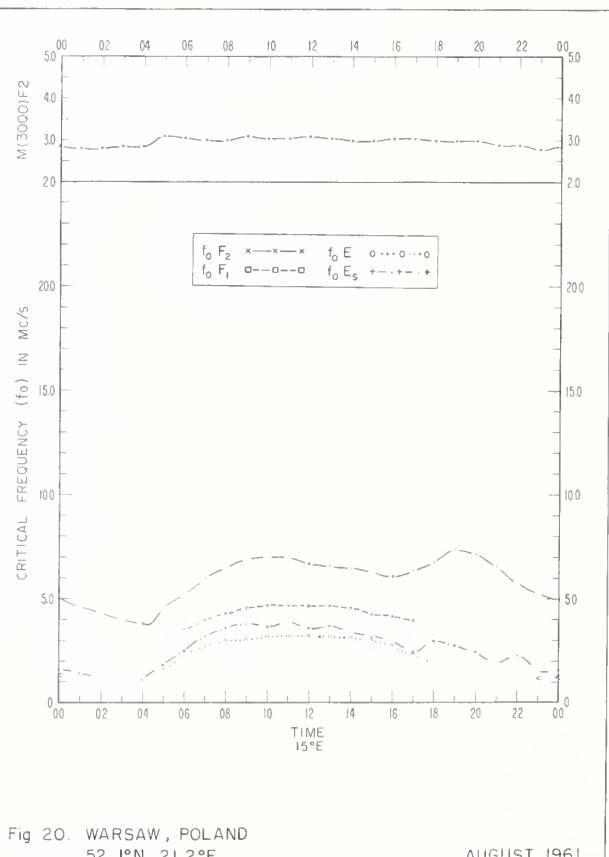
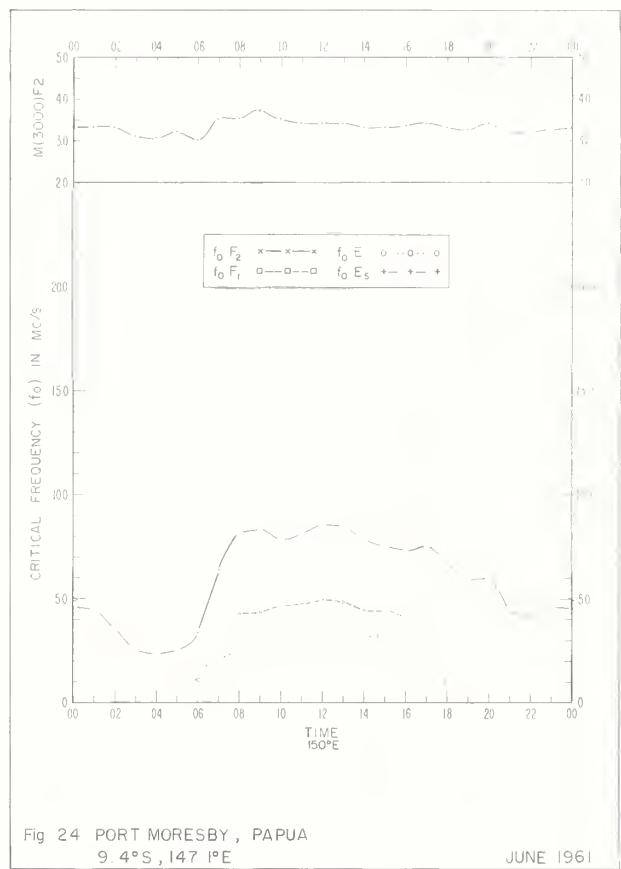
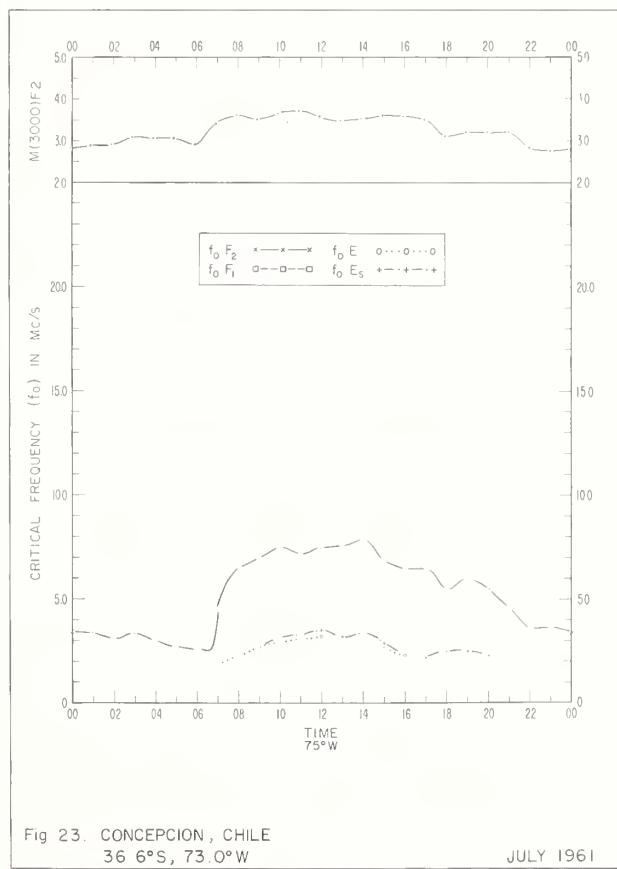
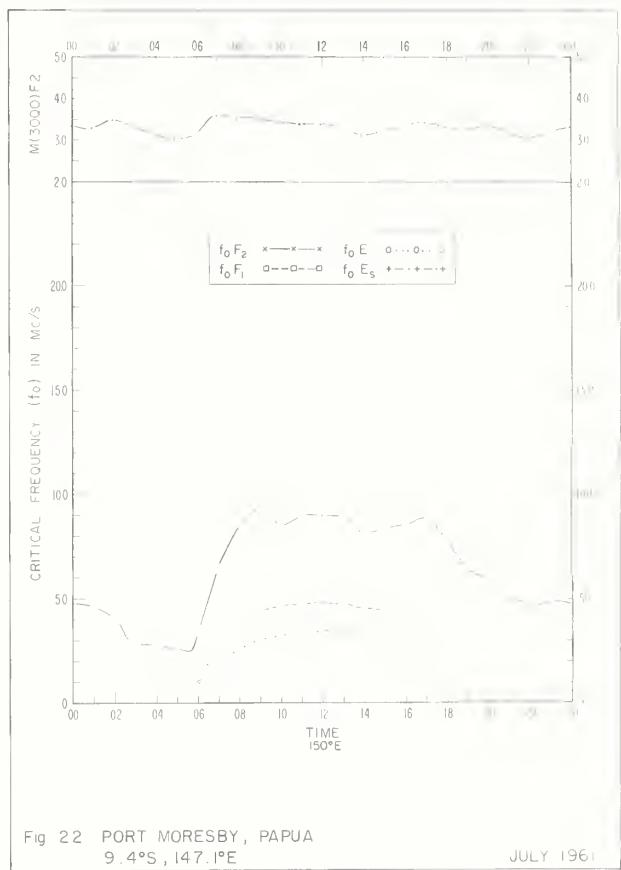
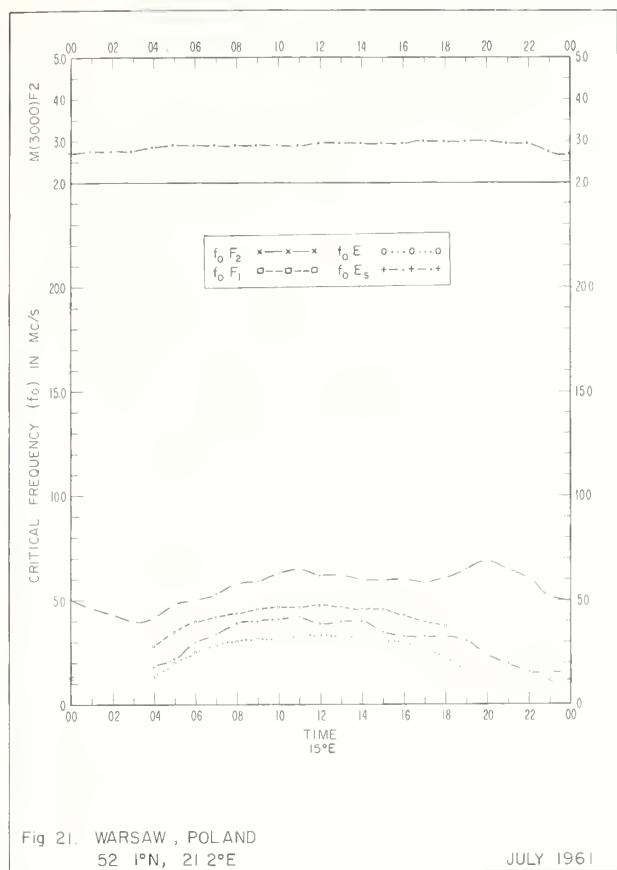


