F—167

# IONOSPHERIC DATA IN JAPAN

## FOR NOVEMBER 1962

Vol. 14 No. 11

Issued in February 1963

Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

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-machi, 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. | Hiraiso-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 nomal 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 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 magnetoionic 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* An $E_s$ 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 thich 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 con 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*

W S .....WWV 20 Mc, 15 Mc and 10 Mc (Washington)

S F .....Various commercial circuits (San Francisco)

H A.....WWVH 15 Mc and 10 Mc (Hawaii)

T O.....JJY 15 Mc and 10 Mc (Tokyo)

S H .....BPV 15 Mc and 10 Mc (Shanghai)

L N .....Various commercial circuit (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drop-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*

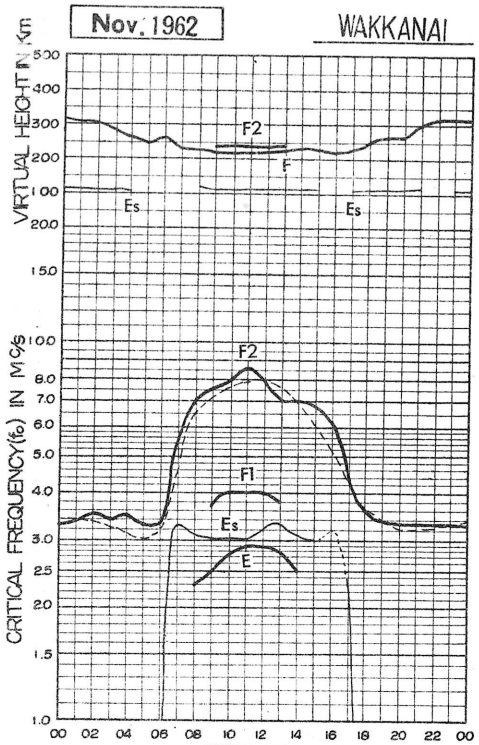
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

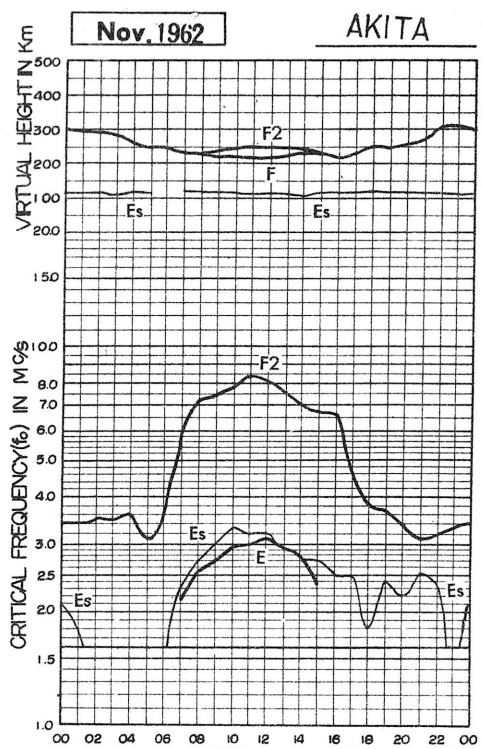
| | | |
|---|---|---|
| 1− | 1 | 1+ |
| 2− | 2 | 2+ |
| 3− | 3 | 3+ |

The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

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.

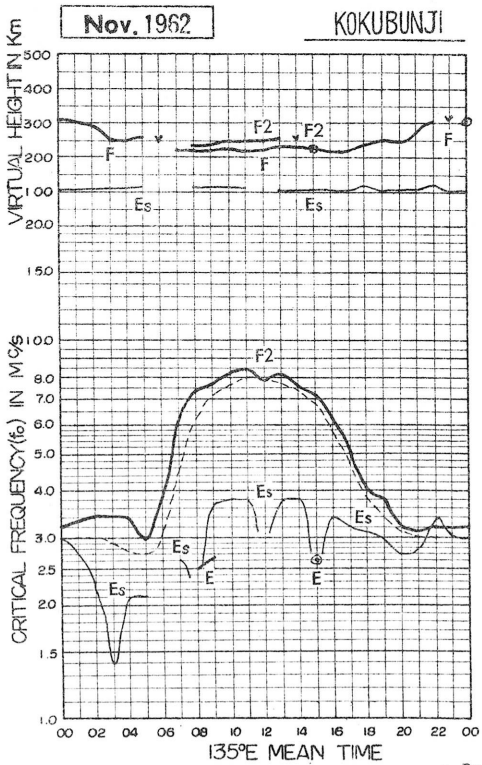
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

