

**CRPL-F 226 PART A**

**FOR OFFICIAL USE**

Reference book not to be  
taken from the library.

**PART A**  
**IONOSPHERIC DATA**

**ISSUED**  
**JUNE 1963**

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



## IONOSPHERIC DATA

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## 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 1962, 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    | 10   | 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   | 49   |
| 1962  | 45   | 42   | 40   | 39   | 39  | 38   | 36   | 34   | 32   | 31   | 30   |      |

Units of Ionospheric Data Tables

foF2, foEs - - - Tenths 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  
TRELEW, ARGENTINA  
TUCUMAN, ARGENTINA

COMMONWEALTH OF AUSTRALIA, IONOSPHERIC PREDICTION SERVICE OF  
THE COMMONWEALTH OBSERVATORY  
BRISBANE, AUSTRALIA  
CANBERRA, AUSTRALIA  
HOBART, TASMANIA  
MAWSON, ANTARCTICA  
TOWNSVILLE, AUSTRALIA  
WILKES STATION, ANTARCTICA

AUSTRALIAN DEPARTMENT OF NATIONAL DEVELOPMENT, BUREAU OF  
MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS  
MUNDARING, WESTERN AUSTRALIA

UNIVERSITY OF GRAZ  
GRAZ, AUSTRIA

BELGIAN ROYAL METEOROLOGICAL INSTITUTE  
DOURBES, BELGIUM

ELECTRONICS DIRECTORATE OF THE BRAZILIAN NAVY  
NATAL, BRAZIL

ESCOLA POLITECNICA, UNIVERSITY OF SAO PAULO  
SAO PAULO, BRAZIL

BRITISH DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH,  
RADIO RESEARCH BOARD  
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SINGAPORE, BRITISH MALAYA  
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DAKAR, SENEGAL  
DJIBOUTI, FRENCH SOMALILAND  
PARIS, FRANCE  
TAHITI, SOCIETY IS.  
TANANARIVE, MALAGASY REPUBLIC

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BERLIN, GERMANY  
JULIUSRUH/RUGEN, GERMANY

INSTITUTE FOR IONOSPHERIC RESEARCH, LINDAU UBER NORTHEIM,  
HANNOVER, GERMANY  
LINDAU/HARZ, GERMANY

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

ICELANDIC POST AND TELEGRAPH ADMINISTRATION  
REYKJAVIK, ICELAND

INDIAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH,  
RADIO RESEARCH COMMITTEE, NEW DELHI, INDIA  
AHMEDABAD, INDIA (PHYSICAL RESEARCH LABORATORY)

METEOROLOGICAL SERVICE, PROVINCE OF MACAU, ASIA  
MACAU

CHRISTCHURCH GEOPHYSICAL OBSERVATORY, NEW ZEALAND DEPARTMENT OF  
SCIENTIFIC AND INDUSTRIAL RESEARCH  
CAPE HALLETT (ADARE), ANTARCTICA  
CHRISTCHURCH, NEW ZEALAND  
SCOTT BASE, ANTARCTICA

MANILA OBSERVATORY, PHILIPPINES  
BAGUIO, LUZON

INSTITUTE OF TELECOMMUNICATION, WARSAW, POLAND  
WARSAW, POLAND

SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH  
CAPETOWN, UNION OF SOUTH AFRICA  
JOHANNESBURG, UNION OF SOUTH AFRICA

UNITED STATES ARMY SIGNAL CORPS., UNITED STATES OF AMERICA  
ADAK, ALASKA  
OKINAWA I.  
THULE, GREENLAND  
WHITE SANDS, NEW MEXICO





























TABLE 41

CANBERRA, AUSTRALIA

—

TIME 150.0E

[illegible]

SWEEP 1.6 MC TO 20.0 MC IN 18 SECONDS.

APRIL, 1961

TABLE 4.3

TRELEW, ARGENTINA

10

TIME 60.00h

[illegible]

SWEEP 1.3 MC TO 18.0 MC IN 20 SECONDS.

APRIL • 1999

TABLE 42

HUGART, TASMANIA

—

TIME 150.0E

[illegible]

SWEEP 1.0 MC TO 16.0 MC IN 1 MINUTE 55 SECONDS.

APRIL, 1961

TABLE 44

CHRISTCHURCH, NEW ZEALAND

144

TIME 180.00E

[illegible]

▲ 2008年12月

APRIL 1991









TABLE 57

| BRISBANE, AUSTRALIA<br>(127°55', 152°46'E) |     |     |     |     |    |    |     |     |     |     |     |     |     | TIME 150-0E |     |     |     |     |     |     |     |     |     |     |
|--------------------------------------------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  |
| f <sub>o</sub> F2                          | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 93  | 93  | 93          | 102 | 102 | 92  | 84  | 86  | 71  | 65  | 64  | 63  | 60  |
| h'F2                                       | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 77  | 77  | 77          | 77  | 77  | 77  | 77  | 77  | 68  | 8   | 8   | 8   | 6   |
| h'F                                        | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 77  | 77  | 77          | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  |
| M3000F2                                    | 280 | 285 | 280 | 310 |    |    | 320 | 335 | 320 | 345 | 315 | 310 | 305 | 290         | 295 | 295 | 300 | 315 | 315 | 285 | 275 | 260 | 260 | 270 |
| f <sub>o</sub> F1                          | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 93  | 93  | 93          | 102 | 102 | 92  | 84  | 86  | 71  | 65  | 64  | 63  | 60  |
| f <sub>o</sub> E                           | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 93  | 93  | 93          | 102 | 102 | 92  | 84  | 86  | 71  | 65  | 64  | 63  | 60  |
| h'E                                        | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 77  | 77  | 77          | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  |
| f <sub>o</sub> E <sub>s</sub>              | 60  | 59  | 58  | 53  | 48 | 43 | 50  | 70  | 80  | 100 | 99  | 77  | 77  | 77          | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  | 77  |

SHEEP 14.0 MC TO 16.0 MC IN 1 MINUTE 55 SECOND.

MARCH, 1961

TABLE 58

| MUNDARING, WESTERN AUSTRALIA<br>(132°05', 116°22'E) |     |     |     |     |     |     |     |     |     |     |     |     |     | TIME 120-0E |     |     |     |     |     |     |     |     |     |     |
|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  |
| f <sub>o</sub> F2                                   | 45  | 43  | 42  | 42  | 38  | 36  | 38  | 55  | 63  | 70  | 77  | 79  | 84  | 87          | 87  | 88  | 85  | 82  | 80  | 72  | 61  | 54  | 48  | 46  |
| h'F2                                                | 24  | 30  | 30  | 25  | 29  | 29  | 28  | 28  | 28  | 27  | 28  | 28  | 28  | 29          | 29  | 28  | 29  | 29  | 28  | 26  | 28  | 29  | 28  | 28  |
| h'F                                                 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260         | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| M3000F2                                             | 250 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260         | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| f <sub>o</sub> F1                                   | 45  | 43  | 42  | 42  | 38  | 36  | 38  | 55  | 63  | 70  | 77  | 79  | 84  | 87          | 87  | 88  | 85  | 82  | 80  | 72  | 61  | 54  | 48  | 46  |
| f <sub>o</sub> E                                    | 45  | 43  | 42  | 42  | 38  | 36  | 38  | 55  | 63  | 70  | 77  | 79  | 84  | 87          | 87  | 88  | 85  | 82  | 80  | 72  | 61  | 54  | 48  | 46  |
| h'E                                                 | 24  | 30  | 30  | 25  | 29  | 29  | 28  | 28  | 28  | 27  | 28  | 28  | 28  | 29          | 29  | 28  | 29  | 29  | 28  | 26  | 28  | 29  | 28  | 28  |
| f <sub>o</sub> E <sub>s</sub>                       | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260         | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |

SHEEP 14.0 MC TO 20.0 MC IN 18 SECONDS.

MARCH, 1961

TABLE 59

| CANBERRA, AUSTRALIA<br>135°35', 149°02'E |     |     |     |     |     |     |     |     |     |     |     |     |     | TIME 150- |     |     |     |     |     |     |     |     |     |     |
|------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  |
| $f_oF2$                                  | 53  | 50  | 49  | 48  | 43  | 41  | 44  | 57  | 64  | 68  | 74  | 78  | 75  | 84        | 86  | 85  | 85  | 83  | 82  | 70  | 57  | 56  | 56  | 56  |
| $h'F2$                                   | 26  | 24  | 20  | 23  | 22  | 24  | 24  | 23  | 23  | 21  | 21  | 23  | 20  | 20        | 22  | 23  | 21  | 27  | 27  | 26  | 27  | 26  | 27  | 28  |
| $h'F$                                    |     |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |
| $M3000f_2$                               | 290 | 285 | 300 | 300 | 280 | 300 | 315 | 330 | 325 | 340 | 320 | 312 | 310 | 315       | 310 | 310 | 310 | 315 | 315 | 285 | 270 | 270 | 270 | 270 |
| $f_oF1$                                  | 12  | 13  | 9   | 15  | 14  | 14  | 11  | 14  | 18  | 12  | 15  | 16  | 14  | 16        | 16  | 17  | 13  | 12  | 7   | 7   | 38  | 3   | 3   |     |
| $f_oE$                                   |     |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |
| $h'E$                                    |     |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |
| $f_oE_s$                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |

SHEEP 14.0 MC TO 20.0 MC IN 18 SECOND.

MARCH, 1961

TABLE 60

| TRILEW, ARGENTINA<br>(143°25', 65°34'S) |     |     |     |     |     |     |     |     |     |     |     |     |     | TIME 60-0W |     |     |     |     |     |     |     |     |     |     |
|-----------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  |
| f <sub>o</sub> F2                       | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| h'F2                                    | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| h'F                                     | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| M3000F2                                 | 285 | 270 | 270 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280        | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 |
| f <sub>o</sub> F1                       | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| f <sub>o</sub> E                        | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| h'E                                     | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |
| f <sub>o</sub> E <sub>s</sub>           | 56  | 58  | 56  | 58  | 60  | 50  | 44  | 62  | 76  | 40  | 46  | 100 | 100 | 100        | 100 | 98  | 98  | 95  | 93  | 73  | 62  | 60  | 59  | 56  |

SHEEP 14.5 MC TO 16.0 MC IN 31 SECONDS.

MARCH, 1961





TAF 1000

| HOUR      | DATE: 11/10/00 |     |     |     |     |     |     |     |     |     |     |     | TIME: 04:00 |     |     |     |     |     |     |     |     |     |     |     |
|-----------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           | 00             | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12          | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
| Fe2       | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe2       | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe F      | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| WIS0001F2 | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe F1     | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe E      | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe N E    | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |
| Fe E1     | MED            | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | CO             | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1         | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
|           | LO             |     |     |     |     |     |     |     |     |     |     |     |             |     |     |     |     |     |     |     |     |     |     |     |

TABLE 11  
MINORING, WESTERN AUSTRALIA  
(32.05, 116.2E)

[illegible]

TABLE 6

100% HYDROGEN, 13.4% (54.6N, 13.4E)

[illegible][illegible]



[illegible]

SWEEP 0.5 MC TO 20.0 MC IN 25 SECONDS.

OCTOBER, 1960

SAO PAULO, BRAZIL

[illegible]

TWEET 1.0 ML TO 25.0 MG.

[illegible]

SWEEP 2.8 MC TO 18.0 MC IN 50 SECONDS.

OCTOBER, 1966

TABLE 14

[illegible]
$$-W_0 = 0 \quad \text{at } t = 0, \quad W_0 = 24 \quad \text{at } 5 \text{ cm}.$$

0961 • 6360137

[illegible]

|      |     | 133°35' - 46°20' |      |      |     |     |     |     |     |     |     |     |     | TIME 45.00 |     |     |     |     |     |     |     |     |     |     |     |
|------|-----|------------------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  |
| f6F2 | MED | 1.4              | 1.00 | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | LQ  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
| f6F2 | MED | 1.2              | 1.0  | 1.1  | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 |
|      | CD  | 1.8              | 1.10 | 1.14 | 1.3 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3        | 2.  |     |     |     |     |     |     |     |     |     |     |

[illegible][illegible]



MAY • 1967

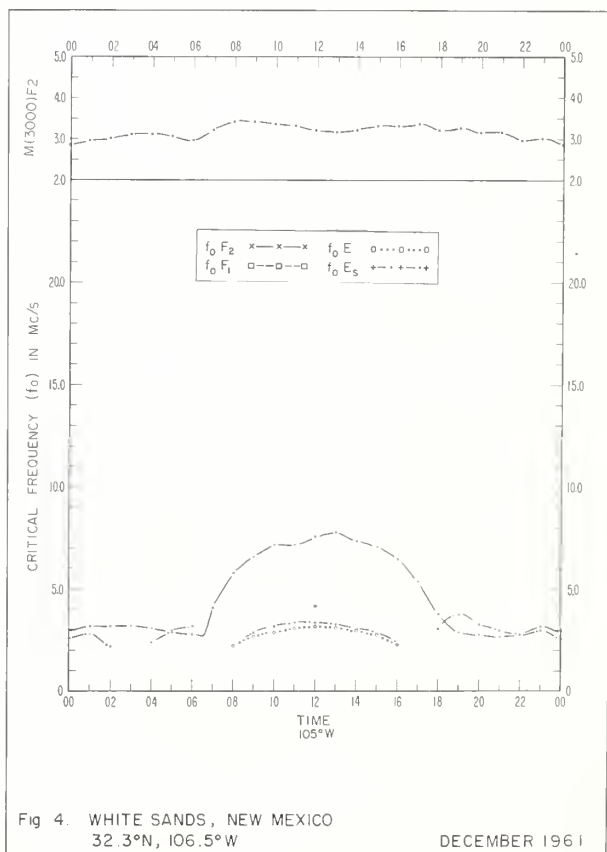
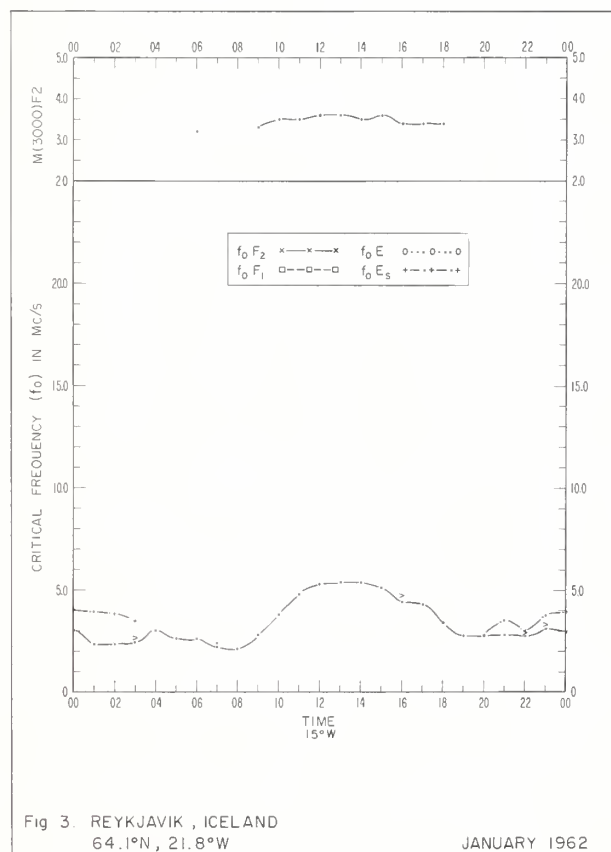
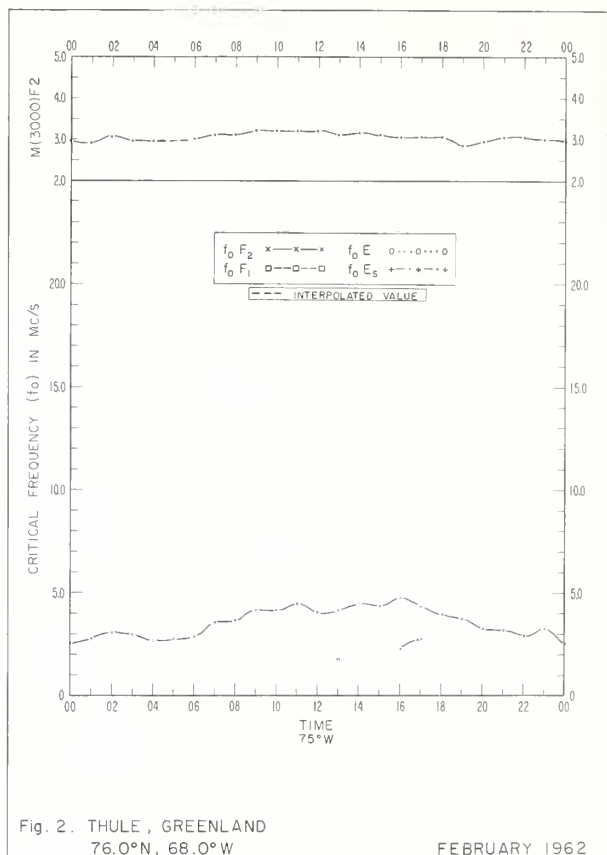
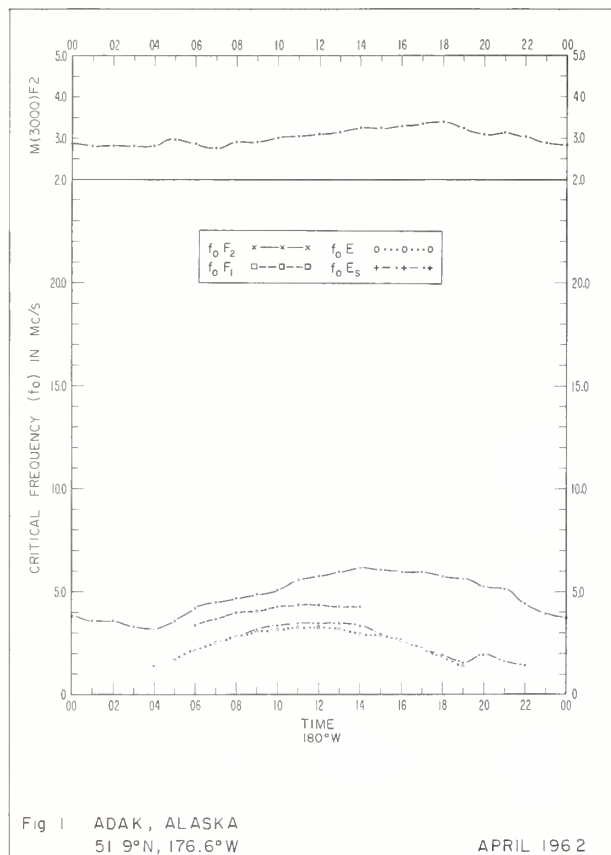


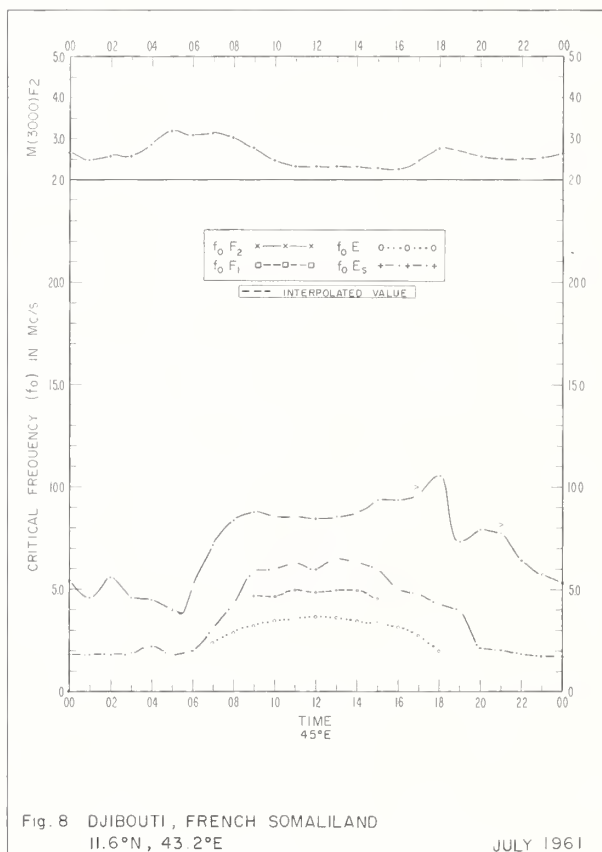
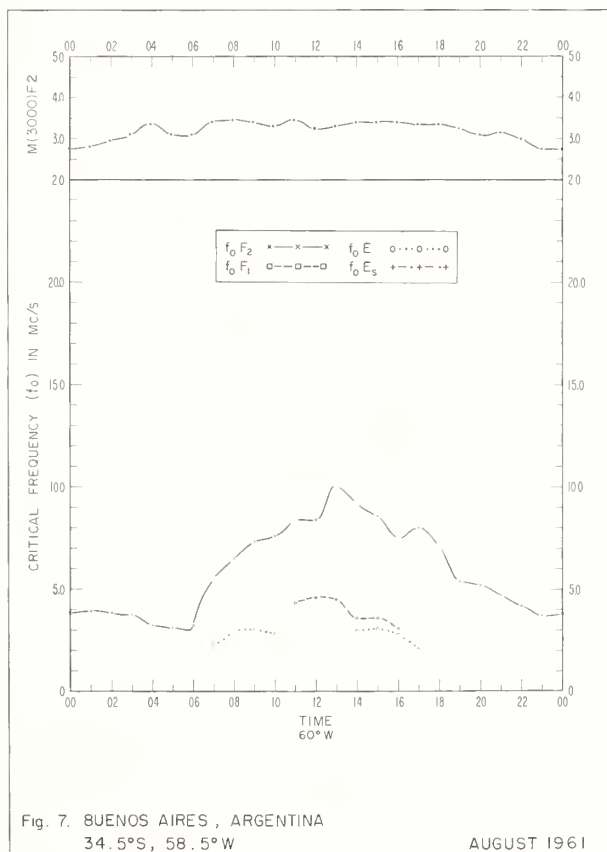
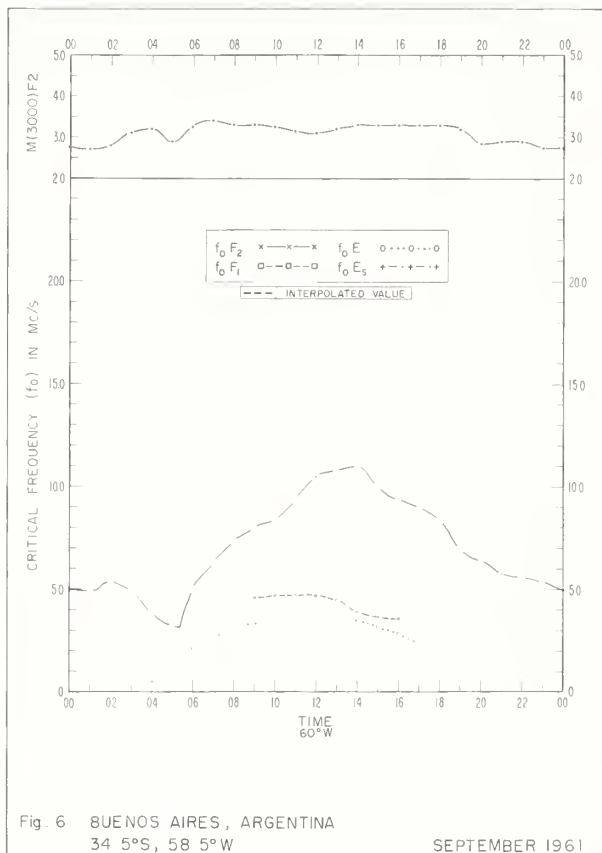
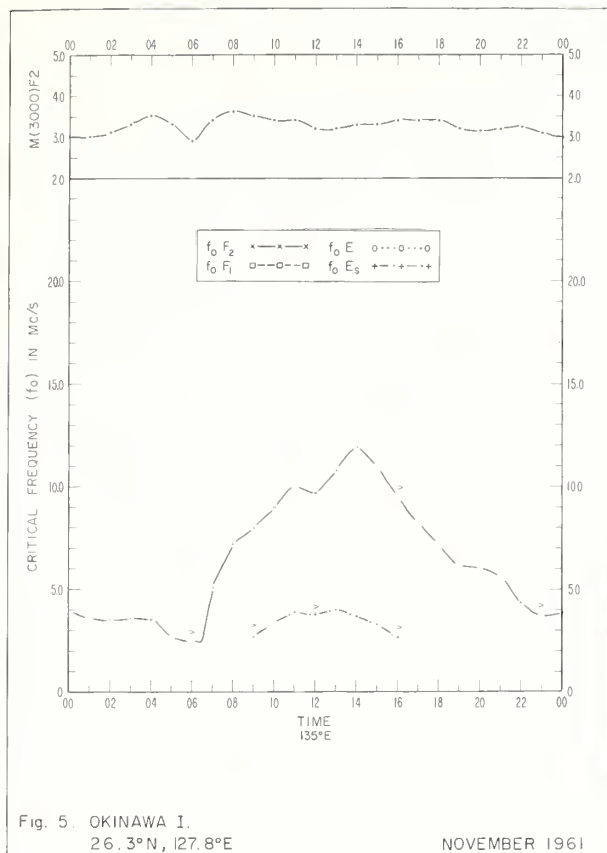


