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# IONOSPHERIC DATA IN JAPAN

## FOR JUNE 1963

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KOKUBUNJI, TOKYO, JAPAN

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CONTENTS

## SITES OF THE RADIO WAVE OBSERVATORIES

Ionospheric observation is carried out at the following four observatories in Japan.

| | Latitude | Longitude | Site |
|---|---|---|---|
| Wakkanai | 45°23.6′N. | 141°41.1′E. | Wakkanai-shi, Hokkaido |
| Akita | 39°43.5′N. | 140°08.2′E. | Tegata Nishishin-machi, Akita-shi, Akita-ken |
| Kokubunji | 35°42.4′N. | 139°29.3′E. | Koganei-shi, Kitatama-gun, Tokyo-to |
| Yamagawa | 31°12.5′N. | 130°37.7′E. | Yamagawa-machi, Ibusuki-gun, Kagoshima-ken |

Solar radio emission and radio propagation conditions are observed at Hiraiso Radio Wave Observatory.

| | Latitude | Longitude | Site |
|---|---|---|---|
| Hiraiso | 36°22.0′N. | 140°37.5′E. | Isozaki-machi, Nakaminato-shi, Ibaragi-ken |

## SYMBOLS AND TERMINOLOGY

### A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, September 2, 1956, and the Second Report of the Committee, May, 1957, supplementary to the First Report.

**Terminology**

$f_0F2$, $f_0F1$, $f_0E$ — The ordinary-wave critical frequency for the $F2$, $F1$ and $E$ layers respectively.

$f_0E_s$ — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

$f_bE_s$ — The ordinary wave frequency at which the highest blanketing $E_s$ layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

$f$-min — That frequency below which no echoes are observed.

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the $F$ region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant $F$ region virtual height parameter is that for lowest $F$ region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when $F$ region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ The lowest virtual height of the trace used to give the $f_0E_s$.

$hpF2$ The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 $f_0F2$.

$ypF2$ The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 $f_0F2$).

**a. Descriptive Symbols**

Used following the numerical value on monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example $E_s$.

B Measurement influenced by, or impossible because of, absorption in the vicinity of $f$-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced by, or impossible because the trace has no sufficiently definite cusp between layers.

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.

O Measurement refers to the ordinary component.

R Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

V Forked trace which may influence the measurement.

W Measurement influenced by, or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

**b. Qualifying Symbols**

Used as a preceeding symbol on monthly tabulation sheets.

D *greater than.....*

E *less than.....*

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

**c. Description of Standard Types of $E_s$**

The nine standard types of $E_s$ are identified by small (lower case) letters: *l*, *c*, *h*, *q*, *r*, *a*, *s*, *f*, *n*. These letters are suggestive of the names low, cusp, high, equatorial, retardation, auroral, slant, flat and unclassified, respectively; it is strongly emphasized that these names are suggestive, not restrictive. The standard types are:

*l* At flat $E_s$ trace at or below the normal $E$ layer minimum virtual height. Use in daytime only.

*c* An $E_s$ trace showing a relatively symmetrical cusp at or below $f_0E$. This is usually continuous with the normal $E$ trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.

*h* An $E_s$ trace showing a discontinuity *in height* with the normal $E$ layer trace at or above $f_0E$. The cusp is not symmetrical, the low frequency end of the $E_s$ trace lying clearly above the high frequency end of the normal $E$ trace. Use in daytime only.

*q* As $E_s$ trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

*r* An $E_s$ trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thick layer included in the $E$ layer tables: $f_0E$, $h'E$) by the lack of group retardation in the $F$ traces at corresponding frequencies.

*a* An $E_s$ pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.

*s* A diffuse $E_s$ trace which rises steadily with frequency. This usually emerges from another $E_s$ trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal $E_s$ trace, *l*, *h* or *f*, and frequencies which greatly exceed the $E$ layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type $E_s$, *q*, at frequencies near the $E$ region critical frequency.

*f* An $E_s$ trace which shows no appreciable increase of height with

frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat $E_s$ traces observed in the daytime are classified according to their virtual height: $h$ or $l$.

$n$ An $E$ trace which cannot be classified into one of the standard types. This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.

**d. Multiple Reflections from $E_s$**

When the ionogram shows the presence of multiple reflections from $E_s$ the number of traces seen should be recorded after the letter indicating the type.

## B. SOLAR RADIO EMISSION

Solar radio emission is received on 200 Mc at Hiraiso Radio Wave Observatory using a 6×4 dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

**a. Daily Data**

*Steady flux* The mean value of recorded base level. Outstanding occurrences are to be omitted except the phenomena with duration of hours or more.

*Variability* Variability is expressed in four grades as follows:

0=no burst
1=a few bursts
2=many bursts
3=exceptionally many bursts

Number of bursts is determined relatively in comparison with the base level. If the number of bursts be fixed, the variability is greater, when bursts are widely distributed, than in the case of being concentrated in a short period.

**b. Outstanding occurrences**

*Starting time* When the start is not obvious, 20% rise time of smoothed flux is adopted and $x$ is suffixed. (e.g. 0234 $x$)

*Maximum time* When the instantaneous maximum can not be taken, the smoothed maximum is used and $x$ is suffixed. (e.g. 0539$x$)

*Time of end* When the phenomena have ended obscurely the time of 20% of maximum smoothed flux is written.

*Type* Outstanding emissions are classified as follows: On another point of view, the classification in the URSI Interchange code is to be added.

S : simple rise and fall of intensity
C : complex variation of intensity
A : appears to be part of general activity
D : distinct from (i.e. apparently superposed upon) the general

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

Combined letters express one phenomenon (e.g. SD, ECD); letters joined by + express some phenomena occurring in parallel; the preceding term is more important (e.g. SD+F, SA+C).

*Maximum intensity*

Instantaneous: The highest value above the base level.

Smoothed: By multiplying the duration, the approximate total power of the phenomenon can be estimated.

## C. RADIO PROPAGATION CONDITIONS

### a. Radio Propagation Quality Figures

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

1=very poor (very disturbed)
2=poor (disturbed)
3=rather poor (unstable)
4=normal
5=good

The tabulated circuits contain London (commercial circuit), WWV (frequencies 10, 15, 20 Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15 Mc broadcast from Hawaii), which are received at Hiraiso Radio Wave Observatory near Tokyo.

Warnings of radio propagation broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses disturbed condition expected to be during the following 12 hours after issue. The letter U and N means also unstable or normal conditions, respectively.

Whole day radio quality indices are the averages of the 6-hourly indices of London, WWV and S. F.

Start- and end-time of principal geomagnetic storms closely correlated to radio propagation conditions are tabulated from observations at Kakioka.

### b. Sudden Ionospheric Disturbances (S. I. D.)

The data of short wave fade-out (SWF) are preparated from the field intensity records on following circuits received at Hiraiso. Characteristics of the phenomenon are classified as follows.

*Circuits and Drop-out intensity*

WS.....WWV 20 Mc, 15 Mc and 10 Mc (Washington)
SF.....Various commercial circuits (San Francisco)
HA.....WWVH 15 Mc and 10 Mc (Hawaii)
TO.....JJY 15 Mc and 10 Mc (Tokyo)
SH.....BPV 15 Mc and 10 Mc (Shanghai)
LN.....Various commercial circuits (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drou-out Intensities of 10 Mc ( ' ), 15 Mc (none) and 20 Mc ( '' ).

*Start-times and Durations*

*Types*

S : sudden drop-out and gradual recoverly
Slow: slow drop-out taking 5 to 15 minutes and gradual recoverly
G : gradual disturbances; fade irregular in both drop-out and recoverly

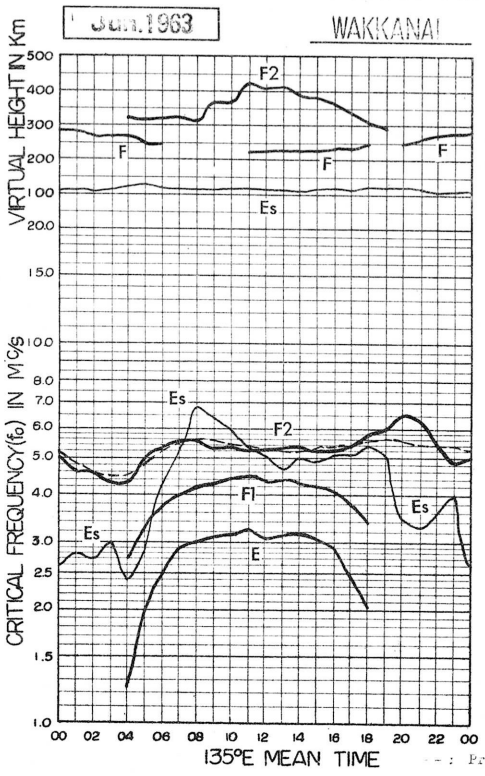
*Importances*

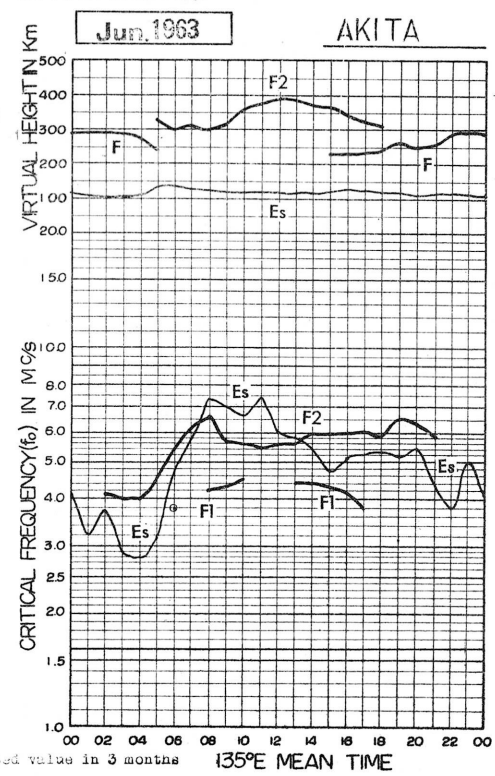
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

| | | |
|---|---|---|
| 1− | 1 | 1+ |
| 2− | 2 | 2+ |
| 3− | 3 | 3+ |

Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

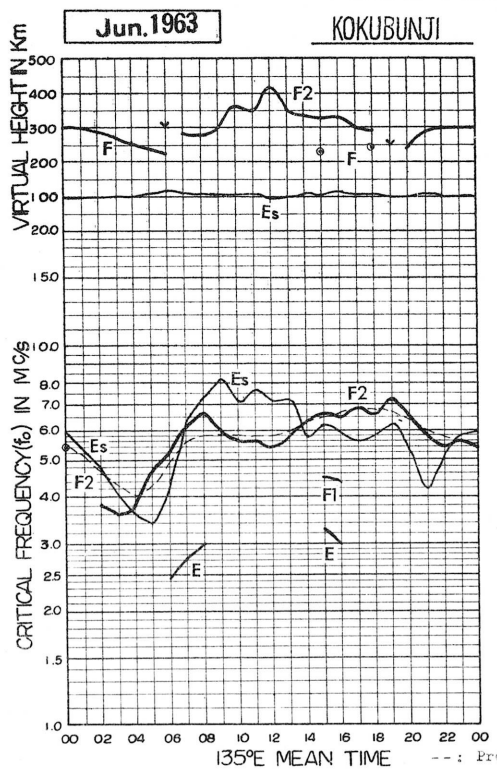
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

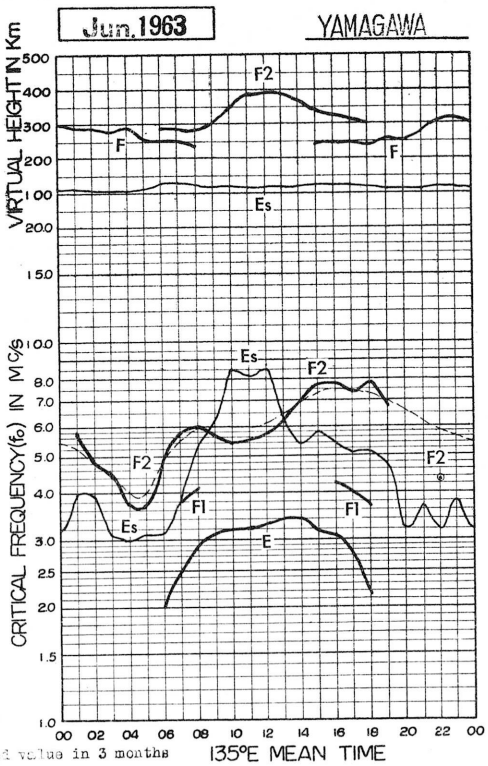



--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS




--: Predicted value in 3 months advance by R.R.L.

# IONOSPHERIC DATA

Jun. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | U5.3S | 5.2 | 4.9 | 4.3 | 3.8 | 4.0 | 4.6 | 5.3 | 6.7 | 5.4 | I5.5A | 5.0 | I5.0A | 5.0 | 5.2 | 6.1 | 5.3 | 5.3 | 5.6 | 5.7 | 6.7 | 6.4 | U6.5S | U6.3S |
| 2 | U7.3S | U4.6S | A | A | A | A | A | A | A | A | A | A | A | R | A | A | 4.9 | I4.9A | I5.1A | 5.8 | 6.7 | 6.3 | 5.7 | 4.3 |
| 3 | 4.1 | 4.1 | 4.0 | 4.0 | 3.0 | 3.8 | 4.8 | 4.7 | A | A | A | A | A | R | A | A | A | A | 5.3 | I5.9A | U6.6S | 5.8 | 4.9 | 4.8 |
| 4 | 4.4 | 4.2 | 4.4 | 4.3 | 4.5 | 5.6 | 5.8 | 5.8 | I5.4A | I5.3A | I5.2A | I5.1A | 5.1 | 5.0 | 5.2 | 5.0 | 5.1 | I5.7A | I6.4A | I7.3A | I7.4S | I6.0A | U5.5S | U4.8SF |
| 5 | I4.6SF | 4.3 | 4.1 | 4.2 | 4.3F | 5.1 | 5.0 | 5.7 | 5.4 | 5.7 | 6.0 | I5.7A | I5.0A | 5.0 | I4.9A | 5.0 | I5.1A | 5.3 | I5.8A | 7.1 | U8.0S | 7.0 | 6.0 | 5.3 |
| 6 | 4.4 | 4.0 | 4.1 | 4.3 | 4.5 | 5.4 | 6.1 | 5.9 | 6.5 | 5.7 | I5.3A | 5.2 | 5.8 | 5.5 | I5.0R | 4.7 | I4.9A | I5.2A | 6.3 | 7.7 | 8.4 | A | A | SF |
| 7 | A | A | A | SF | 4.3F | 5.5 | I6.5A | 7.6 | A | A | A | A | 6.7 | 7.2 | 6.8 | 6.0 | I5.2A | I5.4A | I5.7A | I5.8S | 6.1 | 6.0 | 5.1 | 4.7 |
| 8 | 5.1 | I4.5A | 5.0 | 4.9 | 5.0 | 5.8 | I5.6A | 5.4 | I5.3A | I5.3A | 5.2 | 6.0 | I6.1A | 5.8 | I5.7A | I5.8A | I6.1A | I6.1A | 6.6 | U7.5S | 8.3 | 8.5 | I7.2SF | 5.9 |
| 9 | 5.1 | 5.0 | 4.6 | 4.3 | 4.3 | 5.1 | A | A | C | C | C | C | C | C | C | C | C | C | 6.0 | 7.0 | 7.9 | U6.9S | I6.7S | S |
| 10 | S | SF | 4.7 | I4.8S | I5.0SF | 5.7 | 6.3 | I5.9A | 5.6 | 5.1 | I5.7A | 5.3 | 5.3 | 5.3 | I5.5A | I5.7A | 5.7 | I6.0A | I6.3A | 7.0 | U7.8S | U8.1S | A | A |
| 11 | SF | I5.6SF | 5.6 | 5.0 | 5.1 | 5.0H | 5.4 | 6.0 | I5.6A | I5.5A | I5.5A | I5.6A | 5.6 | 5.4 | 5.3 | 5.4 | 5.9 | 6.3 | 6.2 | 6.3 | 6.6 | 6.7 | 6.3 | 6.3 |
| 12 | 5.7 | 5.8 | 5.4 | 5.4 | 5.3F | 4.7 | 5.3 | 6.0 | I5.7A | I5.4A | 5.1 | I5.6A | 5.1 | I5.3A | 5.9 | 5.5 | 5.3 | 5.3 | 5.3 | 5.8 | 6.3 | 7.0 | 6.3 | 6.0 |
| 13 | 5.3 | 5.1 | 5.0 | I4.9SF | 4.8 | 5.0 | 5.4 | 5.8 | 6.0 | I5.1A | I5.3A | 5.2 | I5.5A | 5.6 | I5.7A | 6.1 | 5.6 | 5.4 | I5.8A | I6.4A | 6.4 | U6.5S | 6.5 | 6.3 |
| 14 | I6.3SF | I6.3SF | 6.0 | 5.5F | 5.3F | 5.8 | 6.6 | I6.8A | 6.7 | 5.7 | I6.2A | A | A | A | A | A | A | 5.3 | 5.7 | 5.7 | I6.6A | U6.6S | I6.4SF | 5.8 |
| 15 | 5.5 | 5.3 | 4.6 | 5.0 | 5.0F | 5.4 | 4.8 | 5.0 | 5.3 | W | I5.1A | 5.1 | 5.3 | 5.3 | 5.3 | 6.0 | 5.7 | 5.5 | 6.0 | 5.6 | 5.5 | U4.9S | 5.0 | 4.9 |
| 16 | 4.7 | 4.5 | 3.8H | 3.6 | 3.8 | 4.5H | 5.4 | 4.7 | I5.0A | I5.2A | 5.5 | I5.5A | 5.7 | W | 5.0 | 5.0 | 5.1 | 5.5 | 5.3 | I5.8A | 6.1 | 6.3 | 5.6 | 5.0 |
| 17 | 5.0 | SF | SF | SF | SF | 5.0F | 6.2 | 7.1 | 5.8 | I5.6A | I5.6A | 5.6 | 5.8 | 6.7 | 6.7 | 5.6 | I5.5A | 5.5 | 6.3 | 7.3 | I7.5S | 7.5 | 6.6 | 6.3 |
| 18 | 6.0 | I5.8SF | 5.3F | I4.5SF | 3.9F | 4.1 | 4.2 | I4.8A | I5.5A | I5.5A | 5.1 | 5.3 | 5.4 | 5.4 | 5.4 | 5.5 | 5.8 | I6.1S | 6.0 | 6.7 | 6.0 | 5.3 | 5.3 | 4.9 |
| 19 | 5.0 | 4.6 | 4.6 | 5.0 | 3.7 | 4.4 | R | A | A | A | 5.4 | A | A | R | A | I4.9S | I4.8A | 5.3 | 5.8 | 5.8 | 6.2 | 5.7 | 5.3 | I5.5SF |
| 20 | 5.5F | SF | SF | SF | SF | 5.8 | 5.4 | 4.3 | 4.9 | A | A | A | A | A | 5.4 | 5.3 | 5.3 | I5.5A | 5.9 | 6.0 | 5.1 | 5.3 | 5.3 | A |
| 21 | SF | FS | FS | FS | 3.9 | 5.2 | I5.3A | 5.2 | I5.0A | I4.8A | 4.6 | I4.7A | I4.7A | 4.7 | 4.6 | 4.7 | 5.1 | 5.3 | 5.4 | 6.3 | 7.1 | 6.3 | 5.6 | 4.7 |
| 22 | U4.3SF | FS | FS | FS | FS | 4.3 | 4.8 | 5.5 | 6.0 | 5.0 | 4.7 | I4.9R | 5.0 | W | W | I5.0A | 5.1 | A | A | A | A | 6.1 | 5.4 | U5.2S |
| 23 | A | A | SF | A | 3.8F | A | A | A | A | A | A | 5.0 | I4.9A | 4.8 | 5.4 | 5.1 | I5.1A | I5.0S | I5.5A | 6.1 | 6.6 | U6.5FS | FS | FS |
| 24 | SF | FS | FS | FS | 4.1 | 4.3 | I4.9A | I5.5A | 6.0 | 6.4 | 5.6 | 5.3 | I5.0A | 5.2 | 5.0 | 5.2 | 5.7 | 5.6 | I6.2A | I6.3A | 5.7 | 5.3 | 5.3SF | U4.9F |
| 25 | 4.8 | I4.5S | 3.8F | I4.0FS | U4.3SF | 6.0 | 7.3F | 7.2 | I6.4A | 5.0 | 5.8 | 5.3 | 5.4 | W | 4.8 | 5.2 | 5.6 | 5.4 | 6.2 | 6.5 | 6.3 | 6.3 | 4.3 | U4.3F |
| 26 | 3.8 | 4.1 | I4.3SF | I3.9S | U3.7FH | 4.5 | 4.1 | I4.5A | 4.7 | 5.3 | 5.7 | 4.7 | A | A | A | A | A | A | A | A | A | A | A | A |
| 27 | A | A | A | FS | FS | 3.6 | A | A | A | A | A | A | A | A | A | A | 5.3 | I5.3A | I5.1A | I5.5A | 5.9 | 5.3F | A | SF |
| 28 | A | SF | 4.1 | I3.9SF | 3.5 | 4.3 | 4.3 | 4.3 | I4.9A | I4.9A | 5.0 | I4.8A | I4.6R | I4.5A | 4.7 | I4.8A | I4.7A | 4.7 | 4.8 | 5.3 | 6.0 | 4.7 | 4.4 | 4.3 |
| 29 | 4.3SF | U4.0FS | 4.0 | 4.0 | 3.6 | 3.9 | A | A | A | 4.7 | 4.8 | I4.9R | 5.1 | I4.7A | I4.7A | 4.7 | I4.7A | 4.6 | 5.2 | 5.3 | 4.6 | U4.4S | I4.4SF | I4.5SF |
| 30 | U4.3SF | 4.0 | 3.9 | 3.7 | 3.6 | 4.3 | 5.3 | 5.1 | I4.7A | I4.7A | 5.0 | 5.0 | I5.0A | 5.3 | 5.5 | 5.1 | 4.7 | 4.7 | 5.2 | 5.8 | 5.8 | 5.4 | 5.0 | U4.5S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 22 | 20 | 21 | 21 | 25 | 28 | 24 | 24 | 22 | 21 | 23 | 22 | 22 | 19 | 22 | 24 | 26 | 26 | 28 | 28 | 28 | 28 | 25 | 23 |
| Median | 5.0 | 4.6 | 4.6 | 4.3 | 4.3 | 5.0 | 5.4 | 5.5 | 5.6 | U5.3 | 5.3 | 5.2 | 5.2 | 5.3 | 5.3 | 5.2 | 5.2 | 5.4 | 5.8 | 6.0 | 6.5 | 6.3 | 5.5 | 4.9 |
| U.Q. | 5.5 | 5.2 | 5.0 | 5.0 | 4.9 | 5.4 | 6.0 | 6.0 | 6.0 | 5.6 | 5.6 | 5.5 | 5.6 | 5.5 | 5.5 | 5.6 | 5.6 | 5.5 | 6.2 | 6.8 | 7.2 | 6.6 | 6.4 | 5.9 |
| L.Q. | 4.4 | 4.2 | 4.0 | 4.0 | 3.8 | 4.3 | 4.8 | 4.9 | 5.0 | 5.0 | 5.1 | •5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.1 | 5.3 | 5.3 | 5.8 | 6.0 | 5.4 | 5.0 | 4.7 |
| Q.R. | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.1 | 1.0 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.2 | 0.9 | 1.0 | 1.2 | 1.2 | 1.4 | 1.2 |

foF2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 1

# IONOSPHERIC DATA

Jun. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 3.7 | 3.8 | 4.1 | I 4.2 A | I 4.3 A | I 4.4 A | 4.5 | I 4.5 A | I 4.5 A | 4.4 | 4.3 | 4.2 | A | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | A | 4.3 | I 4.3 A | I 4.2 A | 4.1 | A | A | | | | | |
| 3 | | | | | | 3.2 | A | A | A | A | A | A | A | U 4.4 R | I 4.3 A | A | A | A | A | | | | | |
| 4 | | | | | | 3.5 | 3.7 | A | A | A | I 4.4 A | I 4.5 A | 4.4 | 4.5 | 4.3 | 4.3 | A | A | A | | | | | |
| 5 | | | | | | | 4.1 | A | A | A | I 4.5 A | I 4.5 A | I 4.6 A | 4.4 | I 4.4 A | I 4.3 A | A | A | A | | | | | |
| 6 | | | | | 2.7 | 3.5 | I 3.8 A | I 4.1 A | I 4.3 A | I 4.5 A | I 4.6 A | 4.5 | 4.4 | 4.4 | 4.5 | 4.0 | I 4.2 A | A | A | | | | | |
| 7 | | | | | 2.7 | A | A | A | A | A | A | A | A | A | 4.2 | 4.2 | A | A | A | | | | | |
| 8 | | | | | | A | A | A | A | A | 4.5 | I 4.5 A | I 4.6 A | 4.6 | A | A | A | A | A | | | | | |
| 9 | | | | | U 2.7 L | A | A | A | C | C | C | C | C | C | C | C | C | C | A | | | | | |
| 10 | | | | | | I 3.4 A | A | A | A | A | A | 4.6 | 4.6 | 4.6 | A | A | A | A | A | | | | | |
| 11 | | | | | 2.7 | | A | A | A | A | A | A | A | 4.6 | 4.5 | I 4.5 A | I 4.2 A | 4.0 | 3.4 | | | | | |
| 12 | | | | | | | 4.0 | A | A | A | A | A | 4.7 | I 4.6 A | I 4.4 A | 4.3 | I 4.3 A | A | A | A | | | | | |
| 13 | | | | | | 3.6 | A | A | A | A | A | A | A | A | A | A | A | 3.8 | A | | | | | |
| 14 | | | | | | 3.5 | A | A | 4.5 | 4.9 | A | A | A | A | A | A | A | 3.9 | A | | | | | |
| 15 | | | | | U 2.7 L | 3.3 | U 4.0 L | I 4.2 A | I 4.3 A | U 4.3 R | I 4.4 A | 4.5 | 4.5 | I 4.4 A | I 4.4 A | 4.3 | I 4.1 A | 4.0 | 3.4 | | | | | |
| 16 | | | | | | | 3.8 | A | A | A | A | A | 4.4 | 4.4 | A | A | A | I 4.0 A | 3.4 | | | | | |
| 17 | | | | | | 3.6 | A | A | A | A | A | 4.5 | I 4.4 A | 4.5 | I 4.3 A | A | A | A | A | A | | | | |
| 18 | | | | | 2.5 | 3.2 | 3.6 | A | A | A | 4.4 | I 4.4 A | 4.3 | 4.4 | 4.3 | 4.3 | I 4.1 A | I 3.7 A | I 3.4 A | | | | | |
| 19 | | | | | | 3.3 | U 3.8 R | A | A | A | A | A | I 4.4 A | I 4.2 R | A | A | A | 3.9 | 3.3 | A | | | | |
| 20 | | | | | | A | I 4.2 A | 3.9 | A | A | A | A | A | A | I 4.3 A | I 4.2 A | A | A | A | | | | | |
| 21 | | | | | | 3.2 | A | A | A | A | A | I 4.2 A | I 4.3 A | 4.2 | 4.2 | 4.2 | 3.9 | 3.6 | 3.4 | A | | | | |
| 22 | | | | | | 3.3 | A | A | A | I 4.3 A | I 4.3 R | 4.3 | 4.3 | U 4.2 R | U 4.1 R | A | A | A | A | | | | | |
| 23 | | | | | | A | A | A | A | A | A | A | I 4.3 A | I 4.3 A | A | A | A | A | A | | | | | |
| 24 | | | | | | | A | A | A | A | A | 4.4 | I 4.4 A | I 4.3 A | 4.3 | 4.2 | I 4.0 A | 3.8 | A | | | | | |
| 25 | | | | | 2.5 | 3.3 | I 3.8 A | 4.0 | I 4.2 A | 4.3 | 4.2 | 4.3 | 4.3 | U 4.3 R | 4.2 | A | A | A | A | | | | | |
| 26 | | | | | | A | A | A | 4.0 | 4.1 | 4.4 | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | A | A | I 3.9 A | A | A | A | | | | |
| 28 | | | | | | 3.3 | 3.7 | 4.0 | A | A | A | A | R | A | A | A | A | 3.7 | A | A | | | | |
| 29 | | | | | | 3.2 | A | A | A | A | 4.3 | 4.3 | 4.3 | I 4.3 A | I 4.2 A | 4.2 | I 4.0 A | 3.8 | 3.3 | | | | | |
| 30 | | | | | | 3.6 | 3.7 | I 3.9 A | A | A | A | A | A | A | I 4.2 R | 4.2 | 4.0 | 3.8 | A | A | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | 7 | 17 | 13 | 7 | 6 | 7 | 11 | 14 | 18 | 21 | 19 | 15 | 12 | 12 | 7 | | | | | |
| Median | | | | | 2.7 | 3.3 | 3.8 | 4.0 | U 4.2 | U 4.3 | U 4.4 | 4.5 | 4.4 | 4.4 | U 4.3 | 4.2 | U 4.1 | 3.8 | 3.4 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

foF1

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 2

# IONOSPHERIC DATA

Jun. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 1.30 | 2.10 | 2.45 | 2.90 | 3.00 | 3.05 | 3.15 | 3.15 | 3.00 | 3.00 | [3.00A] | [2.95A] | 2.90 | 2.50 | 2.10 | S | | | | |
| 2 | | | | | 1.20 | 2.05 | 2.50 | 2.90 | 3.05 | 3.10 | 3.20 | 3.15 | 3.05 | A | A | A | 2.95 | 2.45 | 2.05 | S | | | | |
| 3 | | | | | 1.60 | 2.20 | 2.55 | 2.90 | 3.05 | 3.15 | 3.20 | 3.20 | [3.00B] | 3.00 | [3.05A] | 3.15 | 2.90 | 2.50 | S | S | | | | |
| 4 | | | | E | A | 2.00 | [2.35A] | 2.90 | 3.00 | 3.00 | 3.05 | 3.10 | 3.00 | A | A | A | A | 2.50 | S | S | | | | |
| 5 | | | | | A | [1.95S] | 2.70 | 2.95 | 3.05 | 3.15 | 3.15 | 3.20 | 3.05 | 3.40 | 3.30 | 3.15 | 3.00 | 2.50 | 2.00 | S | | | | |
| 6 | | | | | 1.20 | 2.00 | 2.50 | 2.80 | 3.00 | 3.10 | 3.10 | 3.20 | 3.00 | [3.00A] | 3.15 | 3.10 | [3.00A] | 2.55 | S | S | | | | |
| 7 | | | | | A | 2.00 | 2.30 | 2.85 | 3.00 | 3.05 | 3.00 | 3.00 | [3.05A] | A | A | A | 3.05 | 2.50 | S | S | | | | |
| 8 | | | | | A | 2.00 | 2.45 | 2.90 | 3.05 | 3.20 | 3.25 | 3.25 | 3.15 | 3.15 | [3.15A] | 3.20 | 3.00 | 2.50 | S | S | | | | |
| 9 | | | | | 1.20 | 2.00 | 2.35 | 2.85 | C | C | C | C | C | C | C | C | C | C | S | S | | | | |
| 10 | | | | | A | [2.00A] | 2.60 | 2.85 | 3.00 | 3.15 | 3.20 | 3.25 | [3.10A] | A | A | A | 3.00 | 2.60 | S | S | | | | |
| 11 | | | | | 1.20 | 2.00 | 2.60 | 3.00 | 3.05 | 3.20 | 3.25 | 3.30 | 3.25 | 3.15 | 2.95 | A | A | A | A | S | | | | |
| 12 | | | | | 1.65 | 2.20 | 2.75 | 3.00 | 3.15 | 3.30 | 3.30 | 3.25 | 3.30 | 3.35 | 3.20 | [3.10A] | 2.90 | [2.55A] | S | S | | | | |
| 13 | | | | | A | 2.10 | 2.65 | 2.95 | 3.10 | 3.30 | 3.30 | 3.30 | 3.25 | 3.20 | A | A | A | A | S | S | | | | |
| 14 | | | | | A | 2.20 | 2.65 | 2.90 | 3.00 | 3.15 | 3.30 | 3.35 | 3.35 | 3.00 | A | A | A | 2.80 | S | S | | | | |
| 15 | | | | | 1.20 | 2.10 | 2.65 | [2.90A] | 3.10 | 3.15 | 3.25 | 3.30 | 3.25 | 3.20 | 3.10 | A | A | A | S | S | | | | |
| 16 | | | | | 1.20 | 2.00 | 2.40 | 2.95 | 3.00 | 3.15 | 3.25 | 3.30 | 3.45 | 3.30 | 3.20 | 3.05 | 2.90 | A | S | S | | | | |
| 17 | | | | | 1.15 | 1.95 | 2.60 | 2.90 | 3.05 | 3.10 | 3.20 | 3.25 | [3.10A] | 3.00 | A | A | A | A | S | S | S | | | |
| 18 | | | | | 1.40 | 2.05 | 2.50 | 2.90 | 3.00 | 3.10 | 3.20 | 3.25 | 3.05 | 3.25 | 3.20 | 3.00 | 2.90 | 2.40 | 2.00 | S | | | | |
| 19 | | | | | 1.45 | 2.00 | 2.50 | 2.85 | 3.00 | 3.15 | 3.25 | 3.30 | 3.30 | 3.25 | 3.20 | 3.10 | 2.85 | 2.60 | 2.10 | S | S | | | |
| 20 | | | | | 1.45 | 2.10 | 2.45 | 2.90 | 2.95 | 3.05 | [3.00A] | 2.95 | 3.00 | 3.00 | A | A | A | A | A | S | | | | |
| 21 | | | | | 1.25 | 2.10 | 2.50 | 2.80 | 2.95 | 3.05 | 3.05 | 3.10 | 3.00 | 3.00 | 2.95 | [2.90R] | A | A | S | S | | | | |
| 22 | | | | | 1.20 | 2.00 | 2.70 | 2.80 | 2.90 | 3.00 | 3.00 | 3.30 | 3.30 | 3.15 | 3.10 | A | A | A | S | S | | | | |
| 23 | | | | | 1.80 | 2.05 | 2.30 | 2.85 | 2.95 | 3.00 | 3.05 | 3.10 | 3.10 | 3.10 | 3.20 | 3.15 | 2.90 | 2.45 | S | S | | | | |
| 24 | | | | | A | 2.05 | 2.55 | 2.85 | 3.00 | 3.10 | 3.20 | [3.20A] | 3.20 | 3.30 | 3.20 | 3.05 | 2.95 | 2.45 | 2.00 | S | | | | |
| 25 | | | | | 1.25 | 2.00 | 2.45 | 2.90 | 3.00 | 3.00 | 3.10 | 3.25 | 3.35 | 3.25 | [3.15A] | 3.10 | 2.90 | 2.60 | S | | | | | |
| 26 | | | | | 1.20 | 2.00 | 2.40 | 2.70 | 2.95 | 3.05 | 3.05 | 3.30 | 3.40 | 3.30 | 3.15 | 3.00 | 2.80 | 2.50 | 2.05 | S | | | | |
| 27 | | | | | 1.50 | 2.15 | 2.45 | 2.80 | 2.95 | 3.05 | 3.15 | 3.05 | 3.10 | [3.10A] | [3.05A] | 3.00 | 2.85 | 2.45 | S | S | | | | |
| 28 | | | | | 1.35 | 2.10 | 2.50 | 2.85 | 2.90 | 3.05 | 3.00 | 3.10 | 3.05 | 3.00 | 3.00 | 2.95 | A | A | 2.05 | S | | | | |
| 29 | | | | | A | 2.00 | 2.55 | 2.80 | 3.00 | 3.05 | 3.15 | 3.35 | 3.30 | 3.05 | A | A | A | A | A | A | | | | |
| 30 | | | | | A | 2.00 | 2.40 | 2.90 | 2.95 | 3.00 | [3.05A] | [3.05A] | [3.05A] | 3.25 | 3.20 | 3.00 | 2.85 | 2.50 | 2.00 | S | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | 1 | 20 | 30 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 25 | 20 | 17 | 18 | 19 | 9 | | | | | |
| Median | | | | E | 1.25 | 2.00 | 2.50 | 2.90 | 3.00 | 3.10 | 3.15 | 3.25 | 3.10 | 3.15 | 3.15 | 3.05 | 2.90 | 2.50 | 2.05 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

foE

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 3

11

# IONOSPHERIC DATA

Jun. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 2.5 | 2.3 | E | G | 3.4 | 3.6 | 3.6 | 5.3 | 5.2 | 7.2 | 3.6 | 5.2 | 5.1 | 3.9 | 4.5 | 3.8 | 4.5 | 6.3 | 3.4 | 2.8 | E | E | E |
| 2 | E | 2.5 | 6.5 | 12.1 | 12.0Y | 8.0 | 5.0 | 7.3 | 8.2 | 7.3 | 8.5 | 10.4 | 8.2 | 4.1 | 6.6 | 7.3 | 4.0 | 4.8 | 6.3 | 5.9 | 3.0 | E | E | E |
| 3 | 3.3 | 2.4 | E | 2.0 | G | 3.0 | 5.0 | 4.8 | 6.3 | 8.1 | 6.5 | 6.5 | 9.3 | 4.3 | 6.1 | 4.6 | 5.8 | 8.4 | 12.3 | 6.5 | 2.8 | 2.5 | 2.3 | E |
| 4 | E | E | E | E | 7.0 | 2.5 | 2.9 | 5.3 | 11.8 | 6.6 | 5.5 | 5.0 | 3.6 | 6.0 | 3.6 | 4.3 | 4.6 | 8.1 | 12.1 | 8.3 | 6.4 | 6.3 | 4.4 | 4.0 |
| 5 | 2.8 | 2.6 | 3.0 | 3.1 | 3.6 | 4.0 | 4.3 | 4.3 | 4.5 | 5.1 | 4.8 | 6.8 | 5.6 | G | 5.8 | 4.5 | 5.6 | 6.5 | 7.1 | 4.0 | 3.0 | 3.0 | 2.5 | 2.5 |
| 6 | E | E | E | E | G | 2.4 | 3.8 | 5.1 | 4.3 | 4.5 | 7.0 | 4.6 | 5.0 | 5.5 | 3.5 | G | 6.3 | 5.3 | 5.3 | 4.6 | 7.3 | 10.6 | D | 5.3 |
| 7 | 7.3 | 7.3 | 6.3 | 4.3 | 2.0 | 6.0 | 16.3 | 6.6 | 8.3 | 10.0 | 9.8 | 12.0 | 5.1 | 7.0 | 3.8 | 4.0 | 5.3 | 6.3 | 5.9 | 5.0 | 3.0 | E | 5.2 | 4.0 |
| 8 | 6.3 | 6.8 | 4.3 | 3.0 | 3.1 | 4.5 | 9.1 | 4.4 | 7.3 | 5.3 | 5.0 | 5.5 | 6.6 | 4.3 | 6.5 | 6.3 | 8.3 | 6.6 | 5.3 | 8.2 | 5.3 | 7.3 | 2.6 | E |
| 9 | E | 4.6 | E | E | 2.6 | 4.0 | 6.3 | 8.3 | C | C | C | C | C | C | C | C | C | C | 5.3 | 4.0 | 5.0 | 5.0 | 3.3 | 1.8 |
| 10 | 4.3 | 3.1 | 5.3 | 5.3 | 2.5 | 4.1 | 4.3 | 6.3 | 6.5 | 5.6 | 7.1 | 4.5 | 4.0 | 5.0 | 8.0 | 8.3 | 5.4 | 10.3 | 6.3 | 5.3 | 6.2 | 6.3 | 12.3 | 6.3 |
| 11 | 2.5 | 4.3 | 2.1 | 2.9 | 2.8 | 3.1 | 4.0 | 4.5 | 7.3 | 6.0 | 5.9 | 7.0 | 5.1M | 4.0 | 4.2 | 5.6 | 5.2 | 4.0 | 4.3 | S | 3.1 | E | 4.0 | E |
| 12 | E | E | E | 2.3 | G | 3.0 | 4.2 | 6.3 | 6.8 | 7.3 | 9.3 | 9.5 | 4.0 | 5.3 | 5.3 | 4.0 | 4.5 | 5.1 | 4.5 | 3.3 | 8.3 | 6.3 | 6.3 | 6.3 |
| 13 | E | 3.0 | 5.0 | 4.3 | 3.0 | 3.0 | 4.3 | 4.9 | 6.3 | 6.1 | 7.5 | 5.0 | 6.5 | 6.4 | 8.1 | 10.0 | 4.4 | 4.3 | 13.0 | 8.3 | 3.0 | 2.3 | E | 5.0 |
| 14 | 5.0 | 5.3 | 4.0 | 3.3 | 2.5 | 4.3 | 6.1 | 7.0 | 10.3 | 4.3 | 7.5 | 8.0 | 14.3 | 7.5 | D | 14.0 | 12.3 | 6.3 | 4.8 | 5.3 | 7.6 | 3.6 | 6.3 | 2.3 |
| 15 | 2.5 | 3.1 | 4.3 | 5.1 | 1.8 | 2.5 | 3.4 | 4.3 | 5.4 | 4.3 | 5.6 | 4.5 | 5.1 | 5.0 | 5.0 | 4.3 | 4.6 | 3.0 | 2.7 | 2.7 | 3.6 | 3.3 | 4.3 | E |
| 16 | E | E | E | E | 1.9 | 2.9 | 3.9 | 5.0 | 6.1 | 8.2 | 6.3 | 7.3 | 4.0 | 4.2 | 5.3 | 5.0 | 4.3 | 5.0 | 13.8 | 7.8 | 4.1 | 3.3 | 4.3 | 3.5 |
| 17 | 2.3 | 3.0 | 2.3 | 3.1 | G | G | 4.3 | 4.3 | 5.1 | 6.4 | 6.5 | 5.3 | 5.1 | 3.8 | 5.3 | 5.1 | 7.3 | 4.4 | 5.6 | 6.3 | 5.3 | 4.7 | 3.3 | 3.0 |
| 18 | E | E | 4.3 | 4.3 | 2.8 | 3.0 | 3.2 | 9.0 | 6.0 | 6.8 | 4.0 | 6.1 | 5.0 | 3.7 | G | G | 5.3 | 5.3 | 5.3 | 5.0 | 3.3 | E | 3.3 | 2.2 |
| 19 | E | 2.4 | 2.6 | E | G | 3.3 | 4.8 | 7.0 | 7.3 | 6.1 | 5.2 | 7.0 | 5.3 | 3.7 | 4.3 | 4.7 | 5.1 | 3.5 | 3.4 | 3.1 | 2.3 | E | 3.0 | 3.3 |
| 20 | 2.5 | 1.6 | 2.3 | 2.1 | G | 6.3 | 4.3 | 3.9 | 4.3 | 6.3 | 6.3 | 8.3 | 6.1 | 8.3 | 4.4 | 5.3 | 4.8 | 5.8 | 4.5 | 3.3 | 3.4 | E | 5.3 | 5.6 |
| 21 | 3.2 | 2.0 | 2.3 | 2.1 | 2.6 | 3.2 | 5.3 | 6.0 | 9.1 | 10.2 | 4.5 | 4.4 | 5.0 | 3.5 | G | G | 3.5 | 3.6 | 3.1 | 4.3 | 3.0 | 3.2 | 2.4 | E |
| 22 | E | E | E | 2.1 | 2.0 | 2.6 | 4.3 | 11.3 | 7.5 | 9.0 | 3.6 | G | G | G | 4.0 | 10.0 | 7.0 | 8.0 | 15.3 | 11.6 | 12.3 | 6.3 | 3.5 | 7.3 |
| 23 | 13.0 | 6.3 | 5.0 | 6.4 | 2.7 | 6.1 | 7.3 | 7.3 | 10.0 | 9.0 | 6.3 | 5.3 | 5.3 | 4.7 | 11.0 | 4.9 | 6.3 | 5.1 | 12.5 | 8.0 | 6.3 | 3.3 | 5.3 | 6.3 |
| 24 | 5.4 | 3.3 | 3.5 | 3.3 | 2.4 | 3.2 | 7.0 | 9.6 | 6.1 | 4.8M | 5.0 | 4.9 | 6.4 | 4.8 | 3.6 | 3.6 | 4.2 | 3.4 | 7.4 | 6.5 | 6.3 | 4.0 | 2.9 | 4.0 |
| 25 | 3.5 | 3.3 | E | E | G | 3.0 | 7.3 | 5.0 | 10.1 | 5.3 | G | G | G | G | 3.8 | 4.9 | 4.5 | 4.3 | 6.3 | 4.3 | 3.3 | 2.5 | E | 4.0 |
| 26 | 3.3 | 2.3 | 2.0 | 2.1 | 2.5 | 3.8 | 5.0 | 6.3 | 3.8 | G | G | 4.4 | 7.3 | 9.3 | 5.3 | 8.3 | 12.3 | 5.9 | 10.6 | 8.3 | 8.3 | 9.3 | 7.5 | 7.3 |
| 27 | 9.8 | 6.3 | 8.8 | 3.0 | 4.0 | 3.0 | 7.3 | 6.4 | 7.4 | 12.0 | 12.2 | 9.0 | 5.0 | 10.3Y | 12.3 | 9.3 | 4.3 | 12.0 | 6.5 | 13.3 | 5.2 | 5.0 | 7.3 | 4.0 |
| 28 | 7.5 | E | 2.8 | 4.0 | G | 2.7 | 3.3 | 3.6 | 5.3 | 7.3 | 4.5 | 6.3 | 3.8 | 5.0 | 4.3 | 5.0 | 7.5 | 4.3 | 4.3 | 3.8 | 3.0 | 2.9 | 3.1 | 2.4 |
| 29 | 2.8 | 4.3 | 5.3 | 4.3 | 2.5 | G | 4.0 | 5.3 | 7.0 | 6.5 | 4.1 | 4.3 | 3.8 | 4.3 | 5.0 | 3.7 | 4.8 | 4.0 | 3.3 | 3.2 | 3.0 | 4.0 | 3.8 | 5.3 |
| 30 | 2.4 | 3.8 | 9.0 | 9.0 | 2.0 | G | 4.1 | 5.3 | 7.0 | 6.5 | 5.0 | 5.3 | 12.3 | 4.6 | 4.0 | G | 3.6 | 2.9 | 4.5 | 4.3 | 3.3 | 2.6 | 4.3 | 6.3 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 |
| Median | 2.6 | 2.8 | 2.7 | 3.0 | 2.4 | 3.0 | 4.3 | 5.3 | 6.8 | 6.4 | 5.9 | 5.3 | 5.1 | 4.7 | 5.0 | 4.9 | 5.1 | 5.1 | 5.4 | 5.0 | 3.5 | 3.3 | 3.6 | 4.0 |
| U.Q. | 4.3 | 4.3 | 5.0 | 4.3 | 2.8 | 4.0 | 6.1 | 7.0 | 7.8 | 7.7 | 7.2 | 7.2 | 6.4 | 5.8 | 6.3 | 6.8 | 6.3 | 6.4 | 7.1 | 7.9 | 6.3 | 5.0 | 5.3 | 5.6 |
| L.Q. | E | 1.6 | E | 2.0 | E | 2.7 | 4.0 | 4.5 | 5.4 | 5.2 | 4.6 | 4.5 | 4.0 | 3.9 | 3.8 | 4.0 | 4.4 | 4.3 | 4.5 | 3.9 | 3.0 | 2.3 | 2.6 | 2.2 |
| Q.R. | | 2.7 | | 2.3 | | 1.3 | 2.1 | 2.5 | 2.4 | 2.5 | 2.6 | 2.7 | 2.4 | 1.9 | 2.5 | 2.8 | 1.9 | 2.1 | 2.6 | 4.0 | 3.3 | 2.7 | 2.7 | 3.4 |

foEs

Sweep 1.0 Mc to 18.0 Mc in 4.0 sec in automatic operation

The Radio Research Laboratories, Japan

W 4

12

# IONOSPHERIC DATA

Jun. 1963 | $f_bE_s$ | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E | E | E | | | G | G | G | 4.8 | 4.4 | A | G | A | 4.5 | 3.7 | 4.1 | G | 4.3 | 3.0 | 3.0 | E | | | |
| 2 | | E | A | A | A | A | A | A | A | A | A | A | A | 3.6 | A | A | G | A | A | 5.1 | E | | | |
| 3 | 3.0 | E | | E | | G | 4.0 | 4.2 | A | A | A | A | A | G | A | A | A | A | 4.8 | A | 2.3 | E | E | |
| 4 | | | | | 2.0 | G | 2.7 | 4.3 | A | A | A | A | G | 3.9 | 3.4 | 3.1 | 4.3 | A | A | A | A | A | 3.6 | E |
| 5 | E | 2.3 | E | E | 3.1 | 3.9 | G | 4.2 | 4.3 | 5.0 | 4.6 | A | A | | A | 4.4 | A | 4.4 | A | 3.9 | E | E | E | E |
| 6 | | | | | | G | 3.8 | 4.9 | 4.3 | 4.5 | A | 4.1 | 4.3 | 4.2 | G | | A | A | 4.5 | 4.5 | 5.0 | A | A | 3.0 |
| 7 | A | A | A | 2.5 | 1.9 | 4.1 | A | 6.2 | A | A | A | A | 4.5 | 4.6 | 3.7 | 3.5 | A | A | A | A | E | | 3.6 | 4.1 |
| 8 | 4.7 | A | 3.0 | E | 2.4 | 4.0 | A | 4.1 | A | A | 4.0 | 5.2 | A | 4.2 | A | A | A | A | 5.1 | 7.1 | 4.0 | 4.1 | E | |
| 9 | | E | | | 2.4 | 4.0 | A | A | C | C | C | C | C | C | C | C | C | C | 5.0 | 4.0 | 4.0 | 3.2 | E | E |
| 10 | E | E | E | 3.0 | 1.9 | 3.8 | 4.0 | A | 5.0 | 4.9 | A | 4.4 | 3.9 | G | A | A | 5.1 | A | A | 4.0 | 5.5 | 5.1 | A | A |
| 11 | E | E | E | E | 2.4 | G | 4.0 | 4.2 | A | A | A | A | 4.7 | G | G | 4.4 | 4.2 | 3.0 | 2.6 | S | 3.0 | | E | |
| 12 | | | | E | | G | 3.7 | 5.7 | A | A | 4.6 | A | G | A | 4.4 | 3.5 | 4.3 | 4.0 | 4.3 | 3.2 | 4.6 | 5.0 | 4.0 | E |
| 13 | | E | 2.9 | E | 2.1 | G | 4.0 | 4.7 | 5.2 | A | A | 4.7 | A | 5.0 | A | 5.0 | 4.2 | 3.0 | A | A | 3.0 | E | | E |
| 14 | E | E | E | 2.5 | 2.0 | 3.2 | 5.8 | A | 4.2 | 4.1 | A | A | A | A | A | A | A | G | 4.7 | 4.5 | A | 2.7 | 4.0 | 2.4 |
| 15 | E | E | 3.2 | E | G | G | G | 4.2 | 4.7 | 4.0 | A | 4.2 | 4.0 | 4.6 | 4.5 | 3.6 | 4.1 | 2.9 | G | G | 3.5 | 3.1 | 3.4 | |
| 16 | | | | | G | G | G | 4.1 | A | A | 4.4 | A | G | 4.2 | 4.3 | 4.6 | 4.1 | 4.3 | G | A | 4.0 | 3.2 | 3.2 | 3.0 |
| 17 | E | E | E | E | | | 4.0 | 4.2 | 4.5 | A | A | 4.0 | 4.8 | G | 4.7 | 4.6 | A | 4.1 | 5.4 | 4.0 | A | 4.7 | E | E |
| 18 | | | E | E | 2.2 | G | G | A | A | A | G | 4.6 | 3.8 | G | | | 5.0 | 4.0 | 3.2 | 3.0 | E | | E | E |
| 19 | | E | E | | | G | G | A | A | A | 4.2 | A | A | G | A | A | A | G | 3.2 | 2.6 | G | | E | E |
| 20 | E | E | E | E | | 4.0 | 4.0 | G | 4.1 | A | A | A | A | A | 4.3 | 4.3 | 4.4 | A | 3.3 | 2.5 | 2.7 | | 4.3 | A |
| 21 | 2.4 | E | E | E | G | 2.9 | A | 4.7 | A | A | 4.3 | A | A | G | | | 2.8 | 3.6 | 3.0 | 4.1 | E | 3.0 | E | |
| 22 | | | | E | G | G | 4.0 | 4.0 | 5.2 | 4.3 | G | | | | G | A | 4.6 | A | A | A | A | 4.1 | 3.2 | 4.6 |
| 23 | A | A | 2.7 | A | G | A | A | A | A | A | A | 4.3 | A | 4.3 | 4.2 | 4.8 | A | A | A | A | 4.7 | 2.7 | 2.4 | 4.0 |
| 24 | 3.1 | 2.5 | 2.5 | 2.3 | 2.1 | G | A | A | 4.3 | 4.5 | 4.4 | 4.2 | A | 4.4 | G | G | 4.1 | 3.4 | A | A | E | 3.2 | E | 2.9 |
| 25 | 2.2 | E | | | | G | 6.0 | G | A | G | | | | | 3.6 | 4.3 | 4.1 | 4.0 | 4.3 | 4.0 | 3.1 | 2.5 | | 3.3 |
| 26 | E | E | E | E | G | 3.8 | A | A | G | | | 4.4 | A | A | A | A | A | A | A | A | A | A | A | A |
| 27 | A | A | A | E | G | G | A | A | A | A | A | A | A | A | A | A | 4.0 | A | A | A | 4.0 | 3.1 | A | 2.1 |
| 28 | A | | E | E | | G | G | G | A | A | 4.3 | A | G | A | 4.3 | A | A | 3.5 | 4.2 | 3.6 | E | E | 2.7 | E |
| 29 | E | 3.0 | E | E | 2.3 | | A | A | A | 4.5 | G | 4.0 | G | A | A | 3.5 | A | 2.7 | 2.6 | 2.2 | 2.3 | 3.4 | 3.6 | E |
| 30 | E | E | 3.5 | 2.3 | 1.8 | | G | 4.2 | A | A | 4.4 | 4.7 | A | 4.4 | E4.0 R | | G | G | 4.2 | 4.0 | 3.3 | E | 3.0 | 2.3 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bE_s$