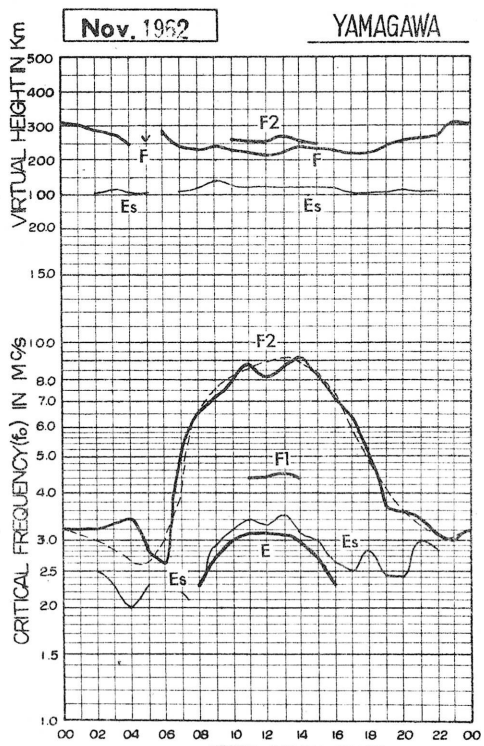



--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS




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

# IONOSPHERIC DATA

Nov. 1962 | 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 | 3.6 | 3.6 | 3.7 | 3.6 | 3.6 | 2.8 | 3.4 | 5.3 | 7.1 | 7.4 | 8.1 | 10.1 | 8.1 | 7.2 | 7.7 | 6.6 | 6.7 | 4.3 | 3.6 | 3.5 | 3.2 | 3.5 | U3.3F | I3.8F5 |
| 2 | U3.4F | 3.0 | I3.2F5 | I3.2A | U3.4F | 3.7 | 3.7 | 5.7 | 5.8 | 8.5 | 8.1 | 10.2 | 7.9 | 7.0 | 7.1 | 7.5 | 6.7 | I4.2A | 3.5 | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 |
| 3 | 3.3 | 3.3 | 3.3 | 3.2 | 3.1 | 3.1 | 3.4 | 6.5 | 6.5 | 8.3 | 8.3 | 8.6 | 8.4 | 6.8 | 6.6 | 7.0 | 6.9 | 5.0 | 4.6 | 3.7 | 3.4 | I3.0A | I3.2A | 3.3 |
| 4 | 3.4 | 3.4 | 3.3 | 3.2 | 3.1 | 2.6 | 3.6 | U6.3S | 7.8 | 7.1 | 8.3 | 8.6 | 8.4 | 6.8 | 6.6 | 6.8 | 7.0 | 4.3 | 4.0 | 3.3 | I3.1A | 3.3 | I3.3A | 3.4 |
| 5 | 3.1 | 3.1 | 3.1 | 3.3 | 3.0 | I3.1S | 3.0 | 5.4 | 8.4 | 9.4 | 8.8 | 9.3 | 8.8 | 7.4 | 7.6 | 7.6 | 7.3 | 4.3 | 4.3 | 3.6 | 3.3 | 3.3 | 3.0 | 2.9 |
| 6 | 3.1 | 3.3 | 3.4 | 3.6 | 3.3 | 3.1 | 3.3 | 6.1 | U7.8SH | 7.4 | 7.5 | 9.0 | 8.5 | 6.9 | 7.5 | 7.1 | U7.0S | A | A | A | 3.5 | 3.6 | 3.7 | 3.6 |
| 7 | 3.4 | 3.4 | 3.7 | 3.2 | U4.1S | 3.1 | 3.4 | 5.9 | 7.4 | 7.5 | C | C | C | C | C | C | C | 5.3 | U3.3S | U4.3S | U4.1S | U4.1S | SF | SF |
| 8 | SF | U4.9SF | 4.6 | 4.0 | 4.0 | 3.5 | 4.0 | 6.4 | U7.4S | U7.7S | 7.5 | 8.3 | 8.3 | 6.9 | 7.0 | 7.0 | 7.6 | 4.5 | 3.7 | 3.1 | 3.0 | 3.0 | 3.2 | 3.2 |
| 9 | 3.3 | 3.3 | 3.5 | 3.3 | 3.5 | 3.1 | 3.7 | 6.3 | 6.8 | 8.6 | 8.1 | 9.7H | 8.3 | 7.5H | 8.1V | 7.9 | 7.0 | U4.2S | 2.8 | 3.2 | 3.4 | 3.4 | 3.3 | 3.3 |
| 10 | 3.3 | 3.3 | 3.4 | 3.4 | 3.4 | 3.4 | 3.0 | 5.6 | 6.8 | 7.1 | 7.3 | 9.2 | 8.6 | 8.1 | 7.4 | 7.5 | 6.8 | 4.6 | I3.8A | 3.3 | I3.1C | 2.9 | I3.0C | I3.1C |
| 11 | 3.1 | 3.3 | 3.6 | 3.4 | 3.7 | 3.6 | 3.2 | 6.0 | 6.5 | 7.2 | 7.6 | 8.4 | 7.7 | 6.7 | 7.4H | 6.6 | 6.6 | 4.1 | 3.8 | 3.6 | I3.3A | 2.9 | I3.0S | 3.3F |
| 12 | U3.3SF | 3.6 | 3.8 | U3.6SF | 3.7 | I3.4A | 3.0 | U6.3S | 8.8 | 9.0 | 8.0 | 9.3 | 7.7 | 6.9 | 7.3 | 6.8 | 6.1 | I4.6AS | I3.4A | 3.2 | U3.8SF | U3.3SF | SF | SF |
| 13 | SF | SF | SF | U3.8SF | U4.3S | 4.0 | 3.3 | 5.9 | U7.7S | 8.7 | 8.0 | 8.9 | 7.9 | 6.3 | I7.1C | 7.1 | 5.0 | I4.0A | I3.8A | 3.7 | 3.3 | 2.9 | U3.3S | I3.3A |
| 14 | U3.3F | SF | FS | FS | SF | SF | U3.7SF | 5.6 | 7.7 | U8.1S | 7.8 | 8.3 | 8.3 | 7.4 | 6.5 | 6.5 | 6.0 | 4.8 | 3.7 | 2.8 | A | A | A | SF |
| 15 | SF | 3.8 | 3.7 | 3.8 | I3.9SF | U4.1FS | I4.1SF | 5.7 | 8.0 | 9.4 | 9.5 | 9.7 | 8.4 | 8.0 | 7.9 | 7.3 | 6.6 | 5.6 | 4.1 | I3.8A | I3.5SF | I3.4SF | 3.3 | 3.2 |
| 16 | 3.3 | 3.6 | 4.4 | 2.9 | I2.7A | U2.5S | 3.0 | 6.1 | 8.6 | 9.2 | 10.8 | 7.4 | 7.8 | 7.3 | 7.7 | 7.2 | 7.5 | 4.4 | 3.7 | 4.4 | 3.3 | I3.4A | 3.7 | 3.7 |
| 17 | 3.7 | 3.6 | I3.6SF | 3.7 | 3.7F | 3.5 | 3.1 | 5.0 | 7.8 | 8.7 | 8.3 | 8.6 | 7.4 | 7.3 | 6.6 | 6.1 | 5.1 | 4.1 | U4.1S | 3.4 | 3.4 | U3.1S | 3.0 | 3.1 |
| 18 | 3.0 | 3.3 | 3.3F | 3.6F | 3.6 | 3.8 | U3.3S | 5.8 | 6.9 | 6.8 | 7.9 | 7.6 | 7.6 | 6.2 | 5.7 | 6.7 | U5.6S | 4.1 | 4.1 | 3.8 | 3.3 | U3.5S | 3.4 | 3.8 |
| 19 | 3.9 | 4.2 | 4.3 | 4.3 | I4.4SF | I3.9SF | I3.6SF | U5.0S | U6.3S | I7.0C | 7.8 | 9.7 | 7.3 | 6.5 | 6.5H | 6.7 | 4.8 | 3.8 | 3.3 | 3.2 | 3.4 | 3.3 | 3.5 | 3.7 |
| 20 | 3.7 | 3.6 | 3.6 | 3.3 | U3.5SF | 2.6 | 2.5 | 5.4 | 7.1 | 7.3 | 7.8 | 7.7 | 7.3H | 7.1 | 6.0 | 6.3 | 6.0 | 3.8 | 3.6 | 3.3 | 3.0 | 2.6 | U3.1S | U3.3S |
| 21 | U3.3SF | U3.3SF | U3.4SF | 3.3F | 3.2 | 2.8 | U2.8S | 5.3 | 6.1 | U6.5S | 7.2 | U7.6S | 7.8 | 6.5 | 7.0 | 6.1 | 6.0 | 4.9 | 3.6 | 3.7 | 3.3 | U2.8S | 3.0 | 2.9 |
| 22 | 3.2 | 3.3 | U3.5SF | 3.4 | 3.3 | 2.8 | 3.3 | 4.9 | 5.8 | 6.7 | U7.4S | 9.0 | 8.0 | 8.1 | 7.9 | U7.5S | 7.3 | U4.4S | 3.3 | 3.3 | 3.5 | U4.3S | 4.3 | 3.9 |
| 23 | 3.8 | 3.3 | 3.3 | 3.3 | 3.5 | 3.3 | 3.5 | 5.8 | U8.3S | 7.0H | 8.6 | 8.4 | 7.2 | U7.2S | 6.8 | 6.3 | 5.0 | 5.2 | 3.6 | 3.7 | I3.5SF | 3.0F | I3.0SF | U2.5S |
| 24 | 2.7 | 3.0 | I3.3SF | U3.7SF | I3.5SF | I3.1F | 3.0 | 5.5 | 7.6 | 7.0 | 8.4 | 7.8 | 7.6 | 7.0 | 6.5 | 6.4 | 4.9H | 3.7 | 2.9 | 3.4 | 3.2 | 2.7 | 3.0 | SF |
| 25 | SF | SF | U3.3SF | U3.8S | I3.4SF | 3.3F | I2.8A | 4.7 | 6.6 | 9.0 | C | C | C | C | C | C | C | I3.7S | I2.8S | U3.3S | U2.8S | I2.7S | I3.0SF | U3.2S |
| 26 | U3.2S | U3.5S | U3.3S | U3.5S | U3.3S | 3.5 | U3.6S | U5.3S | I6.4S | U6.9S | U8.0S | 8.6 | U7.3S | 6.3 | 6.5 | 6.4 | U5.5S | U3.5S | I3.1A | I2.7A | 2.8 | U3.3S | SF | SF |
| 27 | SF | SF | U3.5SF | U3.3S | U3.3S | U3.2S | U3.5S | U5.6S | U6.9S | I7.6C | 6.5 | U6.8S | 6.9 | 7.4 | I6.9S | S | S | S | I2.9S | I3.2AS | I3.2AS | U2.9S | SF | SF |
| 28 | SF | SF | U3.5S | I3.4S | I3.5S | I3.4S | I3.7S | U5.7S | I7.4S | U7.9S | U6.5S | I6.8C | I7.1C | I7.5C | 6.1 | 5.4 | U4.6C | 3.3 | I2.9C | I3.5C | U4.0S | 3.0 | 3.3 | 4.0F |
| 29 | I4.0F | 4.0 | 3.8 | 3.5 | 3.7 | 3.3 | I2.8C | 4.7 | 6.1 | 6.7 | 7.0 | 6.6 | 6.2 | 6.7 | 6.0 | 5.6 | U4.2S | 2.8 | 2.8 | 3.2 | 3.5 | U3.4S | U3.7S | SF |
| 30 | SF | FS | 2.8F | 2.9 | 2.8F | I2.8A | 3.0 | 3.7 | 6.8 | 7.9 | 7.5 | 7.8 | 7.5 | 6.8 | 5.7 | 6.8 | 6.0 | U4.8S | I3.1A | I2.8A | 2.6 | 3.0 | 3.3 | 3.3 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 23 | 24 | 28 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 28 | 28 | 28 | 28 | 28 | 27 | 27 | 28 | 29 | 29 | 29 | 29 | 25 | 23 |
| Median | 3.3 | 3.4 | 3.5 | 3.4 | 3.5 | 3.3 | 3.3 | 5.6 | 7.1 | 7.6 | 8.0 | 8.6 | 7.8 | 7.0 | 7.0 | 6.8 | 6.1 | 4.3 | 3.6 | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 |
| U.Q. | 3.6 | 3.6 | 3.7 | 3.6 | 3.7 | 3.5 | 3.6 | 6.0 | 7.8 | 8.6 | 8.3 | 9.2 | 8.3 | 7.4 | 7.4 | 7.2 | 7.0 | 4.8 | 3.8 | 3.7 | 3.5 | 3.4 | 3.4 | 3.7 |
| L.Q. | 3.2 | 3.3 | 3.3 | 3.3 | 3.3 | 3.0 | 3.0 | 5.3 | 6.5 | 7.0 | 7.5 | 7.8 | 7.4 | 6.8 | 6.5 | 6.4 | 5.1 | 3.9 | 3.1 | 3.2 | 3.2 | 2.9 | 3.0 | 3.2 |
| Q.R. | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 1.3 | 1.6 | 0.8 | 1.4 | 0.9 | 0.6 | 0.9 | 0.8 | 1.9 | 0.9 | 0.7 | 0.5 | 0.3 | 0.5 | 0.4 | 0.5 |

