PART A

IONOSPHERIC DATA

ISSUED
MARCH 1963
IONOSPHERIC DATA

CONTENTS

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Ionospheric Data (revised text)</td>
<td>ii</td>
</tr>
<tr>
<td>Table of Smoothed Observed Zurich Sunspot Numbers</td>
<td>iii</td>
</tr>
<tr>
<td>World-Wide Sources of Ionospheric Data</td>
<td>iv</td>
</tr>
<tr>
<td>Tables of Ionospheric Data</td>
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<tr>
<td>Graphs of Ionospheric Data</td>
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<td>Index of Tables and Graphs of Ionospheric Data in CRPL-F223 (Part A)</td>
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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 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.

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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

COMMONWEALTH OF AUSTRALIA, IONOSPHERIC PREDICTION SERVICE OF THE COMMONWEALTH OBSERVATORY.
BRISBANE, AUSTRALIA
CANBERRA, AUSTRALIA
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

UNIVERSIDAD MAYOR DE SAN ANDRES.
LA PAZ, BOLIVIA

BRITISH DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RADIO RESEARCH BOARD.
FALKLAND IS.

DEFENCE RESEARCH BOARD, CANADA.
CHURCHILL, CANADA
OTTAWA, CANADA
RESOLUTE BAY, CANADA
ST. JOHNS, NEWFOUNDLAND
WINNIPEG, CANADA

UNIVERSIDAD DE CONCEPCION.
CONCEPCION, CHILE

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

CENTRAL AFRICAN INSTITUTE FOR SCIENTIFIC RESEARCH.
LWIRO, CONGO

DANISH NATIONAL COMMITTEE OF URSI.
NARSSARSSUAQ, GREENLAND
IONOSPHERIC RESEARCH GROUP (GRI), FRANCE.
BANGUI, FRENCH EQUATORIAL AFRICA
CASABLANCA, MOROCCO
DAKAR, SENEGAL
DJIBOUTI, FRENCH SOMALILAND
PARIS, FRANCE
POITIERS, FRANCE
TAHITI, SOCIETY IS.
TAMANRASSET, ALGERIA
TANANARIVE, MALAGASY REPUBLIC

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)

NATIONAL INSTITUTE OF GEOPHYSICS, CITY UNIVERSITY, ROME, ITALY.
ROME, ITALY

MANILA OBSERVATORY, PHILIPPINES.
BAGUIO, LUZON

INSTITUTE OF TELECOMMUNICATION, WARSAW, POLAND.
WARSAW, POLAND

RESEARCH INSTITUTE OF NATIONAL DEFENCE, STOCKHOLM, SWEDEN.
UPPSALA, SWEDEN

UNITED STATES ARMY SIGNAL CORPS., UNITED STATES OF AMERICA.
ADAK, ALASKA
FT. MONMOUTH, NEW JERSEY
OKINAWA I.
WHITE SANDS, NEW MEXICO

NATIONAL BUREAU OF STANDARDS, UNITED STATES OF AMERICA.
(CENTRAL RADIO PROPAGATION LABORATORY).
ANCHORAGE, ALASKA
BARROW, ALASKA
FAIRBANKS, ALASKA (GEOPHYSICAL INSTITUTE OF UNIVERSITY ALASKA)
WASHINGTON, D.C.
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**Tables of Ionospheric Data**

*September 1962 - November 1962*

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**Tables of Ionospheric Data**

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**Notes:**
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- SWEEP 2 1/4 MC TO 1 1/4 MC IN 1 MINUTE.
- SWEEP 1 1/4 MC TO 1 1/4 MC IN 5 SECONDS.
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Fig 1 BAGUIO, P. I.
16.4°N, 120.6°E  SEPTEMBER 1962

Fig 2 ROME, ITALY
41.8°N, 12.5°E  JULY 1962

Fig 3 BAGUIO, P. I.
16.4°N, 120.6°E  JULY 1962

Fig 4 ST JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W  JUNE 1962
Fig 13. NARSSARSSUAK, GREENLAND  
61.2°N, 45.4°W  
APRIL 1962

Fig 14. UPPSALA, SWEDEN  
59.8°N, 17.6°E  
APRIL 1962

Fig 15. CHURCHILL, CANADA  
58.8°N, 94.2°W  
APRIL 1962

Fig 16. DOURBES, BELGIUM  
50.1°N, 4.6°E  
APRIL 1962
Fig. 29. Baguio, P. I.  
16.4°N, 120.6°E  
March 1962

Fig. 30. Mundaring, W. Australia  
32.0°S, 116.2°E  
March 1962

Fig. 31. Adak, Alaska  
51.9°N, 176.6°W  
February 1962

Fig. 32. Ahmedabad, India  
23.0°N, 72.6°E  
February 1962
Fig 49 WARSAW, POLAND  
52°N, 21°E  
JUNE 1961

Fig 50 CONCEPCION, CHILE  
36.6°S, 73°W  
JUNE 1961

Fig 51 WHITE SANDS, NEW MEXICO  
32.3°N, 106.5°W  
MAY 1961

Fig 52 ATHENS, GREECE  
38°N, 23.6°E  
APRIL 1961
Fig 53. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W  MARCH 1961

Fig 54. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W  FEBRUARY 1961

Fig 55. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W  FEBRUARY 1961

Fig 56. DOUBES, BELGIUM
50.1°N, 4.6°E  JANUARY 1961
Fig 73. WARSAW, POLAND
52°N, 21.2°E
MAY 1960

Fig 74. AHMEDABAD, INDIA
23.0°N, 72.6°E
MAY 1960

Fig 75. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E
MAY 1960

Fig 76. MUNDARING, W AUSTRALIA
32.0°S, 116.2°E
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Fig 85. BANGUI, FRENCH EQUATORIAL AFRICA
4.6°N, 18.6°E  JUNE 1959

Fig 86. POITIERS, FRANCE
46.6°N, 0.3°E  MAY 1959

Fig 87. TAMANRASSET, FRENCH W AFRICA
22.8°N, 5.5°E  MAY 1959

Fig 88. BANGUI, FRENCH EQUATORIAL AFRICA
4.6°N, 18.6°E  MAY 1959
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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."

These monthly bulletins have limited distribution and are sent, in general, only to those individuals and scientific organizations that collaborate in the exchange of ionospheric, solar, geomagnetic, or other radio propagation data of interest to the CRPL. Others may purchase copies of the same data from the U.S. IGY World Data Center A for Airglow and Ionosphere, National Bureau of Standards, Boulder, Colorado.

"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.


(NOTE: Tested sets of punched cards of the predicted numerical coefficients of numerical maps of the Ionospheric Predictions, for use with electronic computers, may be purchased by arrangement with the Prediction Services Section, CRPL, Boulder Laboratories, Boulder, Colorado.)