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 5

13

# IONOSPHERIC DATA

Jun.1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E1.60S | E | E | E | E | E2.00S | 2.00 | 2.00 | 2.05 | 2.00 | 2.15 | 2.05 | 2.15 | 2.50 | 2.00 | 2.00 | 2.00 | 2.00 | 1.80 | E1.70S | E2.00S | E1.80S | E1.70S | E2.00S |
| 2 | E2.00S | E | E | E | E | E | 1.85 | 2.00 | 2.00 | 2.10 | 2.15 | 2.10 | 2.50 | 2.20 | 2.10 | 2.00 | 2.10 | 2.00 | E2.00S | E1.90S | E1.65S | E2.00S | E2.00S | E2.00S |
| 3 | E1.90S | E | E | E | E | 1.20 | 1.85 | 2.15 | 2.15 | 2.15 | 2.40 | 2.15 | 3.00 | 2.80 | 2.50 | 2.00 | 2.10 | 1.90 | E2.00S | E1.90S | E1.90S | E2.00S | E2.00S | E1.90S |
| 4 | E1.90S | E1.50S | E | E | E | 1.15 | 2.10 | 2.00 | 2.00 | 2.00 | 2.20 | 2.10 | 2.00 | 2.30 | 2.00 | 2.00 | 2.00 | 2.00 | E1.90S | E2.00S | E1.80S | E1.90S | E1.90S | E2.00S |
| 5 | E2.00S | E | E | E | E | E2.10S | 1.95 | 2.00 | 2.15 | 2.30 | 2.20 | 2.15 | 2.00 | 3.00 | 2.40 | 2.10 | 2.15 | 2.00 | 1.50 | E2.00S | E2.00S | E1.80S | E1.90S | E2.00S |
| 6 | E1.90S | E | E | E | E | E | 2.00 | 2.00 | 2.15 | 2.20 | 2.15 | 2.50 | 2.15 | 2.20 | 2.40 | 2.00 | 2.10 | 2.00 | E2.00S | E2.00S | E1.80S | E1.90S | E1.90S | E1.90S |
| 7 | E2.00S | E1.50S | E1.50S | E | E | E | 2.00 | 2.10 | 2.00 | 2.00 | 2.50 | 2.00 | 2.85 | 2.50 | 2.20 | 2.00 | 2.00 | 2.00 | E2.00S | E2.10S | E2.00S | E2.00S | E2.00S | E2.00S |
| 8 | E2.00S | E | E | E | E | E | 2.00 | 2.00 | 2.00 | 2.15 | 2.30 | 2.50 | 2.50 | 2.60 | 2.00 | 2.10 | 2.00 | 2.00 | E2.00S | E2.00S | E1.90S | E2.00S | E2.00S | E2.00S |
| 9 | E2.00S | E1.80S | E | E | E | 1.20 | 2.00 | 2.15 | C | C | C | C | C | C | C | C | C | C | E2.00S | E2.00S | E2.00S | E2.00S | E1.90S | E1.90S |
| 10 | E2.00S | E | E | E | E | E | 2.00 | 2.00 | 2.05 | 2.05 | 2.00 | 2.15 | 2.40 | 2.70 | 2.20 | 2.10 | 2.00 | 2.00 | E2.00S | E2.00S | E1.90S | E1.80S | E1.90S | E1.90S |
| 11 | E1.85S | E | E | E | E | E | 2.00 | 2.00 | 2.00 | 2.10 | 2.15 | 2.00 | 2.60 | 2.10 | 2.00 | 2.10 | 2.00 | 2.00 | 2.00 | E2.15S | E2.00S | E2.00S | E2.00S | E2.00S |
| 12 | E2.00S | E | E | E | E | 1.50 | 2.00 | 2.00 | 2.00 | 2.15 | 2.60 | 2.15 | 2.10 | 2.20 | 2.15 | 2.00 | 2.00 | 2.00 | E2.00S | E1.90S | E2.00S | E2.00S | E1.80S | E1.90S |
| 13 | E2.00S | E | E | E | E | 1.10 | 1.85 | 2.10 | 2.00 | 2.00 | 2.60 | 2.00 | 2.20 | 2.10 | 2.00 | 2.00 | 2.00 | 2.00 | E2.10S | E2.05S | E1.90S | E2.00S | E2.00S | E2.00S |
| 14 | E1.90S | E | E | E | E | 1.20 | 2.00 | 2.00 | 2.00 | 2.50 | 2.15 | 2.50 | 2.60 | 2.70 | 2.20 | 2.15 | 2.00 | 2.00 | E2.00S | E2.00S | E2.00S | E1.85S | E1.90S | E1.90S |
| 15 | E2.00S | E | E | E | E | 1.20 | 1.85 | 2.00 | 2.00 | 2.00 | 2.50 | 2.50 | 2.00 | 2.10 | 2.50 | 2.35 | 2.15 | 2.00 | E2.15S | E2.00S | E2.00S | E2.00S | E2.00S | E1.90S |
| 16 | E1.95S | E | E | E | E | 1.70 | 2.00 | 2.15 | 2.10 | 2.00 | 2.15 | 2.60 | 2.15 | 2.15 | 2.70 | 2.40 | 2.00 | 2.00 | E2.10S | E2.00S | E1.90S | E2.00S | E1.90S | E2.00S |
| 17 | E1.95S | E | E | E | E | E | 2.00 | 2.00 | 2.00 | 2.50 | 2.40 | 2.00 | 2.85 | 2.20 | 2.60 | 2.00 | 2.15 | 2.10 | 1.85 | E2.15S | E1.90S | E2.00S | E2.00S | E2.00S |
| 18 | E2.00S | E | E | E | E | E | 2.00 | 2.10 | 2.15 | 2.15 | 2.20 | 2.15 | 2.10 | 2.40 | 2.00 | 2.05 | 2.00 | 2.00 | E1.85S | E2.00S | E1.95S | E2.00S | E2.00S | E1.90S |
| 19 | E2.00S | E | E1.90S | E | E | E | 2.00 | 2.30 | 2.10 | 2.10 | 2.25 | 2.20 | 2.15 | 2.25 | 2.15 | 2.20 | 2.10 | 2.00 | 1.90 | E2.00S | E2.00S | E1.85S | E2.00S | E1.90S |
| 20 | E1.80S | E | E | E | E | 1.90 | 2.00 | 2.00 | 2.00 | 2.15 | 2.50 | 2.60 | 2.60 | 2.10 | 2.60 | 2.00 | 2.15 | 2.05 | 1.85 | E2.00S | E1.90S | E2.00S | E1.95S | E1.85S |
| 21 | E1.90S | E | E | E | E | E | 2.00 | 2.10 | 2.15 | 2.10 | 2.00 | 2.15 | 2.50 | 2.60 | 2.20 | 2.30 | 2.10 | 2.15 | E2.15S | E1.70S | E2.00S | E1.90S | E2.00S | E1.90S |
| 22 | E1.95S | E | E | E | E | 1.60 | 2.00 | 2.20 | 2.10 | 2.20 | 2.20 | 2.20 | 2.50 | 2.50 | 2.15 | 2.00 | 2.00 | 2.00 | E2.10S | E1.90S | E1.85S | E2.00S | E1.85S | E1.90S |
| 23 | E1.90S | E1.60S | E | E | E | 1.15 | 2.00 | 2.00 | 2.20 | 2.15 | 2.20 | 2.20 | 2.00 | 2.15 | 2.15 | 2.00 | 2.10 | 2.00 | E2.10S | E1.90S | E1.70S | E1.80S | E1.80S | E1.90S |
| 24 | E1.85S | E | E | E | E | E | 1.80 | 2.00 | 2.00 | 2.00 | 2.50 | 2.20 | 2.00 | 2.20 | 2.10 | 2.10 | 2.00 | 2.05 | 1.90 | E1.85S | E1.85S | E2.00S | E1.80S | E1.90S |
| 25 | E1.90S | E | E | E | E | E | 1.90 | 1.95 | 2.50 | 2.15 | 2.40 | 2.10 | 2.60 | 2.05 | 2.50 | 2.10 | 2.15 | 1.95 | 1.85 | E2.00S | E1.50S | E1.20S | E2.00S | E2.00S |
| 26 | E2.00S | E1.50S | E | E | E | E | 1.90 | 1.90 | 1.90 | 2.00 | 2.00 | 2.05 | 2.60 | 2.60 | 2.40 | 2.40 | 2.40 | 1.80 | 1.85 | E1.90S | E2.00S | E1.50S | E2.00S | E1.90S |
| 27 | E1.85S | E | E | E | E | 1.80 | 2.00 | 1.90 | 2.15 | 2.50 | 2.60 | 2.60 | 2.50 | 2.70 | 2.70 | 2.15 | 2.40 | 1.90 | E2.00S | E1.70S | E1.85S | E2.00S | E1.90S | E1.80S |
| 28 | E1.90S | E | E | E | E | E | 1.90 | 1.85 | 2.00 | 2.25 | 2.20 | 2.20 | 2.50 | 2.30 | 2.15 | 2.50 | 2.15 | 1.90 | 1.85 | E1.90S | E1.90S | E1.80S | E1.80S | E2.00S |
| 29 | E1.75S | E1.50S | E | E | E | 1.20 | 1.80 | 2.25 | 2.15 | 2.20 | 2.40 | 2.00 | 2.25 | 2.50 | 2.60 | 2.10 | 2.15 | 1.80 | 1.80 | E1.90S | E2.00S | E1.90S | E1.85S | E1.60S |
| 30 | E1.90S | E1.85S | E | E | E | E | 1.85 | 2.15 | 2.00 | 2.15 | 2.50 | 2.40 | 2.20 | 2.35 | 2.10 | 2.10 | 2.10 | 2.15 | 1.85 | E1.90S | E1.85S | E1.80S | E2.00S | E1.85S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 23 | 28 | 30 | 30 | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| Median | E1.90 | E | E | E | E | E | 2.00 | 2.00 | 2.00 | 2.15 | 2.20 | 2.15 | 2.40 | 2.30 | 2.20 | 2.10 | 2.10 | 2.00 | E2.00 | E2.00 | E1.90 | E2.00 | E1.90 | E1.90 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

f-min

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 6

# IONOSPHERIC DATA

Jun.1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $^{U}2.80^{S}$ | 2.85 | 2.85 | 3.15 | 3.15 | 2.55 | 2.85 | 2.75 | 3.15 | 3.10 | $^{I}3.15^{A}$ | 2.80 | $^{I}2.65^{A}$ | 2.85 | 2.65 | 2.95 | 3.05 | 3.05 | 3.05 | 2.95 | 2.85 | 2.75 | $^{U}2.75^{S}$ | $^{U}2.75^{S}$ |
| 2 | $^{U}2.90^{S}$ | $^{U}3.25^{S}$ | A | A | A | A | A | A | A | A | A | A | A | R | A | A | 2.80 | $^{I}2.95^{A}$ | $^{I}2.90^{A}$ | 2.90 | 3.00 | 3.05 | 3.00 | 2.80 |
| 3 | 2.70 | 2.75 | 2.85 | 3.30 | 2.90 | 2.60 | 2.90 | 2.85 | A | A | A | A | A | R | A | A | A | A | 2.85 | $^{I}2.95^{A}$ | $^{U}3.10^{S}$ | 3.05 | 2.95 | 2.90 |
| 4 | 2.80 | 2.80 | 2.90 | 2.95 | 2.90 | 3.10 | 2.95 | 3.35 | $^{I}3.20^{A}$ | $^{I}3.20^{A}$ | $^{I}2.95^{A}$ | $^{I}2.75^{A}$ | 2.75 | 2.70 | 3.00 | 2.95 | 2.95 | $^{I}2.95^{A}$ | $^{I}2.85^{A}$ | $^{I}3.05^{A}$ | $^{I}3.15^{S}$ | $^{I}3.00^{A}$ | $^{U}2.90^{S}$ | $^{U}2.90^{SF}$ |
| 5 | $^{I}2.85^{SF}$ | 2.90 | 2.95 | 2.95 | 3.00$^{F}$ | 3.25 | 3.00 | 3.15 | 3.15 | 3.20 | 3.20 | $^{I}3.25^{A}$ | $^{I}3.05^{A}$ | 3.00 | $^{I}2.75^{A}$ | 2.85 | $^{I}2.90^{A}$ | 2.95 | $^{I}2.90^{A}$ | 2.90 | $^{U}3.00^{S}$ | 3.10 | 3.00 | 3.05 |
| 6 | 2.95 | 3.00 | 2.95 | 2.80 | 3.00 | 3.05 | 3.30 | 2.90 | 3.40 | 3.45 | $^{I}3.05^{A}$ | 2.70 | 3.15 | 3.10 | $^{I}3.05^{R}$ | 3.25 | $^{I}2.85^{A}$ | $^{I}2.85^{A}$ | $^{I}2.85^{A}$ | 3.00 | 3.15 | A | A | SF |
| 7 | A | A | A | SF | 2.80$^{F}$ | 2.90 | $^{I}2.90^{A}$ | 2.90 | A | A | A | A | 2.45 | 2.65 | 2.90 | 3.00 | $^{I}2.90^{A}$ | $^{I}2.90^{A}$ | $^{I}2.95^{A}$ | $^{I}3.00^{S}$ | 2.85 | 2.90 | 2.95 | 2.85 |
| 8 | 3.15 | $^{I}2.75^{A}$ | 2.60 | 2.65 | 3.10 | 3.30 | $^{I}3.30^{A}$ | 3.30 | $^{I}3.00^{A}$ | $^{I}2.70^{A}$ | 2.50 | 2.95 | $^{I}3.10^{A}$ | 3.05 | $^{I}3.10^{A}$ | $^{I}3.00^{A}$ | $^{I}3.10^{A}$ | $^{I}3.10^{A}$ | 2.90 | $^{U}3.05^{S}$ | 2.80 | 2.95 | $^{I}2.95^{SF}$ | 3.00 |
| 9 | 2.95 | 2.95 | 3.00 | 2.85 | 2.90 | 2.95 | A | A | C | C | C | C | C | C | C | C | C | C | 2.70 | 2.85 | 2.90 | $^{U}3.00^{S}$ | $^{I}2.75^{S}$ | S |
| 10 | S | SF | 2.85 | $^{I}2.85^{S}$ | $^{I}2.90^{SF}$ | 3.20 | 3.35 | $^{I}3.20^{A}$ | 3.25 | 2.95 | $^{I}3.15^{A}$ | 2.85 | 2.85 | 2.95 | $^{I}3.00^{A}$ | $^{I}3.05^{A}$ | 2.85 | $^{I}2.90^{A}$ | $^{I}2.95^{A}$ | 2.95 | $^{U}2.90^{S}$ | $^{U}2.90^{S}$ | A | A |
| 11 | SF | $^{I}2.90^{SF}$ | 2.95 | 3.00 | 3.05 | 3.10$^{H}$ | 3.10 | 3.35 | $^{I}3.20^{A}$ | $^{I}3.20^{A}$ | $^{I}3.20^{A}$ | $^{I}3.15^{A}$ | 2.90 | 2.85 | 2.85 | 2.85 | 2.95 | 3.00 | 3.05 | 2.90 | 2.90 | 2.85 | 2.85 | 3.00 |
| 12 | 2.90 | 2.95 | 2.95 | 3.05 | 3.25$^{F}$ | 3.00 | 2.85 | A | A | A | 3.10 | $^{I}3.10^{A}$ | 2.90 | $^{I}2.80^{A}$ | 3.15 | 2.95 | 2.85 | 3.00 | 3.00 | 2.80 | 2.80 | 2.95 | 2.95 | 3.15 |
| 13 | 3.00 | 2.90 | 3.00 | $^{I}3.10^{SF}$ | 3.15 | 2.85 | 2.95 | 3.20 | 3.35 | $^{I}2.80^{A}$ | $^{I}2.80^{A}$ | 2.75 | $^{I}2.85^{A}$ | 2.90 | $^{I}2.90^{A}$ | 3.00 | 3.00 | 2.95 | $^{I}3.05^{A}$ | $^{I}2.95^{A}$ | 2.95 | $^{U}2.80^{S}$ | 2.85 | 2.85 |
| 14 | $^{I}2.80^{SF}$ | $^{I}2.85^{SF}$ | 2.95 | 3.00$^{F}$ | 2.85$^{F}$ | 3.00 | 3.05 | $^{I}3.05^{A}$ | 3.00 | 2.90 | $^{I}3.15^{A}$ | A | A | A | A | A | A | 3.10 | 3.15 | 3.00 | $^{I}2.70^{A}$ | $^{U}2.75^{S}$ | $^{I}2.90^{SF}$ | 2.85 |
| 15 | 2.90 | 3.00 | 2.65 | 2.70 | 2.75$^{F}$ | 3.20 | 3.20 | 2.80 | 3.00 | W | $^{I}2.70^{A}$ | 2.55 | 2.85 | 2.85 | 2.85 | 3.10 | 2.85 | 3.05 | 3.05 | 3.20 | 3.15 | $^{U}2.85^{S}$ | 3.00 | 2.90 |
| 16 | 2.90 | 2.90 | 2.90$^{H}$ | 2.80 | 2.90 | 2.80$^{H}$ | 3.00 | 3.05 | $^{I}3.05^{A}$ | $^{I}2.95^{A}$ | 2.80 | $^{I}2.85^{A}$ | 3.00 | W | 2.65 | 2.80 | 3.15 | 3.10 | 3.00 | $^{I}3.05^{A}$ | 2.95 | 3.00 | 3.05 | 3.00 |
| 17 | 2.95 | SF | SF | SF | SF | 3.00$^{F}$ | 2.95 | 3.25 | 3.30 | $^{I}3.20^{A}$ | $^{I}3.10^{A}$ | 2.90 | 2.80 | 3.15 | 3.00 | 3.05 | $^{I}3.00^{A}$ | 2.75 | 2.85 | 2.90 | 2.95 | 2.95 | 2.85 | 2.85 |
| 18 | 2.90 | $^{I}2.75^{SF}$ | 2.85$^{F}$ | $^{I}2.70^{SF}$ | 2.90$^{F}$ | 2.70 | 2.70 | $^{I}2.90^{A}$ | $^{I}3.15^{A}$ | $^{I}3.05^{A}$ | 2.80 | 2.70 | 2.95 | 2.85 | 2.95 | 2.90 | 2.80 | $^{I}3.10^{S}$ | 2.90 | 3.20 | 3.05 | 2.85 | 2.75 | 2.75 |
| 19 | 2.80 | 2.85 | 2.90 | 3.00 | 3.25 | 3.00 | R | A | A | A | 3.00 | A | A | R | A | $^{I}2.75^{S}$ | $^{I}2.55^{A}$ | 2.85 | 3.00 | 3.05 | 2.95 | 3.00 | 2.75 | $^{I}2.85^{SF}$ |
| 20 | 2.80$^{F}$ | SF | SF | SF | SF | 3.30 | 3.15 | 2.40 | 2.90 | A | A | A | A | A | 2.95 | 2.85 | 2.90 | $^{I}2.95^{A}$ | 3.05 | 3.10 | 2.95 | 2.85 | 3.00 | A |
| 21 | SF | FS | FS | FS | 2.80 | 3.15 | $^{I}3.35^{A}$ | 3.25 | $^{I}3.05^{A}$ | $^{I}2.80^{A}$ | 2.55 | $^{I}2.70^{A}$ | $^{I}2.55^{A}$ | 2.50 | 2.35 | 2.55 | 3.00 | 3.15 | 3.00 | 2.85 | 2.95 | 3.15 | 3.10 | 3.00 |
| 22 | $^{U}2.85^{SF}$ | FS | FS | FS | FS | 2.65 | 3.00 | 3.10 | 3.40 | 3.25 | 3.00 | $^{I}2.90^{R}$ | 2.90 | W | W | $^{I}2.90^{A}$ | 3.15 | A | A | A | A | 3.10 | 3.15 | $^{U}3.10^{S}$ |
| 23 | A | A | SF | A | 2.90$^{F}$ | A | A | A | A | A | A | 3.10 | $^{I}2.85^{A}$ | 2.65 | 3.00 | 2.95 | $^{I}2.95^{A}$ | $^{I}3.05^{A}$ | $^{I}3.05^{A}$ | 3.15 | 2.90 | $^{U}2.80^{FS}$ | FS | FS |
| 24 | SF | FS | FS | FS | 3.10 | 3.45 | $^{I}2.95^{A}$ | $^{I}3.05^{A}$ | 3.15 | 3.50 | 3.40 | 3.10 | $^{I}2.85^{A}$ | 2.90 | 3.00 | 2.95 | 3.10 | 3.05 | $^{I}3.20^{A}$ | $^{I}3.25^{A}$ | 3.15 | 2.85 | 2.95$^{FS}$ | $^{U}2.95^{F}$ |
| 25 | 2.95 | $^{I}3.00^{S}$ | 2.95$^{F}$ | $^{I}2.85^{FS}$ | $^{U}2.70^{SF}$ | 3.00 | 2.80$^{F}$ | 3.25 | $^{I}3.30^{A}$ | 2.90 | 3.05 | 3.15 | 3.35 | W | 2.85 | 2.90 | 3.05 | 2.95 | 2.95 | 3.15 | 3.00 | 3.15 | 3.05 | $^{U}2.90^{F}$ |
| 26 | 2.80 | 2.90 | $^{I}2.85^{SF}$ | $^{I}2.95^{S}$ | $^{U}2.70^{FH}$ | 3.35 | 2.40 | $^{I}2.50^{A}$ | 2.70 | 2.85 | 3.10 | 2.55 | A | A | A | A | A | A | A | A | A | A | A | A |
| 27 | A | A | A | FS | FS | 3.35 | A | A | A | A | A | A | A | A | A | A | 2.85 | $^{I}3.05^{A}$ | $^{I}3.00^{A}$ | $^{I}3.15^{A}$ | 3.05 | 2.85$^{F}$ | A | SF |
| 28 | A | SF | 3.00 | $^{I}3.00^{SF}$ | 3.05 | 3.30 | 2.90 | 2.65 | $^{I}2.95^{A}$ | $^{I}3.05^{A}$ | 3.10 | $^{I}2.85^{A}$ | $^{I}2.55^{R}$ | $^{I}2.60^{A}$ | 2.70 | $^{I}2.95^{A}$ | $^{I}3.00^{A}$ | 3.00 | 3.10 | 3.05 | 3.15 | 3.00 | 2.90 | 2.85 |
| 29 | 2.80$^{SF}$ | $^{U}2.85^{FS}$ | 2.90 | 2.85 | 3.05 | 2.95 | A | A | A | $^{I}2.60^{A}$ | 3.00 | $^{I}3.05^{R}$ | 2.95 | $^{I}2.70^{A}$ | $^{I}2.60^{A}$ | 2.80 | $^{I}2.80^{A}$ | 2.80 | 3.15 | 3.20 | 3.05 | $^{U}2.85^{S}$ | $^{I}2.75^{SF}$ | $^{I}2.80^{SF}$ |
| 30 | $^{U}2.85^{SF}$ | 2.95 | 2.90 | 2.75 | 2.90 | 2.70 | 3.30 | 3.25 | $^{I}2.95^{A}$ | $^{I}2.80^{A}$ | 2.95 | 2.75 | $^{I}2.60^{A}$ | 2.95 | 3.10 | 2.90 | 2.95 | 2.80 | 3.10 | 3.10 | 3.10 | 2.95 | 2.95 | $^{U}2.90^{S}$ |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 22 | 20 | 21 | 21 | 25 | 28 | 24 | 23 | 21 | 21 | 23 | 22 | 22 | 22 | 23 | 24 | 26 | 26 | 28 | 28 | 28 | 28 | 25 | 23 |
| Median | 2.90 | 2.90 | 2.90 | 2.95 | 2.90 | 3.00 | 3.00 | 3.05 | 3.15 | $^{U}2.95$ | 3.05 | 2.85 | 2.85 | 2.85 | 2.90 | 2.95 | 2.95 | 3.00 | 3.00 | 3.00 | 2.95 | 2.95 | 2.95 | 2.90 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 7

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6 N, Long. 141°41.1 E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 3.50 | 3.45 | 3.65 | I 3.80 A | I 3.95 A | I 3.85 A | 4.00 | I 3.80 A | I 3.55 A | 3.65 | I 3.50 A | 3.45 | A | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | A | 3.80 | I 3.70 A | I 3.60 A | 3.40 | A | A | | | | | |
| 3 | | | | | | 3.20 | A | A | A | A | A | A | A | U 3.85 R | I 3.60 A | A | A | A | A | | | | | |
| 4 | | | | | | 3.45 | 3.85 | A | A | A | I 3.85 A | I 3.70 A | 3.85 | 3.65 | 3.95 | 3.50 | A | A | A | | | | | |
| 5 | | | | | | | 3.45 | A | A | A | I 3.95 A | I 3.90 A | I 3.65 A | 3.85 | A | A | A | A | A | | | | | |
| 6 | | | | | 3.50 | 3.55 | A | A | A | A | A | 3.80 | I 3.85 A | I 3.85 A | 3.75 | 4.05 | I 3.70 A | A | A | | | | | |
| 7 | | | | | 3.35 | A | A | A | A | A | A | A | A | A | 3.75 | 3.55 | A | A | A | | | | | |
| 8 | | | | | | A | A | A | A | A | 4.00 | I 3.60 A | I 3.70 A | 3.70 | A | A | A | A | A | | | | | |
| 9 | | | | | A | A | A | A | C | C | C | C | C | C | C | C | C | C | A | | | | | |
| 10 | | | | | | I 3.75 A | A | A | A | A | A | I 3.85 A | 3.90 | 3.70 | A | A | A | A | A | | | | | |
| 11 | | | | | A | | A | A | A | A | A | A | A | 3.70 | 3.60 | I 3.50 A | I 3.40 A | 3.50 | 3.60 | | | | | |
| 12 | | | | | | | A | A | A | A | A | A | 3.85 | I 3.80 A | I 3.75 A | 3.70 | A | A | A | A | | | | |
| 13 | | | | | | 3.75 | A | A | A | A | A | A | A | A | A | A | A | 3.70 | A | | | | | |
| 14 | | | | | | I 3.60 A | A | A | A | 3.45 | A | A | A | A | A | A | A | 3.65 | A | | | | | |
| 15 | | | | | U 3.45 L | 3.65 | U 3.60 L | A | A | A | A | A | 3.85 | I 3.85 A | I 3.75 A | 3.70 | I 3.50 A | 3.50 | 3.60 | | | | | |
| 16 | | | | | | | 3.70 | A | A | A | A | A | 3.65 | I 3.95 A | A | A | A | I 3.50 A | 3.55 | | | | | |
| 17 | | | | | | 3.10 | A | A | A | A | A | 4.20 | I 3.90 A | 3.90 | I 3.85 A | A | A | A | A | A | | | | |
| 18 | | | | | A | 3.45 | 3.60 | A | A | A | 3.65 | I 3.80 A | 3.95 | 3.85 | 3.70 | 3.55 | I 3.50 A | I 3.60 A | I 3.50 A | | | | | |
| 19 | | | | | | 3.35 | U 3.50 R | A | A | A | A | A | I 3.75 A | I 3.95 R | A | A | A | 3.30 | A | A | | | | |
| 20 | | | | | | A | A | 3.85 | A | A | A | A | A | A | I 3.65 A | I 3.45 A | A | A | A | | | | | |
| 21 | | | | | | A | A | A | A | A | A | I 3.95 A | I 3.80 A | 3.80 | 3.75 | 3.60 | 3.60 | I 3.40 A | 3.45 | A | | | | |
| 22 | | | | | | 3.65 | A | A | A | I 3.95 A | 3.80 | I 3.95 R | 3.95 | U 3.55 | 3.75 | A | A | A | A | | | | | |
| 23 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 24 | | | | | | | A | A | A | A | A | A | A | A | 3.70 | 3.65 | A | A | A | | | | | |
| 25 | | | | | 3.20 | 3.50 | I 3.60 A | 3.75 | I 3.85 A | 3.70 | 4.05 | 3.95 | 3.85 | 4.05 | 3.80 | A | A | A | A | | | | | |
| 26 | | | | | | A | A | A | 3.60 | 3.90 | 3.65 | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | A | A | I 3.70 A | A | A | A | | | | |
| 28 | | | | | | 3.40 | 3.50 | 3.75 | A | A | A | A | R | A | A | A | A | A | A | A | | | | |
| 29 | | | | | | 3.60 | A | A | A | A | 3.80 | I 3.90 A | 3.95 | I 3.95 A | I 3.90 A | 3.85 | I 3.60 A | 3.70 | 3.65 | | | | | |
| 30 | | | | | | 3.20 | 3.50 | I 3.70 A | A | A | A | A | A | A | A | 3.80 | 3.75 | 3.50 | A | A | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | 4 | 16 | 10 | 5 | 3 | 5 | 9 | 12 | 16 | 19 | 17 | 14 | 10 | 10 | 6 | | | | | |
| Median | | | | | 3.40 | 3.50 | 3.55 | 3.75 | U 3.80 | 3.90 | 3.85 | U 3.90 | 3.85 | 3.85 | 3.75 | 3.60 | U 3.55 | 3.50 | 3.60 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F1 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 500 | 400 | 405 | 300 | 350 | I340A | 440 | I480A | 480 | 460 | 350 | 310 | 335 | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | A | R | A | A | 420 | A | A | | | | | |
| 3 | | | | | | 500 | 380 | 400 | A | A | A | A | A | R | A | A | A | A | A | | | | | |
| 4 | | | | | | 295 | 310 | 280 | I310A | I320A | I390A | I450A | 450 | 460 | 375 | 390 | 385 | A | A | | | | | |
| 5 | | | | | | | 350 | 320 | 310 | 325 | 310 | I310A | I365A | 390 | I445A | 420 | I395A | 350 | I340A | | | | | |
| 6 | | | | | 310 | 310 | 270 | I300A | 275 | 280 | I365A | 445 | 330 | 34- | I385R | 360 | I405A | I380A | 345 | | | | | |
| 7 | | | | | 345 | 330 | A | A | A | A | A | A | 450 | 375 | 320 | 320 | A | A | A | | | | | |
| 8 | | | | | | 260 | I280A | 300 | A | A | 500 | 360 | I330A | 345 | I345A | I340A | I335A | I325A | A | | | | | |
| 9 | | | | | 320 | 350 | A | A | C | C | C | C | C | C | C | C | C | C | I350A | | | | | |
| 10 | | | | | | 275 | 265 | I300A | 320 | I375A | I335A | 435 | 400 | 405 | I375A | I345A | A | A | A | | | | | |
| 11 | | | | | 280 | | 320 | 275 | A | A | A | A | 390 | 400 | 420 | 410 | 350 | 310 | 280 | | | | | |
| 12 | | | | | | | 370 | A | A | A | 365 | I360A | 410 | I430A | 345 | 375 | 380 | 350 | 340 | 300 | | | | |
| 13 | | | | | | 290 | 325 | 345 | 300 | I340A | I385A | 425 | I410A | I410A | I395A | 345 | 350 | 310 | A | | | | | |
| 14 | | | | | | 300 | I290A | I310A | 315 | 410 | I325A | A | A | A | A | A | A | 330 | A | | | | | |
| 15 | | | | | 320 | 280 | 305 | 420 | 350 | W | I535A | 495 | 410 | 415 | 410 | 325 | 350 | 330 | 285 | | | | | |
| 16 | | | | | | | 345 | 365 | I370A | I380A | 400 | I400A | 365 | W | 450 | 420 | 335 | 335 | 310 | | | | | |
| 17 | | | | | | 320 | 320 | 255 | 280 | I315A | I355A | 390 | 400 | 320 | 310 | 330 | I340A | 375 | I320A | A | | | | |
| 18 | | | | | 350 | 415 | 430 | I400A | I330A | I360A | 400 | 430 | 380 | 395 | 390 | 385 | I355A | 290 | 300 | | | | | |
| 19 | | | | | | 330 | 300 | A | A | A | 350 | A | A | R | A | I435A | I485A | 380 | 295 | 275 | | | | |
| 20 | | | | | | 270 | 230 | 535 | 400 | A | A | A | A | A | 380 | 395 | 360 | I345A | 300 | | | | | |
| 21 | | | | | | 295 | I290A | A | A | A | 500 | I455A | I480A | 495 | 575 | 500 | 365 | 320 | 315 | 310 | | | | |
| 22 | | | | | | 410 | 330 | 325 | I310A | 325 | 410 | I440R | 390 | W | W | A | 350 | A | A | | | | | |
| 23 | | | | | | A | A | A | A | A | A | 360 | I410A | 470 | 360 | 400 | A | A | A | | | | | |
| 24 | | | | | | | I375A | I340A | 310 | 265 | 295 | 345 | I420A | 400 | 390 | 365 | 310 | 320 | I285A | | | | | |
| 25 | | | | | 350 | 295 | I305A | 260 | I275A | 410 | 345 | 350 | 315 | W | 425 | 400 | 330 | 350 | 300 | | | | | |
| 26 | | | | | | 300 | 585 | I520A | 420 | 410 | 335 | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | A | A | 370 | A | A | A | | | | |
| 28 | | | | | | 325 | 360 | 460 | I485A | I375A | 360 | I425A | I495R | I495A | 450 | I400A | I400A | 370 | 350 | 295 | | | | |
| 29 | | | | | | 370 | A | A | A | I450A | 400 | I385R | 390 | I455A | I470A | 420 | I385A | 405 | 300 | | | | | |
| 30 | | | | | | 410 | 300 | 310 | I375A | I410A | 390 | 450 | I470A | 385 | 345 | 380 | 385 | 400 | 330 | 280 | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | 7 | 22 | 24 | 21 | 18 | 18 | 22 | 20 | 22 | 22 | 23 | 23 | 23 | 20 | 17 | 5 | | | | |
| Median | | | | | 320 | 315 | 320 | 325 | 310 | U370 | 365 | 425 | 405 | 410 | 390 | 385 | 360 | 340 | 310 | 295 | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

h'F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 9

17

# IONOSPHERIC DATA

Jun. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 300 | 290 | 250 | 215 | 245 | 235 | 260 | 250 | I250A | I245A | I240A | 210 | I210A | I245A | 240 | I240A | 265 | A | A | A | 280 | 275 | 290 | 280 |
| 2 | 265 | 230 | A | A | A | A | A | A | A | A | A | A | A | 230 | I230A | I240A | 270 | A | A | A | 260 | 245 | 260 | 275 |
| 3 | I325A | 305 | 290 | 235 | 245 | 280 | A | A | A | A | A | A | A | 220 | I245A | A | A | A | I250A | I250A | 250 | 250 | 260 | 275 |
| 4 | 295 | 300 | 270 | 270 | 265 | 245 | 230 | A | A | A | I230A | I225A | 215 | 235 | 210 | 235 | A | A | A | A | A | A | A | 280 |
| 5 | 285 | 290 | 295 | 290 | I265A | I255A | 265 | A | A | A | I220A | I225A | I240A | 210 | A | A | A | A | A | A | 250 | 245 | 250 | 250 |
| 6 | 265 | 260 | 270 | 260 | 250 | 245 | A | A | A | A | A | 230 | I230A | I230A | 225 | 210 | I245A | A | A | A | A | A | A | A |
| 7 | A | A | A | 360A | 275 | A | A | A | A | A | A | A | A | A | 240 | 260 | A | A | A | A | 275 | 260 | A | A |
| 8 | A | A | A | 300 | 295 | A | A | A | A | A | 220 | I240A | I235A | 235 | A | A | A | A | A | A | A | A | 245 | 260 |
| 9 | 280 | 290 | 250 | 265 | I300A | A | A | A | C | C | C | C | C | C | C | C | C | C | A | A | A | I250A | 260 | 300 |
| 10 | 300 | 295 | 300 | I280A | 270 | I255A | A | A | A | A | A | I235A | 210 | 220 | A | A | A | A | A | A | A | A | A | A |
| 11 | 275 | 275 | 275 | 275 | I280A | 230H | A | A | A | A | A | A | A | 230 | 240 | I240A | I250A | 250 | 250 | 260 | I270A | 275 | 260 | 265 |
| 12 | 275 | 265 | 260 | 260 | 230 | 245 | A | A | A | A | A | A | 215 | I220A | I230A | 235 | A | A | A | A | A | I255A | I250A | 250 |
| 13 | 260 | 265 | 295A | 280 | 270 | 250 | A | A | A | A | A | A | A | A | A | A | A | 235 | A | A | A | 285 | 280 | 275 |
| 14 | 300 | 260 | 260 | 260A | 260 | I260A | A | A | A | 230A | A | A | A | A | A | A | A | 245 | A | A | A | 300A | I285A | 275 |
| 15 | 285 | 270 | I300A | 290 | 270 | 245 | 245 | A | A | A | A | A | 235 | I235A | I230A | 230 | I240A | 240 | 250 | 245 | I255A | I265A | I300A | 275 |
| 16 | 275 | 270 | 240H | 270 | 285 | 240H | 245 | A | A | A | A | A | 230 | I225A | A | A | A | I245A | 240 | A | A | A | A | A |
| 17 | 280 | 270 | 250 | 270 | 255 | 240 | A | A | A | A | A | 210 | I215A | 235 | I220A | A | A | A | A | A | A | A | 275 | 275 |
| 18 | 275 | 340 | 260 | 295 | 285 | 265 | 260 | A | A | A | 235 | I230A | 225 | 215 | 210 | 225 | I235A | I245A | I260A | 260 | 250 | 275 | 305 | 320 |
| 19 | 310 | 265 | 300 | 260 | 235 | 260 | 260 | A | A | A | A | A | I245A | 220 | A | A | A | 240 | I245A | I255A | 250 | 260 | 295 | 290 |
| 20 | 300 | 285 | 265 | 245 | 270 | I265A | I240A | 230 | A | A | A | A | A | A | I225A | I245A | A | A | A | A | 260A | 280 | I295A | I300A |
| 21 | 270 | 290 | 280 | 270 | 300 | A | A | A | A | A | A | I205A | I215A | 230 | 235 | 225 | 220 | I245A | 260 | I270A | 260 | 250A | 225 | 260 |
| 22 | 280 | 275 | 260 | 250 | 230 | 235 | A | A | A | I220A | 215 | 200 | 200 | 240 | 230 | A | A | A | A | A | A | A | A | I280A |
| 23 | A | A | A | A | 300 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | 280A | 260A | I260A |
| 24 | I295A | 285A | 270A | 300A | 295 | 250 | A | A | A | A | A | A | A | A | 215 | 230 | A | A | A | A | 235 | I260A | 275 | I280A |
| 25 | 305 | 235 | 275 | 270 | 265 | 270 | I245A | 240 | I235A | 235 | 205 | 230 | 225 | 200 | 235 | A | A | A | A | A | A | 235A | 250 | I285A |
| 26 | 310 | 310 | 275 | 220 | 305A | A | A | A | 270 | 230 | 235 | A | A | A | A | A | A | A | A | A | A | A | A | A |
| 27 | A | A | A | 240 | 270 | 270 | A | A | A | A | A | A | A | A | A | A | I235A | A | A | A | A | A | A | 310 |
| 28 | I305A | 270 | 265 | 260 | 270 | 260 | 260 | 255 | A | A | A | A | 205 | I220A | A | A | A | A | I235A | I245A | 250 | 250 | 300A | 295 |
| 29 | 310 | I310A | 310 | 300 | 310 | 245 | A | A | A | A | 235 | I210A | 225 | I205A | I210A | 205 | I230A | 230 | 250 | 260 | 245 | I325A | I325A | 280 |
| 30 | 280 | 300 | I320A | 340A | 265 | 240 | 250 | I250A | A | A | A | A | A | A | A | 225 | 225 | 240 | A | A | A | 260 | I275A | 315 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 26 | 26 | 25 | 28 | 29 | 23 | 11 | 5 | 3 | 5 | 9 | 12 | 17 | 20 | 17 | 14 | 10 | 10 | 9 | 8 | 14 | 21 | 22 | 25 |
| Median | 285 | 280 | 270 | 270 | 270 | 250 | 250 | 250 | U250 | 230 | 230 | U225 | 225 | 230 | 230 | 230 | U240 | 240 | 250 | 260 | 250 | 260 | 275 | 280 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

h'F — Sweep 10 Mc to 180 Mc in 40 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 110 | 110 | 105 | E | G | 135 | 135 | 130 | 120 | 120 | 110 | 120 | 110 | 110 | 110 | 110 | 135 | 120 | 120 | 125 | 125 | E | E | E |
| 2 | E | 140 | 135 | 110 | 130 | 125 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 140 | 125 | 120 | 115 | 115 | E | E | E |
| 3 | 110 | 110 | E | 110 | G | 125 | 120 | 125 | 120 | 115 | 115 | 110 | 110 | 120 | 110 | 130 | 120 | 115 | 115 | 115 | 110 | 110 | 110 | E |
| 4 | E | E | E | E | 105 | 150 | 135 | 120 | 115 | 110 | 110 | 110 | 115 | 110 | 110 | 105 | 125 | 115 | 115 | 115 | 115 | 110 | 110 | 110 |
| 5 | 110 | 110 | 110 | 110 | 120 | 125 | 130 | 120 | 115 | 115 | 115 | 110 | 110 | G | 140 | 135 | 125 | 120 | 115 | 115 | 115 | 110 | 110 | 110 |
| 6 | E | E | E | E | G | 135 | 120 | 115 | 120 | 115 | 110 | 120 | 110 | 115 | 120 | G | 115 | 115 | 115 | 110 | 115 | 115 | 110 | 110 |
| 7 | 110 | 105 | 105 | 105 | 105 | 120 | 115 | 115 | 115 | 110 | 110 | 110 | 115 | 110 | 105 | 140 | 130 | 120 | 120 | 115 | 115 | E | 110 | 110 |
| 8 | 105 | 105 | 105 | 105 | 105 | 125 | 120 | 125 | 120 | 120 | 120 | 110 | 110 | 115 | 110 | 130 | 125 | 120 | 125 | 125 | 125 | 120 | 110 | E |
| 9 | E | 135 | E | E | 135 | 125 | 120 | 115 | C | C | C | C | C | C | C | C | C | C | 115 | 120 | 120 | 120 | 110 | 110 |
| 10 | 110 | 105 | 105 | 105 | 110 | 120 | 125 | 120 | 115 | 120 | 110 | 120 | 115 | 115 | 110 | 105 | 125 | 115 | 115 | 115 | 120 | 120 | 115 | 115 |
| 11 | 110 | 110 | 110 | 110 | 125 | 130 | 130 | 125 | 115 | 115 | 115 | 115 | 115 | 115 | 110 | 130 | 140 | 105 | 110 | S | 120 | E | 115 | E |
| 12 | E | E | E | 115 | G | 145 | 135 | 125 | 115 | 115 | 115 | 110 | 120 | 115 | 115 | 115 | 110 | 110 | 115 | 125 | 105 | 120 | 120 | 115 |
| 13 | E | 110 | 110 | 110 | 105 | 140 | 135 | 125 | 115 | 120 | 115 | 115 | 110 | 110 | 110 | 125 | 110 | 115 | 115 | 115 | 125 | 120 | E | 120 |
| 14 | 120 | 110 | 115 | 110 | 110 | 130 | 120 | 120 | 115 | 115 | 120 | 115 | 110 | 110 | 105 | 105 | 105 | 145 | 125 | 125 | 130 | 125 | 125 | 110 |
| 15 | 110 | 110 | 105 | 105 | 150 | 150 | 140 | 130 | 125 | 120 | 115 | 115 | 115 | 110 | 110 | 110 | 110 | 105 | 140 | 135 | 120 | 120 | 120 | E |
| 16 | E | E | E | E | 150 | 140 | 135 | 130 | 125 | 115 | 125 | 120 | 135 | 130 | 125 | 120 | 115 | 115 | 125 | 120 | 120 | 120 | 115 | 115 |
| 17 | 115 | 110 | 110 | 105 | G | G | 125 | 125 | 120 | 120 | 120 | 115 | 110 | 115 | 110 | 110 | 110 | 110 | 120 | 125 | 120 | 115 | 115 | 120 |
| 18 | E | E | 110 | 110 | 145 | 140 | 135 | 120 | 120 | 115 | 120 | 120 | 110 | 120 | G | G | 120 | 115 | 110 | 110 | 120 | E | 125 | 110 |
| 19 | E | 110 | 120 | E | G | 120 | 140 | 125 | 125 | 125 | 130 | 120 | 125 | 140 | 135 | 130 | 120 | 135 | 125 | 125 | 125 | E | 115 | 110 |
| 20 | 110 | 110 | 110 | 115 | G | 125 | 125 | 130 | 125 | 110 | 125 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 100 | 105 | 110 | E | 115 | 110 |
| 21 | 110 | 110 | 110 | 135 | 135 | 140 | 125 | 120 | 115 | 115 | 110 | 115 | 110 | 115 | G | G | 110 | 110 | 125 | 120 | 120 | 115 | 115 | E |
| 22 | E | E | E | 110 | 150 | 145 | 125 | 115 | 110 | 110 | 120 | G | G | G | 115 | 105 | 105 | 105 | 115 | 120 | 110 | 110 | 120 | 110 |
| 23 | 105 | 105 | 105 | 105 | 140 | 125 | 120 | 115 | 110 | 110 | 110 | 115 | 110 | 120 | 135 | 125 | 115 | 115 | 130 | 120 | 120 | 110 | 115 | 110 |
| 24 | 105 | 110 | 105 | 105 | 105 | 135 | 120 | 115 | 115 | 120 | 115 | 110 | 115 | 125 | 140 | 145 | 120 | 125 | 115 | 115 | 115 | 120 | 120 | 110 |
| 25 | 105 | 105 | E | E | G | 125 | 115 | 125 | 115 | 115 | G | G | G | G | 145 | 135 | 135 | 125 | 125 | 120 | 115 | 115 | E | 140 |
| 26 | 125 | 110 | 105 | 110 | 125 | 125 | 120 | 125 | 120 | G | G | 140 | 130 | 130 | 140 | 125 | 120 | 130 | 120 | 115 | 115 | 110 | 120 | 110 |
| 27 | 110 | 105 | 105 | 110 | 130 | 145 | 125 | 120 | 115 | 115 | 115 | 115 | 120 | 140 | 110 | 125 | 125 | 115 | 115 | 115 | 125 | 125 | 120 | 115 |
| 28 | 110 | E | 105 | 110 | G | 130 | 130 | 125 | 115 | 115 | 130 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 115 | 120 | 125 | 115 | 115 | 110 |
| 29 | 110 | 110 | 105 | 105 | 105 | G | 130 | 120 | 115 | 120 | 125 | 125 | 140 | 115 | 110 | 110 | 110 | 110 | 130 | 110 | 125 | 120 | 125 | 120 |
| 30 | 110 | 115 | 110 | 110 | 115 | G | 130 | 125 | 115 | 115 | 115 | 115 | 115 | 120 | 140 | G. | 135 | 140 | 120 | 120 | 120 | 120 | 115 | 115 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 20 | 23 | 22 | 23 | 21 | 27 | 30 | 30 | 29 | 28 | 27 | 27 | 27 | 26 | 27 | 25 | 29 | 29 | 30 | 29 | 30 | 23 | 26 | 23 |
| Median | 110 | 110 | 105 | 110 | 125 | 130 | 125 | 120 | 115 | 115 | 115 | 115 | 115 | 115 | 110 | 120 | 120 | 115 | 120 | 120 | 120 | 120 | 115 | 110 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

h'Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 11

# IONOSPHERIC DATA

Jun. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | f2 | f2 | f2 | | | C | C | C | C | C2 | C | C | C2 | C2 | l | l2 | C | C2 | C2 | C2 | f | | | |
| 2 | | f | f5 | f5 | c5 | c5 | c2 | c3 | c3 | c2 | c2 | c3 | c3 | l | l2 | l2 | C.l | c3 | c5 | c3 | f | | | |
| 3 | f2 | f2 | | f | | C | c2 | c2 | c2 | c2 | c2 | c2 | c3 | C | l | C | C4 | C4 | C3 | C3 | f2 | f | f | |
| 4 | | | | | l | h | Y | C2 | C4 | C2 | C | C2 | C | l | l | l | C.l | C2 | C4 | C4 | f5 | f6 | f3 | f2 |
| 5 | f | f2 | f2 | f2 | C2.l | C2 | C | C2 | C | C | C | C2 | C2 | | h2 | h | C2 | C3 | C3 | C3 | f | f3 | f | f |
| 6 | | | | | | h | C | C | C | C | C2 | C | C | l | C | | l2 | C2 | C2 | C4 | f6 | f5 | f3 | f2 |
| 7 | f6 | f3 | f4 | f3 | l | C3 | c5 | C2 | C2 | C3 | C2 | C2 | l | l | l | h.l | h.2 | C3 | C2 | C2 | f | | f3 | f2 |
| 8 | f3 | f5 | f4 | f2 | l2 | C2 | C2 | C2 | C3 | C2 | C | C | C2 | C | l2 | C3 | C3 | C3 | C | C4 | f2 | f4 | f | |
| 9 | | f | | | C | C2 | C3 | C3 | | | | | | | | | | | C2 | C | f3 | f3 | f2 | f2 |
| 10 | f3 | f2 | f2 | f3 | l | C.l | C2 | C4 | C2 | C | C2 | C | l | C | l2 | l2 | C3 | C3 | C2 | C2 | f5 | f5 | f6 | f4 |
| 11 | f2 | f | f | f | C.l | C | C | C | C2 | C | C | C2 | C | C | C | C.l2 | C.l | l.C | l.C | | f3 | | f | |
| 12 | | | | f | | h | C | C2 | C2 | C2 | C2 | C2 | C | C | C | l | C2 | l2 | C2 | C | f | f2 | f4 | f2 |
| 13 | | f | f2 | f2 | l | h | h | C | C2 | C | C2 | C | C2 | C2 | l2 | C.l2 | l | l | C2 | C3 | f | f | | f |
| 14 | f2 | f | f | f2 | l | C | C2 | C2 | C | C | C3 | C | C5 | C2 | l3 | l3 | l2 | h | C3 | C2 | f4 | f3 | f5 | f3 |
| 15 | f | f2 | f4 | f2 | h | h | h | C.l | C | C | C2 | C | C | C | C | l | l | l | C | C | f3 | f | f2 | |
| 16 | | | | | C | C | C | C | C | C2 | C | C2 | C | C | C | C | C | l2 | C | C5 | f3 | f2 | f4 | f2 |
| 17 | f | f | f2 | f2 | | | C | C | C2 | C | C | C | l | C | l | l2 | l2 | l2 | C2 | C | C4 | f2 | f | f |
| 18 | | | f2 | f2 | h | h | C | C2 | C2 | C3 | C | C | C | C | | | C | C2 | C3 | C2 | f | | f | f |
| 19 | | f | f | | | C | C | C2 | C | C | C | C | C | h | h | C | C | C | C | C | C | | f2 | f2 |
| 20 | f2 | f | f | f | | C | C | C | C | C | C.l | C2 | C | C2 | l | l2 | l2 | l3 | l3 | l | f | | f3 | f3 |
| 21 | f2 | f | f | f | C | h | C2 | C2 | C2 | C2 | C | C | C | C | | | l | l | C2 | C4 | f | f2 | f | |
| 22 | | | | f | C | h | C2 | C | C2 | C | C | | | | C | l3 | l2 | l2 | C5 | C4 | f2 | f2 | f3 | f3 |
| 23 | f4 | f2 | f2 | f4 | h | C2 | C3 | C2 | C2 | C3 | C2 | C | C | C | h | C | C2 | C2 | C4 | C4 | f3 | f2 | f2 | f4 |
| 24 | f2 | f2 | f2 | f2 | l | C.l | C2 | C2 | C2 | C | C | l | C | C | h | h | C | C | C3 | C5 | f | f2 | f2 | f2 |
| 25 | f2 | f | | | | C | C3 | C | C3 | C | | | | | h.l | h | h | C2 | C2 | C | f2 | f | | f |
| 26 | f.f | f2 | f | f | C | C | C2 | C | C | | | h | C | C2 | h | C2 | C4 | C | C5 | C4 | f4 | f3 | f2.f2 | f2 |
| 27 | f4 | f3 | f3 | f | C | h | C5 | C4 | C2 | C2 | C2 | C2 | C | h.l | l3 | C2 | C | C2 | C2 | C4 | f2 | f2 | f4 | f2 |
| 28 | f4 | | f2 | f2 | | C | C | C | C2 | C2 | h | C | C | C | C | C2 | l3 | l2 | C3 | C4 | f | f | f2 | f |
| 29 | f2 | f3 | f2 | f2 | l | | C2 | C2 | C3 | C | C | C | h | C | l2 | l | l | l | C.l | l | f | f3 | f3 | f |
| 30 | f | f2 | f6 | f3 | l | | C | C | C2 | C | l | l | l2 | C | h | | h | h | C3 | C2 | f2 | f | f3 | f2 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