foF2

Sweep 1.0 Mc to 18.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 1

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | | | ᵘ4.1ᴸ | ᵘ4.1ᴸ | 3.7 | | | | | | | | | | |
| 2 | | | | | | | | | | A | ᵘ4.0ᴸ | ᵘ4.2ᴸ | ᶻ4.0ᴬ | L | | | | | | | | | | |
| 3 | | | | | | | | | | ᵘ4.0ᴸ | 4.0 | ᵘ4.2ᴸ | 4.1 | | | | | | | | | | | |
| 4 | | | | | | | | | L | ᵘ3.9ᴸ | ᵘ4.1ᴸ | 4.1 | 4.1 | ᵘ4.0ᴸ | A | | | | | | | | | |
| 5 | | | | | | | | | L | L | L | ᵘ4.1ᴸ | ᵘ4.0ᴸ | 3.5 | | | | | | | | | | |
| 6 | | | | | | | | | | L | 4.0 | ᶻ4.2ᴬ | ᵘ4.1ᴸ | A | A | A | | | | | | | | |
| 7 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 8 | | | | | | | | | | 3.4 | 4.0 | ᵘ4.1ᴸ | ᵘ4.1ᴸ | | | | | | | | | | | |
| 9 | | | | | | | | | | ᵘ4.0ᴸ | ᵘ4.1ᴸᴴ | 3.9 | ᶻ3.6ᴬ | 3.9 | L | | | | | | | | | |
| 10 | | | | | | | | | | | 3.8 | 3.5 | 3.3 | L | | | | | | | | | | |
| 11 | | | | | | | | | | | L | | L | L | | | | | | | | | | |
| 12 | | | | | | | | | | | 3.9 | ᵘ4.1ᴸ | ᵘ4.0ᴸ | 3.6 | | | | | | | | | | |
| 13 | | | | | | | | | | L | L | LH | L | | | | | | | | | | | |
| 14 | | | | | | | | | | 3.6 | 4.0 | ᵘ4.0ᴸᴴ | ᵘ4.1ᴸ | A | | | | | | | | | | |
| 15 | | | | | | | | | | | L | L | L | L | | | | | | | | | | |
| 16 | | | | | | | | | | L | L | 4.0 | | | | | | | | | | | | |
| 17 | | | | | | | | | | L | 4.1 | 4.1 | ᵘ4.0ᴸ | | | | | | | | | | | |
| 18 | | | | | | | | | | | ᶻ3.6ᴸ | 3.6 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | 3.4 | 4.0 | 4.0 | ᵘ3.9ᴸ | | | | | | | | | | |
| 20 | | | | | | | | | | | | ᵘ4.0ᴸ | 3.9 | | | | | | | | | | | |
| 21 | | | | | | | | | | | | ᵘ4.0ᴸ | | | | | | | | | | | | |
| 22 | | | | | | | | | | 3.6 | ᵘ4.0ᴸ | 4.1 | ᶻ4.0ᴬ | ᶻ4.0ᴬ | | | | | | | | | | |
| 23 | | | | | | | | | | ᵘ3.6ᴸ | ᵘ4.0ᴸ | 3.8 | | ᵘ3.8ᴸ | | | | | | | | | | |
| 24 | | | | | | | | | | 3.9 | 3.8 | | ᶻ4.0ᴬ | | | | | | | | | | | |
| 25 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 26 | | | | | | | | | | ᵘ3.8ᴸ | | ᵘ4.0ᴸ | L | | | | | | | | | | | |
| 27 | | | | | | | | | 3.1 | ᶻ3.2ᴸ | 3.7 | 4.0 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | ᵘ3.9ᴸ | C | C | C | C | | | | | | | | | |
| 29 | | | | | | | | | | 3.0 | 3.6ᴴ | 4.1 | | | | | | | | | | | | |
| 30 | | | | | | | | | | ᵘ3.8ᴸ | ᵘ3.9ᴸ | 3.9 | ᵘ4.1ᴸ | ᶻ3.6ᴬ | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | 1 | 12 | 19 | 22 | 17 | 9 | | | | | | | | | | |
| Median | | | | | | | | | 3.1 | ᵘ3.7 | 4.0 | ᵘ4.0 | ᵘ4.0 | ᵘ3.8 | | | | | | | | | | |

foF1

Sweep 1.0 Mc to 18.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 2

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | S | S | A | 2.90 | I2.85A | 2.90 | 2.85 | 2.80 | I2.50A | S | S | S | | | | | | |
| 2 | | | | | | | S | S | A | 2.50 | 2.70 | I2.70A | I2.85A | I2.80R | R | B | S | | | | | | | |
| 3 | | | | | | | S | S | I2.35A | I2.65A | 2.90 | 2.95 | 2.95 | I2.75A | I2.40A | A | A | A | | | | | | |
| 4 | | | | | | | S | S | A | 2.45 | 2.90 | 2.90 | 2.95 | A | A | S | S | S | | | | | | |
| 5 | | | | | | | | S | 2.10 | 2.35 | I2.50B | I2.80A | 2.85 | 2.90 | 2.60 | S | S | | | | | | | |
| 6 | | | | | | | S | S | 2.35 | R | R | A | A | A | A | A | A | | | | | | | |
| 7 | | | | | | | S | S | 2.30 | 2.50 | C | C | C | C | C | C | C | | | | | | | |
| 8 | | | | | | | S | S | 2.25 | 2.40 | I2.55A | I2.70A | A | A | A | S | S | | | | | | | |
| 9 | | | | | | | | S | S | A | A | A | I2.85A | A | A | A | A | | | | | | | |
| 10 | | | | | | | | S | S | 2.70 | 2.90 | 2.90 | I2.90A | 2.85 | 2.70 | 2.15 | S | | | | | | | |
| 11 | | | | | | | | S | 2.30 | A | A | A | 2.95 | 2.80 | S | A | A | | | | | | | |
| 12 | | | | | | | | S | 2.60 | 2.80 | 2.80 | I2.85A | A | A | A | S | S | | | | | | | |
| 13 | | | | | | | | S | S | 2.50 | 2.75 | I2.90B | 2.90 | I2.75S | C | S | S | | | | | | | |
| 14 | | | | | | | | S | A | A | 2.90 | 2.90 | 2.90 | A | A | S | S | | | | | | | |
| 15 | | | | | | | | S | S | I2.40A | I2.75A | I2.85A | 2.90 | I2.70B | B | B | A | | | | | | | |
| 16 | | | | | | | | S | A | A | 2.75 | I2.90A | A | A | S | S | S | | | | | | | |
| 17 | | | | | | | | S | A | A | A | A | A | A | A | S | A | | | | | | | |
| 18 | | | | | | | | S | S | 2.55 | 2.80 | 2.80 | S | S | S | S | S | | | | | | | |
| 19 | | | | | | | | S | S | I2.60C | 2.85 | 2.90 | S | S | S | S | S | | | | | | | |
| 20 | | | | | | | | S | S | S | 2.50 | A | A | A | A | A | S | | | | | | | |
| 21 | | | | | | | | S | I2.20S | 2.45 | 2.75 | 2.85 | 2.70 | I2.50A | 2.35 | 2.25 | S | | | | | | | |
| 22 | | | | | | | | S | S | 2.35 | 2.60 | A | A | A | 2.50 | S | S | | | | | | | |
| 23 | | | | | | | | S | A | A | A | 2.65 | 2.65 | A | S | A | S | | | | | | | |
| 24 | | | | | | | | S | S | A | A | A | A | S | S | S | S | | | | | | | |
| 25 | | | | | | | | S | S | A | C | C | C | C | C | C | C | | | | | | | |
| 26 | | | | | | | | S | S | A | S | 2.90 | I2.80A | I2.75A | A | A | S | | | | | | | |
| 27 | | | | | | | S | S | A | I2.50C | 2.85 | 2.95 | 2.90 | 2.80 | I2.25S | S | S | | | | | | | |
| 28 | | | | | | | | S | S | 2.50 | I2.75S | C | C | C | C | C | C | | | | | | | |
| 29 | | | | | | | | C | C | 2.35 | 2.45 | 2.70 | 2.90 | 2.60 | S | S | S | | | | | | | |
| 30 | | | | | | | | S | S | I2.55S | 2.65 | 2.70 | 2.75 | A | S | S | S | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | 8 | 19 | 21 | 20 | 17 | 12 | 7 | 2 | | | | | | | | |
| Median | | | | | | | | | 2.30 | 2.50 | 2.75 | 2.90 | 2.90 | 2.80 | 2.50 | 2.20 | | | | | | | | |

foE

Sweep 1.0 Mc to 18.0 Mc in 1 min sec in automatic operation.

The Radio Research Laboratories, Japan.