Fig 20. WARSAW , POLAND
52.1°N, 21 2°E

AUGUST 1961



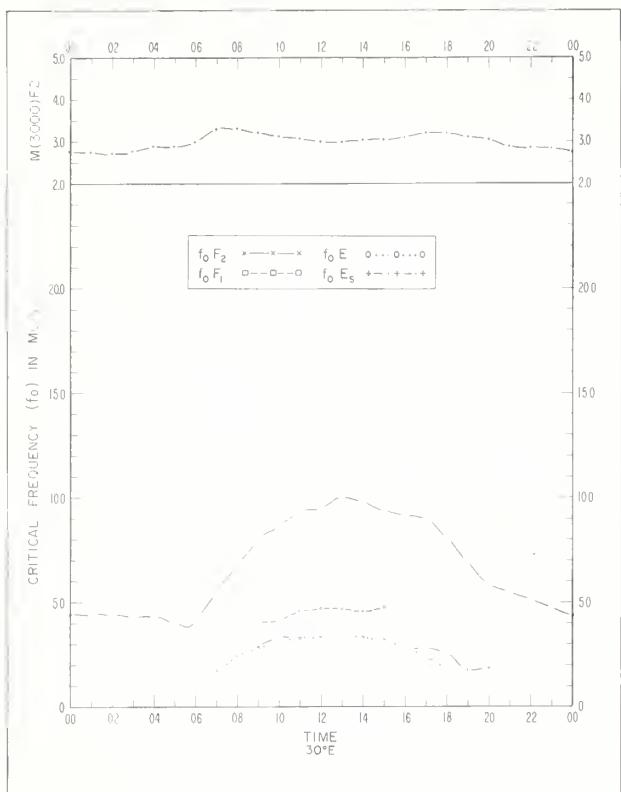


Fig 25 ATHENS , GREECE
38 0°N , 23 6°E
MARCH 1961

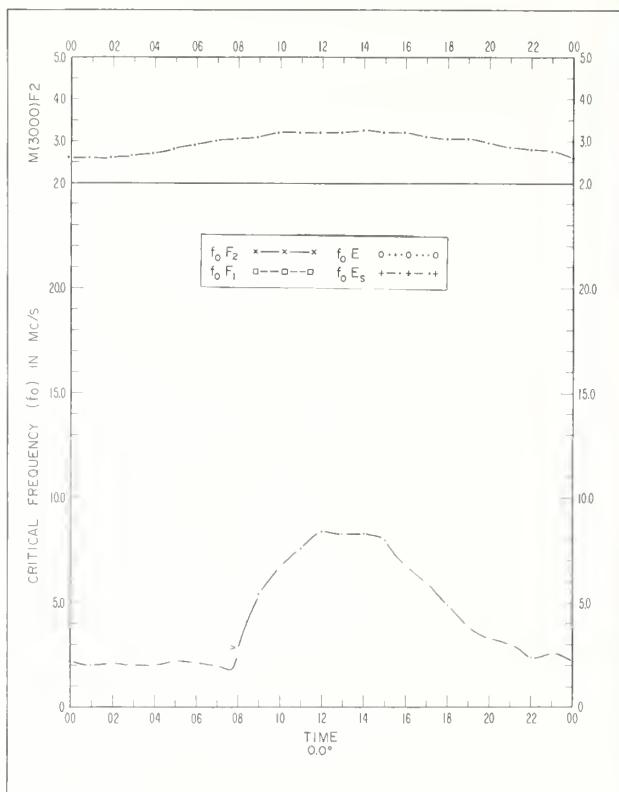


Fig 26 INVERNESS , SCOTLAND
57 4°N , 4 2°W
JANUARY 1961

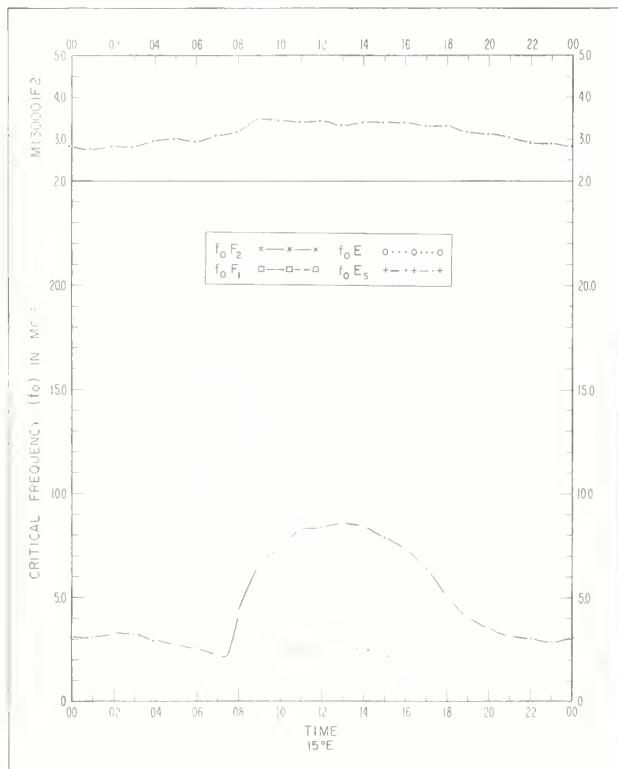


Fig 27 LINDAU/HARZ , GERMANY
51 6°N , 10 1°E
JANUARY 1961

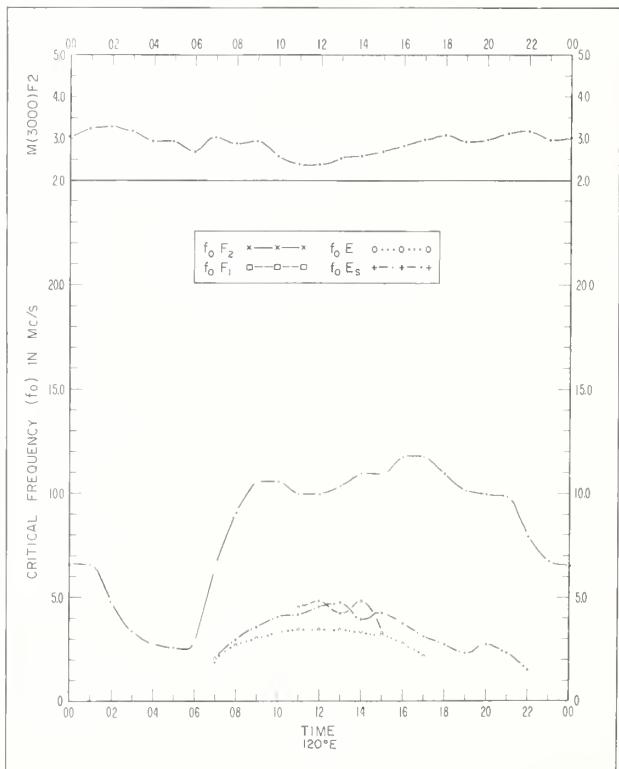


Fig 28 BAGUIO , LUZON
16 4°N , 120 6°E
JANUARY 1961

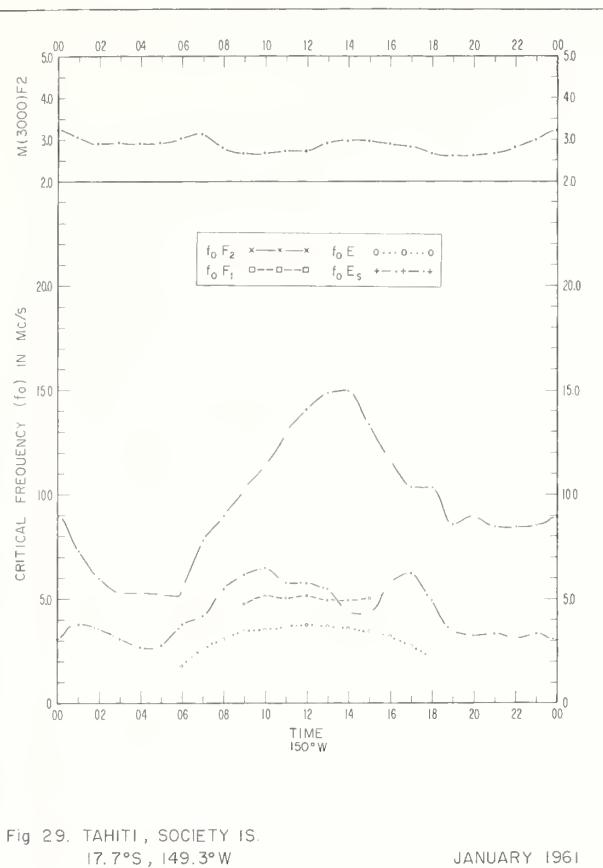


Fig 29. TAHITI , SOCIETY IS.
17.7°S, 149.3°W

JANUARY 1961

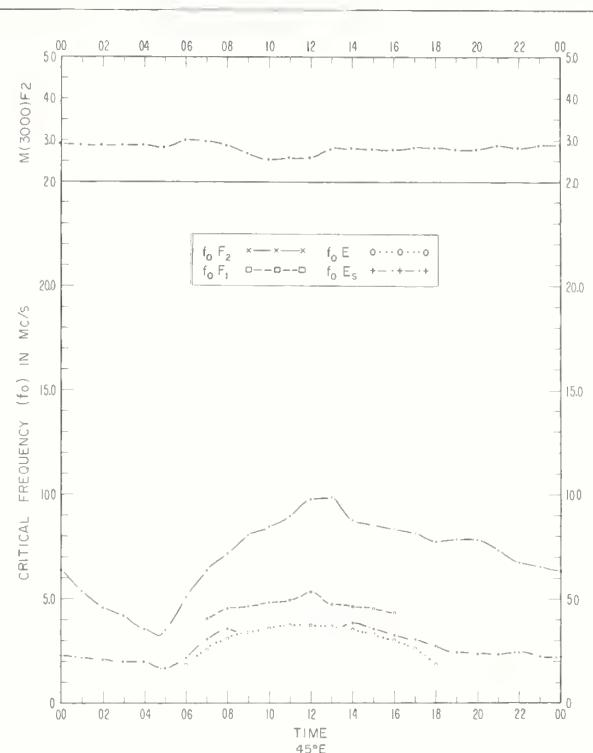


Fig 30. TANANARIVE , MALAGASY REPUBLIC
18.8°S, 47.5°E

JANUARY 1961

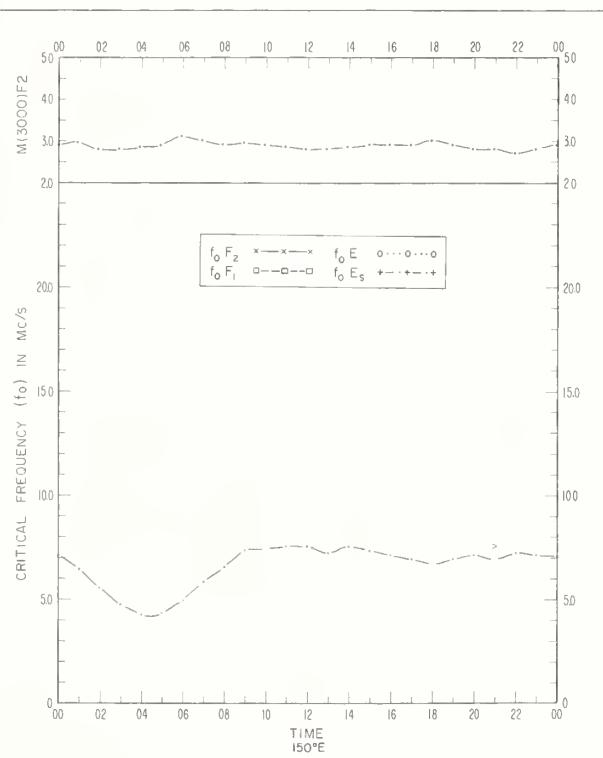


Fig 31. CANBERRA , AUSTRALIA
35.3°S, 149.0°E

JANUARY 1961

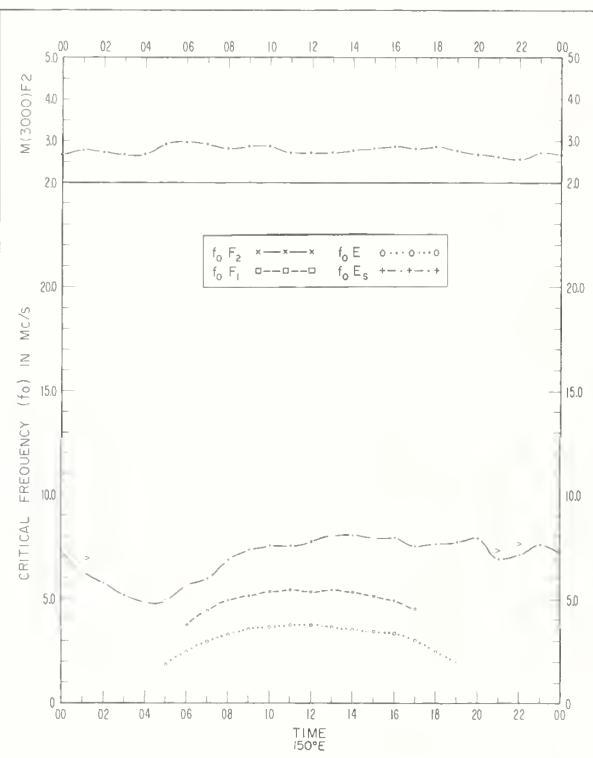


Fig 32. CANBERRA , AUSTRALIA
35.3°S, 149.0°E

DECEMBER 1960

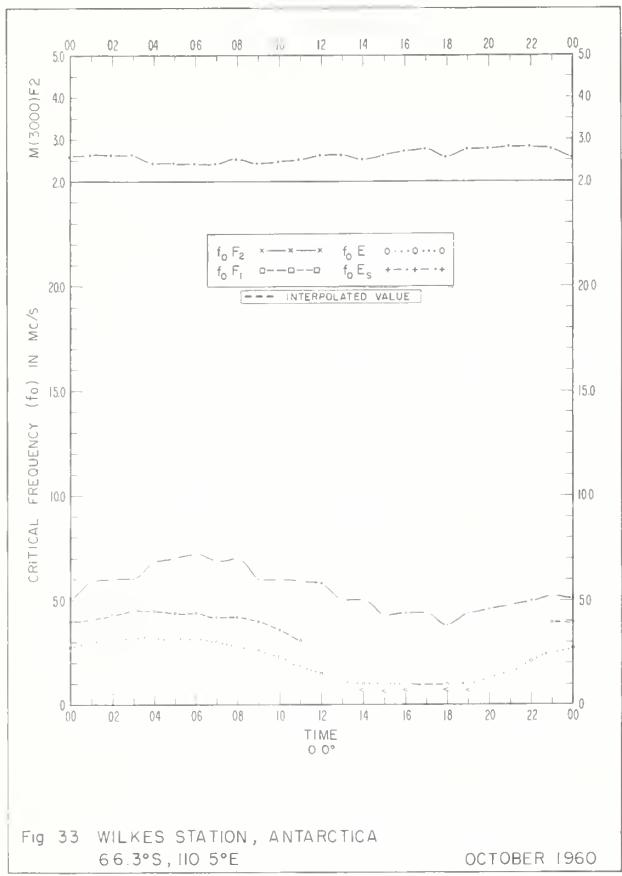


Fig. 33 WILKES STATION, ANTARCTICA
66.3°S, 110.5°E

OCTOBER 1960

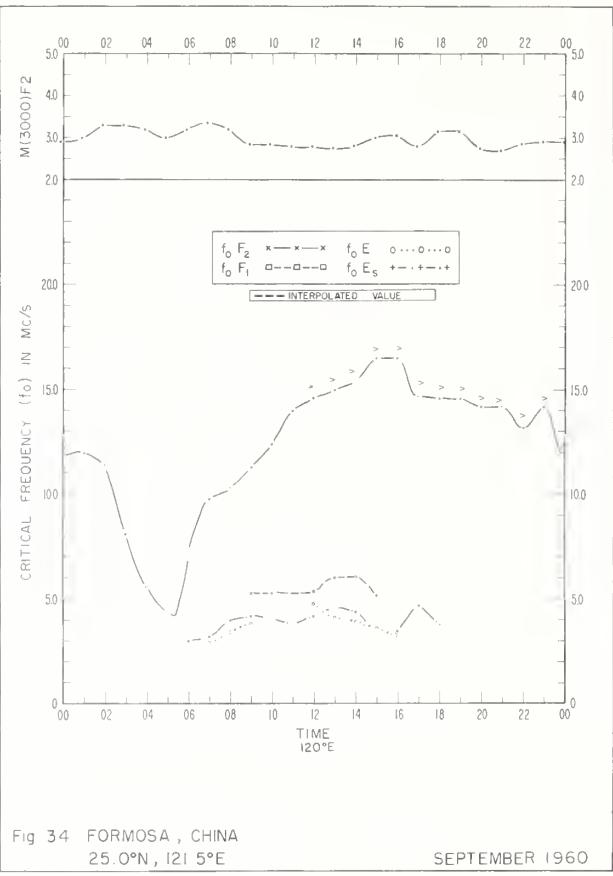


Fig. 34 FORMOSA, CHINA
25.0°N, 121.5°E

SEPTEMBER 1960

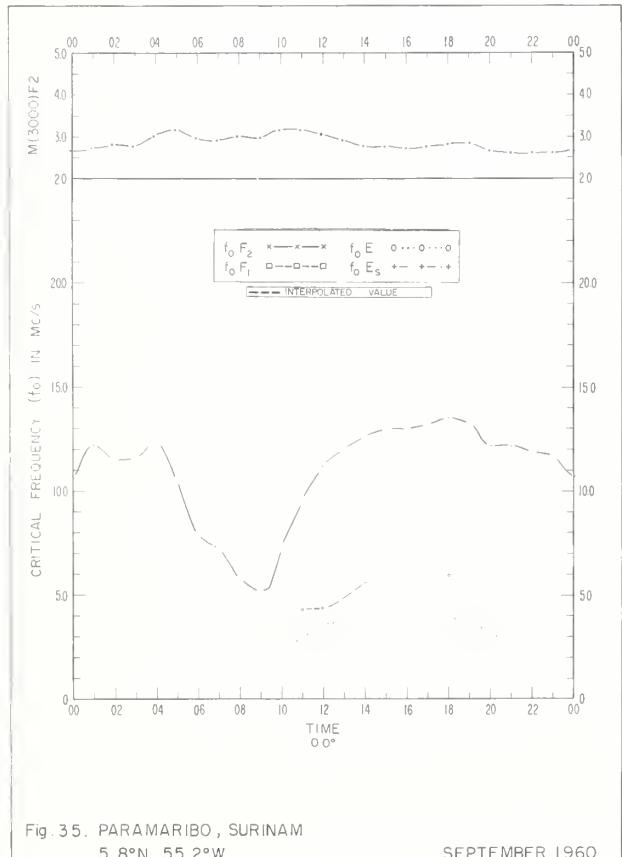


Fig. 35. PARAMARIBO, SURINAM
5.8°N, 55.2°W

SEPTEMBER 1960

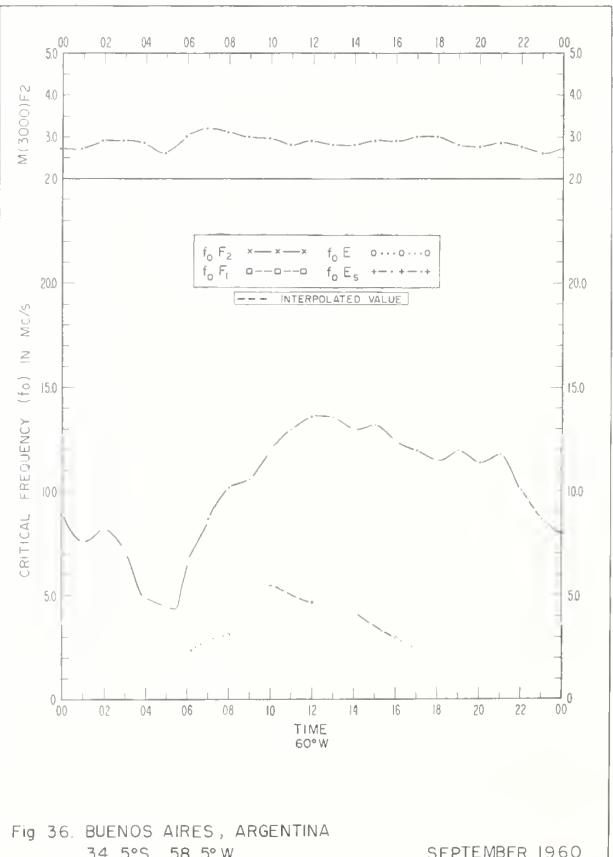
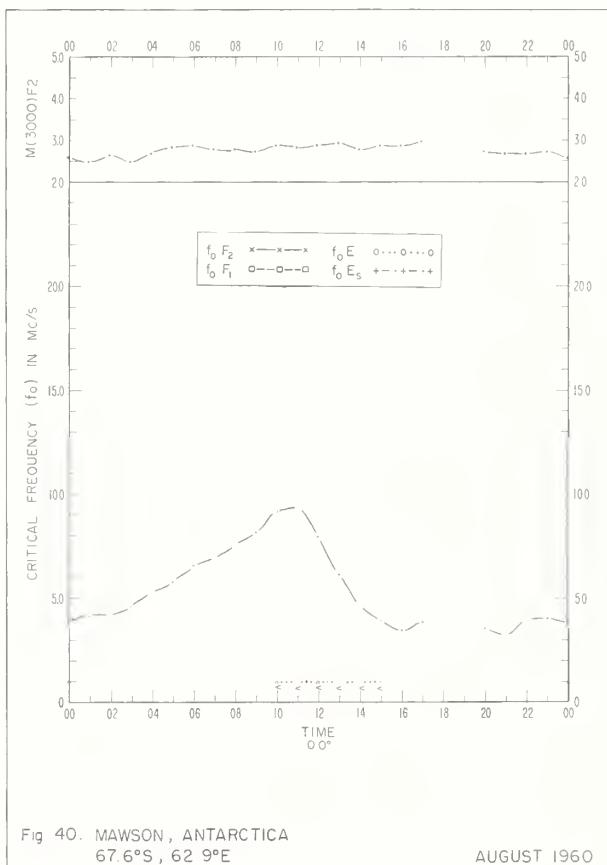
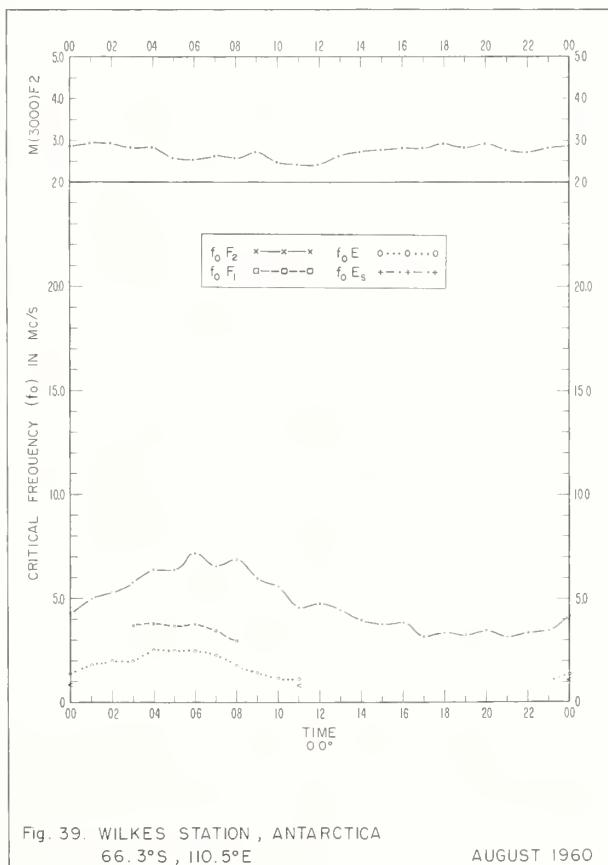
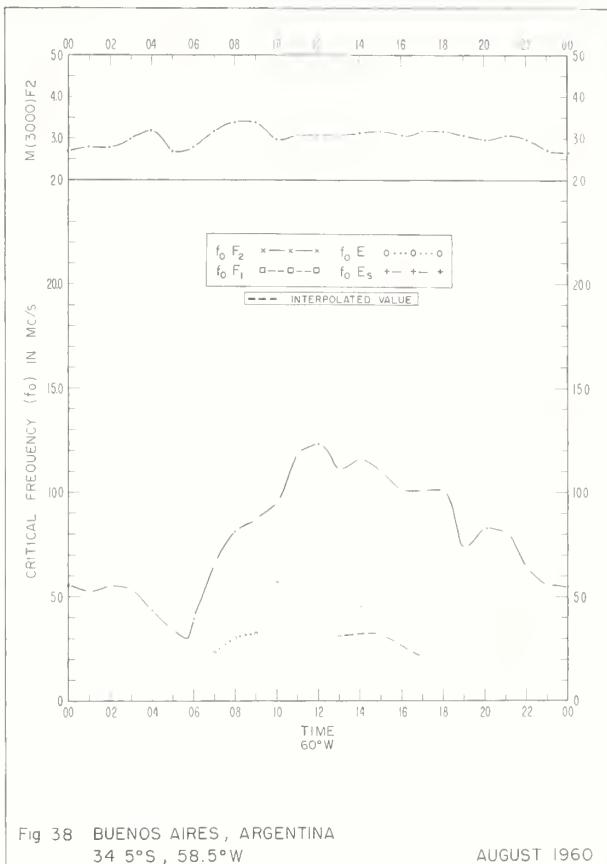
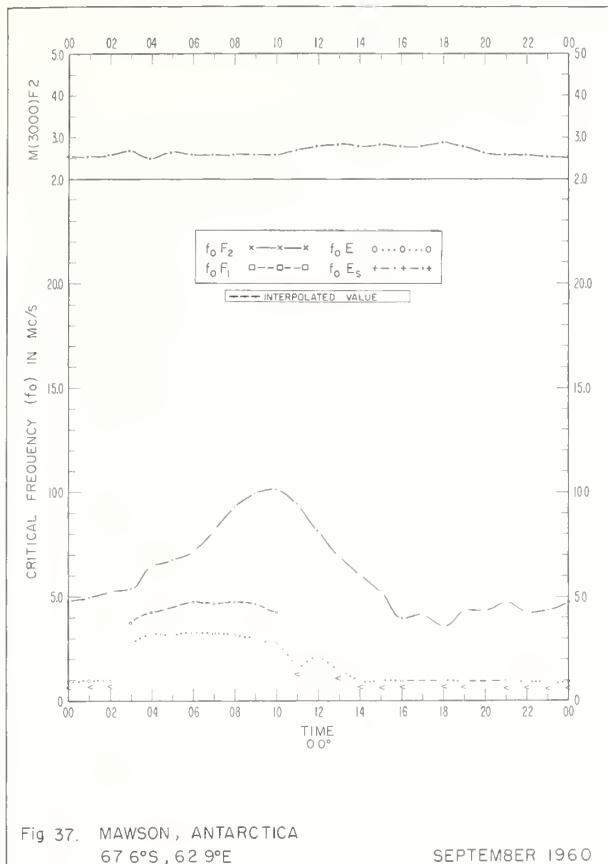