Types of Es | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 12

# IONOSPHERIC DATA

**Jun. 1963** | **foF2** | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $F^S$ | $F^S$ | $R^F$ | $4.5^F$ | $4.0^F$ | 4.1 | $I_{4.9}^A$ | 6.0 | $7.3^S$ | 6.7 | 5.7 | A | A | A | 5.5 | $I_{6.6}^A$ | 7.8 | $I_{6.4}^A$ | $I_{6.2}^A$ | $6.5^S$ | $6.5^S$ | $R^S$ | $R^S$ | $R^S$ |
| 2 | $R^F$ | R | A | A | A | A | A | A | A | A | A | A | $R^S$ | $R^S$ | $R^S$ | 5.1 | $5.3^R$ | $I_{5.1}^A$ | $I_{5.5}^A$ | $I_{6.5}^A$ | $I_{6.4}^R$ | $I_{6.0}^R$ | $R^S$ | A |
| 3 | 4.5 | 4.1 | 4.2 | 4.0 | $3.7^H$ | 3.9 | $I_{4.9}^A$ | A | A | A | A | A | A | A | A | 5.2 | A | A | A | $I_{6.6}^A$ | $I_{6.8}^R$ | $I_{6.2}^R$ | 5.1 | $I_{4.8}^R$ |
| 4 | $4.7^S$ | 4.1 | 4.1 | $4.0^S$ | 3.9 | $J_{5.2}^R$ | 6.2 | 6.3 | $I_{5.8}^A$ | A | A | A | A | $I_{5.3}^A$ | $I_{5.4}^A$ | 5.6 | 6.1 | 6.3 | 6.5 | A | A | $R^S$ | $R^S$ | A |
| 5 | A | A | A | R | 4.1 | $I_{5.2}^R$ | 5.4 | A | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | A | $I_{5.6}^R$ | A | A | A | A | A | $J_{5.4}^R$ | 6.0 | $7.2^R$ | $R^S$ | R | $R^S$ | A | A |
| 7 | A | A | R | $R^F$ | 3.8 | $I_{4.4}^R$ | 5.6 | 6.8 | 7.3 | A | A | A | 6.6 | $I_{8.5}^R$ | $I_{8.2}^R$ | 7.3 | 6.4 | A | A | A | A | A | $5.7^R$ | R |
| 8 | R | A | A | R | $R^S$ | $I_{5.4}^R$ | 6.2 | A | A | A | C | A | R | A | A | A | $I_{6.6}^A$ | 7.0 | A | R | A | R | R | R |
| 9 | R | R | R | $4.2^R$ | 4.6 | $I_{5.1}^R$ | $I_{5.4}^A$ | A | A | A | A | A | 5.5 | $I_{5.8}^A$ | 6.1 | A | A | 6.0 | A | F | R | R | R | A |
| 10 | R | R | R | $5.2^R$ | $I_{5.2}^R$ | $J_{5.3}^R$ | $I_{5.7}^R$ | 6.1 | A | R | A | C | $I_{5.8}^A$ | 6.0 | C | R | C | 6.4 | 7.0 | $A^S$ | R | R | A | R |
| 11 | R | A | R | R | $I_{5.1}^R$ | 5.0 | 5.4 | 6.2 | A | A | A | 5.7 | C | C | C | A | 6.3 | 7.2 | $I_{7.2}^A$ | $7.2^R$ | 6.9 | $6.2^S$ | A | $F^S$ |
| 12 | 5.9 | 5.6 | $F^S$ | $F^S$ | 5.0 | $4.6^F$ | 5.5 | 6.2 | A | A | A | A | 5.9 | 5.5 | 5.8 | 6.0 | $I_{6.0}^A$ | $I_{5.8}^A$ | 5.7 | 6.3 | $6.6^S$ | $R^S$ | A | A |
| 13 | A | A | $I_{5.1}^R$ | $I_{4.8}^R$ | $I_{4.8}^R$ | 5.0 | $5.4^R$ | 6.3 | A | A | A | A | C | 6.2 | 6.8 | 6.7 | 6.7 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | A | 5.8 | $I_{6.0}^A$ | $U_{6.3}^R$ | $7.4^R$ | $8.4^R$ | 8.2 | $I_{7.0}^R$ | $I_{6.0}^C$ | $I_{6.2}^R$ | $6.8^R$ | $I_{6.4}^R$ | $I_{5.8}^R$ | R | R |
| 15 | 5.6 | $I_{5.1}^R$ | $I_{4.5}^R$ | R | R | 5.4 | 5.1 | A | A | C | A | $I_{5.6}^A$ | R | A | 5.9 | 6.1 | 6.0 | $I_{6.3}^A$ | $I_{6.6}^R$ | 6.1 | 5.2 | A | R | R |
| 16 | R | R | 4.1 | 3.5 | $I_{3.9}^R$ | 4.6 | A | A | A | $5.6^R$ | A | A | 5.6 | $I_{5.6}^A$ | $I_{5.2}^A$ | 5.5 | 5.9 | 5.9 | $I_{5.4}^A$ | $I_{6.0}^R$ | $U_{6.7}^R$ | 5.5 | $5.0^R$ | A |
| 17 | A | R | A | $4.7^R$ | 4.6 | 5.2 | $6.6^R$ | $8.2^R$ | $I_{6.8}^{RH}$ | $I_{5.8}^{RH}$ | $J_{5.1}^R$ | $I_{5.9}^R$ | $I_{6.4}^A$ | $I_{7.0}^R$ | $I_{7.8}^R$ | $I_{6.4}^R$ | 5.4 | $5.7^F$ | $6.8^H$ | $I_{7.2}^{RS}$ | $7.4^S$ | $I_{7.2}^{RS}$ | $R^S$ | A |
| 18 | $F^S$ | $F^S$ | R | F | 4.1 | 4.1 | $I_{4.6}^A$ | $4.7^R$ | A | A | A | A | 6.0 | 6.2 | 6.3 | 5.9 | 6.1 | 6.6 | 7.3 | 7.0 | $I_{5.3}^{RS}$ | $I_{5.2}^{RF}$ | 5.2 | $5.0^R$ |
| 19 | $R^S$ | $R^F$ | $R^S$ | R | 3.9 | 4.4 | $I_{4.2}^A$ | 5.2 | A | A | A | 5.3 | $I_{5.1}^A$ | 4.9 | 5.8 | 5.4 | 5.5 | 5.7 | 5.8 | $I_{6.4}^R$ | $I_{5.5}^{RS}$ | $5.1^S$ | $R^S$ | $F^S$ |
| 20 | $R^S$ | F | $R^F$ | R | F | 5.4 | $I_{4.9}^{RS}$ | 4.6 | 6.4 | $I_{5.4}^A$ | $5.3^H$ | $4.8^R$ | 5.1 | $5.4^R$ | $I_{6.6}^A$ | $U_{7.5}^R$ | 6.9 | 5.8 | 6.1 | $U_{6.3}^R$ | 6.1 | $4.6^R$ | R | A |
| 21 | A | A | A | $I_{3.8}^A$ | 3.2 | 4.7 | $I_{5.0}^A$ | A | A | A | A | A | A | 4.9 | $I_{5.0}^A$ | $5.0^R$ | 5.2 | 5.1 | 5.6 | 6.7 | 6.5 | 6.0 | 5.2 | $R^F$ |
| 22 | $R^F$ | $R^F$ | $I_{4.4}^{FS}$ | $I_{4.2}^{RS}$ | 4.0 | 4.8 | $5.5^H$ | 6.1 | $I_{6.6}^R$ | A | A | A | A | A | A | $5.8^H$ | 5.8 | 6.1 | 5.2 | 6.0 | $I_{6.6}^R$ | 6.0 | $R^F$ | $R^S$ |
| 23 | $R^S$ | $R^F$ | $R^F$ | A | F | 4.5 | A | A | A | A | A | A | A | A | $I_{5.7}^A$ | 6.4 | 6.0 | 6.1 | 5.6 | 5.9 | $R^S$ | $F^S$ | $F^S$ | $R^S$ |
| 24 | $R^S$ | $R^F$ | F | $R^F$ | 4.1 | 4.5 | $I_{5.0}^{RH}$ | 5.7 | 6.6 | 6.6 | 6.0 | $I_{5.4}^A$ | $I_{5.2}^A$ | 5.1 | 6.3 | 6.5 | $6.6^H$ | 6.7 | 6.0 | 6.5 | A | $R^S$ | $R^S$ | $R^S$ |
| 25 | $R^S$ | $R^F$ | $F^S$ | $3.8^F$ | $I_{3.8}^{FS}$ | 4.3 | 6.0 | 7.0 | 6.5 | $5.4^R$ | $5.6^R$ | 5.5 | C | C | C | C | C | C | C | C | $7.3^S$ | $6.1^R$ | 4.7 | $J_{4.5}^R$ |
| 26 | $I_{4.1}^R$ | $4.0^R$ | 3.9 | $3.9^R$ | $U_{4.4}^R$ | 4.9 | A | A | A | 6.8 | $I_{5.7}^A$ | A | A | A | A | A | $I_{5.0}^A$ | A | A | $7.1^S$ | R | A | A | $R^S$ |
| 27 | 3.9 | $R^S$ | $R^S$ | $4.1^{RS}$ | $I_{4.0}^{RS}$ | 3.9 | A | A | A | A | A | A | A | A | R | 5.4 | 5.6 | 6.2 | 5.4 | $6.5^R$ | $U_{5.1}^R$ | A | R | A |
| 28 | A | $U_{4.0}^R$ | $I_{3.8}^{RS}$ | $I_{3.8}^{RF}$ | $U_{3.6}^R$ | $R^S$ | A | R | $6.0^R$ | $U_{5.8}^R$ | A | A | A | A | A | $5.1^R$ | 5.2 | $I_{5.4}^A$ | $I_{5.6}^A$ | 5.7 | 5.0 | A | $R^S$ | $A^S$ |
| 29 | $4.5^R$ | $U_{4.5}^R$ | $I_{4.0}^{RS}$ | $I_{3.6}^{RF}$ | $3.5^F$ | 3.7 | R | A | A | 5.1 | $I_{5.1}^A$ | $I_{5.2}^A$ | $I_{5.2}^R$ | 5.3 | 5.1 | 5.2 | 4.8 | 5.3 | 5.8 | 5.7 | $I_{4.6}^R$ | $4.5^{RS}$ | $R^S$ | $R^S$ |
| 30 | $I_{4.5}^A$ | $I_{4.0}^A$ | $3.8^{RS}$ | $3.5^F$ | 3.3 | $I_{4.2}^{RS}$ | $I_{4.8}^{RS}$ | 5.0 | $I_{4.8}^A$ | $I_{4.8}^R$ | $I_{5.6}^A$ | $I_{5.5}^A$ | 5.5 | 5.5 | 6.4 | 6.0 | $5.2^R$ | $I_{5.0}^A$ | 5.8 | $I_{6.8}^{RS}$ | $6.3^R$ | $J_{4.5}^R$ | A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 8 | 8 | 10 | 16 | 23 | 26 | 21 | 15 | 10 | 10 | 10 | 10 | 13 | 16 | 18 | 22 | 25 | 24 | 22 | 21 | 19 | 14 | 6 | 3 |
| Median | 4.5 | $U_{4.1}$ | $U_{4.1}$ | 4.0 | 4.0 | 4.6 | 5.4 | 6.1 | 6.6 | 5.7 | 5.6 | $U_{5.5}$ | 5.6 | 5.6 | 6.0 | 6.0 | 6.0 | 6.0 | 5.9 | 6.5 | 6.4 | 5.9 | 5.2 | 4.8 |
| U.Q. | 5.2 | 4.8 | 4.4 | 4.4 | 4.6 | 5.2 | 5.6 | 6.3 | 6.8 | 6.6 | 5.7 | 5.7 | 6.2 | 6.2 | 6.6 | 6.5 | 6.5 | 6.4 | 6.6 | 6.8 | 6.7 | 6.1 | 5.2 | |
| L.Q. | 4.3 | 4.0 | 3.9 | 3.8 | 3.8 | 4.3 | 4.9 | 5.2 | 6.0 | 5.4 | 5.3 | 5.3 | 5.2 | 5.3 | 5.5 | 5.4 | 5.4 | 5.7 | 5.6 | 6.0 | 5.3 | 5.1 | 5.0 | |
| Q.R. | 0.9 | 0.8 | 0.5 | 0.6 | 0.8 | 0.9 | 0.7 | 1.1 | 0.8 | 1.2 | 0.4 | 0.4 | 1.0 | 0.9 | 1.1 | 1.1 | 1.1 | 0.7 | 1.0 | 0.8 | 1.4 | 1.0 | 0.2 | |

The Radio Research Laboratories, Japan

**foF2**

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

A 1

21

# IONOSPHERIC DATA

Jun.1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | $I_{4.1}^{A}$ | $I_{4.3}^{A}$ | 4.4 | 4.5 | A | A | A | A | A | A | A | A | | | | | |
| 2 | | | | | | | | A | A | A | A | A | $R^{S}$ | $R^{S}$ | $R^{S}$ | 4.2 | A | A | A | | | | | |
| 3 | | | | | | 3.2 | A | A | A | A | A | A | A | A | A | 4.2 | A | A | A | | | | | |
| 4 | | | | | | L | $3.8^{L}$ | L | A | A | A | A | A | A | A | A | R | A | A | | | | | |
| 5 | | | | | | | L | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 6 | | | | | | C | C | C | C | A | A | A | A | A | A | A | A | 3.8 | 3.4 | | | | | |
| 7 | | | | | | L | 3.9 | A | A | A | A | A | A | A | 4.4 | 4.3 | $I_{4.2}^{A}$ | A | A | | | | | |
| 8 | | | | | | | A | A | A | A | C | A | A | A | A | A | A | 4.0 | A | | | | | |
| 9 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | 4.0 | A | | | | | |
| 10 | | | | | | | A | A | A | A | A | C | A | A | C | A | C | A | A | | | | | |
| 11 | | | | | | | L | A | A | A | A | 4.7 | C | C | C | A | A | A | A | | | | | |
| 12 | | | | | | | A | A | A | A | A | A | A | A | A | 4.5 | A | A | A | | | | | |
| 13 | | | | | | | A | A | A | A | A | A | C | A | 4.3 | 4.3 | 4.2 | C | C | | | | | |
| 14 | | | | | | | C | C | C | A | $4.6^{H}$ | A | A | 4.4 | $I_{4.6}^{A}$ | $I_{4.6}^{R}$ | A | C | R | | | | | |
| 15 | | | | | | | L | A | A | C | A | A | A | A | A | A | R | A | R | | | | | |
| 16 | | | | | | A | A | A | A | A | A | A | A | A | A | R | $I_{4.2}^{A}$ | 4.0 | A | | | | | |
| 17 | | | | | | L | $I_{3.8}^{L}$ | $I_{4.2}^{LR}$ | $I_{4.4}^{A}$ | 4.5 | R | A | A | R | $I_{4.5}^{A}$ | $I_{4.4}^{R}$ | $I_{4.2}^{L}$ | 4.0 | L | | | | | |
| 18 | | | | | L | $I_{3.0}^{A}$ | $I_{3.5}^{A}$ | A | A | A | A | A | A | 4.5 | $I_{4.4}^{A}$ | 4.3 | 4.2 | A | A | | | | | |
| 19 | | | | | | | A | A | A | A | A | $I_{4.3}^{A}$ | $I_{4.4}^{A}$ | $I_{4.4}^{A}$ | $4.4^{RH}$ | 4.3 | $I_{4.2}^{A}$ | 3.8 | A | | | | | |
| 20 | | | | | | L | A | 3.9 | $I_{4.2}^{A}$ | $I_{4.2}^{A}$ | 4.4 | $I_{4.4}^{L}$ | 4.4 | 4.3 | A | A | A | L | L | | | | | |
| 21 | | | | | | A | A | A | A | A | A | A | A | A | A | $I_{4.1}^{A}$ | $I_{3.9}^{R}$ | 3.7 | A | | | | | |
| 22 | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | 3.8 | L | | | | | |
| 23 | | | | | | | A | A | A | A | A | A | A | A | A | A | $I_{4.0}^{A}$ | 3.8 | L | | | | | |
| 24 | | | | | | | L | A | A | A | A | A | $I_{4.4}^{A}$ | $4.3^{R}$ | A | A | 4.1 | $I_{3.6}^{L}$ | L | | | | | |
| 25 | | | | | | 3.1 | A | A | 4.2 | 4.3 | $4.4^{R}$ | A | C | C | C | C | C | C | C | | | | | |
| 26 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | R | $I_{4.2}^{R}$ | $U_{4.0}^{R}$ | 3.8 | $3.4^{L}$ | | | | | |
| 28 | | | | | | | A | A | $I_{4.1}^{R}$ | $4.3^{R}$ | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | L | A | A | A | A | A | R | R | $4.4^{R}$ | $I_{4.2}^{R}$ | $4.2^{R}$ | $4.1^{R}$ | $3.8^{R}$ | $3.3^{L}$ | | | | | |
| 30 | | | | | | L | $3.6^{R}$ | $I_{3.9}^{A}$ | $I_{4.2}^{A}$ | $I_{4.3}^{R}$ | $I_{4.5}^{A}$ | $I_{4.5}^{A}$ | 4.5 | A | R | $I_{4.2}^{A}$ | $I_{4.2}^{A}$ | $I_{3.8}^{A}$ | $I_{3.4}^{A}$ | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | 3 | 5 | 4 | 6 | 6 | 5 | 4 | 4 | 6 | 7 | 13 | 12 | 13 | 4 | | | | | |
| Median | | | | | | 3.1 | 3.8 | $U_{4.0}$ | $U_{4.2}$ | 4.3 | 4.5 | $U_{4.4}$ | $U_{4.4}$ | 4.4 | $U_{4.4}$ | 4.3 | $U_{4.2}$ | 3.8 | 3.4 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

foF1

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

A 2

# IONOSPHERIC DATA

Jun. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | B | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 3 | | | | | | B | A | A | A | R | R | C | A | A | A | A | A | A | A | | | | | |
| 4 | | | | | | R | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 5 | | | | | | B | A | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 6 | | | | | | C | C | C | C | A | R | A | A | A | A | A | A | A | A | | | | | |
| 7 | | | | | | B | A | A | A | A | A | A | A | A | A | A | A | 2.55 | A | | | | | |
| 8 | | | | | | B | A | R | R | B | C | R | A | A | R | R | A | A | A | | | | | |
| 9 | | | | | | A | A | A | A | A | A | A | B | A | A | 3.30 | A | A | B | | | | | |
| 10 | | | | | | 2.00 | A | A | A | A | A | C | A | A | C | A | C | A | A | | | | | |
| 11 | | | | | | A | A | A | A | A | A | A | C | C | C | A | A | A | A | | | | | |
| 12 | | | | | | A | A | A | A | A | R | B | B | B | A | A | A | A | A | | | | | |
| 13 | | | | | | A | A | A | A | A | A | A | C | A | A | A | A | C | C | | | | | |
| 14 | | | | | | C | C | C | C | 3.40 | A | A | R | $I_{3.50}^{R}$ | A | $I_{3.20}^{R}$ | $I_{3.00}^{R}$ | C | A | B | | | | | |
| 15 | | | | | | A | A | A | 3.10 | C | A | A | R | A | A | A | A | A | A | B | | | | |
| 16 | | | | | | A | A | A | A | A | R | A | A | A | A | A | A | A | A | | | | | |
| 17 | | | | | | 2.00 | A | A | A | R | R | A | A | A | A | A | A | A | A | B | | | | |
| 18 | | | | | E | A | A | A | A | A | A | A | A | A | A | A | 3.05 | A | B | | | | | |
| 19 | | | | | | A | A | A | A | A | $I_{3.40}^{A}$ | $I_{3.45}^{A}$ | A | A | A | 3.20 | 3.05 | A | A | | | | | |
| 20 | | | | | | A | A | A | A | A | A | A | 3.50 | A | A | A | A | A | A | | | | | |
| 21 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 22 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | B | | | | | |
| 23 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 24 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 25 | | | | | | A | A | A | A | A | A | A | C | C | C | C | C | C | C | | | | | |
| 26 | | | | | | A | A | A | A | A | A | A | A | A | A | 3.05 | A | A | B | | | | | |
| 27 | | | | | | A | A | A | A | A | A | A | A | R | $3.40^{R}$ | A | A | A | A | | | | | |
| 28 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 30 | | | | | | A | A | A | A | A | R | A | A | R | A | A | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | 1 | 2 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 3 | 1 | | | | | | |
| Median | | | | | E | 2.00 | | | 3.10 | 3.40 | $U_{3.40}$ | $U_{3.45}$ | 3.50 | $U_{3.50}$ | 3.40 | 3.20 | 3.05 | 2.55 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

foE

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 3

23

# IONOSPHERIC DATA

Jun. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $J_{3.1}$ | $J_{2.7}$ | 2.3 | E | $J_{2.2}$ | 2.4 | $J_{5.0}$ | $J_{5.6}$ | $J_{5.0}$ | $J_{4.9}^{Y}$ | 4.4 | $J_{7.5}$ | $J_{6.0}$ | $J_{5.9}$ | $J_{6.0}$ | $J_{8.2}$ | $J_{6.3}$ | $J_{6.5}$ | $J_{7.6}$ | $J_{6.3}$ | $J_{5.1}$ | $J_{3.2}$ | $J_{3.9}$ | $J_{3.4}$ |
| 2 | $J_{2.9}$ | 1.9 | $J_{3.8}$ | $J_{4.0}$ | $J_{3.4}$ | $J_{3.9}$ | $J_{8.2}$ | $J_{7.8}$ | $J_{6.1}$ | 6.9 | $J_{6.3}$ | $J_{6.0}$ | 4.1 | 4.0 | 3.7 | 3.5 | 4.4 | $J_{6.5}$ | $J_{6.3}$ | $J_{6.0}$ | $J_{5.3}$ | $J_{3.7}$ | 2.4 | $J_{3.5}$ |
| 3 | E | $J_{2.6}$ | $J_{2.3}$ | 2.3 | $J_{1.9}$ | 2.5 | $J_{5.0}$ | $J_{6.6}$ | $J_{6.0}$ | $J_{7.5}$ | $J_{7.6}$ | $J_{11.0}^{Y}$ | $J_{8.2}$ | $J_{8.2}$ | $J_{5.3}$ | 3.7 | $J_{6.4}$ | $J_{8.0}$ | $J_{8.6}$ | $J_{7.6}$ | $J_{3.3}$ | $J_{3.1}$ | 2.0 | $J_{2.5}$ |
| 4 | $J_{2.0}$ | 2.2 | 2.2 | 2.4 | E | G | 3.3 | 4.0 | $J_{7.3}$ | $J_{5.3}$ | $J_{14.6}$ | $J_{7.5}$ | $J_{5.3}$ | $J_{6.3}$ | $J_{5.1}$ | $J_{5.2}$ | 4.0 | $J_{6.0}$ | $J_{7.8}$ | $J_{7.5}$ | $J_{8.4}$ | $J_{3.0}$ | $J_{3.8}$ | $J_{8.0}$ |
| 5 | $J_{5.3}$ | $J_{5.0}$ | $J_{3.6}$ | $J_{3.3}$ | $J_{1.9}$ | 2.6 | $J_{3.5}$ | $J_{7.5}$ | $J_{7.7}$ | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | $J_{6.5}$ | 4.6 | $J_{7.3}$ | $J_{7.0}$ | $J_{6.0}$ | $J_{8.1}$ | $J_{6.3}$ | $J_{4.6}$ | $J_{3.3}$ | $J_{3.1}$ | $J_{5.3}$ | $J_{5.2}$ | $J_{5.0}$ | $J_{5.0}$ | $J_{5.0}$ |
| 7 | $J_{5.0}$ | $J_{3.8}$ | $J_{2.5}$ | $J_{2.3}$ | $J_{3.5}$ | 3.0 | 3.5 | $J_{5.3}$ | $J_{6.0}$ | $J_{8.0}$ | $J_{5.3}$ | $J_{12.8}$ | $J_{12.6}$ | $J_{6.2}$ | $J_{3.6}$ | $J_{4.9}$ | $J_{5.1}$ | $J_{7.8}$ | $J_{9.9}$ | $J_{8.3}$ | $J_{8.4}$ | $J_{8.3}$ | $J_{3.0}$ | $J_{3.3}$ |
| 8 | $J_{3.5}$ | $J_{6.3}$ | $J_{7.8}$ | $J_{6.1}$ | $J_{6.0}$ | 4.2 | $J_{5.0}$ | $J_{6.9}$ | $J_{6.4}$ | $J_{8.0}$ | C | $J_{16.1}^{Y}$ | $J_{5.1}$ | $J_{10.3}^{Y}$ | $J_{7.6}$ | $D_{20.0}^{DY}$ | 11.1 | $J_{6.1}$ | $J_{6.5}$ | $J_{6.0}^{Y}$ | $J_{6.0}$ | $J_{6.1}$ | $J_{5.1}$ | $J_{5.2}$ |
| 9 | $J_{4.1}$ | $J_{5.0}$ | $J_{2.9}$ | $J_{2.4}$ | 2.5 | $J_{3.4}$ | $J_{5.8}$ | $J_{7.0}$ | $J_{7.6}$ | $J_{8.2}$ | $J_{7.0}$ | $J_{7.0}$ | $J_{5.1}$ | $J_{6.8}$ | 5.5 | 7.8 | $J_{16.3}^{Y}$ | $J_{12.6}$ | $J_{6.1}$ | $J_{3.8}$ | $J_{6.3}$ | $J_{5.3}$ | $J_{5.8}$ | $J_{7.5}$ |
| 10 | $J_{5.5}$ | $J_{6.8}$ | $J_{5.1}$ | $J_{2.9}$ | $J_{2.5}$ | G | $J_{5.1}$ | $J_{7.0}$ | $J_{11.9}$ | 4.5 | $J_{5.0}$ | C | $J_{6.6}$ | $J_{5.7}$ | C | 4.2 | C | $J_{4.6}$ | $J_{5.0}$ | $J_{5.9}$ | $J_{6.2}$ | $J_{4.9}$ | $J_{6.5}$ | $J_{6.1}$ |
| 11 | $J_{5.8}$ | $J_{5.1}$ | $J_{5.1}$ | $J_{3.3}$ | $J_{2.8}$ | $J_{4.8}$ | 3.7 | $J_{5.3}$ | $J_{7.3}$ | $J_{7.3}$ | $J_{8.6}$ | $J_{5.0}$ | C | C | C | $J_{5.5}$ | $J_{7.3}$ | $J_{8.3}$ | $J_{7.5}$ | $J_{7.0}$ | $J_{6.6}$ | $J_{3.3}$ | $J_{8.1}$ | $J_{6.0}$ |
| 12 | $J_{2.5}$ | $J_{2.5}$ | $J_{4.8}$ | $J_{5.2}$ | $J_{4.9}$ | $J_{3.8}$ | $J_{5.1}$ | 5.0 | $J_{7.8}$ | $J_{11.5}$ | $J_{12.0}$ | $J_{7.6}$ | $J_{5.5}$ | $J_{5.3}$ | 4.2 | 4.1 | $J_{6.6}$ | $J_{14.5}^{Y}$ | $J_{7.1}$ | $J_{5.8}$ | $J_{3.2}$ | $J_{7.3}$ | $J_{7.4}$ | $J_{7.3}$ |
| 13 | $J_{5.0}$ | $J_{5.3}$ | $J_{5.1}$ | $J_{4.8}$ | $J_{2.9}$ | $J_{4.9}$ | $J_{4.5}$ | $J_{5.2}$ | $J_{7.6}$ | $J_{7.0}$ | $J_{6.3}$ | $J_{6.3}$ | C | $J_{4.5}$ | 3.6 | $J_{4.5}$ | 4.4 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | $J_{10.9}$ | 4.1 | $J_{8.1}$ | $J_{5.2}$ | 4.2 | $J_{7.1}$ | 4.1 | $J_{6.0}$ | C | 3.1 | 2.6 | $J_{6.0}$ | $J_{3.5}$ | $J_{3.9}$ | $J_{4.6}$ |
| 15 | $J_{5.8}$ | $J_{2.5}$ | $J_{3.8}$ | $J_{3.1}$ | $J_{3.0}$ | $J_{2.5}$ | 3.7 | 6.6 | $J_{7.3}$ | C | $J_{6.5}$ | $J_{6.1}$ | 4.8 | $J_{6.6}$ | $J_{5.4}$ | $J_{5.0}$ | $J_{4.8}^{Y}$ | $J_{7.8}$ | 3.6 | $J_{2.8}$ | $J_{3.5}$ | $J_{5.5}$ | $J_{3.3}$ | $J_{3.5}$ |
| 16 | $J_{3.1}$ | $J_{2.8}$ | $J_{3.3}$ | $J_{2.5}$ | $J_{2.9}$ | $J_{3.8}$ | $J_{6.0}$ | $J_{7.5}$ | $J_{7.4}$ | $J_{6.3}$ | $J_{11.5}$ | $J_{7.5}$ | $J_{6.7}$ | $J_{5.6}$ | $J_{7.5}$ | 4.1 | $J_{6.0}$ | 3.1 | $J_{10.8}^{Y}$ | $J_{3.5}$ | $J_{5.6}$ | $J_{5.0}$ | $J_{3.8}$ | $J_{5.9}$ |
| 17 | $J_{5.0}$ | $J_{3.4}$ | $J_{6.0}$ | $J_{3.5}$ | $J_{2.3}$ | G | $J_{2.9}$ | 3.6 | 4.7 | 4.5 | 4.0 | $J_{5.7}$ | $J_{8.1}$ | 3.9 | 4.6 | 3.5 | 3.9 | 4.0 | 2.7 | $J_{5.0}$ | $J_{6.1}$ | $J_{6.1}$ | $J_{5.1}$ | $J_{8.3}$ |
| 18 | $J_{6.1}$ | $J_{6.3}$ | $J_{5.6}$ | $J_{3.6}$ | E | $J_{3.5}$ | $J_{4.5}$ | $J_{4.8}$ | $J_{10.1}$ | $J_{7.7}$ | $J_{12.3}^{Y}$ | $J_{10.9}$ | $J_{5.8}$ | 4.0 | 4.4 | 3.5 | G | $J_{5.0}$ | $J_{5.3}$ | $J_{5.0}$ | $J_{4.9}^{Y}$ | $J_{2.4}$ | $J_{2.5}$ | $J_{3.1}$ |
| 19 | $J_{4.1}$ | $J_{3.6}$ | $J_{2.9}$ | $J_{2.3}$ | $J_{2.6}$ | 2.2 | $J_{5.0}$ | $J_{6.0}$ | $J_{6.8}$ | $J_{7.2}$ | $J_{5.2}$ | $J_{4.9}$ | $J_{6.5}$ | 5.0 | 4.0 | 4.1 | 4.5 | $J_{4.0}$ | $J_{6.0}$ | $J_{2.9}$ | $J_{3.0}$ | $J_{2.4}$ | $J_{4.2}$ | 2.2 |
| 20 | $J_{1.8}$ | 2.0 | $J_{1.8}$ | 2.2 | $J_{2.6}$ | 3.0 | $J_{4.3}$ | $J_{3.7}$ | $J_{5.9}$ | $J_{8.3}$ | 3.9 | 3.9 | G | $J_{4.6}$ | $J_{8.5}$ | $J_{8.3}$ | $J_{6.0}$ | $J_{5.0}$ | $J_{3.0}$ | $J_{2.3}$ | 2.1 | $J_{2.0}$ | $J_{3.0}$ | $J_{5.4}$ |
| 21 | $J_{4.6}$ | $J_{3.8}$ | $J_{5.4}$ | $J_{4.0}$ | $J_{5.6}$ | $J_{3.5}$ | $J_{7.3}$ | $J_{6.0}$ | $J_{6.0}$ | $J_{7.4}$ | $J_{7.1}$ | $J_{6.4}$ | $J_{8.8}$ | $J_{5.1}$ | $J_{6.5}$ | 4.5 | $J_{3.3}$ | $J_{3.0}$ | $J_{3.5}$ | $J_{5.2}$ | $J_{6.1}$ | $J_{5.1}$ | $J_{2.8}$ | $J_{3.6}$ |
| 22 | 2.2 | E | 2.0 | 2.1 | E | 2.6 | $J_{4.2}$ | $J_{5.7}$ | $D_{20.0}^{D}$ | $J_{13.5}$ | $J_{14.4}^{Y}$ | $J_{11.0}$ | $J_{8.6}$ | $J_{7.9}$ | $J_{6.5}$ | $J_{6.0}$ | $J_{6.3}$ | $J_{3.9}$ | $J_{3.3}$ | $J_{2.6}$ | $J_{2.3}$ | $J_{2.3}$ | $J_{2.9}$ | $J_{3.0}$ |
| 23 | $J_{3.8}$ | $J_{2.6}$ | $J_{6.1}$ | $J_{4.9}$ | $J_{5.0}$ | $J_{6.4}$ | $J_{8.3}$ | $J_{5.9}$ | $J_{8.5}$ | $J_{8.3}$ | $J_{12.8}$ | $J_{11.9}$ | $J_{10.0}$ | $J_{9.9}$ | 8.3 | $J_{3.7}$ | $J_{5.8}$ | $J_{4.1}$ | $J_{2.5}$ | $J_{2.5}$ | $J_{8.4}$ | $J_{5.2}$ | $J_{3.8}$ | $J_{5.0}$ |
| 24 | $J_{6.1}$ | $J_{5.2}$ | $J_{2.9}$ | $J_{2.8}$ | $J_{2.7}$ | 3.1 | $J_{3.9}$ | $J_{5.8}$ | $J_{7.1}$ | $J_{6.7}$ | $J_{7.6}$ | $J_{11.0}$ | $J_{6.0}$ | $J_{4.4}$ | $J_{6.1}$ | $J_{5.2}$ | 3.8 | $J_{3.3}$ | $J_{2.6}$ | $J_{5.8}$ | $J_{6.5}$ | $J_{3.0}$ | $J_{4.1}$ | $J_{4.2}$ |
| 25 | $J_{6.0}$ | $J_{3.1}$ | $J_{4.0}$ | $J_{2.5}$ | $J_{2.3}$ | $J_{3.3}$ | $J_{3.8}$ | $J_{7.0}$ | $J_{11.0}^{Y}$ | 3.6 | 4.0 | $J_{5.1}$ | C | C | C | C | C | C | C | C | $J_{3.8}$ | $J_{3.8}$ | 2.3 | $J_{2.5}$ |
| 26 | $J_{2.8}$ | $J_{2.8}$ | $J_{3.0}$ | $J_{6.0}$ | $J_{4.6}$ | $J_{4.6}$ | $J_{4.0}$ | $J_{5.2}$ | $J_{7.3}$ | $J_{6.1}$ | $J_{12.3}$ | $J_{12.0}$ | $J_{13.9}$ | $J_{11.8}$ | $J_{6.2}$ | $J_{6.0}$ | $J_{5.3}$ | $J_{7.3}$ | $J_{9.9}$ | $J_{7.5}$ | $J_{6.8}$ | $J_{13.2}$ | $J_{10.9}$ | $J_{6.1}$ |
| 27 | $J_{3.0}$ | $J_{3.8}$ | $J_{3.8}$ | $J_{3.2}$ | $J_{3.3}$ | $J_{3.3}$ | $J_{8.3}$ | $J_{8.6}$ | $J_{5.3}$ | $J_{5.2}$ | $J_{7.5}$ | $J_{7.5}$ | $J_{6.4}$ | $J_{7.5}^{Y}$ | 3.6 | $J_{6.3}$ | $J_{4.3}$ | 3.3 | 2.3 | $J_{3.1}$ | $J_{6.0}$ | $J_{5.0}$ | $J_{2.9}$ | $J_{6.1}$ |
| 28 | $J_{4.8}$ | $J_{3.0}$ | $J_{2.6}$ | $J_{2.6}$ | $J_{5.3}$ | $J_{5.0}^{S}$ | $J_{4.9}$ | $J_{4.1}$ | $J_{3.6}$ | $J_{6.1}$ | $J_{5.3}$ | $J_{6.0}$ | $J_{5.0}$ | $J_{6.1}$ | $J_{7.4}$ | $J_{12.1}$ | $J_{5.4}$ | $J_{10.1}$ | $J_{13.5}$ | $J_{5.3}$ | $J_{2.9}$ | $J_{5.2}$ | $J_{3.0}^{S}$ | $J_{5.1}$ |
| 29 | $J_{2.9}$ | $J_{3.0}$ | $J_{3.0}$ | 2.3 | $J_{3.0}$ | $J_{3.0}$ | 3.6 | $J_{6.5}$ | $J_{8.0}$ | $J_{6.5}$ | $J_{6.9}$ | $J_{5.8}$ | 3.6 | 3.5 | 3.7 | $J_{3.4}$ | $J_{3.8}$ | $J_{2.9}$ | $J_{3.0}$ | $J_{2.5}$ | $J_{2.9}$ | 2.4 | $J_{2.9}$ | $J_{3.1}^{S}$ |
| 30 | $J_{4.1}$ | $J_{5.2}$ | $J_{5.6}^{Y}$ | $J_{2.9}^{S}$ | $J_{3.8}$ | 2.9 | $J_{6.0}$ | $J_{4.2}$ | $J_{4.9}$ | 3.7 | $J_{6.3}$ | $J_{5.3}$ | $J_{5.2}$ | $J_{8.5}^{Y}$ | 3.5 | $J_{4.3}$ | $J_{4.3}$ | $J_{5.3}$ | $J_{5.1}$ | $J_{5.0}$ | $J_{3.3}^{S}$ | $J_{3.0}^{S}$ | $J_{4.6}^{S}$ | $J_{6.0}^{S}$ |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 26 | 27 | 26 | 28 | 27 | 26 | 27 | 27 | 28 | 28 | 28 | 28 |
| Median | 4.1 | 3.2 | 3.7 | 2.9 | 2.8 | 3.2 | 4.7 | 5.8 | 7.3 | 7.0 | 6.7 | 7.4 | 6.0 | 5.9 | 5.4 | 4.7 | 5.1 | 5.2 | 5.3 | 5.2 | 5.4 | 4.4 | 3.8 | 5.0 |
| U.Q. | 5.2 | 5.0 | 5.1 | 3.8 | 3.6 | 3.8 | 5.4 | 7.0 | 7.8 | 8.0 | 10.0 | 11.0 | 8.1 | 7.5 | 7.1 | 6.2 | 6.3 | 7.8 | 7.6 | 6.0 | 6.2 | 5.2 | 5.0 | 6.0 |
| L.Q. | 2.9 | 2.6 | 2.8 | 2.4 | 2.3 | 2.6 | 3.8 | 5.1 | 6.0 | 5.7 | 5.1 | 5.9 | 5.1 | 4.5 | 4.0 | 4.1 | 4.3 | 3.9 | 3.1 | 2.9 | 3.3 | 3.0 | 2.9 | 3.4 |
| Q.R. | 2.3 | 2.4 | 2.3 | 1.4 | 1.3 | 1.2 | 1.6 | 1.9 | 1.8 | 2.3 | 4.9 | 5.1 | 3.0 | 3.0 | 3.1 | 2.1 | 2.0 | 3.9 | 4.5 | 3.1 | 2.9 | 2.2 | 2.1 | 2.6 |

foEs

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | $f_bE_s$ | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.7 | 1.8 | 1.8 | | 1.9 | 2.3 | A | 5.1 | 4.5 | 4.2 | 4.3 | A | A | A | 4.7 | A | 5.3 | A | A | 5.2 | 3.1 | 2.9 | $E_{3.9}^{RS}$ | 2.3 |
| 2 | 2.0 | 1.8 | A | A | A | A | A | A | A | A | A | A | $E_{4.1}^{RS}$ | $E_{4.0}^{RS}$ | $U_{3.7}^{R}$ | 3.5 | 4.4 | A | A | A | 3.3 | 2.8 | 1.8 | A |
| 3 | | 2.0 | 1.8 | 1.7 | 1.7 | 2.3 | A | A | A | A | A | A | A | A | A | 3.7 | A | A | A | A | 1.8 | 2.4 | 1.7 | 1.9 |
| 4 | 1.8 | 1.7 | 1.7 | 2.4 | | | 3.1 | 4.0 | A | A | A | A | A | A | A | 5.2 | 3.4 | 4.0 | 5.3 | A | A | 1.9 | $E_{3.8}^{RS}$ | A |
| 5 | A | A | A | 2.3 | 1.9 | 2.3 | 2.9 | A | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | A | $E_{4.6}^{R}$ | A | A | A | A | A | $E_{4.6}^{R}$ | $U_{3.3}^{R}$ | 2.2 | 5.3 | 5.1 | 4.1 | A | A |
| 7 | A | A | 2.3 | 1.8 | 3.0 | 3.0 | 3.4 | 5.3 | 5.2 | A | A | A | 5.6 | 5.4 | $U_{3.6}^{R}$ | 3.9 | 4.7 | A | A | A | A | A | 2.0 | $E_{3.3}^{R}$ |
| 8 | $E_{3.5}^{R}$ | A | A | 2.0 | 5.0 | $E_{4.2}^{R}$ | 4.8 | A | A | A | C | A | 4.7 | A | A | A | A | 2.8 | A | 2.6 | A | 5.3 | 5.1 | 3.7 |
| 9 | $E_{4.1}^{RS}$ | 3.5 | 1.9 | 2.1 | 1.8 | $E_{3.4}^{R}$ | A | A | A | A | A | A | $E_{5.1}^{R}$ | A | 5.2 | A | A | 3.6 | A | $U_{3.8}^{R}$ | 5.8 | 5.0 | 4.9 | A |
| 10 | 2.3 | 5.3 | 2.2 | 2.0 | 1.9 | | 5.1 | 5.4 | A | $U_{4.5}^{R}$ | A | C | A | 5.3 | C | $E_{4.2}^{R}$ | C | $E_{4.6}^{R}$ | $U_{5.0}^{R}$ | A$^{S}$ | 4.2 | 2.0 | A | 5.2 |
| 11 | 5.3 | A | $E_{5.1}^{R}$ | 2.2 | 2.6 | 3.9 | 3.5 | 4.4 | A | A | A | 4.0 | C | C | C | A | 5.5 | 5.4 | A | 4.0 | 5.2 | 1.7 | A | 1.7 |
| 12 | 1.8 | 1.7 | 4.0 | 3.0 | 2.4 | 1.8 | $U_{5.1}^{R}$ | 4.9 | A | A | A | A | 5.2 | 5.0 | $E_{4.2}^{R}$ | $U_{4.1}^{R}$ | A | A | 4.5 | 3.5 | 2.2 | 2.7 | A | A |
| 13 | A | A | 4.0 | 2.3 | 2.0 | 3.9 | 4.5 | 5.0 | A | A | A | A | C | $U_{4.5}^{R}$ | 3.6 | 3.7 | 3.9 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | A | 4.1 | A | $U_{5.2}^{R}$ | 3.6 | 5.0 | $E_{4.1}^{R}$ | $E_{6.0}^{R}$ | C | 2.8 | 2.5 | 3.0 | 3.5 | $E_{3.9}^{R}$ | $E_{4.6}^{R}$ |
| 15 | 2.9 | 2.9 | 2.7 | 2.0 | 2.5 | 2.5 | 3.4 | A | A | C | A | A | $E_{4.8}^{R}$ | A | 5.4 | $U_{5.0}^{R}$ | 3.7 | A | $E_{3.6}^{R}$ | 2.8 | 2.5 | A | 2.7 | 2.7 |
| 16 | 2.8 | 2.1 | 1.9 | 2.0 | 1.8 | $U_{3.8}^{R}$ | A | A | A | 5.2 | A | A | 5.0 | A | A | 3.6 | 5.2 | 3.0 | A | $E_{3.5}^{R}$ | 5.4 | 4.0 | $E_{3.8}^{R}$ | A |
| 17 | A | 1.9 | A | 2.4 | 2.0 | | 2.7 | 3.3 | 4.4 | 4.2 | 4.0 | 4.7 | A | $E_{3.9}^{R}$ | $E_{4.6}^{R}$ | $E_{3.5}^{R}$ | 3.8 | 3.4 | 2.5 | 4.4 | $U_{6.1}^{R}$ | $E_{6.1}^{R}$ | 4.7 | A |
| 18 | 4.2 | 4.3 | 4.5 | 2.5 | | 3.1 | A | 4.4 | A | A | A | A | 5.0 | 3.9 | $U_{4.4}^{R}$ | 3.5 | | 4.5 | 4.1 | 4.0 | 1.8 | 2.1 | 1.8 | 2.6 |
| 19 | 3.4 | 2.0 | 2.3 | 1.7 | 1.9 | 2.1 | A | 4.1 | A | A | A | 4.4 | A | 4.6 | 3.6 | 4.0 | 4.3 | 3.5 | 5.3 | 2.5 | 3.0 | 1.9 | 2.0 | 1.7 |
| 20 | 1.7 | E | 1.7 | 1.7 | 1.8 | 2.2 | $E_{4.3}^{R}$ | 3.3 | 5.2 | A | 3.8 | 3.7 | | 4.0 | A | 6.2 | 4.2 | 3.0 | 2.8 | $U_{2.3}^{R}$ | 1.9 | 1.8 | 2.4 | A |
| 21 | A | A | A | A | 2.3 | 3.4 | A | A | A | A | A | A | A | 4.4 | A | 4.3 | 3.3 | 2.7 | 3.5 | $E_{5.2}^{R}$ | 5.4 | 4.1 | 2.0 | 1.7 |
| 22 | 1.7 | | 1.7 | 1.7 | | 2.4 | 4.1 | 4.8 | 5.3 | A | A | A | A | A | A | 4.9 | 4.7 | 3.0 | $U_{3.3}^{R}$ | 2.0 | 1.8 | 1.7 | 2.5 | 2.7 |
| 23 | 2.8 | 1.8 | 2.1 | A | 1.7 | 4.0 | A | A | A | A | A | A | A | A | A | $E_{3.7}^{R}$ | 4.6 | 3.0 | 2.4 | 1.8 | 5.2 | 4.5 | 3.3 | 3.4 |
| 24 | 4.8 | 2.5 | 1.8 | 1.9 | 1.8 | 2.8 | 3.4 | 4.1 | 6.0 | 5.7 | 4.9 | A | A | 3.9 | | 4.4 | 3.2 | 2.8 | 2.4 | 5.3 | A | 1.8 | $E_{4.1}^{RS}$ | $E_{4.2}^{RS}$ |
| 25 | 2.8 | 1.9 | 2.0 | 1.7 | 1.8 | 2.8 | $U_{3.8}^{R}$ | 6.2 | 3.6 | $E_{3.6}^{R}$ | 3.4 | 4.9 | C | C | C | C | C | C | C | C | 2.9 | $E_{3.8}^{R}$ | 1.8 | 1.8 |
| 26 | 2.3 | 1.8 | 2.3 | 2.2 | 2.1 | 2.8 | A | A | A | $U_{6.1}^{R}$ | A | A | A | A | A | A | A | A | A | 5.4 | 1.8 | A | A | 2.5 |
| 27 | 2.9 | 2.4 | 2.6 | 2.1 | 2.3 | 3.1 | A | A | A | A | A | A | A | A | 3.5 | 3.5 | 3.0 | 2.7 | 2.2 | 2.1 | 1.9 | A | A | A |
| 28 | A | 3.7 | 1.7 | 1.9 | 2.9 | 2.7 | A | A | 3.6 | 4.0 | A | A | A | A | A | 4.5 | 4.5 | A | A | 3.5 | 2.3 | A | A | A |
| 29 | 1.8 | 2.0 | 2.0 | 1.7 | 2.1 | 2.4 | A | A | A | 4.3 | A | 4.0 | R | $U_{3.5}^{R}$ | 3.6 | 3.4 | 3.0 | 2.7 | 2.4 | 1.8 | 2.3 | 1.7 | A | A |
| 30 | A | A | 2.3 | 1.8 | 1.8 | 2.5 | 3.0 | 4.0 | A | 3.7 | A | A | 4.5 | 5.0 | 3.5 | 4.3 | 4.1 | A | $U_{5.1}^{R}$ | $U_{5.0}^{R}$ | 3.3 | 1.7 | A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bE_s$