W 3

11

# IONOSPHERIC DATA

Nov. 1962 | 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 | E | E | E | E | E | E | 12.3 | S | 3.1 | G | 3.5 | 2.8g | G | G | 3.7 | 3.0 | S | S | 13.6 | E | E | E | 13.3 | 13.3 |
| 2 | 13.3 | 13.0 | E | 13.5 | 12.5 | E | S | S | 3.7 | 14.2 | 14.5 | 3.9 | 16.5 | G | G | B | S | 16.5 | 12.3 | 12.3 | 13.3 | 13.1 | 12.7 | 13.3 |
| 3 | 13.0 | 12.4 | 12.1 | E | E | E | S | S | 15.3 | 13.5 | G | G | G | 13.3 | 3.0 | 2.8 | 13.1 | 13.3 | E | E | E | 14.3 | 15.3 | 13.4 |
| 4 | 12.5 | E | E | E | 12.8 | 12.3 | 12.5 | 17.0 | 3.0 | 3.0 | G | G | G | 2.9 | 13.3 | S | S | E | E | E | 14.5 | 13.3 | 15.0 | 13.3 |
| 5 | 13.3 | 13.0 | E | 13.6 | E | E | E | 2.6 | 13.8 | 3.7 | 13.0 | 15.0 | G | G | G | S | S | E | E | E | E | E | E | 13.1 |
| 6 | E | 14.3 | 13.0 | E | E | E | S | S | G | G | G | 18.3 | 16.3 | 15.5 | 16.0 | 16.1 | 16.5 | 19.8 | 16.0 | 14.3 | 13.0 | E | E | 13.1 |
| 7 | 13.0 | 12.0 | 12.0 | 12.1 | E | 12.0 | S | S | G | G | C | C | C | C | C | C | C | 13.0 | E | E | 2.9 | 13.3 | 13.3 | E |
| 8 | E | 13.6 | E | E | E | E | S | S | 2.6 | 14.3 | 14.3 | 14.3 | 13.4 | 13.3 | 13.3 | S | S | 13.6 | E | E | E | E | E | E |
| 9 | E | E | E | E | E | E | E | S | S | 2.9 | 13.3 | 13.3 | 14.3 | 3.1 | 13.1 | 13.1 | 13.2 | 13.1 | 13.2 | E | E | E | E | E |
| 10 | E | E | E | E | E | E | E | S | S | G | G | G | 3.0 | G | G | 2.7 | 15.3 | 14.3 | 13.6 | 19.3 | C | E | C | C |
| 11 | E | E | E | E | E | E | E | 3.0 | G | 4.0 | 13.5 | 3.3 | 3.8 | 13.1 | S | 13.1 | 2.9 | 12.3 | E | E | 14.3 | E | E | E |
| 12 | E | 12.1 | E | 12.0 | 12.3 | 13.5 | E | S | 2.5g | G | 13.0 | 13.2 | 13.2 | 3.4 | 13.0 | S | S | 16.3 | 14.2 | 13.0 | 13.2 | 13.3 | E | E |
| 13 | E | 12.4 | 12.1 | 12.8 | 12.1 | E | E | S | S | 2.9 | G | B | G | S | C | S | S | 15.3 | 17.0 | 15.1 | 13.3 | E | E | 14.0 |
| 14 | E | 12.4 | 12.4 | 13.1 | 12.4 | 12.3 | E | 13.5 | 15.1 | 3.0 | 2.8g | G | G | 14.1 | 13.3 | S | 13.0 | 12.6 | 15.3 | 13.0 | 16.3 | 15.2 | 14.0 | 13.0 |
| 15 | 2.8 | 12.5 | 12.3 | E | E | E | E | S | 13.1 | 14.3 | 2.9 | 3.3 | G | B | B | B | 13.3 | 11.0 | 14.8 | 16.3 | 14.3 | 12.5 | E | 12.5 |
| 16 | E | E | E | 1.6 | 16.5 | 13.0 | 14.3 | S | 18.3 | 14.0 | G | 2.8 | 4.0 | 3.6 | S | S | S | 12.5 | 14.3 | 13.0 | 12.3 | 14.4 | E | E |
| 17 | E | E | E | 12.5 | 12.4 | 12.0 | 13.0 | S | 14.3 | 16.3 | 16.3 | 3.8 | 14.0 | 14.6 | 13.4 | S | 13.0 | 13.0 | 13.0 | E | E | E | E | E |
| 18 | E | E | E | E | E | 11.0 | E | S | S | G | G | G | S | S | S | S | S | E | E | E | E | E | E | E |
| 19 | E | E | E | 13.0 | 12.4 | E | E | S | S | C | G | G | S | S | S | S | S | E | E | E | E | E | E | E |
| 20 | E | E | E | E | E | E | E | S | 2.5 | 2.9 | 13.3 | 14.3 | 14.0 | 14.0 | 13.1 | 13.3 | S | E | E | E | E | E | E | E |
| 21 | E | E | E | E | E | E | E | S | 2.8 | 3.1 | 3.4 | 3.5 | 14.0 | 13.8 | 3.0 | 3.0 | S | E | E | E | E | E | E | E |
| 22 | E | 12.4 | E | E | E | E | E | 13.3 | 3.0 | 3.5 | 3.3 | 3.7 | 16.3 | 16.3 | 13.3 | S | S | E | E | E | E | E | E | E |
| 23 | 12.3 | E | E | 12.0 | 12.0 | E | E | S | 14.4 | 3.0 | 3.0 | G | G | 13.1 | S | 2.9 | S | E | E | E | E | E | E | 17.3 |
| 24 | E | 12.5 | 13.0 | 12.4 | 12.3 | E | E | S | 4.0 | 3.0 | 13.3 | 14.3 | 15.0 | S | S | S | S | E | E | E | E | E | E | E |
| 25 | E | E | E | 1.5 | E | E | 13.5 | 13.3 | 2.6 | 15.1 | C | C | C | C | C | C | C | 12.4 | S | E | E | S | E | E |
| 26 | E | 13.1 | 12.0 | 12.1 | 1.6 | E | E | 14.0 | 13.1 | 14.3 | S | G | 13.3 | 13.6 | 3.0 | 13.5 | S | E | 17.3 | 14.0 | E | 13.0 | E | E |
| 27 | E | E | E | E | E | E | S | S | 13.3 | C | G | G | G | G | S | S | S | E | S | 16.1 | 13.0 | E | E | E |
| 28 | 12.8 | 12.1 | 12.1 | E | 12.0 | E | E | S | S | G | S | C | C | C | C | C | C | C | C | C | E | C | 3.0M | E |
| 29 | E | E | E | E | E | E | E | C | C | G | G | G | G | G | S | S | S | E | E | E | E | E | E | E |
| 30 | 12.5 | 12.0 | 1.6 | 12.3 | 12.6 | 14.3 | 12.1 | S | S | S | G | G | G | 14.3 | S | S | S | E | 12.8 | 18.3 | 13.6 | E | E | E |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 30 | 30 | 24 | 7 | 22 | 27 | 26 | 26 | 25 | 22 | 16 | 10 | 8 | 28 | 27 | 29 | 29 | 28 | 29 | 29 |
| Median | E | E | E | E | E | E | E | 3.3 | 3.1 | 3.0 | 3.0 | 3.0 | 3.2 | 3.3 | 3.1 | 3.0 | 3.2 | 2.4 | E | E | E | E | E | E |
| U.Q. | 2.5 | 2.4 | 2.0 | 2.3 | 2.3 | E | E | 4.0 | 4.0 | 4.0 | 3.3 | 3.8 | 4.0 | 4.0 | 3.3 | 3.3 | 4.2 | 3.4 | 4.2 | 3.5 | 3.2 | 3.0 | E | 3.1 |
| L.Q. | E | E | E | E | E | E | E | 3.0 | 2.6 | G | G | G | G | G | 3.0 | 2.9 | 3.0 | E | E | E | E | E | E | E |
| Q.R. | | | | | | | | 1.0 | 1.4 | | | | | | 0.3 | 0.4 | 1.2 | | | | | | | |

foEs

Sweep 1.0 Mc to 18.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | $f_bE_s$ | 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 | | | | | | | G | S | 2.8 | | 3.8 | 2.5 | | | 3.0 | G | S | S | E | | | | E | E |
| 2 | E | E | | A | E | | S | S | 3.0 | 4.0 | G | 3.1 | 4.1 | | | B | S | A | E | E | E | E | E | E |
| 3 | E | E | E | | | | S | S | 2.7 | 3.0 | | | | 3.0 | 3.0 | 2.5 | 2.9 | 2.6 | | | | A | A | 2.9 |
| 4 | E | | | | E | E | E | 4.8 | 2.5 | G | | | | 2.8 | 2.9 | S | S | | | | A | E | A | E |
| 5 | E | E | | E | | | | G | G | 3.6 | G | 3.0 | | | | S | S | | | | | | | E |
| 6 | | 2.2 | E | | | | S | S | | | | 5.7 | 3.1 | 5.1 | 4.4 | 4.6 | 6.0 | A | A | A | 2.6 | | | E |
| 7 | E | E | E | E | | E | S | S | | | C | C | C | C | C | C | C | E | | | E | E | E | |
| 8 | | E | | | | | S | S | G | G | 3.0 | 3.1 | 3.0 | 3.0 | 2.6 | S | S | 3.0 | | | | | | |
| 9 | | | | | | | | S | S | 2.9 | 3.0 | 3.0 | 4.2 | 2.9 | 2.8 | 2.6 | 2.5 | 2.5 | E | | | | | |
| 10 | | | | | | | | S | S | | | | 3.0 | | | G | 5.0 | 3.6 | A | E | C | | C | C |
| 11 | | | | | | | | G | | 3.0 | 3.1 | 3.2 | G | G | S | 2.9 | 2.7 | E | | | A | | | |
| 12 | | E | | E | E | A | | S | 2.4 | | 2.5 | 3.0 | 2.9 | 3.0 | 2.6 | S | S | AS | A | 2.5 | E | E | | |
| 13 | | E | E | E | E | | | S | S | G | | B | | S | C | S | S | A | A | 2.3 | 2.7 | | | A |
| 14 | | E | E | E | E | E | | 3.2 | 5.1 | 3.8 | G | | | 4.1 | 3.0 | S | G | E | 2.8 | E | A | A | A | E |
| 15 | E | E | E | | | | | S | G | 3.0 | 2.9 | 3.2 | | B | B | B | 2.9 | 3.2 | E | A | E | E | | E |
| 16 | | | | E | A | E | E | S | 2.7 | 3.0 | | 2.8 | 2.7 | 3.5 | S | S | S | E | 3.0 | E | E | A | | |
| 17 | | | | E | E | E | E | S | 4.0 | 3.1 | 3.0 | 3.6 | 3.1 | 3.0 | 3.2 | S | 2.3 | E | E | | | | | |
| 18 | | | | | | E | | S | S | | | | S | S | S | S | S | | | | | | | |
| 19 | | | | E | E | | | S | S | C | | | S | S | S | S | S | | | | | | | |
| 20 | | | | | | | | S | G | G | G | 3.2 | 3.2 | 3.5 | 2.6 | 3.1 | S | | | | | | | |
| 21 | | | | | | | | S | G | G | G | G | 2.5 | 3.6 | G | G | S | | | | | | | |
| 22 | | E | | | | | | 3.1 | G | G | G | G | 4.6 | 5.0 | G | S | S | | | | | | | |
| 23 | E | | | E | E | | | S | 4.4 | 2.6 | 2.7 | | | 2.8 | S | 2.5 | S | | | | | | | E |
| 24 | | E | E | E | E | | | S | G | 2.5 | 3.0 | 3.2 | 4.4 | S | S | S | S | | | | | | | |
| 25 | | | | E | | | A | 3.0 | G | 4.2 | C | C | C | C | C | C | C | E | S | | | S | | |
| 26 | | E | E | E | E | | | G | G | 3.0 | S | | 2.9 | 3.0 | 2.7 | 3.1 | S | | A | A | | E | | |
| 27 | | | | | | | S | S | 2.3 | C | | | | | S | S | S | | S | A | AS | | | |
| 28 | E | E | E | | E | | | S | S | | S | C | C | C | C | C | C | C | C | C | | C | E | |
| 29 | | | | | | | | C | C | | | | | | S | S | S | | | | | | | |
| 30 | E | E | E | E | E | A | E | S | S | S | | | | 4.3 | S | S | S | | A | A | E | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bE_s$