Fig. 36. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W

SEPTEMBER 1960



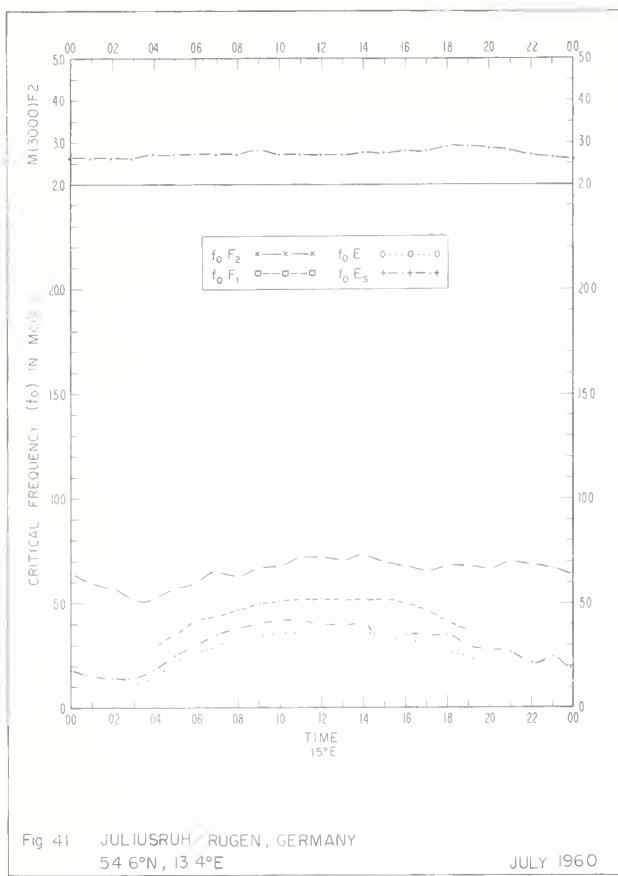


Fig. 41 JULIUSRUH/RUGEN, GERMANY
54°6'N, 13°4'E JULY 1960

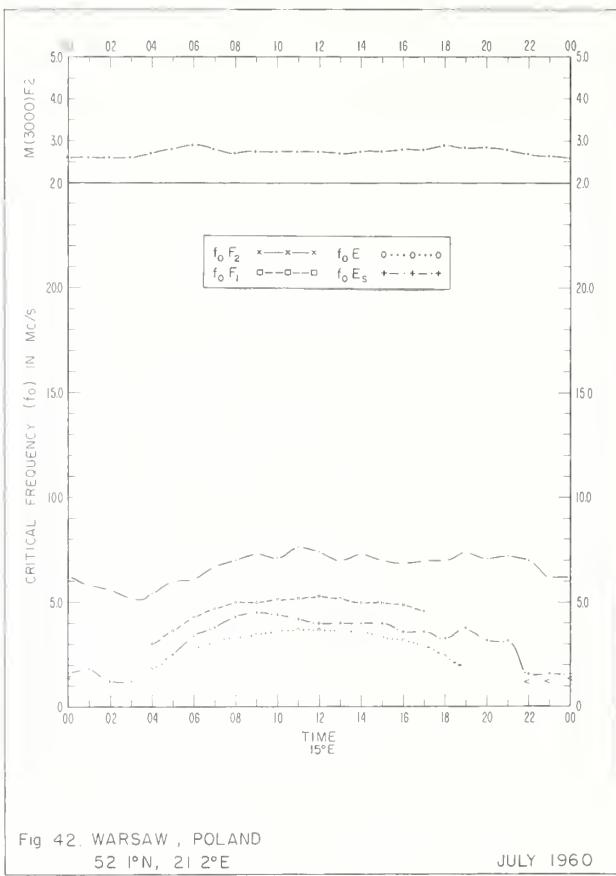


Fig. 42. WARSAW, POLAND
52°1'N, 21°2'E JULY 1960

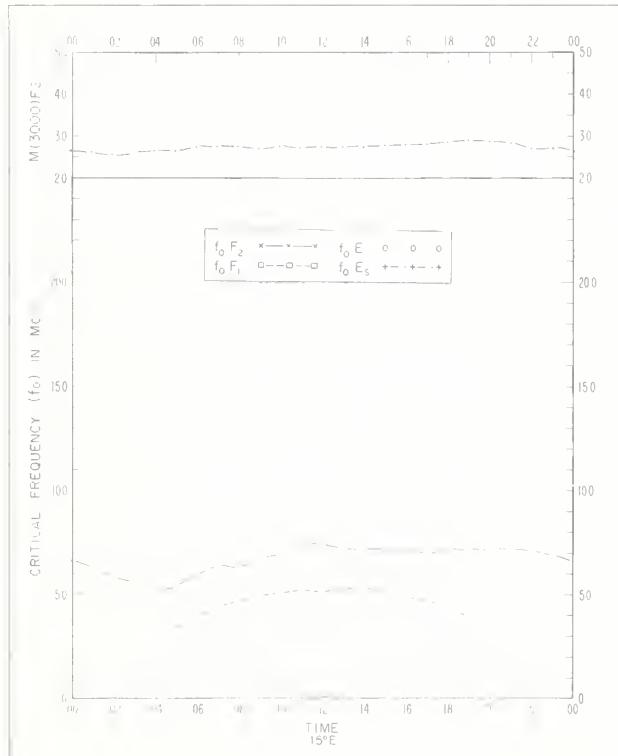


Fig. 43. LINDAU/HARZ, GERMANY
51°6'N, 10°1'E JULY 1960

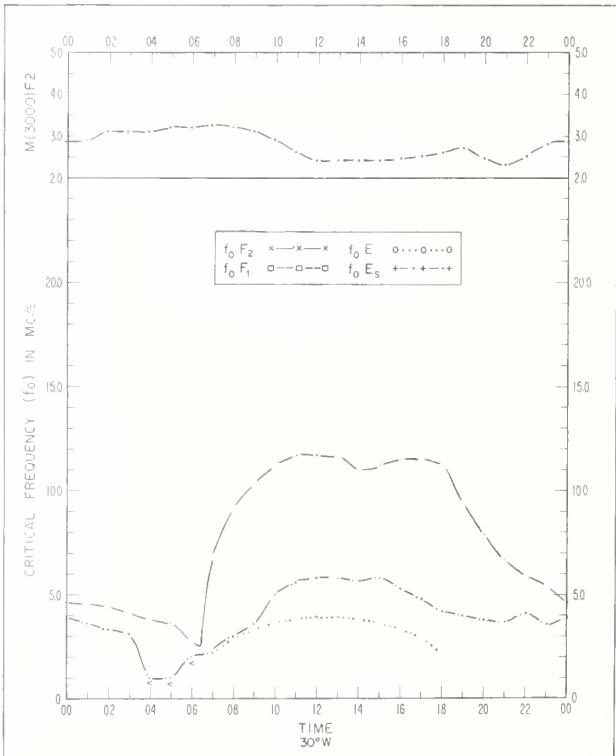


Fig. 44 NATAL, BRAZIL
5.7°S, 35.2°W JULY 1960

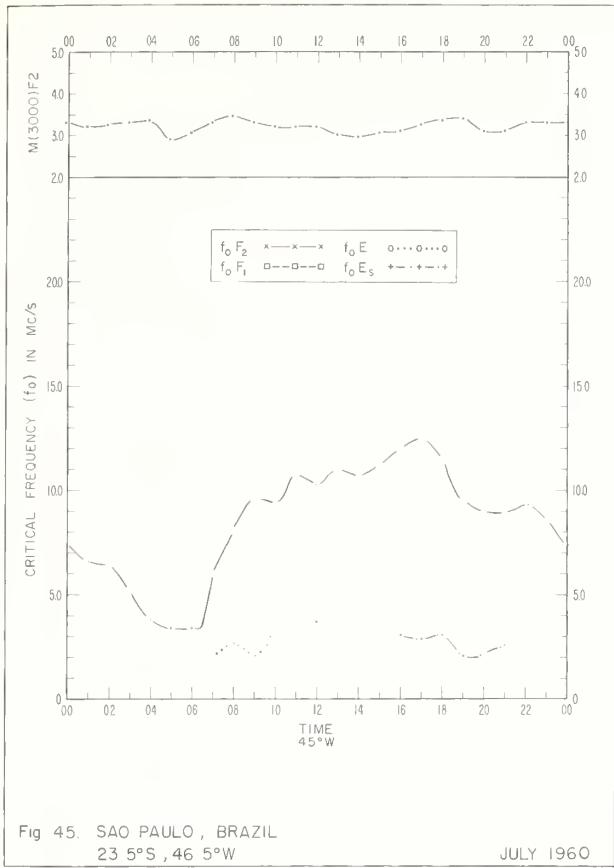


Fig 45. SAO PAULO , BRAZIL
23 5°S , 46 5°W

JULY 1960

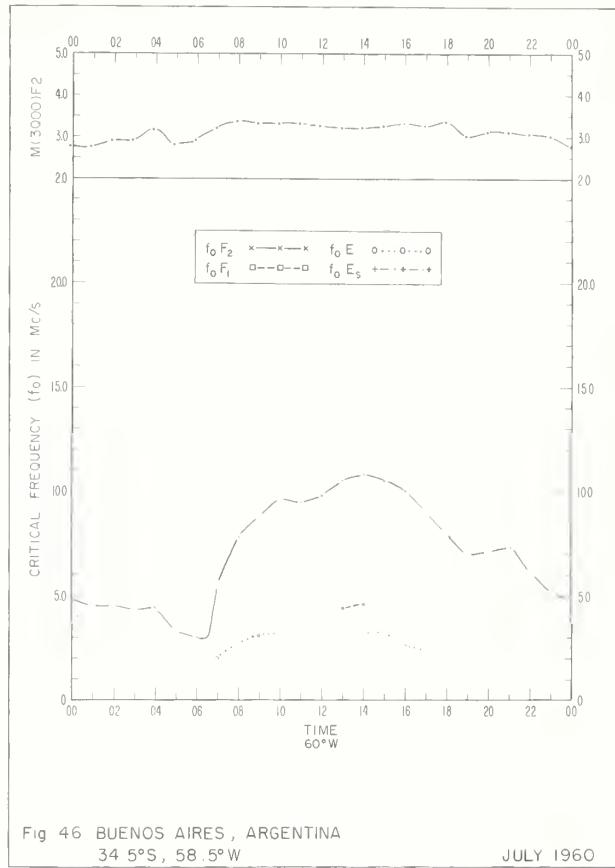


Fig 46 BUENOS AIRES , ARGENTINA
34 5°S , 58 .5°W

JULY 1960

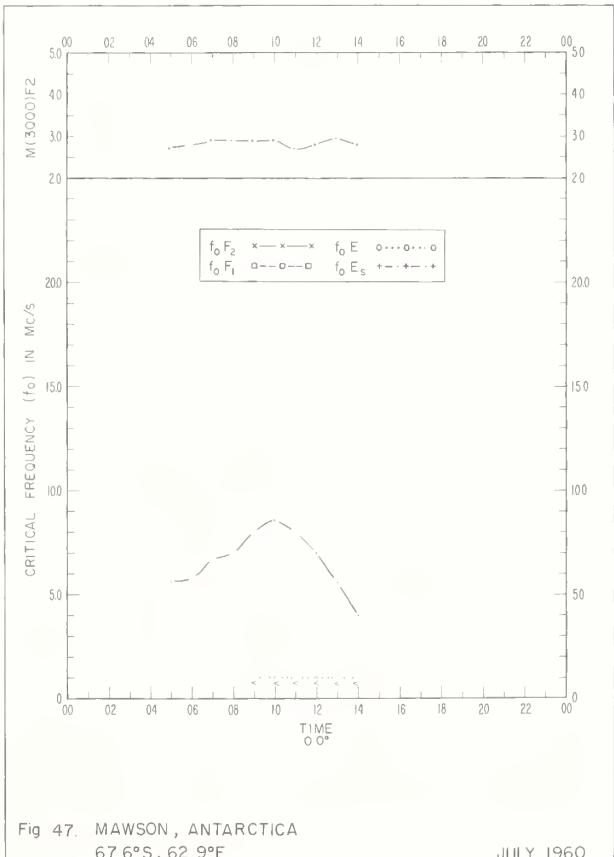


Fig 47. MAWSON , ANTARCTICA
67 6°S , 62 .9°E

JULY 1960

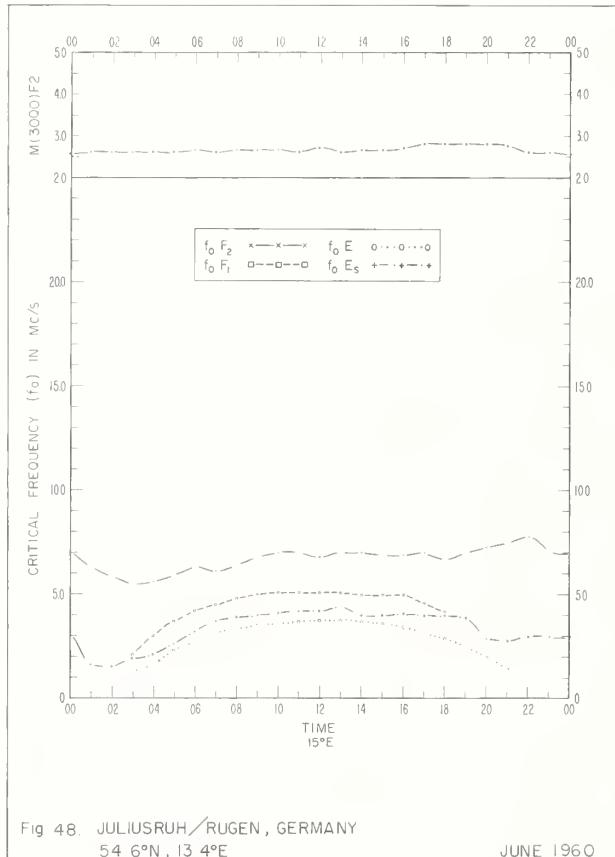
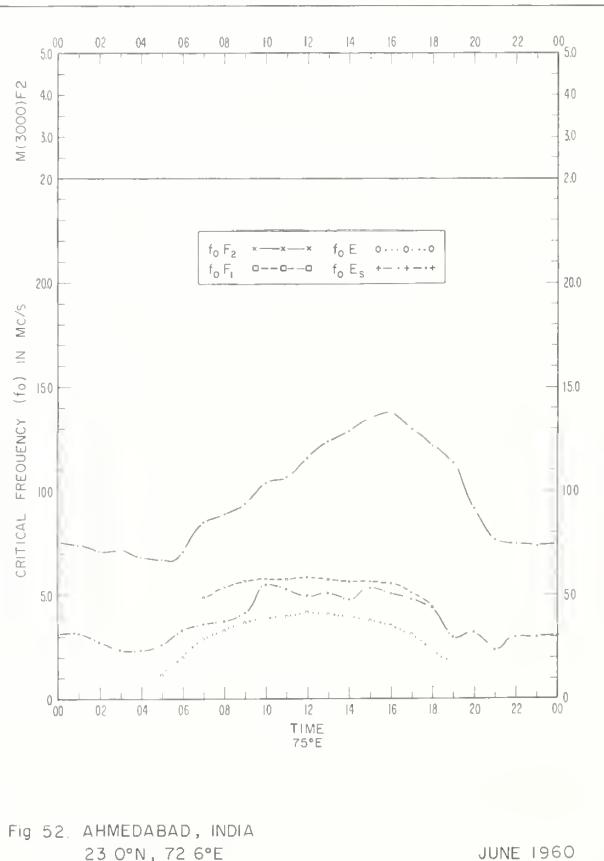
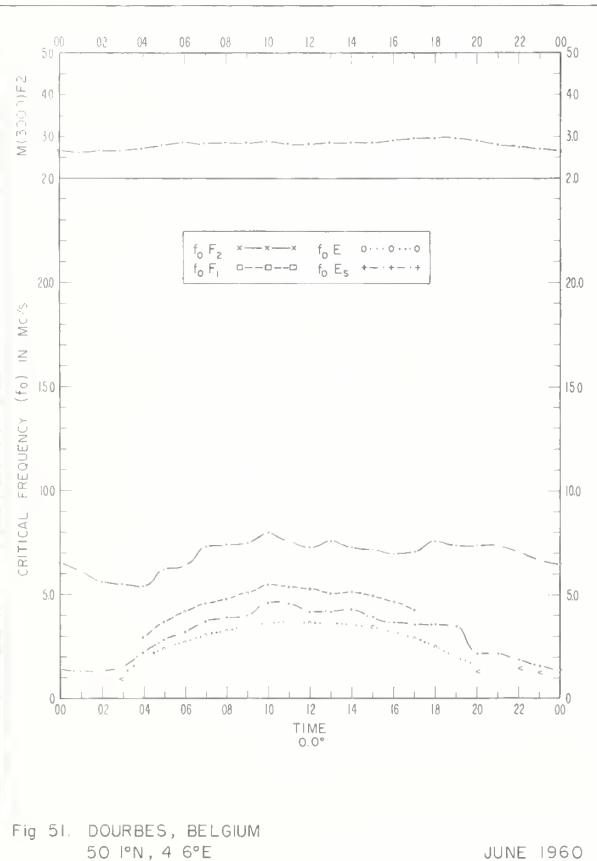
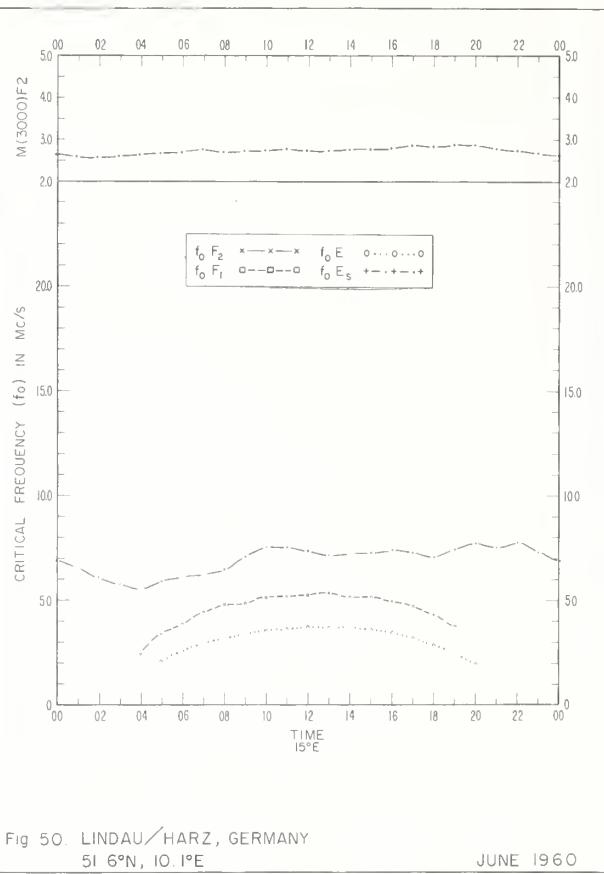
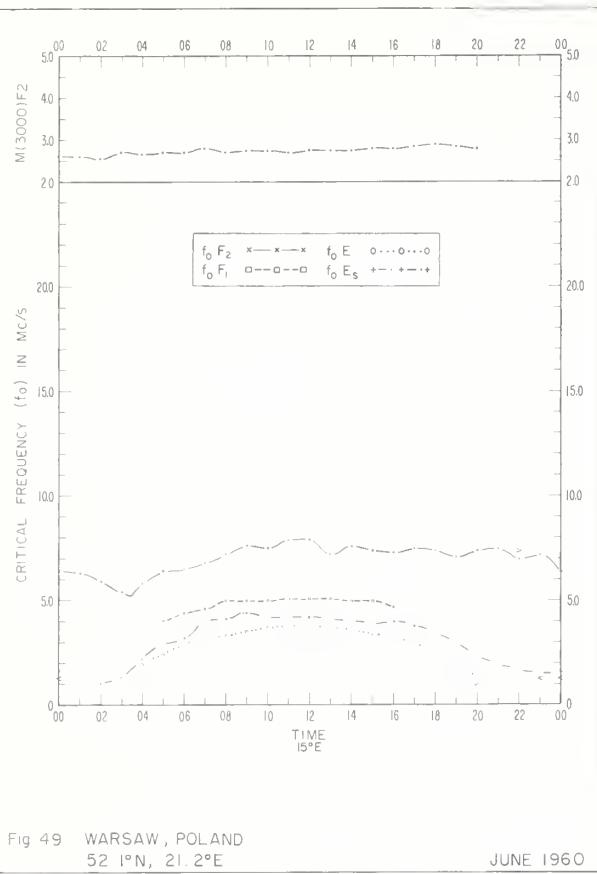