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.65 | 1.65 | 1.75 | 1.70 | 1.65 | 1.70 | 1.65 | 1.70 | 1.75 | 1.80 | 1.80 | 2.15 | 2.55 | 1.80 | 1.90 | 1.80 | 1.80 | 1.90 | 1.80 | 1.80 | 1.70 | 1.70 | 1.65 | 1.75 |
| 2 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.75 | 1.80 | 1.75 | 2.00 | 2.00 | 2.20 | 2.25 | 2.05 | 2.50 | 2.05 | 2.05 | 1.80 | 1.70 | 1.75 | 1.80 | 1.75 | 1.70 | 1.80 | 1.70 |
| 3 | 1.70 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.80 | 2.10 | 2.20 | $E_{2.45}^{C}$ | $E_{2.55}^{C}$ | $E_{3.50}^{C}$ | 2.00 | 2.45 | 2.15 | 1.85 | 2.00 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.70 | 1.70 |
| 4 | 1.80 | 1.65 | 1.70 | 1.80 | 1.75 | 1.75 | 1.70 | 1.75 | 1.85 | 1.90 | 2.50 | 2.10 | 2.05 | 2.50 | 1.90 | 2.05 | 1.75 | 1.75 | 1.80 | 1.90 | 1.70 | 1.70 | 1.70 | 1.70 |
| 5 | 1.75 | 1.70 | 1.70 | 1.70 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | 1.95 | 2.55 | 2.10 | 2.10 | 2.20 | 2.75 | 1.75 | 1.80 | 1.70 | 1.75 | 1.70 | 1.75 | 1.70 | 1.75 | 1.80 |
| 7 | 1.75 | 1.65 | 1.70 | 1.70 | 1.70 | 1.80 | 1.80 | 1.80 | 1.80 | 2.60 | 2.70 | 2.15 | 2.20 | 2.55 | 1.80 | 1.75 | 1.75 | 1.70 | 1.70 | 1.65 | 1.70 | 1.70 | 1.70 | 1.70 |
| 8 | 1.70 | E | E | E | 1.65 | 1.75 | 1.65 | 1.70 | 1.75 | 3.50 | $I_{2.20}^{C}$ | 2.95 | 2.20 | 1.75 | 2.20 | 1.95 | 2.00 | 1.80 | 1.75 | 1.75 | 1.75 | 1.70 | 1.75 | 1.75 |
| 9 | 1.70 | 1.70 | 1.75 | 1.70 | 1.80 | 1.75 | 1.65 | 1.85 | 1.85 | 2.10 | 2.60 | 3.05 | 3.50 | 2.60 | 2.20 | 1.85 | 1.80 | 1.80 | 1.85 | 1.80 | 1.80 | 1.75 | 1.75 | 1.70 |
| 10 | 1.75 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.75 | 1.80 | 2.00 | 2.00 | 2.00 | $I_{2.15}^{C}$ | 2.55 | 2.10 | $I_{2.60}^{C}$ | 2.60 | $I_{2.20}^{C}$ | 1.75 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 |
| 11 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 | 1.80 | 1.85 | 1.90 | 1.75 | C | C | C | 1.85 | 1.75 | 1.70 | 1.65 | 1.70 | 1.70 | 1.65 | 1.70 | 1.70 |
| 12 | 1.65 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.75 | 1.80 | 1.75 | 1.80 | 2.05 | 3.50 | 3.65 | 3.50 | 2.00 | 1.95 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 |
| 13 | 1.70 | 1.75 | 1.75 | 1.70 | 1.70 | 1.70 | 1.75 | 1.75 | 1.80 | 1.80 | 1.80 | 1.90 | $I_{3.15}^{C}$ | 1.95 | 2.10 | 1.90 | 1.70 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | 1.75 | 1.95 | 2.05 | 2.45 | 2.40 | 2.25 | 2.05 | 1.95 | $I_{1.80}^{C}$ | 1.95 | 1.80 | 1.80 | 1.75 | 1.75 | 1.75 |
| 15 | 1.75 | 1.75 | 1.75 | 1.70 | 1.80 | 1.75 | 1.70 | 1.70 | 2.10 | $I_{2.00}^{C}$ | 2.25 | 2.50 | 2.90 | 2.95 | 2.50 | 2.05 | 1.80 | 1.80 | 1.90 | 1.80 | 1.80 | 1.70 | 1.70 | 1.70 |
| 16 | 1.75 | 1.70 | 1.70 | 1.75 | 1.80 | 1.75 | 1.70 | 1.80 | 1.80 | 2.00 | 2.70 | 2.90 | 2.50 | 2.05 | 1.90 | 1.80 | 1.75 | 1.70 | 1.80 | 1.70 | 1.75 | 1.75 | 1.80 | 1.80 |
| 17 | 1.70 | 1.75 | 1.70 | 1.70 | 1.80 | 1.85 | 1.75 | 1.75 | 1.80 | 1.80 | 2.00 | 2.15 | 2.55 | 2.55 | 2.55 | 1.90 | 1.75 | 1.75 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 |
| 18 | 1.75 | 1.65 | 1.70 | 1.65 | 1.70 | 1.70 | 1.75 | 1.75 | 1.80 | 1.85 | 1.80 | 1.80 | 1.80 | 1.95 | 1.90 | 1.75 | 1.75 | 1.70 | 1.80 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| 19 | 1.70 | 1.70 | 1.65 | 1.70 | 1.65 | 1.70 | 1.70 | 1.75 | 1.75 | 1.75 | 1.75 | 1.85 | 2.20 | 2.20 | 1.75 | 1.75 | 1.75 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.70 |
| 20 | 1.70 | E | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.80 | 1.75 | 1.75 | 1.85 | 1.80 | 1.90 | 1.95 | 1.80 | 1.75 | 1.75 | 1.70 | 1.75 | 1.80 | 1.70 | 1.75 | 1.70 | 1.70 |
| 21 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.80 | 1.85 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| 22 | 1.65 | 1.65 | 1.65 | 1.70 | 1.70 | 1.70 | 1.70 | 1.80 | 1.75 | 1.75 | 1.85 | 2.20 | 2.05 | 1.80 | 1.85 | 1.75 | 1.70 | 1.75 | 1.80 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| 23 | 1.70 | 1.65 | 1.70 | E | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.80 | 1.80 | 1.80 | 1.85 | 1.80 | 1.75 | 1.70 | 1.75 | 1.75 | 1.75 | 1.70 | 1.70 | 1.75 | 1.75 |
| 24 | 1.75 | 1.70 | 1.65 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.75 | 1.80 | 2.10 | 1.80 | 1.75 | 1.75 | 1.75 | 1.75 | 1.80 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| 25 | 1.70 | 1.70 | E | E | 1.70 | 1.65 | 1.65 | 1.80 | 1.70 | 1.75 | 1.85 | 2.00 | C | C | C | C | C | C | C | C | 1.70 | 1.70 | 1.75 | 1.70 |
| 26 | 1.75 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 | 1.90 | 1.75 | 1.80 | 1.80 | 1.80 | 1.80 | 1.85 | 1.75 | 1.75 | 1.80 | 1.70 | 1.75 | 1.75 | 1.75 | 1.70 |
| 27 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.75 | 1.75 | 1.80 | 1.80 | 1.85 | 1.75 | 2.00 | 1.90 | 1.80 | 1.70 | 1.70 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.65 |
| 28 | 1.80 | 1.75 | 1.65 | 1.65 | 1.75 | 1.65 | 1.70 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.85 | 1.80 | 1.75 | 1.65 | 1.70 | 1.75 | 1.65 | 1.65 | 1.75 | 1.70 |
| 29 | 1.70 | E | 1.65 | 1.70 | 1.70 | 1.65 | 1.75 | 1.75 | 1.75 | 1.80 | 1.80 | 1.80 | 1.80 | 2.15 | 2.00 | 1.80 | 1.80 | 1.70 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| 30 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.65 | 1.70 | 1.70 | 1.75 | 1.75 | 1.75 | 2.15 | 1.75 | 2.10 | 1.80 | 1.80 | 1.75 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 | 1.70 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 27 | 27 | 27 | 28 | 28 | 27 | 27 | 27 | 28 | 28 | 28 | 28 |
| Median | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.80 | 1.80 | 1.90 | 2.10 | 2.05 | 2.10 | 1.90 | 1.80 | 1.75 | 1.70 | 1.75 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

f-min

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 6

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $F^{S}$ | $F^{S}$ | $R^{F}$ | 3.00$^{Z}$ | 3.30$^{F}$ | 3.20 | $I_{3.00}{}^{A}$ | 2.90 | 3.05$^{S}$ | 3.50 | 3.10 | A | A | A | 2.80 | $I_{2.90}{}^{A}$ | 3.20 | $I_{3.30}{}^{A}$ | $I_{3.05}{}^{A}$ | 2.95$^{S}$ | 2.80$^{S}$ | $R^{S}$ | $R^{S}$ | $R^{S}$ |
| 2 | $R^{F}$ | R | A | A | A | A | A | A | A | A | A | A | $R^{S}$ | $R^{S}$ | $R^{S}$ | 2.85 | 2.95$^{R}$ | $I_{3.10}{}^{A}$ | $I_{3.05}{}^{A}$ | $I_{2.95}{}^{A}$ | $I_{3.05}{}^{RS}$ | $I_{3.25}{}^{RS}$ | $R^{S}$ | A |
| 3 | 2.75 | 2.75 | 2.90 | 2.80 | 3.15$^{H}$ | 2.70 | $I_{3.10}{}^{A}$ | A | A | A | A | A | A | A | A | 2.90 | A | A | A | $I_{2.95}{}^{A}$ | $I_{3.10}{}^{RS}$ | $I_{3.05}{}^{RS}$ | 2.95 | $I_{2.95}{}^{RS}$ |
| 4 | 3.00$^{S}$ | 2.90 | 2.90 | 2.90$^{S}$ | 3.00 | $J_{3.40}{}^{R}$ | 3.40 | 3.40 | $I_{3.25}{}^{A}$ | A | A | A | A | $I_{2.80}{}^{A}$ | $I_{2.80}{}^{A}$ | 2.95 | 3.00 | 3.10 | 2.90 | A | A | $R^{S}$ | $R^{S}$ | A |
| 5 | A | A | A | R | 3.00 | $I_{2.95}{}^{R}$ | 3.00 | A | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | A | $I_{3.25}{}^{R}$ | A | A | A | A | A | $J_{2.85}{}^{R}$ | 2.90 | $2.95^{RS}$ | $R^{S}$ | R | $R^{S}$ | A | A |
| 7 | A | A | R | $R^{F}$ | 2.95 | $I_{3.00}{}^{R}$ | 2.70 | 2.90 | 3.20 | A | A | A | 2.40 | $I_{2.85}{}^{R}$ | $I_{3.00}{}^{R}$ | 3.20 | 3.00 | A | A | A | A | A | $3.00^{R}$ | R |
| 8 | R | A | A | R | $R^{S}$ | $I_{3.50}{}^{R}$ | 3.50 | A | A | A | C | A | R | A | A | A | $I_{3.05}{}^{A}$ | 3.10 | A | R | A | R | R | R |
| 9 | R | R | R | $2.90^{R}$ | 3.00 | $I_{3.40}{}^{R}$ | $I_{3.20}{}^{A}$ | A | A | A | A | A | A | A | 2.70 | A | A | 2.80 | A | R | R | R | R | A |
| 10 | R | R | R | $2.90^{R}$ | $I_{3.25}{}^{R}$ | $J_{3.35}{}^{R}$ | $I_{3.35}{}^{R}$ | 3.10 | A | R | A | C | $I_{3.15}{}^{A}$ | 3.05 | C | R | C | 3.00 | 3.00 | $A^{S}$ | R | R | A | R |
| 11 | R | A | R | R | $I_{3.10}{}^{R}$ | 3.10 | 3.20 | 3.30 | A | A | A | 2.90 | C | C | C | A | 2.85 | 3.05 | $I_{3.10}{}^{A}$ | $3.15^{R}$ | 3.05 | $2.85^{S}$ | A | $F^{S}$ |
| 12 | 2.90 | 3.05 | $F^{S}$ | $F^{S}$ | 3.35 | $3.00^{F}$ | $I_{2.90}{}^{A}$ | 3.00 | A | A | A | A | 3.15 | 2.75 | 2.80 | 2.90 | $I_{3.05}{}^{A}$ | $I_{3.00}{}^{A}$ | 2.85 | 3.05 | $2.90^{S}$ | $R^{S}$ | A | A |
| 13 | A | A | $I_{3.10}{}^{R}S$ | $I_{3.25}{}^{R}$ | $I_{3.10}{}^{R}$ | 3.00 | $2.85^{R}$ | 3.20 | A | A | A | A | C | 2.90 | 3.10 | 3.15 | 3.15 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | A | 3.20 | $I_{2.95}{}^{A}$ | $U_{2.80}{}^{R}$ | $2.80^{R}$ | $2.85^{R}$ | 3.10 | $I_{3.20}{}^{R}$ | $I_{3.15}{}^{C}$ | $I_{3.10}{}^{R}$ | $3.15^{R}$ | $I_{3.00}{}^{R}$ | $I_{2.65}{}^{R}$ | R | R |
| 15 | 3.00 | $I_{2.90}{}^{R}$ | $I_{2.85}{}^{R}$ | R | R | 3.40 | 3.25 | A | A | C | A | $I_{3.05}{}^{A}$ | R | A | 3.05 | 2.90 | 2.90 | $I_{3.00}{}^{A}$ | $I_{3.10}{}^{R}$ | 3.20 | 2.95 | A | R | R |
| 16 | R | R | 3.10 | 3.10 | $I_{3.00}{}^{R}$ | 3.15 | A | A | A | $2.80^{R}$ | A | A | 3.00 | $I_{3.00}{}^{A}$ | $I_{2.80}{}^{A}$ | 2.75 | 3.10 | 3.10 | $I_{2.90}{}^{A}$ | $I_{3.00}{}^{R}$ | $U_{3.20}{}^{R}$ | 3.10 | $2.85^{R}$ | A |
| 17 | A | R | A | $3.00^{R}$ | 3.00 | 3.05 | $2.85^{R}$ | $3.15^{R}$ | $I_{3.30}{}^{R}H$ | $I_{3.20}{}^{R}H$ | $J_{3.10}{}^{R}$ | $I_{2.95}{}^{R}$ | $I_{2.80}{}^{A}$ | $I_{2.90}{}^{R}$ | $I_{3.10}{}^{R}$ | $I_{3.10}{}^{R}$ | 2.85 | $2.75^{F}$ | $2.85^{H}$ | $I_{3.00}{}^{RS}$ | $3.15^{S}$ | $I_{3.00}{}^{RS}$ | $R^{S}$ | A |
| 18 | $F^{S}$ | $F^{S}$ | R | F | 2.80 | 2.70 | $I_{2.90}{}^{A}$ | $2.60^{F}$ | A | A | A | A | 2.80 | 2.90 | 3.05 | 2.95 | 3.00 | 3.05 | 3.25 | 3.15 | $I_{3.00}{}^{RS}H$ | $2.85^{RF}$ | 2.90 | $2.75^{R}$ |
| 19 | $R^{S}$ | $R^{F}$ | $R^{S}$ | R | 3.20 | 3.40 | $I_{3.20}{}^{A}$ | 3.10 | A | A | A | 2.85 | $I_{2.80}{}^{A}$ | 2.35 | 3.05 | 2.80 | 2.95 | 3.00 | 3.00 | $I_{3.15}{}^{R}$ | $I_{3.10}{}^{RS}$ | $2.65^{S}$ | $R^{S}$ | $F^{S}$ |
| 20 | $R^{S}$ | F | $R^{F}$ | R | F | 3.50 | $I_{3.10}{}^{R}S$ | 2.75 | 3.40 | $I_{2.80}{}^{A}$ | $3.00^{H}$ | $2.95^{R}$ | 2.40 | $2.45^{R}$ | $I_{2.75}{}^{A}$ | $U_{3.10}{}^{R}$ | 3.25 | 3.05 | 3.05 | $U_{3.05}{}^{R}$ | 3.05 | $2.85^{R}$ | R | A |
| 21 | A | A | A | $I_{2.85}{}^{A}$ | 2.90 | 3.15 | A | A | A | A | A | A | A | 2.45 | $I_{2.70}{}^{A}$ | $2.80^{R}$ | 2.95 | 2.80 | 2.90 | 3.05 | 3.10 | 2.95 | 3.00 | $R^{F}$ |
| 22 | $R^{F}$ | $R^{F}$ | $I_{3.05}{}^{F}S$ | $I_{3.30}{}^{R}$ | 3.00 | 3.20 | $3.15^{H}$ | 3.20 | $I_{3.50}{}^{R}$ | A | A | A | A | A | A | $2.85^{H}$ | 2.95 | 3.20 | 2.75 | 3.05 | $I_{3.20}{}^{R}$ | 3.20 | $R^{F}$ | $R^{S}$ |
| 23 | $R^{S}$ | $R^{F}$ | $R^{F}$ | A | F | 3.15 | A | A | A | A | A | A | A | A | $I_{2.90}{}^{A}$ | 3.00 | 3.10 | 3.20 | 2.90 | 3.20 | $R^{S}$ | $F^{S}$ | $F^{S}$ | $R^{S}$ |
| 24 | $R^{S}$ | $R^{F}$ | F | $R^{F}$ | 3.20 | 2.95 | $I_{3.25}{}^{R}H$ | 3.20 | 3.20 | 3.30 | 3.35 | $I_{3.30}{}^{A}$ | $I_{2.95}{}^{A}$ | 2.70 | 3.00 | 3.00 | $3.15^{H}$ | 3.30 | 3.15 | 3.10 | A | $R^{S}$ | $R^{S}$ | $R^{S}$ |
| 25 | $R^{S}$ | $R^{F}$ | $F^{S}$ | $3.00^{F}$ | $I_{2.80}{}^{R}S$ | 2.50 | 3.10 | 3.40 | 3.50 | $3.40^{R}$ | $3.00^{R}$ | 2.90 | C | C | C | C | C | C | C | C | $3.10^{S}$ | $3.10^{R}$ | 2.90 | $J_{2.90}{}^{R}$ |
| 26 | $I_{3.15}{}^{R}$ | $2.95^{R}$ | 2.80 | 2.90 | $U_{3.20}{}^{R}$ | 3.25 | A | A | A | 3.25 | $I_{3.20}{}^{A}$ | A | A | A | A | A | $I_{2.80}{}^{A}$ | A | A | $3.25^{S}$ | R | A | A | $R^{S}$ |
| 27 | 2.90 | $R^{S}$ | $R^{S}$ | $3.10^{S}$ | $I_{3.00}{}^{R}S$ | 2.95 | A | A | A | A | A | A | A | A | R | 2.95 | 2.75 | 3.30 | 2.95 | $3.25^{R}$ | $U_{3.50}{}^{R}$ | A | R | A |
| 28 | A | $U_{2.90}{}^{R}$ | $I_{3.25}{}^{R}S$ | $I_{3.10}{}^{R}$ | $U_{3.30}{}^{R}$ | $R^{S}$ | A | R | $3.20^{R}$ | $U_{3.30}{}^{R}$ | A | A | A | A | A | $2.80^{R}$ | 2.85 | $I_{3.05}{}^{A}$ | $I_{3.20}{}^{A}$ | 3.15 | 3.00 | A | $R^{S}$ | A |
| 29 | $2.85^{R}$ | $U_{3.00}{}^{R}$ | $I_{2.90}{}^{R}S$ | $I_{3.05}{}^{R}$ | $3.00^{F}$ | 2.85 | R | A | A | 3.00 | $I_{3.00}{}^{A}$ | $I_{2.90}{}^{A}$ | $I_{2.80}{}^{R}$ | 3.00 | 2.85 | 3.00 | 2.80 | 3.00 | 3.20 | 3.35 | $I_{3.00}{}^{R}$ | $2.95^{RS}$ | $R^{S}$ | $R^{S}$ |
| 30 | $I_{2.90}{}^{A}$ | $I_{2.90}{}^{A}$ | $3.00^{R}S$ | $2.90^{F}$ | 3.10 | $I_{3.10}{}^{R}S$ | $I_{3.25}{}^{R}S$ | 3.45 | $I_{3.05}{}^{A}$ | $I_{2.75}{}^{R}$ | $I_{3.00}{}^{A}$ | $I_{3.00}{}^{A}$ | 2.90 | 2.70 | 3.05 | 3.20 | $3.00^{R}$ | $I_{2.90}{}^{A}$ | 3.00 | $I_{3.25}{}^{RS}$ | $3.35^{R}$ | $J_{3.05}{}^{R}$ | A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 8 | 8 | 10 | 16 | 23 | 26 | 20 | 15 | 10 | 10 | 10 | 10 | 12 | 15 | 18 | 22 | 25 | 24 | 22 | 21 | 19 | 14 | 6 | 3 |
| Median | 2.90 | $U_{2.90}$ | $U_{2.95}$ | 3.00 | 3.00 | 3.10 | $U_{3.10}$ | 3.15 | 3.20 | 3.20 | 3.10 | $U_{2.95}$ | $U_{2.80}$ | 2.80 | 2.90 | 2.95 | 3.00 | 3.05 | 3.00 | 3.15 | 3.05 | 3.00 | 2.90 | 2.90 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | A | A | A | A | A | $A_S$ | $A_S$ | A | A | A | A | A | | | | | |
| 2 | | | | | | | | A | A | A | A | A | R | R | $R^S$ | 3.65 | A | A | A | | | | | |
| 3 | | | | | | 3.20 | A | A | A | A | A | A | A | A | A | 3.50 | A | A | A | | | | | |
| 4 | | | | | | L | $3.60^L$ | L | A | A | A | A | A | A | A | A | R | A | A | | | | | |
| 5 | | | | | | | A | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 6 | | | | | | C | C | C | C | A | A | A | A | A | A | A | A | 3.75 | 3.55 | | | | | |
| 7 | | | | | | L | 3.50 | A | A | A | A | A | A | A | 3.70 | 3.50 | $I_{3.45}^A$ | A | A | | | | | |
| 8 | | | | | | | A | A | A | A | C | A | A | A | A | A | A | 3.60 | A | | | | | |
| 9 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | 3.40 | A | | | | | |
| 10 | | | | | | | A | A | A | A | A | C | A | A | C | A | C | A | A | | | | | |
| 11 | | | | | | | L | A | A | A | A | 3.85 | C | C | C | A | A | A | A | | | | | |
| 12 | | | | | | | A | A | A | A | A | A | A | A | A | R | A | A | A | | | | | |
| 13 | | | | | | | A | A | A | A | A | A | C | A | 3.95 | 3.70 | A | C | C | | | | | |
| 14 | | | | | | | C | C | C | A | $A^H$ | A | A | 4.10 | $I_{3.75}^A$ | $I_{3.45}^R$ | A | C | R | | | | | |
| 15 | | | | | | | L | A | A | C | A | A | A | A | A | A | R | A | R | | | | | |
| 16 | | | | | | A | A | A | A | A | A | A | A | A | A | R | $I_{3.60}^A$ | 3.50 | A | | | | | |
| 17 | | | | | | L | $I_{3.60}^L$ | $I_{3.55}^L$ | $I_{3.70}^A$ | 3.85 | R | A | A | R | A | $I_{3.50}^R$ | $I_{3.60}^L$ | 3.50 | L | | | | | |
| 18 | | | | | L | A | A | A | A | A | A | A | A | 3.80 | $I_{3.60}^A$ | 3.50 | 3.45 | A | A | | | | | |
| 19 | | | | | | | A | A | A | A | A | $I_{3.75}^A$ | $I_{3.70}^A$ | $I_{3.70}^A$ | $3.55^{RH}$ | $I_{3.55}^A$ | $I_{3.40}^A$ | 3.70 | A | | | | | |
| 20 | | | | | | L | A | 3.75 | $I_{3.75}^A$ | $I_{3.90}^A$ | 4.00 | $I_{3.90}^L$ | 3.80 | 3.55 | A | A | A | L | L | | | | | |
| 21 | | | | | | A | A | A | A | A | A | A | A | A | A | $I_{3.65}^A$ | $I_{3.60}^R$ | 3.60 | A | | | | | |
| 22 | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | 3.50 | L | | | | | |
| 23 | | | | | | | A | A | A | A | A | A | A | A | A | A | $I_{3.75}^A$ | 3.70 | L | | | | | |
| 24 | | | | | | | L | A | A | A | A | A | $I_{4.10}^A$ | $4.25^R$ | A | A | 3.60 | $I_{3.80}^L$ | L | | | | | |
| 25 | | | | | | $I_{3.25}^A$ | A | A | 3.85 | 3.45 | $3.85^R$ | A | C | C | C | C | C | C | C | | | | | |
| 26 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | R | $I_{3.60}^R$ | $U_{3.60}^R$ | 3.70 | $3.50^L$ | | | | | |
| 28 | | | | | | | A | A | $I_{3.80}^R$ | $3.45^R$ | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | L | A | A | A | A | A | R | R | $3.50^R$ | $I_{3.70}^R$ | $3.60^R$ | $3.50^R$ | $3.70^R$ | $3.70^L$ | | | | | |
| 30 | | | | | | L | $3.60^R$ | $I_{3.75}^A$ | $I_{3.70}^A$ | $I_{3.80}^R$ | $I_{3.80}^A$ | A | A | A | R | $I_{3.60}^A$ | $I_{3.60}^A$ | $I_{3.40}^A$ | $I_{3.35}^A$ | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | 2 | 4 | 3 | 5 | 5 | 3 | 3 | 3 | 6 | 6 | 12 | 11 | 13 | 4 | | | | | |
| Median | | | | | | $U_{3.20}$ | 3.60 | $U_{3.75}$ | $U_{3.75}$ | 3.80 | 3.85 | $U_{3.85}$ | $U_{3.80}$ | 3.75 | $U_{3.70}$ | $U_{3.60}$ | $U_{3.60}$ | 3.60 | 3.50 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

M(3000)F1 | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 8

# IONOSPHERIC DATA

Jun. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | $I_{340}^{A}$ | 300 | 280 | 355 | A | A | A | 405 | $I_{380}^{A}$ | 295 | $I_{290}^{A}$ | A | | | | | |
| 2 | | | | | | | | A | A | A | A | A | $R^{S}$ | $R^{S}$ | $R^{S}$ | 400 | 355 | $I_{325}^{A}$ | A | | | | | |
| 3 | | | | | | 420 | A | A ~ | A | A | A | A | A | A | A | 395 | A | A | A | | | | | |
| 4 | | | | | | $260^{L}$ | 280 | 280 | $I_{325}^{A}$ | A | A | A | A | A | A | $I_{375}^{A}$ | 345 | 300 | $345^{A}$ | | | | | |
| 5 | | | | | | | $290^{L}$ | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 6 | | | | | | C | C | C | C | A | R | A | A | A | A | A | $I_{380}^{A}$ | 350 | 305 | | | | | |
| 7 | | | | | | 355 | 370 | $I_{310}^{A}$ | 275 | A | A | A | A | 345 | 340 | 295 | 330 | A | A | | | | | |
| 8 | | | | | | | 270 | A | A | A | C | A | 330 | A | A | A | $I_{330}^{A}$ | 325 | A | | | | | |
| 9 | | | | | | | A | A | A | A | A | A | A | A | 420 | A | A | 280 | $I_{315}^{A}$ | | | | | |
| 10 | | | | | | | $I_{270}^{A}$ | A | A | 275 | A | C | A | A | C | R | C | 320 | $305^{A}$ | | | | | |
| 11 | | | | | | | 300 | 295 | A | A | A | 395 | C | C | C | A | A | 305 | A | | | | | |
| 12 | | | | | | | $I_{325}^{A}$ | 335 | A | A | A | A | 345 | $I_{375}^{A}$ | 405 | 355 | $I_{330}^{A}$ | $I_{325}^{A}$ | $I_{320}^{A}$ | | | | | |
| 13 | | | | | | | 375 | 305 | A | A | A | A | C | 395 | 340 | 320 | 305 | C | C | | | | | |
| 14 | | | | | | | C | C | C | A | 325 | $I_{350}^{A}$ | 405 | 390 | 335 | 295 | $I_{310}^{A}$ | $I_{300}^{C}$ | $I_{295}^{R}$ | | | | | |
| 15 | | | | | | | 290 | A | A | C | A | A | A | A | A | 375 | 355 | $I_{325}^{A}$ | $I_{300}^{R}$ | | | | | |
| 16 | | | | | | A | A | A | A | A | A | A | 385 | $I_{385}^{A}$ | $I_{430}^{A}$ | 400 | $I_{345}^{A}$ | 330 | $I_{270}^{A}$ | | | | | |
| 17 | | | | | | 330 | 290 | 255 | 295 | 360 | $I_{360}^{R}$ | 350 | $I_{385}^{A}$ | 345 | 320 | 320 | 395 | 400 | 295 | | | | | |
| 18 | | | | | 345 | 400 | $I_{450}^{A}$ | A | A | A | A | A | 395 | 390 | 345 | 370 | 345 | 325 | 295 | | | | | |
| 19 | | | | | | | A | 345 | A | A | A | 400 | $I_{395}^{A}$ | $I_{440}^{A}$ | 345 | 395 | 375 | 345 | $I_{295}^{A}$ | | | | | |
| 20 | | | | | | 245 | $I_{295}^{A}$ | 445 | 295 | $I_{460}^{A}$ | 395 | $I_{470}^{L}$ | 565 | 505 | $I_{400}^{A}$ | $I_{315}^{A}$ | 295 | 320 | 300 | | | | | |
| 21 | | | | | | 290 | A | A | A | A | A | A | A | 540 | $I_{440}^{A}$ | 430 | 370 | 395 | 330 | | | | | |
| 22 | | | | | | 260 | 310 | 295 | $305^{A}$ | A | A | A | A | A | A | 355 | 345 | 295 | 390 | | | | | |
| 23 | | | | | | | A | A | A | A | A | A | A | A | $I_{390}^{A}$ | 340 | 305 | 300 | 305 | | | | | |
| 24 | | | | | | | $395^{L}$ | 305 | $I_{300}^{A}$ | $295^{A}$ | 295 | $I_{310}^{A}$ | $I_{405}^{A}$ | 450 | 350 | 340 | 290 | 290 | 285 | | | | | |
| 25 | | | | | | 445 | 300 | $I_{295}^{A}$ | 255 | 280 | 360 | 370 | C | C | C | C | C | C | C | | | | | |
| 26 | | | | | | | A | A | A | $I_{315}^{A}$ | $I_{320}^{A}$ | A | A | A | A | A | $I_{410}^{A}$ | A | A | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | R | 370 | 385 | 280 | 315 | | | | | |
| 28 | | | | | | | A | A | 280 | 315 | A | A | A | A | A | $405^{A}$ | 375 | $I_{335}^{A}$ | $I_{305}^{A}$ | | | | | |
| 29 | | | | | | $420^{L}$ | R | A | A | 370 | $I_{375}^{A}$ | $I_{405}^{A}$ | $I_{420}^{R}$ | 315 | 400 | 360 | 420 | 335 | $285^{R}$ | | | | | |
| 30 | | | | | | 300 | $375^{R}$ | 280 | $I_{370}^{A}$ | $I_{435}^{R}$ | $I_{365}^{A}$ | $I_{375}^{A}$ | 370 | $I_{400}^{A}$ | 330 | 310 | 365 | $I_{370}^{A}$ | $I_{325}^{A}$ | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | 1 | 11 | 16 | 13 | 10 | 10 | 9 | 9 | 11 | 13 | 16 | 22 | 24 | 24 | 20 | | | | | |
| Median | | | | | 345 | 330 | 300 | 305 | 300 | 315 | 360 | $^{U}375$ | 395 | 390 | 370 | 365 | 345 | 325 | 305 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'F2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N / Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 295 | 295 | 255 | 285 | 245 | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| 2 | 255 | 210 | A | A | A | A | A | A | A | A | A | A | A | A | A | 235 | A | A | A | A | A | 240 | 245 | $I_{295}^{A}$ |
| 3 | 295 | 340 | 295 | 290 | 290 | 260 | A | A | A | A | A | A | A | A | A | $265^{A}$ | A | A | A | $I_{260}^{A}$ | 240 | 260 | 245 | 305 |
| 4 | 280 | 295 | 290 | $I_{285}^{A}$ | 295 | 240 | $235^{A}$ | A | A | A | A | A | A | A | A | A | 255 | A | A | A | A | 245 | A | A |
| 5 | A | A | A | A | 295 | 235 | 240 | A | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | A | A | A | A | A | A | A | A | 240 | 230 | 290 | 250 | $235^{A}$ | $I_{245}^{A}$ | A |
| 7 | A | A | $320^{A}$ | 295 | $I_{300}^{A}$ | $I_{260}^{A}$ | $255^{A}$ | A | A | A | A | A | A | A | 235 | A | A | A | A | A | A | A | 245 | A |
| 8 | A | A | A | A | A | A | A | A | A | A | C | A | A | A | A | A | $I_{235}^{A}$ | 245 | $I_{250}^{A}$ | 250 | A | A | A | A |
| 9 | A | $I_{295}^{A}$ | 260 | $290^{A}$ | 290 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | $270^{A}$ | A | A | A | A |
| 10 | A | A | A | 295 | 245 | 245 | A | A | A | A | A | C | A | A | C | A | C | A | A | $A^{S}$ | A | 255 | A | A |
| 11 | A | A | A | 275 | 255 | $I_{255}^{A}$ | A | A | A | A | A | 225 | C | C | C | A | A | A | A | 255 | $I_{250}^{A}$ | 255 | $I_{290}^{A}$ | 240 |
| 12 | 255 | 255 | $I_{290}^{A}$ | $290^{A}$ | 230 | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A | 280 | $265^{A}$ | 295 | A | A |
| 13 | A | A | A | 285 | 255 | $I_{230}^{A}$ | A | A | A | A | A | A | C | A | 235 | 240 | A | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | A | $A^{H}$ | A | A | 205 | $I_{220}^{A}$ | $I_{240}^{A}$ | $I_{245}^{A}$ | C | A | 250 | A | A | A | A |
| 15 | A | 260 | $I_{290}^{A}$ | 295 | 260 | 245 | $I_{250}^{A}$ | A | A | C | A | A | A | A | A | A | A | A | A | 245 | $285^{A}$ | $I_{290}^{A}$ | $I_{295}^{A}$ | $I_{295}^{A}$ |
| 16 | $I_{290}^{A}$ | 290 | 250 | 295 | 295 | A | A | A | A | A | A | A | A | A | A | 220 | $I_{245}^{A}$ | 240 | A | A | A | A | A | A |
| 17 | A | 250 | $I_{270}^{A}$ | $285^{A}$ | 275 | 245 | 245 | $235^{H}$ | $I_{240}^{A}$ | $I_{235}^{A}$ | 195 | A | A | A | A | $I_{230}^{R}$ | $I_{230}^{A}$ | $I_{235}^{A}$ | 245 | $I_{290}^{A}$ | A | A | A | A |
| 18 | A | A | A | $300^{A}$ | $E_{300}^{E}$ | A | A | A | A | A | A | A | A | 240 | $I_{230}^{A}$ | 240 | 240 | A | A | 245 | 240 | $300^{A}$ | 295 | $I_{320}^{A}$ |
| 19 | $I_{310}^{A}$ | 290 | 250 | 245 | 255 | 245 | A | A | A | A | A | $I_{240}^{A}$ | $I_{240}^{A}$ | $I_{245}^{A}$ | 220 | A | A | A | A | 255 | $I_{240}^{A}$ | 295 | 295 | 295 |
| 20 | 295 | 290 | 285 | 290 | $245^{H}$ | 240 | $I_{245}^{A}$ | 230 | $I_{215}^{A}$ | $I_{220}^{A}$ | 200 | 205 | 220 | A | A | A | A | 240 | $255^{A}$ | 285 | 240 | 285 | 290 | A |
| 21 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | $240^{A}$ | 230 | A | A | A | A | 275 | 290 |
| 22 | 285 | 290 | 265 | 245 | 250 | 245 | A | A | A | A | A | A | A | A | A | A | A | 240 | $I_{235}^{A}$ | 285 | 245 | 235 | $300^{A}$ | $I_{325}^{A}$ |
| 23 | $I_{295}^{A}$ | 295 | $290^{A}$ | $I_{290}^{A}$ | 280 | A | A | A | A | A | A | A | A | A | A | A | $I_{225}^{A}$ | 240 | 245 | 245 | A | A | A | A |
| 24 | A | A | 245 | 265 | 255 | 240 | 240 | A | A | A | A | A | $I_{200}^{A}$ | 200 | A | A | 210 | 240 | 230 | $I_{240}^{A}$ | $I_{260}^{A}$ | 295 | $I_{290}^{A}$ | $I_{270}^{A}$ |
| 25 | $I_{245}^{A}$ | 245 | $305^{A}$ | 295 | 315 | $I_{245}^{A}$ | A | A | 210 | $I_{200}^{R}$ | 235 | A | C | C | C | C | C | C | C | C | 245 | $I_{240}^{A}$ | 270 | 270 |
| 26 | 300 | 305 | 330 | 300 | 285 | 250 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | 345 | A | A | A |
| 27 | A | $305^{A}$ | $I_{290}^{A}$ | 270 | A | A | A | A | A | A | A | A | A | A | 220 | $I_{230}^{A}$ | 225 | 230 | 245 | 260 | 215 | A | A | A |
| 28 | A | $305^{A}$ | 265 | $290^{A}$ | 300 | $240^{A}$ | A | A | 205 | A | A | A | A | A | A | A | A | A | A | 270 | $250^{A}$ | A | A | $I_{325}^{A}$ |
| 29 | 255 | $255^{A}$ | $I_{260}^{A}$ | 245 | $275^{A}$ | 260 | A | A | A | A | A | $I_{205}^{A}$ | $I_{210}^{R}$ | $205^{R}$ | 210 | $225^{A}$ | $225^{A}$ | 230 | 235 | 230 | $250^{A}$ | 255 | $I_{305}^{A}$ | $I_{310}^{A}$ |
| 30 | $I_{290}^{A}$ | $I_{300}^{A}$ | $I_{310}^{A}$ | 295 | $300^{A}$ | 260 | 250 | $I_{225}^{A}$ | $I_{235}^{A}$ | 215 | A | A | A | A | 220 | $I_{235}^{A}$ | $I_{240}^{A}$ | A | A | A | A | 230 | A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 14 | 19 | 20 | 24 | 23 | 20 | 8 | 3 | 5 | 4 | 3 | 4 | 4 | 5 | 8 | 10 | 12 | 11 | 9 | 18 | 15 | 16 | 14 | 12 |
| Median | 290 | 290 | 290 | 290 | 275 | 245 | 245 | 230 | $U_{215}$ | $U_{220}$ | 200 | $U_{215}$ | $U_{215}$ | 205 | 220 | 235 | $U_{240}$ | 240 | 245 | 260 | 250 | 255 | 290 | $U_{295}$ |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'F

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 105 | 100 | E | 105 | 145 | 140 | 125 | 125 | 120 | 120 | 110 | 110 | 105 | 105 | 105 | 105 | 130 | 125 | 125 | 110 | 110 | 105 | 110 |
| 2 | 105 | 145 | 105 | 140 | 100 | 145 | 140 | 125 | 120 | 115 | 115 | 110 | 110 | 145 | 130 | 120 | 140 | 140 | 125 | 115 | 115 | 110 | 110 | 110 |
| 3 | E | 105 | 110 | 105 | 105 | 140 | 130 | 120 | 125 | 125 | 115 | 110 | 110 | 105 | 105 | 145 | 140 | 125 | 120 | 115 | 120 | 115 | 110 | 105 |
| 4 | 105 | 105 | 105 | 100 | E | G | 145 | 135 | 120 | 115 | 110 | 110 | 110 | 110 | 105 | 110 | 140 | 135 | 120 | 115 | 110 | 110 | 110 | 110 |
| 5 | 105 | 105 | 100 | 100 | 105 | 115 | 110 | 125 | 115 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 6 | C | C | C | C | C | C | C | C | C | 115 | 120 | 115 | 135 | 125 | 115 | 115 | 115 | 140 | 135 | 110 | 110 | 105 | 115 | 110 |
| 7 | 110 | 110 | 105 | 105 | 140 | 130 | 140 | 125 | 120 | 110 | 110 | 105 | 105 | 105 | 105 | 100 | 135 | 125 | 125 | 115 | 110 | 115 | 105 | 105 |
| 8 | 105 | 105 | 105 | 105 | 105 | 145 | 135 | 130 | 130 | 120 | C | 115 | 140 | 140 | 145 | 130 | 130 | 145 | 125 | 135 | 120 | 135 | 115 | 115 |
| 9 | 110 | 140 | 115 | 110 | 130 | 140 | 135 | 130 | 125 | 120 | 115 | 115 | 120 | 110 | 125 | 145 | 135 | 125 | 120 | 110 | 110 | 110 | 115 | 115 |
| 10 | 110 | 110 | 105 | 105 | 105 | G | 130 | 125 | 120 | 125 | 120 | C | 110 | 110 | C | 115 | C | 140 | 120 | 110 | 110 | 105 | 120 | 110 |
| 11 | 110 | 105 | 105 | 140 | 105 | 140 | 140 | 135 | 125 | 125 | 120 | 130 | C | C | C | 110 | 105 | 130 | 120 | 105 | 115 | 120 | 120 | 110 |
| 12 | 110 | 105 | 105 | 105 | 105 | 105 | 145 | 135 | 135 | 125 | 120 | 120 | 120 | 115 | 110 | 115 | 120 | 115 | 115 | 110 | 115 | 135 | 130 | 115 |
| 13 | 115 | 110 | 110 | 110 | 110 | 110 | 135 | 130 | 125 | 125 | 125 | 120 | C | 120 | 140 | 125 | 130 | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | 120 | 130 | 120 | 145 | 145 | 145 | 145 | 145 | C | 145 | 145 | 130 | 135 | 125 | 120 |
| 15 | 115 | 110 | 110 | 110 | 105 | 105 | 145 | 145 | 140 | C | 120 | 120 | 125 | 110 | 110 | 110 | 110 | 105 | 105 | 140 | 140 | 135 | 125 | 120 |
| 16 | 120 | 115 | 110 | 105 | 140 | 145 | 140 | 145 | 135 | 135 | 130 | 130 | 130 | 135 | 130 | 120 | 130 | 145 | 130 | 105 | 125 | 120 | 105 | 110 |
| 17 | 115 | 110 | 110 | 105 | 110 | G | 135 | 140 | 135 | 135 | 130 | 120 | 110 | 110 | 110 | 120 | 120 | 140 | 145 | 125 | 120 | 120 | 115 | 115 |
| 18 | 110 | 110 | 105 | 110 | E | 145 | 145 | 140 | 130 | 120 | 120 | 120 | 115 | 130 | 120 | 140 | G | 120 | 120 | 115 | 110 | 110 | 120 | 110 |
| 19 | 105 | 105 | 100 | 105 | 105 | 145 | 145 | 145 | 140 | 140 | 145 | 145 | 140 | 145 | 140 | 145 | 145 | 140 | 125 | 130 | 110 | 110 | 110 | 105 |
| 20 | 105 | 105 | 105 | 105 | 110 | 145 | 135 | 140 | 115 | 115 | 120 | 120 | G | 110 | 105 | 105 | 105 | 100 | 105 | 100 | 105 | 105 | 110 | 110 |
| 21 | 110 | 105 | 105 | 105 | 105 | 145 | 140 | 135 | 140 | 125 | 120 | 120 | 120 | 115 | 105 | 105 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 110 |
| 22 | 115 | E | 120 | 115 | E | 145 | 140 | 120 | 110 | 110 | 145 | 110 | 110 | 115 | 110 | 110 | 135 | 125 | 130 | 105 | 110 | 110 | 105 | 105 |
| 23 | 105 | 100 | 110 | 110 | 110 | 105 | 130 | 130 | 120 | 110 | 110 | 115 | 110 | 115 | 115 | 130 | 120 | 110 | 120 | 125 | 120 | 125 | 120 | 120 |
| 24 | 105 | 105 | 105 | 105 | 100 | 145 | 145 | 135 | 130 | 120 | 135 | 135 | 140 | 135 | 125 | 135 | 135 | 110 | 110 | 110 | 120 | 120 | 110 | 110 |
| 25 | 105 | 105 | 105 | 105 | 130 | 140 | 130 | 110 | 110 | 120 | 120 | 115 | C | C | C | C | C | C | C | C | 105 | 105 | 115 | 140 |
| 26 | 120 | 110 | 105 | 100 | 110 | 115 | 120 | 120 | 115 | 120 | 105 | 150 | 140 | 140 | 145 | 140 | 140 | 130 | 115 | 115 | 135 | 125 | 110 | 110 |
| 27 | 110 | 105 | 105 | 105 | 105 | 110 | 140 | 135 | 125 | 120 | 120 | 120 | 120 | 125 | 175 | 125 | 120 | 125 | 130 | 115 | 115 | 115 | 110 | 100 |
| 28 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 125 | 125 | 125 | 120 | 120 | 115 | 115 | 110 | 110 | 110 | 120 | 110 | 115 | 125 | 120 | 115 | 110 |
| 29 | 105 | 105 | 105 | 105 | 100 | 100 | 125 | 120 | 120 | 120 | 120 | 120 | 140 | 125 | 110 | 105 | 105 | 105 | 105 | 110 | 105 | 105 | 120 | 115 |
| 30 | 115 | 115 | 110 | 110 | 110 | 130 | 120 | 140 | 120 | 145 | 120 | 115 | 120 | 125 | 125 | 130 | 135 | 120 | 115 | 110 | 110 | 120 | 115 | 110 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 27 | 27 | 28 | 27 | 25 | 25 | 28 | 28 | 28 | 28 | 28 | 28 | 25 | 27 | 26 | 28 | 26 | 26 | 27 | 27 | 28 | 28 | 28 | 28 |
| Median | 110 | 105 | 105 | 105 | 105 | 140 | 140 | 130 | 125 | 120 | 120 | 120 | 120 | 115 | 115 | 120 | 130 | 125 | 120 | 115 | 110 | 115 | 115 | 110 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 11

# IONOSPHERIC DATA

Jun. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | f2 | f4 | f | | f2 | h2 | h3 | h2 | h3 | h2 | h2 | c3 | c | c2 | c | 13 | 12 | h3 | h2 | f3 | f2 | f4 | f3 | f2 |
| 2 | f2 | f | f3 | f2 | f4 | h2 | h5 | h3 | h2 | c2 | c2 | c2 | c | hc | h | h | h2 | h3 | h2 | f2 | f3 | f2 | f2 | f3 |
| 3 | | f2 | f | f | f | h | h2 | c2 | h2 | h | c2 | c | c2 | c | 12 | h | h2 | h3 | h | f3 | f | f2 | f | f2 |
| 4 | f2 | f | f2 | f2 | | | h3 | h2 | h3 | c2 | c2 | c2 | c | c3 | c2 | c2 | h | h4 | c2 | f2 | f2 | f | f2 | f3 |
| 5 | f3 | f3 | f3 | f2 | f | f | c2 | h2 | c3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | c2 | h | c2 | h2 | h2 | c2 | c2 | c2 | h2 | h | f4 | f2 | f3 | f2 | f3 |
| 7 | f3 | f3 | f2 | f2 | f2 | h2 | h2 | h2 | h2 | c3 | c | c2 | c | 1 | c | 1 | h | h2 | h3 | f3 | f2 | f2 | f2 | f2 |
| 8 | f3 | f2 | f2 | f2 | f2 | h2 | h | h2 | h2 | h2 | | c2 | h | h2 | h2 | h2 | h2 | hs | h2 | f3 | f3 | f5 | f3 | f2 |
| 9 | f2 | f2 | f | f2 | f | h2 | h3 | h2 | h2 | h | c2 | c2 | c | c2 | h | h2 | h2 | h2 | c2 | f3 | f3 | f2 | f3 | f4 |
| 10 | f2 | f3 | f2 | f2 | f | | h2 | h3 | c3 | h2 | h2 | | c2 | c | | c | | h2 | c2 | f2 | f2 | f2 | f4 | f4 |
| 11 | f3 | f2 | f3 | f2 | f2 | h21 | h21 | h2 | h3 | h2 | h2 | h | | | | c2 | 13 | h212 | h212 | f3 | f3 | f4 | f4 | f2 |
| 12 | f2 | f2 | f3 | f3 | f3 | 1h3 | h2 | h2 | h3 | h2 | h2 | h | h | c | c | c | o4 | c2 | c2 | f3 | f2 | f3 | f5 | f3 |
| 13 | f2 | f2 | f5 | f4 | f2 | 12 | h3 | h2 | h2 | h2 | h3 | h | | h | h | h | h2 | | | | | | | |
| 14 | | | | | | | | | | h2 | h | h2 | h | h | h2 | h | h2 | | h | h | f2 | f3 | f2 | f4 |
| 15 | f3 | f2 | f2 | f2 | f2 | 1 | h2 | h21 | h | | h2 | h2 | h | c | c | c2 | c2 | 13 | 12 | h | f2 | f2 | f2 | f2 |
| 16 | f3 | f2 | f | f | f | h3 | h2 | h2 | h2 | h2 | h2 | h2 | h2 | h | h | h | h2 | h | h | 12 | f | f3 | f3 | f2 |
| 17 | f5 | f2 | f2 | f2 | f2 | | h | h | h | h | h | h | c2 | c | c | h | c2 | h2 | h2 | h3 | f3 | f6 | f4 | f4 |
| 18 | f3 | f4 | f3 | f2 | | h2 | h2 | h2 | h2 | h2 | h2 | h2 | c | h | h | h | | h3 | c2 | f3 | f | f2 | f2 | f2 |
| 19 | f4 | f2 | f2 | f | f2 | h2 | h3 | h2 | h2 | h3 | h2 | h | h2 | h | h | h2 | h2 | h2 | h2 | f4 | f2 | f3 | f2 | f2 |
| 20 | f2 | f | f2 | f | f | h | h3 | h3 | c2 | c3 | h | h | | c2 | c3 | 13 | 12 | 12 | 1 | f | f | f | f2 | f4 |
| 21 | f2 | f3 | f3 | f3 | f2 | h2 | h3 | h3 | h2 | h4 | h3 | h2 | h2 | c2 | c2 | c2 | c3 | 13h | 14 | f3 | f3 | f3 | f2 | f2 |
| 22 | f | | f | f | | h2 | h3 | h21 | c3 | c2 | hc2 | c2 | c2 | c2 | c2 | c2 | h2 | h2 | h2 | f2 | f | f | f4 | f2 |
| 23 | f3 | f2 | f2 | f3 | f2 | 12 | h3 | h3 | h3 | c3 | c3 | c2 | c4 | c2 | c3 | h2 | h2 | c2 | c | f | f5 | f3 | f6 | f7 |
| 24 | f3 | f2 | f2 | f2 | f2 | h21 | h3 | h2 | h4 | h2 | h2 | h2 | h2 | h | h2 | h2 | h2 | c2 | 12 | f3 | f3 | f2 | f2 | f3 |
| 25 | f3 | f2 | f2 | f2 | f2 | h2 | h4 | c2 | c2 | h | h | c2 | | | | | | | | | f2 | f3 | f | f |
| 26 | f2 | f2 | f4 | f2 | f5 | c2 | c2 | h2 | h2 | h3 | c3 | h2 | h2 | h2 | h2 | h3 | h2 | h3 | c2 | f3 | f | f3 | f2 | f3 |
| 27 | f4 | f4 | f3 | f2 | f2 | c3 | h3 | h3 | h2 | h | h2 | h3 | h2 | h2 | h | h2 | h | h | h | f2 | f3 | f3 | f3 | f4 |
| 28 | f3 | f3 | f2 | f2 | f2 | 14 | 13 | h2 | h | h | h2 | h | h2 | h2 | c3 | c2 | c2 | h4 | 15 | f2 | f2 | f3 | f6 | f3 |
| 29 | f2 | f2 | f2 | f | f2 | f2 | 12 | h3 | h3 | h2 | h2 | h | h | h | c2 | 12 | 12 | 12 | 12 | f2 | f2 | f2 | f5 | f7 |
| 30 | f3 | f3 | f4 | f2 | f2 | h2 | h2 | h2 | h2 | h | h2 | c2 | h | h | h | h | h2 | h3 | 13 | f5 | f5 | f4 | f8 | f5 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