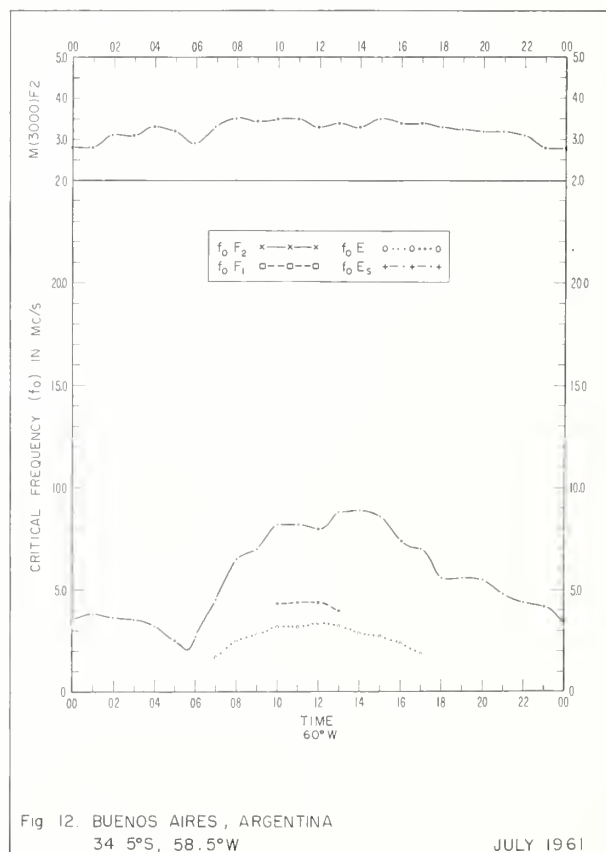
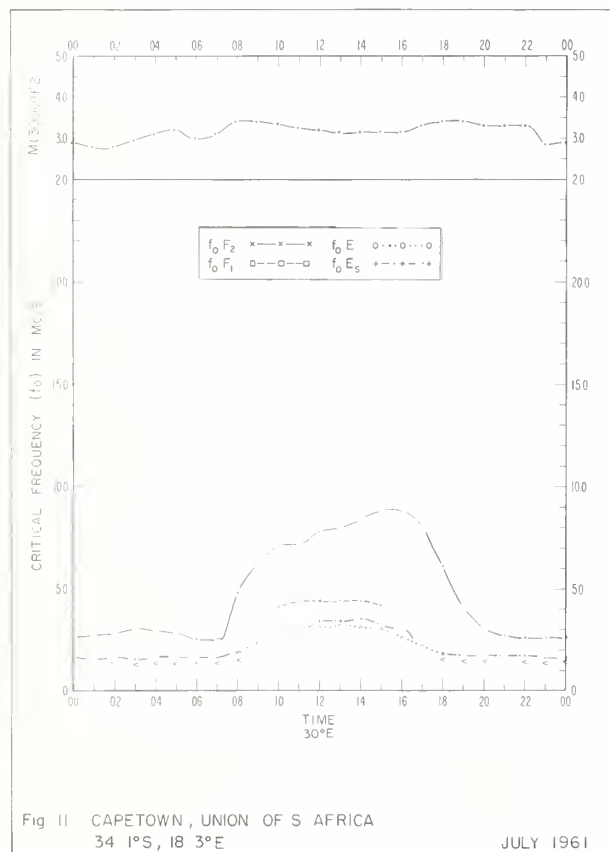
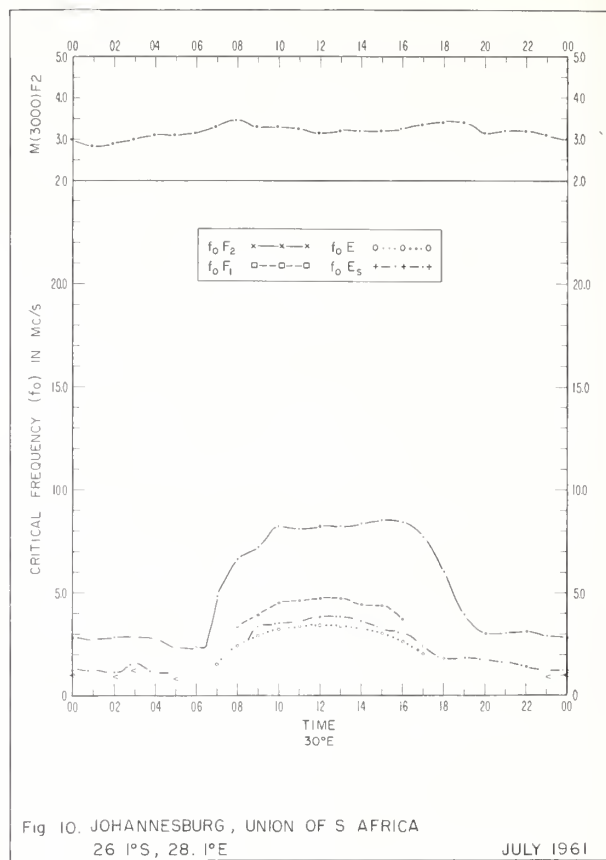
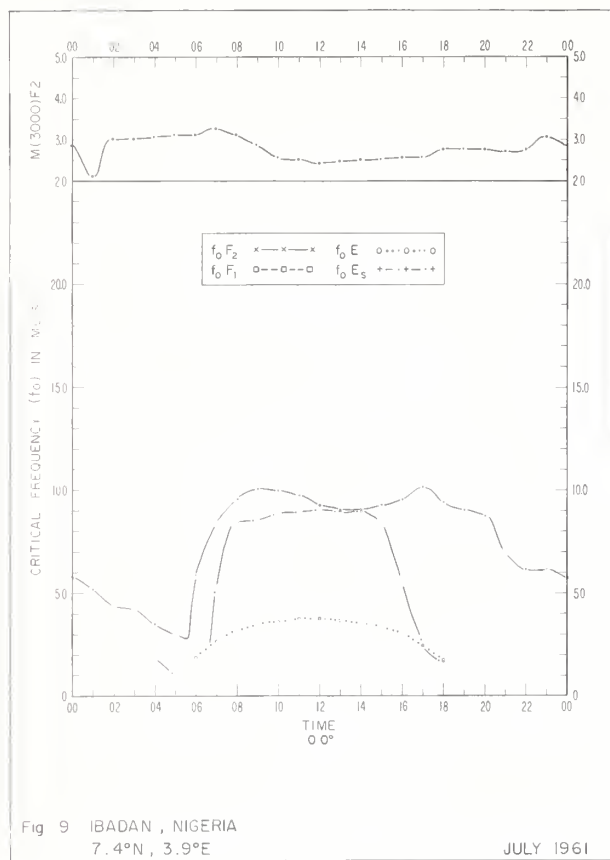
[illegible][illegible][illegible]

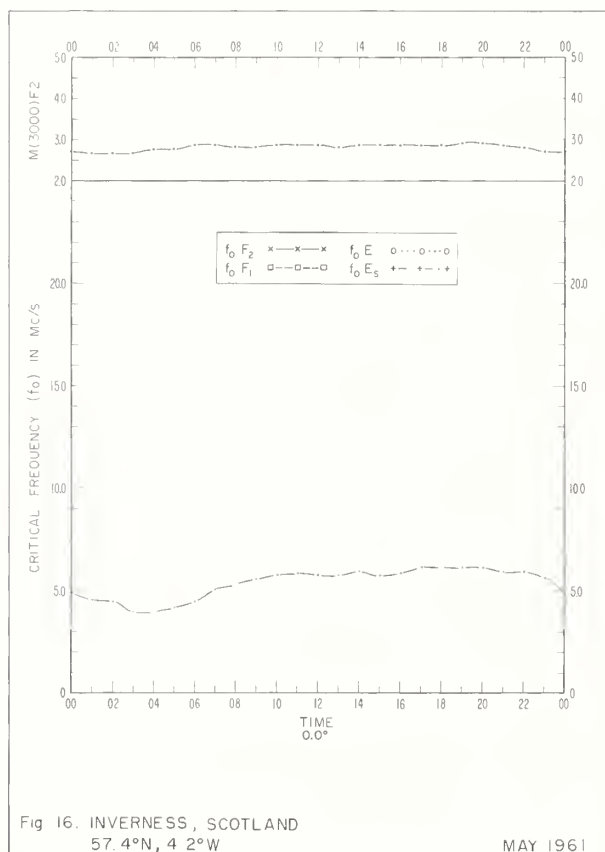
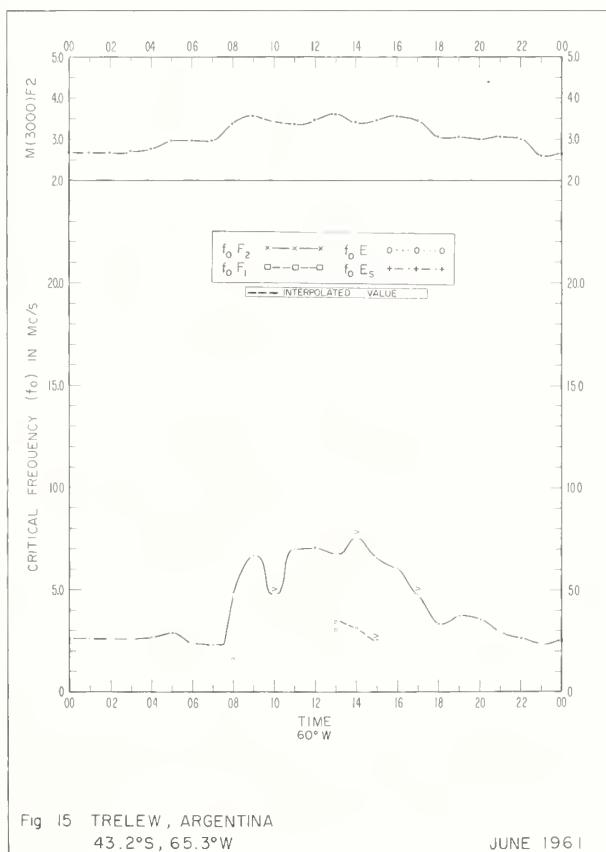
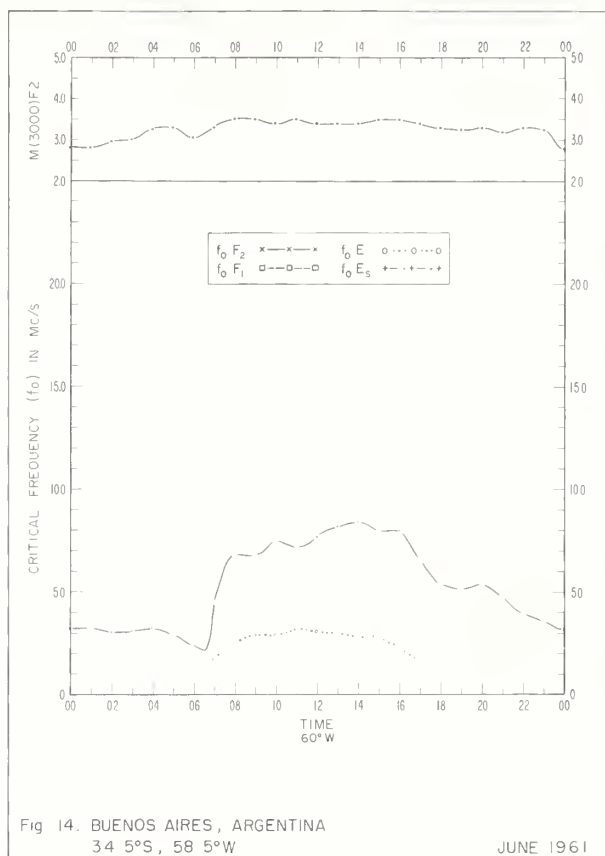
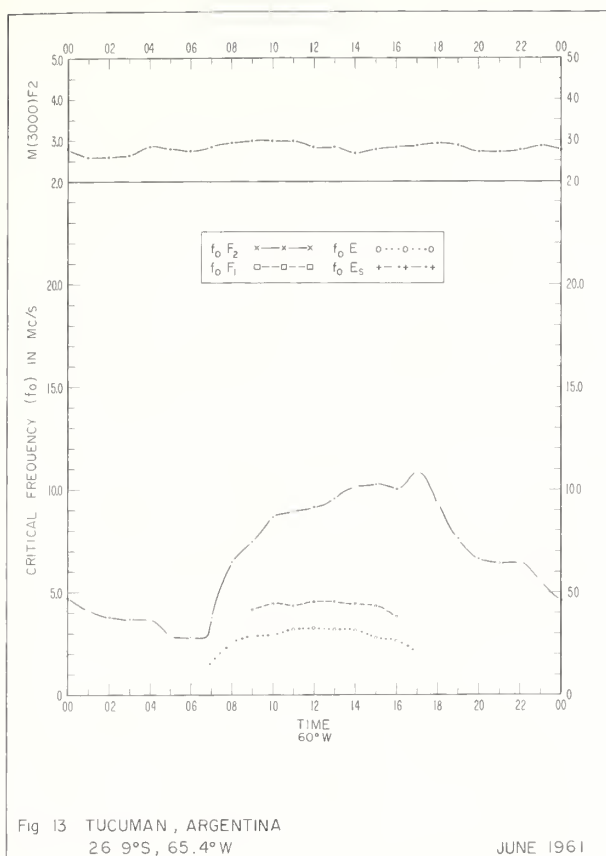
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|----------|-----|----|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Fe2      | MED | 1  | 14 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |
| CU       | LO  | 1  | 14 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |
| LO       |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| h'F2     | MED |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CU       | LO  |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| LO       |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| h'F      | MED |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CU       | LO  |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| LO       |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| W30000F2 | MED | 12 | 14 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |
| CU       | LO  | 12 | 14 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |
| LO       |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FeFl     | MED |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CAT      |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FeE      | MED |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CAT      |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| N'E      | MED |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CAT      |     |    |    |    |    |     |     |     |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FeEs     | MED | 18 | 42 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |
| CAT      |     | 18 | 42 | 33 | 33 | 4.0 | 3.7 | 2.2 | 1  | 4.2 | 2.5 | 3.5 | 2.5 | 3.0 | 3.1 | 3.3 | 3.2 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 | 3.4 | 3.4 |



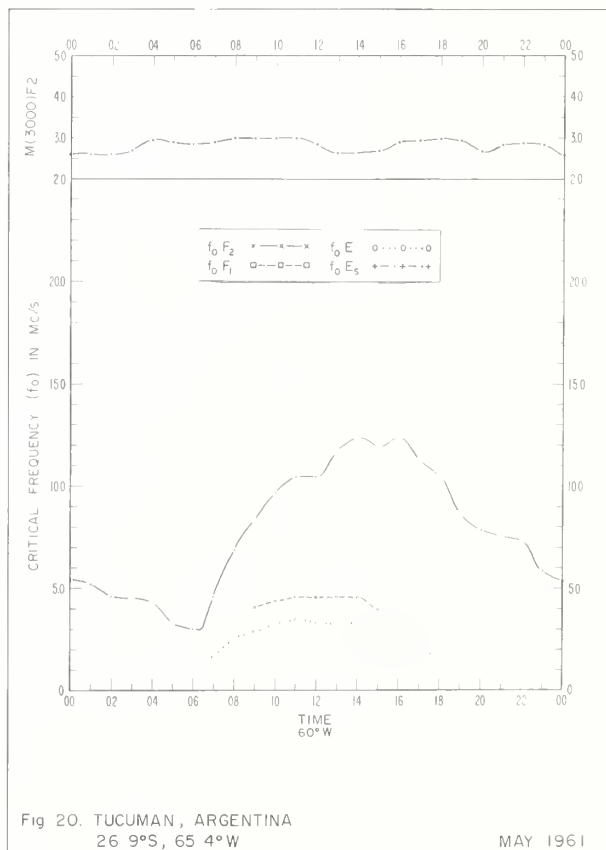
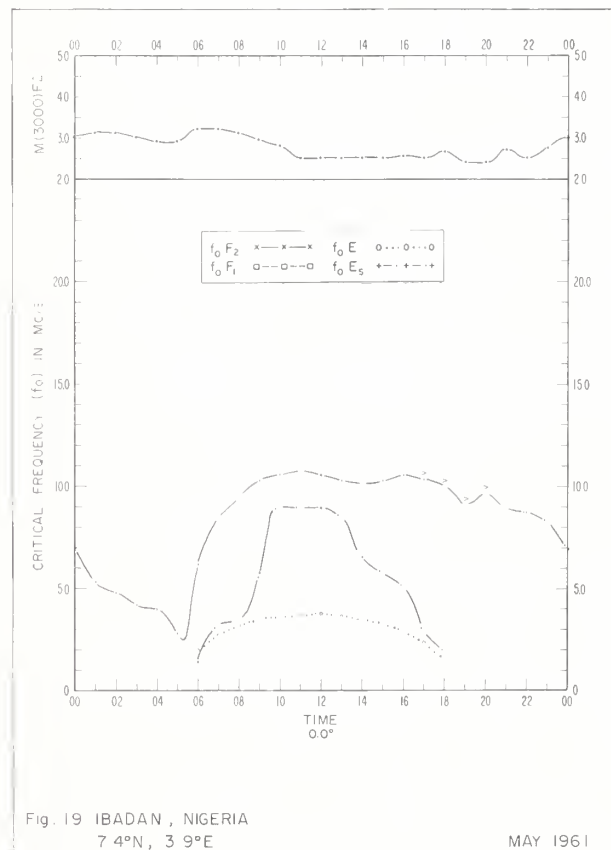
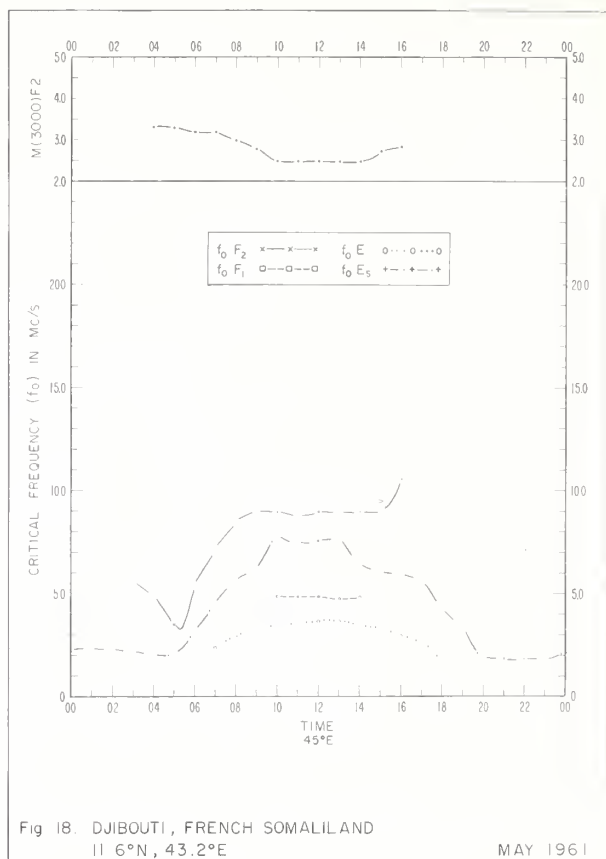
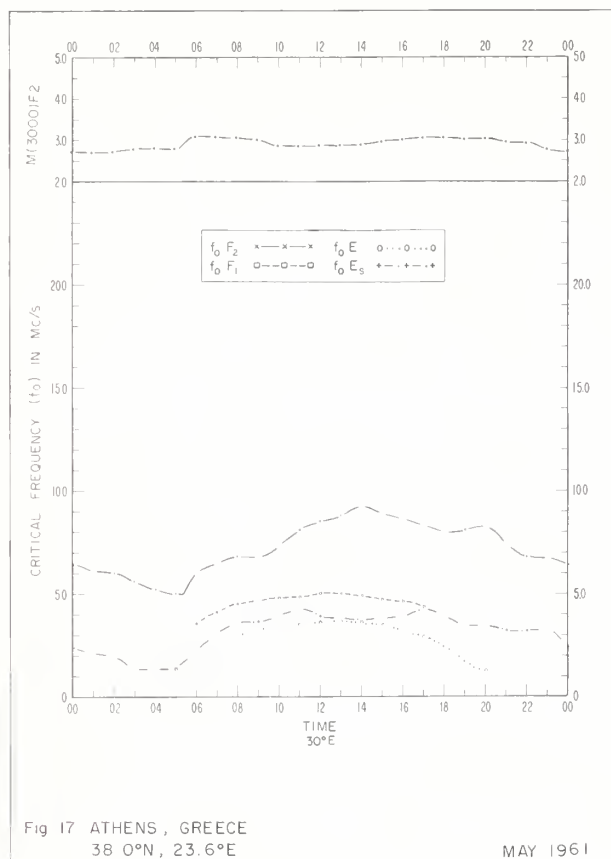