Fig 48 JULIUSRUH / RUGEN , GERMANY
54 6°N , 13 4°E

JUNE 1960



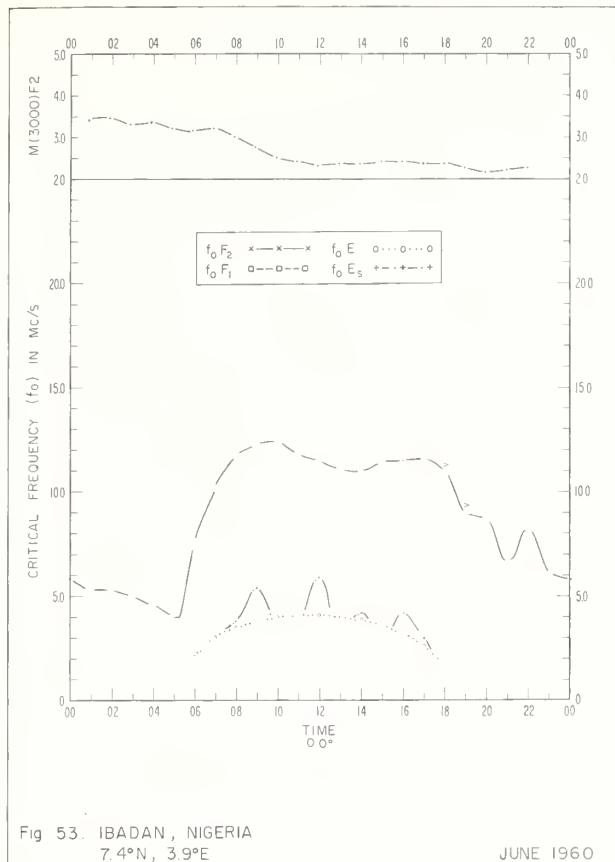


Fig 53. IBADAN , NIGERIA
7.4°N, 39°E

JUNE 1960

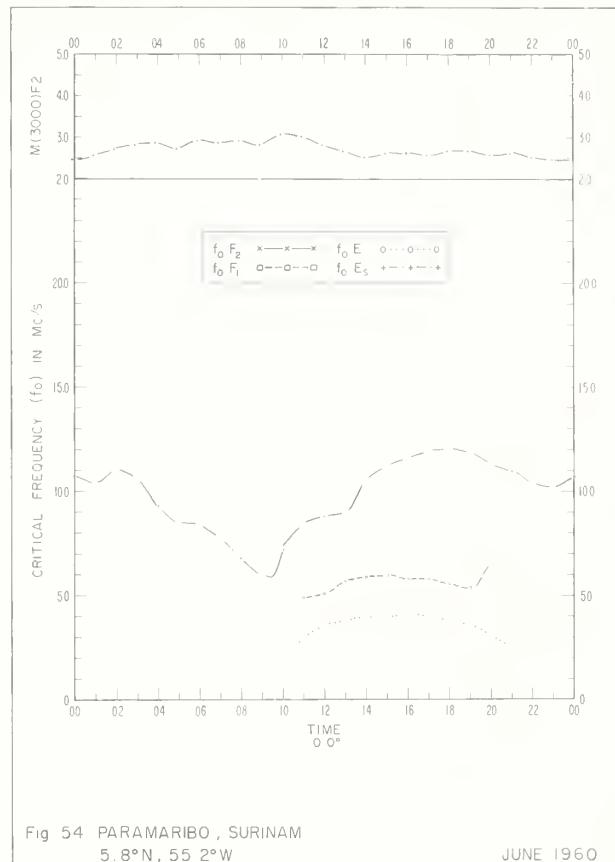


Fig 54. PARAMARIBO , SURINAM
5.8°N, 55.2°W

JUNE 1960

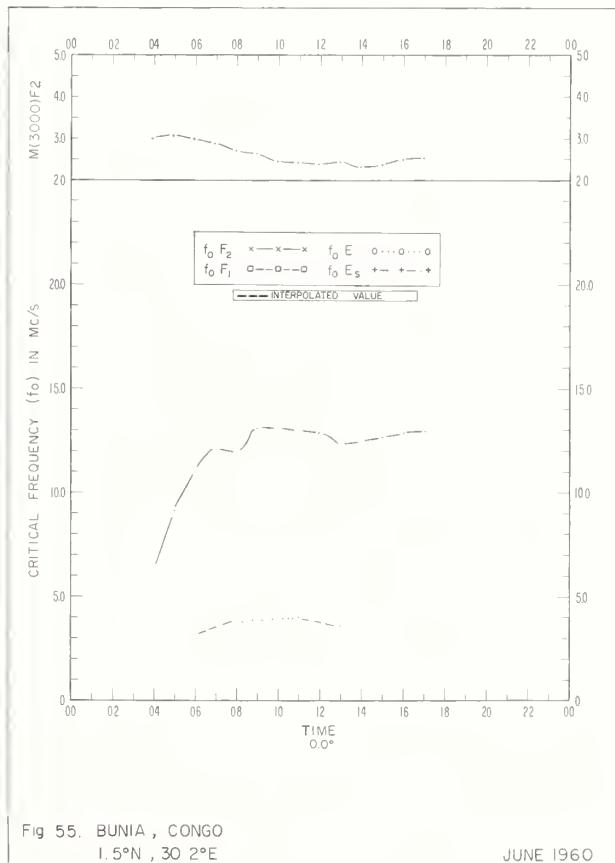


Fig 55. BUNIA , CONGO
1.5°N, 30.2°E

JUNE 1960

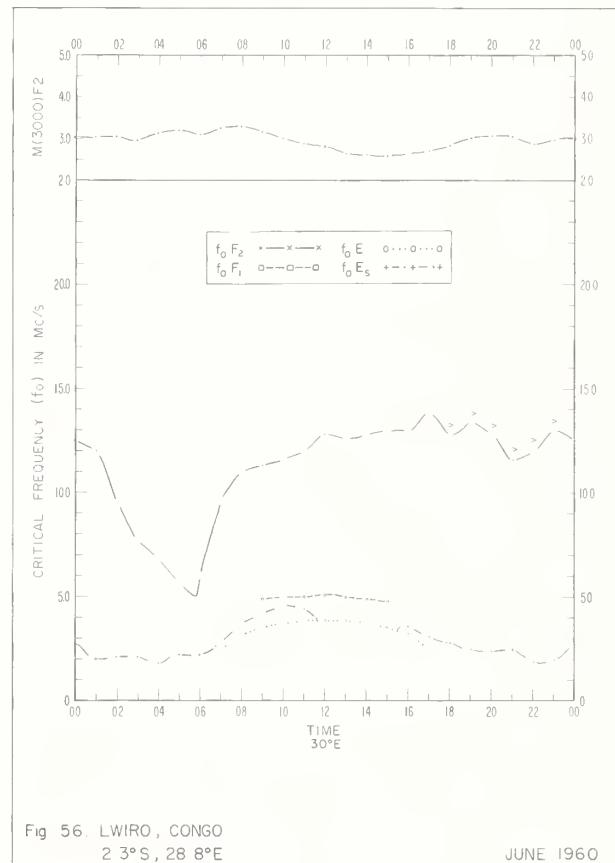
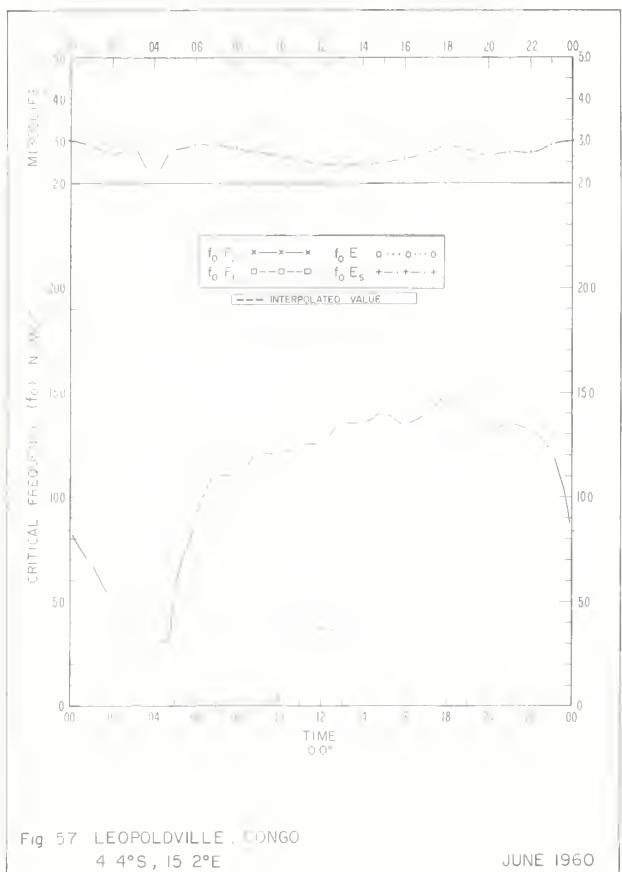
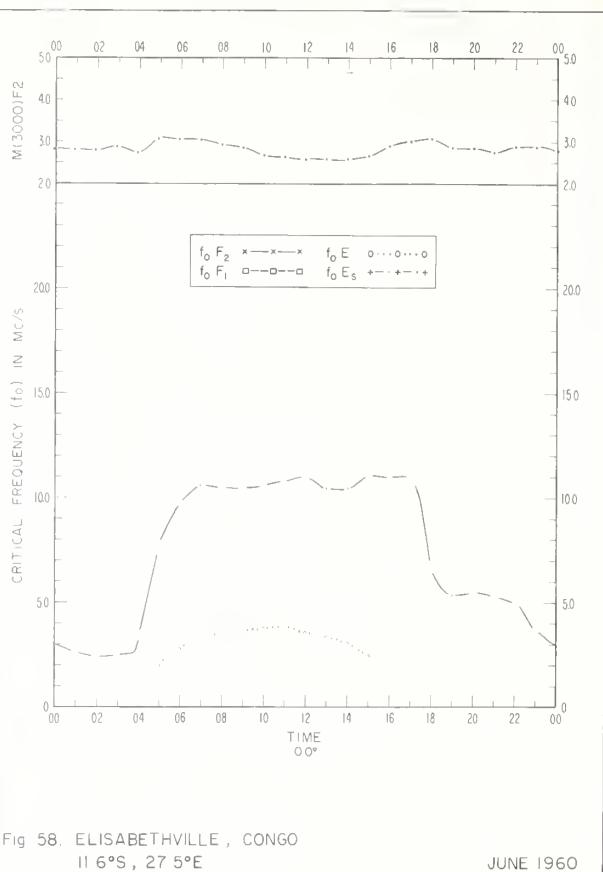