Types of Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 12

# IONOSPHERIC DATA

**Jun.1963** | **foF2** | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N, Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F | F | J 4.8F | J 4.8F | 4.8F | U 4.9S | 4.8 | I 6.1A | U 6.6S | I 6.2A | 5.4 | 5.6 | I 5.5A | I 5.8A | 5.9 | 6.9 | C | C | 6.4 | A | A | F | F | A |
| 2 | F | F | A | A | A | A | A | A | A | A | A | A | S | 5.0 | 5.2 | I 5.2A | J 5.0A | A | A | 6.5 | I 6.8F | I 6.2F | I 5.4F | 4.9 |
| 3 | A | F | 3.4 | I 3.4F | I 4.0F | 4.5S | 5.0 | A | A | A | A | A | A | A | A | A | 5.5 | 5.8 | 6.4 | I 7.6A | FS | F | F | F |
| 4 | F | I 4.6F | U 4.4F | I 4.0F | 3.9 | J 4.9S | 6.9 | 5.8 | A | 6.0 | I 5.5A | I 5.2A | U 5.4R | A | A | 6.2 | I 7.1A | I 7.2A | I 7.2A | 7.1 | U 7.1S | 6.9 | 6.8 | I 6.0F |
| 5 | U 5.4F | F | F | F | F | U 4.9S | J 5.3R | 6.6 | 7.3 | 6.4R | 5.9 | S | A | A | 5.7 | 6.3 | J 6.5S | 6.2 | J 6.6R | J 6.9S | 7.1 | 6.2S | J 5.4S | A |
| 6 | A | A | F | 4.0 | J 4.4S | 5.4 | J 5.0S | J 6.6R | I 6.5A | U 6.0A | 5.6 | 5.8R | I 5.7A | 5.6R | I 6.2S | U 5.6S | 6.2 | 7.1 | U 7.7S | U 8.1S | U 8.4R | U 6.8S | A | A |
| 7 | A | A | 3.7S | U 4.2S | U 3.7S | U 4.7S | 5.3 | I 7.0A | U 8.8S | 6.3 | I 6.3A | I 6.0A | 6.2R | 9.1 | J 8.5S | 7.5S | 6.8 | 6.8 | 5.9 | I 7.6A | 6.5 | A | A | A |
| 8 | I 4.6S | F | A | A | A | 5.6 | 5.5 | A | A | A | A | C | 7.3 | I 8.5R | I 7.6R | 7.4 | 6.7 | I 7.6S | J 8.0R | I 8.0R | R | A | FS | F |
| 9 | F | F | F | F | F | U 5.3S | 5.4 | 5.8 | A | A | A | A | A | A | 6.8 | 6.9 | 6.0 | 6.8 | J 8.1R | 9.0S | U 7.3S | I 6.0S | 5.9 | I 5.8F |
| 10 | J 5.9F | F | F | F | 5.4 | 5.1 | 5.4 | I 6.1S | 6.8 | U 6.1S | A | A | A | A | 6.0 | 6.1 | 6.6 | 7.0 | 7.4 | I 7.2A | I 6.5A | 6.4S | I 6.4S | I 6.0F |
| 11 | I 6.1A | 6.1F | F | F | F | 5.6 | 5.9 | 6.0 | 5.9 | A | A | A | A | A | A | A | A | 7.6S | I 7.7A | 7.5 | I 6.8A | A | A | F |
| 12 | A | F | A | F | F | F | A | J 6.6R | A | A | A | A | A | A | J 6.4A | A | A | A | I 6.6A | 7.1S | 7.1 | 6.4 | F | A |
| 13 | F | F | F | F | 4.5F | 5.0 | 5.5 | 6.9 | 6.4 | A | A | A | A | 7.0 | 8.1S | I 7.9S | I 7.6S | J 7.4S | 7.1 | 7.0S | 6.7 | 6.2 | 6.7 | 6.0 |
| 14 | I 6.3A | I 5.7F | F | F | F | 5.1F | 6.6 | I 7.5A | I 7.3A | 6.4S | A | A | 6.1 | 8.4 | 8.7 | I 9.1A | J 7.8S | 6.9 | I 7.0A | U 6.2S | 5.7S | I 5.5A | F | F |
| 15 | FS | F | F | F | U 4.4S | 5.1 | A | A | A | A | A | 6.0S | A | A | A | 6.6 | 6.5 | 6.9 | 7.4 | I 6.5A | 5.5 | A | A | A |
| 16 | A | A | A | A | A | 4.3 | A | A | A | A | A | A | I 5.4A | I 5.2A | 5.4 | I 5.2A | I 6.0A | J 5.0S | 5.1 | 7.0 | 6.5 | 4.8 | 4.5 | F |
| 17 | S | A | J 4.5F | FS | F | 4.9 | 6.2 | J 7.2S | 6.6 | 5.6 | J 5.5R | 6.0 | U 5.9R | 7.2 | J 7.5S | 7.1 | 5.7 | 6.3R | 7.2 | 8.1 | 7.1S | 6.5 | 6.0 | I 6.4F |
| 18 | U 6.4S | F | F | F | F | A | J 4.4S | 5.4 | 6.5 | A | A | A | A | A | 6.6 | 6.1 | 6.1 | 6.8 | J 7.9R | 7.3 | A | F | J 5.4F | J 5.3F |
| 19 | S | F | F | F | 3.2 | 3.9S | U 4.8R | A | A | 5.2 | 6.1 | I 5.5S | I 5.4S | 6.0 | J 6.1R | I 6.0R | 5.9 | 5.8 | 7.2 | 7.7S | U 4.1S | A | A | A |
| 20 | I 4.8A | 4.5 | 4.3 | I 4.5F | I 4.7F | J 4.6S | J 5.6R | I 5.8A | 7.2 | I 5.8A | S | S | S | 5.8 | 6.6 | J 9.0S | J 8.3S | 6.1 | 6.1 | I 6.6A | 7.1 | U 4.2S | 4.0 | A |
| 21 | A | A | A | A | 3.1 | J 4.7S | A | A | A | A | A | A | A | A | A | I 5.2A | I 5.7A | I 5.5A | 6.4 | I 6.8A | 6.1 | 5.1F | 4.9 | 4.8 |
| 22 | I 4.8A | I 4.3A | F | F | F | 4.7 | 5.1 | 7.1 | I 6.4A | I 5.8A | A | A | A | 5.6 | 6.2 | 6.6 | 7.3 | 6.4 | 5.8 | 6.9 | U 7.5S | J 5.5S | J 4.3S | U 4.3S |
| 23 | A | F | A | I 3.4F | I 3.7F | 4.4 | 4.3 | 5.3 | 5.4 | 5.8 | I 5.6A | I 5.7A | I 5.4A | 5.4 | J 6.3R | 7.8 | 7.2 | 6.5 | 5.8 | 6.4 | J 5.1S | A | FS | SF |
| 24 | F | F | F | F | F | 4.2S | U 5.3R | A | A | 6.9 | 5.6 | J 5.1R | J 5.2R | I 5.4S | I 6.4A | 8.9 | 8.5S | 7.0 | 6.6 | 7.1 | I 5.2S | U 4.0S | F | F |
| 25 | S | A | I 3.6A | 3.2 | I 3.3A | I 3.7A | 4.9 | 6.8S | 6.6 | I 5.8A | A | A | A | 6.0 | J 6.5R | I 6.6A | 6.8 | U 6.8R | I 6.4A | J 8.1R | 6.9 | F | F | F |
| 26 | S | A | F | A | 4.7F | 4.8R | I 4.0A | I 4.8A | 5.9 | U 7.4S | 5.7R | A | A | A | A | A | A | 5.4 | J 5.8R | 6.0 | J 5.3R | U 4.0S | U 3.9S | U 4.1S |
| 27 | 3.5 | 3.4 | 3.5 | I 3.5F | 3.4 | J 4.6S | A | A | A | A | A | A | A | S | A | 5.4 | 5.7 | 7.2S | 6.5 | 7.0S | U 4.0S | A | AS | S |
| 28 | A | I 3.6S | U 3.9S | 3.6S | U 3.5S | I 3.6A | I 4.4A | I 5.2A | 6.8S | A | A | A | 5.2 | A | A | A | A | 6.7 | J 6.5R | I 6.4A | I 5.1A | S | A | A |
| 29 | A | A | A | A | 3.1 | I 3.6A | 4.5 | I 5.0A | I 5.0A | 5.0 | I 5.0A | U 5.1R | I 5.4A | I 5.7A | 5.8 | 5.7 | J 5.7R | 6.4 | 6.4 | 5.1 | J 4.8S | J 4.5S | I 4.0S | S |
| 30 | F | A | 3.8F | 3.5F | I 3.5F | I 4.3S | J 5.0H | 5.4 | I 4.3S | I 4.9R | 5.8 | 5.5R | I 5.6A | 5.9 | 7.2 | 7.0 | I 6.1A | I 5.8A | 6.5 | 8.3 | 6.5S | J 4.3S | I 4.1A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 9 | 7 | 10 | 11 | 18 | 27 | 24 | 21 | 18 | 17 | 12 | 11 | 14 | 17 | 22 | 25 | 25 | 27 | 29 | 29 | 26 | 18 | 15 | 10 |
| Median | U 5.4 | U 4.5 | 3.8 | U 3.6 | 3.8 | 4.7 | 5.2 | 6.1 | 6.6 | 6.0 | 5.6 | 5.6 | U 5.4 | 5.8 | 6.4 | 6.6 | 6.5 | 6.8 | 6.6 | 7.1 | 6.5 | 5.8 | 5.4 | U 5.6 |
| U.Q. | 6.2 | 5.7 | 4.4 | 4.2 | 4.5 | 5.1 | 5.5 | 6.8 | 6.8 | 6.4 | 5.8 | 6.0 | 5.9 | 7.1 | 7.2 | 7.4 | 7.2 | 7.0 | 7.3 | 7.6 | 7.1 | 6.4 | 6.0 | 6.0 |
| L.Q. | 4.7 | 3.6 | 3.6 | 3.4 | 3.4 | 4.3 | 4.8 | 5.4 | 5.9 | 5.7 | 5.5 | 5.2 | 5.4 | 5.5 | 6.0 | 5.8 | 5.8 | 6.1 | 6.4 | 6.6 | 5.3 | 4.5 | 4.1 | 4.8 |
| Q.R. | 1.5 | 2.1 | 0.8 | 0.8 | 1.1 | 0.8 | 0.7 | 1.4 | 0.9 | 0.7 | 0.3 | 0.8 | 0.5 | 1.6 | 1.2 | 1.6 | 1.4 | 0.9 | 0.9 | 1.0 | 1.8 | 1.9 | 1.9 | 1.2 |

**foF2** Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 1

# IONOSPHERIC DATA

Jun. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L | A | A | A | L | A | A | A | A | 4.5 | C | C | A | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | S | B | A | A | A | A | A | | | | | |
| 3 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 4 | | | | | | L | L | | A | A | A | A | A | A | A | S | A | A | A | | | | | |
| 5 | | | | | | | | A | A | A | A | S | A | A | A | L | 4.5L | A | A | | | | | |
| 6 | | | | | | L | | U 4.5L | A | A | A | S | A | A | S | S | S | A | L | | | | | |
| 7 | | | | | | | A | A | A | A | A | A | L | A | A | A | A | A | A | | | | | |
| 8 | | | | | | | A | A | A | A | A | C | A | L | B | 4.5L | A | A | A | | | | | |
| 9 | | | | | | | A | A | A | A | A | A | A | A | S | U 4.6L | S | A | L | | | | | |
| 10 | | | | | | | L | A | A | A | A | A | A | A | A | 4.6L | 4.4S | 4.0 | A | | | | | |
| 11 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 12 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 13 | | | | | | | L | A | A | A | A | A | A | U 5.0L | L | A | U 4.5S | A | A | | | | | |
| 14 | | | | | | | A | A | A | A | A | A | S | A | A | A | A | A | A | | | | | |
| 15 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 16 | | | | | 4 | A | A | A | A | A | A | A | A | A | A | A | A | A | L | | | | | |
| 17 | | | | | | | 3.9L | A | A | A | A | A | B | U 5.0L | AS | 4.5L | U 4.5S | L | A | | | | | |
| 18 | | | | | | A | S | A | A | A | A | A | A | A | 4.6L | A | 4.3L | L | | | | | | |
| 19 | | | | | | | A | A | A | L | S | S | S | A | L | S | S | L | 3.3L | | | | | |
| 20 | | | | | | | L | A | A | A | S | S | S | S | L | S | L | A | A | | | | | |
| 21 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 22 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 23 | | | | | | | A | A | A | A | A | A | A | L | S | 4.5L | A | A | 3.3L | | | | | |
| 24 | | | | | | | A | A | A | A | S | L | 4.6L | S | A | A | A | A | A | | | | | |
| 25 | | | | | | A | A | S | A | A | A | A | A | 4.5S | 4.6L | A | A | A | A | | | | | |
| 26 | | | | | | | A | A | A | L | L | A | A | A | A | A | A | A | L | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | S | A | A | S | 3.7 | S | | | | | |
| 28 | | | | | | A | A | A | S | A | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | A | A | A | A | A | AS | A | A | AS | S | 4.2S | 3.9S | | | | | | |
| 30 | | | | | | | | 4.0L | S | S | A | S | A | 4.6 | A | 4.6L | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | 1 | 2 | | | | | 1 | 4 | 2 | 7 | 6 | 3 | 2 | | | | | |
| Median | | | | | | | 3.9 | U 4.2 | | | | | 4.6 | U 4.8 | 4.6 | 4.5 | 4.4 | 3.9 | 3.3 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 2

# IONOSPHERIC DATA

Jun. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | S | A | 2.70 | I2.90A | S | A | A | A | A | A | A | C | C | S | | | | | |
| 2 | | | | | | S | 2.45R | 2.75A | A | A | S | A | A | B | S | A | I2.90R | A | S | | | | | |
| 3 | | | | | | 2.00 | 2.10 | A | A | A | S | S | A | A | A | A | A | B | S | | | | | |
| 4 | | | | | | 1.85S | I2.30B | 2.70 | I2.95S | A | A | A | A | A | A | S | A | A | A | | | | | |
| 5 | | | | | | S | A | A | A | A | A | A | A | A | S | S | 3.00 | B | B | | | | | |
| 6 | | | | | | S | A | 3.00 | A | A | S | S | 3.55S | S | S | S | S | R | S | | | | | |
| 7 | | | | | | S | S | R | S | A | A | A | A | | A | 3.65 | I2.90S | A | S | | | | | |
| 8 | | | | | | S | 2.55 | I2.80B | A | A | A | C | A | S | B | B | S | A | S | | | | | |
| 9 | | | | | | A | I2.50A | I2.70R | S | A | A | A | A | A | S | I3.40S | I2.90A | A | B | | | | | |
| 10 | | | | | | S | I2.45A | A | A | A | A | A | A | A | S | S | S | 2.65 | S | | | | | |
| 11 | | | | | | S | 2.35 | 2.80 | I3.00S | A | A | A | A | A | A | A | A | A | S | | | | | |
| 12 | | | | | | S | B | B | A | A | A | A | A | A | A | A | A | A | S | | | | | |
| 13 | | | | | | B | R | I2.95A | A | A | A | A | A | A | A | A | A | B | B | | | | | |
| 14 | | | | | | S | I2.55A | A | A | A | A | A | S | A | S | I3.30S | I3.00A | 2.65 | R | | | | | |
| 15 | | | | | | A | A | A | A | A | 3.55 | A | A | A | S | A | A | A | A | | | | | |
| 16 | | | | | | S | I2.30A | 2.85 | A | A | A | A | A | A | S | I3.30A | 3.00 | A | A | | | | | |
| 17 | | | | | | S | R | A | A | A | A | A | B | B | A | A | B | 2.75 | B | | | | | |
| 18 | | | | | | S | 2.45 | 2.75 | I3.00A | A | A | A | A | A | A | A | 3.10 | A | B | | | | | |
| 19 | | | | | | S | 2.70 | 2.80 | I3.10A | A | A | R | 3.60 | A | A | A | R | A | S | | | | | |
| 20 | | | | | | S | I2.50R | 2.70 | R | A | S | S | S | S | A | A | A | A | S | | | | | |
| 21 | | | | | | 2.00 | 2.45 | 2.70 | I3.00A | A | A | A | A | A | A | A | A | A | A | S | | | | |
| 22 | | | | | | S | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 23 | | | | | | S | I2.20B | 2.60 | B | A | A | A | A | A | S | A | A | A | S | | | | | |
| 24 | | | | | | S | I2.50A | 2.75 | A | A | S | I3.60B | U3.60R | S | A | A | A | A | A | | | | | |
| 25 | | | | | | A | A | A | A | A | A | A | A | S | A | A | A | A | S | | | | | |
| 26 | | | | | | S | A | A | A | A | S | 3.70 | I3.70S | 3.60 | I3.30S | I3.10A | B | A | B | | | | | |
| 27 | | | | | | A | 2.30 | I2.70S | A | R | A | A | A | S | S | S | R | A | S | | | | | |
| 28 | | | | | | S | S | R | I2.60R | A | A | A | A | A | A | A | A | A | S | | | | | |
| 29 | | | | | | S | A | A | A | A | A | A | A | A | A | S | A | A | S | | | | | |
| 30 | | | | | | S | 2.50 | 2.75R | U3.00S | I3.40A | S | S | S | I3.50S | A | S | A | A | B | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | 3 | 17 | 17 | 8 | 1 | 1 | 2 | 4 | 2 | 1 | 5 | 7 | 3 | | | | | | |
| Median | | | | | | 2.00 | 2.45 | 2.75 | U3.00 | U3.40 | 3.55 | U3.65 | U3.60 | U3.55 | U3.30 | U3.30 | U3.00 | 2.65 | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 3

# IONOSPHERIC DATA

Jun. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 3.0M | E | E | J 4.0 | S | 3.5 | 8.0M | 12.1M | 9.0M | J 5.2 | 5.4 | J 6.1 | J 8.4 | 5.8M | 3.8 | C | C | 8.9M | J11.3 | 9.1S | J 4.8 | J 5.3 | J 6.9 |
| 2 | J 5.8 | 6.0M | J 6.2 | 6.5M | 5.8 | 5.3 | 6.0M | 11.9M | D20.0D | 5.6 | 5.9M | J 7.3 | 4.1 | B | 5.5M | J 7.7 | 6.1M | 12.0 | J10.7Y | 5.9 | J 7.6 | 4.0M | 3.8M | J 4.8 |
| 3 | 5.7M | 2.2 | E | J 4.4 | 2.9M | J 4.3 | 5.4M | 6.4 | 9.0M | 8.3M | J 8.2 | 8.4M | J 9.5 | 8.4 | 9.6M | 7.1M | J 7.4 | J 5.1 | 5.9M | J 7.9 | 5.7M | 3.8M | J4.8 | 2.4 |
| 4 | J 2.7 | 2.4 | J 6.2 | J 2.5 | 3.0 | G | J 3.8 | 3.6 | 5.7 | 6.9M | 8.1M | J 5.4 | 7.2M | 9.6M | 10.9M | S | 9.6 | D20.0D | 15.0M | 9.1 | J 6.5 | J 4.1 | J 3.4 | J 5.9 |
| 5 | 3.8M | 3.3 | 2.4 | 2.5 | 2.4 | 3.8M | 2.5 | J 4.7 | 4.8 | 5.6Y | 5.4 | S | 4.9 | 5.9 | 5.5 | S | 3.7 | 3.5 | 4.4M | 4.1M | J 4.9 | 3.8M | J 5.6 | J 6.4 |
| 6 | J 6.4 | J 8.0 | 3.0 | 3.0M | 2.5 | 2.1 | 2.5 | 3.5 | J 6.9 | J 8.2 | 5.2 | S | J 8.1 | 4.9 | 4.8 | S | S | 5.5 | S | 2.8 | 2.4 | J 5.3 | 6.4 | J 7.9 |
| 7 | J 6.1 | 4.2 | J 3.0 | 2.2 | J 2.9 | 4.9 | J 6.3 | 8.8 | J 8.3 | 5.6 | 6.4 | J 6.0 | 4.0 | 5.7 | 5.8 | 4.8 | 5.2M | 5.9 | 4.8 | 7.0M | J11.1 | 13.4 | 9.0M | 7.9M |
| 8 | 5.5M | 4.7 | 9.9M | 6.1M | 5.8M | 5.9M | 4.8 | J 7.0 | 8.7M | J 9.0 | 8.5M | C | J 8.0 | S | B | B | 8.0M | 5.4M | 6.8 | 6.8M | 4.8M | 9.0M | 6.0M | 4.9M |
| 9 | 5.7M | 3.8M | J 3.6 | 2.9 | 2.4 | 2.5 | 5.8M | J 4.2 | 7.1 | 9.4M | J 9.7 | 13.4 | 13.9M | J 9.6 | S | J 5.0 | 3.8 | 4.8 | 2.6 | 3.3 | J 4.6 | 4.4M | 5.6M | 5.7M |
| 10 | 3.0 | 4.1M | 3.1 | J 3.8 | J 4.0 | 3.0 | 3.3 | J 6.7Y | 7.7M | 8.5M | 9.3M | 11.1M | J11.2 | 14.0M | J 5.9 | S | 3.8S | 3.4 | 4.1M | 7.9M | 6.6M | 6.0M | 3.0 | 4.3M |
| 11 | J 7.1 | J 7.8 | 4.8M | 5.6M | J 5.4 | 3.0 | 3.0 | J 4.8 | J 4.9 | 12.0M | J 7.4 | 11.0M | 8.9M | 19.0M | 12.2M | J9.8 | 8.6M | J6.0 | 11.6Y | J 8.5 | J 7.9 | J 7.5 | 11.8M | 6.1M |
| 12 | J 6.9 | 6.3M | 7.2M | J 6.4 | J 6.9 | 4.3 | 7.4M | 5.8M | 7.4M | 11.6M | 14.0M | 11.9M | J11.2Y | 11.7M | 6.6M | 11.4 | 11.0M | 14.3M | J 9.2 | 7.1M | 3.3 | J 4.2 | J 6.4 | J 7.2 |
| 13 | J 5.0 | J 5.7 | J 5.3 | J 4.8 | J 2.5 | B | G | 6.4M | 6.3 | J11.8 | J10.4 | 9.4M | J10.0 | J 5.3 | 5.4M | 5.0 | 3.7 | 6.4 | 6.5 | 6.2M | 3.5 | 3.9M | 3.8M | 3.5 |
| 14 | J 7.4 | 5.6M | J 5.3 | J 3.4 | 3.0M | 3.3 | 5.9 | J 9.0 | D20.0D | J 8.8 | 12.1M | 7.0M | 4.2S | J 7.2 | 6.6 | J 7.5 | J 4.4 | 5.6 | J11.4 | 5.0M | J 5.8 | 6.2S | 4.0M | J 6.9 |
| 15 | 6.0M | J 4.4 | 4.2M | 3.0M | 5.5M | J 3.4 | 6.6M | 7.0M | 6.5M | 9.9M | 10.7 | J 8.3 | 12.1M | 10.4 | 8.4M | 7.5M | 7.7M | J 9.0 | J 7.2 | 5.6M | J 5.7 | 6.0M | J 5.8 | 6.7M |
| 16 | J 9.4 | J 7.0 | J 6.8 | 6.6 | 8.8M | 5.9M | 6.8 | 12.6M | 7.4 | 10.5M | 9.5M | 5.9M | 12.5 | J 7.1 | S | J 7.3 | J10.4 | 5.7 | 3.1 | S | 3.1M | J 2.6 | 2.9M | J 4.9 |
| 17 | 5.9M | J 7.0 | J 5.9 | J 6.0 | J 4.5 | 3.2 | 2.4G | 4.9M | J 4.5 | 5.6 | 6.0 | 6.1M | B | B | 4.5S | J 4.2S | 3.4S | 3.7 | J 2.7 | 4.9M | 3.2M | 4.9M | J 5.0 | 5.8M |
| 18 | J 6.9 | 6.4 | 6.0M | J 3.9 | J 4.8 | 3.9M | 3.3 | 4.5 | 6.6M | J 8.2 | J 6.5 | 8.9M | 14.7M | 12.0 | 4.3 | 4.7M | G | 4.4 | 3.5 | 3.8 | 12.3 | 3.6M | 3.2M | J 5.1 |
| 19 | 4.5M | 4.0M | 4.4M | 3.5 | 1.8 | S | 3.4 | J 5.0 | J 8.9 | 4.2 | J 4.3S | 4.8M | 4.2 | J 4.3 | 4.6 | 3.5 | G | J 3.0 | 3.3M | 3.0 | J 8.4 | J 5.6 | J 6.7 | J 7.6 |
| 20 | 6.2M | J 4.9 | J 4.9 | 2.3 | 2.5 | 2.9 | 3.0 | J 6.4 | J 7.9 | 7.6M | S | S | J 4.2S | S | 4.4S | 3.8S | 4.0M | 5.3M | 6.2 | 8.9M | 5.6M | S | 2.4 | J 8.4 |
| 21 | 6.4M | 9.6M | J 7.0 | 6.0M | J 3.4 | 2.6S | J 5.4 | 6.7 | J 7.2 | 5.9M | 6.1M | 8.0M | 4.5S | 11.0M | 8.1M | 6.8M | J 9.0 | 12.0M | 5.8 | 9.6M | 5.9M | 3.4M | J 5.3 | 5.9M |
| 22 | 5.6M | 5.5M | 2.1 | 3.0 | 2.0M | 2.4 | 4.2 | 7.7 | 8.4 | 9.5M | J 6.8 | 6.0M | J11.5Y | 4.9M | J 4.8 | 7.1 | J 6.0 | 6.3M | 6.4M | 4.0M | 2.3 | J 2.7S | 3.0M | 3.4 |
| 23 | 5.9M | J 4.2 | 8.0M | J 5.2S | J 4.8 | J 3.8 | J 3.8 | 6.9 | 5.9 | 5.6 | 8.9M | 9.8M | 5.4 | 3.7 | S | 4.2 | 4.9 | J 4.2 | 5.4 | 3.8M | 2.5S | J 7.4 | J 5.1 | 6.0M |
| 24 | J 6.1 | 4.0 | J 3.7 | 4.0 | 2.3 | J 3.5 | 5.8 | J 8.0 | J 9.2 | 5.3 | S | 4.3S | 4.4 | S | J 8.2 | 6.0 | 5.8M | 4.0 | 9.5M | J 9.0 | J 5.5 | 3.4 | 3.5M | J 5.4 |
| 25 | 5.4M | 5.5M | 6.8M | J 5.4 | 5.8M | 9.0M | J 8.4 | 4.0S | 4.2 | 9.7M | 8.3 | 15.1M | 6.3M | S | 8.6M | 9.4M | J 7.2 | J 6.7 | 8.7M | J 9.9 | 5.0S | J 6.4 | J 3.5 | 3.6M |
| 26 | 3.6M | 6.4M | 6.0M | J 7.5S | 5.5M | 2.6 | 4.4 | 5.9 | 6.5 | 4.7S | 4.3S | 6.4 | 6.1 | J 7.1 | 5.9M | 6.1 | 9.3 | 5.8M | J 3.5 | J 5.2 | 4.9M | J 3.1 | J 5.3 | 9.1M |
| 27 | J 8.3 | 5.8M | J 4.8 | J 4.6 | 3.8S | 2.4S | J 4.9 | J 7.2 | J11.7 | J 8.4Y | J14.8 | 12.0M | 13.1M | S | 5.6 | J 8.4Y | 3.4 | 2.7 | 3.4 | 5.5 | J 5.0 | J 6.0 | J 4.0 | 3.3 |
| 28 | J 6.0 | 3.5 | 3.3 | 3.0 | 3.1 | J 7.7 | 5.4 | 9.1 | J 3.7 | J 5.7 | 5.0S | 14.7 | J 4.6 | 9.0M | D20.0D | 6.2 | 13.2M | 6.7 | 5.8M | 8.2M | 12.2M | 3.9S | J 6.2 | J 7.2 |
| 29 | J 7.3 | 8.4M | J 6.0 | 5.8M | J 3.2 | 3.9M | 3.6 | 5.8M | J 9.0 | 5.8M | 6.0 | 4.2 | 7.6M | 5.8M | 4.2 | D 3.3S | 3.3 | 3.0 | 3.7 | 4.9M | 3.8 | J 3.0 | J 5.4S | 3.0 |
| 30 | 3.9M | 4.0S | 3.2 | J 4.0 | J 5.1 | S | 3.3 | 3.5 | J 3.7S | 3.5S | 5.7M | 4.3 | 6.1 | 4.3 | 6.1M | S | 6.9M | 6.7M | 6.2M | J 6.4 | J 4.2S | 3.4 | 5.4M | 5.4M |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 30 | 26 | 30 | 30 | 30 | 30 | 28 | 26 | 29 | 23 | 26 | 23 | 28 | 29 | 29 | 29 | 30 | 29 | 30 | 30 |
| Median | 5.9 | 5.2 | 4.8 | 4.0 | 3.6 | 3.4 | 4.3 | 6.4 | 7.3 | 8.2 | 7.1 | 7.6M | 7.2 | 7.2 | 5.8 | 6.2 | 5.9 | 5.6 | 5.9 | 6.2M | 5.2 | 4.2 | 5.2 | 5.8 |
| U.Q. | 6.4 | 6.4 | 6.2 | 5.8 | 5.4 | 4.3 | 5.8 | 7.7 | 8.9 | 9.4 | 9.4 | 11.0 | 11.2 | 10.4 | 8.2 | 7.5 | 8.3 | 6.7 | 8.8 | 8.4 | 6.6 | 6.0 | 5.8 | 6.9 |
| L.Q. | 5.0 | 4.0 | 3.2 | 3.0 | 2.5 | 2.6 | 3.3 | 4.8 | 5.9 | 5.6 | 5.8 | 5.9 | 4.6 | 5.3 | 4.8 | 4.7 | 3.8 | 4.1 | 3.6 | 4.5 | 3.8 | 3.5 | 3.5 | 4.8 |
| Q.R. | 1.4 | 2.4 | 3.0 | 2.8 | 2.9 | 1.7 | 2.5 | 2.9 | 3.0 | 3.8 | 3.6 | 5.1 | 6.6 | 5.1 | 3.4 | 2.8 | 4.5 | 2.6 | 5.2 | 3.9 | 2.8 | 2.5 | 2.3 | 2.1 |

The Radio Research Laboratories, Japan

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 4

# IONOSPHERIC DATA

Jun.1963 | $f_bEs$ | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 1.9 | | | 2.3 | S | 3.5 | A | 5.0 | A | 4.5 | 4.9 | A | A | 5.0 | 3.5 | C | C | 5.1 | A | A | 3.5 | 2.1 | A |
| 2 | 4.0 | 4.2 | A | A | A | A | A | A | A | A | A | A | S | B | 5.0 | A | A | A | A | 4.5 | 4.4 | 2.6 | 2.4 | 2.6 |
| 3 | A | 1.6 | | 2.6 | 1.7 | 3.0 | 4.0 | A | A | A | A | A | A | A | A | A | 4.5 | 4.6 | 5.2 | A | 2.9 | 2.0 | 3.5 | 2.1 |
| 4 | 2.0 | E | 1.8 | 1.8 | 1.9 | | 3.5 | 3.5 | A | 5.4 | A | A | 4.7 | A | A | S | A | A | A | 2.6 | 2.2 | 2.1 | 2.7 | 3.1 |
| 5 | 2.0 | 2.6 | 2.1 | E | E | 2.5 | E 2.5S | 4.4 | 4.6 | 4.5 | 4.6 | S | A | A | 5.0 | S | 3.6 | 3.5 | 4.0 | 2.1 | 4.1 | 3.5 | 4.4 | A |
| 6 | A | A | 1.9 | 2.1 | 2.0 | 2.1 | E 2.5R | 3.3 | A | 4.4 | 4.7 | S | A | 4.8 | S | S | S | 4.6 | S | 2.1 | 2.1 | 4.1 | A | A |
| 7 | A | A | 2.8 | 1.7 | E | 3.6 | 4.5 | A | 7.1 | 5.2 | A | A | E 4.0S | 5.1 | 4.9 | 4.6 | 4.6 | 4.1 | 4.4 | A | 4.8 | A | A | A |
| 8 | 2.8 | 2.9 | A | A | A | 4.7 | 4.4 | A | A | A | A | C | 5.0 | S | B | B | 4.6 | 5.0 | 5.2 | 5.0 | 4.8 | A | 3.5 | 3.5 |
| 9 | 3.6 | 2.6 | 2.6 | 2.7 | 1.6 | 2.5 | 4.5 | 4.1 | A | A | A | A | A | A | S | 4.3 | E 3.8S | 4.2 | 2.6 | 2.6 | 2.5 | S | 3.2 | 2.7 |
| 10 | 2.5 | 2.5 | 2.4 | 2.1 | 2.8 | 2.6 | 2.8 | 5.0 | 5.8 | 5.0 | A | A | A | A | 5.5 | S | E 3.8S | 3.2 | 3.5 | A | A | 3.5 | 2.8 | 3.1 |
| 11 | A | 4.5 | 3.1 | 3.5 | 3.6 | 2.5 | 2.9 | 4.5 | 4.7 | A | A | A | A | A | A | A | A | 4.5 | A | 4.8 | A | A | A | 4.0 |
| 12 | A | 2.8 | A | 2.6 | 1.5 | 3.8 | A | 4.8 | A | A | A | A | A | A | A | A | A | A | A | 6.5 | 2.5 | 2.6 | 4.5 | A |
| 13 | 3.1 | 2.9 | 4.5 | 3.5 | E | B | | 5.6 | 5.1 | A | A | A | A | 4.8 | 4.7 | 4.7 | 3.6 | 4.9 | 5.6 | 6.2 | 3.0 | 3.5 | 2.6 | 2.5 |
| 14 | A | 2.1 | 2.6 | 2.6 | 1.9 | 2.6 | 4.6 | A | A | 4.5 | A | A | E 4.2S | 5.1 | 6.4 | A | U 4.4S | 4.4 | A | 4.5 | 2.6 | A | 2.6 | 4.4 |
| 15 | 3.5 | 2.0 | 2.3 | 1.8 | 2.2 | 2.5 | A | A | A | A | A | 5.1 | A | A | A | 5.5 | 4.5 | 4.3 | 6.4 | A | 4.5 | A | A | A |
| 16 | A | A | A | A | A | 3.3 | A | A | A | A | A | A | A | A | S | A | A | 4.8 | 3.1 | S | 2.5 | 2.2 | E | 3.5 |
| 17 | 2.0 | A | 2.0 | 3.8 | 1.8 | 2.6 | E 2.4R | 4.5 | 4.4 | 4.7 | 4.7 | 4.9 | B | B | E 4.5S | 3.6 | E 3.4S | 3.6 | 2.6 | 4.2 | 2.2 | 3.5 | 4.0 | 3.5 |
| 18 | 5.5 | 4.4 | 3.8 | 3.0 | 2.7 | A | E 3.3S | 4.5 | 5.1 | A | A | A | A | A | 4.3 | 4.6 | | 3.5 | 3.5 | 3.5 | A | 2.3 | 2.6 | 3.1 |
| 19 | 3.9 | 2.8 | 2.9 | 2.1 | E | S | 3.3 | A | A | 4.1 | E 4.3S | S | E 4.2S | 4.3 | 4.6 | E 3.5S | | 2.9 | 2.6 | 2.1 | 2.9 | A | A | A |
| 20 | A | 3.4 | 2.1 | 1.8 | 1.5 | S | 2.8 | A | 5.2 | A | S | S | S | S | 4.1 | E 3.8S | U 4.0S | 4.5 | 5.5 | A | 4.4 | S | 2.1 | A |
| 21 | A | A | A | A | 2.6 | 2.2 | A | A | A | A | A | A | A | A | A | A | A | A | 4.8 | A | 4.8 | 2.5 | 4.2 | 4.1 |
| 22 | A | A | E | 1.9 | E | 2.1 | 4.2 | 4.5 | A | A | A | A | A | 4.6 | 4.5 | 4.5 | 4.4 | 5.0 | 4.3 | 2.9 | 2.1 | 2.1 | 2.1 | 2.9 |
| 23 | A | 2.6 | A | 2.0 | 1.8 | 2.6 | 3.6 | 4.6 | 4.4 | 4.9 | A | A | A | E 3.7S | S | 3.8 | 4.5 | 4.2 | 2.8 | 2.5 | 2.5 | A | U 4.4S | 2.4 |
| 24 | 2.5 | 2.5 | 2.6 | 2.0 | 1.4 | 3.5 | 4.8 | A | A | 4.6 | S | 4.2 | 4.4 | S | A | 4.5 | 4.5 | 4.0 | 4.4 | 5.0 | 2.6 | 2.2 | E | 2.6 |
| 25 | 2.6 | A | A | 2.8 | A | A | 3.9 | E 4.0S | 4.2 | A | A | A | A | S | 4.2 | A | 4.5 | 4.7 | A | 4.7 | 3.7 | 5.0 | 2.1 | 2.1 |
| 26 | S | A | U 3.1A | A | 2.0 | 2.1 | A | A | 5.3 | 4.5 | E 4.3S | A | A | A | A | A | A | 4.7 | 2.6 | 4.0 | 3.0 | 2.6 | 2.6 | 2.6 |
| 27 | 2.6 | 2.7 | 2.6 | 2.0 | 1.5 | 2.3 | A | A | A | A | A | A | A | S | A | 4.8 | E 3.4S | 2.6 | 2.4 | 2.7 | 2.3 | A | AS | S |
| 28 | A | S | 2.9 | 1.3 | 2.3 | A | A | A | 3.3 | A | A | A | 4.5 | A | A | A | A | 5.1 | 4.5 | A | A | 3.2 | A | A |
| 29 | A | A | A | A | 2.1 | A | 3.6 | A | A | 4.4 | A | E 4.2S | A | A | E 4.2S | D 3.3S | E 3.3S | U 3.0S | 3.5 | 3.5 | 3.5 | 2.0 | 2.6 | 2.6 |
| 30 | 2.2 | A | 2.0 | 2.8 | 2.6 | S | 2.8 | 3.3 | S | 3.5 | 4.9 | E 4.3S | A | 4.1 | 5.5 | S | A | A | 5.3 | 4.5 | U 4.2S | 2.2 | A | * |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

$f_bEs$ | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 5

# IONOSPHERIC DATA

Jun. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E1.80S | E1.50S | 1.10 | 1.10 | E | E2.00S | 2.10 | 2.10 | 2.10 | E3.80S | 3.40 | 3.40 | 3.20 | 3.00 | 2.80 | 2.80 | C | C | E2.20S | E1.80S | E2.00S | E1.70S | E1.70S | E1.90S |
| 2 | E1.90S | E1.50S | E1.60S | E | E | E2.00S | 2.00 | 2.00 | 2.60 | 3.20 | E3.50S | E3.00S | E3.40S | 4.50 | E3.50S | 2.80 | 2.20 | 2.10 | E2.00S | E1.80S | E1.50S | E1.80S | E1.50S | E1.80S |
| 3 | E1.90S | E1.50S | 1.40 | E | E | E1.65S | 1.60 | 2.20 | 2.20 | E3.30S | E3.50S | E3.40S | 2.90 | E3.00S | 2.90 | 2.60 | 2.10 | 2.70 | E2.10S | E2.30S | E1.90S | E1.70S | E1.50S | E1.80S |
| 4 | E1.50S | E1.60S | 1.30 | E | E1.40S | E1.60S | 2.65 | 2.20 | E3.10S | E2.70S | E3.50S | E3.10S | E3.50S | E3.10S | 2.30 | E4.50S | E3.10S | 2.20 | 1.90 | E1.70S | E1.80S | E1.50S | E1.90S | E1.90S |
| 5 | E1.80S | E1.60S | E1.60S | E1.50S | 1.10 | E1.70S | 2.00 | E2.00S | 2.75 | 2.85 | E3.30S | S | 3.10 | E3.40S | E3.60S | E3.10S | 2.20 | 2.60 | 2.10 | E1.90S | E1.90S | E1.90S | E1.90S | E1.90S |
| 6 | E1.50S | E1.60S | 1.40 | 1.00 | 1.00 | E1.60S | E1.90S | 2.20 | 2.10 | 2.60 | 3.05 | E4.65S | 2.80 | E3.50S | E3.50S | E4.35S | E4.50S | 2.20 | E2.40S | E1.80S | 1.40 | E1.75S | E1.80S | E1.90S |
| 7 | E1.85S | E1.60S | 1.50 | E | 1.05 | E2.00S | E2.70S | 2.00 | E2.90S | E3.00S | E3.20S | E3.30S | 2.90 | 2.80 | 2.40 | 2.80 | E3.30S | 2.20 | E2.05S | E2.10S | E2.00S | E1.90S | E1.80S | E1.70S |
| 8 | E1.90S | E1.50S | E1.80S | 1.10 | 1.00 | E1.50S | 1.90 | 2.85 | E2.90S | E3.10S | 3.00 | C | E3.30S | E3.90S | 4.50 | 3.80 | E3.20S | 2.10 | E1.90S | E1.70S | E1.60S | E1.80S | E1.50S | E1.50S |
| 9 | E1.70S | E1.60S | E1.50S | 1.10 | 1.10 | 1.70 | 2.10 | 2.10 | E3.00S | 3.30 | 2.70 | 3.00 | 3.10 | E3.10S | E4.70S | E3.10S | E2.80S | 2.10 | 2.05 | E2.00S | E1.90S | E1.80S | E1.80S | E1.50S |
| 10 | E1.70S | 1.40 | 1.40 | 1.20 | E | E1.90S | 2.10 | 2.20 | 2.65 | 2.70 | 2.80 | E3.50S | 3.00 | 2.80 | 3.00 | E3.80S | 2.80 | 2.25 | E2.10S | E1.95S | E2.00S | E1.70S | E1.50S | E1.80S |
| 11 | E1.90S | E1.70S | E1.50S | 1.30 | 1.10 | E1.80S | 1.90 | 2.20 | E3.10S | 3.10 | E3.20S | E3.45S | 3.55 | 3.40 | 2.90 | 2.60 | 2.10 | 2.30 | E2.00S | E2.00S | E1.90S | E1.90S | E2.00S | E1.90S |
| 12 | E1.70S | E1.90S | E1.70S | 1.10 | 1.00 | E2.00S | 2.80 | 3.00 | 2.80 | E3.05S | 3.00 | E3.30S | E3.00S | E3.20S | 3.00 | 3.10 | 2.80 | 2.30 | E2.30S | E1.70S | E1.80S | E1.90S | E1.50S | E1.90S |
| 13 | E1.90S | 1.45 | E1.60S | 1.10 | 1.10 | 1.90 | 2.20 | 2.10 | 2.30 | 2.60 | 2.60 | 3.10 | 3.10 | 3.10 | 2.80 | 2.60 | 2.70 | 2.60 | 2.60 | E2.00S | E1.80S | E1.80S | E1.90S | E1.80S |
| 14 | E1.50S | E1.60S | 1.10 | 1.10 | E | E1.90S | 1.70 | 2.10 | 3.10 | E2.85S | 3.00 | 3.30 | E3.70S | 3.00 | 2.95 | 2.80 | 2.10 | 2.20 | 1.60 | E2.00S | E2.00S | E1.90S | E1.90S | E1.95S |
| 15 | E1.95S | E1.60S | E1.50S | 1.00 | 1.50 | E1.80S | 1.90 | 1.90 | 2.20 | E3.10S | 2.90 | 2.80 | 3.00 | E3.20S | E3.50S | 2.85 | 2.10 | 2.00 | 2.00 | E2.00S | E2.10S | E1.50S | E1.50S | E1.80S |
| 16 | E1.50S | E1.90S | E1.60S | 1.20 | E1.60S | E1.50S | 2.00 | 2.20 | 2.70 | E3.05S | 3.10 | E3.05S | 3.10 | E3.10S | E4.60S | 3.00 | 2.30 | 2.10 | 2.10 | E2.00S | E1.90S | E1.95S | E2.20S | E1.90S |
| 17 | E1.90S | E1.90S | E1.60S | E | E | E1.70S | 2.10 | E2.20S | 2.90 | E3.25S | 2.90 | 3.00 | 4.80 | 4.70 | E3.10S | E3.10S | 3.00 | 2.20 | 2.00 | E2.10S | E1.90S | E2.10S | E2.10S | E1.90S |
| 18 | E1.90S | E1.50S | 1.10 | E | E | E1.95S | 2.10 | 2.10 | 2.10 | 2.90 | 3.10 | 2.90 | 3.10 | 3.10 | 2.95 | 2.80 | 2.20 | 2.20 | 2.10 | E1.60S | E1.90S | E1.50S | E1.90S | E1.90S |
| 19 | E1.80S | E1.80S | E1.60S | E1.50S | 1.10 | E2.00S | 2.30 | 2.30 | 2.70 | E3.10S | E3.20S | 3.20 | 3.10 | 3.00 | 3.10 | 2.30 | 2.10 | 2.20 | E2.10S | E1.60S | E1.90S | E1.90S | E2.10S | E1.80S |
| 20 | E1.80S | E1.90S | 1.40 | 1.10 | E | E2.40S | 2.00 | 2.10 | 2.30 | 2.80 | E3.60S | S | E3.40S | E4.70S | 2.70 | 2.10 | 2.00 | 2.30 | E2.10S | E1.70S | E2.00S | E1.80S | E2.00S | E1.90S |
| 21 | E1.70S | E1.60S | E1.60S | E | E | E1.70S | 1.95 | 2.00 | 2.00 | 2.70 | 3.20 | 3.10 | 3.55 | E2.80S | 3.00 | 2.80 | 2.10 | 2.40 | E1.80S | E1.80S | E1.95S | E1.80S | E1.90S | E1.95S |
| 22 | E1.90S | E1.50S | E1.50S | 1.10 | 1.10 | E2.00S | 2.30 | 2.00 | 2.80 | E2.80S | 2.60 | E2.90S | E3.20S | E3.20S | 2.90 | 2.80 | 2.40 | 2.30 | 2.00 | E1.80S | E1.80S | E1.80S | E1.80S | E1.90S |
| 23 | E1.90S | E1.50S | E1.80S | E1.50S | 1.60 | E2.00S | 2.20 | 2.10 | 2.80 | E3.00S | E3.10S | 3.05 | 3.10 | E2.90S | E4.40S | 2.90 | 2.10 | 2.10 | E2.00S | E1.90S | E2.00S | E1.80S | E1.90S | E1.90S |
| 24 | E1.90S | E1.60S | E1.50S | E | E | E1.70S | 2.20 | 2.30 | 2.10 | 2.80 | E4.40S | 3.60 | 3.20 | E3.30S | 2.80 | 2.85 | 2.10 | 2.20 | E2.20S | E1.90S | E1.90S | E1.80S | E1.50S | E1.70S |
| 25 | E1.80S | 1.50 | E | E | 1.00 | E1.50S | 1.95 | E2.20S | 2.20 | E2.90S | 2.90 | 2.90 | 2.90 | E3.50S | 2.80 | 2.85 | 2.10 | 2.20 | E2.20S | E2.00S | E1.80S | E1.95S | E1.80S | E1.80S |
| 26 | E1.80S | E1.80S | E1.70S | E | 1.20 | E1.95S | 2.10 | 2.10 | 2.90 | E3.10S | E3.50S | 3.30 | 3.30 | 3.25 | 2.90 | 2.40 | 2.70 | 2.40 | 2.10 | E2.20S | E1.80S | E1.80S | E1.90S | E1.90S |
| 27 | E1.80S | E1.60S | E1.50S | E | 1.20 | E1.50S | 2.10 | E2.80S | E3.20S | 1.80 | 3.10 | 3.10 | 3.25 | S | E3.40S | E3.20S | 2.00 | 2.10 | E1.80S | E1.90S | 1.40 | E1.70S | E1.65S | E1.90S |
| 28 | E1.70S | E1.65S | E1.55S | 1.15 | 1.50 | E1.80S | E2.25S | 1.75 | 2.10 | 3.05 | E3.10S | 3.20 | 3.40 | E3.50S | 3.00 | 2.80 | 2.70 | 2.25 | E1.90S | E1.90S | E1.90S | E1.80S | E1.80S | E1.90S |
| 29 | E1.90S | E1.50S | E1.50S | E | E1.70S | E1.80S | E2.10S | 2.10 | 2.60 | E2.80S | 2.80 | 3.30 | 3.60 | 3.10 | 3.05 | 2.80 | 2.60 | 2.10 | E2.40S | E1.90S | E1.90S | E1.90S | E1.90S | E1.90S |
| 30 | E1.90S | E1.50S | E1.90S | E1.80S | E1.50S | E1.95S | 1.80 | 2.25 | 2.20 | E2.80S | 3.20 | E3.40S | E3.20S | 3.05 | E2.90S | E2.90S | 2.20 | 2.00 | 2.00 | E2.00S | E2.00S | E1.80S | E1.90S | E1.80S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 26 | 26 | 30 | 28 | 27 | 24 | 30 | 18 | 20 | 23 | 29 | 21 | 22 | 24 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| Median | E1.80 | E1.60 | E1.50 | 1.00 | 1.00 | E1.80 | E2.10 | 2.10 | 2.45 | E2.90 | 3.00 | E3.10 | 3.10 | E3.10 | 2.90 | 2.80 | 2.20 | 2.20 | E2.10 | E1.90 | E1.90 | E1.80 | E1.85 | E1.90 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 6