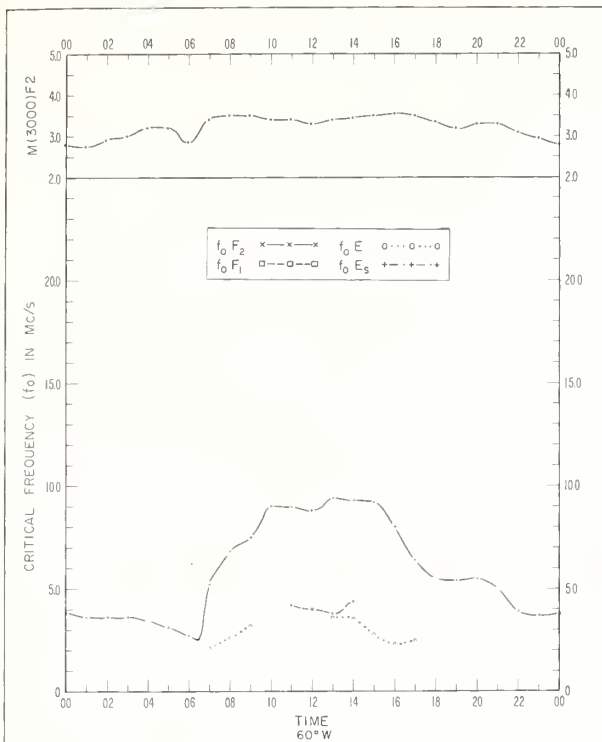


Fig. 21. BUENOS AIRES, ARGENTINA  
34.5°S, 58.5°W

MAY 1961

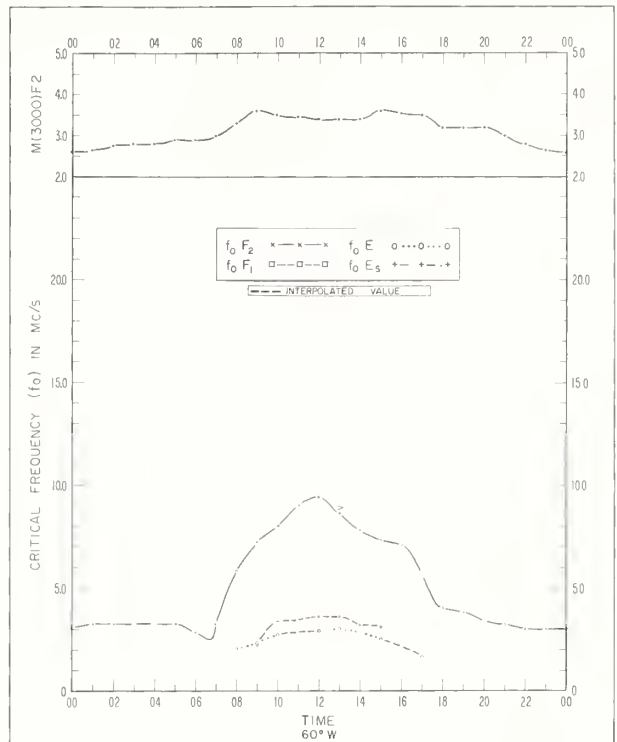


Fig. 22. TRELEW, ARGENTINA  
43.2°S, 65.3°W

MAY 1961

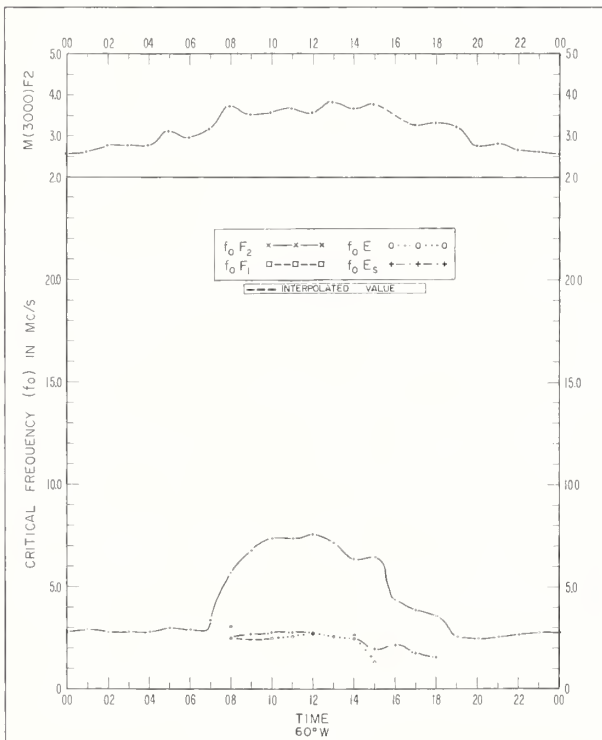


Fig. 23. FALKLAND IS.  
51.7°S, 57.8°W

MAY 1961

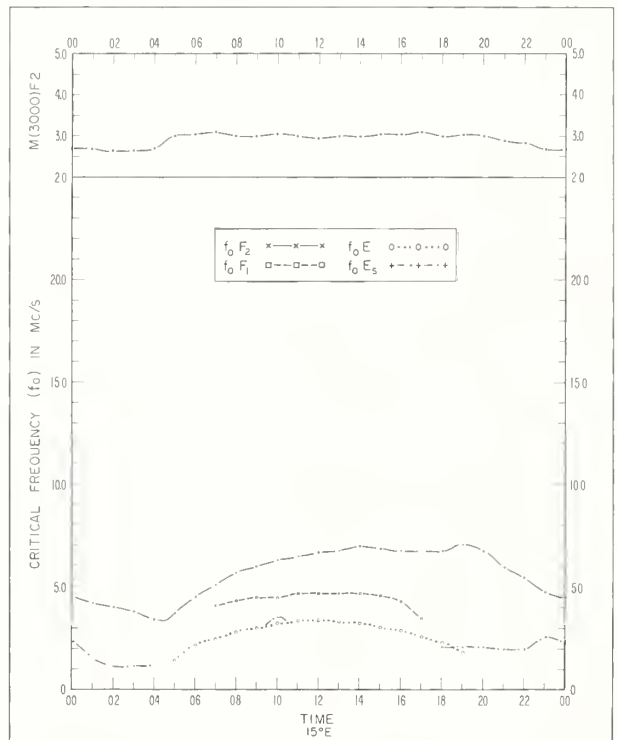
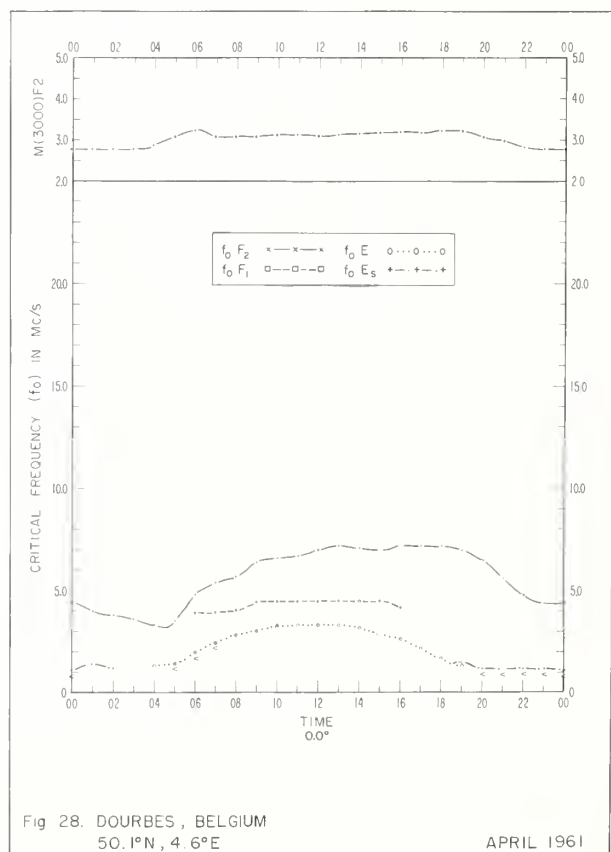
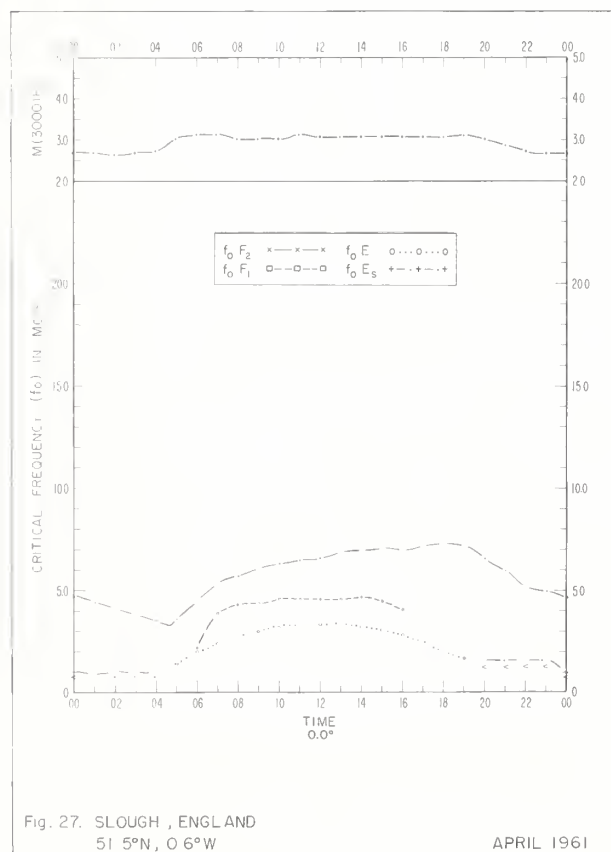
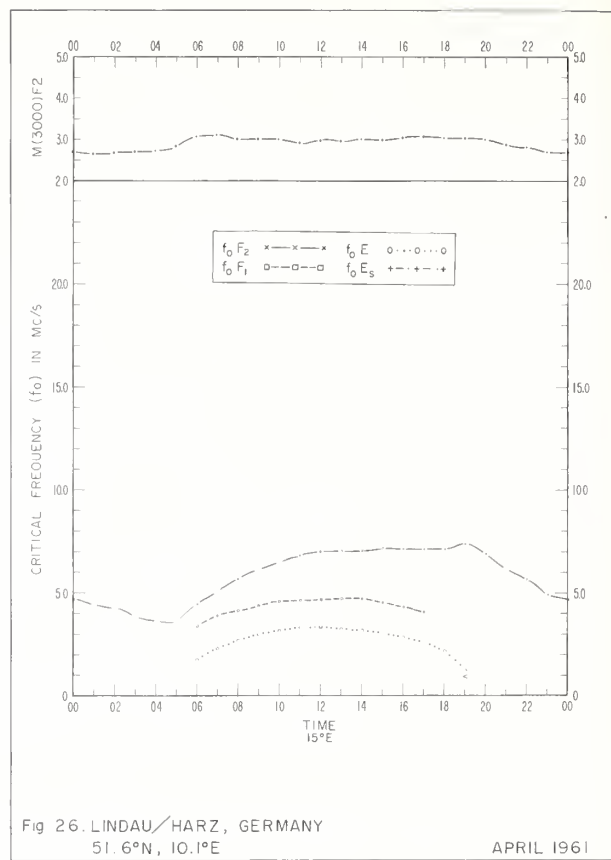
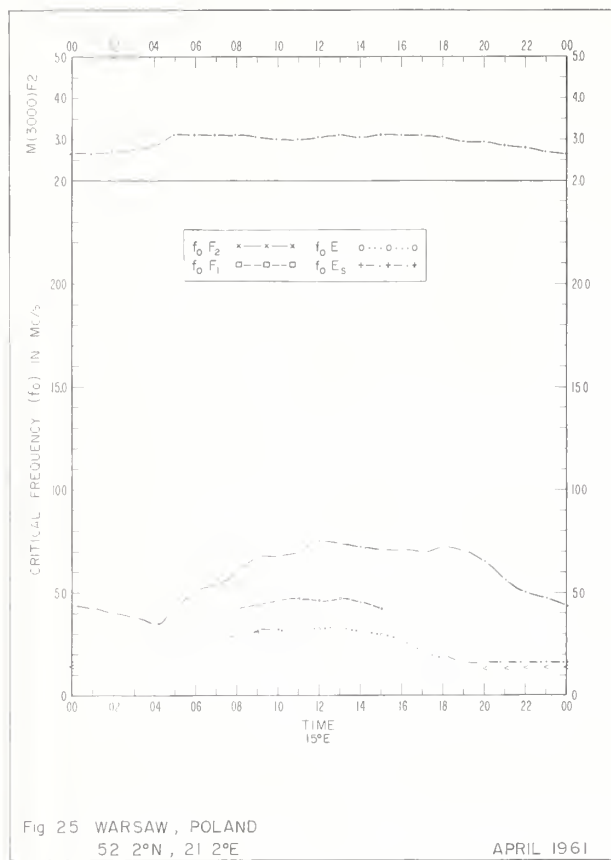
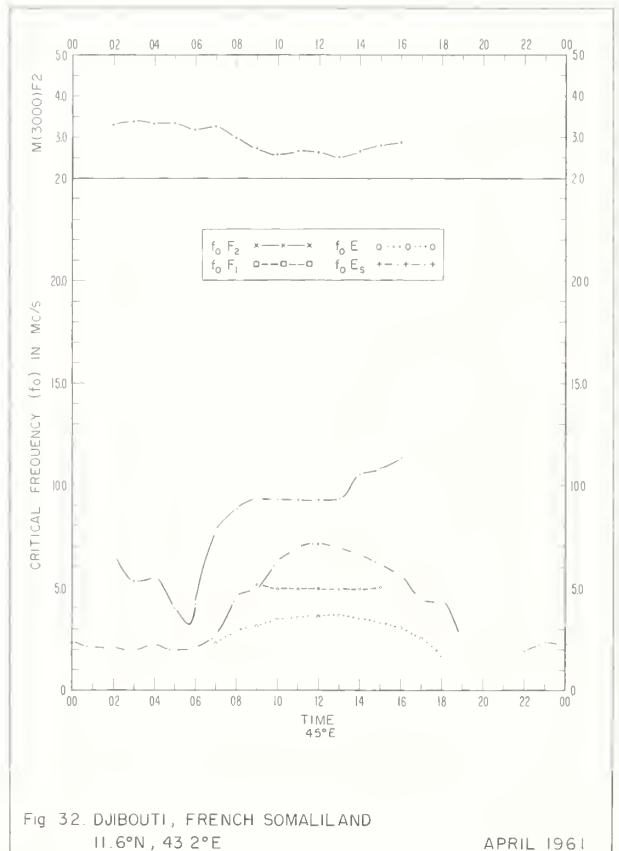
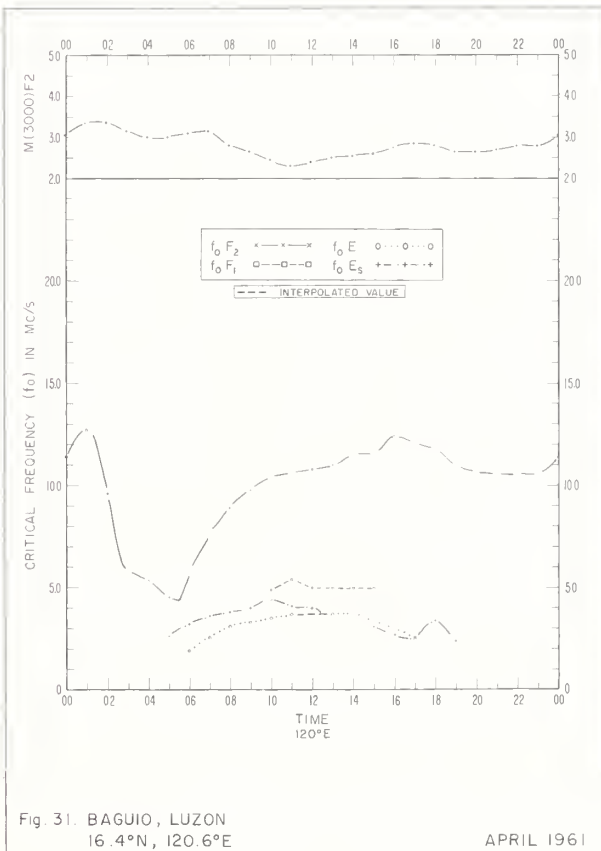
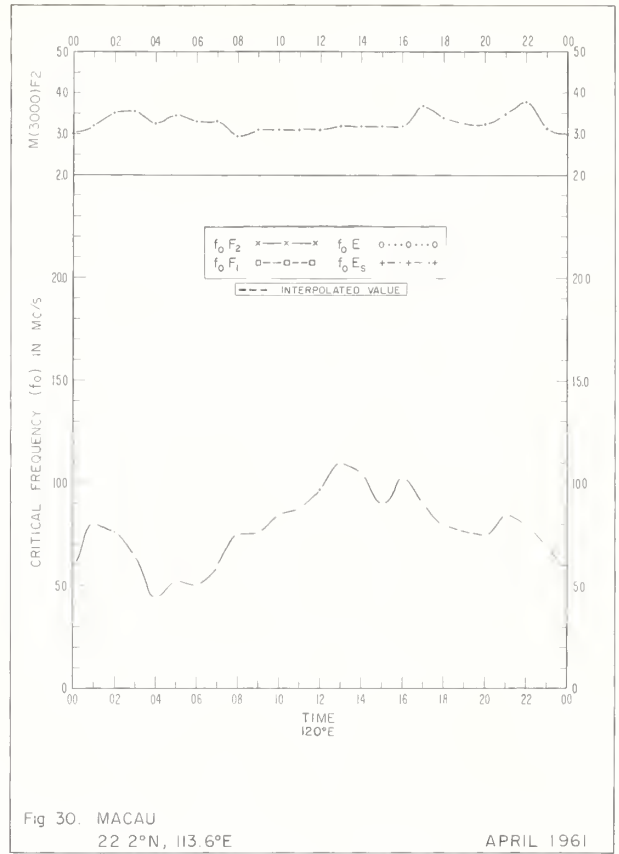
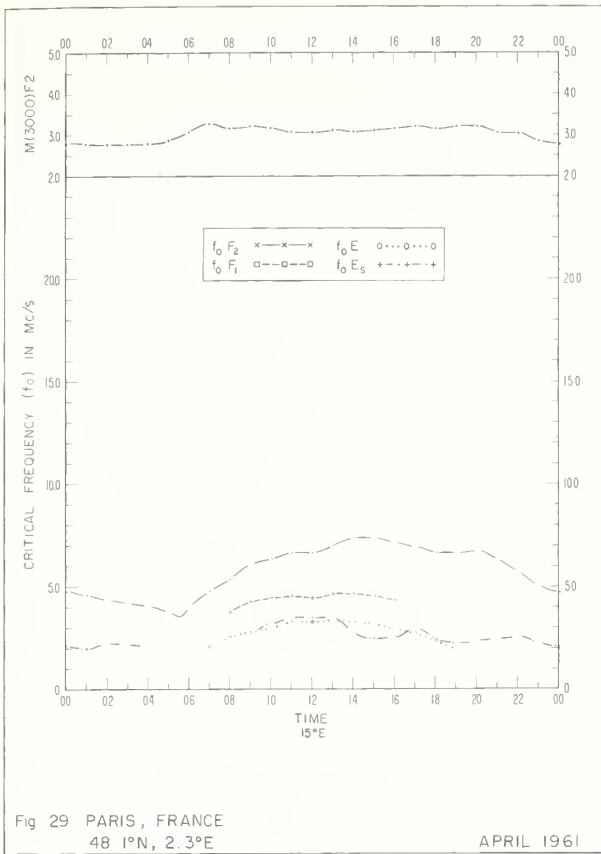
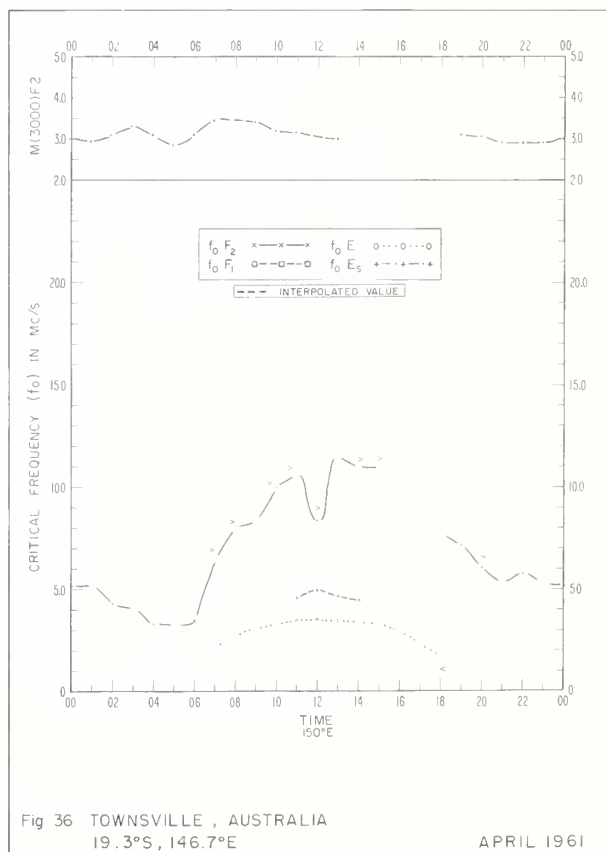
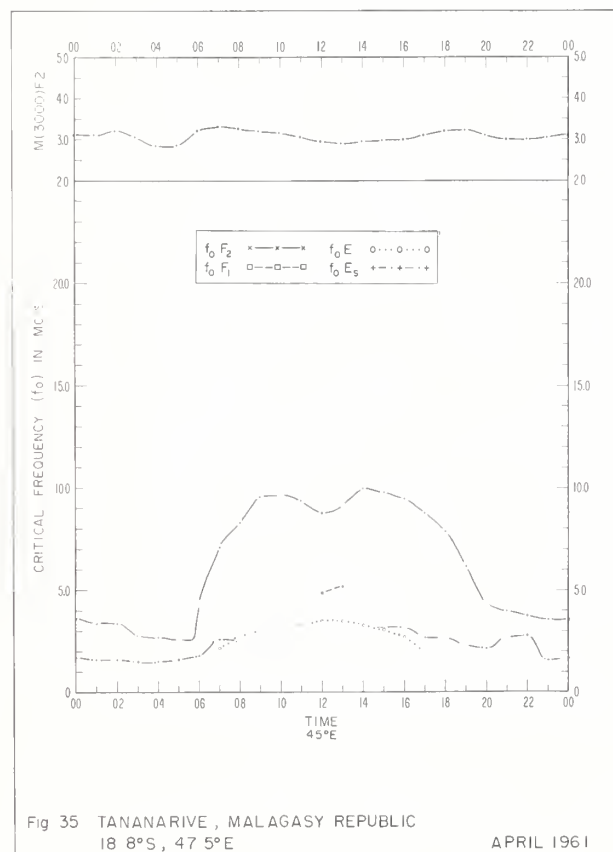
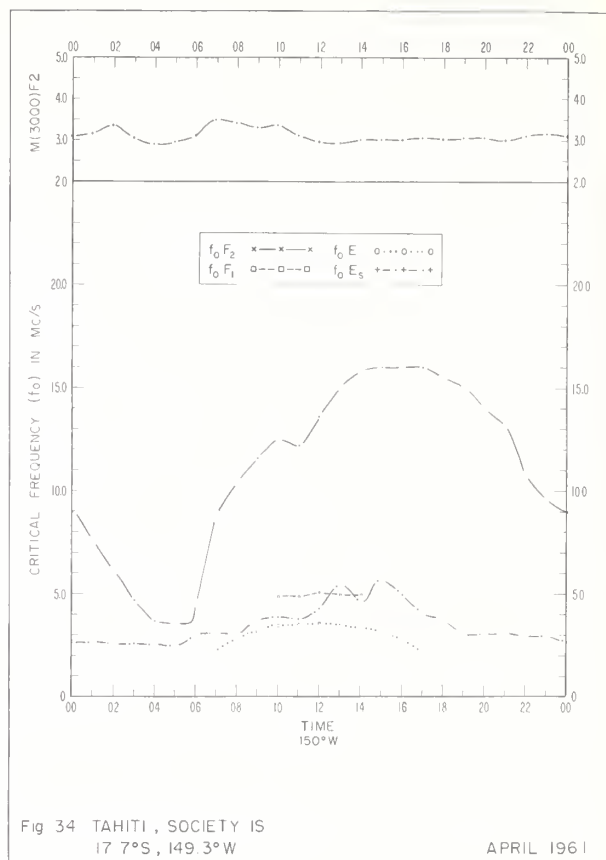
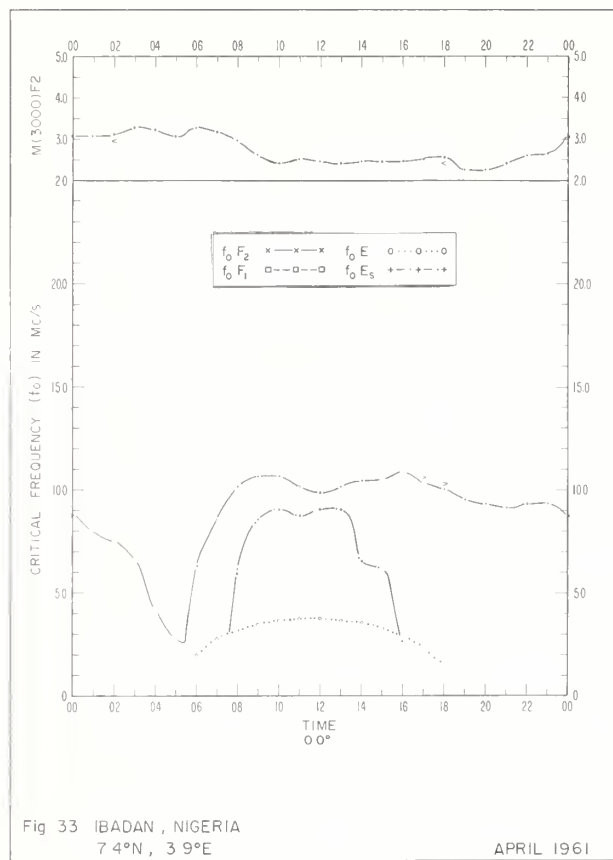