Fig 56. LWIRO , CONGO
2.3°S, 28.8°E

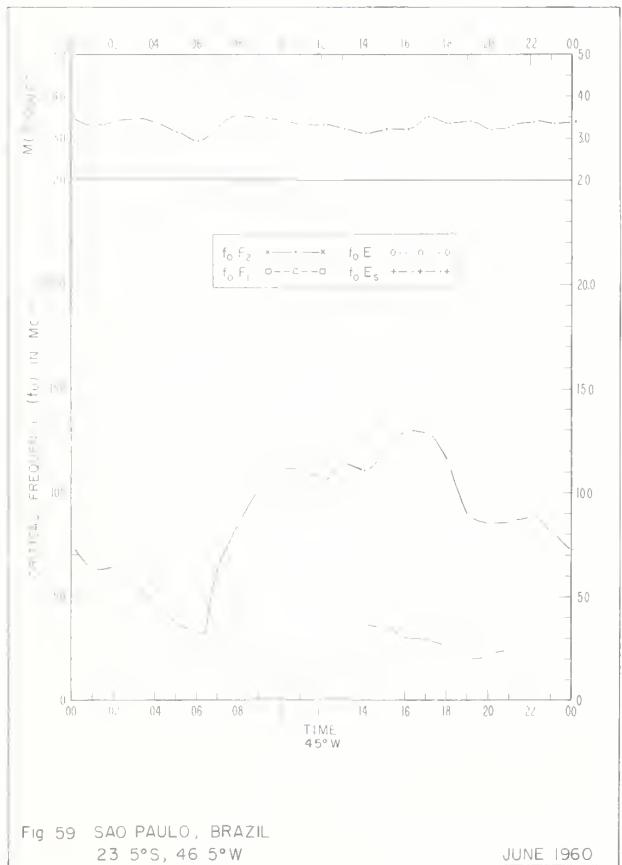
JUNE 1960

Fig. 57 LEOPOLDVILLE, CONGO
4 4°S, 15 2°E

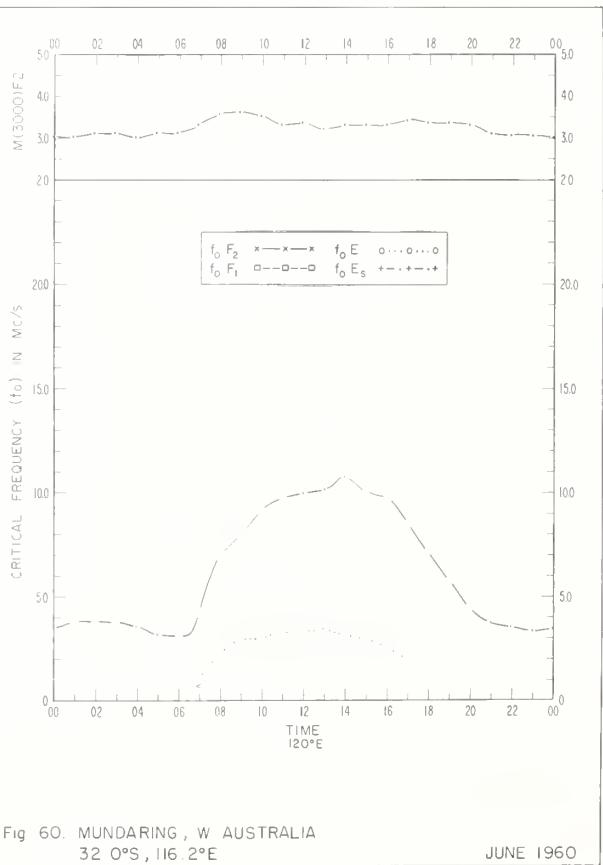
JUNE 1960

Fig. 58. ELISABETHVILLE, CONGO
II 6°S, 27 5°E

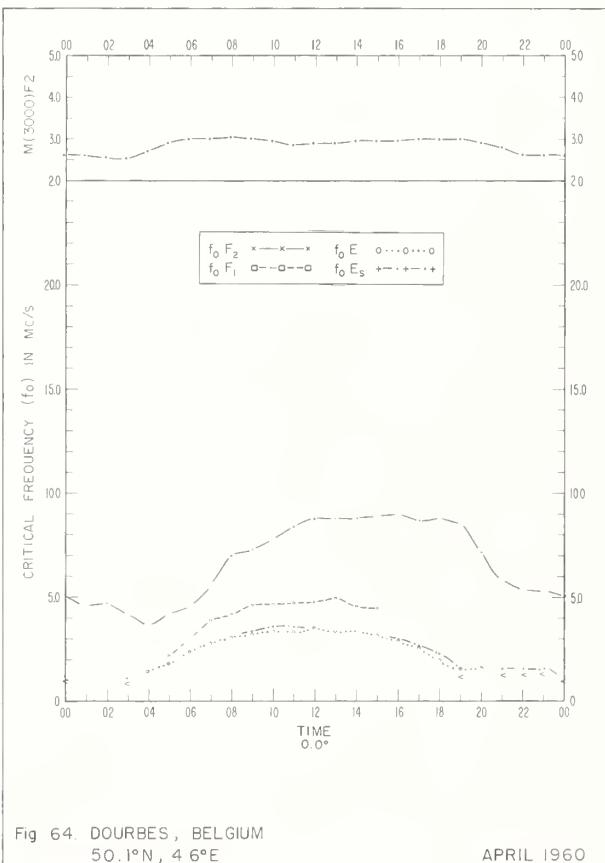
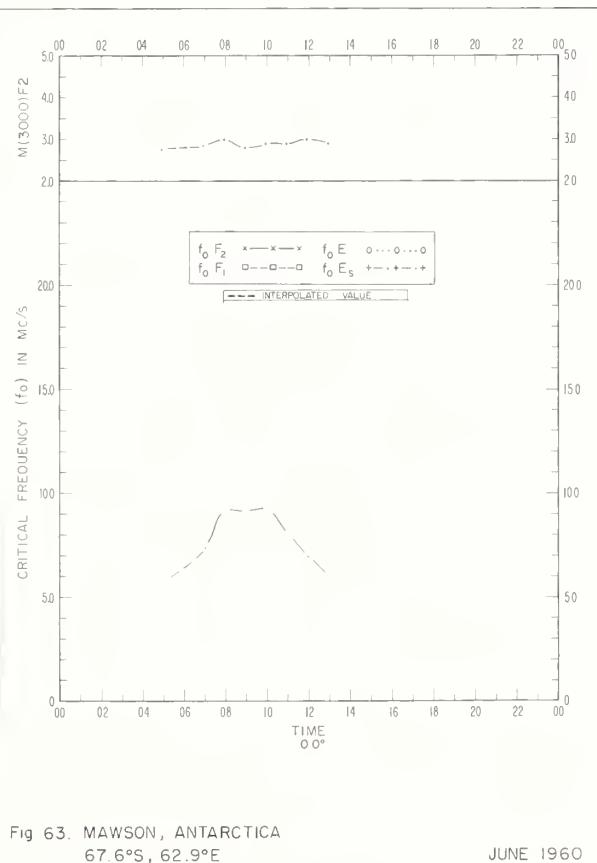
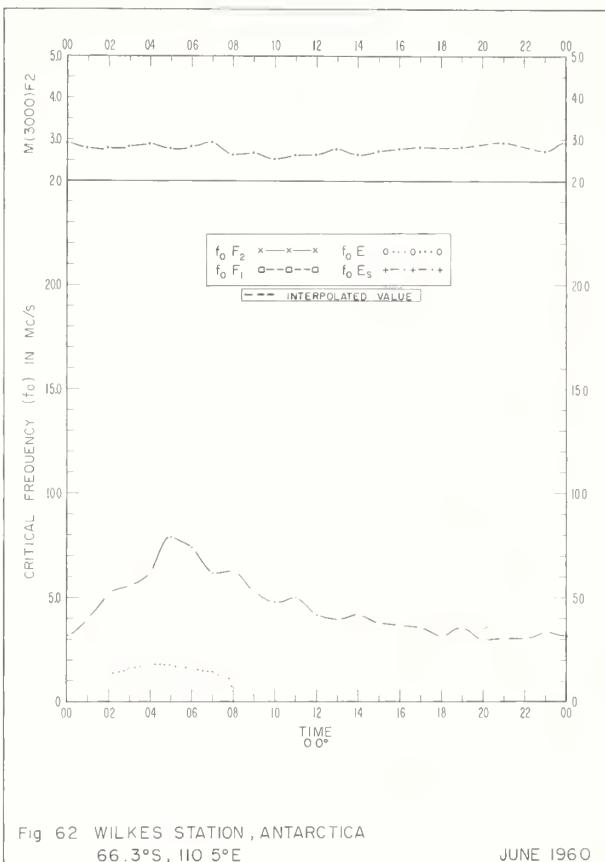
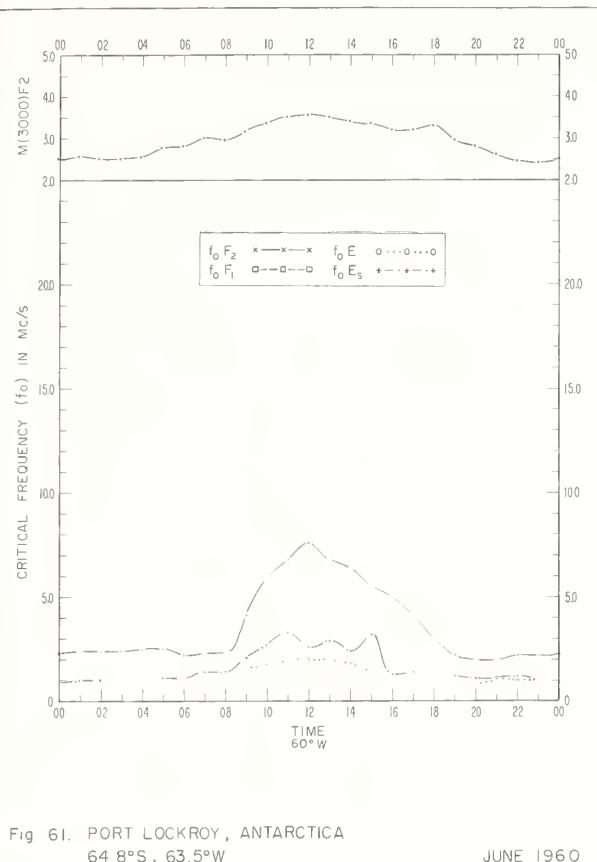
JUNE 1960

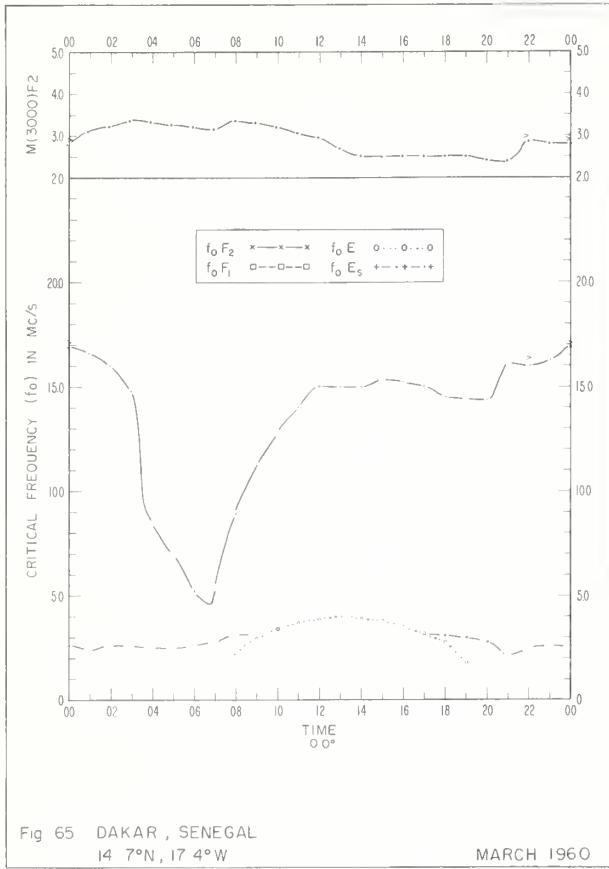
Fig. 59 SAO PAULO, BRAZIL
23 5°S, 46 5°W

JUNE 1960

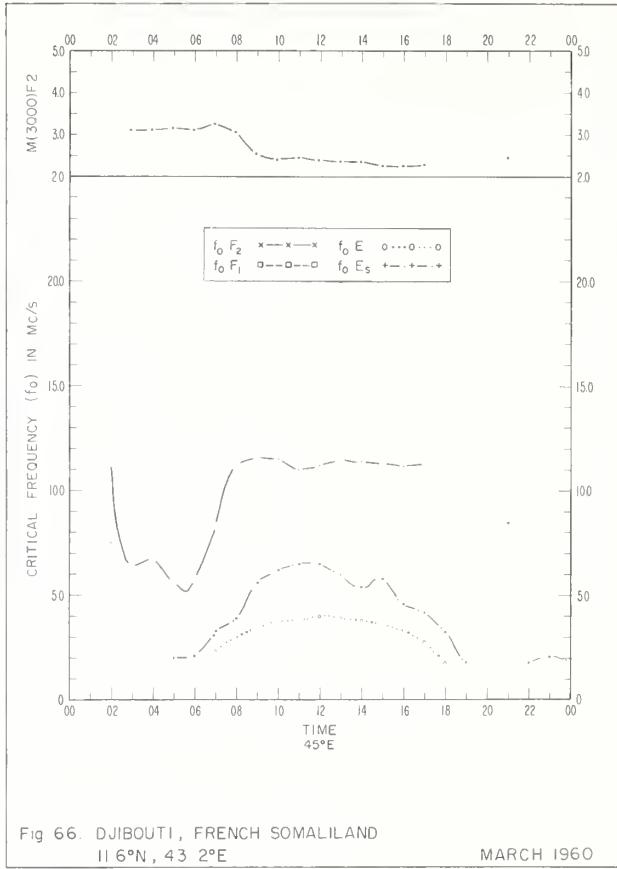
Fig. 60. MUNDARING, W AUSTRALIA
32 0°S, 116 2°E

JUNE 1960

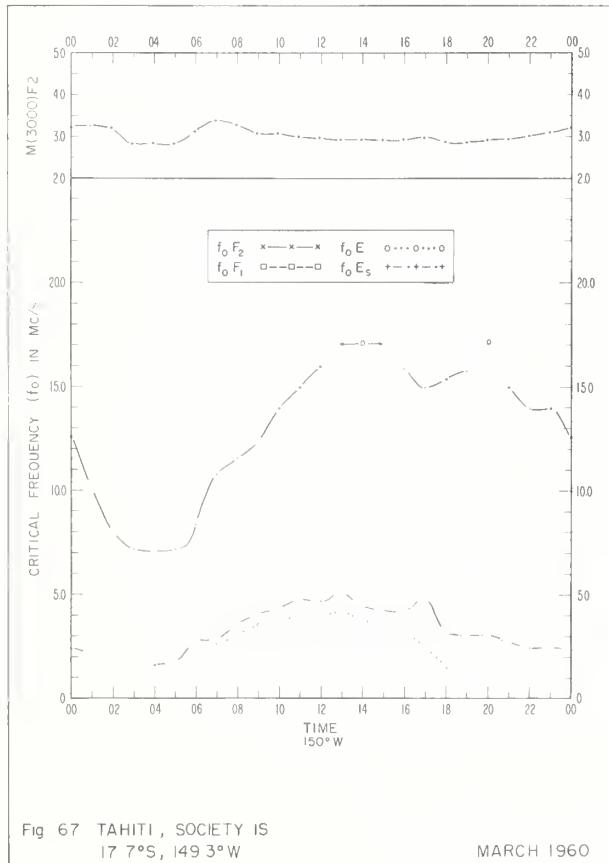


Fig 65 DAKAR , SENEGAL
14 7°N, 17 4°W

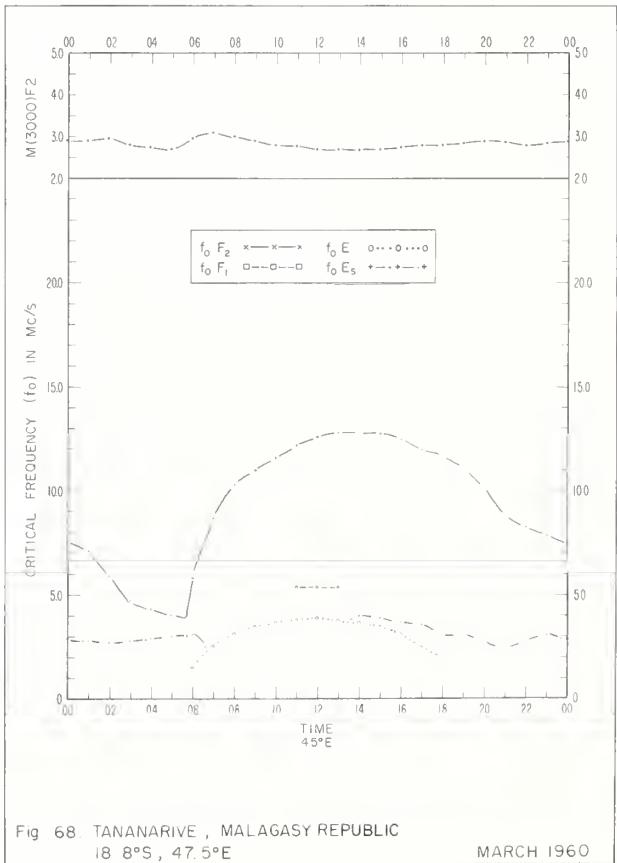
MARCH 1960

Fig 66. DJIBOUTI , FRENCH SOMALILAND
11 6°N, 43 2°E

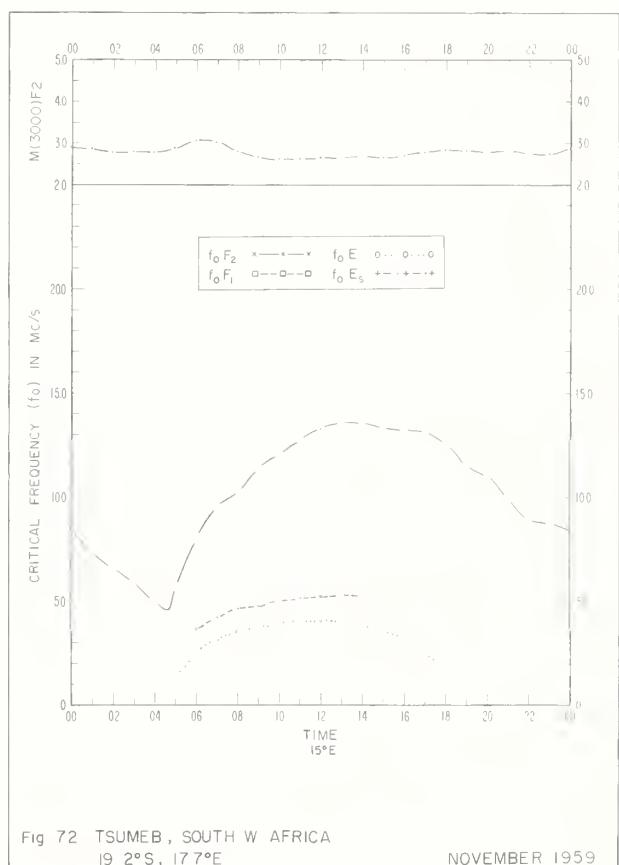
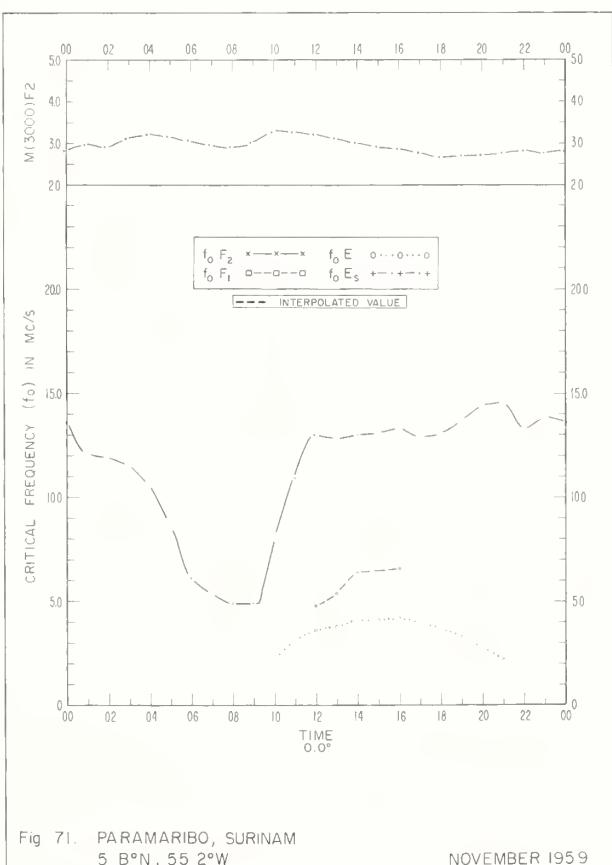
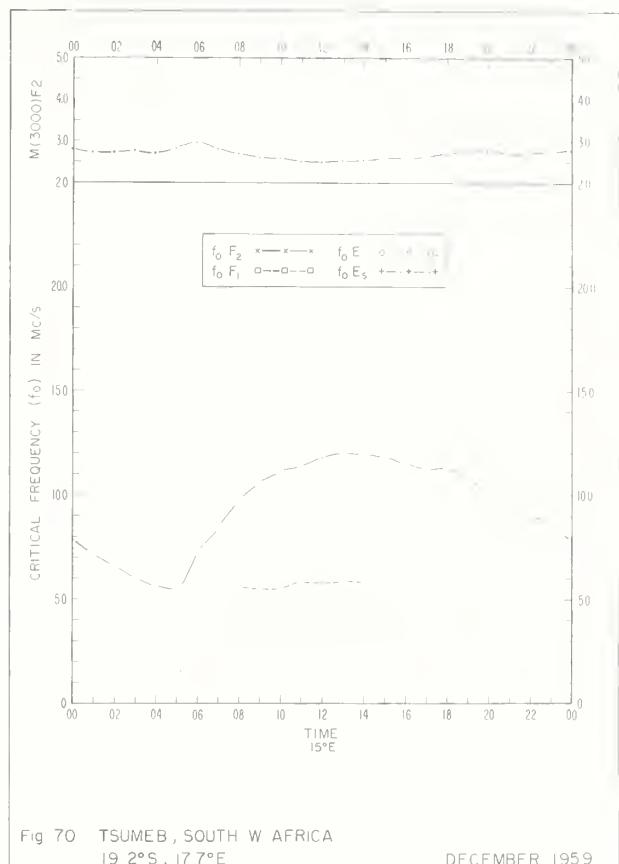
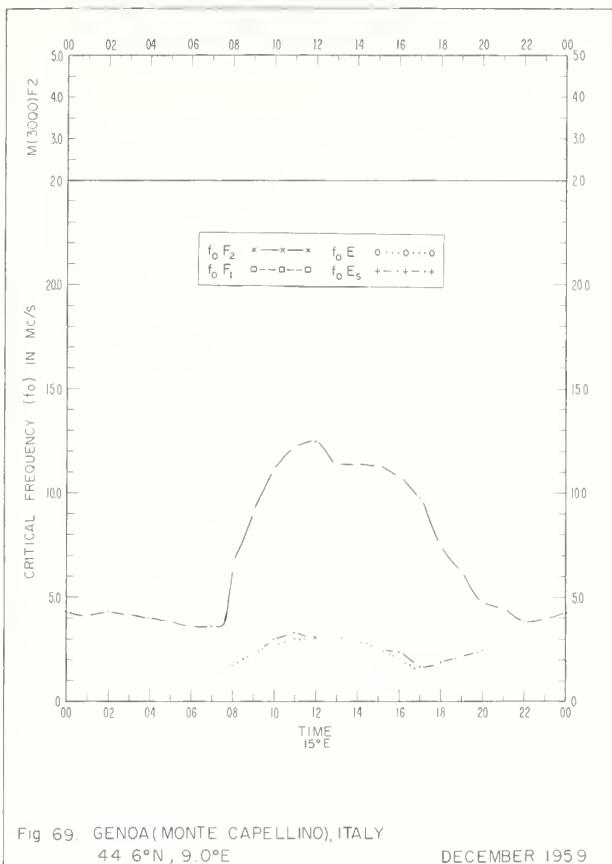
MARCH 1960