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F | F | J2.90F | J2.80F | 3.10F | U3.40S | 2.90 | I3.10A | U3.05S | I3.15A | 2.60 | 3.00 | I2.90A | I2.85A | 3.05 | 2.90 | C | C | 3.15 | A | A | F | F | A |
| 2 | F | F | A | A | A | A | A | A | A | A | A | A | S | 2.55 | 2.75 | I2.80A | A | A | A | 2.95 | I2.90F | F | F | 2.85 |
| 3 | A | F | 2.95 | I2.80F | I3.00F | 3.20S | 3.00 | A | A | A | A | A | A | A | A | A | 2.85 | 2.95 | 3.00 | I3.10A | FS | F | F | F |
| 4 | F | I2.85F | U2.75F | I2.90F | 2.85 | J3.25S | 3.60 | 3.45 | A | 3.30 | I3.00A | I2.75A | U2.80R | A | A | 2.70 | I2.95A | I3.00A | I3.05A | 2.95 | U3.40S | 3.05 | 2.95 | I2.95F |
| 5 | U2.95F | F | F | F | F | U3.10S | J3.00R | 3.30 | 3.25 | 3.25R | 3.20 | S | A | A | 2.90 | 3.00 | J3.10S | 2.95 | J3.05R | J3.30S | 3.10 | 3.25S | J2.95S | A |
| 6 | A | A | F | 3.00 | U3.40S | 3.35 | J3.20S | J3.15R | A | U3.30A | 3.10 | 3.10R | I2.85A | 2.90R | I2.75S | U2.50S | 2.90 | 2.95 | U3.05S | U3.10S | U3.45R | U3.25S | A | A |
| 7 | A | A | 2.75S | U2.60S | U2.65S | U2.70S | 3.15 | I2.80A | U3.60S | 3.00 | A | A | 2.35R | 2.95 | J3.05S | 3.20S | 3.05 | 3.10 | 2.70 | I3.05A | 3.25 | A | A | A |
| 8 | S | F | A | A | A | 3.00 | 3.25 | A | A | A | A | C | A | R | R | 2.95 | 2.90 | S | J3.25R | R | R | A | FS | F |
| 9 | F | F | F | F | F | U3.00S | 3.15 | 3.10 | A | A | A | A | A | A | 2.80 | 3.05 | 2.85 | 2.80 | J3.05R | 3.10S | U3.40S | I3.00S | 2.85 | I2.90F |
| 10 | J2.85F | F | F | F | 3.25 | 3.50 | 3.30 | I3.10S | 3.10 | U3.30S | A | A | A | A | 3.00 | 3.00 | 3.00 | 3.00 | 3.10 | A | A | 2.85S | I2.80S | I2.85F |
| 11 | I2.90A | 2.95F | F | F | F | 3.20 | 3.60 | 3.30 | 3.35 | A | A | A | A | A | A | A | A | 3.05S | A | 3.20 | I3.15A | A | A | F |
| 12 | A | F | A | F | F | F | A | J3.20R | A | A | A | A | A | A | A | A | A | A | I2.90A | 2.95S | 3.10 | 2.80 | F | A |
| 13 | F | F | F | F | 2.85F | 3.00 | 3.10 | 3.35 | 3.30 | A | A | A | A | 2.90 | 2.95S | I3.00S | I3.10S | J3.15S | 3.25 | 3.00S | 2.95 | 2.75 | 2.85 | 2.90 |
| 14 | I3.00A | I3.10F | F | F | F | 3.15F | 3.35 | A | A | 3.25S | A | A | 2.85 | 2.85 | 3.00 | I3.20A | J3.10S | 3.05 | I3.15A | U2.70S | 3.10S | I2.90A | F | F |
| 15 | FS | F | F | F | U2.95S | 3.15 | A | A | A | A | A | 3.10S | A | A | A | 2.95 | 2.90 | 2.85 | 3.25 | A | 2.95 | A | A | A |
| 16 | A | A | A | A | A | 2.80 | A | A | A | A | A | A | I2.80A | I2.75A | 2.95 | I2.75A | I3.00A | S | 2.90 | 3.25 | 3.50 | 2.75 | 2.95 | F |
| 17 | S | A | J3.05F | FS | F | 2.85 | 3.05 | J3.30S | 3.35 | 3.00 | J2.95R | 2.90 | U2.80R | 2.90 | J3.05S | 3.10 | 2.75 | 2.85R | 3.05 | 3.10 | 3.35S | 2.95 | 3.00 | I3.00F |
| 18 | U3.00S | F | F | F | F | A | I2.80S | 2.55 | 3.05 | A | A | A | A | A | 3.00 | 3.00 | 2.90 | 2.95 | J3.10R | 3.35 | A | F | F | J2.80F |
| 19 | S | F | F | F | 3.00 | 3.10S | U3.05R | A | A | 3.25 | 2.95 | I2.80S | I2.75S | 2.85 | J3.00R | I2.90R | 2.90 | 2.90 | 3.05 | 3.10S | U2.90S | A | A | A |
| 20 | I2.95A | 2.85 | 3.00 | F | F | J3.25S | J3.20R | I2.90A | 3.45 | I3.15A | S | S | S | 2.55 | 2.70 | J3.10S | J3.15S | 3.15 | 2.95 | I3.20A | 3.35 | U3.30S | 2.75 | A |
| 21 | A | A | A | A | 2.90 | J3.15S | A | A | A | A | A | A | A | A | A | A | A | I2.95A | 3.00 | I3.20A | 3.15 | 2.90F | 3.05 | 2.95 |
| 22 | I3.00A | I2.90A | F | F | F | 3.15 | 2.95 | 3.25 | I3.40A | I3.20A | A | A | A | 2.85 | 2.85 | 2.90 | 3.25 | 3.00 | 2.95 | 3.05 | U3.30S | J3.30S | J2.80S | U2.80S |
| 23 | A | F | A | I2.90F | I3.10F | 3.20 | 3.15 | 3.00 | 3.00 | 3.30 | A | A | I2.80A | 2.85 | J2.85R | 3.05 | 3.05 | 3.10 | 3.00 | 3.00 | J3.35S | A | FS | SF |
| 24 | F | F | F | F | F | 3.05S | U3.35R | A | A | 3.50 | 3.40 | J2.95R | R | S | I2.85A | 3.05 | 3.30S | 3.25 | 2.90 | 3.50 | I3.15S | U2.90S | F | F |
| 25 | S | A | A | 2.80 | I2.90A | I2.90A | 2.90 | 3.20S | 3.35 | I3.45A | A | A | A | 2.95 | J2.95R | I3.00A | 3.10 | U3.20R | I3.05A | J3.20R | 3.15 | F | F | F |
| 26 | S | A | F | A | 3.40F | 3.10R | I3.40A | I3.55A | 2.80 | U3.50S | 3.10R | A | A | A | A | A | A | 2.85 | J2.95R | 3.35 | J3.05R | U2.75S | U2.75S | U2.90S |
| 27 | 2.85 | 2.70 | 2.85 | I2.85F | 2.95 | J3.25S | A | A | A | A | A | A | A | S | A | 2.90 | 2.80 | 3.05S | 3.00 | 3.30S | U2.80S | A | AS | S |
| 28 | A | I2.75S | U2.80S | 2.80S | U2.70S | I2.90A | I2.85A | I2.95A | 3.25S | A | A | A | 2.70 | A | A | A | A | 3.15 | J2.95R | A | A | S | A | A |
| 29 | A | A | A | A | 3.20 | I3.05A | 2.95 | A | A | 2.70 | I2.80A | U2.90R | I2.85A | I3.00A | 3.05 | 2.80 | J2.85R | 3.10 | 3.30 | 3.35 | J2.90S | J2.95S | I2.95S | S |
| 30 | F | A | 2.85F | 2.85F | I3.05F | S | J2.90 (S/H) | 3.15 | S | I3.10R | 2.95 | 2.75R | I2.75A | 2.75 | 2.95 | 3.00 | I2.90A | I2.80A | 3.00 | 3.25 | 3.55S | J2.85S | I2.80A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 8 | 7 | 9 | 10 | 17 | 26 | 24 | 19 | 14 | 17 | 10 | 9 | 12 | 15 | 20 | 24 | 23 | 25 | 28 | 25 | 24 | 17 | 13 | 10 |
| Median | U2.95 | U2.85 | 2.85 | U2.80 | 3.00 | 3.10 | 3.10 | 3.15 | 3.30 | 3.25 | 3.00 | 2.90 | U2.80 | 2.85 | 2.95 | 3.00 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 2.90 | 2.85 | U2.90 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4' N, Long. 139° 29.3' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L | A | A | A | L | A | A | A | A | 3.35 | C | C | A | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | S | B | A | A | A | A | A | | | | | |
| 3 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 4 | | | | | | L | L | | A | A | A | A | A | A | A | S | A | A | A | | | | | |
| 5 | | | | | | | | A | A | A | A | S | A | A | A | L | 3.35L | A | A | | | | | |
| 6 | | | | | | L | | U3.35L | A | A | A | S | A | A | S | S | S | A | L | | | | | |
| 7 | | | | | | | A | A | A | A | A | A | L | A | A | A | A | A | A | | | | | |
| 8 | | | | | | | A | A | A | A | A | C | A | L | B | 3.55L | A | A | A | | | | | |
| 9 | | | | | | | A | A | A | A | A | A | A | A | S | A | S | A | L | | | | | |
| 10 | | | | | | | L | A | A | A | A | A | A | A | A | 3.45L | 3.40S | 3.55 | A | | | | | |
| 11 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 12 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 13 | | | | | | | L | A | A | A | A | A | A | A | L | A | U3.40S | A | A | | | | | |
| 14 | | | | | | | A | A | A | A | A | A | S | A | A | A | A | A | A | | | | | |
| 15 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 16 | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | L | | | | | |
| 17 | | | | | | | 3.35L | A | A | A | A | A | B | B | AS | 3.55L | U3.30S | L | A | | | | | |
| 18 | | | | | | A | S | A | A | A | A | A | A | A | A | A | 3.35L | L | | | | | | |
| 19 | | | | | | | A | A | A | L | S | S | S | A | L | S | S | L | 3.30L | | | | | |
| 20 | | | | | | | L | A | A | A | S | S | S | S | L | S | L | A | A | | | | | |
| 21 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 22 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 23 | | | | | | | A | A | A | A | A | A | A | L | S | 3.55L | A | A | 3.50L | | | | | |
| 24 | | | | | | | A | A | A | A | S | L | 3.25L | S | A | A | A | A | A | | | | | |
| 25 | | | | | | A | A | S | A | A | A | A | A | 3.30S | 3.45L | A | A | A | A | | | | | |
| 26 | | | | | | | A | A | A | L | L | A | A | A | A | A | A | A | L | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | S | A | A | S | 3.50 | S | | | | | |
| 28 | | | | | | A | A | A | S | A | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | A | A | A | A | A | AS | A | A | AS | S | S | 3.35S | | | | | | |
| 30 | | | | | | | | 3.45L | S | S | A | S | A | 3.05 | A | 3.65L | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | 1 | 2 | | | | | 1 | 2 | 1 | 6 | 5 | 3 | 2 | | | | | |
| Median | | | | | | | 3.35 | U3.40 | | | | | 3.25 | 3.20 | 3.45 | 3.55 | 3.35 | 3.50 | 3.40 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 8

40

# IONOSPHERIC DATA

Jun. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 370 | A | 300 | A | 450 | 350A | A | A | 385 | 340 | C | C | 300 | | | | | |
| 2 | | | | | | A | A | A | A | A | A | A | S | 500 | E440A | A | A | A | A | | | | | |
| 3 | | | | | | 275 | 350 | A | A | A | A | A | A | A | A | A | 360A | 340 | E310A | | | | | |
| 4 | | | | | | 260 | 230 | | A | 300 | A | A | 430 | A | A | 360 | A | A | A | | | | | |
| 5 | | | | | | | | 285 | 275 | 300 | 310 | S | A | A | 350A | 340 | 305 | 310 | 295 | | | | | |
| 6 | | | | | | 250 | | 285 | A | 265 | 345 | 310 | A | 355 | S | 410 | 355 | 315 | 295 | | | | | |
| 7 | | | | | | | 300 | A | 250 | 310 | A | A | 525 | 310 | 310 | 300 | 310 | 300 | E380A | | | | | |
| 8 | | | | | | | 255 | A | A | A | A | C | 350 | 285 | 305 | 305 | 340 | 295 | 280 | | | | | |
| 9 | | | | | | | E300A | 310 | A | A | A | A | A | A | 375 | 305 | 360 | 350 | 270 | | | | | |
| 10 | | | | | | | 250 | 275 | 300A | 270 | A | A | A | A | E395A | 350 | 325 | 300 | 250A | | | | | |
| 11 | | | | | | | 250 | 250A | 280 | A | A | A | A | A | A | A | A | 295 | A | | | | | |
| 12 | | | | | | | A | 295 | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 13 | | | | | | | 305 | 250A | 280 | A | A | A | A | 350 | 325 | 310 | 305 | 295 | E295A | | | | | |
| 14 | | | | | | | 230 | A | A | 295 | A | A | 385 | 340 | 310 | A | 275 | 300 | A | | | | | |
| 15 | | | | | | | A | A | A | A | A | E340A | A | A | A | E350A | 360 | 340A | E300A | | | | | |
| 16 | | | | | | E310A | A | A | A | A | A | A | A | A | 395 | A | A | E300A | 350 | | | | | |
| 17 | | | | | | | 300 | 270 | 255 | 360 | 380 | 370 | 405 | 340 | 300 | 300 | 385 | 350 | 295 | | | | | |
| 18 | | | | | | A | S | 495 | 310 | A | A | A | A | A | 325 | 345 | 340 | 305 | | | | | | |
| 19 | | | | | | | 305 | A | A | 310 | 400 | S | E410S | 360 | 385 | E350S | 345 | 350 | 300 | | | | | |
| 20 | | | | | | | 255 | A | 250 | A | S | S | S | 455 | 385 | 285 | 265 | E290A | E350A | | | | | |
| 21 | | | | | | | A | A | A | A | A | A | A | A | A | A | A | A | E300A | A | | | | |
| 22 | | | | | | | 350A | 260 | A | A | A | A | A | 385 | 360 | 340 | 280 | 310 | E305A | | | | | |
| 23 | | | | | | | E300A | E310A | 345 | 290 | A | A | A | 385 | 360 | 295 | 300 | 285 | 290 | | | | | |
| 24 | | | | | | | E300A | A | A | 250 | 295 | 350 | 430 | S | A | 295 | 255 | 255 | 300A | | | | | |
| 25 | | | | | | A | 350 | E300S | 255 | A | A | A | A | 350 | 325 | A | 305 | 290A | A | | | | | |
| 26 | | | | | | | A | A | E410A | 250 | 330 | A | A | A | A | A | A | 360A | 300 | | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | S | A | 360 | 365 | 280 | 285 | | | | | |
| 28 | | | | | | A | A | A | 245 | A | A | A | 435 | A | A | A | A | 295 | E250A | | | | | |
| 29 | | | | | | | 355 | A | A | E410A | A | E440A | A | A | 335 | 350 | 355 | 295 | | | | | | |
| 30 | | | | | | | | 305 | S | 385 | 375 | 405 | A | 400 | 330A | 300 | A | A | 315 | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | 3 | 18 | 11 | 12 | 12 | 8 | 6 | 8 | 13 | 17 | 18 | 20 | 24 | 16 | | | | | |
| Median | | | | | | 260 | E300 | 285 | 280 | 300 | 360 | 350 | 420 | 355 | 335 | 325 | 330 | 300 | 295 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'F2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 9

# IONOSPHERIC DATA

Jun.1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35°42.4'N | Long. 139°29.3'E



| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 250 | 300 | 255 | 250 | 250A | 230 | E300A | A | A | A | E360A | A | A | A | A | 250 | C | C | A | A | A | E350A | 300 | I310A |
| 2 | E350A | E300A | A | A | A | A | A | A | A | A | A | A | S | B | A | A | A | A | A | E300A | 300A | 330 | 295 | 300 |
| 3 | I300A | 305 | 245 | E400A | 270 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | 250A | 305 | E350A | 300 |
| 4 | 285 | 300 | 280 | 290 | 300 | 245 | 225 | 245 | A | A | A | A | A | A | A | S | A | A | A | 250A | 250 | 250 | 260 | 300A |
| 5 | 285 | 300 | 300 | 285 | 250 | 250 | 245 | I245A | I245A | A | A | S | A | A | A | E300S | 250A | A | A | 255 | 260A | 250A | E310A | A |
| 6 | A | A | 250 | 255 | 225 | 215 | 205 | 245 | A | A | A | S | A | A | S | S | S | A | 250 | 245 | 215 | 255 | A | A |
| 7 | A | A | 295 | 305 | 280 | 355 | A | A | A | A | A | A | S | A | A | A | A | A | I245A | I250A | E250A | A | A | A |
| 8 | 305 | 300 | A | A | A | E300A | A | A | A | A | A | C | A | 230 | I240B | 230 | A | A | A | E255A | E250A | I325A | 395 | 300 |
| 9 | 305 | 295 | 255 | 280 | 300 | 250 | A | A | A | A | A | A | A | A | S | E300A | S | A | 260A | 245 | 205 | I300S | 315 | 310 |
| 10 | 300 | 300 | 300 | 260 | 250 | 230 | 210 | A | A | A | A | A | A | A | A | 245 | E295S | 210 | A | A | A | E310A | 280A | 345 |
| 11 | A | E340A | 300 | 300 | 300 | 235 | 225 | A | A | A | A | A | A | A | A | A | A | A | A | E260A | I245A | A | A | E350A |
| 12 | A | 300 | I300A | 255 | 250 | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A | E360A | 245 | 295 | E305A | I320A |
| 13 | 345 | 305 | E350A | E300A | 255 | 245 | 225 | A | A | A | A | A | A | E350A | E330A | A | 250 | A | A | E310A | 275 | 310A | 300 | 295 |
| 14 | I300A | 250 | 260 | 315 | 255 | 245 | A | A | A | A | A | A | S | A | A | A | A | A | A | E400A | 225 | A | 325 | E350A |
| 15 | E350A | 300 | 300 | 250 | 295 | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | E300A | A | A | A |
| 16 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | S | A | A | A | E305A | 245 | 205 | 295A | 305 | E350A |
| 17 | 250 | A | 250 | E350A | 255 | 250A | 225 | I230A | A | A | A | A | B | E310B | AS | 225 | E250S | E280A | I245A | 260 | 230 | 300A | E300A | E300A |
| 18 | E350A | E350A | E340A | E280A | 310 | A | S | A | A | A | A | A | A | A | A | I210A | 205 | I240A | 250A | 210 | A | E340A | 245 | 315 |
| 19 | E360A | 300 | 245 | 255 | 210 | 205 | A | A | A | E280A | S | S | S | A | E350A | I220S | I230S | 230 | 235 | 210 | E300A | A | A | A |
| 20 | I305A | E350A | 255 | 255 | 300 | 245 | 230 | A | A | A | 200 | S | S | S | E300A | I210S | E250S | A | A | A | E250A | 230 | 295 | A |
| 21 | A | A | A | A | E350A | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | E250A | 300 | E340A | E350A |
| 22 | I285A | I290A | 255 | 255 | 255 | 230 | A | A | A | A | A | A | A | A | A | A | A | A | A | 250A | 210 | 210 | 300 | E310A |
| 23 | A | 300 | I305A | 285 | 225 | 245 | A | A | A | A | A | A | A | E350A | S | 245 | I245A | I245A | 250A | 250A | 200 | A | E350A | 300 |
| 24 | 300 | 270 | 295 | 245 | 250 | E295A | A | A | A | A | S | E345S | E310A | S | A | A | A | I235A | I250A | 250 | 245 | 295 | 300 | 255 |
| 25 | E295A | A | A | 310 | I310A | A | A | S | A | A | A | A | A | 250 | 245 | I245A | A | A | A | 260A | 250A | E310A | 260 | 300 |
| 26 | S | A | 320A | A | 245 | 220 | A | A | A | E250A | S | A | A | A | A | A | A | A | 245 | 245A | 255 | 280A | 350A | 310 |
| 27 | E350A | E355A | E340A | 300 | 245 | 235 | A | A | A | A | A | A | A | S | A | A | 235 | 225 | 240 | 230 | 285 | I360A | AS | S |
| 28 | A | I320S | 290 | 270 | 305 | I270A | I260A | I250A | 240 | A | A | A | A | A | A | A | A | A | A | A | A | E250A | A | A |
| 29 | A | A | A | A | 255 | I260A | A | A | A | A | A | AS | A | A | AS | I230S | 245 | 245 | 250A | 240A | E310A | 260 | E310A | 310 |
| 30 | 300 | I295A | 300 | E350A | 300A | 235 | 205H | 250 | S | 195 | I230A | S | A | E305A | A | 230 | A | A | A | E250A | 210 | 255 | I280A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 15 | 18 | 21 | 19 | 26 | 23 | 10 | 6 | 2 | 3 | 2 | 1 | 1 | 6 | 5 | 11 | 7 | 7 | 11 | 17 | 19 | 20 | 17 | 16 |
| Median | 300 | 300 | 290 | 270 | 255 | 245 | 225 | U245 | U240 | E250 | U215 | E345 | E310 | E310 | E300 | 230 | 245 | 235 | 250 | E250 | 245 | 295 | 300 | 300 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'F | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 10

# IONOSPHERIC DATA

Jun. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100 | 100 | E | E | 100 | S | 110 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | C | C | 105 | 105 | 100 | 100 | 120 | 100 |
| 2 | 100 | 100 | 100 | 100 | 100 | 120 | 120 | 110 | 110 | 105 | 105 | 100 | 100 | B | 105 | 115 | 115 | 105 | 105 | 105 | 100 | 105 | 100 | 100 |
| 3 | 100 | 100 | E | 100 | 100 | 115 | 110 | 105 | 105 | 110 | 105 | 110 | 100 | 100 | 100 | 100 | 100 | 115 | 105 | 105 | 105 | 110 | 105 | 100 |
| 4 | 100 | 100 | 115 | 100 | 100 | G | 110 | 110 | 110 | 105 | 100 | 105 | 110 | 100 | 100 | S | 115 | 110 | 105 | 105 | 100 | 100 | 100 | 100 |
| 5 | 100 | 100 | 100 | 100 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | S | 100 | 110 | 110 | S | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 |
| 6 | 100 | 100 | 100 | 100 | 100 | 115 | 105 | 110 | 110 | 115 | 110 | S | 115 | 110 | 115 | S | S | 115 | S | 105 | 115 | 110 | 105 | 110 |
| 7 | 105 | 105 | 110 | 105 | 110 | 115 | 115 | 115 | 110 | 105 | 105 | 105 | 105 | 100 | 115 | 120 | 115 | 110 | 105 | 105 | 105 | 105 | 105 | 100 |
| 8 | 100 | 100 | 100 | 100 | 100 | 100 | 120 | 115 | 110 | 110 | 110 | C | 100 | S | B | B | 110 | 105 | 105 | 100 | 105 | 105 | 105 | 100 |
| 9 | 100 | 100 | 100 | 100 | 115 | 120 | 115 | 110 | 110 | 100 | 100 | 100 | 100 | 100 | S | 110 | 110 | 110 | 105 | 100 | 100 | 100 | 100 | 100 |
| 10 | 100 | 100 | 100 | 100 | 100 | 100 | 115 | 110 | 105 | 100 | 100 | 100 | 110 | 100 | 135 | S | 145 | 130 | 100 | 100 | 100 | 100 | 100 | 100 |
| 11 | 100 | 100 | 100 | 100 | 100 | 100 | 120 | 120 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 105 | 105 |
| 12 | 100 | 100 | 100 | 100 | 100 | 115 | 110 | 110 | 110 | 105 | 100 | 100 | 100 | 100 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 105 | 105 | 100 |
| 13 | 100 | 100 | 100 | 100 | 120 | B | G | 115 | 105 | 110 | 105 | 105 | 100 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 105 |
| 14 | 100 | 100 | 100 | 100 | 100 | 100 | 115 | 110 | 105 | 105 | 100 | 105 | 105 | 110 | 115 | 115 | 110 | 110 | 110 | 105 | 105 | 100 | 105 | 100 |
| 15 | 100 | 100 | 100 | 100 | 100 | 100 | 125 | 115 | 110 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 105 | 105 | 105 |
| 16 | 105 | 100 | 100 | 100 | 100 | 105 | 115 | 110 | 110 | 105 | 105 | 110 | 105 | 105 | S | 110 | 105 | 110 | 105 | S | 100 | 110 | 110 | 110 |
| 17 | 100 | 100 | 105 | 100 | 100 | 100 | 105 | 105 | 105 | 105 | 100 | 100 | B | B | 105 | 105 | 145 | 110 | 105 | 105 | 100 | 105 | 100 | 105 |
| 18 | 100 | 100 | 100 | 100 | 100 | 125 | 125 | 115 | 105 | 105 | 105 | 105 | 100 | 100 | 105 | 105 | G | 105 | 105 | 100 | 100 | 105 | 130 | 100 |
| 19 | 100 | 100 | 100 | 100 | 100 | S | 135 | 115 | 110 | 105 | 110 | 110 | 130 | 110 | 105 | 105 | G | 105 | 100 | 100 | 100 | 100 | 105 | 110 |
| 20 | 100 | 100 | 100 | 100 | 100 | 150 | 145 | 110 | 110 | 105 | S | S | 100 | S | 100 | 130 | 100 | 105 | 105 | 100 | 105 | S | 100 | 100 |
| 21 | 100 | 100 | 100 | 100 | 100 | 110 | 115 | 110 | 105 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 22 | 100 | 100 | 100 | 100 | 100 | 145 | 110 | 100 | 100 | 100 | 100 | 100 | 105 | 100 | 100 | 105 | 110 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 23 | 100 | 100 | 100 | 100 | 100 | 100 | 110 | 110 | 105 | 105 | 100 | 100 | 100 | 100 | S | 105 | 105 | 100 | 105 | 100 | 100 | 105 | 110 | 105 |
| 24 | 100 | 100 | 100 | 100 | 100 | 100 | 115 | 110 | 100 | 110 | S | 115 | 110 | S | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 105 | 100 |
| 25 | 100 | 100 | 100 | 100 | 100 | 100 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | S | 100 | 105 | 125 | 110 | 110 | 100 | 100 | 105 | 100 | 115 |
| 26 | 100 | 110 | 100 | 100 | 100 | 105 | 105 | 110 | 105 | 105 | 105 | 120 | 120 | 115 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 110 | 110 | 105 |
| 27 | 110 | 100 | 100 | 100 | 100 | 110 | 120 | 110 | 105 | 110 | 110 | 110 | 110 | S | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 110 | 105 |
| 28 | 105 | 105 | 105 | 105 | 100 | 110 | 110 | 110 | 115 | 110 | 105 | 100 | 110 | 100 | 100 | 100 | 105 | 105 | 105 | 105 | 115 | 110 | 110 | 110 |
| 29 | 100 | 105 | 100 | 100 | 100 | 110 | 110 | 110 | 100 | 100 | 100 | 105 | 100 | 100 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 110 | 105 | 105 |
| 30 | 105 | 100 | 100 | 100 | 100 | S | 130 | 115 | 135 | 110 | 120 | 115 | 115 | 110 | 110 | S | 110 | 105 | 105 | 100 | 105 | 105 | 100 | 100 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 28 | 29 | 30 | 25 | 29 | 30 | 30 | 30 | 28 | 26 | 29 | 23 | 26 | 24 | 26 | 29 | 29 | 29 | 30 | 29 | 30 | 30 |
| Median | 100 | 100 | 100 | 100 | 100 | 110 | 115 | 110 | 105 | 105 | 105 | 105 | 100 | 100 | 105 | 105 | 110 | 105 | 105 | 100 | 100 | 105 | 105 | 100 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 11

# IONOSPHERIC DATA

Jun. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | f2 | f2 | | | f3 | | 12 | c3 | 12 | 1 | 1 | 1 | 1 | 12 | 1 | 1 | | | 13 | f3 | f3 | f3 | ff2 | f2 |
| 2 | f2 | f2 | f2 | f3 | f2 | h2 | c2 | c2 | 14 | 12 | 12 | 12 | 1 | | 1 | 12 | h21 | 12 | 13 | f3 | f3 | f3 | f2 | f2 |
| 3 | f3 | f2 | | f3 | f2 | c2 | c2 | 13 | 12 | 12 | 12 | 12 | 1 | 12 | 12 | 12 | 1 | 12 | 12 | f2 | f2 | f2 | f2 | f |
| 4 | f | f2 | ff2 | f2 | f | | 1 | c | 12 | 12 | 12 | 1 | 1 | 12 | 12 | | 12 | 12 | 12 | f2 | f2 | f2 | f2 | f2 |
| 5 | f2 | f2 | f | f2 | f | 12 | 1 | 12 | 1 | 1 | 1 | | 1 | 1 | 1 | | c | 1 | 12 | f2 | f4 | f3 | f4 | f3 |
| 6 | f4 | f3 | f3 | f2 | f2 | 1 | 1 | c | 12 | 1 | c | | c2 | 1 | 1 | | | 1 | | f | f | f3 | f2 | f3 |
| 7 | f3 | f3 | f2 | f | f | 12 | 12 | c2 | 12 | 1 | 12 | 1 | 1 | 1 | h1 | h | 1 | 1 | 1 | f3 | f3 | f3 | f3 | f3 |
| 8 | f2 | f3 | f2 | f4 | f4 | 12 | h | c2 | 12 | 12 | 12 | | 1 | | | | 12 | 1 | 13 | f3 | f4 | f3 | f2 | f3 |
| 9 | f3 | f3 | f2 | f3 | f | 1 | 12 | c | 12 | 12 | 12 | 12 | 12 | 12 | | 1 | 1 | 1 | 1 | f | f | f2 | f2 | f2 |
| 10 | f2 | f2 | f | f2 | f3 | 1 | 12 | 1 | 12 | 12 | 12 | 12 | 112 | 1 | h | | h | h | 12 | f4 | f3 | f3 | f2 | f2 |
| 11 | f3 | f3 | f3 | f2 | f3 | 1 | h | h | 1 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 1 | 12 | f2 | f2 | f | f3 | f3 |
| 12 | f4 | f3 | f3 | f3 | f3 | 12 | 12 | 1 | 13 | 12 | 12 | 12 | 1 | 1 | 1 | 12 | 13 | 12 | 13 | f3 | f2 | f2 | f3 | f3 |
| 13 | f2 | f2 | f3 | f3 | f | | | 13 | 12 | 12 | 12 | 12 | 1 | 1 | 1 | 1 | 1 | 12 | 12 | f3 | f2 | f3 | f2 | f2 |
| 14 | f3 | f2 | f2 | f3 | f3 | 1 | 12 | 13 | 13 | 1 | 12 | 1 | 1 | 1 | c2 | c | 1 | c | c4 | f2 | f | f3 | f2 | f3 |
| 15 | f3 | f2 | f2 | f3 | f3 | 1 | h31 | h31 | 12 | 12 | c2 | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | f2 | f2 | f4 | f4 | f3 |
| 16 | f3 | f3 | f3 | f3 | f3 | 13 | 13 | c3 | 12 | 12 | 12 | 1 | 12 | 12 | | 12 | c3 | 11 | 1 | | f2 | f | f | f2 |
| 17 | f2 | f4 | f2 | f3 | f3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | h | c | 1 | f | f2 | f3 | f3 | f3 |
| 18 | f2 | f3 | f3 | f3 | f3 | h3 | h | c2 | 12 | 12 | 12 | 12 | 14 | 12 | 1 | 1 | | 1 | 1 | f2 | f2 | f3 | f | f3 |
| 19 | f3 | f3 | f2 | f2 | f | | h | c2 | 1 | 1 | 1 | 1 | h | 1 | 1 | 1 | | 1 | 1 | f | f2 | f2 | f2 | f2 |
| 20 | f2 | f3 | f | f2 | f2 | h | h | c2 | c3 | 12 | | | 1 | | 1 | h1 | 1 | 12 | 12 | f3 | f3 | | f | f3 |
| 21 | f3 | f3 | f3 | f2 | f3 | c | c2 | c3 | c2 | 1 | 1 | 12 | 1 | 12 | 12 | 12 | 1 | 12 | 13 | 13 | f2 | f2 | f3 | f2 |
| 22 | f3 | f3 | f | f2 | f | h | 12 | 12 | 12 | 12 | 1 | 1 | 12 | 1 | 1 | 12 | 1 | 1 | 12 | f2 | f | f | f2 | f2 |
| 23 | f | f2 | f2 | f2 | f | 1 | 12 | c2 | 12 | 1 | 12 | 12 | 12 | 1 | | 1 | 12 | 1 | 1 | f2 | f | f3 | f2 | f2 |
| 24 | f3 | f3 | f3 | f3 | f2 | 12 | 12 | c2 | 13 | 1 | | 1 | c | | 12 | 12 | 1 | 1 | 12 | f3 | f2 | f2 | f2 | f2 |
| 25 | f4 | f3 | f2 | f2 | f3 | 13 | 12 | 12 | 1 | 12 | 12 | 12 | 12 | | 12 | 12 | h21 | 12 | 12 | f2 | f3 | f3 | f2 | f |
| 26 | f3 | f2 | f3 | f4 | f3 | 12 | 12 | 13 | 12 | 1 | 1 | h | h | c | c | 1 | 13 | 12 | 12 | f2 | f2 | f2 | f2 | f2 |
| 27 | f2 | f2 | f3 | f2 | f2 | 1 | h2 | 12 | 13 | 12 | 12 | 12 | 12 | | h | 1 | 1 | 1 | 12 | f2 | f2 | f3 | f3 | f3 |
| 28 | f2 | f4 | f2 | f2 | f3 | 12 | 12 | c2 | c | 12 | 1 | 13 | 1 | 12 | 13 | 1 | 12 | 12 | 12 | f3 | f2 | f2 | f2 | f2 |
| 29 | f3 | f2 | f3 | f3 | f2 | 12 | 12 | 12 | 12 | 12 | 12 | 1 | 1 | 12 | 1 | 1 | 1 | 1 | 1 | f2 | f3 | ff | f3 | f2 |
| 30 | f2 | f4 | f2 | f3 | f2 | | c | c | h | 1 | h | c | c | c | 1 | | 12 | 13 | 13 | f2 | f2 | f2 | f3 | f4 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 12

# IONOSPHERIC DATA

Jun. 1963 | $h_pF2$ | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F | F | J350 F | 365 | 305 F | U270S | G | A | U305S | I305A | G | A | A | A | A | 350 | C | C | 300 | A | A | F | F | A |
| 2 | F | F | A | A | A | A | A | A | A | A | A | A | S | G | A | A | A | A | A | 330 | I350F | F | F | 360 |
| 3 | A | F | 310 | I360F | I320F | 290S | I350A | A | A | A | A | A | A | A | A | A | 375 | 345 | 330 | I310A | FS | F | F | F |
| 4 | F | I350F | U350F | I350F | 350 | J295S | 250 | 250 | A | A | A | A | A | A | A | 365 | A | A | I300A | 310 | U290S | 305 | 330 | I340F |
| 5 | U350F | F | F | F | F | U305S | J310R | 300 | 295 | 300R | 310 | S | A | A | A | 345 | J310S | 350 | J310R | J290S | 300 | 295S | J350S | A |
| 6 | A | A | F | 345 | J250S | 255 | J300S | J300R | A | U275A | A | 315R | A | A | S | U425S | 355 | 320 | U315S | U295S | U250R | U270S | A | A |
| 7 | A | A | 360S | U375S | U375S | U375S | A | I360A | U255S | 325 | A | A | 530R | 350 | J335S | 305S | 330 | 315 | 400 | I330A | 290 | A | A | A |
| 8 | S | F | A | A | A | A | 255 | A | A | A | A | C | A | R | R | 320 | 350 | S | J300R | R | R | A | FS | F |
| 9 | F | F | F | F | F | U300S | 300 | 310 | A | A | A | A | A | A | 375 | 310 | 370 | 380 | J305R | 300S | U250S | I330S | 360 | I355F |
| 10 | J350F | F | F | F | 295 | 250 | 255 | I320S | 310 | U285S | A | A | A | A | A | 350 | 345 | 320 | 300 | A | A | 355S | I365S | F |
| 11 | A | 350F | F | F | F | 295 | 250 | 275 | 285 | A | A | A | A | A | A | A | A | 310S | A | 295 | I300A | A | A | F |
| 12 | A | F | A | F | F | F | A | J300R | A | A | A | A | A | A | A | A | A | A | I350A | A | 300 | 355 | F | A |
| 13 | F | F | F | F | 350F | 290 | 315 | 260 | 280 | A | A | A | A | 350 | 345S | I340S | I310S | J300S | 295 | A | 330 | 355 | 355 | 345 |
| 14 | I320A | I290F | F | F | F | 290F | 265 | A | A | 295S | A | A | S | 355 | 345 | I300A | J305S | 310 | I310A | U405S | 300S | I370A | F | F |
| 15 | FS | F | F | F | U345S | 300 | A | A | A | A | A | 345S | A | A | A | 350 | 360 | 350 | A | A | 310 | A | A | A |
| 16 | A | A | A | A | A | 355 | A | A | A | A | A | A | A | A | A | A | A | S | 350 | 295 | 254 | 355 | 355 | F |
| 17 | S | A | J305F | FS | F | 300 | 310 | J285S | 265 | A | A | A | B | 350 | J325S | 305 | 395 | 360R | 305 | 305 | 280S | 345 | 345 | I350F |
| 18 | U355S | F | F | F | F | A | S | A | 320 | A | A | A | A | A | 340 | 350 | 350 | 345 | J295R | 255 | A | F | F | J385F |
| 19 | S | F | F | F | 300 | 280S | U305R | A | A | G | S | S | S | 370 | G | I340R | 350 | 355 | 305 | 305S | U335S | A | A | A |
| 20 | I350A | 350 | 335 | F | F | J275S | J300R | I365A | 235 | A | S | S | S | S | 400 | J300S | J300S | 300 | A | A | 255 | U290S | 345 | A |
| 21 | A | A | A | A | A | J290S | A | A | A | A | A | A | A | A | A | A | A | A | 310 | A | A | 345F | A | A |
| 22 | A | I340A | F | F | F | 295 | 350 | 280 | I2.80A | A | A | A | A | A | 365 | 350 | 295 | 315 | 340 | 300 | U270S | J290S | J345S | U340S |
| 23 | A | F | A | I340F | I310F | 275 | A | 315 | A | A | A | A | A | A | J370R | 320 | 310 | 300 | 310 | 310 | J240S | A | FS | SF |
| 24 | F | F | F | F | F | 300S | A | A | A | 250 | G | S | R | S | I370A | 315 | 295S | 290 | 310 | 250 | I280S | U320S | F | F |
| 25 | S | A | A | 350 | I335A | I350A | 350 | 290S | 275 | A | A | A | A | 350 | J345R | I310A | 315 | U300R | I330A | J300R | 280 | F | F | F |
| 26 | S | A | F | A | 250F | 290R | A | A | A | U255S | 330R | A | A | A | A | A | A | A | J310R | 250 | J300R | U310S | U385S | U350S |
| 27 | 355 | 370 | 350 | I340F | 300 | J275S | A | A | A | A | A | A | A | S | A | A | 375 | 305S | 295 | 260S | U335S | A | AS | S |
| 28 | A | I350S | U345S | 345S | U345S | I315A | I370A | I340A | 275S | A | A | A | A | A | A | A | A | 300 | J300R | A | A | S | A | A |
| 29 | A | A | A | A | 300 | I310A | 355 | A | A | A | A | S | A | A | A | 350 | J360R | 305 | 270 | 260 | U330S | J320S | I325S | S |
| 30 | F | A | 355F | 350F | I325F | S | J310S/H | 305 | S | R | 375 | G | I400A | 400 | 345 | 310 | A | A | 330 | 295 | 250S | J330S | I340A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 6 | 7 | 9 | 10 | 16 | 25 | 18 | 16 | 12 | 8 | 3 | 2 | 2 | 7 | 12 | 21 | 20 | 21 | 26 | 21 | 23 | 17 | 12 | 8 |
| Median | U350 | U350 | 350 | U350 | 315 | 295 | 310 | 300 | 280 | U290 | 330 | 330 | U465 | 350 | 345 | 340 | 350 | 315 | 310 | 300 | 290 | 330 | 350 | U350 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

$h_pF2$

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | ypF2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F | F | J 50F | J 80F | 50F | U 35S | G | A | U 50S | I 50A | G | A | A | A | A | 55 | C | C | 50 | A | A | F | F | F |
| 2 | F | F | A | A | A | A | A | A | A | A | A | A | S | G | A | A | A | A | A | 65 | I 80F | F | F | 55 |
| 3 | A | F | 80 | I 80F | I 60F | 20S | I 50A | A | A | A | A | A | A | A | A | A | 40 | 50 | 65 | I 55A | FS | F | F | F |
| 4 | F | I 60F | U 65F | I 55F | 55 | J 45S | 20 | 50 | A | A | A | A | A | A | A | 50 | A | A | I 80A | 85 | U 25S | 80 | 70 | I 60F |
| 5 | U 50F | F | F | F | F | U 45S | J 85R | 25 | 50 | 50R | 40 | S | A | A | A | 45 | J 55S | 50 | J 55R | J 25S | 50 | 55 | J 50S | A |
| 6 | A | A | F | 55 | J 50S | 50 | J 50S | J 50R | A | U 95A | A | 85R | A | A | S | U 85S | 95 | 85 | U 85S | U105S | U105R | U 75S | A | A |
| 7 | A | A | 90S | U 90S | U 95S | U 85S | A | I 80A | U 70S | 70 | A | A | 75R | 75 | J 50S | 60S | 60 | 65 | 65 | I 60A | 60 | A | A | A |
| 8 | S | F | A | A | A | A | 50 | A | A | A | A | C | A | R | R | 85 | 65 | S | J 55R | R | R | A | FS | F |
| 9 | F | F | F | F | F | U 60S | 95 | 45 | A | A | A | A | A | A | 75 | 85 | 75 | 85 | J 90R | 65S | U 55S | I 80S | 85 | I 50F |
| 10 | J 55F | F | F | F | 55 | 50 | 70 | I 40S | 50 | U 30S | A | A | A | A | A | 45 | 50 | 75 | 60 | A | A | 70S | I 80S | F |
| 11 | A | 50F | F | F | F | 50 | 45 | 40 | 30 | A | A | A | A | A | A | A | A | 85S | A | 55 | I 60A | A | A | F |
| 12 | A | F | A | F | F | F | A | J 50R | A | A | A | A | A | A | A | A | A | A | I 80A | A | 55 | 90 | F | A |
| 13 | F | F | F | F | 90F | 105 | 45 | 85 | 65 | A | A | A | A | 55 | 55S | I 60S | I 65S | J 60S | 55 | A | 65 | 90 | 90 | 60 |
| 14 | I 90A | I 75F | F | F | F | 60F | 50 | A | A | 50S | A | A | S | 90 | 50 | I 50A | J 55S | 80 | I 55A | U 60S | 55S | I 60A | F | F |
| 15 | FS | F | F | F | U 55S | 50 | A | A | A | A | A | 60S | A | A | A | 55 | 65 | 100 | A | A | 95 | A | A | A |
| 16 | A | A | A | A | A | 90 | A | A | A | A | A | A | A | A | A | A | A | S | 50 | 55 | 50 | 95 | 90 | F |
| 17 | S | A | J 80F | FS | F | 55 | 85 | J 30S | 45 | A | A | A | B | 55 | J 70S | 90 | 55 | 85R | 70 | 60 | 30S | 55 | 55 | I 60F |
| 18 | U 45S | F | F | F | F | A | S | A | 45 | A | A | A | A | A | 55 | 45 | 55 | 60 | J 55R | 50 | A | F | F | J 60F |
| 19 | S | F | F | F | 85 | 70S | U 50R | A | A | G | S | S | S | 70 | G | I 70R | 55 | 50 | 65 | 55S | U 60S | A | A | A |
| 20 | I 60A | 65 | 65 | F | F | J 40S | J 65R | I 60A | 55 | A | S | S | S | S | 50 | J 50S | J 50S | 50 | A | A | 50 | U 55S | 60 | A |
| 21 | A | A | A | A | A | J 55S | A | A | A | A | A | A | A | A | A | A | A | A | 85 | A | A | 55F | A | A |
| 22 | A | I 70A | F | F | F | 55 | 45 | 70 | I 40A | A | A | A | A | A | 80 | 55 | 50 | 80 | 60 | 80 | U 65S | J 40S | J 60S | U 65S |
| 23 | A | F | A | I 85F | I 60F | 70 | A | 80 | A | A | A | A | A | A | J 75R | 60 | 65 | 55 | 85 | 80 | J 60S | A | FS | SF |
| 24 | F | F | F | F | F | 95S | A | A | A | 50 | G | S | R | S | I 65A | 80 | 20S | 55 | 85 | 45 | I 70S | U 75S | F | F |
| 25 | S | A | A | 55 | I 65A | I 55A | 50 | 55S | 40 | A | A | A | A | 45 | J 75R | I 60A | 60 | U 55R | I 50A | J 50R | 70 | F | F | F |
| 26 | S | A | F | A | 60F | 60R | A | A | A | U 45S | 25R | A | A | A | A | A | A | A | J 85R | 55 | J 70R | U 85S | U 60S | U 45S |
| 27 | 90 | 75 | 55 | I 65F | 95 | J 70S | A | A | A | A | A | A | A | S | A | A | 80 | 80S | 105 | 90S | U 95S | A | AS | S |
| 28 | A | I 80S | U 95S | 95S | U 95S | I100A | I 80A | I 80A | 100S | A | A | A | A | A | A | A | A | 50 | J 95R | A | A | S | A | A |
| 29 | A | A | A | A | 50 | I 50A | 50 | A | A | A | A | S | A | A | A | 75 | J 85R | 55 | 65 | 50 | J 65S | J 75S | I 70S | S |
| 30 | F | A | 90F | 95F | I 80F | S | J 85$^{S}_{H}$ | 50 | S | R | 25 | G | I 55A | 65 | 60 | 85 | A | A | 65 | 55 | 35S | J 85S | I 90A | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 6 | 7 | 9 | 10 | 16 | 25 | 18 | 16 | 12 | 8 | 3 | 2 | 2 | 7 | 12 | 21 | 20 | 21 | 26 | 21 | 23 | 17 | 12 | 8 |
| Median | U 60 | U 70 | 80 | U 80 | 60 | 55 | 50 | 50 | 50 | U 50 | 25 | 70 | U 65 | 65 | 60 | 60 | 60 | 60 | 65 | 55 | 60 | 75 | 70 | U 60 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

ypF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 14

# IONOSPHERIC DATA

Jun. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $J_{5.3}^{S}$ | 5.0 | S | A | $J_{4.2}^{S}$ | $I_{4.2}^{S}$ | 4.7 | $6.1^{S}$ | $I_{6.3}^{A}$ | $I_{6.0}^{A}$ | $I_{5.6}^{A}$ | $I_{5.8}^{A}$ | 6.0 | 6.4 | 6.9 | 8.3 | 9.1 | $I_{7.3}^{S}$ | 5.9 | S | S | $J_{5.7}^{S}$ | S | S |
| 2 | S | $6.5^{S}$ | $4.3^{S}$ | 3.4 | S | S | 5.4 | 5.9 | A | A | A | A | A | A | A | A | A | A | $7.3^{S}$ | $I_{6.6}^{S}$ | S | S | S | S |
| 3 | S | S | S | S | S | $I_{5.4}^{S}$ | $I_{5.6}^{A}$ | $I_{6.3}^{S}$ | A | A | A | A | A | A | 6.9 | 8.0 | $J_{8.0}^{S}$ | $I_{8.4}^{A}$ | 9.0 | S | S | S | A | S |
| 4 | S | S | S | $I_{3.9}^{S}$ | $I_{4.0}^{S}$ | $4.7^{S}$ | 5.5 | $I_{5.4}^{S}$ | $I_{5.6}^{S}$ | 5.8 | S | A | $I_{5.5}^{A}$ | 5.7 | 6.4 | $I_{7.4}^{S}$ | 8.1 | $I_{7.8}^{S}$ | 6.4 | S | S | S | S | S |
| 5 | S | $I_{5.8}^{S}$ | $I_{5.1}^{S}$ | 4.1 | $J_{3.7}^{S}$ | 3.8 | 5.0 | $I_{6.1}^{S}$ | 6.3 | $I_{6.2}^{S}$ | C | C | C | C | S | $J_{7.8}^{S}$ | $I_{7.0}^{S}$ | 6.4 | $I_{7.7}^{S}$ | 7.9 | $I_{7.2}^{S}$ | $J_{6.3}^{S}$ | $J_{4.3}^{S}$ | A |
| 6 | A | S | S | $J_{5.1}^{S}$ | A | A | A | 6.1 | $I_{6.2}^{S}$ | $5.8^{S}$ | 5.8 | $I_{5.3}^{A}$ | 5.4 | 5.7 | 5.9 | $I_{6.9}^{S}$ | $J_{8.0}^{S}$ | 8.7 | $I_{8.8}^{S}$ | $I_{9.0}^{SH}$ | S | S | 4.8 | A |
| 7 | S | $J_{3.9}^{S}$ | $I_{3.8}^{S}$ | $J_{3.9}^{S}$ | $J_{3.6}^{S}$ | $I_{3.6}^{S}$ | $J_{5.2}^{S}$ | 5.5 | $I_{5.5}^{A}$ | $J_{5.6}^{S}$ | A | A | A | 9.1 | 8.4 | $I_{7.6}^{S}$ | $I_{7.1}^{S}$ | $6.8^{S}$ | $6.2^{S}$ | $I_{6.4}^{S}$ | 6.6 | S | A | S |
| 8 | A | S | A | A | $I_{3.6}^{A}$ | $J_{3.9}^{S}$ | 4.7 | 5.8 | $I_{5.8}^{A}$ | $J_{5.7}^{R}$ | $I_{5.7}^{A}$ | $I_{6.6}^{S}$ | $J_{7.9}^{S}$ | 8.5 | 8.6 | 9.0 | $I_{9.7}^{S}$ | $I_{9.5}^{S}$ | $I_{9.0}^{S}$ | $J_{8.3}^{S}$ | S | S | S | S |
| 9 | S | $I_{5.8}^{S}$ | $I_{5.9}^{S}$ | $I_{5.8}^{S}$ | $I_{5.4}^{S}$ | $J_{5.1}^{S}$ | $J_{6.0}^{S}$ | $J_{6.6}^{S}$ | $I_{7.8}^{A}$ | 8.3 | A | A | A | $I_{8.4}^{A}$ | $9.2^{S}$ | $I_{9.5}^{S}$ | 9.2 | 9.2 | $I_{9.3}^{S}$ | $J_{8.8}^{S}$ | S | S | S | S |
| 10 | S | $I_{6.2}^{S}$ | $I_{5.9}^{S}$ | $I_{5.7}^{S}$ | 5.1 | $J_{4.7}^{S}$ | 5.4 | 6.0 | $I_{6.0}^{S}$ | 5.9 | A | A | S | $I_{6.3}^{S}$ | $I_{6.9}^{A}$ | $I_{7.2}^{S}$ | 7.8 | $I_{8.4}^{S}$ | S | A | A | A | S | $I_{5.9}^{S}$ |
| 11 | $J_{6.0}^{S}$ | S | S | S | F | S | $5.5^{SH}$ | 5.9 | $5.8^{S}$ | $I_{5.9}^{S}$ | A | A | A | A | A | A | $J_{7.9}^{S}$ | A | A | S | S | S | S | S |
| 12 | S | S | S | S | S | $J_{3.8}^{S}$ | $5.1^{S}$ | S | A | A | A | A | A | A | $I_{8.4}^{A}$ | 9.1 | 9.1 | $I_{9.2}^{S}$ | $J_{8.5}^{S}$ | S | S | S | $I_{5.9}^{S}$ | $I_{5.9}^{S}$ |
| 13 | $I_{6.2}^{A}$ | $I_{6.4}^{S}$ | $6.0^{S}$ | $I_{4.5}^{S}$ | $I_{3.7}^{S}$ | $I_{4.0}^{S}$ | 5.9 | 5.7 | $I_{5.5}^{A}$ | 6.0 | C | A | A | A | 8.0 | $I_{8.4}^{S}$ | 8.8 | $9.1^{S}$ | 8.4 | $I_{7.1}^{S}$ | S | S | S | S |
| 14 | S | S | S | $I_{6.0}^{S}$ | $I_{5.5}^{S}$ | $J_{5.7}^{S}$ | $5.8^{H}$ | $J_{6.9}^{S}$ | $I_{6.5}^{S}$ | $I_{5.7}^{A}$ | $I_{5.5}^{A}$ | $I_{5.7}^{A}$ | 6.2 | 8.2 | 8.7 | $J_{8.1}^{S}$ | $J_{7.9}^{S}$ | $I_{8.1}^{S}$ | $8.5^{S}$ | $I_{7.3}^{S}$ | $I_{6.4}^{S}$ | $6.4^{S}$ | $5.7^{S}$ | A |
| 15 | A | S | S | $I_{5.2}^{S}$ | $I_{4.6}^{S}$ | $I_{4.5}^{S}$ | 4.9 | $I_{5.8}^{A}$ | S | A | $I_{6.4}^{A}$ | $I_{5.8}^{A}$ | A | A | A | A | A | $J_{8.2}^{S}$ | $I_{8.7}^{S}$ | 8.6 | S | S | S | S |
| 16 | S | A | S | S | $J_{4.6}^{S}$ | $3.3^{S}$ | $5.1^{S}$ | 5.8 | S | A | A | A | A | 4.9 | 5.6 | 6.1 | 5.6 | $I_{5.8}^{S}$ | S | S | $J_{4.5}^{S}$ | 3.8 | $I_{3.6}^{S}$ | $J_{4.4}^{S}$ |
| 17 | S | S | S | A | 3.3 | $2.9^{S}$ | 5.2 | $I_{6.0}^{S}$ | 6.0 | 5.6 | $I_{6.0}^{S}$ | $I_{6.1}^{S}$ | $I_{5.9}^{S}$ | $I_{5.9}^{A}$ | 6.6 | 7.9 | S | S | S | S | S | S | S | A |
| 18 | A | S | S | $I_{5.2}^{A}$ | $I_{4.6}^{S}$ | $I_{4.0}^{S}$ | $J_{4.0}^{S}$ | 4.9 | 6.0 | G | R | A | 5.5 | $6.9^{S}$ | $I_{6.1}^{S}$ | $I_{5.7}^{S}$ | 5.9 | S | S | $5.1^{S}$ | $I_{4.1}^{S}$ | S | S | S |
| 19 | S | S | S | S | A | $I_{3.0}^{S}$ | 4.9 | $I_{4.9}^{S}$ | 4.9 | $I_{6.1}^{S}$ | 5.2 | $I_{5.3}^{A}$ | $I_{5.8}^{A}$ | $6.0^{S}$ | $I_{6.4}^{S}$ | 7.2 | 7.2 | $I_{7.4}^{S}$ | $I_{7.8}^{S}$ | $I_{6.6}^{S}$ | S | S | S | $I_{5.2}^{S}$ |
| 20 | $J_{5.8}^{S}$ | 5.2 | $I_{4.9}^{S}$ | $I_{4.7}^{S}$ | $I_{4.1}^{S}$ | $I_{3.4}^{S}$ | 4.9 | $I_{5.8}^{S}$ | 5.7 | 5.2 | A | A | A | $6.1^{S}$ | $I_{7.9}^{S}$ | $J_{11.0}^{S}$ | $J_{7.8}^{S}$ | 5.9 | $I_{6.0}^{S}$ | S | S | S | S | S |
| 21 | S | A | $I_{3.1}^{S}$ | 3.2 | $I_{2.8}^{S}$ | $I_{3.1}^{S}$ | 5.0 | 5.6 | A | A | A | A | A | A | A | $I_{5.5}^{A}$ | 6.1 | $I_{6.2}^{S}$ | $J_{6.3}^{S}$ | $I_{6.0}^{S}$ | 5.7 | $I_{5.1}^{S}$ | $J_{5.3}^{S}$ | S |
| 22 | S | A | S | S | S | S | 4.5 | 5.4 | $I_{6.2}^{S}$ | $I_{6.0}^{S}$ | 5.4 | $I_{5.4}^{A}$ | 5.7 | $I_{6.8}^{A}$ | $J_{8.1}^{S}$ | 9.0 | $7.0^{S}$ | 6.0 | $I_{6.2}^{S}$ | $I_{7.5}^{S}$ | $I_{7.2}^{S}$ | S | S | S |
| 23 | S | $I_{5.3}^{S}$ | $J_{4.8}^{S}$ | $I_{4.5}^{S}$ | $I_{3.6}^{S}$ | $I_{3.5}^{S}$ | $I_{4.2}^{S}$ | $J_{5.3}^{S}$ | $I_{6.0}^{S}$ | $I_{5.6}^{A}$ | 5.1 | $I_{5.7}^{A}$ | 6.7 | 7.0 | 7.8 | 8.7 | 8.1 | $J_{7.3}^{S}$ | S | S | S | $I_{4.9}^{S}$ | 3.4 | $I_{3.2}^{S}$ |
| 24 | S | S | $3.6^{S}$ | $I_{3.6}^{S}$ | $I_{3.5}^{S}$ | 3.6 | 4.5 | 5.3 | $6.0^{S}$ | 5.6 | 5.1 | A | A | A | A | $8.2^{S}$ | 8.1 | $6.6^{S}$ | $I_{6.5}^{S}$ | $I_{6.5}^{S}$ | 5.7 | S | A | S |
| 25 | S | S | S | $3.3^{S}$ | $J_{2.9}^{S}$ | 3.0 | 4.3 | 5.8 | 5.8 | $I_{5.5}^{A}$ | $I_{5.2}^{A}$ | $I_{5.3}^{A}$ | 5.7 | 6.6 | $J_{7.7}^{S}$ | $I_{7.5}^{S}$ | S | C | A | S | S | 4.9 | S | S |
| 26 | S | S | A | A | A | A | A | A | 5.8 | $I_{5.6}^{S}$ | 5.2 | $I_{4.8}^{R}$ | $I_{4.8}^{R}$ | 5.5 | $5.7^{S}$ | A | A | S | S | S | S | S | S | S |
| 27 | S | S | S | S | 4.5 | $3.3^{S}$ | $3.8^{S}$ | 5.1 | $J_{6.5}^{S}$ | $I_{5.8}^{A}$ | $I_{5.3}^{A}$ | $I_{5.2}^{A}$ | $I_{5.0}^{R}$ | $I_{5.1}^{R}$ | 5.3 | $I_{6.1}^{S}$ | 7.0 | $I_{8.6}^{S}$ | $I_{8.5}^{S}$ | $I_{5.8}^{S}$ | S | S | S | S |
| 28 | S | S | S | S | $I_{2.8}^{A}$ | $I_{3.3}^{A}$ | $I_{4.0}^{A}$ | 5.2 | $I_{5.5}^{S}$ | $I_{5.0}^{A}$ | A | A | $I_{5.5}^{A}$ | A | A | A | 7.0 | $I_{6.9}^{S}$ | S | S | A | A | S | S |
| 29 | A | A | A | A | A | A | $I_{4.8}^{S}$ | 4.9 | 4.8 | A | A | A | A | A | $J_{5.4}^{S}$ | $I_{5.6}^{S}$ | 6.6 | $I_{6.7}^{S}$ | $I_{6.4}^{S}$ | $J_{5.4}^{S}$ | S | S | $J_{3.3}^{S}$ | S |
| 30 | S | S | S | S | 3.5 | $I_{3.4}^{S}$ | 4.9 | 5.1 | $5.9^{S}$ | $I_{5.7}^{A}$ | $I_{5.2}^{R}$ | 5.5 | 5.5 | 5.6 | 6.4 | $7.1^{S}$ | S | S | S | S | S | $I_{4.5}^{S}$ | $I_{3.8}^{S}$ | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 4 | 9 | 10 | 16 | 21 | 24 | 28 | 28 | 24 | 23 | 14 | 13 | 15 | 19 | 23 | 25 | 24 | 23 | 20 | 16 | 8 | 8 | 9 | 5 |
| Median | 5.9 | $U_{5.8}$ | $U_{4.8}$ | $U_{4.5}$ | $U_{3.7}$ | $U_{3.7}$ | 5.0 | 5.8 | $U_{6.0}$ | $U_{5.7}$ | $U_{5.4}$ | $U_{5.5}$ | 5.7 | 6.3 | 6.9 | 7.8 | 7.8 | $U_{7.4}$ | $U_{7.8}$ | $U_{6.8}$ | $U_{6.0}$ | 5.0 | 4.3 | $U_{5.2}$ |
| U.Q. | 6.1 | 6.3 | 5.9 | 5.2 | 4.6 | 4.4 | 5.4 | 6.0 | 6.2 | 6.0 | 5.7 | 5.8 | 6.0 | 7.0 | 8.1 | 8.6 | 8.1 | 8.6 | 8.6 | 8.1 | 6.9 | 6.0 | 5.5 | 5.9 |
| L.Q. | 5.6 | 5.1 | 3.8 | 3.8 | 3.5 | 3.3 | 4.6 | 5.3 | 5.6 | 5.6 | 5.2 | 5.3 | 5.5 | 5.7 | 6.1 | 7.0 | 7.0 | 6.6 | 6.4 | 6.2 | 5.1 | 4.7 | 3.5 | 3.8 |
| Q.R. | 0.5 | 1.2 | 2.1 | 1.4 | 1.1 | 1.1 | 0.8 | 0.7 | 0.6 | 0.4 | 0.5 | 0.5 | 0.5 | 1.3 | 2.0 | 1.6 | 1.1 | 2.0 | 2.2 | 1.9 | 1.8 | 1.3 | 2.0 | 2.1 |