Fig. 24. JULIUSRUH/RÜGEN, GERMANY  
54.6°N, 13.4°E

APRIL 1961







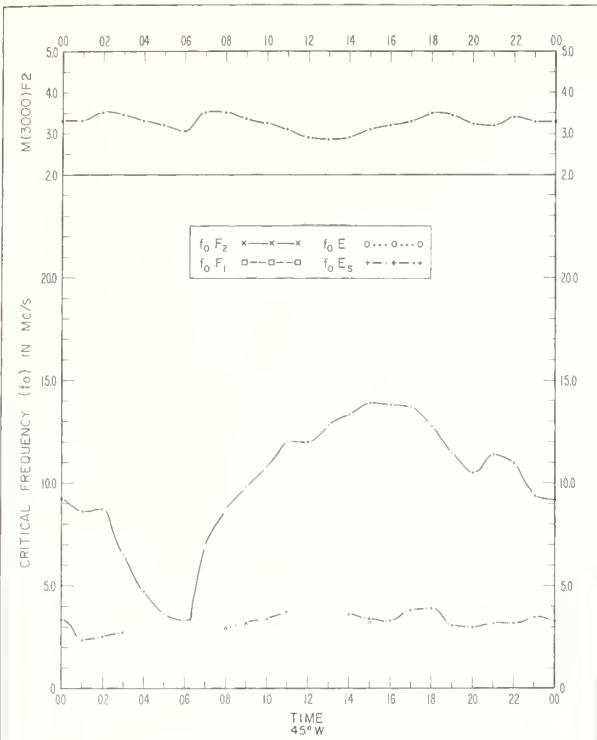


Fig. 37. SAO PAULO, BRAZIL  
23.5°S, 46.5°W

APRIL 1961

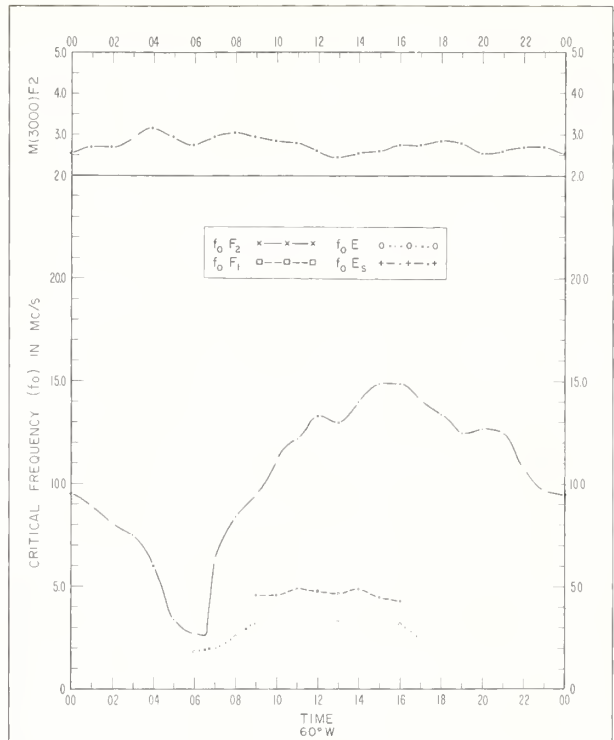


Fig. 38. TUCUMAN, ARGENTINA  
26.9°S, 65.4°W

APRIL 1961

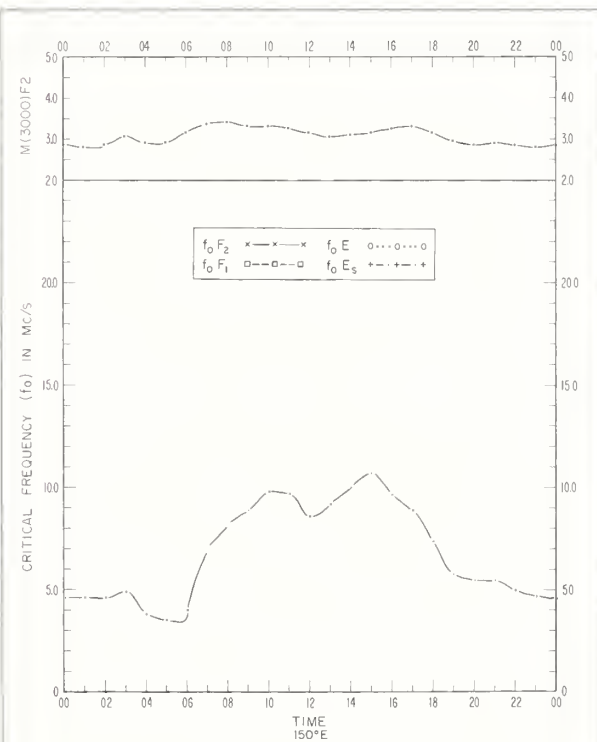


Fig. 39. BRISBANE, AUSTRALIA  
27.5°S, 152.9°E

APRIL 1961

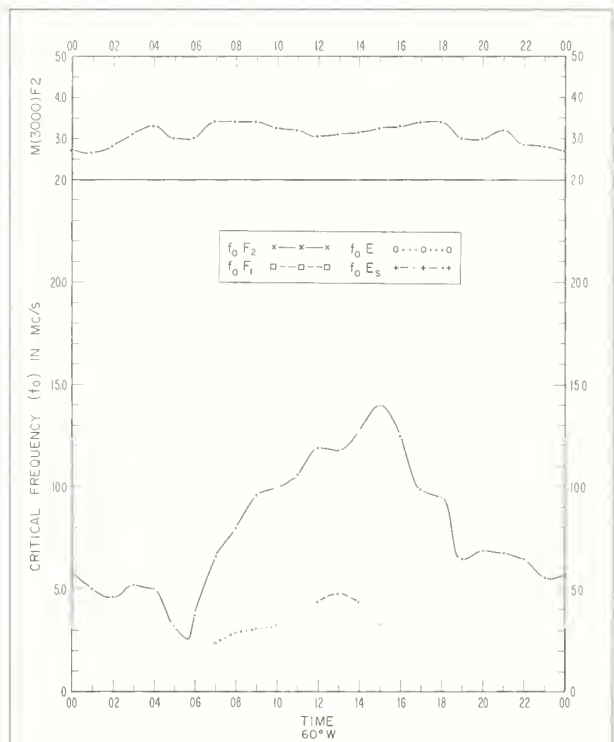
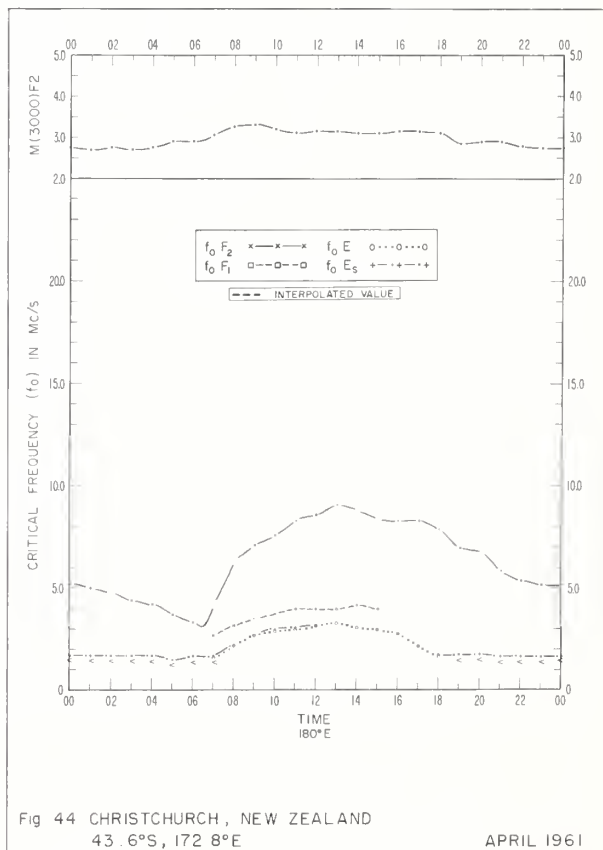
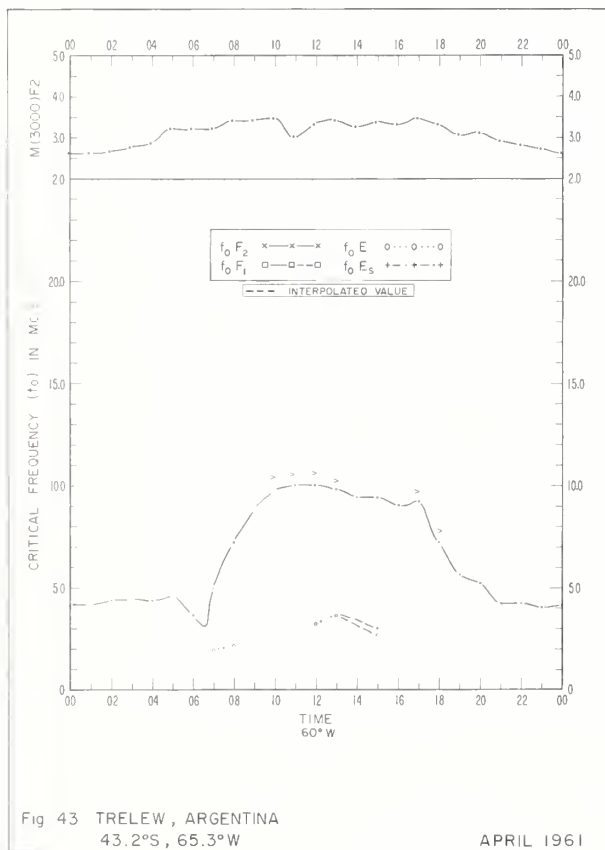
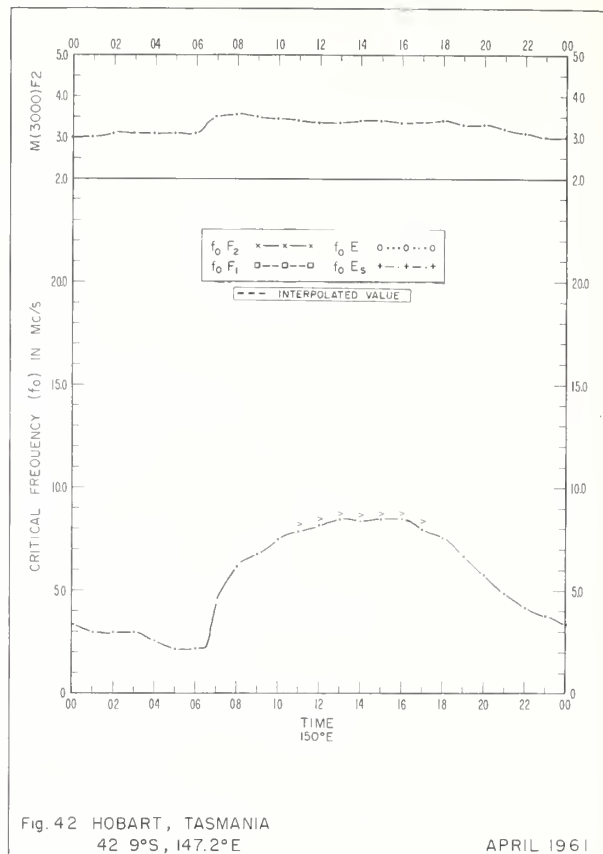
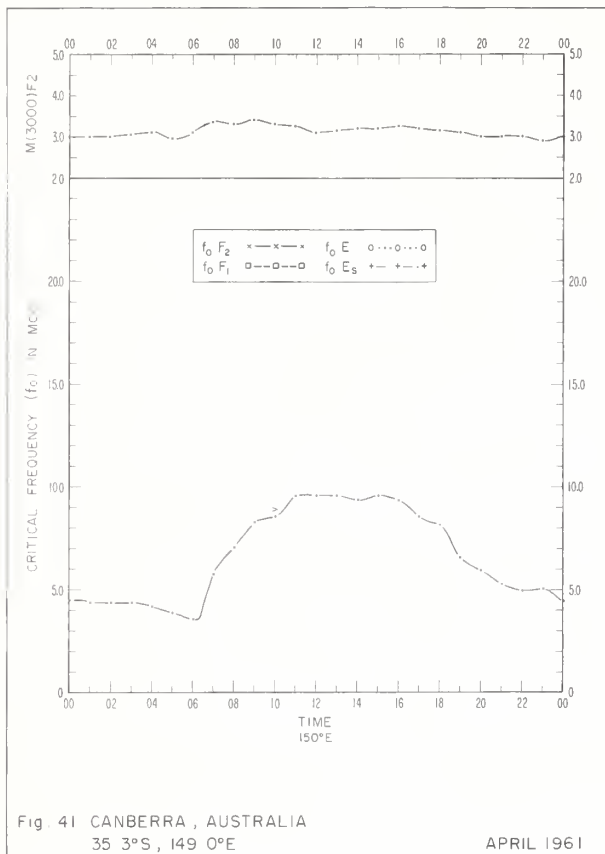
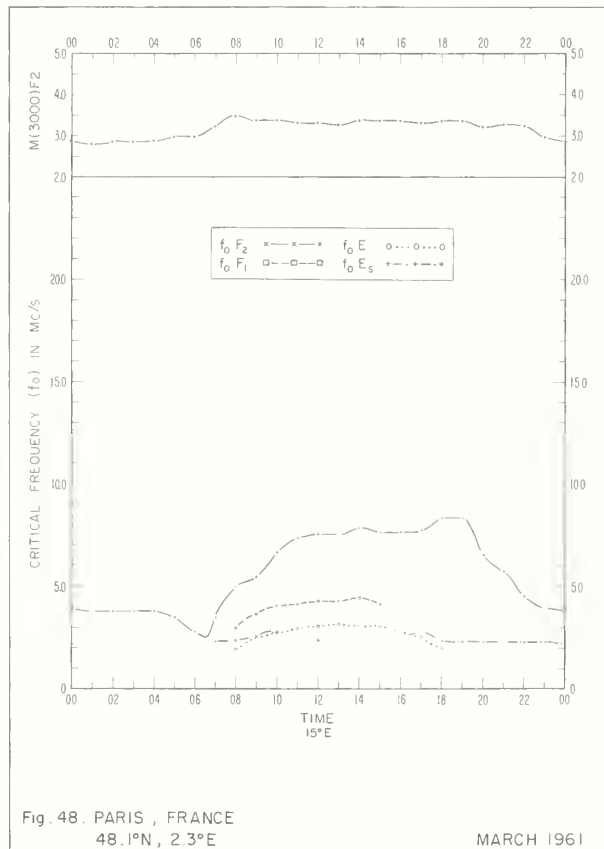
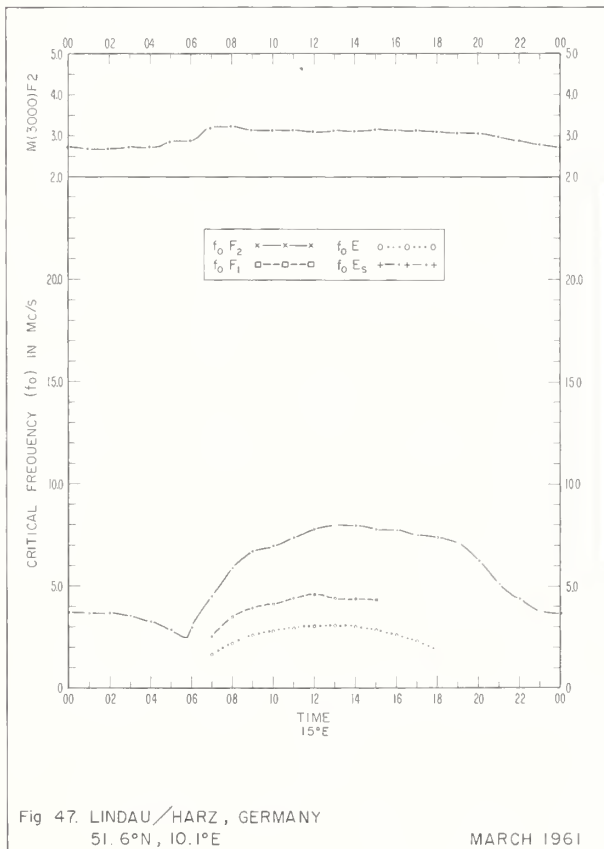
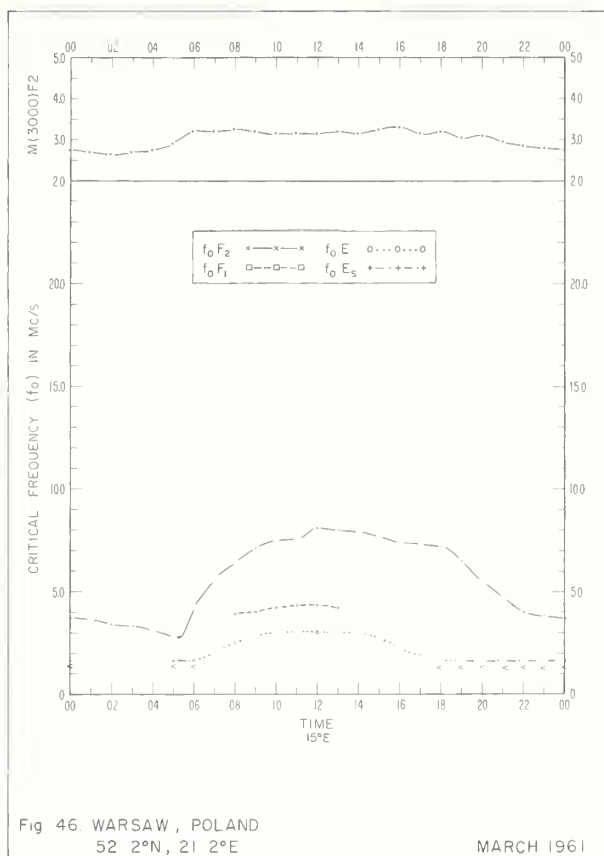
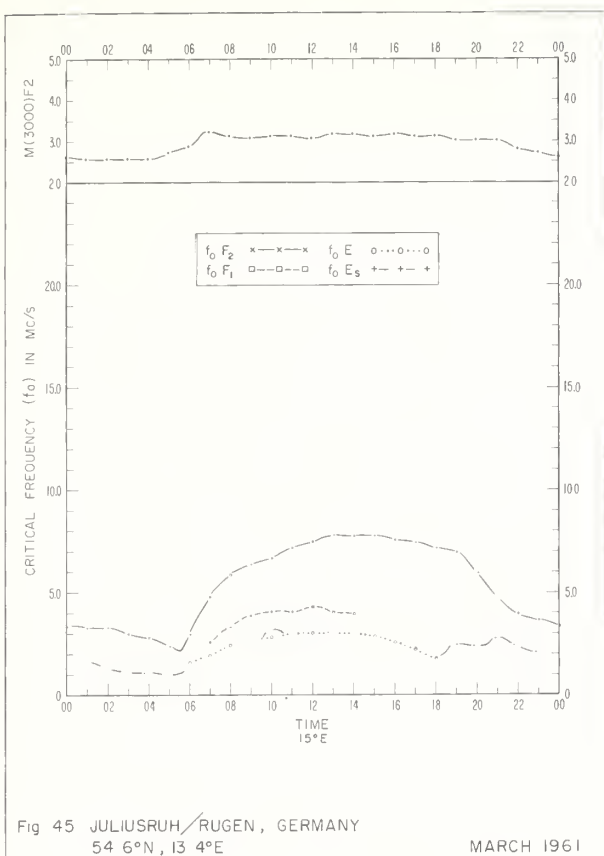