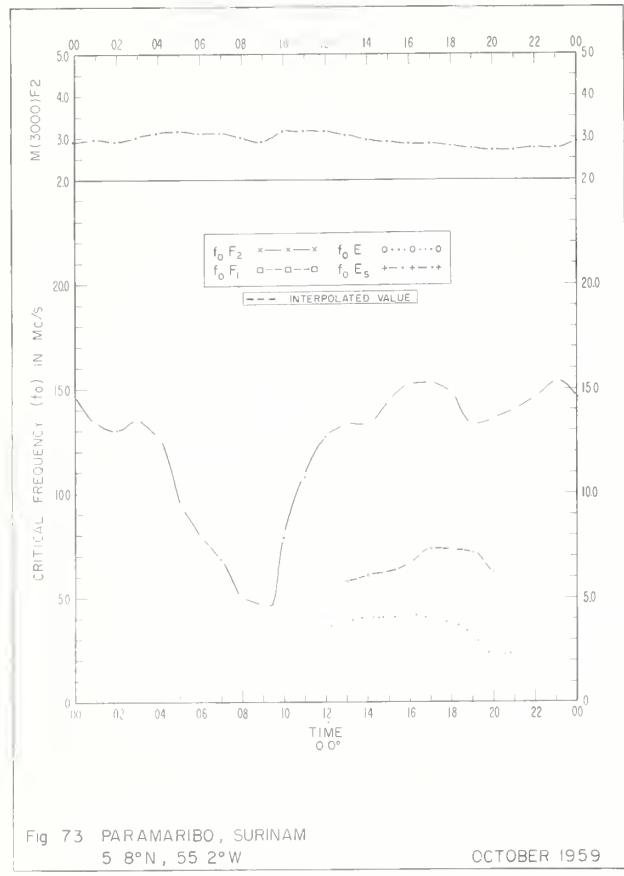
Fig 67 TAHITI , SOCIETY IS
17 7°S, 149 3°W

MARCH 1960

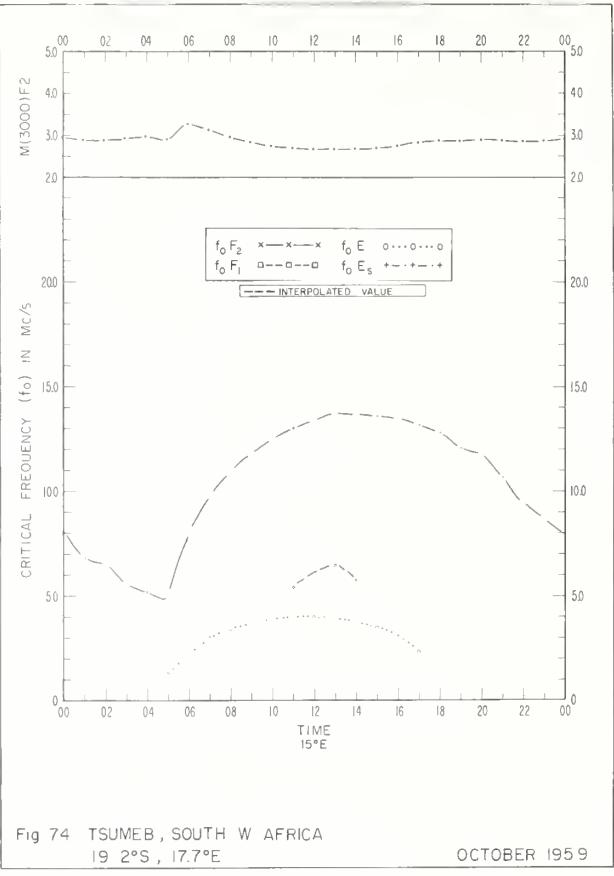
Fig 68 TANANARIVE , MALAGASY REPUBLIC
18 8°S, 47.5°E

MARCH 1960

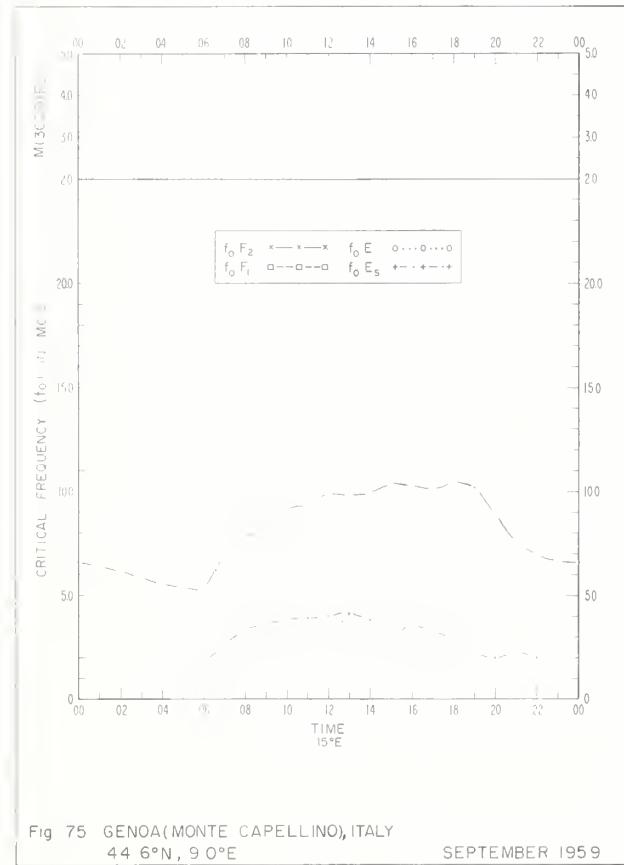


Fig 73 PARAMARIBO, SURINAM
5 8°N, 55 2°W

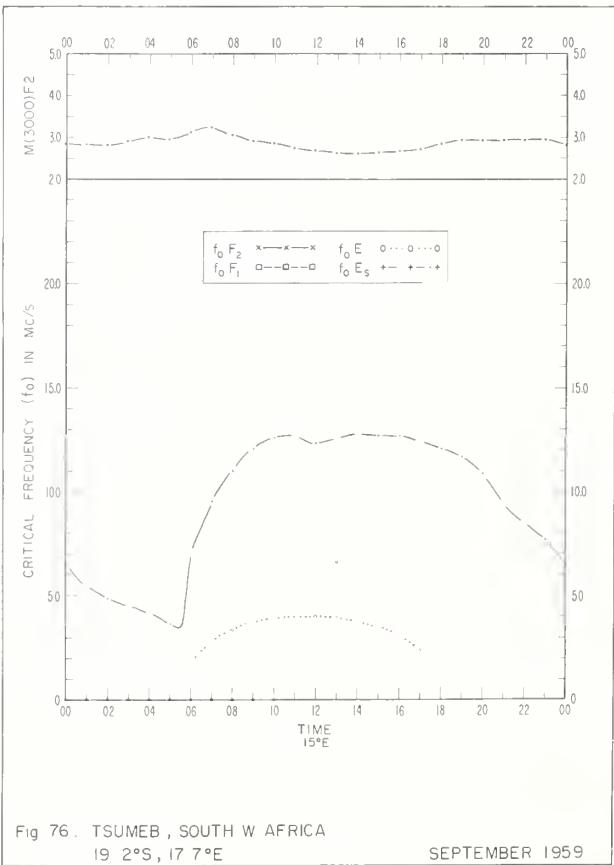
OCTOBER 1959

Fig 74 TSUMEB, SOUTH W AFRICA
19 2°S, 17 7°E

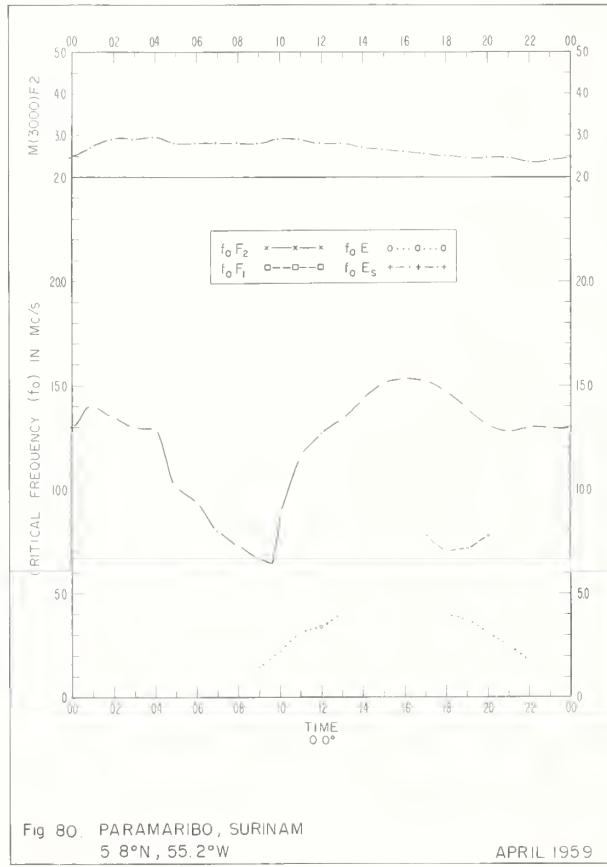
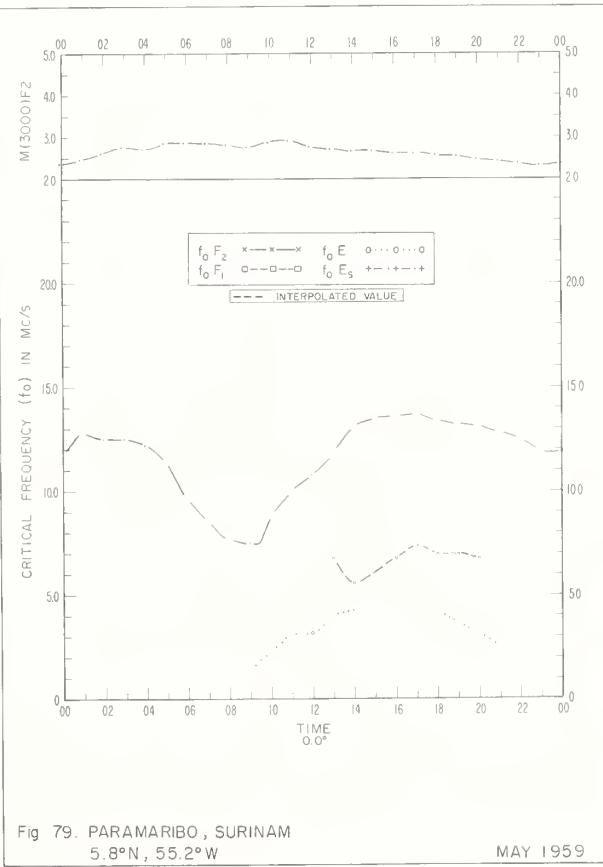
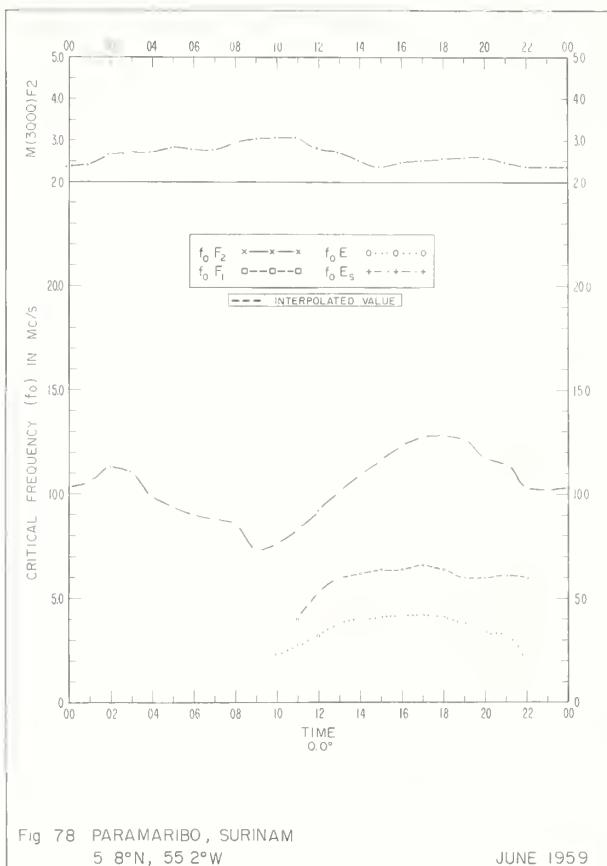
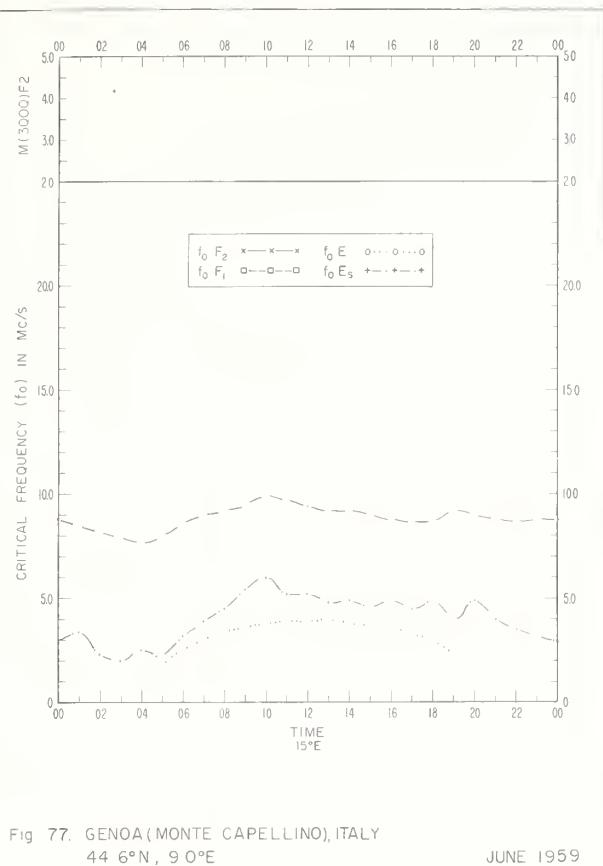
OCTOBER 1959

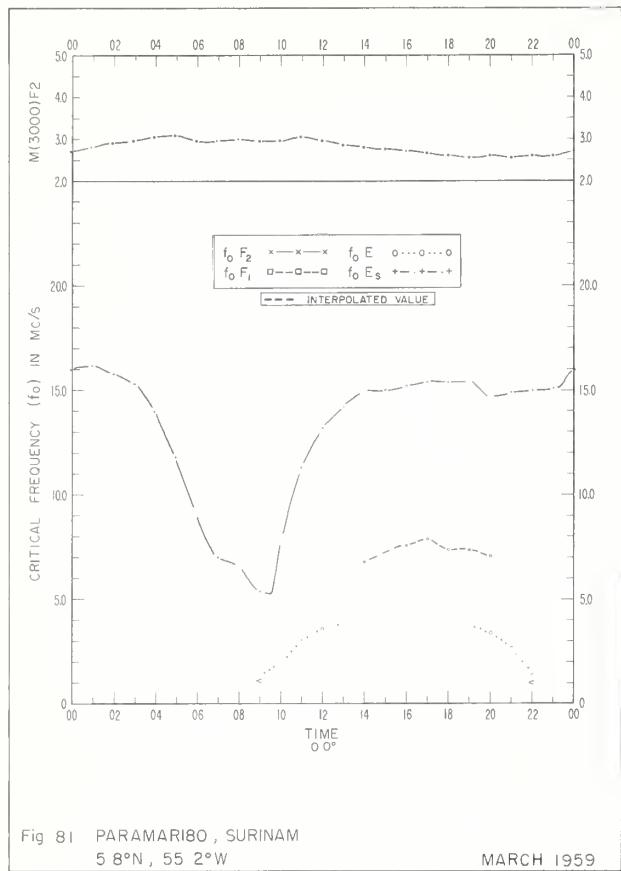
Fig 75 GENOA(MONTE CAPELLINO), ITALY
44 6°N, 9 0°E

SEPTEMBER 1959

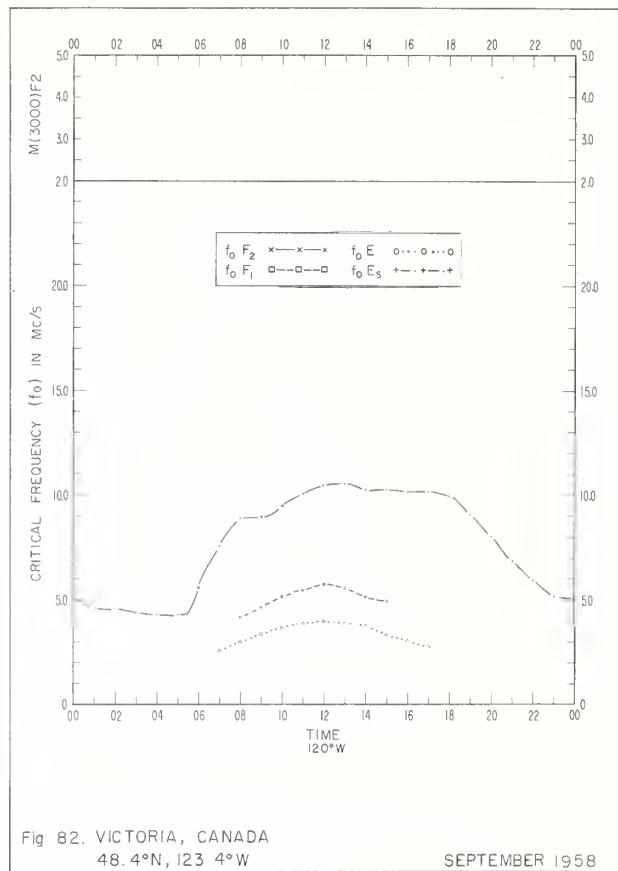
Fig 76 TSUMEB, SOUTH W AFRICA
19 2°S, 17 7°E