The Radio Research Laboratories, Japan

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 1

47

# IONOSPHERIC DATA

Jun. 1963 | $f_oF1$ | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L | A | A | A | A | A | 4.6 | A | A | A | A | 4.0 | A | | | | | |
| 2 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 3 | | | | | | | A | 4.0 | A | A | A | A | A | A | R | A | 4.3 | A | A | | | | | |
| 4 | | | | | | | | A | R | A | A | A | A | 4.5 | R | A | A | A | A | | | | | |
| 5 | | | | | | | | L | 4.3 | A | C | C | C | C | A | 4.4 | A | A | A | | | | | |
| 6 | | | | | | | | L | A | A | A | $I_{4.6}^{A}$ | 4.6 | $I_{4.6}^{A}$ | A | A | 4.2 | 4.0 | 3.7 | | | | | |
| 7 | | | | | | | | 4.1 | A | A | A | A | A | A | $I_{4.5}^{R}$ | 4.5 | 4.2 | 4.1 | 3.8 | | | | | |
| 8 | | | | | | | | | A | R | A | B | 4.7 | 4.8 | 4.7 | A | A | 4.1 | L | | | | | |
| 9 | | | | | | | | L | A | A | A | A | A | A | A | R | $4.4^{R}$ | A | A | | | | | |
| 10 | | | | | | | | L | A | L | A | A | A | A | A | A | A | A | A | | | | | |
| 11 | | | | | | | | | $I_{4.1}^{A}$ | $I_{4.7}^{A}$ | A | A | A | A | A | A | A | A | A | | | | | |
| 12 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | 4.2 | 3.7 | | | | | |
| 13 | | | | | | | | | A | A | C | A | A | A | A | A | 4.4 | $I_{4.1}^{A}$ | 3.7 | | | | | |
| 14 | | | | | | | | $3.7^{L}$ | 4.2 | A | A | A | A | A | A | A | A | $I_{4.1}^{A}$ | 3.7 | | | | | |
| 15 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 16 | | | | | | | | L | A | A | A | A | A | R | R | 4.3 | A | A | $3.6^{S}$ | L | | | | |
| 17 | | | | | | | L | L | A | A | R | A | A | A | A | A | A | $I_{4.0}^{RH}$ | 3.5 | | | | | |
| 18 | | | | | | | | A | R | R | A | A | A | $4.5^{R}$ | A | A | A | A | A | | | | | |
| 19 | | | | | | | | A | A | A | 4.6 | A | A | R | R | R | 4.2 | 4.0 | R | | | | | |
| 20 | | | | | | | L | S | $4.0^{H}$ | 4.3 | A | A | A | A | A | A | 4.2 | $I_{4.0}^{A}$ | 3.7 | A | | | | |
| 21 | | | | | | | | L | A | A | A | A | A | A | A | A | R | A | S | | | | | |
| 22 | | | | | | | | $I_{3.8}^{A}$ | $I_{4.1}^{A}$ | $I_{4.3}^{A}$ | A | A | A | A | R | A | $I_{4.2}^{R}$ | A | A | | | | | |
| 23 | | | | | | | | A | A | A | A | A | A | R | R | $4.2^{R}$ | 4.1 | A | A | L | | | | |
| 24 | | | | | | | | A | L | $I_{4.3}^{R}$ | A | A | A | A | A | A | A | A | A | | | | | |
| 25 | | | | | | | L | $3.8^{S}$ | $4.0^{S}$ | A | A | A | A | A | A | A | A | C | A | | | | | |
| 26 | | | | | | | A | A | A | A | 4.3 | A | R | R | R | A | A | A | A | | | | | |
| 27 | | | | | | | | 3.7 | A | A | A | A | R | R | R | A | R | R | A | | | | | |
| 28 | | | | | | | | 3.7 | A | A | A | A | A | A | A | A | 4.1 | A | A | | | | | |
| 29 | | | | | | | | 3.8 | 4.1 | A | A | A | A | A | R | B | $4.2^{R}$ | $I_{3.9}^{R}$ | 3.6 | | | | | |
| 30 | | | | | | | | S | 4.1 | A | A | A | R | A | A | A | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 8 | 8 | 4 | 2 | 1 | 3 | 4 | 2 | 4 | 11 | 11 | 9 | | | | | |
| Median | | | | | | | | 3.8 | 4.1 | $U_{4.3}$ | 4.4 | $U_{4.6}$ | 4.6 | 4.6 | $U_{4.6}$ | 4.4 | 4.2 | 4.0 | 3.7 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

$f_oF1$

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 2

# IONOSPHERIC DATA

Jun. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | S | 2.40 | 2.85 | 3.00 | 3.10 | R | A | A | A | A | A | 2.80 | 2.25 | | | | | |
| 2 | | | | | | | S | 2.50$^{H}$ | 2.75 | 3.10 | 3.20 | I3.20$^{R}$ | A | A | A | A | A | A | A | | | | | |
| 3 | | | | | | | S | 2.50 | 2.85 | 3.10 | 3.10 | 3.15 | A | A | R | R | 3.10 | 2.80 | B | | | | | |
| 4 | | | | | | | I1.85$^{A}$ | 2.40 | 2.80 | 3.15 | A | A | A | R | R | 3.30 | 3.10 | 2.65 | 2.10 | | | | | |
| 5 | | | | | | | A | A | A | A | C | C | C | C | R | 3.35 | 3.10 | 2.80 | I2.15$^{B}$ | | | | | |
| 6 | | | | | | | S | A | A | A | 3.40 | 3.30 | R | R | R | R | 3.10 | 2.70 | I2.00$^{B}$ | | | | | |
| 7 | | | | | | | A | 2.40 | 2.90 | 3.05 | 3.20 | 3.20$^{R}$ | A | A | R | A | A | 2.70 | 2.30 | | | | | |
| 8 | | | | | | | 2.00 | 2.55 | I2.80$^{A}$ | 3.20$^{R}$ | 3.15 | B | R | R | R | R | I3.20$^{R}$ | 2.80 | 2.25 | | | | | |
| 9 | | | | | | | S | 2.50 | 2.90 | 3.20 | I3.30$^{R}$ | I3.30$^{R}$ | I3.30$^{B}$ | A | B | B | 3.00 | 2.85 | 2.30 | | | | | |
| 10 | | | | | | | A | A | A | A | 3.35 | R | R | R | I3.40$^{R}$ | I3.45$^{R}$ | 3.35 | 2.90 | 2.30 | | | | | |
| 11 | | | | | | | S | 2.70 | 2.80 | 3.20 | I3.20$^{R}$ | R | B | B | R | A | A | A | A | | | | | |
| 12 | | | | | | | 2.10 | 2.60 | I3.00$^{A}$ | I3.30$^{R}$ | R | B | B | R | R | A | A | A | A | | | | | |
| 13 | | | | | | | A | 2.60 | 3.00 | 3.30$^{R}$ | 3.40 | A | A | 3.40 | I3.35$^{R}$ | 3.30 | 2.90 | 2.70 | 2.10 | | | | | |
| 14 | | | | | | | 2.10 | 2.75 | 2.90 | 3.10 | A | A | A | A | A | A | R | 2.80 | 2.20 | | | | | |
| 15 | | | | | | | A | 2.60 | 3.10 | 3.20 | 3.35 | I3.45$^{R}$ | I3.40$^{R}$ | 3.40$^{R}$ | I3.25$^{R}$ | 3.10 | 2.60 | A | A | | | | | |
| 16 | | | | | | | A | 2.60$^{H}$ | 2.90 | 3.15 | 3.30 | I3.20$^{R}$ | I3.15$^{B}$ | I3.45$^{R}$ | I3.40$^{R}$ | 3.10 | 3.10$^{R}$ | I2.70$^{A}$ | I2.30$^{A}$ | S | | | | | |
| 17 | | | | | | | A | A | A | A | A | R | R | A | A | A | A | 2.70$^{H}$ | A | | | | | |
| 18 | | | | | | | A | 2.50 | 2.90 | 3.10 | R | R | R | R | R | 3.20 | 2.80 | B | I1.90$^{B}$ | | | | | |
| 19 | | | | | | | B | 2.45 | 2.90 | 3.05 | B | R | 3.30 | R | R | A | A | A | A | | | | | |
| 20 | | | | | | | S | 2.45 | 2.90 | 3.20 | I3.30$^{R}$ | I3.05$^{R}$ | I3.10$^{B}$ | I3.10$^{R}$ | A | A | A | A | 2.20 | S | | | | |
| 21 | | | | | | | 1.90 | 2.50 | 3.00 | 3.10 | 3.25 | I3.35$^{R}$ | 3.50 | R | R | R | 2.95 | 2.70 | A | | | | | |
| 22 | | | | | | | 1.85 | 2.30 | I2.65$^{A}$ | 2.80 | 3.10 | 3.10 | A | A | A | A | A | 2.50 | A | | | | | |
| 23 | | | | | | | S | 2.30 | 2.80 | 3.00 | 3.15$^{R}$ | 3.10 | B | R | R | R | 2.95 | 2.60 | 1.95 | S | | | | |
| 24 | | | | | | | A | A | A | I2.95$^{A}$ | 3.20 | B | R | B | 3.40 | 3.30 | 3.05 | 2.55 | 1.75 | | | | | |
| 25 | | | | | | | S | 2.70 | 2.90 | I3.05$^{A}$ | I3.10$^{A}$ | I3.20$^{A}$ | I3.25$^{B}$ | 3.15 | 3.30 | I3.20$^{A}$ | 3.10 | I2.70$^{C}$ | 2.05 | | | | | |
| 26 | | | | | | | A | A | 2.80 | I3.20$^{A}$ | 3.00 | I3.20$^{A}$ | A | R | R | 3.20$^{R}$ | 3.00 | 2.50 | B | | | | | |
| 27 | | | | | | | 2.10 | 2.30 | 2.80 | 2.95 | 3.20 | B | B | B | R | R | 3.05 | 2.70 | 2.10 | | | | | |
| 28 | | | | | | | A | 2.30 | 2.70 | 3.05 | 3.20$^{R}$ | R | R | B | B | 3.20 | 2.90 | A | A | | | | | |
| 29 | | | | | | | 2.00 | 2.50 | 2.90 | 3.10 | 3.20 | 3.30$^{R}$ | B | R | A | B | A | A | A | | | | | |
| 30 | | | | | | | 2.10 | 2.50 | 2.80 | 3.00 | 3.20 | B | B | B | B | A | R | S | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | 9 | 24 | 25 | 26 | 23 | 14 | 7 | 5 | 6 | 11 | 18 | 20 | 17 | | | | | |
| Median | | | | | | | 2.00 | 2.50 | 2.90 | 3.10 | 3.20 | U3.20 | U3.30 | 3.40 | U3.40 | 3.20 | 3.05 | 2.70 | 2.15 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 3

# IONOSPHERIC DATA

Jun. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | 4.8 | J5.1 | 5.8 | 2.1 | J2.7 | J4.3 | 6.0 | J8.3 | 7.0 | J8.4 | 9.1 | 5.1 | J5.3 | J5.6 | J8.6 | 6.4 | 3.3 | J4.3 | 6.1 | 4.8 | 2.9 | J4.2 | 3.9 |
| 2 | 3.6 | 3.8 | J3.2 | 3.3 | 3.2 | J5.3 | 3.1 | J6.2 | J9.9 | J12.7 | 12.5M | 9.3 | 10.6 | J13.4 | J10.8 | J9.7 | 12.5 | 9.2 | 6.4 | 6.0 | 3.9M | 6.0 | 3.7 | J3.8 |
| 3 | 4.9 | 4.9M | 4.9M | 4.0 | 3.0 | 3.7 | J7.8 | 4.4 | 9.3 | J11.9 | 13.3 | 6.3 | 11.4 | 13.0 | 4.0 | 6.3 | G | J10.2 | 6.4 | 5.8M | 4.6 | 4.6 | 5.7M | 3.0 |
| 4 | 3.0 | 4.8M | 3.1 | 2.8 | J3.0 | J3.3 | 3.4 | 4.2 | 3.7 | 5.2 | J5.5 | 6.6 | J8.6 | 4.1 | 3.9 | J5.4 | J5.7 | 7.3 | J5.4 | 5.9 | 3.0 | J5.3 | 3.0 | 3.0 |
| 5 | 2.7 | S | 2.1 | 2.7 | J2.5 | 3.5 | J3.3 | 4.0 | 4.5 | J4.4 | C | C | C | C | J5.1 | 4.3 | 6.7 | 4.0 | 5.8 | J5.3 | 3.2 | 3.8 | 3.1 | J5.1 |
| 6 | 5.7 | J5.3 | 4.4 | 3.8 | 5.7 | 8.9M | 5.3 | J3.6 | 4.3 | 5.1 | J5.5 | 6.3M | 6.4 | 4.8 | J5.8 | 6.2 | J5.8 | J4.4 | J5.1 | S | J2.4 | 3.9M | 2.9 | J5.1 |
| 7 | 3.0 | 3.0 | 3.1 | J2.5 | 2.4 | 2.9 | J3.2 | J5.4 | J11.2 | 9.2M | J11.5 | 7.5 | 11.3 | J7.4 | 3.5 | 3.7 | 3.2 | 2.6G | 3.1 | 4.9 | 3.2 | 5.9M | 9.2M | 5.9 |
| 8 | 9.1 | 4.1 | 5.8 | J5.6 | 3.7M | 5.1 | 3.2 | J5.5 | 8.4 | J8.4 | 12.8 | B | G | G | J5.1 | 4.8 | 4.8 | 3.2 | 3.2 | J3.2 | 3.2 | 3.5 | 2.8 | 5.8 |
| 9 | 5.9 | 6.3 | 5.9 | 5.6 | 2.9 | 2.2 | J4.8 | J5.3 | J8.6 | 6.4 | 9.3 | 13.4 | J11.6 | 18.0M | 8.0M | B | 3.2 | J4.9 | 4.5 | 2.9 | 2.9 | 5.8 | 3.1 | 3.0 |
| 10 | 2.7 | J5.7 | J5.3 | 4.3M | 3.0 | 2.8 | 2.8 | 3.4 | J5.1 | J5.4 | J10.1 | 11.3M | 9.2M | 6.3 | J7.6 | J5.7 | J8.3 | J8.2 | 8.3 | 12.6 | 8.9M | 9.2M | 5.7 | 3.8M |
| 11 | 3.6M | 3.1 | 5.1M | 5.7 | J2.5 | 2.1 | S | 3.0 | J5.1 | J5.6 | 9.1 | 16.3 | J8.8 | 14.5M | J9.8 | J8.4 | J6.6 | J8.4 | J11.9 | J6.3 | J5.1 | 3.0M | 2.8 | J5.3 |
| 12 | J5.3 | 4.0 | 4.9M | 3.0 | 3.0 | 3.0 | 2.9 | J6.1 | 9.0 | 10.0 | J11.2 | J12.5 | 13.5 | 13.5 | J15.4 | 9.4M | 4.8 | 3.8 | J3.6 | 4.3 | 2.8 | 2.7 | 5.7 | J5.3 |
| 13 | 8.9M | 3.8 | 3.1 | J3.0 | 3.0 | 3.3 | 2.3 | 3.2 | 6.2 | J5.5 | J7.0 | J8.7 | J8.4 | J8.4 | J6.9 | J8.4 | 9.1M | J5.1 | 4.3 | 6.0M | J5.2 | 3.6 | 3.2 | 3.3 |
| 14 | 2.9 | 3.1 | J5.1 | 2.9 | J1.5 | S | G | 3.4 | 3.5 | 7.3M | 9.1M | 6.2M | J5.5 | 5.1 | J5.4 | J5.6 | J8.4 | 6.1 | J3.6 | S | J2.3 | 7.1M | 6.0 | 5.8M |
| 15 | 5.9 | 5.9 | 4.8 | 3.1M | S | 2.8 | J2.4 | 5.9 | J6.1 | 9.0M | J8.5 | J8.2 | 13.0 | 16.7 | 7.1 | 8.0 | J10.2 | 6.2M | 6.9M | 6.4 | 6.7M | 2.8M | 2.7 | 3.0 |
| 16 | 5.7 | 6.6M | J5.4 | 2.9 | 3.1 | 3.1M | J5.3 | 3.2 | J5.6 | 13.7 | J10.0 | J8.5 | J10.7 | 4.5 | G | 3.4 | 4.4 | 4.8 | 2.9 | 2.6 | 3.6 | 3.2M | S | 3.0 |
| 17 | 3.1 | 2.8 | 3.1 | 4.2 | 5.8 | 3.0 | 3.1 | J3.1 | 5.8 | 4.3 | 3.3 | 5.0 | J5.1 | J6.3 | J5.4 | 6.4 | 4.6 | G | 3.3 | 2.6 | J2.3 | S | 3.4M | 6.0M |
| 18 | 5.7M | 4.0 | J5.6 | 6.0M | 3.4 | 3.1 | J2.3 | 4.4 | 3.9 | 4.1 | 4.4 | 5.5 | J5.5 | 4.4 | J5.4 | J5.7 | J11.0 | 9.2 | J5.1 | J2.8 | S | 2.8 | 3.3 | 3.9M |
| 19 | 3.2 | 3.4 | 3.0 | 2.9 | 3.1 | 2.5 | 3.2 | J5.4 | J5.4 | J5.8 | 3.8 | J8.3 | 9.9 | 3.8M | 3.8 | 3.4 | J3.7 | J3.5 | J3.4 | J4.6 | 3.1M | S | S | S |
| 20 | S | 2.3 | S | S | S | S | 2.5 | 3.3 | 3.7 | 3.7 | J8.3 | 10.7 | 8.4 | J5.3 | J5.4 | J4.8 | 4.3M | 4.5 | 3.4 | 3.0 | J3.4 | 5.7 | 5.8 | 5.8M |
| 21 | 3.0M | 4.7M | 3.0 | 2.7 | 2.7 | 2.5 | 2.6 | 3.3 | J8.4 | J12.7 | J13.8 | 13.6M | 13.3 | J8.5 | J8.5 | J11.4 | J5.4 | J5.2 | J3.4 | J4.1 | J5.6 | 3.4M | 3.2M | 3.2M |
| 22 | 3.1 | 5.8 | 4.0M | 4.3M | J3.0 | 3.4 | 2.4 | 6.0 | 13.3 | J5.1 | J8.5 | 6.0 | 6.7 | J8.4 | 4.0 | 4.5 | 3.2 | 5.9 | J5.2 | J5.4 | 6.0M | 3.2 | 3.5 | 3.6 |
| 23 | 3.0M | S | 3.0 | 3.1 | 2.8 | 3.3 | J3.9 | J5.3 | J5.8 | J10.6 | 6.1 | 12.4M | 7.8M | G | G | 3.7 | 9.3 | 6.0M | J5.2 | J2.5 | 2.4 | 3.0 | 2.9 | 3.2M |
| 24 | 2.4 | 2.9 | 3.1 | 3.0 | S | 2.7 | 3.0 | J3.4 | 3.9 | 3.7 | 4.5 | J5.5 | J6.8 | 6.6 | J9.2 | J5.8 | J5.4 | 6.2 | D6.0S | J4.8 | 3.1 | 4.4M | 5.5M | 3.3 |
| 25 | 3.2 | 3.9M | 3.0 | J2.1 | S | S | 1.9 | 2.4G | 3.8 | 6.3 | J8.3 | J7.9 | J4.9 | J5.2 | J6.4 | 6.0 | 8.4 | C | 9.0M | 3.0 | 2.9 | 2.3 | J2.3 | 2.5 |
| 26 | 2.9 | 2.9M | 3.9 | J5.6 | 6.7M | 9.0M | 9.2M | 5.9 | J5.2 | 7.0M | J5.6 | 4.6 | 3.8 | G | G | 7.3M | 7.3M | 6.7M | 5.9M | 5.9M | S | S | S | 2.8 |
| 27 | 3.4M | 2.9 | 3.9M | 3.0 | 2.3 | S | G | J3.3 | 5.0 | 6.1M | J8.6 | 5.5 | 3.8 | 3.8 | G | J5.4 | J4.8 | 3.3 | J3.5 | 3.1 | 2.9 | 3.1M | 3.4M | 2.9M |
| 28 | 3.0M | 3.0M | 3.0 | 3.1 | 3.9M | J5.0 | 5.8M | 3.1 | J5.2 | J5.7 | J11.8 | 13.3 | 14.2M | 11.2 | J10.3 | 9.1 | 3.3 | 5.9 | 5.9 | 7.0 | 10.9 | 5.7 | 3.0 | 3.9M |
| 29 | 5.9M | 5.8M | 5.7M | 5.8M | J5.3 | 3.5M | J3.4 | 2.8 | 3.6 | 6.4 | J11.3 | J11.6 | J13.4 | 14.4M | 3.8 | B | 4.3 | 3.5 | 2.9 | 3.0 | S | S | S | S |
| 30 | S | 2.9 | 3.0 | 3.3M | J2.6 | 2.9 | 2.5 | 3.3 | 4.1 | 5.9 | 4.5 | J5.1 | B | 4.9 | 4.4 | 5.1 | 5.0 | 4.5 | J5.4 | 4.5 | 3.3 | 3.9M | 2.8 | 3.8M |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 27 | 28 | 29 | 29 | 26 | 26 | 29 | 30 | 30 | 30 | 29 | 28 | 28 | 29 | 30 | 28 | 30 | 29 | 30 | 28 | 27 | 26 | 26 | 28 |
| Median | 3.2 | 4.0 | 3.9 | 3.1 | 3.0 | 3.1 | 3.1 | 3.8 | 5.3 | 6.2 | 8.5 | 8.2 | 8.5 | 6.3 | 5.4 | 5.8 | 5.4 | 5.1 | 5.1 | 4.7 | 3.2 | 3.7 | 3.2 | 3.8 |
| U.Q. | 5.7 | 5.1 | 5.1 | 5.0 | 3.4 | 3.5 | 4.1 | 5.4 | 8.4 | 9.0 | 11.2 | 11.4 | 11.4 | 12.1 | 7.6 | 8.2 | 8.3 | 6.4 | 5.9 | 6.0 | 5.1 | 5.7 | 5.5 | 5.2 |
| L.Q. | 3.0 | 3.0 | 3.0 | 2.9 | 2.6 | 2.8 | 2.4 | 3.3 | 4.1 | 5.2 | 5.6 | 6.1 | 5.5 | 4.4 | 3.9 | 4.8 | 4.3 | 3.6 | 3.4 | 3.0 | 2.9 | 3.0 | 2.9 | 3.0 |
| Q.R. | 2.7 | 2.1 | 2.1 | 2.1 | 0.8 | 0.7 | 1.7 | 2.1 | 4.3 | 3.8 | 5.6 | 5.3 | 5.9 | 7.7 | 3.7 | 3.4 | 4.0 | 2.8 | 2.5 | 3.0 | 2.2 | 2.7 | 2.6 | 2.2 |

The Radio Research Laboratories, Japan

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | $f_bEs$ | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | 2.6 | A | A | E | 2.3 | 2.3 | 5.4 | A | A | A | A | 4.0 | 4.7 | 5.4 | 6.9 | 4.3 | G | 4.1 | A | 4.4 | 1.9 | 4.2 | A |
| 2 | 3.4 | 3.7 | 2.5 | 2.7 | A | 2.6 | G | 5.7 | A | A | A | A | A | A | A | A | A | A | 5.8 | 3.5 | 2.5 | A | A | A |
| 3 | A | A | A | A | A | 2.4 | A | 3.8 | A | A | A | A | A | A | $E_{4.0}^{R}$ | $E_{6.3}^{R}$ | | A | 6.4 | A | A | A | A | A |
| 4 | A | A | 2.0 | 2.1 | 2.1 | 2.0 | 3.3 | 3.6 | $E_{3.7}^{R}$ | 4.9 | A | A | A | $E_{4.1}^{R}$ | 3.9 | 4.9 | 5.5 | A | 3.7 | A | A | A | A | 2.2 |
| 5 | E | S | E | E | 1.9 | 2.3 | 3.3 | 3.8 | 3.9 | $E_{4.4}^{R}$ | C | C | C | C | 5.0 | 3.9 | A | 4.0 | 5.2 | $E_{5.3}^{S}$ | 3.0 | 3.8 | 1.9 | A |
| 6 | A | A | 1.9 | 2.4 | A | A | A | 3.5 | 4.2 | 5.1 | 4.5 | A | 4.3 | 4.7 | 5.3 | A | 3.7 | 3.3 | 2.7 | S | E | A | 2.5 | A |
| 7 | A | 2.6 | A | 2.2 | 2.3 | 2.1 | 3.0 | 2.8 | A | 5.2 | A | A | A | $E_{7.4}^{S}$ | $E_{3.5}^{R}$ | 3.7 | $E_{3.2}^{R}$ | $2.5^{G}$ | 2.8 | 4.2 | 2.7 | A | A | A |
| 8 | A | A | A | A | A | 2.1 | 3.0 | 4.2 | A | 4.2 | A | B | | | 4.6 | 4.5 | 4.4 | G | 3.0 | 2.4 | 2.1 | A | 1.9 | A |
| 9 | A | 4.4 | A | 4.6 | 2.3 | E | 4.6 | 3.9 | A | 5.5 | A | A | A | A | 6.8 | B | $E_{3.2}^{R}$ | 4.8 | 4.5 | 2.1 | 2.2 | A | A | A |
| 10 | 2.0 | 4.1 | 4.1 | 3.5 | 2.4 | 2.5 | 2.4 | 3.4 | 5.1 | 4.3 | A | A | 5.1 | 5.0 | A | 5.6 | 5.1 | A | A | A | A | A | A | A |
| 11 | 2.9 | A | A | A | 2.1 | 2.1 | S | $E_{3.0}^{R}$ | 4.4 | A | A | A | A | A | A | A | A | A | A | A | 4.5 | A | 2.3 | A |
| 12 | A | A | 2.6 | 1.9 | 2.2 | 2.8 | 2.5 | A | A | A | A | A | A | A | A | 7.1 | 4.3 | 3.6 | 3.6 | $E_{4.3}^{S}$ | 2.1 | 2.0 | A | A |
| 13 | A | 1.9 | 2.2 | 2.0 | 2.1 | 2.1 | G | 3.1 | A | 5.5 | A | A | A | A | 5.3 | A | 4.2 | 4.4 | 3.5 | A | A | 2.8 | 2.3 | 2.4 |
| 14 | E | 2.5 | 2.2 | 1.9 | 1.5 | S | | 3.3 | 3.5 | A | A | A | 4.9 | 4.7 | 4.6 | 4.7 | 5.0 | 4.4 | 3.4 | S | 2.3 | 4.1 | 2.8 | A |
| 15 | A | A | A | A | S | 2.0 | 2.4 | A | 6.1 | A | A | A | A | A | A | A | A | 5.3 | A | 6.3 | A | A | A | A |
| 16 | A | A | A | 1.9 | 2.4 | 2.5 | 4.2 | G | A | A | A | A | A | 4.3 | | $E_{3.4}^{R}$ | 4.4 | 4.8 | 2.6 | 2.0 | 3.6 | 2.2 | S | E |
| 17 | A | 1.9 | 2.3 | A | 2.2 | 2.0 | 2.4 | 2.8 | 4.2 | 4.3 | $E_{3.3}^{R}$ | A | 5.0 | A | 5.2 | 5.3 | 4.4 | | 3.1 | $E_{2.6}^{R}$ | 2.1 | S | A | A |
| 18 | A | 3.7 | 2.0 | A | A | 2.2 | 2.2 | 3.8 | $E_{3.9}^{R}$ | 4.1 | A | A | 4.6 | 4.2 | A | A | 4.5 | 5.0 | 4.8 | $E_{2.8}^{S}$ | S | A | A | A |
| 19 | A | 2.7 | A | A | A | E | 3.1 | A | 4.4 | A | 3.8 | A | A | $E_{3.8}^{R}$ | $E_{3.8}^{R}$ | $E_{3.4}^{R}$ | 3.5 | 3.5 | $E_{3.4}^{R}$ | 4.5 | A | S | S | S |
| 20 | S | E | S | S | S | S | 2.5 | $E_{3.3}^{S}$ | G | 3.7 | A | A | A | 4.7 | 5.2 | 4.5 | 3.7 | 4.5 | 3.4 | 2.7 | 3.4 | A | A | A |
| 21 | A | A | 2.3 | 2.0 | E | E | G | 3.1 | A | A | A | A | A | A | A | A | 4.3 | 5.1 | $E_{3.4}^{S}$ | 4.1 | 5.2 | A | $E_{3.2}^{S}$ | A |
| 22 | E | A | A | A | A | 2.1 | 2.3 | 4.1 | 5.4 | 4.6 | 4.8 | A | 5.3 | A | $E_{4.0}^{R}$ | $E_{4.5}^{R}$ | $E_{3.2}^{R}$ | A | 4.2 | 4.5 | A | A | A | A |
| 23 | E | S | 2.5 | 2.3 | 1.9 | A | A | A | A | A | 4.7 | A | 4.9 | | | G | 3.5 | 4.2 | 4.1 | 2.2 | E | A | 2.5 | A |
| 24 | A | A | 2.1 | 2.4 | S | 2.0 | 2.8 | 3.4 | 3.9 | $E_{3.7}^{R}$ | 4.5 | A | A | A | A | 4.4 | 5.2 | 4.4 | A | 3.9 | $E_{3.1}^{S}$ | 2.1 | A | A |
| 25 | 2.5 | 2.2 | 2.6 | 2.0 | S | S | $E_{1.9}^{R}$ | $2.2^{G}$ | 3.6 | A | A | A | 4.8 | 4.6 | 5.3 | 4.8 | 5.0 | C | A | $E_{3.0}^{S}$ | $E_{2.9}^{S}$ | $E_{2.3}^{S}$ | E | A |
| 26 | 2.1 | A | A | A | A | A | A | A | 5.0 | 5.3 | 3.8 | A | A | | | A | A | 4.6 | A | 5.2 | S | S | S | E |
| 27 | A | A | A | A | 2.2 | S | | 3.1 | 3.9 | A | A | A | $E_{3.8}^{R}$ | $E_{3.8}^{R}$ | | A | 4.6 | 3.3 | 3.4 | 2.5 | 2.7 | A | A | A |
| 28 | A | A | A | 2.2 | A | A | A | 3.1 | 5.2 | A | A | A | A | A | A | A | 3.3 | 4.2 | A | A | A | A | E | A |
| 29 | A | A | A | A | A | A | A | G | 3.4 | A | A | A | A | A | $E_{3.8}^{R}$ | B | 3.6 | $E_{3.5}^{R}$ | 2.5 | 2.8 | S | S | S | S |
| 30 | S | A | 2.3 | 2.5 | 2.1 | E | 2.2 | 3.1 | 3.9 | A | $E_{4.5}^{S}$ | 4.6 | B | 4.9 | $E_{4.4}^{R}$ | 4.9 | 5.0 | 4.5 | 5.3 | 4.0 | 3.3 | A | 2.3 | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bEs$

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 5

# IONOSPHERIC DATA

Jun. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E



| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.30 | 1.20 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.70 | 2.30 | 2.00 | 2.30 | 2.45 | 2.30 | 2.20 | 2.20 | 1.65 | 1.80 | 1.90 | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ |
| 2 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | E | 1.20 | $E_{1.70}^{S}$ | $E_{1.75}^{S}$ | $E_{1.60}^{S}$ | 1.90 | 2.20 | 2.10 | 2.50 | 2.90 | 2.50 | 2.50 | 2.30 | 1.85 | 1.90 | 1.85 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | $E_{1.90}^{S}$ |
| 3 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | E | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | 1.70 | 2.05 | 2.35 | 2.30 | 2.25 | 2.70 | 2.40 | 2.30 | 2.45 | 2.20 | 2.20 | 2.05 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ |
| 4 | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | 1.40 | E | 1.40 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.90 | 2.15 | 2.30 | 2.50 | 2.50 | 2.60 | 2.40 | 2.20 | 2.15 | 2.10 | 1.90 | 2.20 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ |
| 5 | $E_{2.00}^{S}$ | $E_{2.00}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | 1.15 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 2.00 | 1.90 | C | C | C | C | 2.50 | 2.30 | 2.00 | 2.00 | 2.20 | $E_{1.75}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ |
| 6 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | 1.30 | E | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.65}^{S}$ | 1.90 | 2.00 | 2.35 | 2.35 | 2.35 | 2.30 | 2.40 | 2.40 | 2.20 | 1.90 | 2.10 | 2.00 | $E_{2.00}^{S}$ | $E_{1.95}^{S}$ | $E_{1.90}^{S}$ | $E_{2.00}^{S}$ |
| 7 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.60}^{S}$ | E | 1.25 | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | $E_{1.60}^{S}$ | 1.80 | 1.90 | 2.00 | 2.30 | 2.20 | 2.60 | 2.35 | 2.40 | 2.00 | 1.65 | 1.85 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.95}^{S}$ | $E_{2.00}^{S}$ |
| 8 | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | E | 1.35 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.90 | 1.90 | 2.80 | 2.40 | 4.75 | 2.30 | 2.60 | 2.35 | 2.45 | 2.20 | 2.10 | 2.00 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ |
| 9 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.85}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | 1.90 | 2.00 | 2.20 | 2.50 | 2.45 | 3.60 | 2.50 | 3.50 | 4.10 | 2.30 | 2.10 | 2.25 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}$ |
| 10 | $E_{1.70}^{S}$ | $E_{1.75}^{S}$ | $E_{2.00}^{S}$ | $E_{1.70}^{S}$ | 1.20 | 1.95 | 1.80 | 1.90 | 2.00 | 2.10 | 2.40 | 2.40 | 2.30 | 2.20 | 2.30 | 2.30 | 2.30 | 2.10 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.60}^{S}$ | $E_{2.10}^{S}$ |
| 11 | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.75}^{S}$ | E | $E_{1.80}^{S}$ | 2.10 | 2.00 | 2.10 | 2.10 | 2.50 | 2.50 | 3.75 | 3.65 | 2.60 | 2.50 | 2.25 | 2.00 | 1.95 | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ |
| 12 | $E_{1.70}^{S}$ | $E_{1.85}^{S}$ | $E_{1.90}^{S}$ | E | 1.40 | $E_{1.80}^{S}$ | 1.80 | 1.80 | 2.30 | 2.30 | 2.40 | 3.70 | 3.60 | 2.60 | 2.60 | 2.45 | 2.25 | 1.90 | 2.00 | 1.80 | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ |
| 13 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 1.40 | 1.30 | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 1.85 | 2.00 | 2.05 | 2.30 | 2.50 | 2.35 | 2.30 | 2.50 | 2.30 | 2.00 | 1.90 | 2.00 | 1.90 | 1.35 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ |
| 14 | $E_{1.95}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | E | $E_{1.80}^{S}$ | 1.80 | 1.90 | 1.80 | 2.30 | 2.30 | 2.50 | 2.70 | 2.30 | 2.60 | 2.40 | 2.30 | 1.90 | 1.70 | 2.00 | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | $E_{1.75}^{S}$ | $E_{1.80}^{S}$ |
| 15 | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 1.90 | 2.20 | 2.35 | 2.60 | 2.50 | 2.40 | 2.50 | 2.30 | 2.10 | 2.10 | 1.80 | 1.90 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ |
| 16 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.20 | E | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | $E_{1.60}^{S}$ | 1.90 | 2.05 | 2.50 | 2.25 | 3.10 | 2.50 | 2.30 | 2.30 | 2.00 | 1.95 | 2.00 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{2.10}^{S}$ | $E_{2.00}^{S}$ |
| 17 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.75}^{S}$ | $E_{1.90}^{S}$ | 1.20 | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 2.00 | 2.00 | 2.10 | 3.00 | 2.40 | 2.50 | 2.65 | 2.40 | 2.40 | 2.30 | 2.15 | 2.30 | 2.20 | $E_{1.70}^{S}$ | $E_{2.30}^{S}$ | $E_{2.10}^{S}$ | $E_{1.80}^{S}$ |
| 18 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.95}^{S}$ | $E_{1.85}^{S}$ | $E_{1.60}^{S}$ | $E_{1.80}^{S}$ | 1.80 | 1.90 | 2.00 | 2.30 | 2.40 | 2.60 | 2.60 | 2.75 | 2.30 | 2.25 | 2.30 | 2.00 | $E_{1.70}^{S}$ | $E_{2.20}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ |
| 19 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | 1.90 | 2.00 | 2.10 | 2.30 | 3.40 | 2.40 | 2.40 | 2.60 | 2.30 | 2.40 | 2.30 | 2.10 | 2.00 | 2.00 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{2.10}^{S}$ |
| 20 | $E_{2.30}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{2.05}^{S}$ | $E_{2.05}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.70 | 2.05 | 2.05 | 2.30 | 2.45 | 3.15 | 2.35 | 2.25 | 2.35 | 2.10 | 2.00 | 1.80 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.75}^{S}$ |
| 21 | $E_{1.90}^{S}$ | $E_{1.95}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{2.00}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 2.10 | 2.05 | 2.20 | 2.30 | 2.40 | 2.30 | 2.55 | 2.20 | 2.20 | 2.15 | 1.90 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.95}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ |
| 22 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | 1.20 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.90 | 1.90 | 2.10 | 2.35 | 2.30 | 2.40 | 2.30 | 2.30 | 2.30 | 2.00 | 2.15 | 2.00 | 1.90 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ |
| 23 | $E_{2.10}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}$ | 1.20 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | 1.80 | 2.05 | 2.10 | 2.40 | 2.70 | 3.40 | 2.65 | 2.50 | 2.20 | 2.20 | 2.20 | 1.80 | 2.00 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ |
| 24 | $E_{1.95}^{S}$ | $E_{1.95}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.65}^{S}$ | 1.90 | 2.15 | 2.30 | 3.50 | 2.50 | 3.60 | 2.35 | 2.20 | 1.95 | 1.70 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.95}^{S}$ |
| 25 | $E_{1.95}^{S}$ | 1.30 | $E_{1.90}^{S}$ | E | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | 1.40 | $E_{1.70}^{S}$ | 2.10 | 2.20 | 2.25 | 2.30 | 3.40 | 2.30 | 2.30 | 2.30 | 2.10 | $I_{2.00}^{C}$ | 2.00 | 1.90 | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ |
| 26 | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.90 | 2.00 | 2.00 | 2.20 | 2.50 | 2.20 | 2.50 | 2.40 | 2.20 | 2.05 | 1.70 | 2.10 | $E_{1.80}^{S}$ | S | $E_{2.20}^{S}$ | $E_{2.00}^{S}$ | $E_{2.00}^{S}$ |
| 27 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | 2.00 | 2.00 | 2.20 | 2.20 | 3.40 | 3.35 | 3.40 | 2.30 | 2.20 | 2.20 | 2.10 | 1.95 | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.60}^{S}$ |
| 28 | $E_{2.05}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | 1.30 | $E_{1.85}^{S}$ | $E_{1.80}^{S}$ | 1.80 | 2.00 | 2.30 | 2.20 | 2.20 | 2.25 | 3.40 | 3.45 | 2.50 | 2.20 | 1.85 | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.10}^{S}$ | $E_{1.90}^{S}$ |
| 29 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 1.40 | $E_{1.80}^{S}$ | 1.80 | 2.00 | 2.05 | 2.20 | 2.30 | 2.60 | 3.40 | 2.55 | 2.70 | 4.40 | 2.25 | 1.95 | 2.00 | $E_{1.60}^{S}$ | $E_{2.00}^{S}$ | $E_{2.10}^{S}$ | $E_{2.10}^{S}$ | S |
| 30 | $E_{2.50}^{S}$ | $E_{2.00}^{S}$ | $E_{2.10}^{S}$ | $E_{2.00}^{S}$ | E | $E_{1.95}^{S}$ | 1.90 | 2.00 | 2.05 | 2.60 | 2.60 | 3.35 | 4.10 | 4.25 | 4.10 | 2.50 | 2.25 | $E_{2.80}^{S}$ | 1.90 | 1.90 | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{2.10}^{S}$ | $E_{1.70}^{S}$ |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 19 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 30 | 30 | 29 |
| Median | $E_{1.90}$ | $E_{1.90}$ | $E_{1.80}$ | $E_{1.80}$ | 1.20 | $E_{1.80}$ | $E_{1.80}$ | 1.80 | 2.00 | 2.15 | 2.30 | 2.45 | 2.50 | 2.50 | 2.40 | 2.30 | 2.20 | 2.00 | 2.00 | $E_{1.80}$ | $E_{1.80}$ | $E_{1.90}$ | $E_{1.90}$ | $E_{1.90}$ |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $J_{3.00}^{S}$ | 2.85 | S | A | $J_{3.25}^{S}$ | $I_{3.20}^{S}$ | 3.20 | $3.30^{S}$ | $I_{3.20}^{A}$ | $I_{3.00}^{A}$ | $I_{3.10}^{A}$ | $I_{2.85}^{A}$ | 3.30 | 2.85 | 2.90 | 2.80 | 3.10 | $I_{3.25}^{S}$ | 2.90 | S | S | $J_{3.00}^{S}$ | S | S |
| 2 | S | $3.10^{S}$ | $3.45^{S}$ | 2.95 | S | S | 3.15 | A | A | A | A | A | A | A | A | A | A | A | $3.15^{S}$ | $I_{3.40}^{S}$ | S | S | S | S |
| 3 | S | S | S | S | S | $I_{3.55}^{S}$ | $I_{3.30}^{A}$ | $I_{3.35}^{S}$ | A | A | A | A | A | A | 2.80 | 2.85 | $J_{2.90}^{S}$ | $I_{3.00}^{A}$ | 3.05 | S | S | S | A | S |
| 4 | S | S | S | $I_{2.95}^{S}$ | $I_{3.00}^{S}$ | 3.20 | 3.25 | $I_{3.20}^{S}$ | $I_{3.30}^{S}$ | 3.20 | S | A | $I_{2.70}^{A}$ | 2.60 | 2.85 | $I_{2.90}^{S}$ | 2.95 | $I_{3.15}^{S}$ | 2.95 | S | S | S | S | S |
| 5 | S | $I_{2.80}^{S}$ | $I_{2.95}^{S}$ | 3.15 | $J_{3.05}^{S}$ | 3.15 | 3.25 | $I_{3.30}^{S}$ | 3.25 | $I_{3.30}^{S}$ | C | C | C | C | S | $J_{2.95}^{S}$ | $I_{3.00}^{S}$ | 3.15 | $I_{2.95}^{S}$ | 3.05 | $I_{3.30}^{S}$ | $J_{3.50}^{S}$ | $J_{2.80}^{S}$ | A |
| 6 | A | S | S | $J_{3.35}^{S}$ | A | A | A | 3.30 | $I_{3.45}^{S}$ | $3.45^{S}$ | 3.45 | $I_{3.15}^{A}$ | 2.55 | 2.80 | 2.70 | $I_{2.70}^{S}$ | $J_{2.75}^{S}$ | 2.95 | $I_{3.05}^{S}$ | $I_{3.20}^{S}$ | S | S | 3.00 | A |
| 7 | S | $J_{2.90}^{S}$ | $I_{2.95}^{S}$ | $J_{3.05}^{S}$ | $J_{3.05}^{S}$ | $I_{3.35}^{S}$ | $J_{3.45}^{S}$ | 3.10 | $I_{3.00}^{A}$ | $J_{2.95}^{S}$ | A | A | A | 2.80 | 3.00 | $I_{2.95}^{S}$ | $I_{3.10}^{S}$ | $3.00^{S}$ | $2.60^{S}$ | $I_{2.90}^{S}$ | 3.25 | S | A | S |
| 8 | A | S | A | A | $I_{3.05}^{A}$ | $J_{3.45}^{S}$ | 3.35 | 3.45 | $I_{3.20}^{A}$ | $J_{2.90}^{R}$ | $I_{2.85}^{A}$ | $I_{2.85}^{S}$ | $J_{2.95}^{S}$ | 2.90 | 3.00 | 2.80 | $I_{2.95}^{S}$ | $I_{3.15}^{S}$ | $I_{3.10}^{S}$ | $J_{2.95}^{S}$ | S | S | S | S |
| 9 | S | $I_{3.20}^{S}$ | $I_{3.20}^{S}$ | $I_{3.10}^{S}$ | $I_{3.15}^{S}$ | $J_{3.15}^{S}$ | $J_{3.15}^{S}$ | $J_{2.85}^{S}$ | $I_{3.00}^{A}$ | 3.15 | A | A | A | $I_{2.60}^{A}$ | $2.70^{S}$ | $I_{2.80}^{S}$ | 2.75 | 2.85 | $I_{3.10}^{S}$ | $J_{3.35}^{S}$ | S | S | S | S |
| 10 | S | $I_{3.00}^{S}$ | $I_{3.10}^{S}$ | $I_{3.05}^{S}$ | 3.20 | $J_{3.30}^{S}$ | 3.35 | 3.35 | $I_{3.20}^{S}$ | 3.10 | A | A | S | $I_{2.90}^{S}$ | $I_{2.80}^{A}$ | $I_{2.85}^{S}$ | 2.85 | $I_{2.90}^{S}$ | S | A | A | A | S | $I_{2.90}^{S}$ |
| 11 | $J_{2.90}^{S}$ | S | S | S | F | S | $3.70_{H}^{S}$ | 3.40 | $3.35^{S}$ | $I_{3.20}^{S}$ | A | A | A | A | A | A | $J_{2.70}^{S}$ | A | A | S | S | S | S | S |
| 12 | S | S | S | S | S | $J_{3.50}^{S}$ | $3.15^{S}$ | S | A | A | A | A | A | A | $I_{2.65}^{A}$ | 2.85 | 2.85 | $I_{2.90}^{S}$ | $J_{2.95}^{S}$ | S | S | S | $I_{3.20}^{S}$ | $I_{3.50}^{S}$ |
| 13 | $I_{3.55}^{A}$ | $I_{3.35}^{S}$ | $3.35^{S}$ | $I_{3.20}^{S}$ | $I_{3.05}^{S}$ | $I_{3.00}^{S}$ | 3.40 | 3.65 | $I_{3.35}^{A}$ | 3.35 | C | A | A | A | 2.75 | $I_{2.80}^{S}$ | 2.90 | $2.95^{S}$ | 3.00 | $I_{3.15}^{S}$ | S | S | S | S |
| 14 | S | S | S | $I_{3.20}^{S}$ | $I_{3.10}^{S}$ | $J_{2.80}^{S}$ | $3.10^{H}$ | $J_{3.35}^{S}$ | $I_{3.40}^{S}$ | $I_{3.10}^{A}$ | $I_{2.85}^{A}$ | $I_{2.75}^{A}$ | 2.65 | 2.80 | 2.90 | $J_{2.90}^{S}$ | $J_{2.95}^{S}$ | $I_{2.90}^{S}$ | $3.10^{S}$ | $I_{3.10}^{S}$ | $I_{3.05}^{S}$ | $2.80^{S}$ | $2.65^{S}$ | A |
| 15 | A | S | S | $I_{3.15}^{S}$ | $I_{3.25}^{S}$ | $I_{3.15}^{S}$ | 3.05 | $I_{2.90}^{A}$ | S | A | $I_{3.05}^{A}$ | $I_{3.00}^{A}$ | A | A | A | A | A | $J_{2.70}^{S}$ | $I_{3.00}^{S}$ | 3.25 | S | S | S | S |
| 16 | S | A | S | S | $J_{3.25}^{S}$ | $3.15^{S}$ | $3.35^{S}$ | 3.45 | S | A | A | A | A | R | 2.70 | 2.95 | 2.90 | $I_{2.70}^{S}$ | S | S | $J_{3.25}^{S}$ | 2.85 | $I_{3.00}^{S}$ | $J_{2.75}^{S}$ |
| 17 | S | S | S | A | 2.75 | $2.95^{S}$ | 3.25 | $I_{3.35}^{S}$ | 3.15 | 3.05 | $I_{3.00}^{S}$ | $I_{3.00}^{S}$ | $I_{2.85}^{S}$ | $I_{2.50}^{A}$ | 2.50 | 2.75 | S | S | S | S | S | S | S | A |
| 18 | A | S | S | $I_{2.80}^{A}$ | $I_{2.95}^{S}$ | $I_{3.00}^{S}$ | $J_{2.80}^{S}$ | 2.90 | 3.35 | G | R | A | 2.75 | $3.05^{S}$ | $I_{3.00}^{S}$ | $I_{2.90}^{S}$ | 2.90 | S | S | $3.15^{S}$ | $I_{3.05}^{S}$ | S | S | S |
| 19 | S | S | S | S | A | $I_{3.00}^{S}$ | 3.45 | $I_{3.20}^{S}$ | 2.75 | $I_{3.15}^{S}$ | 2.90 | $I_{3.00}^{A}$ | $I_{2.90}^{A}$ | $3.05^{S}$ | $I_{2.90}^{S}$ | 2.95 | 2.95 | $I_{3.05}^{S}$ | $I_{3.30}^{S}$ | $I_{3.30}^{S}$ | S | S | S | $I_{2.80}^{S}$ |
| 20 | $J_{2.75}^{S}$ | 2.90 | $I_{2.95}^{S}$ | $I_{2.95}^{S}$ | $I_{2.85}^{S}$ | $I_{2.90}^{S}$ | 3.10 | $I_{3.40}^{S}$ | 3.40 | 3.30 | A | A | A | $2.50^{S}$ | $I_{2.60}^{S}$ | $J_{3.25}^{S}$ | $J_{3.35}^{S}$ | 3.05 | $I_{2.95}^{S}$ | S | S | S | S | S |
| 21 | S | A | $I_{2.95}^{S}$ | 2.80 | $I_{2.95}^{S}$ | $I_{3.40}^{S}$ | 3.40 | 3.45 | A | A | A | A | A | A | A | $I_{2.70}^{A}$ | 2.95 | $I_{2.80}^{S}$ | $J_{3.35}^{S}$ | $I_{3.35}^{S}$ | 3.35 | $I_{3.20}^{S}$ | $J_{2.90}^{S}$ | S |
| 22 | S | A | S | S | S | S | 3.30 | 3.35 | $I_{3.30}^{S}$ | $I_{3.40}^{S}$ | 3.15 | $I_{2.90}^{A}$ | 2.75 | $I_{2.70}^{A}$ | $J_{2.75}^{S}$ | 3.20 | $3.15^{S}$ | 2.95 | $I_{3.10}^{S}$ | $I_{3.25}^{S}$ | $I_{3.60}^{S}$ | S | S | S |
| 23 | S | $I_{3.00}^{S}$ | $J_{3.35}^{S}$ | $I_{3.30}^{S}$ | $I_{3.25}^{S}$ | $I_{3.15}^{S}$ | $I_{3.30}^{S}$ | $J_{3.20}^{S}$ | $I_{3.40}^{S}$ | $I_{3.10}^{A}$ | 2.45 | $I_{2.75}^{A}$ | 2.80 | 2.75 | 2.85 | 3.00 | 3.05 | $J_{3.10}^{S}$ | S | S | S | $I_{3.55}^{S}$ | 3.00 | $I_{2.85}^{S}$ |
| 24 | S | S | $3.00^{S}$ | $I_{3.00}^{S}$ | $I_{3.00}^{S}$ | 3.35 | 3.50 | 3.55 | $3.50^{S}$ | 3.30 | 2.80 | A | A | A | A | $3.05^{S}$ | 3.10 | $3.10^{S}$ | $I_{3.20}^{S}$ | $I_{3.35}^{S}$ | 3.35 | S | A | S |
| 25 | S | S | S | $2.75^{S}$ | $J_{3.30}^{S}$ | 3.15 | 3.25 | 3.45 | 3.30 | $I_{3.45}^{A}$ | $I_{3.10}^{A}$ | $I_{2.95}^{A}$ | 2.90 | 2.90 | $J_{3.00}^{S}$ | $I_{2.90}^{S}$ | S | C | A | S | S | 3.30 | S | S |
| 26 | S | S | A | A | A | A | A | A | 2.95 | $I_{3.05}^{S}$ | 3.10 | $I_{2.80}^{R}$ | $I_{2.50}^{R}$ | 2.75 | $2.85^{S}$ | A | A | S | S | S | S | S | S | S |
| 27 | S | S | S | S | 3.30 | $3.25^{S}$ | $3.30^{S}$ | 3.05 | $J_{3.40}^{S}$ | $I_{3.50}^{A}$ | $I_{3.20}^{A}$ | $I_{3.05}^{A}$ | $I_{2.70}^{R}$ | $I_{2.70}^{R}$ | 2.55 | $I_{2.80}^{S}$ | 2.75 | $I_{3.05}^{S}$ | $I_{3.25}^{S}$ | $I_{3.20}^{S}$ | S | S | S | S |
| 28 | S | S | S | S | $I_{3.00}^{A}$ | $I_{3.00}^{A}$ | $I_{2.95}^{A}$ | 3.05 | $I_{2.95}^{S}$ | $I_{3.20}^{A}$ | A | A | $I_{2.90}^{A}$ | A | A | A | 3.00 | $I_{3.10}^{S}$ | S | S | A | A | S | S |
| 29 | A | A | A | A | A | A | $I_{3.30}^{S}$ | 3.35 | 3.15 | A | A | A | A | A | $J_{2.75}^{S}$ | $I_{2.80}^{S}$ | 2.90 | $I_{3.05}^{S}$ | $I_{3.20}^{S}$ | $J_{3.35}^{S}$ | S | S | $J_{3.15}^{S}$ | S |
| 30 | S | S | S | S | 2.95 | $I_{3.20}^{S}$ | 3.45 | 3.25 | $3.20^{S}$ | $I_{3.10}^{A}$ | $I_{2.95}^{R}$ | 2.80 | 2.65 | 2.75 | 2.80 | $2.90^{S}$ | S | S | S | S | S | $I_{3.40}^{S}$ | $I_{2.90}^{S}$ | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 4 | 9 | 10 | 16 | 21 | 24 | 28 | 27 | 24 | 23 | 14 | 13 | 15 | 18 | 23 | 25 | 24 | 23 | 20 | 16 | 8 | 8 | 9 | 5 |
| Median | 2.95 | $U_{3.00}$ | $U_{3.05}$ | $U_{3.05}$ | $U_{3.05}$ | $U_{3.15}$ | 3.30 | 3.35 | $U_{3.30}$ | $U_{3.15}$ | $U_{3.00}$ | $U_{2.90}$ | 2.75 | 2.80 | 2.80 | 2.90 | 2.95 | $U_{3.00}$ | $U_{3.10}$ | $U_{3.20}$ | $U_{3.30}$ | 3.25 | 3.00 | $U_{2.85}$ |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