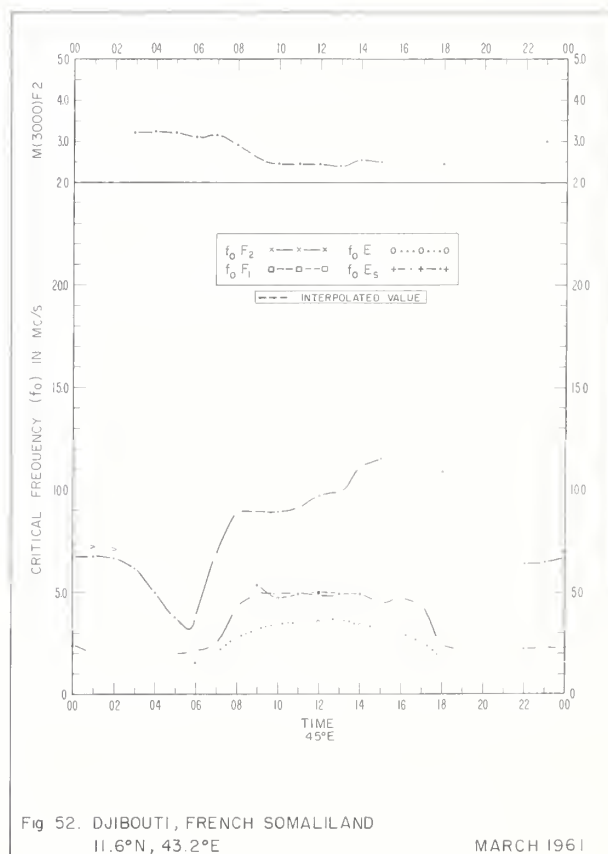
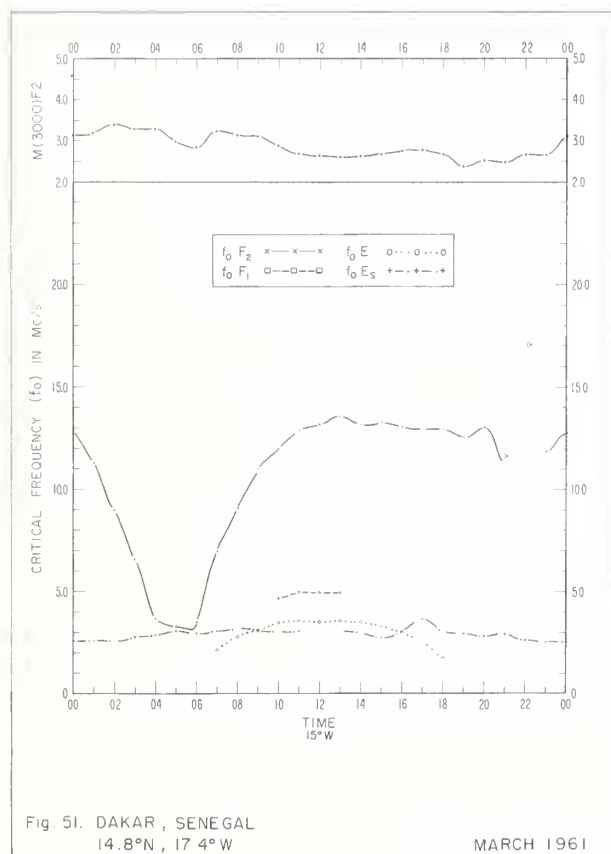
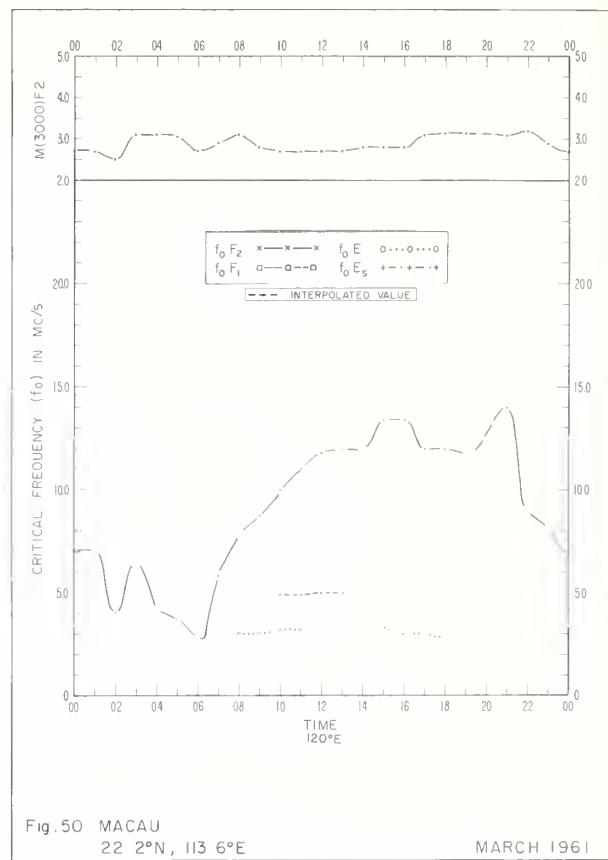
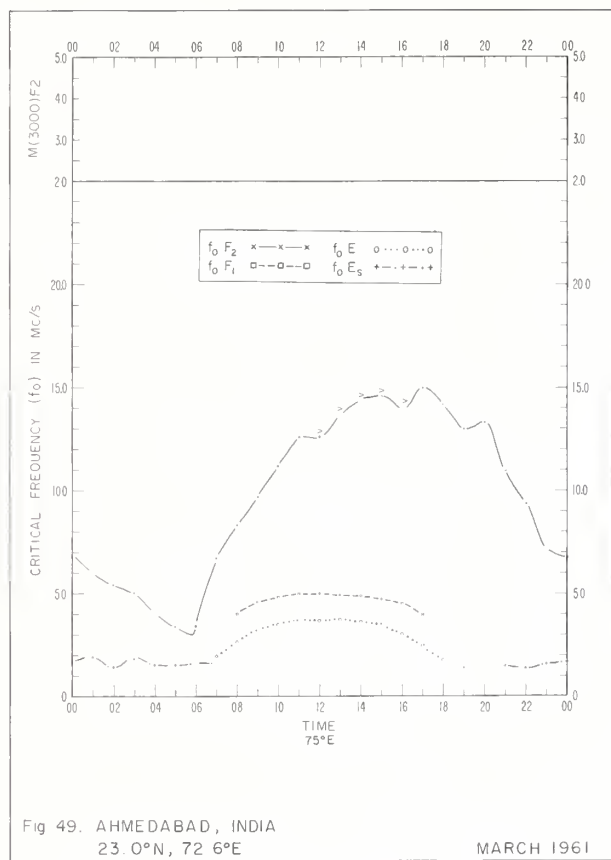
Fig. 40. BUENOS AIRES, ARGENTINA  
34.5°S, 58.5°W

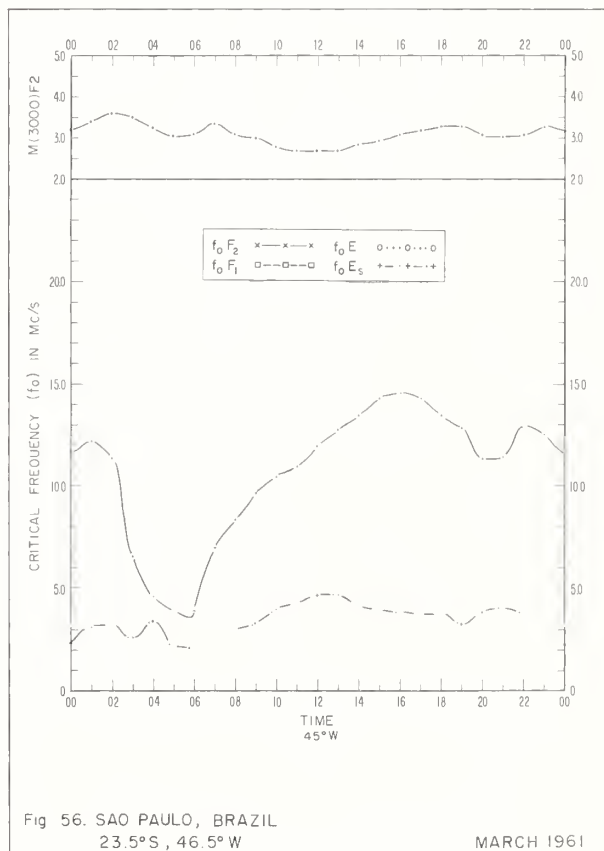
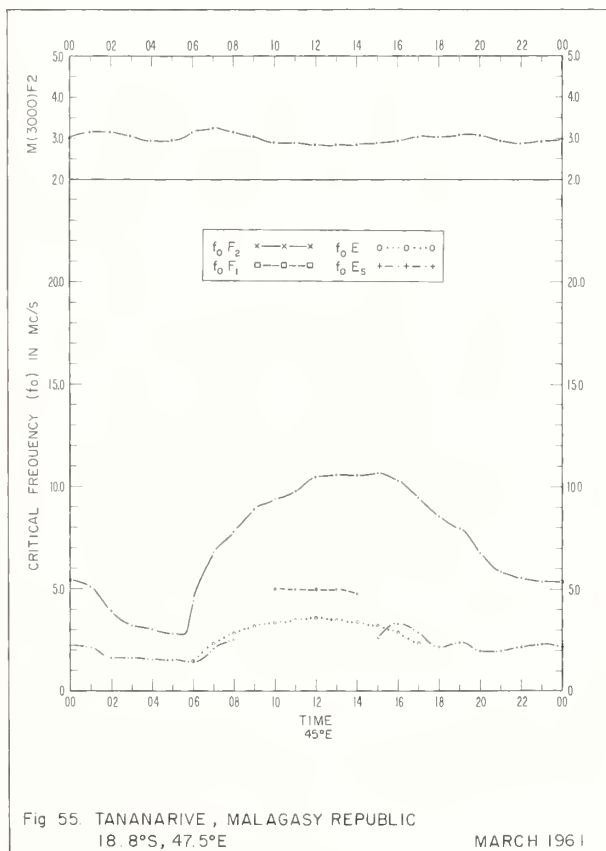
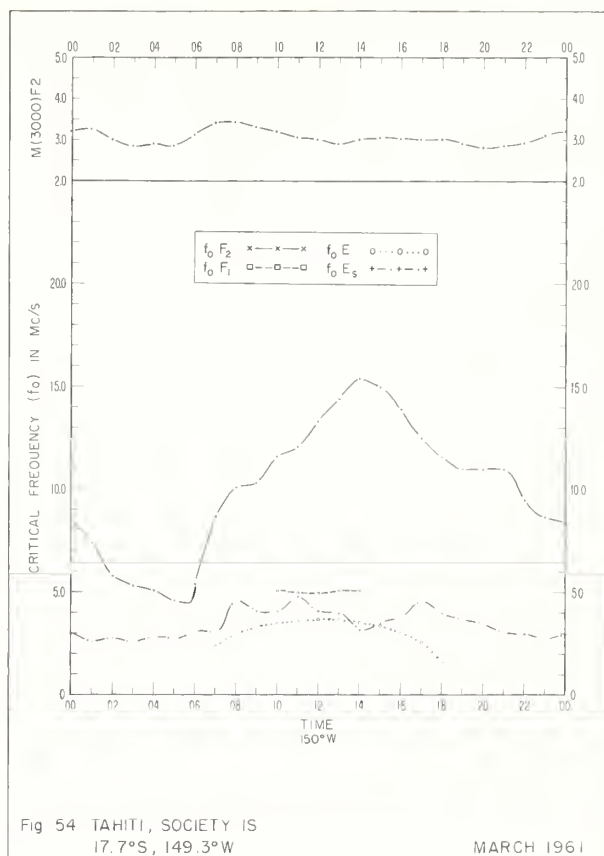
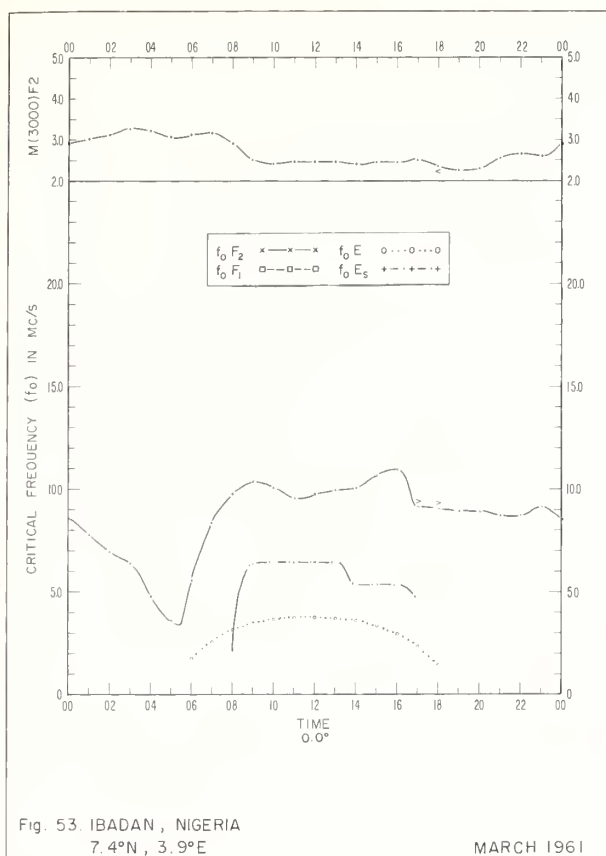
APRIL 1961

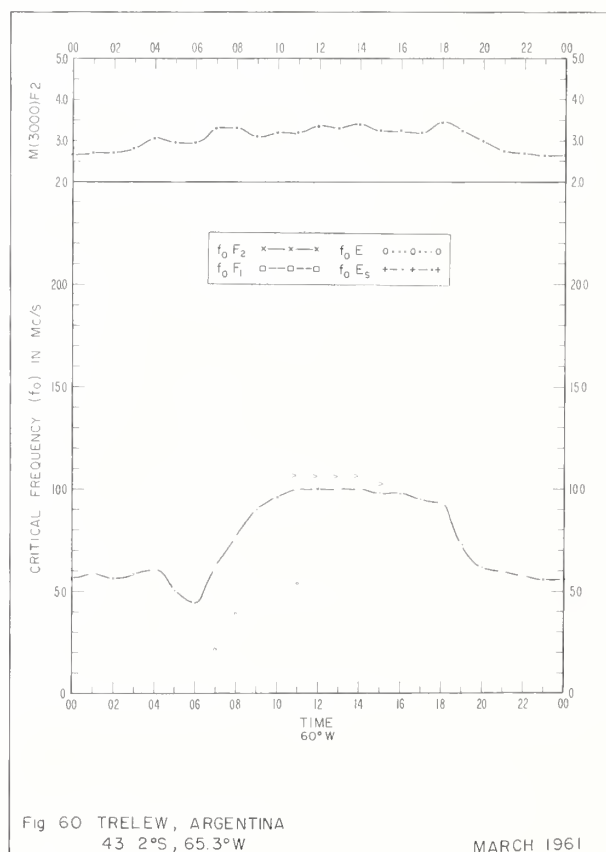
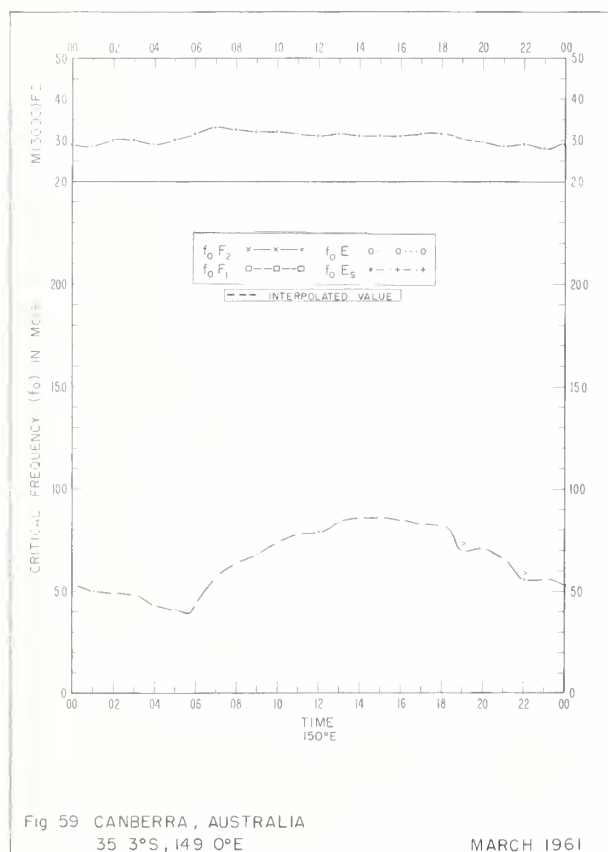
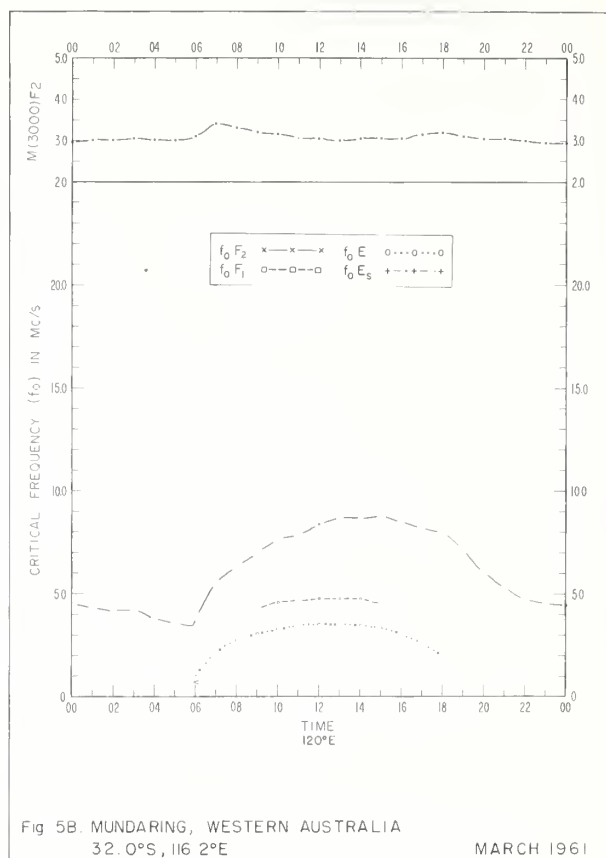
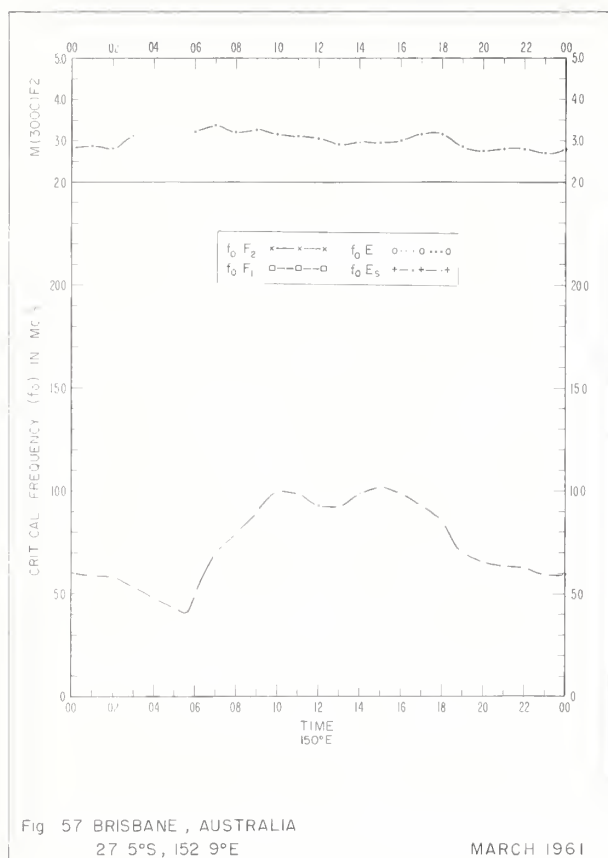