SEPTEMBER 1959

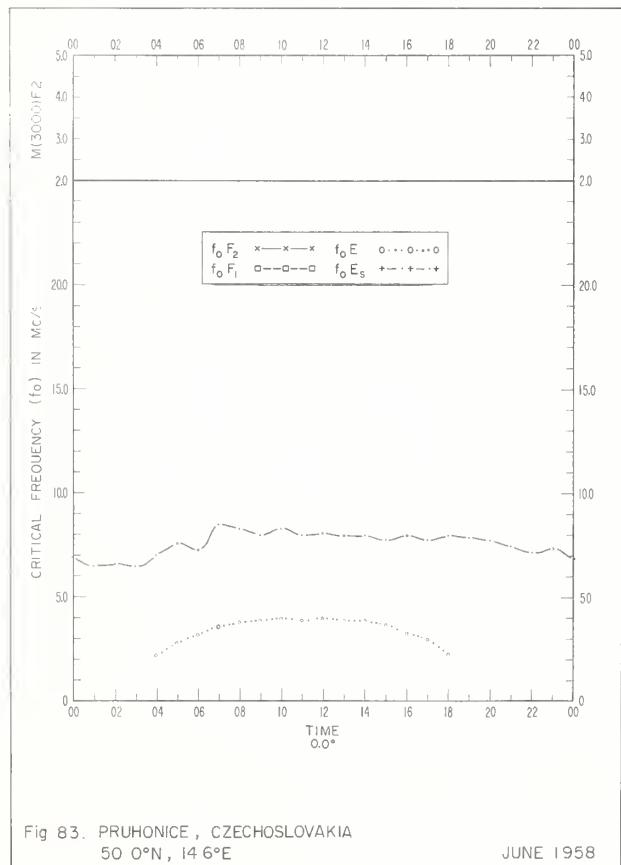


Fig 81. PARAMARIBO, SURINAM
5 8°N, 55 2°W

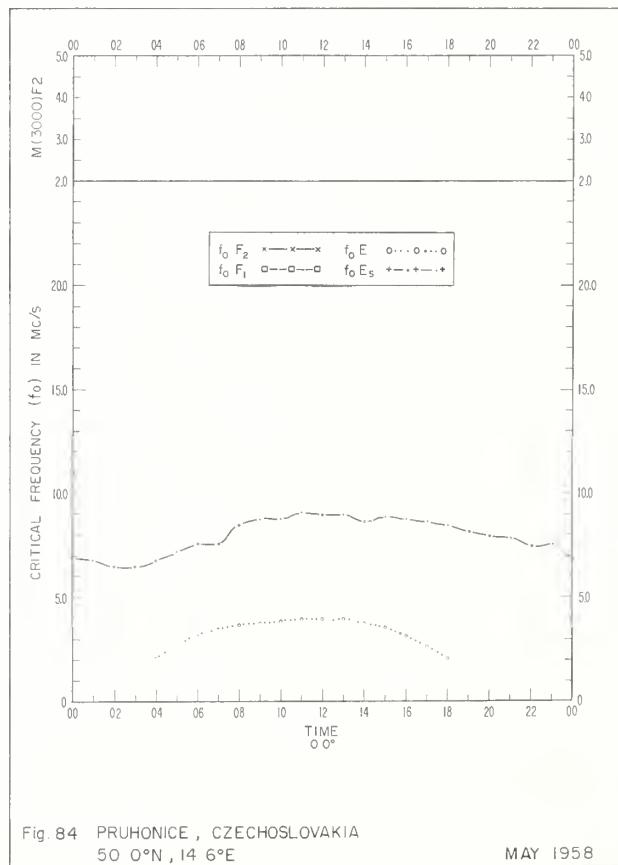
MARCH 1959

Fig 82. VICTORIA, CANADA
48.4°N, 123.4°W

SEPTEMBER 1958

Fig 83. PRUHONICE, CZECHOSLOVAKIA
50 0°N, 14 6°E

JUNE 1958

Fig 84 PRUHONICE, CZECHOSLOVAKIA
50 0°N, 14 6°E

MAY 1958

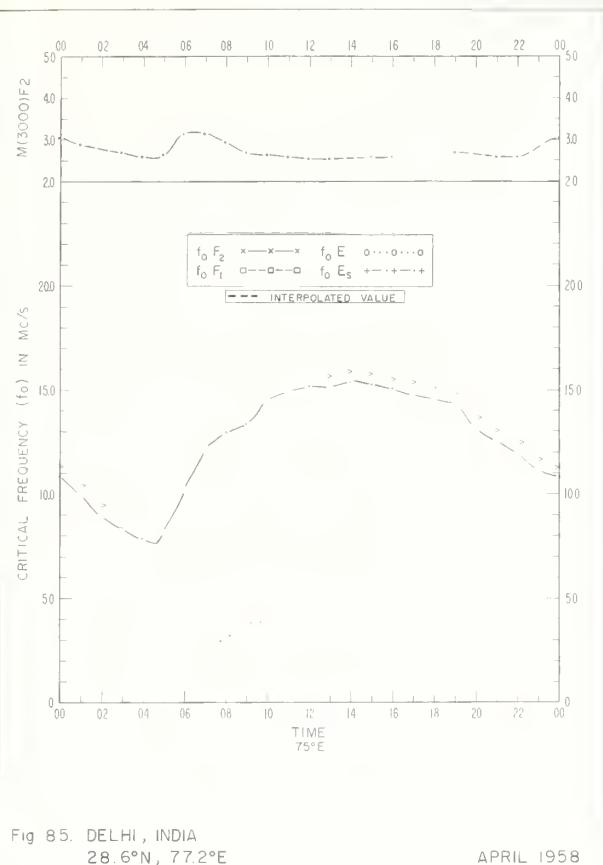


Fig. 85. DELHI, INDIA
28.6°N, 77.2°E

APRIL 1958

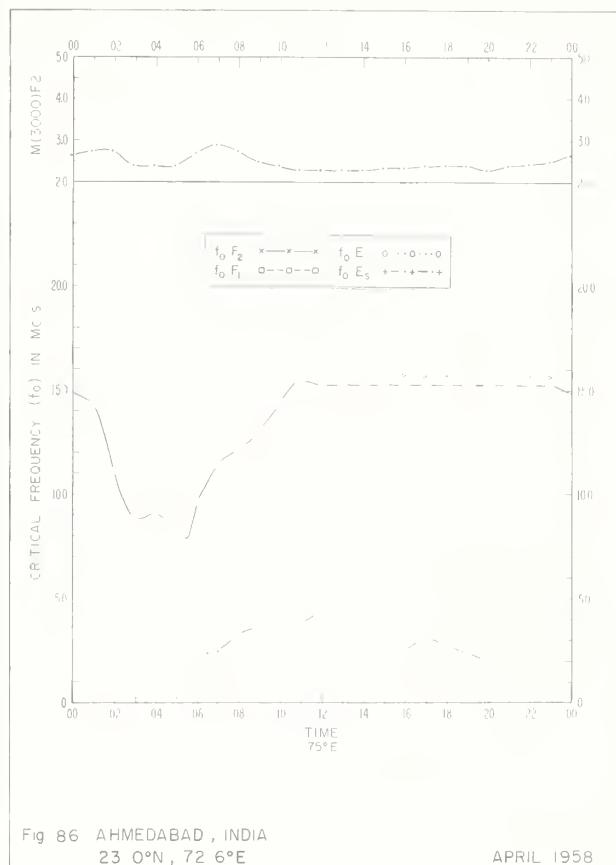


Fig. 86 AHMEDABAD, INDIA
23.0°N, 72.6°E

APRIL 1958

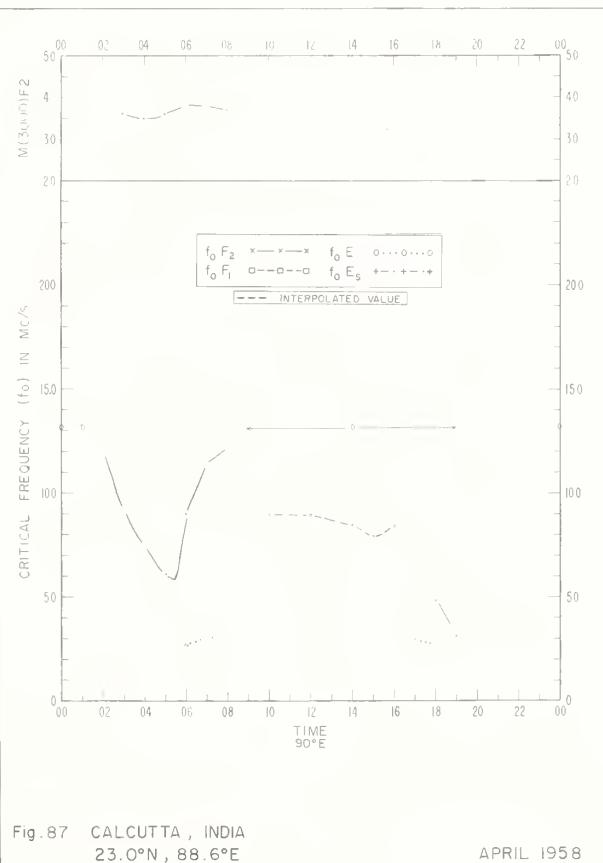


Fig. 87 CALCUTTA, INDIA
23.0°N, 88.6°E

APRIL 1958

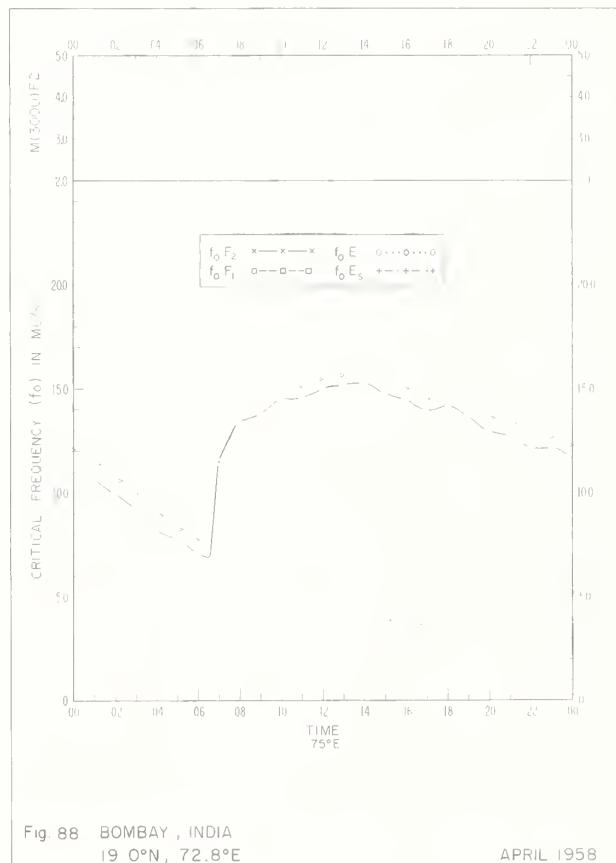
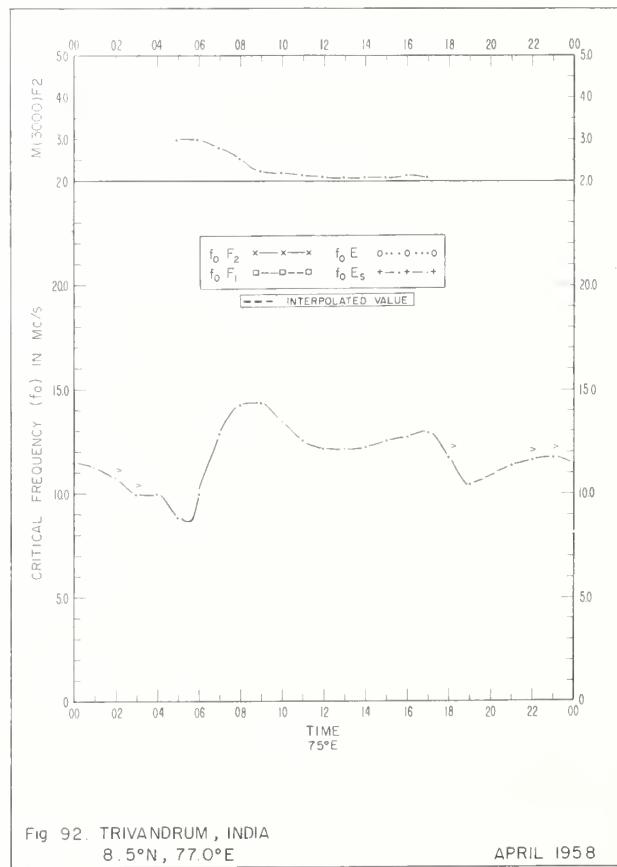
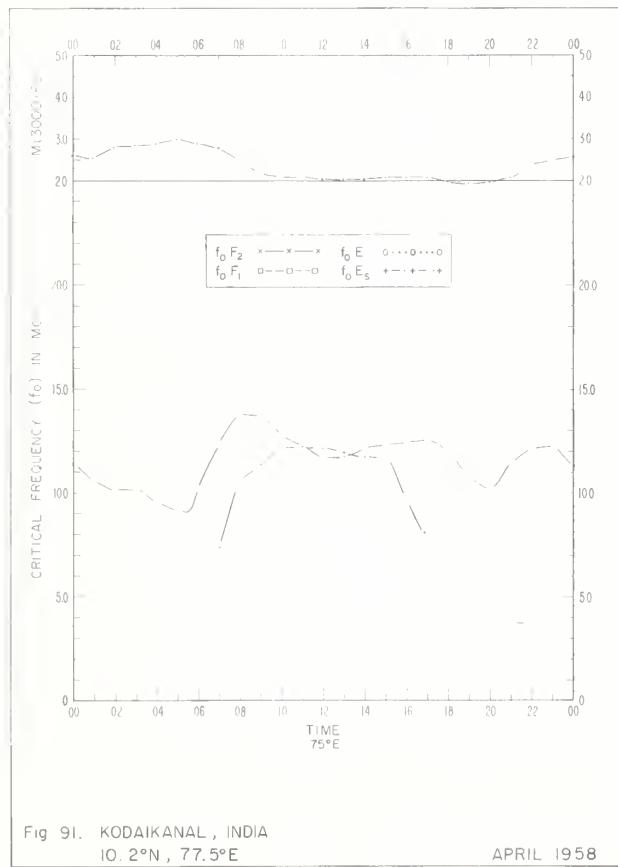
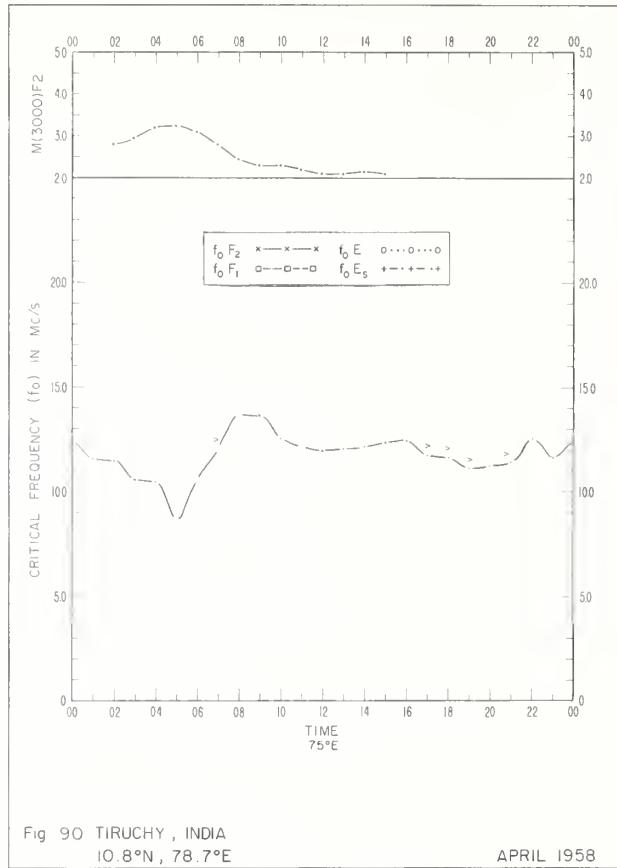
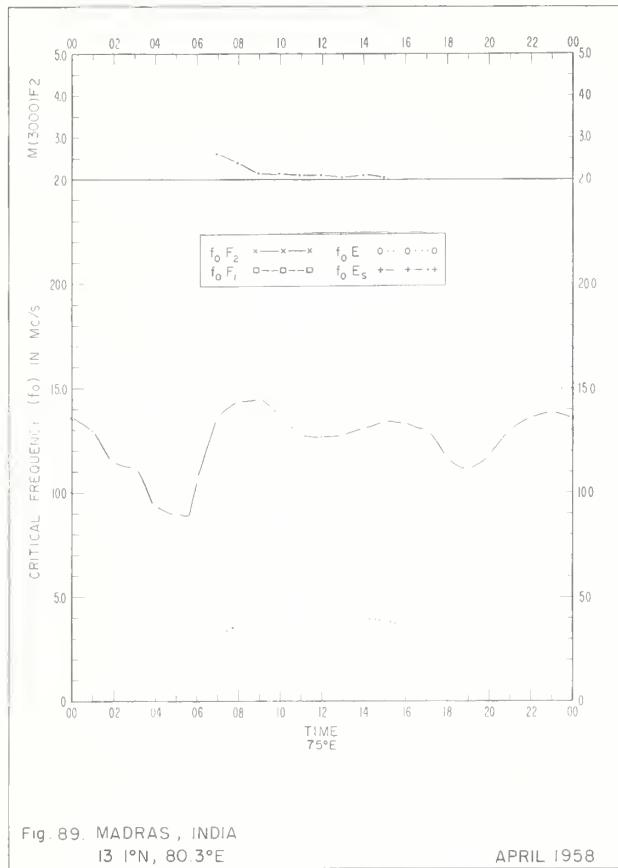