Sweep 1.0 Mc to 18.0 Mc in 1 min/~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 5

# IONOSPHERIC DATA

Nov. 1962 | 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 | E2.00S | E2.00S | E1.90S | E | E | E1.50S | E1.70S | E2.10S | 2.00 | 2.20 | 2.00 | 2.00 | 2.15 | 2.00 | 2.00 | E2.15S | E2.00S | E2.10S | E2.00S | E2.10S | E2.10S | E2.00S | E2.00S | E2.00S |
| 2 | E2.00S | E1.60S | E2.00S | E | E | E2.00S | E2.00S | E2.10S | 2.05 | 2.10 | 2.10 | 2.10 | 2.05 | 2.15 | 2.00 | 2.40 | E2.00S | E2.00S | E2.00S | E1.90S | E2.00S | E2.00S | E2.15S | E2.00S |
| 3 | E1.90S | E | E | E | E | E | E2.00S | E2.20S | 2.00 | 2.00 | 2.00 | 2.15 | 2.00 | 2.00 | 2.20 | 2.00 | E2.00S | E2.00S | E2.50S | E2.10S | E2.00S | E2.00S | E2.00S | E1.90S |
| 4 | E2.00S | E2.00S | E2.00S | E | E | E | E2.00S | E2.15S | 2.00 | 2.00 | 2.20 | 2.25 | 2.00 | 2.10 | 2.00 | E2.30S | E2.00S | E2.10S | E2.00S | E2.10S | E2.00S | E2.00S | E1.90S | E2.00S |
| 5 | E2.00S | E2.00S | E2.00S | E | E | E | E2.00S | E1.90S | 2.00 | 2.00 | 2.50 | 2.15 | 2.15 | 2.00 | 2.00 | E2.40S | E2.20S | E2.00S | E2.00S | E2.10S | E2.10S | E2.10S | E2.10S | E2.10S |
| 6 | E1.90S | E1.20S | E | E | E1.60S | E1.50S | E1.70S | E2.10S | 1.90 | 2.15 | 2.20 | 2.10 | 2.05 | 2.10 | 2.00 | 2.00 | 1.80 | E1.90S | E1.80S | E2.00S | E2.00S | E2.00S | E2.10S | E2.00S |
| 7 | E2.00S | E | E1.80S | E | E | E1.20S | E2.00S | E2.10S | 2.00 | 2.00 | C | C | C | C | C | C | C | E2.00S | E2.00S | E2.10S | E2.00S | E2.00S | E1.80S | E2.00S |
| 8 | E1.95S | E | E2.00S | E | E1.50S | E1.70S | E2.00S | E2.15S | 2.00 | 2.00 | 2.15 | 2.10 | 2.00 | 2.05 | 2.00 | E2.50S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 9 | E1.95S | E | E | E | E | E | E2.00S | E2.10S | E2.40S | 2.15 | 2.10 | 2.10 | 2.05 | 2.00 | 1.90 | 1.90 | 2.00 | E1.90S | E1.80S | E2.00S | E2.10S | E2.00S | E2.00S | E2.00S |
| 10 | E2.00S | E1.70S | E2.00S | E | E | E1.60S | E1.80S | E2.10S | E2.50S | 2.00 | 2.05 | 2.00 | 2.05 | 2.05 | 2.05 | 2.00 | E2.00S | E2.00S | E1.80S | E2.00S | C | E2.00S | C | C |
| 11 | E2.00S | E2.00S | E2.00S | E | E | E1.90S | E1.90S | E2.10S | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | E2.70S | 2.00 | E2.00S | E1.70S | E1.90S | E2.00S | E2.00S | E1.90S | E2.00S | E1.85S |
| 12 | E2.00S | E | E2.00S | E | E | E1.60S | E2.00S | E2.10S | 2.05 | 2.10 | 2.00 | 2.00 | 2.00 | 2.00 | 1.80 | E2.15S | E2.00S | E2.00S | E2.10S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 13 | E2.00S | E1.60S | E | E | E | E2.00S | E1.70S | E2.00S | E2.50S | 2.00 | 2.00 | 3.00 | 2.15 | E2.90S | C | E2.30S | E2.00S | E2.00S | E1.80S | E2.00S | E1.80S | E2.00S | E2.15S | E1.90S |
| 14 | E2.00S | E | E | E | E | E2.00S | E2.00S | E2.00S | 2.10 | 2.00 | 2.00 | 2.15 | 2.05 | 2.05 | 2.10 | E2.30S | E2.00S | E2.00S | E1.80S | E2.00S | E2.00S | E1.90S | E2.00S | E2.00S |
| 15 | E2.00S | E | E1.50S | E | E | E | E2.00S | E2.00S | E2.00S | 2.00 | 2.15 | 2.25 | 2.05 | 2.80 | 2.70 | 2.30 | E2.00S | E1.90S | E2.00S | E2.10S | E2.00S | E2.00S | E2.10S | E2.00S |
| 16 | E2.00S | E | E1.95S | E | E | E | E1.60S | E2.00S | 2.00 | 2.00 | 2.00 | 2.05 | 2.30 | 2.50 | E2.50S | E2.20S | E2.00S | E1.90S | E2.00S | E2.00S | E2.00S | E1.90S | E2.00S | E2.00S |
| 17 | E2.00S | E1.70S | E1.20S | E | E | E | E2.00S | E2.30S | 2.05 | 2.05 | 2.30 | 2.05 | 2.50 | 2.15 | 2.15 | E2.30S | E2.00S | E2.00S | E2.00S | E2.00S | E2.10S | E2.00S | E2.10S | E2.00S |
| 18 | E2.00S | E1.80S | E2.00S | E | E | E2.00S | E2.00S | E2.00S | E2.30S | 2.15 | 2.10 | 2.50 | E3.00S | E2.90S | E2.60S | E2.30S | E2.00S | E2.00S | E2.00S | E2.05S | E2.00S | E2.10S | E2.00S | E2.00S |
| 19 | E2.00S | E1.50S | E2.00S | E | E | E2.00S | E2.00S | E2.00S | E2.30S | E2.10C | 2.50 | 2.50 | E3.00S | E2.70S | E2.70S | E2.60S | E2.10S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 20 | E2.00S | E1.20S | E2.00S | E | E | E2.00S | E1.90S | E2.00S | E2.20S | E2.40S | 2.00 | 2.30 | 2.10 | 2.00 | 2.05 | 2.05 | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E1.80S | E2.00S |
| 21 | E2.00S | E1.80S | E1.90S | E | E | E1.50S | E1.95S | E2.00S | E2.20S | 2.00 | 2.10 | 2.00 | 1.90 | 2.00 | 2.00 | 2.00 | E2.00S | E1.85S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 22 | E2.00S | E1.50S | E | E | E | E1.50S | E2.00S | E1.80S | E2.10S | 2.00 | 1.90 | 2.00 | 2.05 | 2.00 | 2.00 | E2.20S | E2.10S | E2.00S | E1.90S | E2.00S | E2.00S | E2.00S | E2.00S | E1.80S |
| 23 | E2.00S | E1.20S | E2.00S | E | E | E1.60S | E2.00S | E2.00S | E2.00S | 2.00 | 2.10 | 2.00 | 2.00 | 2.00 | E2.70S | E2.05S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 24 | E2.00S | E | E | E | E | E1.60S | E1.60S | E2.00S | E2.00S | 2.05 | 2.10 | 2.05 | 2.00 | E2.70S | E2.50S | E2.10S | E2.10S | E1.80S | E2.00S | E2.00S | E2.00S | E1.90S | E2.00S | E1.90S |
| 25 | E1.90S | E | E | E | E1.50S | E1.80S | E2.00S | E1.80S | E1.90S | 2.00 | C | C | C | C | C | C | C | E2.00S | S | E2.00S | E1.80S | S | E1.85S | E1.90S |
| 26 | E2.00S | E | E | E | E | E2.00S | E2.00S | E2.00S | E2.00S | 2.00 | E3.10S | 2.00 | 2.00 | 2.00 | 2.00 | E2.00S | E2.00S | E2.00S | E2.00S | E1.70S | E2.00S | E1.80S | E1.90S | E1.80S |
| 27 | E1.80S | E | E | E | E | E1.60S | E1.80S | E2.00S | E2.00S | E4.50C | 1.90 | 2.05 | 2.10 | 2.00 | E2.60S | E2.05S | E2.00S | E2.00S | S | E2.00S | E1.70S | E2.00S | E1.90S | E1.80S |
| 28 | E1.90S | E | E | E1.60S | E | E2.00S | E1.80S | E1.70S | E2.15S | 2.00 | E2.70S | C | E5.00C | E5.00C | E4.60C | E4.50C | E3.00C | E2.40C | C | C | E2.00S | E2.70C | E2.40C | E2.15C |
| 29 | E2.30C | E2.50C | E2.30C | E2.10C | E2.00C | E2.10C | E2.35C | E3.10C | E3.00C | 2.00 | 2.05 | 2.00 | 2.00 | 2.10 | E2.40S | E2.10S | E2.10S | E1.80S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 30 | E2.00S | E | E | E | E | E | E1.80S | E2.00S | E2.20S | E2.50S | 2.00 | 2.10 | 2.00 | 2.10 | E2.90S | E2.20S | E2.00S | E1.85S | E1.90S | E2.00S | E2.00S | E2.00S | E2.00S | E2.00S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 28 | 26 | 30 | 30 | 30 | 30 | 27 | 26 | 27 | 25 | 23 | 17 | 28 | 28 | 30 | 27 | 29 | 29 | 29 | 29 | 29 |
| Median | E2.00 | E1.20 | E1.85 | E | E | E1.60 | E2.00 | E2.00 | E2.00 | 2.00 | 2.10 | 2.10 | 2.05 | 2.00 | 2.00 | E2.20 | E2.00 | E2.00 | E2.00 | E2.00 | E2.00 | E2.00 | E2.00 | E2.00 |