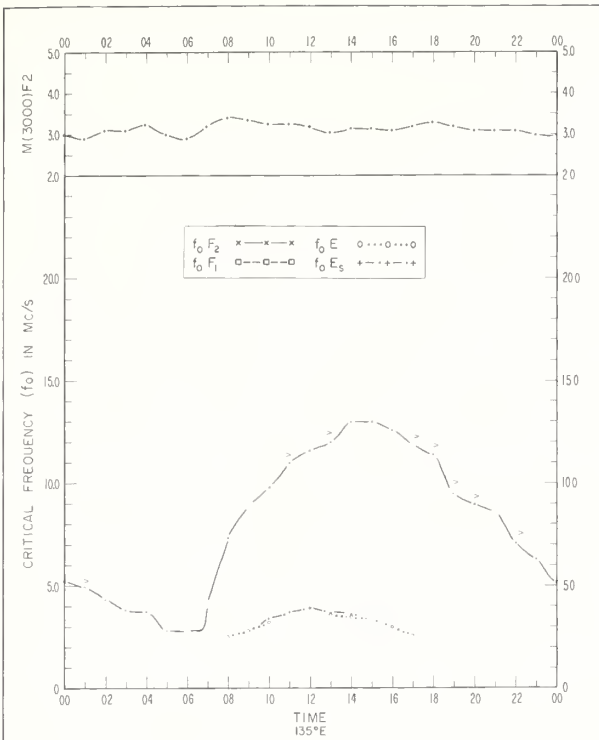


Fig. 61. OKINAWA I  
26.3°N, 127.8°E

FEBRUARY 1961

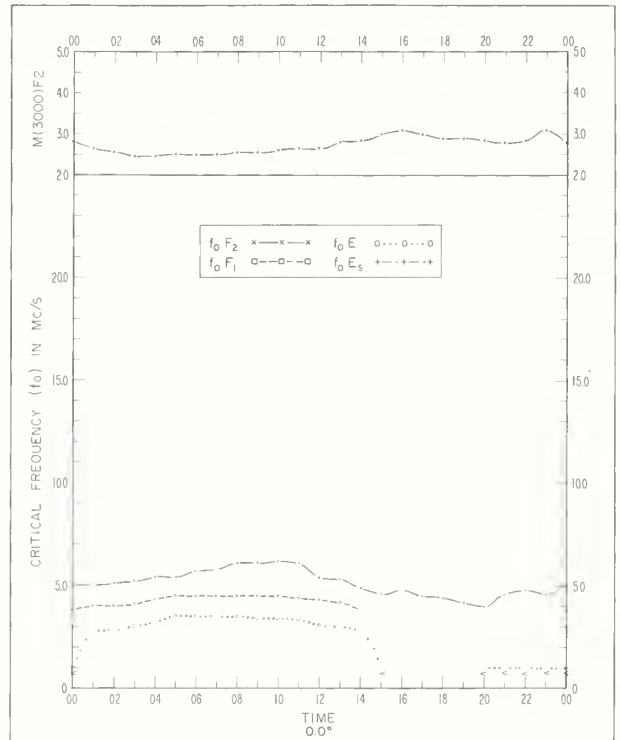


Fig. 62 MAWSON, ANTARCTICA  
67.6°S, 62.9°E

JANUARY 1961

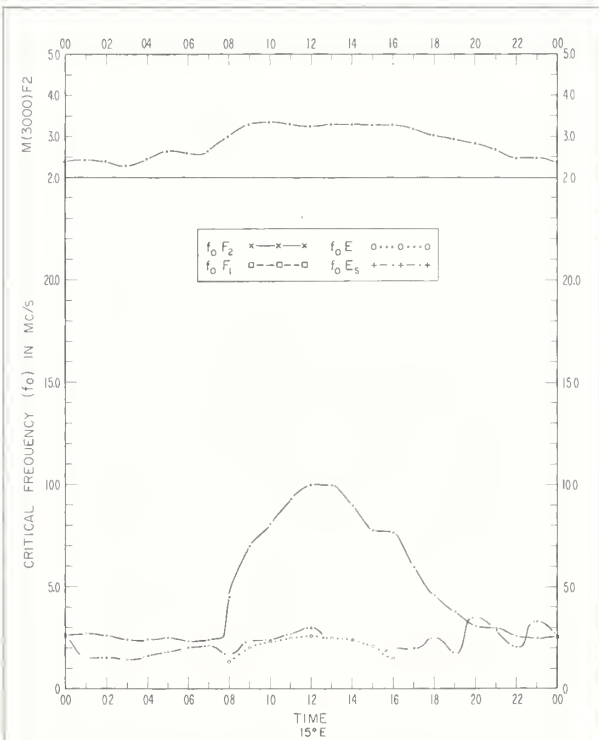


Fig. 63. JULIUSRUH/RÜGEN, GERMANY  
54.6°N, 13.4°E

DECEMBER 1960

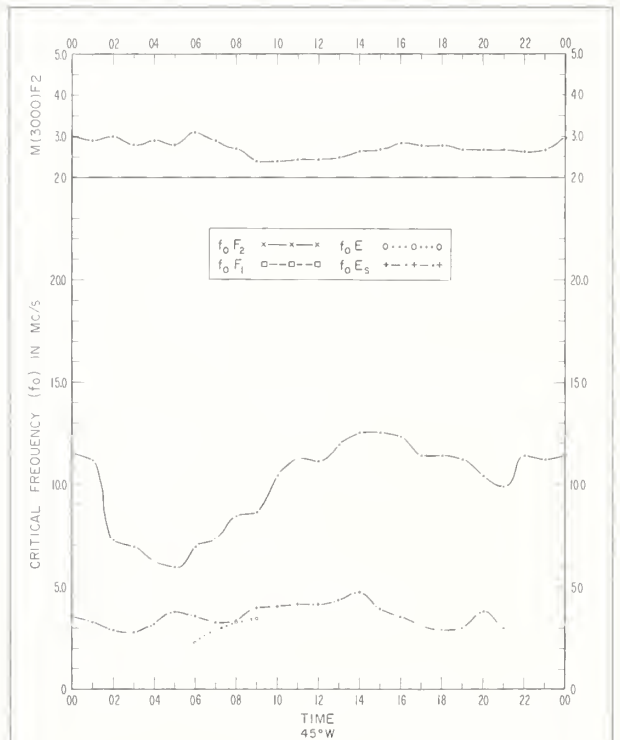


Fig. 64 SAO PAULO, BRAZIL  
23.5°S, 46.5°W

DECEMBER 1960

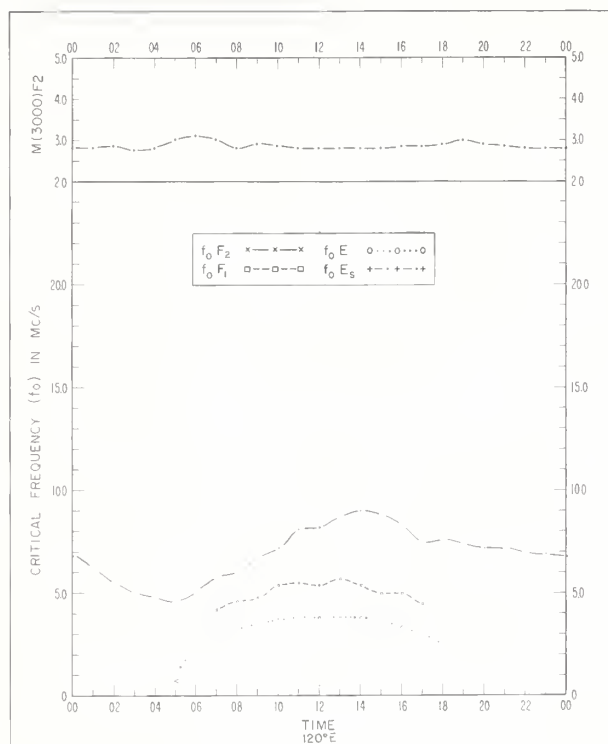


Fig 65. MUNDARING, WESTERN AUSTRALIA  
32 0°S, 116 2°E

DECEMBER 1960

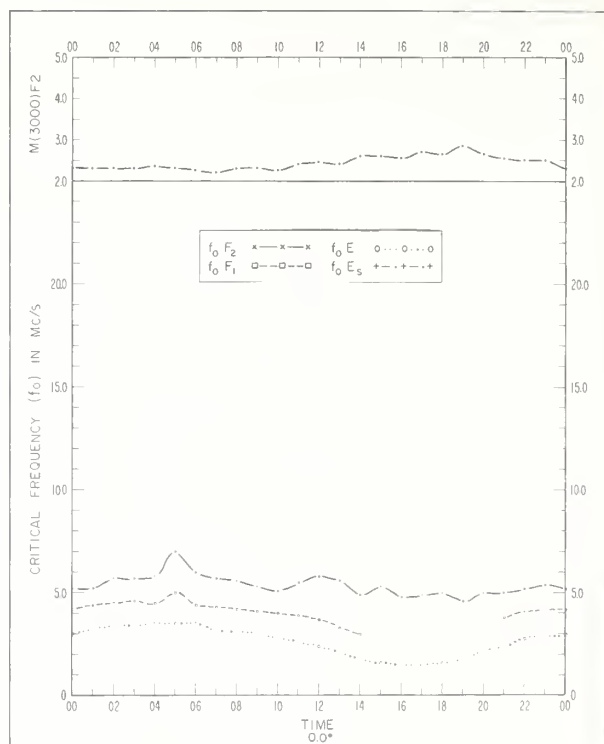


Fig 66. WILKES STATION, ANTARCTICA  
66 3°S, 110 5°E

DECEMBER 1960

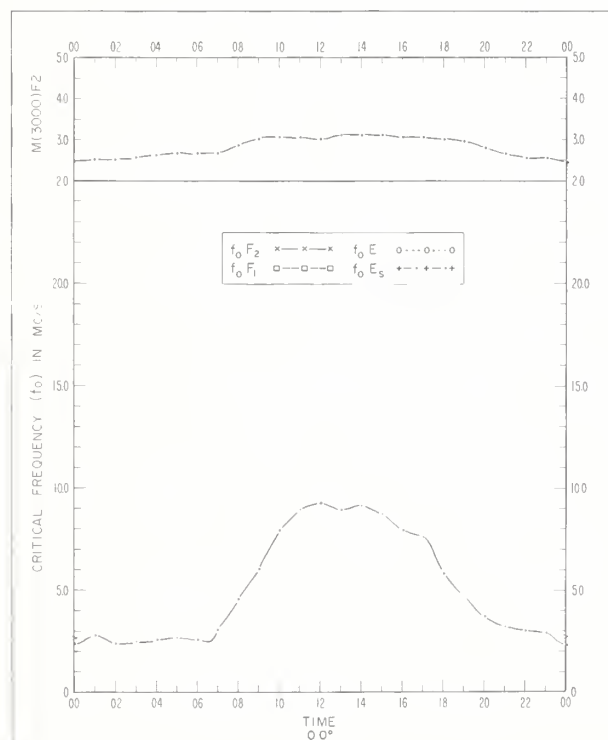


Fig 67. INVERNESS, SCOTLAND  
57 4°N, 4 2°W

NOVEMBER 1960

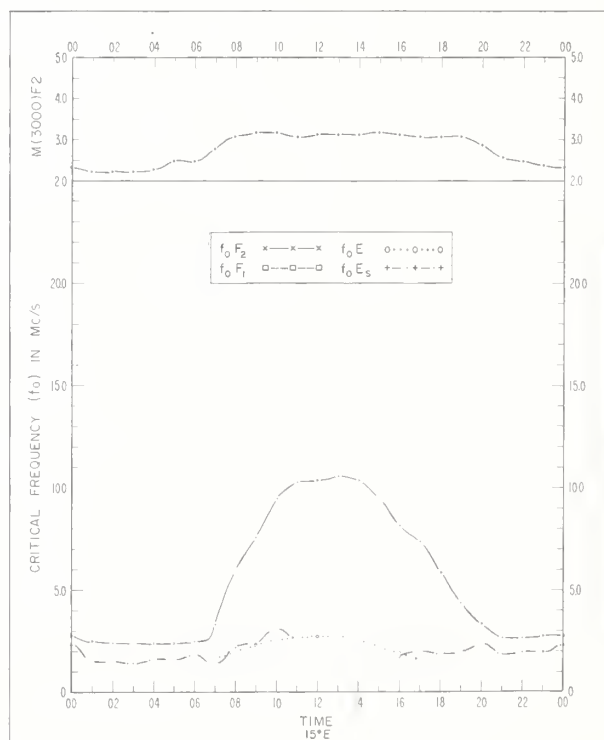
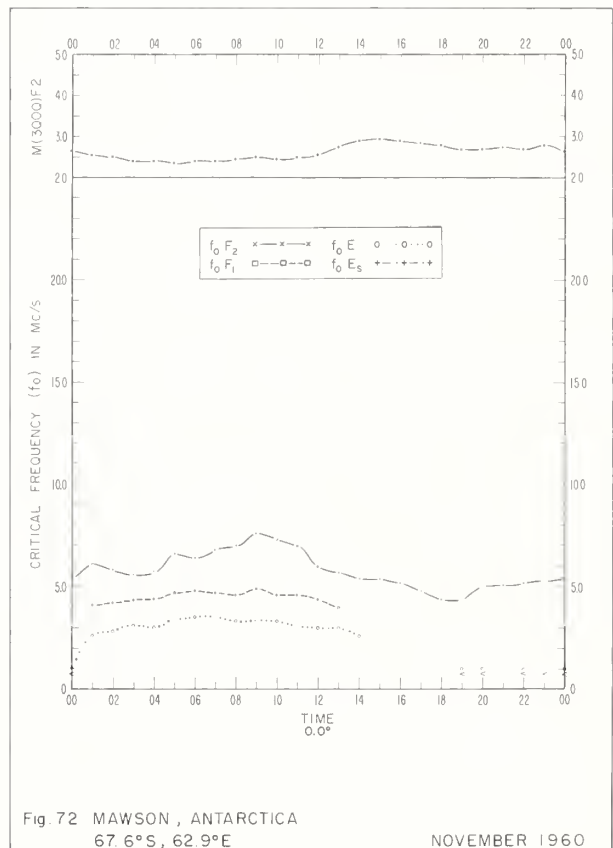
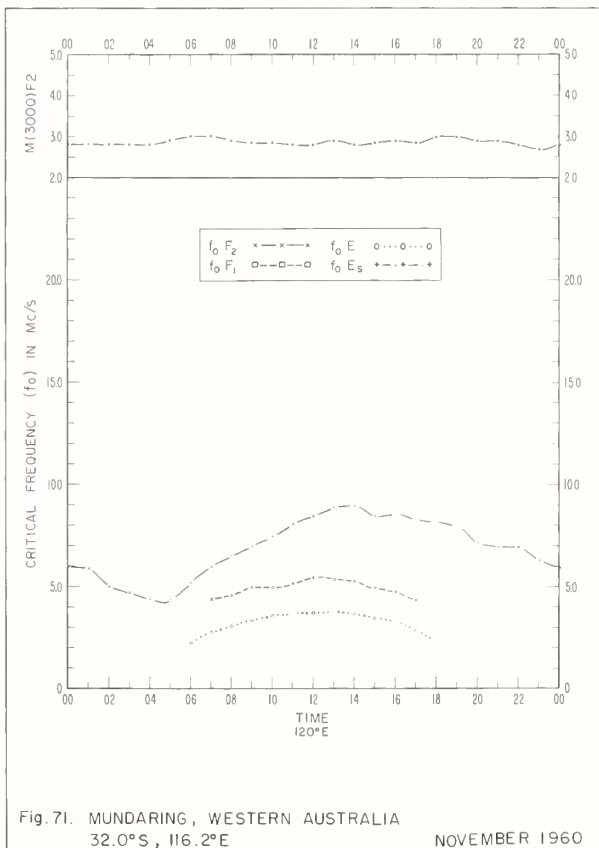
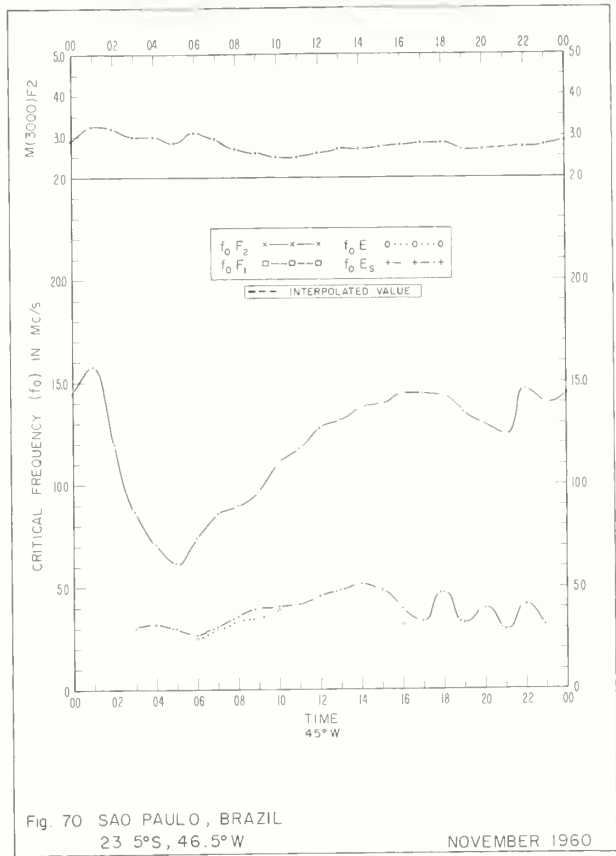
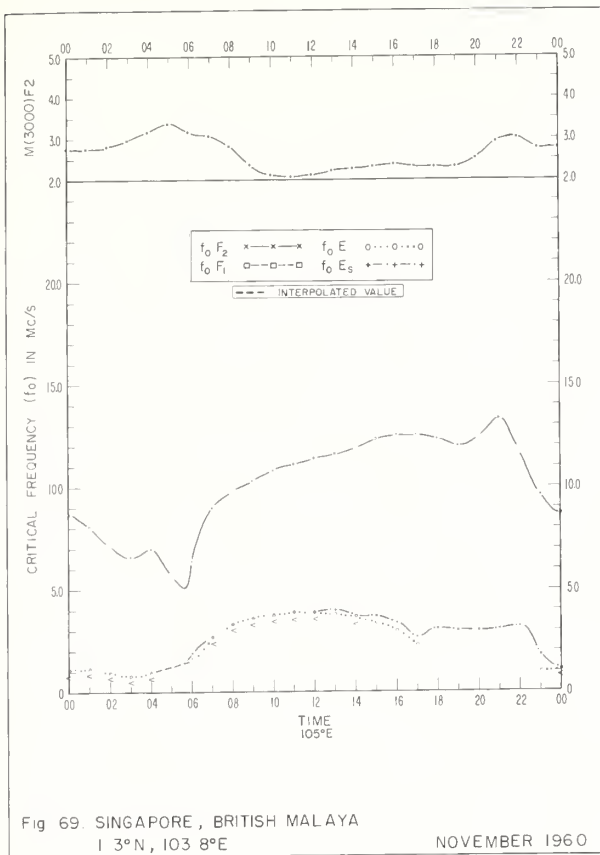
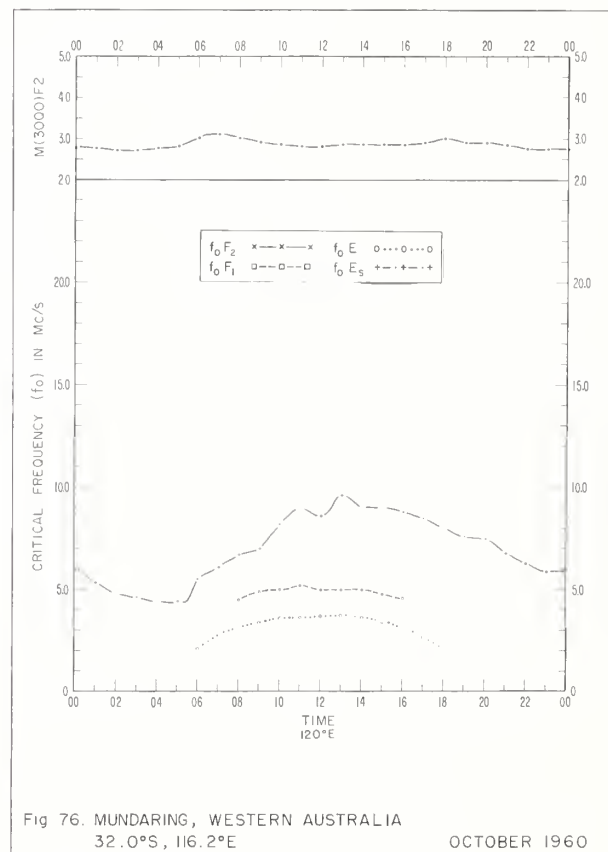
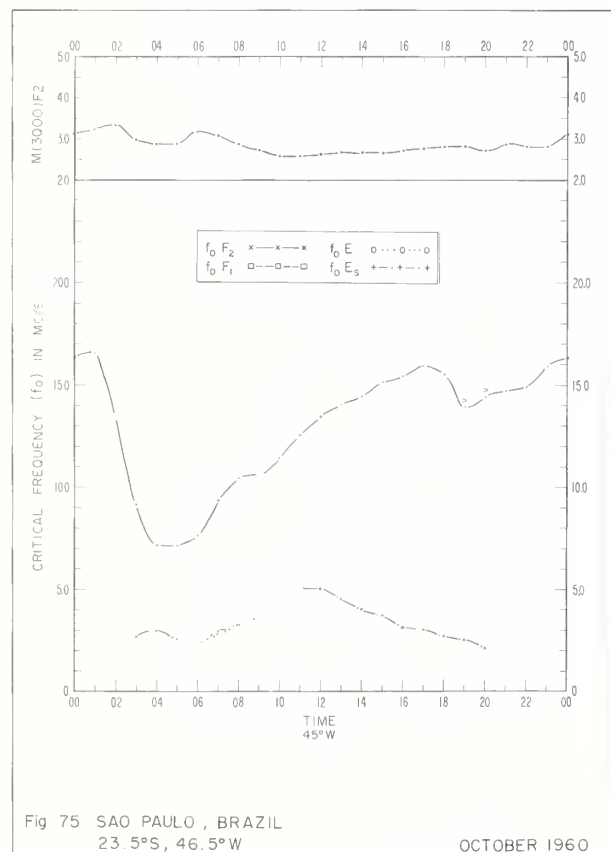
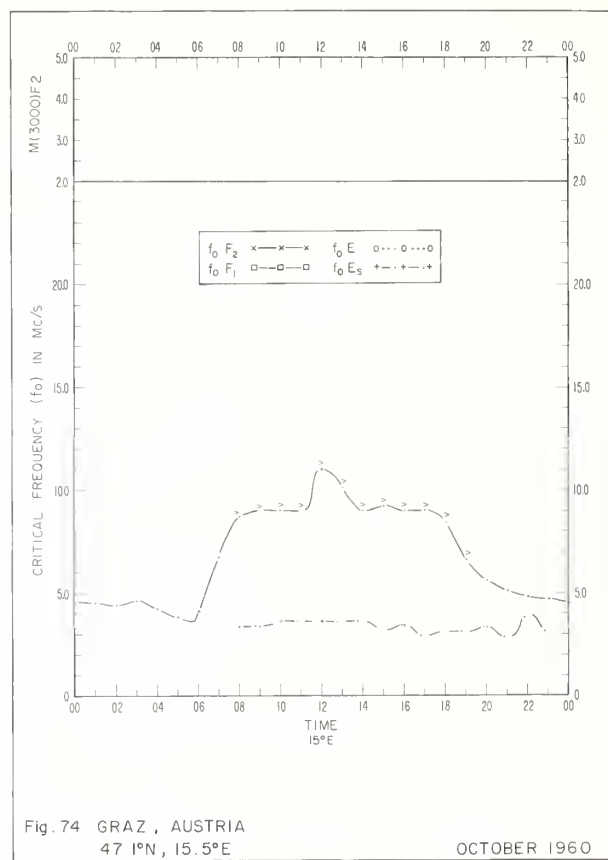
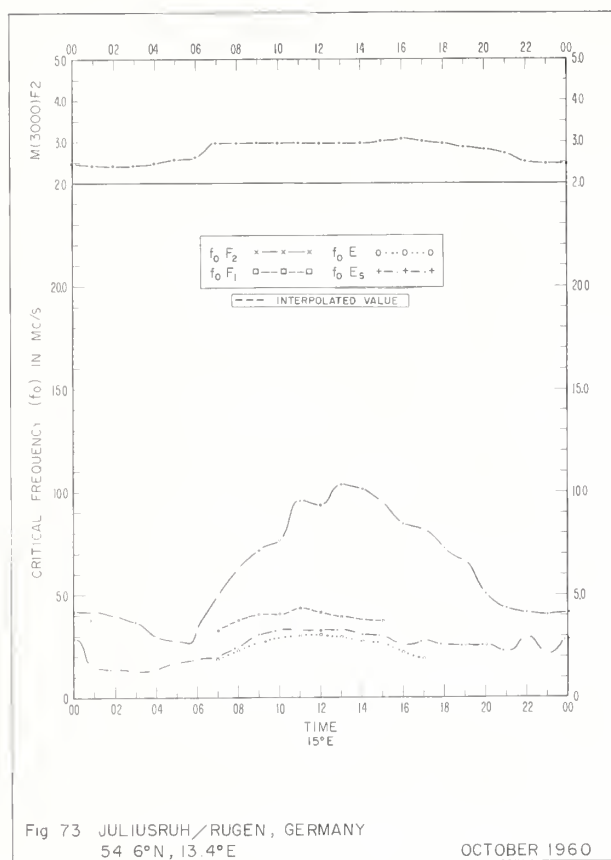