Fig. 88 BOMBAY, INDIA
19.0°N, 72.8°E

APRIL 1958



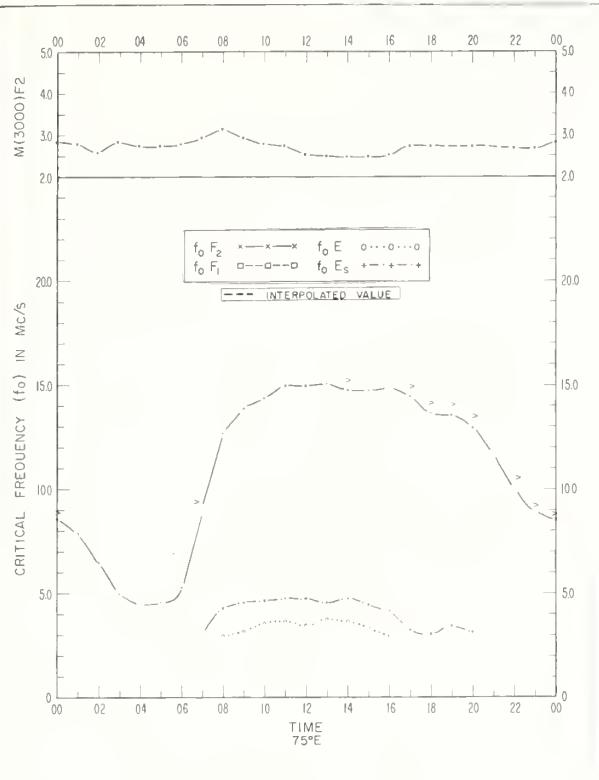


Fig. 93. DELHI , INDIA
28.6°N , 77.2°E

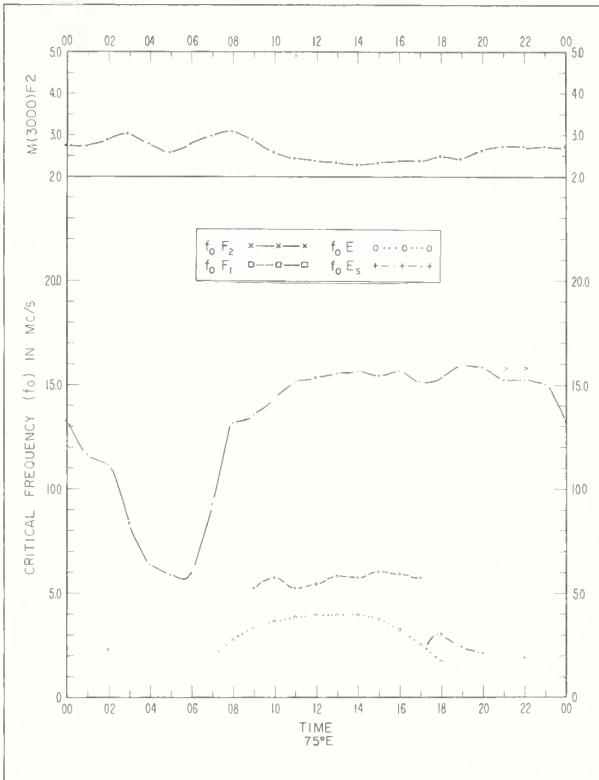


Fig. 94. AHMEDABAD , INDIA
23.0°N , 72.6°E

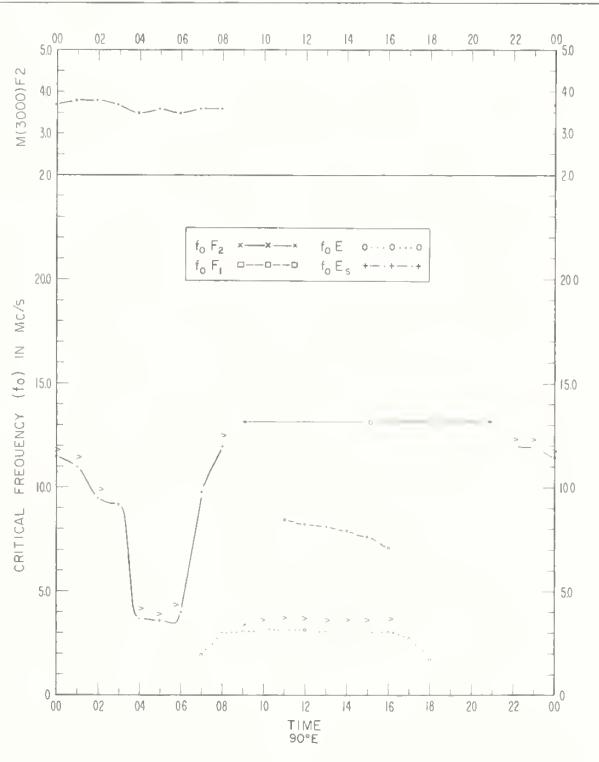


Fig. 95. CALCUTTA , INDIA
23.0°N , 88.6°E

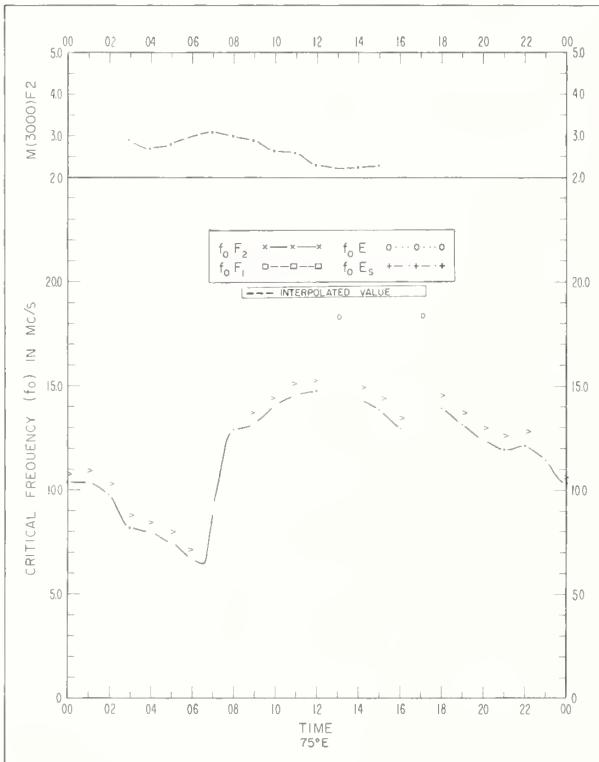


Fig. 96. BOMBAY , INDIA
19.0°N , 72.8°E

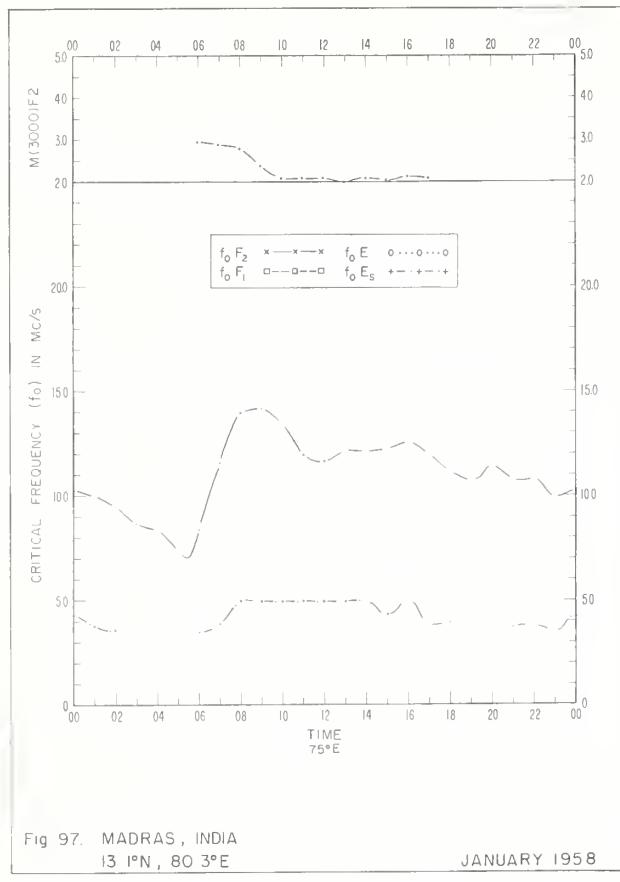


Fig 97. MADRAS, INDIA
13°N, 80°E

JANUARY 1958

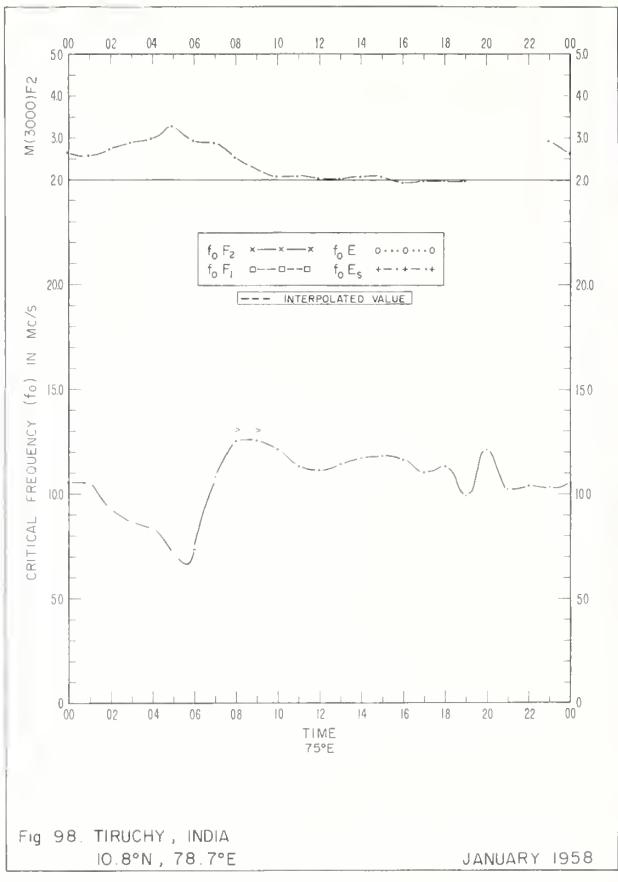


Fig 98. TIRUCHY, INDIA
10.8°N, 78.7°E

JANUARY 1958

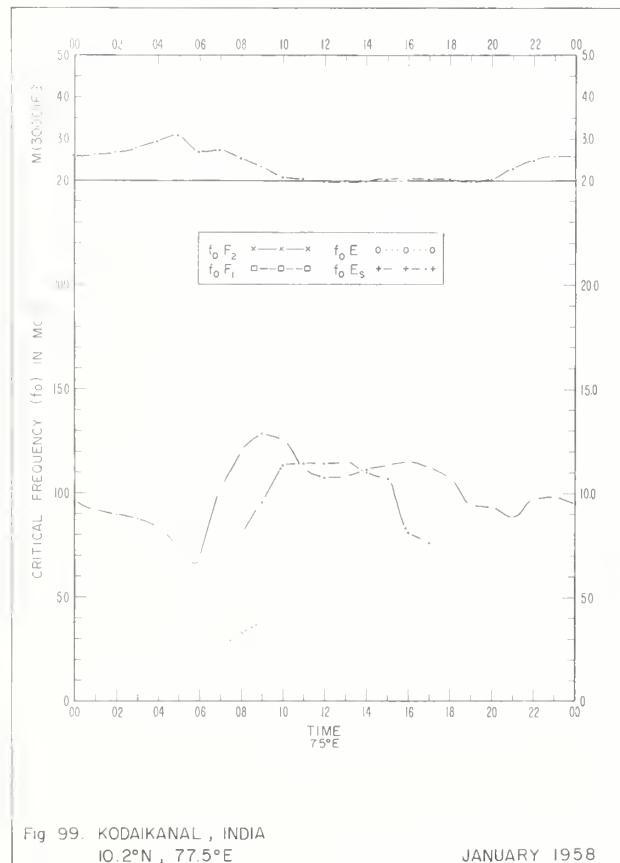


Fig 99. KODAIKANAL, INDIA
10.2°N, 77.5°E

JANUARY 1958

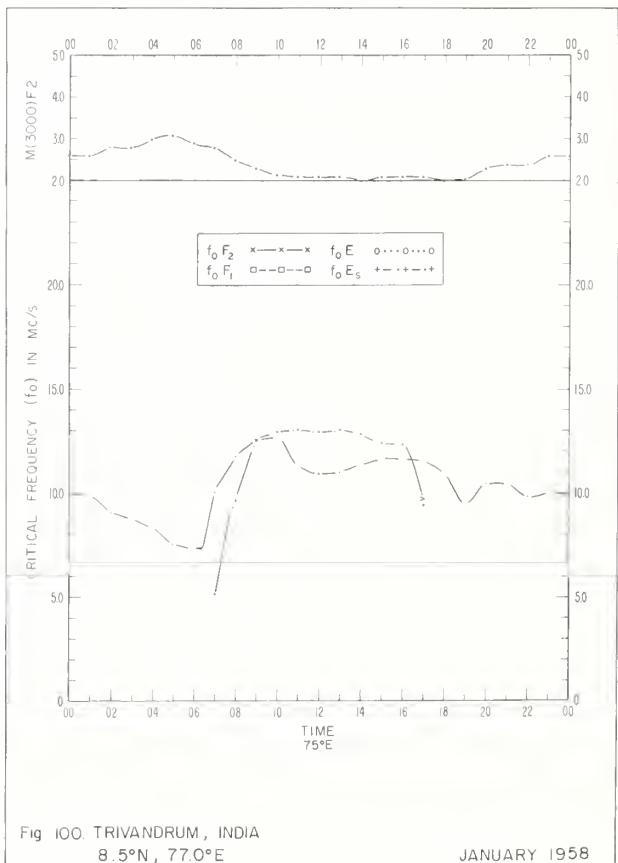


Fig 100. TRIVANDRUM, INDIA
8.5°N, 77.0°E

JANUARY 1958

INDEX OF IONOSPHERIC DATA IN CRPL F224

PAGE
TABLE FIGURE

AHMEDABAD, INDIA	1958	JAN.	24	49
	1958	APR.	22	47
	1960	JUNE	13	38
ANCHORAGE, ALASKA	1962	APR.	2	27
ATHENS, GREECE	1961	MAR.	7	32
BAGUIO, LUZON	1961	JAN.	7	32
	1962	JAN.	3	28
	1962	AUG.	1	26
BOMBAY, INDIA	1958	JAN.	24	49
	1958	APR.	22	47
BUENOS AIRES, ARGENTINA	1960	JULY	12	37
	1960	AUG.	10	35
	1960	SEPT.	9	34
BUNIA, CONGO	1960	JUNE	14	39
CALCUTTA, INDIA	1958	JAN.	24	49
	1958	APR.	22	47
CANBERRA, AUSTRALIA	1960	DEC.	8	33
	1961	JAN.	8	33
COCOS IS.	1962	MAY	2	27
CONCEPCION, CHILE	1961	JULY	6	31
DAKAR, SENEGAL	1960	MAR.	17	42
DELHI, INDIA	1958	JAN.	24	49
	1958	APR.	22	47
DJIBOUTI, FRENCH SOMALILAND	1960	MAR.	17	42

INDEX OF IONOSPHERIC DATA IN CRPL F224

			PAGE TABLE	FIGURE
DJIBOUTI, FRENCH SOMALILAND	1961	SEPT.	5	30
DOURBES, BELGIUM	1960	APR.	16	41
	1960	JUNE	13	38
ELISABETHVILLE, CONGO	1960	JUNE	15	40
FORMOSA, CHINA	1960	SEPT.	9	34
FT. MONMOUTH, NEW JERSEY	1961	OCT.	5	30
GENOA (MONTE CAPELLINO), ITALY	1959	JUNE	20	45
	1959	SEPT.	19	44
	1959	DEC.	18	43
GODHAVN, GREENLAND	1961	DEC.	4	29
GRAND BAHAMA I.	1962	MAY	1	26
HUANCAYO, PERU	1962	JAN.	3	28
IBADAN, NIGERIA	1960	JUNE	14	39
INVERNESS, SCOTLAND	1961	JAN.	7	32
JULIUSRUH/RUGEN, GERMANY	1960	JUNE	12	37
	1960	JULY	11	36
KODAIKANAL, INDIA	1958	JAN.	25	50
	1958	APR.	23	48
LEOPOLDVILLE, CONGO	1960	JUNE	15	40
LINDAU/HARZ, GERMANY	1960	JUNE	13	38
	1960	JULY	11	36

INDEX OF IONOSPHERIC DATA IN CRPL F224

PAGE
TABLE FIGURE

LINDAU/HARZ, GERMANY	1961	JAN.	7	32
LWIRO, CONGO	1960	JUNE	14	39
MADRAS, INDIA	1958	JAN.	25	50
	1958	APR.	23	48
MAWSON, ANTARCTICA	1960	JUNE	16	41
	1960	JULY	12	37
	1960	AUG.	10	35
	1960	SEPT.	10	35
MUNDARING, WESTERN AUSTRALIA	1960	JUNE	15	40
	1961	OCT.	5	30
NARSSARSSUAQ, GREENLAND	1962	JAN.	3	28
NATAL, BRAZIL	1960	JULY	11	36
OKINAWA I.	1962	JUNE	1	26
PARAMARIBO, SURINAM	1959	MAR.	21	46
	1959	APR.	20	45
	1959	MAY	20	45
	1959	JUNE	20	45
	1959	OCT.	19	44
	1959	NOV.	18	43
	1960	JUNE	14	39
	1960	SEPT.	9	34
POLE STATION, ANTARCTICA	1961	NOV.	4	29
PORT LOCKROY, ANTARCTICA	1960	JUNE	16	41
PORT MORESBY, PAPUA	1961	JUNE	6	31
	1961	JULY	6	31
	1961	DEC.	4	29

			PAGE TABLE	FIGURE
PRUHONICE, CZECHOSLOVAKIA	1958	MAY	21	46
	1958	JUNE	21	46
RESOLUTE BAY, CANADA	1962	APR.	2	27
SAO PAULO, BRAZIL	1960	JUNE	15	40
	1960	JULY	12	37
TAHITI, SOCIETY IS.	1960	MAR.	17	42
	1961	JAN.	8	33
TANANARIVE, MALAGASY REPUBLIC	1960	MAR.	17	42
	1961	JAN.	8	33
THULE, GREENLAND	1962	MAR.	3	28
TIRUCHY, INDIA	1958	JAN.	25	50
	1958	APR.	23	48
TOWNSVILLE, AUSTRALIA	1962	MAY	2	27
TRIVANDRUM, INDIA	1958	JAN.	25	50
	1958	APR.	23	48
TSUMEB, SOUTH WEST AFRICA	1959	SEPT.	19	44
	1959	OCT.	19	44
	1959	NOV.	18	43
	1959	DEC.	18	43
VICTORIA, CANADA	1958	SEPT.	21	46
WARSAW, POLAND	1960	JUNE	13	38
	1960	JULY	11	36
	1961	JULY	6	31
	1961	AUG.	5	30
	1961	DEC.	4	29
WASHINGTON, D.C.	1962	JUNE	1	26
WILKES STATION, ANTARCTICA	1960	JUNE	16	41
	1960	AUG.	10	35
	1960	OCT.	9	34

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

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