M(3000)F2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 7

# IONOSPHERIC DATA

Jun. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L | A | A | A | A | A | 3.70 | A | A | A | A | 3.55 | A | | | | | |
| 2 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 3 | | | | | | | A | A | A | A | A | A | A | A | R | A | 3.50 | A | A | | | | | |
| 4 | | | | | | | | A | R | A | A | A | A | R | R | A | A | A | A | | | | | |
| 5 | | | | | | | | L | 3.70 | A | C | C | C | C | A | 3.65 | A | A | A | | | | | |
| 6 | | | | | | | | L | A | A | A | A | 3.90 | A | A | A | 3.50 | 3.60 | 3.50 | | | | | |
| 7 | | | | | | | | 3.40 | A | A | A | A | A | A | $I_{3.60}^{R}$ | 3.45 | 3.45 | 3.40 | 3.15 | | | | | |
| 8 | | | | | | | | | A | R | A | B | 3.70 | R | A | A | A | 3.55 | L | | | | | |
| 9 | | | | | | | | L | A | A | A | A | A | A | A | R | $3.45^{R}$ | A | A | | | | | |
| 10 | | | | | | | | L | A | L | A | A | A | A | A | A | A | A | A | | | | | |
| 11 | | | | | | | | | $I_{3.75}^{A}$ | $I_{3.55}^{A}$ | A | A | A | A | A | A | A | A | A | | | | | |
| 12 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | 3.50 | A | | | | | |
| 13 | | | | | | | | | A | A | C | A | A | A | A | A | A | A | A | | | | | |
| 14 | | | | | | | | $3.75^{L}$ | 3.80 | A | A | A | A | A | A | A | A | A | A | | | | | |
| 15 | | | | | | | L | A | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 16 | | | | | | | | L | A | A | A | A | A | R | R | 3.50 | A | A | $3.40^{S}$ | L | | | | |
| 17 | | | | | | | L | L | A | A | R | A | A | A | A | A | A | $R^{H}$ | 3.25 | | | | | |
| 18 | | | | | | | | A | R | R | A | A | A | $3.80^{R}$ | A | A | A | A | A | | | | | |
| 19 | | | | | | | | A | A | A | 3.50 | A | A | R | R | R | 3.60 | 3.45 | R | | | | | |
| 20 | | | | | | | L | S | $3.75^{H}$ | 3.70 | A | A | A | A | A | A | 3.55 | A | A | A | | | | |
| 21 | | | | | | | | L | A | A | A | A | A | A | A | A | R | A | S | | | | | |
| 22 | | | | | | | | $I_{3.70}^{A}$ | $I_{3.60}^{A}$ | A | A | A | A | A | R | A | $I_{3.60}^{R}$ | A | A | | | | | |
| 23 | | | | | | | | A | A | A | A | A | A | R | R | $3.85^{R}$ | 3.65 | A | A | L | | | | |
| 24 | | | | | | | | A | L | R | A | A | A | A | A | A | A | A | A | | | | | |
| 25 | | | | | | | L | $3.65^{S}$ | $3.95^{S}$ | A | A | A | A | A | A | A | A | C | A | | | | | |
| 26 | | | | | | | A | A | A | A | 4.10 | A | R | R | R | A | A | A | A | | | | | |
| 27 | | | | | | | | 3.40 | A | A | A | A | R | R | R | A | R | R | A | | | | | |
| 28 | | | | | | | | 3.40 | A | A | A | A | A | A | A | A | 3.65 | A | A | | | | | |
| 29 | | | | | | | | 3.65 | 3.70 | A | A | A | A | A | R | B | $3.45^{R}$ | R | 3.60 | | | | | |
| 30 | | | | | | | | S | A | A | A | A | R | A | A | A | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 7 | 7 | 2 | 2 | | 3 | 1 | 1 | 4 | 10 | 6 | 5 | | | | | |
| Median | | | | | | | | 3.65 | 3.75 | $U_{3.60}$ | 3.80 | | 3.70 | 3.80 | $U_{3.60}$ | 3.60 | 3.50 | 3.50 | 3.40 | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 290 | 310 | $I_{300}^{A}$ | $I_{340}^{A}$ | $I_{355}^{A}$ | $I_{410}^{A}$ | 375 | 390 | 360 | 370 | 295 | 280 | 330 | | | | | |
| 2 | | | | | | | 255 | $E_{350}^{A}$ | A | A | A | A | A | A | A | A | A | A | 300 | | | | | |
| 3 | | | | | | | A | 280 | A | A | A | A | A | A | 355 | 360 | 330 | $I_{325}^{A}$ | 300 | | | | | |
| 4 | | | | | | | | 225 | 300 | 320 | A | A | $I_{450}^{A}$ | 455 | 380 | 340 | 325 | $I_{295}^{A}$ | 305 | | | | | |
| 5 | | | | | | | | 275 | 290 | 300 | C | C | C | C | 340 | 310 | $I_{340}^{A}$ | 325 | 305 | | | | | |
| 6 | | | | | | | | 295 | 250 | 290 | 295 | $I_{350}^{A}$ | 455 | 410 | 435 | $I_{385}^{A}$ | 340 | 305 | 295 | | | | | |
| 7 | | | | | | | | 330 | $I_{295}^{A}$ | 390 | A | A | A | 380 | 305 | 325 | 305 | 320 | 370 | | | | | |
| 8 | | | | | | | | | A | 385 | $I_{350}^{A}$ | 365 | 340 | 330 | 325 | 340 | 320 | 295 | 280 | | | | | |
| 9 | | | | | | | | 335 | $I_{325}^{A}$ | 300 | A | A | A | $I_{400}^{A}$ | 385 | 335 | 340 | 310 | 290 | | | | | |
| 10 | | | | | | | | 280 | 280 | 300 | A | A | 350 | 390 | $I_{385}^{A}$ | 355 | 345 | A | A | | | | | |
| 11 | | | | | | | | | 295 | $I_{325}^{A}$ | A | A | A | A | A | A | A | A | A | | | | | |
| 12 | | | | | | | 255 | A | A | A | A | A | A | A | A | 355 | 320 | 310 | 290 | | | | | |
| 13 | | | | | | | | | $I_{275}^{A}$ | 305 | C | A | A | $I_{400}^{A}$ | 365 | $I_{340}^{A}$ | 330 | 295 | 280 | | | | | |
| 14 | | | | | | | | 255 | 245 | A | A | A | 445 | 350 | 325 | 320 | 320 | 320 | 285 | | | | | |
| 15 | | | | | | | 295 | A | 290 | $I_{285}^{A}$ | $I_{365}^{A}$ | $I_{365}^{A}$ | A | A | $I_{380}^{A}$ | $I_{370}^{A}$ | $I_{360}^{A}$ | 355 | $I_{315}^{A}$ | | | | | |
| 16 | | | | | | | | 270 | A | A | A | A | A | R | 440 | 355 | 340 | 375 | 305 | 240 | | | | |
| 17 | | | | | | | 280 | 275 | 320 | 335 | 360 | $I_{385}^{A}$ | 355 | $I_{520}^{A}$ | 445 | 365 | 345 | 340 | 300 | | | | | |
| 18 | | | | | | | | 370 | 290 | G | A | A | 445 | 335 | $I_{350}^{A}$ | $I_{390}^{A}$ | 365 | 315 | 285 | | | | | |
| 19 | | | | | | | | A | 430 | A | 400 | $I_{375}^{A}$ | $I_{385}^{A}$ | 350 | 360 | 340 | 305 | 320 | 280 | | | | | |
| 20 | | | | | | | 310 | 260 | 280 | 305 | A | A | A | 470 | 400 | 285 | 275 | 340 | 340 | 275 | | | | |
| 21 | | | | | | | | 270 | A | A | A | A | A | A | A | A | 355 | 350 | 300 | | | | | |
| 22 | | | | | | | | 290 | 320 | 310 | 340 | $I_{395}^{A}$ | $E_{435}^{A}$ | $I_{310}^{A}$ | 345 | 290 | 295 | $I_{345}^{A}$ | 350 | | | | | |
| 23 | | | | | | | | A | $I_{300}^{A}$ | $I_{355}^{A}$ | $E_{525}^{A}$ | $I_{425}^{A}$ | 375 | 380 | 345 | 310 | 305 | 305 | 330 | 290 | | | | |
| 24 | | | | | | | | 255 | 255 | 290 | 425 | A | A | A | A | 305 | 295 | 305 | $I_{310}^{A}$ | | | | | |
| 25 | | | | | | | 300 | 290 | 280 | $I_{290}^{A}$ | $I_{375}^{A}$ | $I_{400}^{A}$ | 395 | 360 | 330 | 340 | 360 | $I_{330}^{C}$ | $I_{310}^{A}$ | | | | | |
| 26 | | | | | | | A | A | $E_{350}^{A}$ | 305 | 305 | $I_{440}^{A}$ | $I_{535}^{R}$ | 435 | 390 | A | A | 340 | A | | | | | |
| 27 | | | | | | | | 340 | 280 | $I_{285}^{A}$ | $I_{340}^{A}$ | $I_{385}^{A}$ | 395 | $I_{480}^{R}$ | 490 | $I_{385}^{A}$ | 355 | 305 | 255 | | | | | |
| 28 | | | | | | | | 345 | 270 | $I_{370}^{A}$ | A | A | $I_{410}^{A}$ | A | A | A | 330 | 310 | $I_{260}^{A}$ | | | | | |
| 29 | | | | | | | | 300 | 345 | A | A | A | A | A | 420 | 400 | 350 | 305 | 260 | | | | | |
| 30 | | | | | | | | 300 | 325 | A | 355 | 395 | 450 | 410 | 400 | 345 | 350 | 315 | 325 | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | 7 | 21 | 23 | 21 | 12 | 12 | 15 | 19 | 24 | 25 | 27 | 27 | 27 | 3 | | | | |
| Median | | | | | | | 290 | 290 | 290 | 305 | 355 | $U_{390}$ | 395 | 390 | 370 | 340 | 330 | 315 | 300 | 275 | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Jun. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 260 | 320 | A | A | 255 | 255 | 250 | A | A | A | A | A | 220 | A | A | A | A | 230 | A | A | 305 | 285 | 355 | A |
| 2 | 310 | 255 | 240 | 350 | $I_{330}^{A}$ | 305 | 230 | A | A | A | A | A | A | A | A | A | A | A | A | 260 | 245 | $I_{320}^{A}$ | A | A |
| 3 | A | A | A | A | A | 245 | $I_{280}^{A}$ | A | A | A | A | A | A | A | 270 | $I_{255}^{A}$ | 250 | A | A | A | A | A | A | A |
| 4 | A | A | 300 | 305 | 300 | 255 | 255 | $I_{215}^{A}$ | $I_{195}^{A}$ | A | A | A | A | $E_{300}^{R}$ | 220 | $I_{205}^{A}$ | $I_{235}^{A}$ | $I_{245}^{A}$ | $I_{250}^{A}$ | $I_{255}^{A}$ | $I_{255}^{A}$ | A | A | 330 |
| 5 | 290 | 300 | 290 | 255 | 260 | 255 | 290 | $I_{240}^{A}$ | 250 | A | C | C | C | C | A | 250 | A | A | A | A | 240 | 240 | 290 | A |
| 6 | A | A | 250 | 240 | A | A | A | 250 | A | A | A | A | 230 | A | A | A | 250 | 240 | 230 | $245^{H}$ | 235 | $I_{230}^{A}$ | 260 | A |
| 7 | A | 345 | $I_{340}^{A}$ | 310 | 305 | 225 | 255 | 240 | A | A | A | A | A | A | $I_{255}^{R}$ | 250 | 250 | 250 | 255 | $E_{310}^{A}$ | 235 | A | A | A |
| 8 | A | A | A | A | $I_{290}^{A}$ | 240 | 240 | 265 | A | $E_{290}^{A}$ | A | $I_{225}^{B}$ | 240 | $I_{240}^{R}$ | $I_{250}^{A}$ | $I_{240}^{A}$ | $I_{250}^{A}$ | 260 | 240 | 255 | 240 | $I_{280}^{A}$ | 330 | $I_{310}^{A}$ |
| 9 | $I_{300}^{A}$ | 305 | $I_{250}^{A}$ | $E_{320}^{A}$ | 270 | 255 | 290 | A | A | A | A | A | A | A | A | 260 | 270 | A | A | 250 | 240 | A | A | $I_{330}^{A}$ |
| 10 | 300 | 315 | 305 | 270 | 250 | 250 | 245 | 250 | $I_{260}^{A}$ | A | A | A | A | A | A | A | A | A | A | A | A | A | A | $I_{350}^{A}$ |
| 11 | 305 | A | A | A | 290 | 240 | $200^{H}$ | 245 | $I_{235}^{A}$ | $I_{250}^{A}$ | A | A | A | A | A | A | A | A | A | A | 270 | $I_{300}^{A}$ | 300 | A |
| 12 | A | A | 270 | 290 | 320 | 260 | 245 | A | A | A | A | A | A | A | A | A | A | 255 | $I_{250}^{A}$ | 290 | 270 | 250 | $I_{250}^{A}$ | $I_{240}^{A}$ |
| 13 | $I_{250}^{A}$ | 270 | 250 | 275 | 300 | 300 | 240 | 230 | A | A | C | A | A | A | A | A | A | A | $I_{255}^{A}$ | $I_{285}^{A}$ | $I_{260}^{A}$ | 300 | 300 | 290 |
| 14 | 280 | 290 | 260 | 255 | 255 | 250 | $235^{H}$ | 250 | 245 | A | A | A | A | A | A | A | A | A | A | 245 | 255 | $E_{305}^{A}$ | 350 | A |
| 15 | A | A | A | $I_{265}^{A}$ | 285 | 300 | 255 | A | A | A | A | A | A | A | A | A | A | A | A | 270 | A | A | A | A |
| 16 | A | A | $I_{300}^{A}$ | 255 | 260 | 280 | 270 | 235 | A | A | A | A | A | 255 | $I_{240}^{R}$ | 260 | A | A | 240 | 240 | 275 | 315 | 305 | 350 |
| 17 | $I_{310}^{A}$ | 330 | 275 | $I_{315}^{A}$ | 310 | 340 | 250 | 240 | $I_{235}^{A}$ | $I_{220}^{A}$ | R | A | A | A | A | A | A | $230^{H}$ | $I_{240}^{A}$ | 255 | 240 | 250 | $I_{320}^{A}$ | A |
| 18 | A | 275 | 315 | A | A | 315 | 260 | $I_{265}^{A}$ | A | $E_{290}^{A}$ | A | A | A | 250 | A | A | A | A | A | 250 | 280 | A | A | A |
| 19 | A | 305 | $I_{265}^{A}$ | A | A | $E_{300}^{S}$ | 245 | A | A | A | 250 | A | A | 260 | 245 | 220 | 245 | 275 | A | 250 | $I_{270}^{A}$ | 290 | 320 | 310 |
| 20 | 300 | 275 | 280 | 300 | 290 | 295 | 295 | $I_{250}^{A}$ | $225^{H}$ | 240 | A | A | A | A | A | A | $E_{270}^{A}$ | A | A | $I_{260}^{A}$ | 240 | A | A | A |
| 21 | A | A | 340 | 300 | 300 | 245 | 250 | 250 | A | A | A | A | A | A | A | A | 235 | A | A | 255 | $E_{305}^{A}$ | A | 365 | $I_{310}^{A}$ |
| 22 | 255 | $I_{285}^{A}$ | A | A | A | $E_{295}^{A}$ | 245 | $I_{225}^{A}$ | $I_{235}^{A}$ | A | A | A | A | A | A | A | 255 | A | A | 270 | $I_{250}^{A}$ | A | A | A |
| 23 | 290 | 260 | 250 | 255 | 225 | $I_{285}^{A}$ | $I_{265}^{A}$ | A | A | A | A | A | A | R | $I_{260}^{R}$ | 240 | 250 | A | A | 255 | 225 | $I_{255}^{A}$ | 300 | $I_{335}^{A}$ |
| 24 | $I_{350}^{A}$ | $I_{310}^{A}$ | 300 | $E_{350}^{A}$ | 260 | 240 | 255 | $I_{250}^{A}$ | $I_{240}^{A}$ | $I_{240}^{A}$ | A | A | A | A | A | A | A | A | A | 270 | 255 | 255 | $I_{300}^{A}$ | $I_{310}^{A}$ |
| 25 | 250 | 270 | 330 | 350 | 300 | 275 | 250 | 250 | 240 | A | A | A | A | A | A | A | A | C | A | 250 | 250 | 250 | 275 | $I_{300}^{A}$ |
| 26 | 325 | $I_{255}^{A}$ | A | A | A | A | A | A | A | A | 240 | $I_{250}^{A}$ | $I_{260}^{R}$ | $I_{240}^{R}$ | 250 | A | A | A | A | 290 | $I_{250}^{S}$ | 300 | 310 | 300 |
| 27 | $I_{285}^{A}$ | $I_{260}^{A}$ | A | A | 260 | 255 | 260 | 250 | A | A | A | A | A | 240 | R | A | A | 255 | $I_{250}^{A}$ | 235 | 300 | A | A | A |
| 28 | $I_{330}^{A}$ | $I_{320}^{A}$ | $I_{290}^{A}$ | $E_{255}^{S}$ | $I_{310}^{A}$ | A | A | 255 | A | A | A | A | A | A | A | A | 225 | A | A | A | A | A | 305 | $I_{300}^{A}$ |
| 29 | $I_{275}^{A}$ | $I_{250}^{A}$ | A | A | A | A | $I_{265}^{A}$ | 240 | 240 | A | A | A | A | A | A | $I_{225}^{B}$ | 290 | $I_{255}^{A}$ | 235 | 250 | 290 | 305 | 305 | $I_{290}^{S}$ |
| 30 | 340 | $I_{335}^{A}$ | 300 | 300 | 310 | 290 | 240 | 230 | $I_{245}^{A}$ | A | A | A | 245 | A | A | A | A | A | A | 260 | 220 | $I_{260}^{A}$ | 310 | A |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 19 | 21 | 21 | 18 | 23 | 24 | 27 | 21 | 12 | 4 | 2 | 2 | 5 | 6 | 8 | 10 | 12 | 10 | 10 | 23 | 25 | 17 | 19 | 15 |
| Median | 300 | 290 | 290 | 280 | 290 | 255 | 250 | 250 | $U_{240}$ | $U_{240}$ | 245 | $U_{240}$ | 240 | 245 | $U_{250}$ | 245 | 250 | 250 | $U_{245}$ | 255 | 250 | 280 | 305 | $U_{310}$ |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

# IONOSPHERIC DATA

Jun. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | 105 | 105 | 105 | 105 | 105 | 130 | 125 | 120 | 110 | 110 | 110 | 110 | 110 | 105 | 125 | 125 | 145 | 110 | 120 | 110 | 105 | 105 | 105 |
| 2 | 105 | 105 | 105 | 105 | 105 | 120 | 120 | 125 | 120 | 120 | 120 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 120 | 120 |
| 3 | 110 | 105 | 105 | 105 | 105 | 105 | 130 | 130 | 120 | 120 | 110 | 110 | 110 | 110 | 150 | 130 | G | 120 | 120 | 110 | 115 | 120 | 120 | 115 |
| 4 | 110 | 110 | 105 | 105 | 110 | 110 | 125 | 130 | 130 | 125 | 110 | 110 | 110 | 140 | 140 | 140 | 130 | 120 | 115 | 115 | 110 | 110 | 105 | 125 |
| 5 | 120 | S | 125 | 110 | 110 | 110 | 110 | 110 | 115 | 115 | C | C | C | C | 145 | 140 | 125 | 130 | 125 | 125 | 120 | 120 | 120 | 120 |
| 6 | 115 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 130 | 125 | 130 | 125 | 130 | 130 | 140 | 130 | 135 | 125 | 120 | S | 120 | 115 | 110 | 110 |
| 7 | 105 | 105 | 105 | 105 | 105 | 105 | 110 | 130 | 125 | 125 | 115 | 110 | 110 | 110 | 120 | 120 | 115 | 115 | 140 | 125 | 105 | 105 | 120 | 120 |
| 8 | 120 | 105 | 105 | 105 | 105 | 105 | 140 | 130 | 125 | 120 | 110 | B | G | G | 130 | 145 | 130 | 140 | 125 | 110 | 120 | 115 | 115 | 110 |
| 9 | 110 | 105 | 105 | 105 | 110 | 120 | 140 | 135 | 120 | 120 | 115 | 115 | 120 | 110 | 120 | B | 140 | 140 | 125 | 110 | 110 | 110 | 105 | 110 |
| 10 | 120 | 105 | 105 | 105 | 105 | 105 | 110 | 110 | 130 | 130 | 115 | 110 | 125 | 125 | 125 | 125 | 135 | 130 | 120 | 110 | 110 | 110 | 110 | 110 |
| 11 | 120 | 110 | 105 | 105 | 105 | 105 | S | 155 | 120 | 130 | 120 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 120 |
| 12 | 120 | 115 | 105 | 105 | 105 | 140 | 145 | 130 | 125 | 125 | 125 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 130 | 120 |
| 13 | 110 | 110 | 110 | 105 | 105 | 105 | 160 | 155 | 130 | 135 | 130 | 130 | 125 | 125 | 120 | 120 | 120 | 120 | 115 | 110 | 110 | 110 | 110 | 110 |
| 14 | 125 | 125 | 120 | 120 | 105 | S | G | 140 | 140 | 110 | 110 | 120 | 110 | 110 | 110 | 140 | 130 | 130 | 125 | S | 125 | 120 | 110 | 110 |
| 15 | 110 | 110 | 110 | 105 | S | 105 | 105 | 130 | 125 | 120 | 120 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 125 |
| 16 | 120 | 110 | 110 | 105 | 105 | 105 | 135 | 150 | 135 | 125 | 120 | 115 | 110 | 135 | G | 125 | 140 | 140 | 130 | 105 | 130 | 130 | S | 120 |
| 17 | 115 | 110 | 110 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 120 | 120 | 110 | 140 | 105 | 130 | 110 | G | 125 | 115 | 105 | S | 140 | 125 |
| 18 | 120 | 110 | 105 | 110 | 110 | 110 | 110 | 140 | 135 | 135 | 130 | 125 | 130 | 135 | 120 | 120 | 115 | 110 | 110 | 115 | S | 130 | 130 | 115 |
| 19 | 105 | 105 | 105 | 105 | 105 | 105 | 140 | 135 | 135 | 125 | 140 | 125 | 120 | 120 | 125 | 120 | 120 | 110 | 105 | 105 | 105 | S | S | S |
| 20 | S | 105 | S | S | S | S | 150 | 140 | 145 | 140 | 120 | 110 | 110 | 115 | 110 | 110 | 105 | 140 | 130 | 140 | 135 | 130 | 125 | 120 |
| 21 | 115 | 110 | 110 | 110 | 110 | 135 | 145 | 135 | 125 | 120 | 115 | 120 | 115 | 130 | 130 | 120 | 130 | 125 | 125 | 120 | 105 | 110 | 110 | 115 |
| 22 | 110 | 105 | 105 | 105 | 105 | 105 | 145 | 125 | 110 | 120 | 120 | 115 | 110 | 110 | 120 | 115 | 115 | 125 | 125 | 125 | 120 | 120 | 120 | 110 |
| 23 | 115 | S | 105 | 105 | 110 | 110 | 140 | 130 | 125 | 120 | 120 | 110 | 120 | G | G | 140 | 125 | 125 | 120 | 120 | 120 | 110 | 110 | 110 |
| 24 | 115 | 105 | 105 | 105 | S | 110 | 105 | 105 | 140 | 140 | 125 | 120 | 125 | 125 | 125 | 125 | 125 | 115 | 110 | 110 | 110 | 110 | 120 | 125 |
| 25 | 115 | 115 | 125 | 125 | S | S | 120 | 120 | 145 | 110 | 110 | 110 | 140 | 115 | 140 | 140 | 140 | C | 125 | 125 | 125 | 105 | 135 | 130 |
| 26 | 140 | 120 | 120 | 120 | 115 | 110 | 110 | 110 | 120 | 110 | 115 | 145 | 120 | G | G | 135 | 130 | 125 | 125 | 125 | S | S | S | 140 |
| 27 | 120 | 110 | 105 | 105 | 105 | S | G | 140 | 125 | 120 | 120 | 125 | 120 | 120 | G | 130 | 130 | 130 | 125 | 120 | 120 | 115 | 110 | 115 |
| 28 | 120 | 115 | 110 | 105 | 105 | 105 | 105 | 135 | 130 | 130 | 125 | 120 | 120 | 120 | 120 | 125 | 140 | 115 | 105 | 105 | 105 | 105 | 125 | 125 |
| 29 | 120 | 120 | 125 | 120 | 110 | 110 | 140 | 145 | 130 | 120 | 110 | 110 | 110 | 110 | 110 | B | 110 | 145 | 105 | 105 | S | S | S | S |
| 30 | S | 125 | 120 | 120 | 120 | 120 | 155 | 140 | 135 | 120 | 120 | 120 | B | 150 | 150 | 140 | 135 | 130 | 130 | 120 | 105 | 120 | 125 | 125 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 27 | 28 | 29 | 29 | 26 | 26 | 27 | 30 | 30 | 30 | 29 | 28 | 27 | 26 | 26 | 28 | 29 | 28 | 30 | 28 | 27 | 26 | 26 | 28 |
| Median | 115 | 110 | 105 | 105 | 105 | 110 | 130 | 130 | 125 | 120 | 120 | 120 | 115 | 120 | 120 | 125 | 125 | 125 | 120 | 110 | 110 | 110 | 120 | 120 |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 11

57

# IONOSPHERIC DATA

Jun. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5′ N, Long. 130°37.7′ E

| Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | f2 | f2 | f3 | f | f3 | c2 | c3 | c4 | c3 | c2 | c3 | ℓ | ℓ | ℓ | h2ℓ | hℓ | h | c2 | f2 | f4 | f2 | f2 | f |
| 2 | f2 | f3 | f2 | f2 | f2 | ff2 | ℓc | c3 | c | h2 | c2 | c4 | ℓ3 | ℓ2 | ℓ3 | ℓ3 | ℓ3 | ℓ3 | ℓ2 | f6 | f2 | f2 | f4 | f3 |
| 3 | f2 | f2 | f3 | f2 | f2 | f3 | h5ℓ | h | c5 | c2 | c3 | c2 | ℓ2 | ℓ2 | h | h | | c2 | c3 | f2 | f3 | f2 | f2 | f |
| 4 | f2 | f2 | f2 | f2 | f2 | f2 | c2ℓ | c2 | h2 | h2 | ℓ | ℓ2 | ℓ2 | h | h | h | h2 | c | c2 | f2 | f3 | f2 | f2 | f2 |
| 5 | f | | f | f | f2 | f2 | ℓ4 | ℓ2 | ℓ | ℓ2 | | | | | h | h | h2 | h2 | c2 | f2 | f | f4 | f | f3 |
| 6 | f4 | f2 | f | f3 | f3 | f2 | ℓ3 | ℓ2 | hℓ | h2ℓ | h | h | h | h | h2 | h2 | h | c2 | c2 | | f | f2 | f | f |
| 7 | f2 | f3 | f2 | f2 | f2 | f | ℓ3 | c2 | h3 | h3 | c3 | c2 | ℓ3 | ℓ3 | h | ℓ | ℓ | ℓ | h2 | f2 | f3 | f2 | ff2 | f4 |
| 8 | f2 | f2 | f2 | f2 | f2 | f | h3ℓ | h2 | h2ℓ | c2 | c3 | | | | h | h | h | h | c | f2 | f2 | f | f2 | f3 |
| 9 | f2 | f2 | f3 | f3 | f3 | f | h4 | h2 | c2 | c3 | c3 | c3 | c3 | ℓ2 | c3 | | h | h | c2 | f | f2 | f | f2 | f2 |
| 10 | f | f4 | f3 | f2 | f | f | ℓ | ℓ2 | cℓ | cℓ | c2 | c3 | h | h | c2 | c2 | h3 | c2 | c4 | f3 | f4 | f2 | f2 | f2 |
| 11 | f2 | f3 | f2 | f4 | f2 | f | | h | c2 | h | c2 | c2 | c3 | c4 | c2 | ℓ3 | ℓ4 | ℓ4 | ℓ4 | f3 | f2 | f2 | f2 | f2 |
| 12 | f3 | f3 | f2 | f | f2 | f3 | c | c3 | c3ℓ | h2 | c2 | c2 | c2 | c2 | c3 | ℓ2 | ℓ | ℓ | ℓ2 | f3 | f2 | f | ff3 | f2 |
| 13 | f2 | f2 | f2 | f2 | f2 | f2 | hℓ | h | h2 | h2 | h2 | h3ℓ | h2ℓ | h | h | c2 | c2 | c2 | c2 | f2 | f4 | f2 | f2 | f2 |
| 14 | f | f2 | f | f | f | | | h | h | c3 | ℓ | ℓ | ℓ | ℓ | ℓh | hℓ | h2 | h | c2 | | f2 | f3 | f3 | f |
| 15 | f3 | f3 | f3 | f2 | | f2 | ℓ | c3ℓ | c3ℓ | c2 | c3 | c2 | c2 | c3 | c2 | c3 | c2 | ℓ3 | ℓ3 | f3 | f3 | f | f2 | f2 |
| 16 | f3 | f2 | f3 | f2 | f2 | f | h3ℓ | h2 | h4 | h4 | c2 | c3 | c4 | h | | h | h | hℓ2 | cℓ2 | ℓ | f2f2 | f | | f2 |
| 17 | f2 | f2 | f2 | f4 | f2 | f2 | ℓ2 | ℓ2 | ℓ2 | ℓ | ℓ | h2 | c | hℓ | ℓ2 | hℓ2 | ℓ | | ℓ | f2 | f | | f2 | f2 |
| 18 | f4 | f3 | f3 | f2 | f4 | f2 | ℓ2 | c2ℓ | h | h | h | h2 | h | h | c2 | c2 | c3 | c2 | c2 | f2 | | f2 | f3 | f2 |
| 19 | f2 | f2 | f3 | f | f2 | f | c | c4 | h2 | c2 | h | h | c | c | h | ℓ | ℓ | ℓ2 | ℓ3 | f3 | f2 | | | |
| 20 | | f | | | | | h2 | h | h | h | c2 | c3 | c2 | c | ℓ2 | ℓ | ℓ2 | hℓ3 | h2ℓ | h2ℓ | f2 | f3f | f2 | f2 |
| 21 | f2 | f2 | f3 | f | f | f | h | h2 | h4 | c2 | c2 | c2 | c2 | h3 | h2 | h2 | h | h | hℓ | f2f | f2 | f | f | f2 |
| 22 | f2 | f2 | f2 | f2 | f3 | f2 | hℓ | h | ℓ2 | c | c2 | c | ℓ2 | ℓ2 | ℓ | ℓ | ℓ | h3 | hℓ2 | f3 | f3 | f | f2 | f4 |
| 23 | f2 | | f | f | f | f2 | h5 | c2 | c2 | c2 | c2 | c2 | c2 | | | h | c | c2 | c2 | ℓ | f | f2 | f | f |
| 24 | f | f2 | f2 | f2 | | f2 | ℓ3 | ℓ3h | h2ℓ2 | hℓ | c | c | c2 | c2 | c2 | c2 | c2 | c3 | c3 | f3 | f3 | f2 | f2 | f2 |
| 25 | f2 | f2 | f3 | f2 | | | ℓ | ℓ | h | ℓ2 | ℓ2 | ℓ3 | hc | c2 | h2c2 | h2ℓ | h2 | | c2 | f2 | f | f | f | f3 |
| 26 | f | f | f2 | f2 | f3 | f2 | ℓ2 | ℓ2 | c | ℓ | c | hℓ | ℓ | | | h2 | h2 | h2 | h2 | f3 | | | | f |
| 27 | f | f2 | f2 | f2 | f | | | h2 | c | c2 | h2 | hℓ | ℓ | ℓ | | h | h | h | c3 | f2 | f2 | f2 | f | f |
| 28 | f2 | f2 | f2 | f | f | f2 | ℓ3 | h2ℓ2 | hℓ | h | c4 | c3 | c2 | c2 | c2 | c3 | h | ℓ | ℓ2 | f2 | f3 | f2 | f | f |
| 29 | f | f2 | f2 | f2 | f5 | f3 | h | h2 | h | c2 | c2 | c2 | c4 | c3 | ℓ | | ℓ | hℓ2 | ℓh | f | | | | |
| 30 | | f | f | f | f2 | f | h | h | h2 | c | c | ℓ | | h | h | hℓ | h2 | h | c2ℓ | ff2 | f2 | f3f | f | f2 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| U.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| L.Q. | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.R. | | | | | | | | | | | | | | | | | | | | | | | | |

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

# SOLAR RADIO EMISSION 200 Mc/s

Flux in $10^{-22}$ w.m.$^{-2}$ (c/s)$^{-1}$, 2 polarizations

HIRAISO

Time in U.T.

| Jun. 1963 | Steady Flux | | | | | Variability | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 00-03 | 03-06 | 06-09 | 21-24 | mean | 00-03 | 03-06 | 06-09 | 21-24 | mean |
| 1 | 7 | 6 | 6 | - | 7 | 0 | 0 | 0 | - | 0 |
| 2 | 7 | 7 | 7 | (7) | 7 | 0 | 0 | 0 | (0) | 0 |
| 3 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 4 | 7 | - | - | - | 7 | 0 | - | - | - | 0 |
| 5 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 7 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 8 | 7 | 7 | 7 | 6 | 7 | 0 | 0 | 0 | 1 | 0 |
| 9 | 6 | 6 | 8 | - | 7 | 0 | 1 | 1 | - | 1 |
| 10 | 12 | 8 | 7 | 9 | 8 | 1 | 1 | 0 | 1 | 1 |
| 11 | 11 | 11 | 21 | 27 | 12 | 1 | 1 | 2 | 2 | 1 |
| 12 | 27 | 61 | 38 | 26 | 38 | 2 | 3 | 2 | 1 | 2 |
| 13 | 34 | 31 | 30 | 15 | 30 | 2 | 2 | 1 | 1 | 2 |
| 14 | 18 | 29 | 23 | 8 | 21 | 1 | 1 | 1 | 0 | 1 |
| 15 | 11 | 12 | 7 | - | 9 | 0 | 0 | 1 | - | 1 |
| 16 | 7 | 7 | - | - | 7 | 0 | 0 | - | - | 0 |
| 17 | 6 | 7 | 7 | - | 7 | 0 | 0 | 0 | - | 0 |
| 18 | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 |
| 19 | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 |
| 20 | 6 | 6 | 6 | - | 6 | 0 | 0 | 0 | - | 0 |
| 21 | 6 | 12 | 8 | 8 | 9 | 0 | 0 | 0 | 0 | 0 |
| 22 | 6 | 9 | 8 | - | 8 | 0 | 0 | 0 | - | 0 |
| 23 | 6 | 7 | 7 | - | 7 | 0 | 0 | 0 | - | 0 |
| 24 | 7 | 6 | 6 | (7) | 7 | 0 | 0 | 0 | (0) | 0 |
| 25 | 7 | 8 | 7 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 26 | 6 | 7 | 8 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 27 | 8 | 7 | 7 | (6) | 7 | 0 | 0 | 0 | (0) | 0 |
| 28 | 6 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 29 | 7 | 7 | - | - | 7 | 0 | 0 | - | - | 0 |
| 30 | 6 | 7 | - | 7 | 7 | 0 | 0 | - | 0 | 0 |

Note No observations during the following periods:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4th | 0200- | | 0950 | 20th | 1920- | 21st | 0000 |
| 8th | 0600- | | 0630 | 22nd | 1920- | 23rd | 0030 |
| 9th | 0150- | | 0320 | 23rd | 1920- | 24th | 0100 |
| 9th | 1920- | 10th | 0130 | 24th | 1920- | | 2330 |
| 10th | 2230- | | 2350 | 27th | 1920- | | 2330 |
| 14th | 1920- | | 2200 | 29th | 0430- | | 1000 |
| 15th | 1920- | 16th | 0000 | 29th | 1920- | 30th | 0000 |
| 16th | 1920- | 17th | 0000 | 30th | 0600- | | 1000 |
| 17th | 1920- | 18th | 0000 | | | | |

Outstanding Occurrences

| Jun. 1963 | Start-time | Dura-tion | Type | Max. Int. | | Max. Time | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | Inst. | Smd. | | |
| 14 | 0238 | 13<br>30 | CD/8 | 220 | 90 | 0245.8 | post-burst increase |

## RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

| Jun. 1963 | Whole Day Index | L. N. 06 12 18 / 12 18 24 | W W V 00 06 12 18 / 06 12 18 24 | S. F. 00 06 12 18 / 06 12 18 24 | W W V H 00 06 12 18 / 06 12 18 24 | Warning 00 06 12 18 / 06 12 18 24 | Principal magnetic storms Start | End | ΔH |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3o | 3 4 (4) | (3) - 1 1 | 4 4 (3) C | 4 4 3 3 | U U U U | | | |
| 2 | 3- | 3 3 (3) | - - 1 1 | C 4 3 3 | 4 4 2 2 | W W U U | | | |
| 3 | 3+ | 4 4 (4) | - - 1 1 | 3 4 4 4 | 3 4 3 4 | U U N N | | | |
| 4 | 4+ | 4 5 4 | (2) - 5 4 | 4 (5) 4 5 | 4 3 4 4 | N N N N | | | |
| 5 | 4+ | 5 4 4 | - - 4 4 | 5 5 4 5 | 3 5 3 4 | N N N N | | | |
| 6 | 5- | 4 5 3 | - - 5 5 | 5 5 5 (5) | 4 4 3 3 | N N N N | 10.6 | --- | 117γ |
| 7 | 3+ | 3 3 3 | - - 1 2 | 5 5 5 3 | 4 3 3 3 | U U U U | --- | --- | |
| 8 | 3o | 3 4 2 | - - (3) 3 | 3 C C 4 | 3 4 4 4 | U U U U | --- | --- | |
| 9 | 3+ | 3 4 (3) | - - (3) 3 | 4 3 4 4 | 5 4 4 4 | U U U U | --- | 18.0 | |
| 10 | 4o | 4 4 4 | - - 5 3 | 5 4 4 3 | 4 4 5 4 | U U U U | | | |
| 11 | 5- | 5 5 5 | - - 5 4 | 4 5 4 4 | 4 4 5 4 | U N N N | | | |
| 12 | 5o | 5 5 5 | - - 5 5 | 5 5 5 4 | 4 5 4 4 | N N N N | | | |
| 13 | 5- | 5 4 5 | (5 4 5) 4 | 4 4 5 5 | 5 5 5 5 | N N N N | | | |
| 14 | 4o | 4 4 4 | (4 4) 4 (3) | 5 5 4 4 | 5 4 4 4 | N N N N | | | |
| 15 | 4o | 4 5 4 | (4) - 1 (3) | 5 5 5 4 | 4 4 4 3 | N N N N | | | |
| 16 | 5- | 5 5 5 | (4) - 4 5 | 5 5 5 5 | 4 2 4 4 | N N N N | | | |
| 17 | 3+ | 4 4 2 | (5) - 4 1 | 4 3 4 4 | 4 3 4 3 | N N N N | | | |
| (18) | 3- | 3 3 2 | (3 3) 1 2 | 3 3 3 2 | 4 3 2 3 | N N N N | | | |
| (19) | 3+ | 3 4 3 | (2) - 1 C | 3 5 5 4 | 5 4 4 4 | U U U U | | | |
| (20) | 3o | 2 3 3 | - - 2 3 | 3 4 4 3 | 5 3 3 3 | U U U U | | | |
| 21 | 3o | 3 2 4 | - - 3 4 | 3 2 3 3 | 3 3 2 3 | U U U U | | | |
| 22 | 4- | 4 5 C | (3) - 4 C | 3 4 4 3 | 4 4 3 2 | U U U U | | | |
| 23 | 4+ | 4 5 C | (5) - 5 C | 3 4 4 (4) | 4 4 (4) C | U U U U | | | |
| 24 | 4o | 4 4 5 | 4 - 4 C | 4 4 4 4 | C 3 3 3 | U U U U | | | |
| 25 | 3+ | 4 4 2 | (5) - - C | 3 3 3 3 | (4) 3 3 3 | U N N N | | | |
| 26 | 3o | 2 3 2 | - - 1 3 | 3 4 4 4 | 4 3 2 3 | U U U U | | | |
| 27 | 3o | 4 4 3 | - - 1 1 | 4 4 3 3 | 5 4 3 4 | U U U U | | | |
| 28 | 3o | 3 3 2 | - - (3) 1 | 4 4 (4) 4 | 4 4 3 5 | U U U U | | | |
| 29 | 3o | C C C | - - 1 (3) | 3 4 4 4 | 5 (4) 3 4 | U U N N | | | |
| 30 | 3o | C C C | - - 1 (3) | 4 4 4 3 | C C (4 4) | N N N N | | | |

* = day of Special World Interval

( ) = Regular World Day

- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

# SUDDEN IONOSPHERIC DISTURBANCES

## (S.I.D.)

HIRAISO

Time in U.T.

| Jun. 1963 | S W F | | | | | | | | Correspondence | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drop-out Intensities (db) | | | | | | Start-time | Dura-tion | Type | Imp. | Flare | Solar Noise | Mag. |
| | WS | SF | HA | TO | LN | SH | | | | | | | |
| 14 | 17" | - | - | - | - | | 02.23 | 25 | S | 2 | x | x | |

IONOSPHERIC DATA IN JAPAN FOR JUNE 1963
第 15 号　第 6 巻

1963年 8 月 20 日　印　刷
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