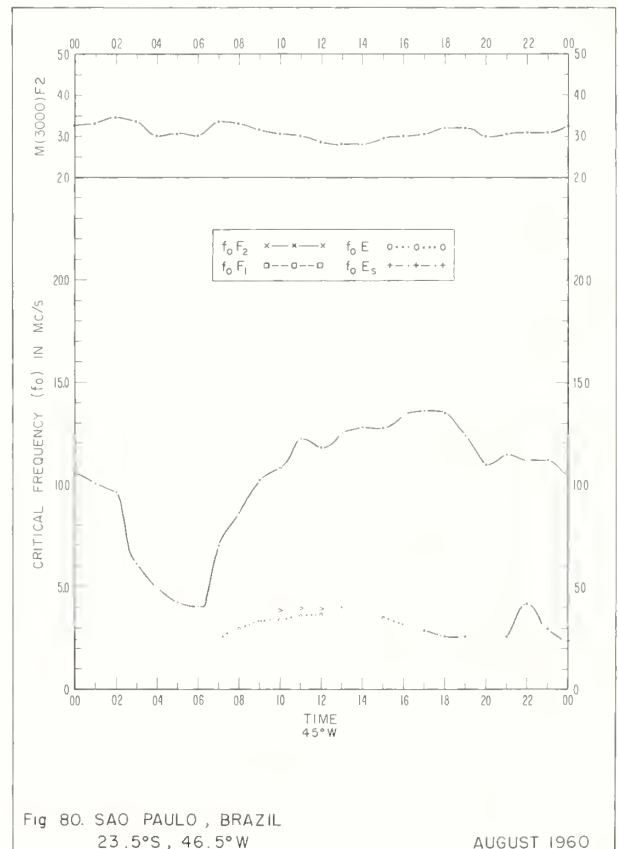
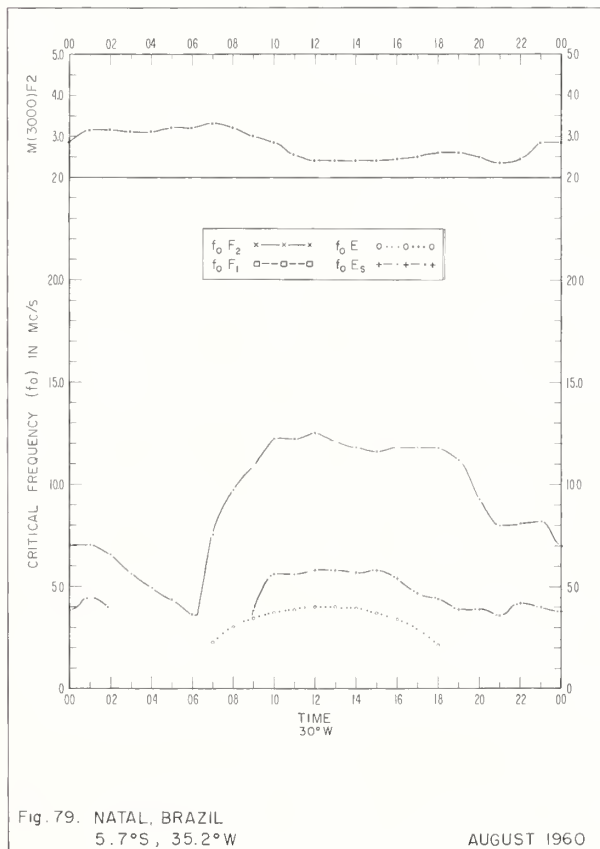
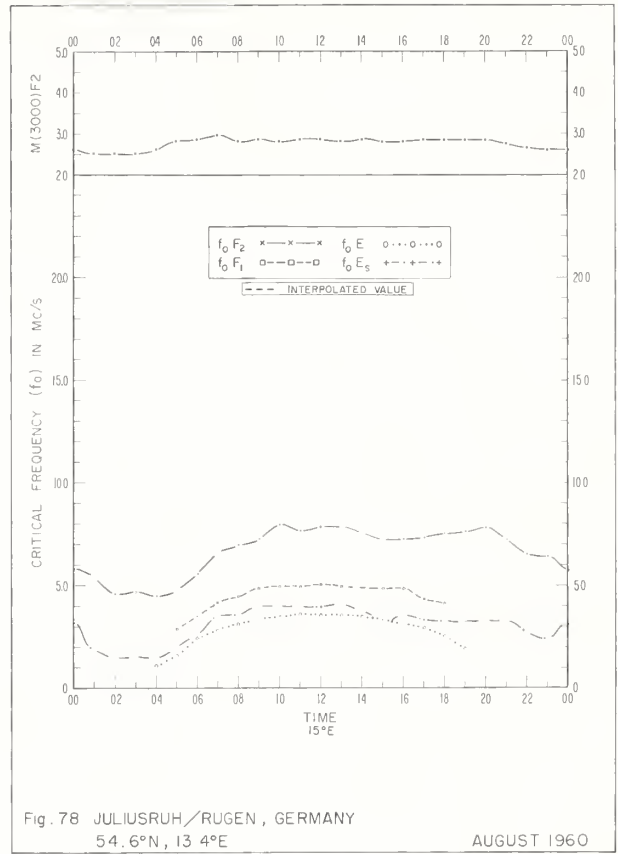
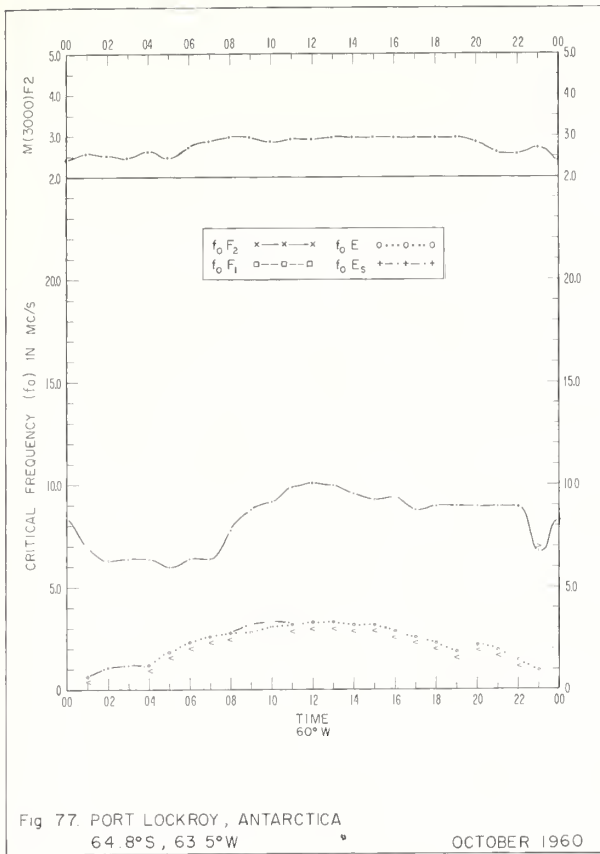
Fig 68. JULIUSRUH/RÜGEN, GERMANY  
54 6°N, 13 4°E