f-min

Sweep 1.0 Mc to 18.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 6

# IONOSPHERIC DATA

Nov. 1962 | 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 | 2.85 | 2.80 | 2.95 | 3.05 | 3.40 | 3.55 | 3.45 | 3.60 | 3.50 | 3.40 | 3.35 | 3.35 | 3.50 | 3.45 | 3.30 | 3.50 | 3.60 | 3.50 | 3.20 | 3.20 | 3.05 | 2.85 | U2.80F | I2.90FS |
| 2 | U3.50F | 3.05 | I2.85FS | I2.85A | U2.95F | 3.50 | 3.25 | 3.45 | 3.50 | 3.55 | 3.35 | 3.30 | 3.45 | 3.50 | 3.40 | 3.35 | 3.60 | I3.50A | 3.35 | 3.10 | 3.05 | 2.95 | 2.95 | 2.90 |
| 3 | 2.90 | 2.90 | 3.05 | 3.05 | 3.15 | 3.30 | 3.35 | 3.40 | 3.55 | 3.35 | 3.25 | 3.25 | 3.50 | 3.30 | 3.50 | 3.30 | 3.75 | 3.30 | 3.30 | 3.20 | 3.10 | I3.10A | I2.85A | 2.75 |
| 4 | 2.85 | 2.95 | 2.90 | 3.15 | 3.45 | 3.25 | 3.15 | U3.50S | 3.35 | 3.50 | 3.45 | 3.25 | 3.55 | 3.55 | 3.50 | 3.55 | 3.55 | 3.50 | 3.25 | 3.35 | I2.95A | 2.95 | I3.00A | 3.05 |
| 5 | 2.95 | 3.05 | 3.05 | 2.95 | 3.05 | I3.25S | 3.10 | 3.35 | 3.25 | 3.45 | 3.40 | 3.45 | 3.45 | 3.45 | 3.30 | 3.45 | 3.65 | 3.45 | 3.30 | 3.30 | 3.10 | 3.25 | 3.00 | 2.95 |
| 6 | 2.90 | 2.95 | 3.00 | 3.20 | 3.25 | 3.05 | 3.25 | 3.50 | U3.35SH | 3.40 | 3.45 | 3.45 | 3.55 | 3.40 | 3.40 | 3.40 | U3.55S | A | A | A | 3.15 | 3.00 | 3.00 | 3.05 |
| 7 | 2.80 | 2.80 | 2.95 | 2.80 | U3.40S | 2.90 | 3.25 | 3.45 | 3.40 | 3.45 | C | C | C | C | C | C | C | 3.55 | U2.90S | U3.00S | U2.95S | U2.95S | SF | SF |
| 8 | SF | U3.05SF | 3.20 | 3.05 | 3.20 | 3.00 | 3.20 | 3.30 | U3.40S | U3.50S | 3.40 | 3.45 | 3.40 | 3.30 | 3.45 | 3.45 | 3.55 | 3.50 | 3.15 | 3.30 | 3.00 | 2.95 | 2.90 | 2.90 |
| 9 | 2.95 | 3.05 | 3.15 | 3.05 | 3.30 | 3.20 | 3.20 | 3.50 | 3.40 | 3.60 | 3.50 | 3.20H | 3.25 | 3.15H | 3.35V | 3.45 | 3.30 | U3.50S | 3.05 | 3.15 | 3.25 | 3.25 | 2.90 | 2.95 |
| 10 | 2.95 | 2.95 | 2.85 | 3.10 | 3.20 | 3.50 | 3.10 | 3.45 | 3.25 | 3.50 | 3.40 | 3.35 | 3.25 | 3.45 | 3.50 | 3.45 | 3.55 | 3.50 | I3.25A | 3.10 | I3.20C | 3.30 | I3.15C | I3.00C |
| 11 | 2.90 | 3.05 | 3.05 | 3.05 | 3.05 | 3.60 | 3.15 | 3.60 | 3.55 | 3.40 | 3.45 | 3.45 | 3.40 | 3.60 | 3.50H | 3.50 | 3.50 | 3.35 | 3.05 | 3.20 | I3.25A | 3.05 | I3.25S | 2.80F |
| 12 | U3.05SF | 3.05 | 3.10 | U3.05SF | 3.30 | I3.30A | 3.20 | U3.45S | 3.50 | 3.55 | 3.30 | 3.45 | 3.40 | 3.40 | 3.55 | 3.65 | 3.60 | I3.55AS | I3.30A | 3.15 | U3.20SF | U3.35SF | SF | SF |
| 13 | SF | SF | SF | U3.05SF | U3.25S | 3.45 | 3.05 | 3.65 | U3.45S | 3.45 | 3.40 | 3.50 | 3.30 | 3.35 | I3.40C | 3.50 | 3.40 | I3.25A | I3.30A | 3.35 | 3.20 | 3.10 | U3.05S | I2.85A |
| 14 | U2.95F | SF | FS | FS | SF | SF | U3.20SF | 3.55 | 3.50 | U3.60S | 3.50 | 3.45 | 3.45 | 3.45 | 3.55 | 3.40 | 3.50 | 3.40 | 3.55 | 3.20 | A | A | A | SF |
| 15 | SF | 2.95 | 2.95 | 2.90 | I2.95SF | U3.00FS | I3.45SF | 3.55 | 3.30 | 3.50 | 3.45 | 3.50 | 3.45 | 3.30 | 3.40 | 3.40 | 3.50 | 3.25 | 3.40 | I3.25A | I3.35SF | I2.75SF | 2.65 | 2.60 |
| 16 | 2.60 | 2.80 | 3.25 | 3.40 | I3.05A | U2.90S | 3.00 | 3.30 | 3.35 | 3.30 | 3.40 | 3.40 | 3.25 | 3.30 | 3.25 | 3.35 | 3.45 | 3.35 | 3.05 | 3.20 | 3.05 | I2.95A | 3.10 | 2.90 |
| 17 | 2.90 | 2.85 | I2.95SF | 2.95 | 2.85F | 3.25 | 3.10 | 3.40 | 3.45 | 3.45 | 3.45 | 3.50 | 3.40 | 3.35 | 3.35 | 3.40 | 3.50 | 3.20 | U3.40S | 3.25 | 3.30 | U3.00S | 3.00 | 3.05 |
| 18 | 3.00 | 2.85 | 3.05F | 2.85F | 3.05 | 3.40 | U3.45S | 3.55 | 3.60 | 3.55 | 3.45 | 3.40 | 3.60 | 3.50 | 3.50 | 3.60 | U3.45S | 3.30 | 3.35 | 3.45 | 3.35 | U3.20S | 3.00 | 3.05 |
| 19 | 2.90 | 2.95 | 2.90 | 3.00 | I3.10SF | I3.25SF | I3.40SF | U3.30S | U3.50S | I3.60C | 3.35 | 3.15 | 3.40 | 3.60 | 3.25H | 3.60 | 3.60 | 3.40 | 3.35 | 3.35 | 3.30 | 3.15 | 2.90 | 2.85 |
| 20 | 2.95 | 3.05 | 3.10 | 3.05 | U2.90SF | 3.40 | 3.20 | 3.45 | 3.50 | 3.50 | 3.35 | 3.50 | 3.20H | 3.45 | 3.55 | 3.40 | 3.50 | 3.10 | 3.10 | 3.20 | 3.35 | 2.90 | U3.00S | U2.80S |
| 21 | U2.95SF | U3.05SF | U2.95SF | 3.05F | 3.20 | 3.25 | U3.20S | 3.60 | 3.50 | U3.50S | 3.25 | U3.30S | 3.35 | 3.40 | 3.25 | 3.50 | 3.35 | 3.35 | 3.30 | 3.25 | 3.20 | U3.45S | 2.95 | 2.95 |
| 22 | 2.95 | 2.80 | U2.85SF | 3.10 | 2.90 | 3.05 | 2.90 | 3.10 | 3.45 | 3.30 | U3.30S | 3.35 | 3.40 | 3.50 | 3.25 | U3.35S | 3.40 | U3.25S | 3.60 | 3.05 | 2.85 | U2.80S | 2.80 | 2.75 |
| 23 | 2.90 | 2.90 | 2.75 | 2.90 | 3.15 | 3.05 | 3.20 | 3.40 | U3.35S | 3.25H | 3.50 | 3.55 | 3.55 | U3.40S | 3.55 | 3.50 | 3.40 | 3.40 | 3.40 | 3.25 | I3.10SF | 3.00F | I3.00SF | U2.90S |
| 24 | 2.95 | 3.00 | I3.10SF | U3.20S | I3.20SF | I3.10F | 3.35 | 3.30 | 3.55 | 3.55 | 3.45 | 3.55 | 3.55 | 3.55 | 3.55 | 3.55 | 3.25H | 3.45 | 3.40 | 3.55 | 3.45 | 3.00 | 2.95 | SF |
| 25 | SF | SF | U2.95SF | U2.65S | I3.20SF | 3.25F | I3.25A | 3.45 | 3.50 | 3.40 | C | C | C | C | C | C | C | I3.50S | I3.30S | U3.10S | U3.15S | U2.95S | I2.80SF | U2.80S |
| 26 | U2.80S | U3.15S | U3.05S | U3.15S | U3.05S | 3.30 | U3.35S | U3.60S | I3.50S | U3.45S | U3.40S | 3.60 | U3.50S | 3.35 | 3.45 | 3.55 | U3.50S | U3.35S | I3.40A | I3.45A | 3.20 | U2.80S | SF | SF |
| 27 | SF | SF | U2.85SF | U3.05S | U3.05S | U3.15S | U3.30S | U3.40S | U3.50S | I3.45C | 3.55 | U3.70S | 3.35 | 3.50 | I3.55S | S | S | S | I3.20S | I3.10AS | I3.30AS | U3.10S | SF | SF |
| 28 | SF | SF | U3.00S | I3.10S | I3.15S | I3.25S | I3.25S | U3.35S | I3.50S | U3.55S | U3.55S | I3.45C | I3.45C | I3.45C | 3.45 | 3.45 | U3.50C | 3.15 | I3.15C | I3.20C | U3.50S | 3.35 | 2.95 | 3.15F |
| 29 | I3.10F | 3.00 | 2.95 | 3.15 | 2.95 | 3.35 | I3.50C | 3.50 | 3.45 | 3.35 | 3.45 | 3.50 | 3.50 | 3.60 | 3.60 | 3.75 | U3.55S | 3.20 | 3.00 | 3.30 | 3.35 | U3.20S | U2.70S | SF |
| 30 | SF | FS | 2.95F | 3.10 | 3.05F | I3.10A | 3.35 | 3.45 | 3.45 | 3.50 | 3.55 | 3.40 | 3.55 | 3.60 | 3.50 | 3.30 | 3.65 | U3.25S | I3.40A | I3.20A | 2.90 | 2.70 | 2.95 | 2.90 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 23 | 24 | 28 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 28 | 28 | 28 | 28 | 28 | 27 | 27 | 28 | 29 | 29 | 29 | 29 | 25 | 23 |
| Median | 2.95 | 2.95 | 2.95 | 3.05 | 3.15 | 3.25 | 3.20 | 3.45 | 3.50 | 3.50 | 3.40 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.50 | 3.40 | 3.30 | 3.20 | 3.20 | 3.00 | 2.95 | 2.90 |

M(3000)F2 | Sweep 1.0 Mc to 18.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 7

15

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | | | U3.85 L | U3.90 L | 4.05 | | | | | | | | | | |
| 2 | | | | | | | | | | A | U4.00 L | U3.80 L | I4.00A | L | | | | | | | | | | |
| 3 | | | | | | | | | | I3.95 L | 3.95 | I3.95 L | 3.90 | | | | | | | | | | | |
| 4 | | | | | | | | | L | U3.85 L | I 4.00 L | 3.85 | 3.90 | U4.00 L | A | | | | | | | | | |
| 5 | | | | | | | | | L | LA | L | U3.95 L | U3.80 L | 4.05 | | | | | | | | | | |
| 6 | | | | | | | | | | L | 3.90 | I3.90A | U3.95 L | A | A | A | | | | | | | | |
| 7 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 8 | | | | | | | | | | 4.10 | 3.85 | U3.90 L | U3.90 L | | | | | | | | | | | |
| 9 | | | | | | | | | | U4.00 L | U3.90 LH | 4.05 | I4.20A | 4.05 | L | | | | | | | | | |
| 10 | | | | | | | | | | | 4.10 | 4.30 | 4.30 | L | | | | | | | | | | |
| 11 | | | | | | | | | | | L | | L | L | | | | | | | | | | |
| 12 | | | | | | | | | | | 4.00 | U3.90 L | U4.00 L | 3.90 | | | | | | | | | | |
| 13 | | | | | | | | | | L | L | LH | L | | | | | | | | | | | |
| 14 | | | | | | | | | | 4.10 | 4.00 | I4.05 H | I3.95 L | A | | | | | | | | | | |
| 15 | | | | | | | | | | | L | L | L | L | | | | | | | | | | |
| 16 | | | | | | | | | | L | L | 3.95 | | | | | | | | | | | | |
| 17 | | | | | | | | | | L | 3.90 | 3.90 | U4.00 L | | | | | | | | | | | |
| 18 | | | | | | | | | | | I4.10 L | 4.15 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | 4.15 | 3.85 | 4.00 | U3.85 L | | | | | | | | | | |
| 20 | | | | | | | | | | | | U3.90 L | 4.10 | | | | | | | | | | | |
| 21 | | | | | | | | | | | | U4.00 L | | | | | | | | | | | | |
| 22 | | | | | | | | | | 3.95 | I3.80 L | 3.70 | I3.85A | A | | | | | | | | | | |
| 23 | | | | | | | | | | U4.30 L | U3.80 L | 3.95 | | U3.95 L | | | | | | | | | | |
| 24 | | | | | | | | | | 3.95 | 3.95 | | I4.05A | | | | | | | | | | | |
| 25 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 26 | | | | | | | | | | U3.95 L | | I3.85 L | L | | | | | | | | | | | |
| 27 | | | | | | | | | 4.15 | I4.15 C | 4.35 | 4.00 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | U4.10 L | C | C | C | C | | | | | | | | | |
| 29 | | | | | | | | | | 4.15 | 3.45 H | 3.85 | | | | | | | | | | | | |
| 30 | | | | | | | | | | U4.05 L | U3.90 L | 3.85 | U3.90 L | A | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | 1 | 12 | 19 | 23 | 17 | 7 | | | | | | | | | | |
| Median | | | | | | | | | 4.15 | U4.00 | 3.95 | 3.90 | U3.95 | 4.00 | | | | | | | | | | |

M(3000)F1 Sweep 1.0 Mc to 18.0 Mc in 1 min/sec in automatic operation.

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | | | 250 | 240 | 245 | | | | | | | | | | |
| 2 | | | | | | | | | | 260 | 250 | 250 | 235 | L | | | | | | | | | | |
| 3 | | | | | | | | | | 260 | 240 | 240 | 235 | | | | | | | | | | | |
| 4 | | | | | | | | | 245 | 240 | 230 | 240 | 235 | 230 | 240 | | | | | | | | | |
| 5 | | | | | | | | | L | 240 | 250 | 245 | 250 | 240 | | | | | | | | | | |
| 6 | | | | | | | | | | 235 | 240 | L250A | 240 | L240A | 240 | 260 | | | | | | | | |
| 7 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 8 | | | | | | | | | | 240 | 245 | 240 | 240 | | | | | | | | | | | |
| 9 | | | | | | | | | | 240 | 240 | 260 | 250 | 230 | 240 | | | | | | | | | |
| 10 | | | | | | | | | | | 230 | 240 | 240 | 240 | | | | | | | | | | |
| 11 | | | | | | | | | | | 245 | | 245 | 230 | | | | | | | | | | |
| 12 | | | | | | | | | | | 245 | 245 | 225 | 250 | | | | | | | | | | |
| 13 | | | | | | | | | | 235 | 230 | 240 | 240 | | | | | | | | | | | |
| 14 | | | | | | | | | | 220 | 235 | 235 | 245 | 240 | | | | | | | | | | |
| 15 | | | | | | | | | | | 240 | 240 | 240 | 245 | | | | | | | | | | |
| 16 | | | | | | | | | | 245 | 220 | 235 | | | | | | | | | | | | |
| 17 | | | | | | | | | | 230 | 240 | 230 | 230 | | | | | | | | | | | |
| 18 | | | | | | | | | | | 225 | 245 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | 245 | 240 | 225 | 245 | | | | | | | | | | |
| 20 | | | | | | | | | | | | 240 | 230 | | | | | | | | | | | |
| 21 | | | | | | | | | | | | 235 | | | | | | | | | | | | |
| 22 | | | | | | | | | | 245 | 240 | 260 | 240 | 260 | | | | | | | | | | |
| 23 | | | | | | | | | | 235H | 255 | 240 | | 240 | | | | | | | | | | |
| 24 | | | | | | | | | | 230 | 230 | | 240 | | | | | | | | | | | |
| 25 | | | | | | | | | | | C | C | C | C | C | C | | | | | | | | |
| 26 | | | | | | | | | | 250 | | 240 | 235 | | | | | | | | | | | |
| 27 | | | | | | | | | 230 | 245 | 230 | 225 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | 230 | L250C | 240 | 245 | 260 | | | | | | | | | |
| 29 | | | | | | | | | | 235 | 245 | 235 | | | | | | | | | | | | |
| 30 | | | | | | | | | | 235 | 235 | 250 | 235 | 250 | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | 2 | 18 | 24 | 26 | 22 | 15 | 4 | 1 | | | | | | | | |
| Median | | | | | | | | | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 260 | | | | | | | | |