NOVEMBER 1960









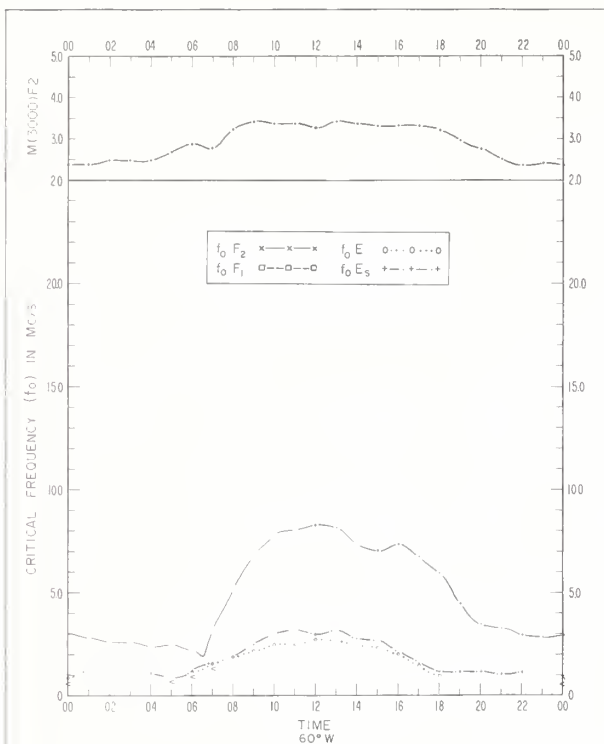


Fig 81. PORT LOCKROY, ANTARCTICA  
64 8°S, 63 5°W

AUGUST 1960

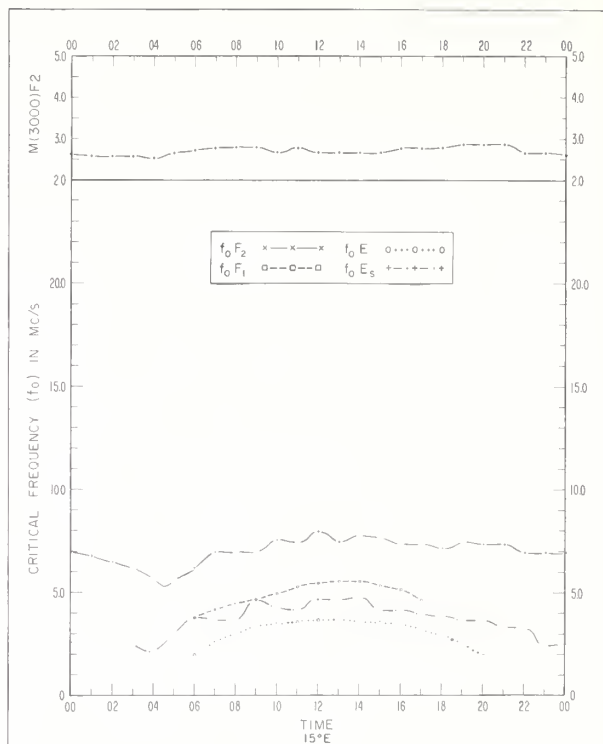


Fig 82. PARIS, FRANCE  
48 1°N, 2.3°E

JUNE 1960

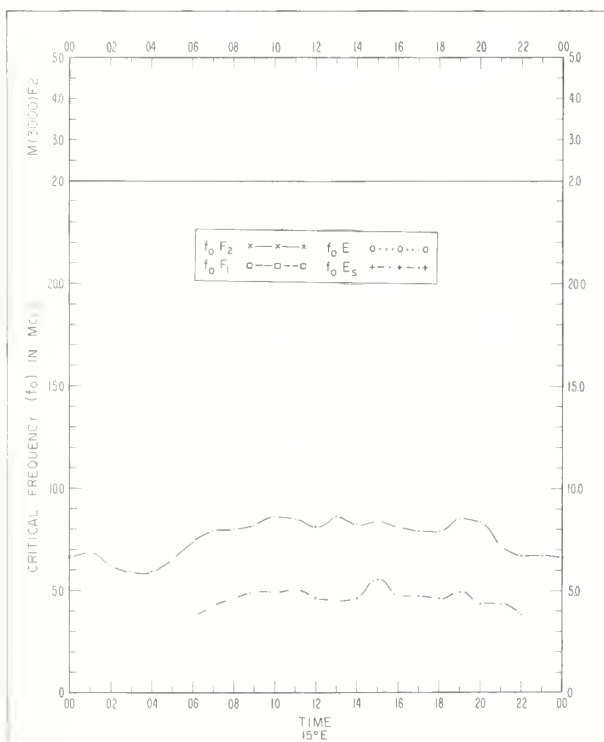


Fig 83. GRAZ, AUSTRIA  
47 1°N, 15 5°E

JUNE 1960

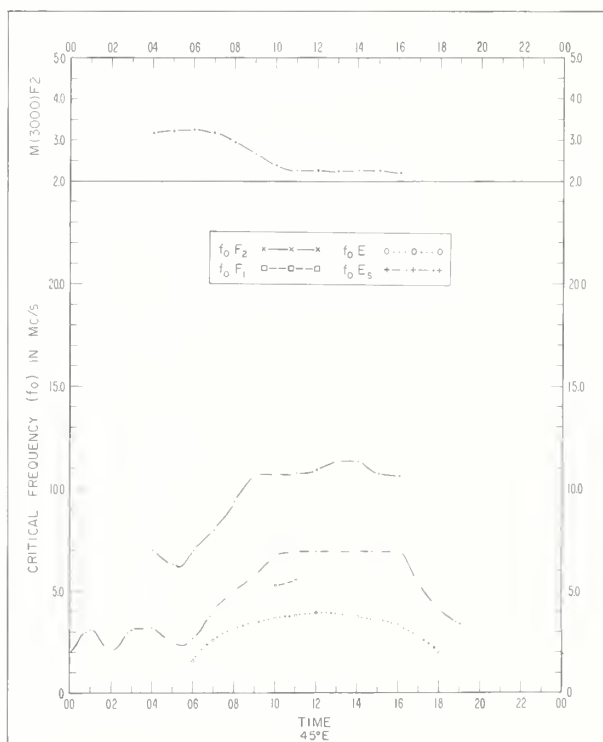
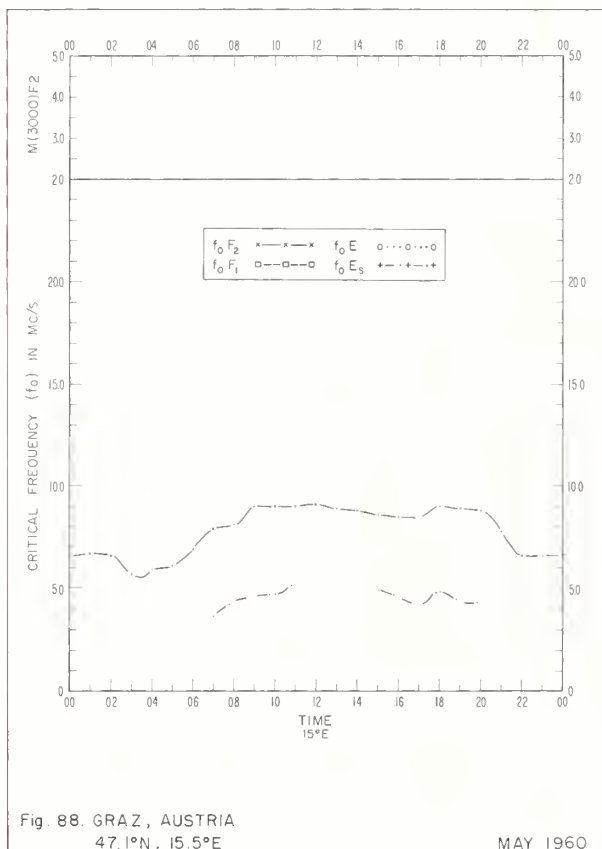
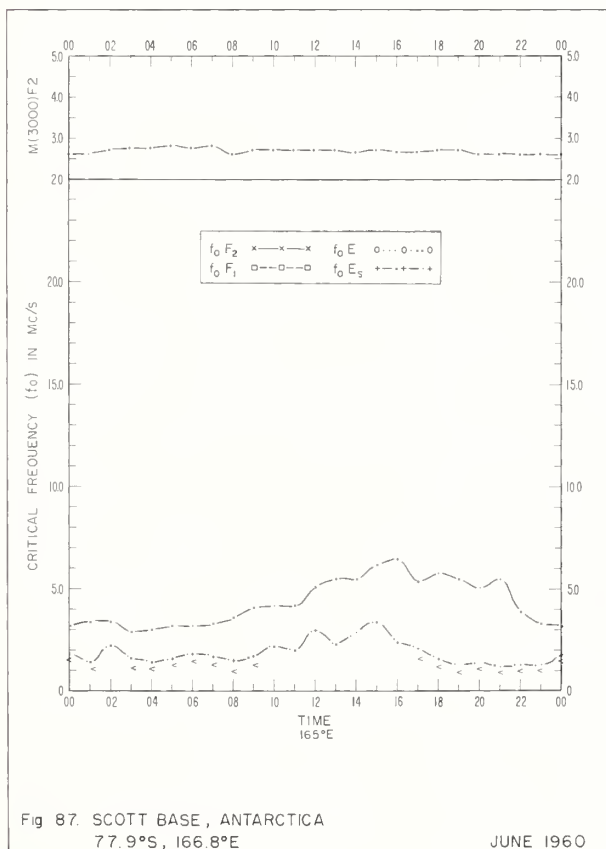
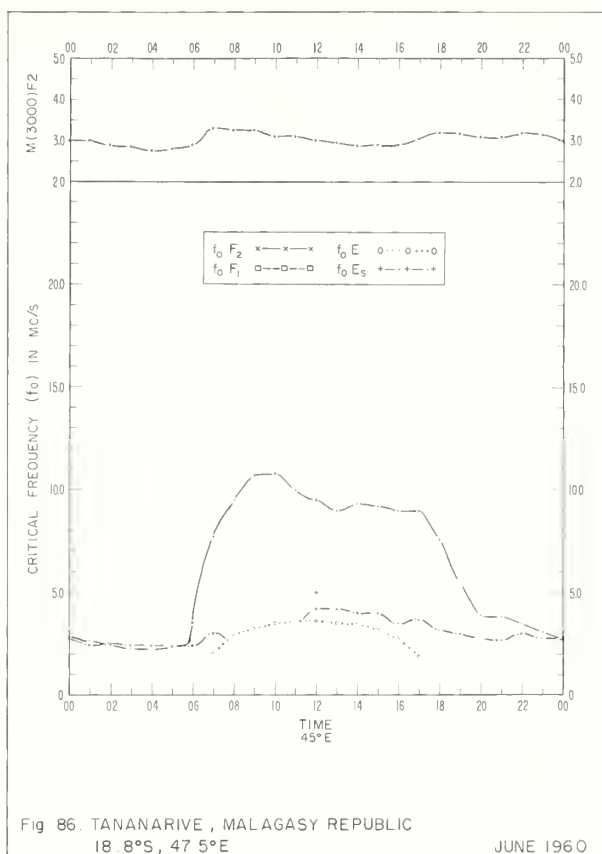
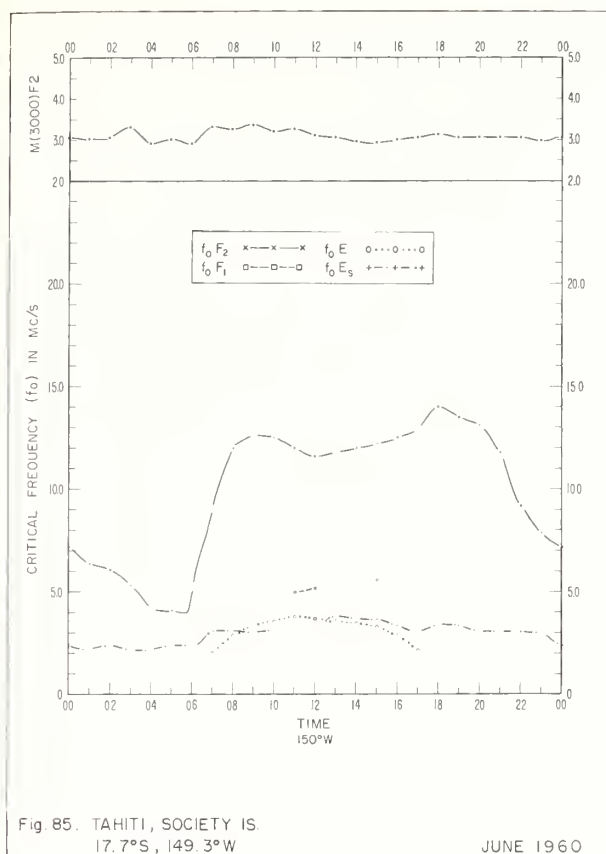
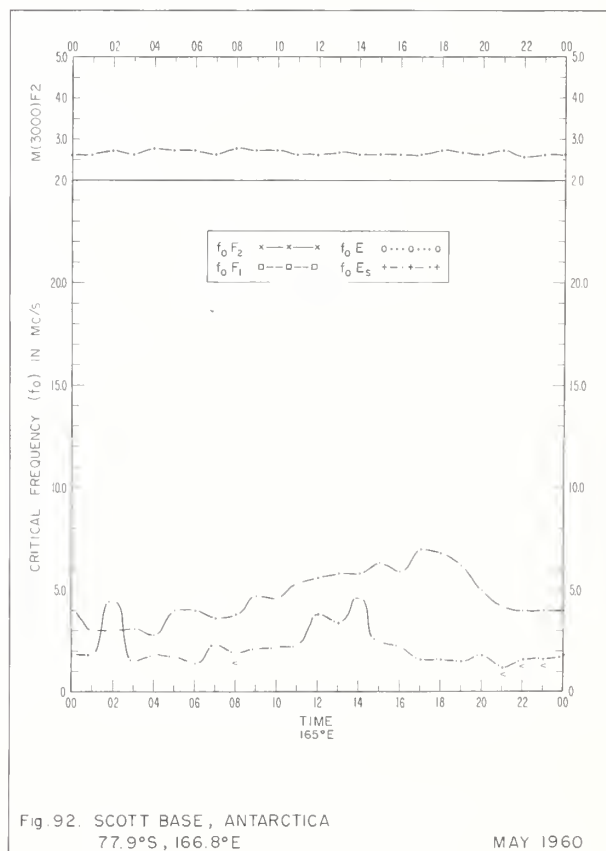
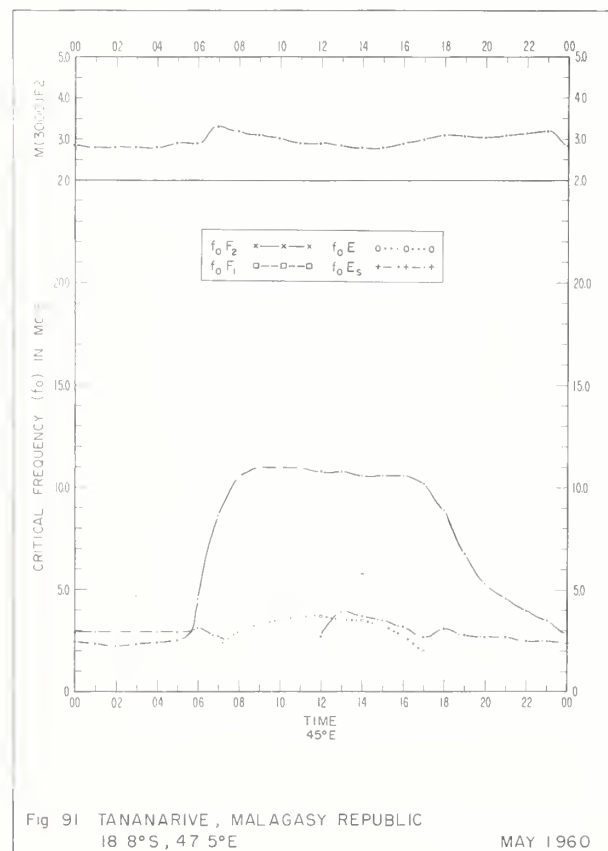
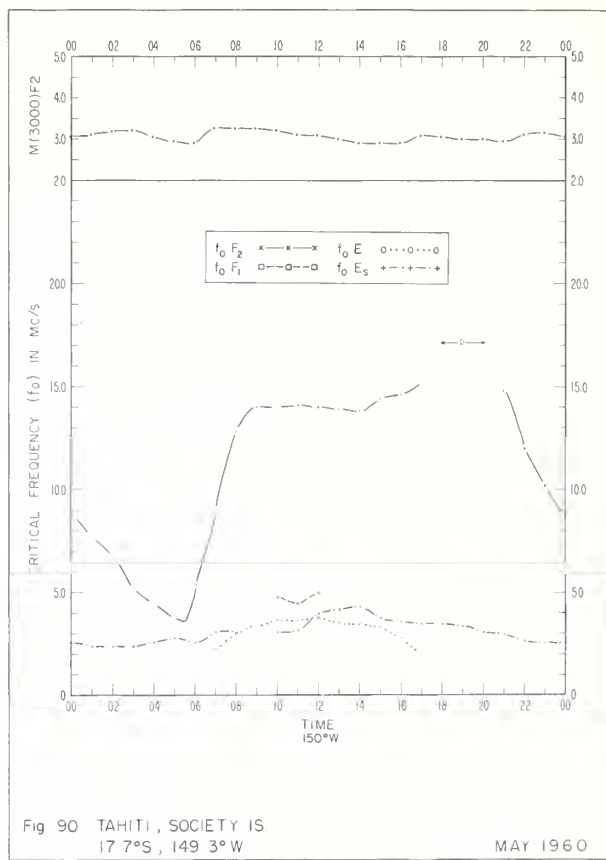
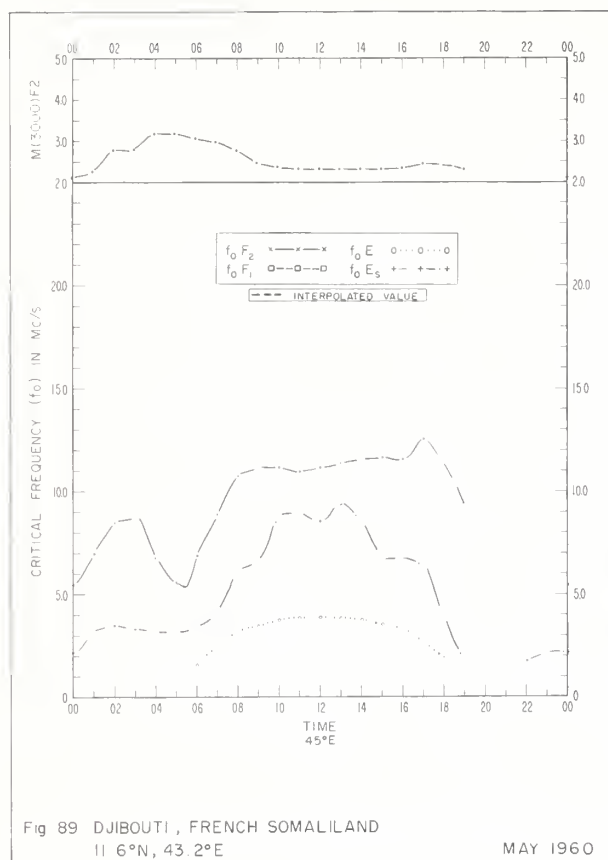
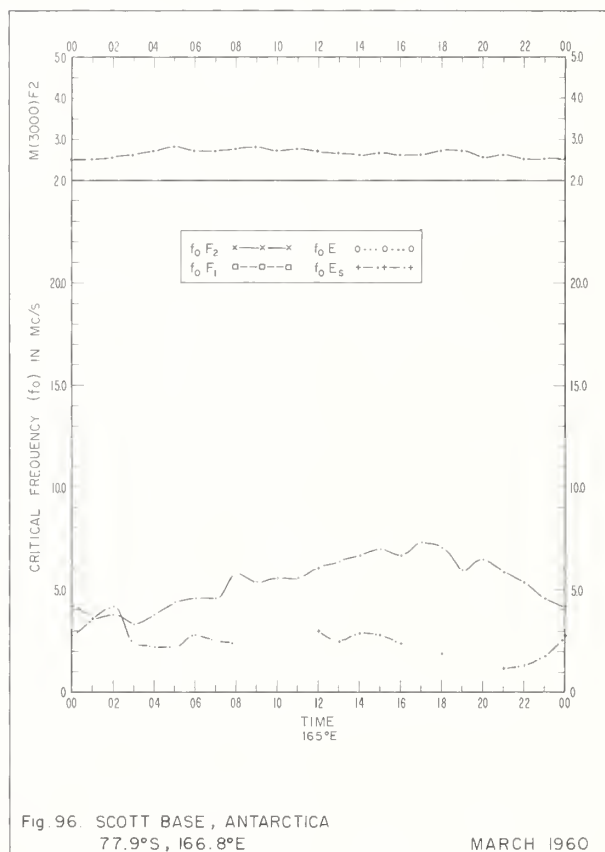
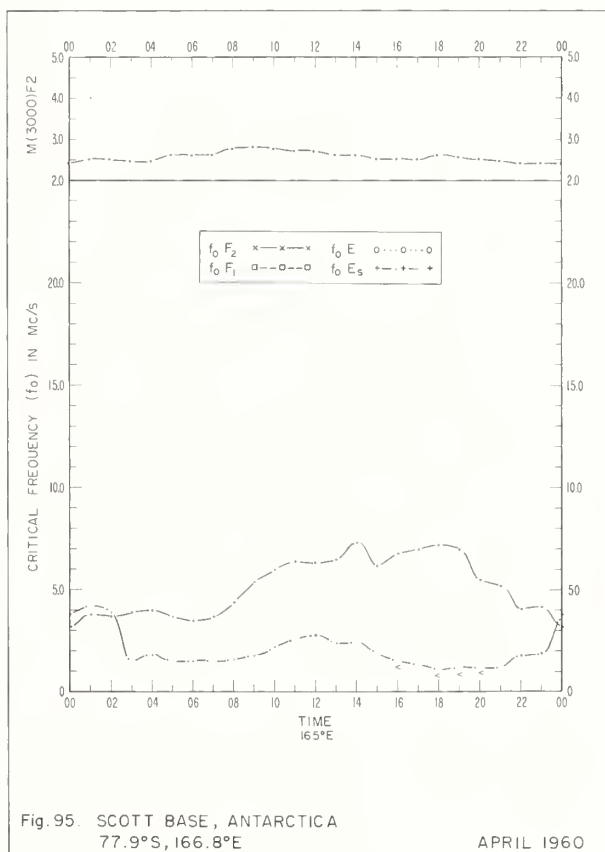
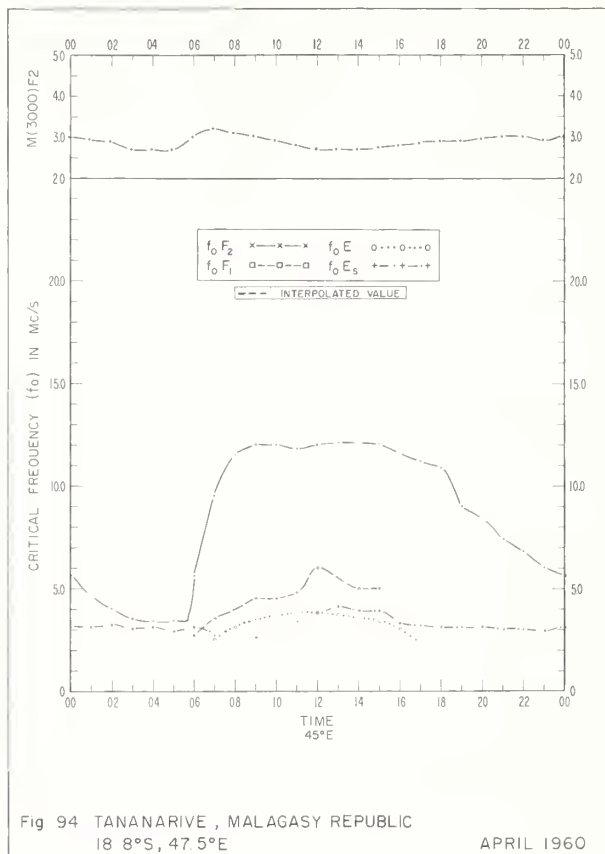
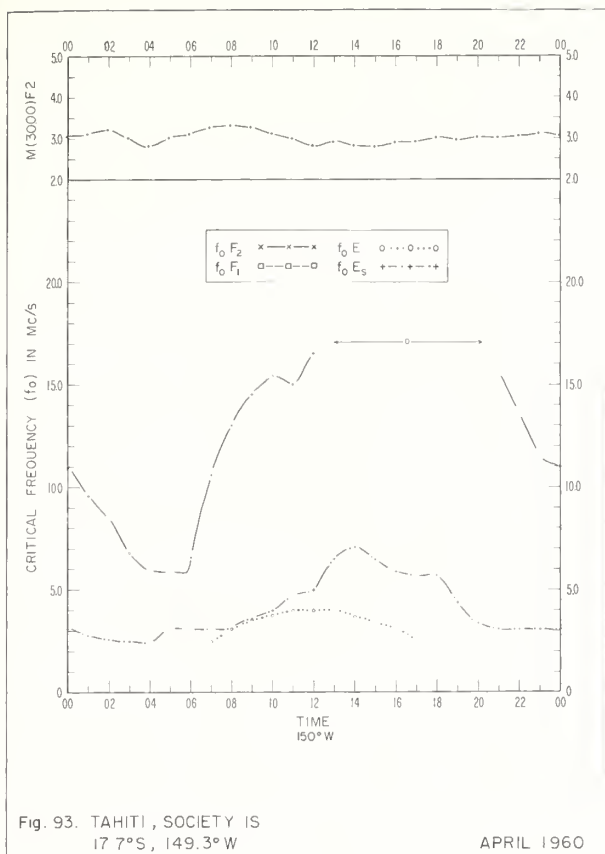


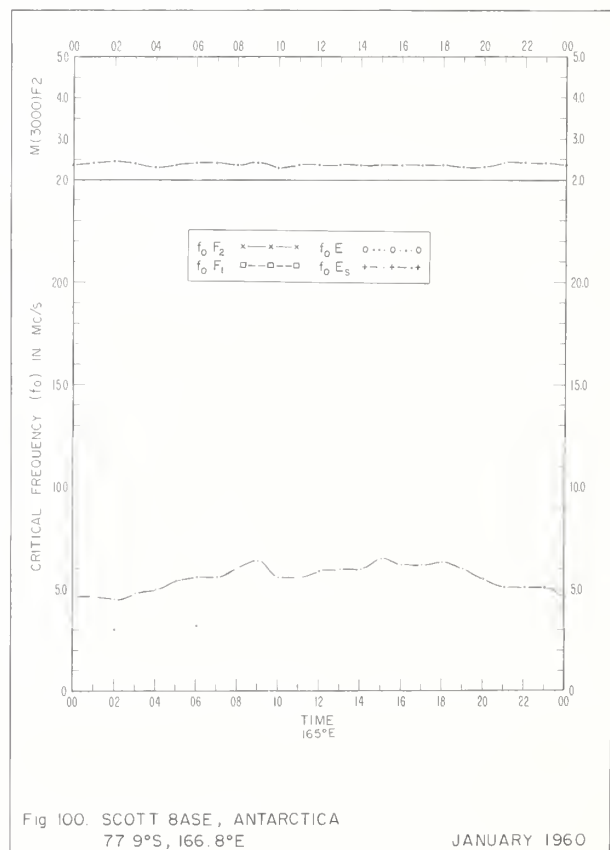
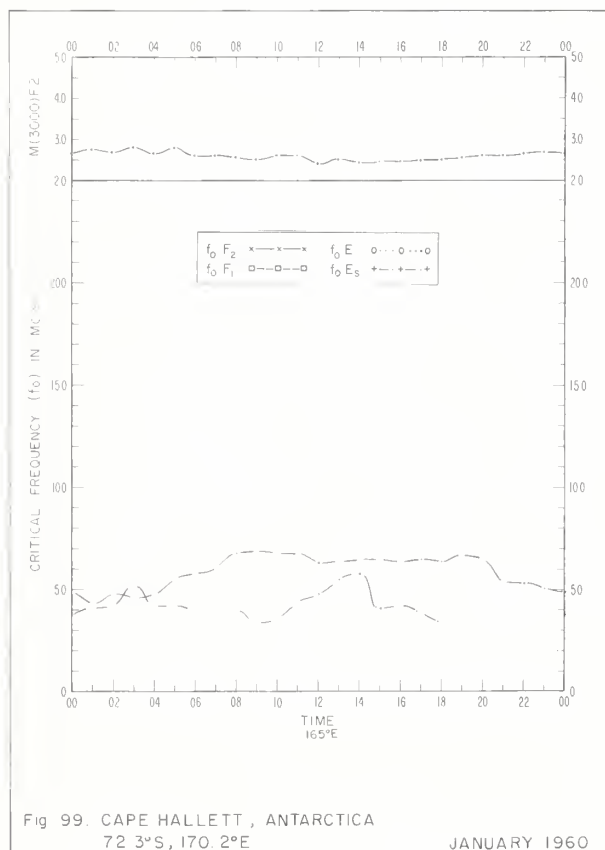
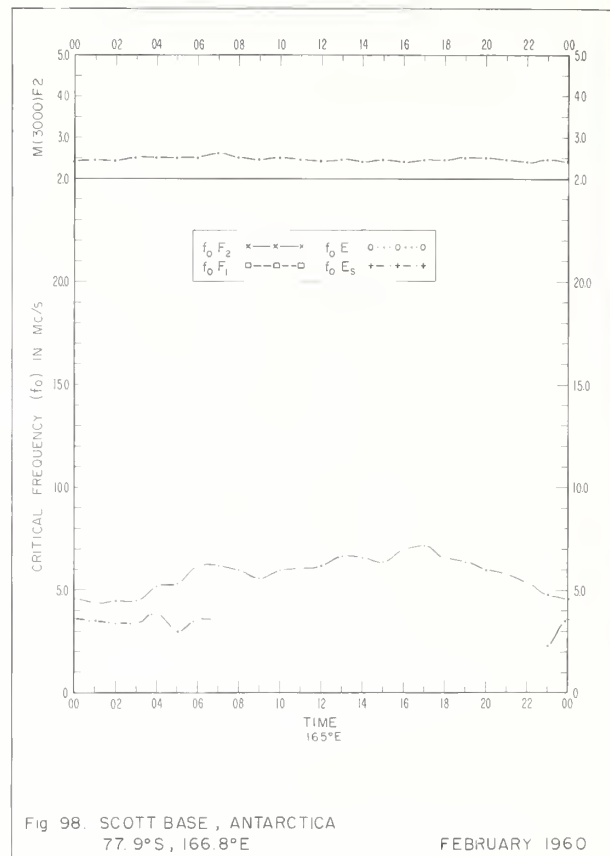
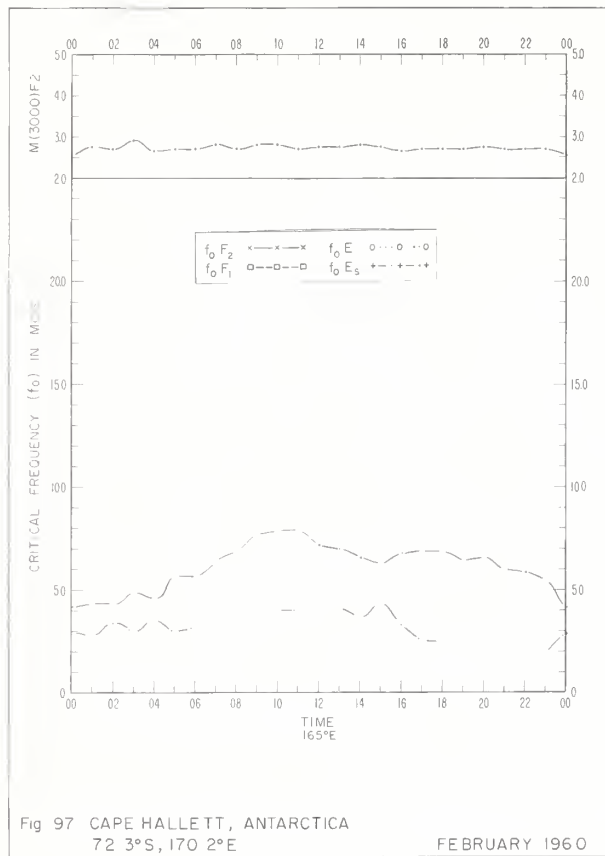
Fig 84. DJIBOUTI, FRENCH SOMALILAND  
11.6°N, 43 2°E

JUNE 1960









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| BAGUIO, LUZON                | 1961 | APR. | 8     | 33     |
| BRISBANE, AUSTRALIA          | 1961 | MAR. | 15    | 40     |
|                              | 1961 | APR. | 10    | 35     |
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|                              | 1961 | MAY  | 6     | 31     |
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|                              | 1961 | AUG. | 2     | 27     |
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| CAPE HALLETT, ANTARCTICA     | 1960 | JAN. | 25    | 50     |
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## CRPL REPORTS

(A detailed list of CRPL publications is available from the Central Radio Propagation Laboratory on request.)

### Catalog of Data.

A catalog of records and data on file at the U.S. IGY World Data Center A for Airglow and Ionosphere, Boulder Laboratories, National Bureau of Standards, Boulder, Colorado, which includes a fee schedule to cover the cost of supplying copies, is available upon request.

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

CRPL-F (Part B), "Solar Geophysical Data."

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### "Ionospheric Predictions."

This series of publications is issued monthly, three months in advance, as an aid in determining the best sky-wave frequencies for high frequency communications over any transmission path, at any time of day for average conditions for the month.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price 15 cents. Annual subscription (12 issues) \$1.50 (50 cents additional for foreign mailing).

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