h'F2

Sweep 1.0 Mc to 18.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 9

# IONOSPHERIC DATA

Nov. 1962 | 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 | 350 | 330 | 315 | 285 | 250 | 235 | 255 | 225 | 240 | 230 | 255 | 230 | 230 | 215 | 240 | 240 | 225 | 220 | 260 | 260 | 300 | 300 | 350 | 300 |
| 2 | 250 | 300 | 305 | I335A | 310 | 225 | 250 | 230 | 230 | I230A | 220 | 220 | I215A | 240 | 245 | 245 | 215 | I225A | 250 | 270 | 300 | 305 | 345 | 340 |
| 3 | 345 | 350 | 300 | 250 | 260 | 250 | 250 | 230 | 230 | 245 | 220 | 225 | 230 | 230 | 240 | 240 | 215 | 240 | 250 | 260 | 285 | I310A | I360A | I360A |
| 4 | 350 | 315 | 300 | 265 | 230 | 260 | 295 | I235A | 230 | 215 | 240 | 200 | 230 | 215 | I230A | 235 | 225 | 215 | 245 | 265 | I325A | 325 | I310A | 300 |
| 5 | 305 | 300 | 300 | 290 | 260 | 255 | 260 | 225 | 240 | I240A | 225 | 220 | 210 | 210 | 220H | 230 | 220 | 220 | 250 | 260 | 270 | 270 | 310 | 350 |
| 6 | 330 | 325 | 300 | 250 | 250 | 240 | 250 | 225 | 220H | 225 | 220 | I245A | 235 | A | A | A | A | A | A | A | 295A | 300 | 300 | 275 |
| 7 | 315 | 335 | 300 | 330 | 250 | 275 | 250 | 225 | 230 | 225 | C | C | C | C | C | C | C | 220 | 310 | 260 | 270 | 310 | 320 | 300 |
| 8 | 325 | 265 | 250 | 250 | 255 | 260 | 260 | 230 | 225 | 210 | 210 | 220 | 195 | 225 | 230 | 230 | 225 | I225A | 250 | 255 | 285 | 335 | 310 | 310 |
| 9 | 300 | 300 | 265 | 250 | 250 | 220 | 250 | 220 | 220 | 235 | 210 | 200 | I235A | 220 | 230 | 240 | 225 | 225A | 305 | 290 | 270 | 260 | 305 | 300 |
| 10 | 305 | 300 | 310 | 260 | 270 | 225 | 225 | 220 | 220 | 225 | 200 | 205 | 200 | 230 | 240 | 225 | A | A | A | 300 | I285C | 275 | I295C | I310C |
| 11 | 305 | 310 | 295 | 255 | 250 | 220 | 250 | 225 | 220 | 230 | 210 | 245 | 230 | 230 | 240H | 220 | 225 | 235 | 255 | 260 | I260A | 260 | 265 | 340 |
| 12 | 325 | 310 | 275 | 270 | 260 | I250A | 280 | 240 | 240 | 220 | 205 | 200 | 225 | 205 | 235 | 220 | 220 | I235A | I250A | 300A | 245 | 255 | 300 | 310 |
| 13 | 325 | 315 | 300 | 290 | 255 | 240 | 260 | 215 | 230 | 220 | 210 | 200H | 240 | 225 | I235C | 240 | 210 | I245A | I250A | 260 | I250A | 295 | 305 | I355A |
| 14 | 350 | 320 | 310 | 310 | 260 | 220 | 240 | 220 | I225A | 220 | 210 | 240 | 245 | I235A | 225 | 230 | 215 | 230 | 250 | 250 | A | A | A | 310 |
| 15 | 310 | 310 | 315 | 300 | 280 | 250 | 215 | 220 | 220 | 225 | 215 | 245 | 230 | 225 | 230 | 230 | 220 | I235A | 230 | I260A | 250 | 335 | 385 | 420 |
| 16 | 380 | 325 | 250 | 250 | I285A | 350 | 310 | 230 | 240 | 235 | 230 | 220 | 225 | 250 | 240 | 235 | 225 | 220 | I260A | 260 | 250 | I305A | 300 | 305 |
| 17 | 305 | 305 | 270 | 300 | 300 | 275 | 300 | 215 | I230A | 235 | 220 | 245 | 225 | 230 | 220 | 220 | 220 | 265 | 240 | 250 | 260 | 300 | 315 | 290 |
| 18 | 300 | 300 | 300 | 285 | 260 | 250 | 275 | 230 | 225H | 220 | 225 | 205 | 210 | 230 | 220H | 225 | 220 | 235 | 260 | 245 | 255 | 275 | 285 | 275 |
| 19 | 300 | 275 | 270 | 285 | 280 | 245 | 240 | 215 | 220 | I220C | 205 | 230 | 220 | 210 | 230 | 225 | 220 | 250 | 260 | 250 | 250 | 270 | 305 | 310 |
| 20 | 305 | 300 | 275 | 275 | 250 | 265 | 270 | 235 | 225 | 235 | 230 | 230 | 215 | 245 | 230 | 240 | 220 | 250 | 260 | 250 | 260 | 320 | 300 | 330 |
| 21 | 325 | 305 | 300 | 270 | 250 | 220 | 265 | 220 | 220 | 225 | 240 | 225 | 245 | 235 | 240 | 225 | 220 | 225 | 260 | 260 | 260 | 300 | 320 | 335 |
| 22 | 315 | 325 | 300 | 270 | 300 | 330 | 300 | 250A | 220 | 210 | 230 | 235 | I235A | I240A | 235 | 230 | 230 | 215 | 225 | 285 | 300 | 305 | 300 | 320 |
| 23 | 305 | 270 | 330 | 300 | 260 | 280 | 260 | 240 | I225A | 210 | 220 | 230 | 240 | 225 | 235 | 230 | 220 | 235 | 250 | 270 | 260 | 285 | 300 | 330 |
| 24 | 365 | 310 | 315 | 270 | 265 | 260 | 250 | 240 | 225 | 215 | 220 | 235 | I210A | 235 | 230 | 225 | 210 | 220 | 250 | 240 | 255 | 315 | 335 | 325 |
| 25 | 350 | 325 | 320 | 290 | 250 | 250 | I295A | 245 | 225 | 230A | C | C | C | C | C | C | C | 230 | I270S | 270 | 265 | I330S | 350 | 315 |
| 26 | 335 | 280 | 300 | 270 | 300 | 260 | 250 | 230 | 220 | 230 | 240 | 235 | 235 | 240 | 230 | 235 | 205 | 245 | I240A | I230A | 285 | 325 | 320 | 310 |
| 27 | 300 | 270 | 270 | 260 | 260 | 260 | 260 | 235 | 205 | I210C | 200 | 225 | 235 | 240 | 235 | 210 | 215 | 225 | I245S | I255A | I260AS | 300 | 350 | 290 |
| 28 | 300 | 295 | 270 | 300 | 300 | 220 | 250 | 220 | 225 | 220 | 210 | C | C | C | I230C | C | I240C | I275C | C | C | 240 | I285C | 350 | 295 |
| 29 | 285 | 285 | 300 | 290 | 305 | 265 | 290 | 250 | 230 | 205 | 200H | 230 | 240 | 240 | 240 | 210 | 210 | 280 | 300 | 270 | 260 | 310 | 345 | 290 |
| 30 | 285 | 300 | 300 | 300 | 300 | I300A | 255 | 220 | 250 | 235 | 230 | 225 | 230 | I240A | 235 | 245 | 210 | 235 | I235A | I285A | 360 | 390 | 310 | 300 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 28 | 27 | 27 | 26 | 27 | 26 | 25 | 27 | 27 | 28 | 29 | 29 | 29 | 30 |
| Median | 310 | 305 | 300 | 280 | 260 | 250 | 260 | 230 | 225 | 225 | 220 | 225 | 230 | 230 | 235 | 230 | 220 | 230 | 250 | 260 | 265 | 300 | 310 | 310 |

h'F

Sweep 1.0 Mc to 18.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 10

# IONOSPHERIC DATA

Nov. 1962 | 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 | E | E | E | E | E | E | 120 | S | 115 | G | 110 | 110 | G | G | 135 | 130 | S | S | 110 | E | E | E | 115 | 110 |
| 2 | 110 | 110 | E | 105 | 105 | E | S | S | 130 | 120 | 115 | 110 | 110 | G | G | B | S | 115 | 115 | 110 | 110 | 115 | 110 | 110 |
| 3 | 105 | 105 | 105 | E | E | E | S | S | 120 | 115 | G | G | G | 115 | 110 | 110 | 105 | 105 | E | E | E | 110 | 110 | 110 |
| 4 | 110 | E | E | E | 110 | 110 | 150 | 115 | 120 | 120 | G | G | G | 110 | 110 | S | S | E | E | E | 110 | 115 | 110 | 110 |
| 5 | 110 | 110 | E | 115 | E | E | E | 130 | 120 | 110 | 110 | 110 | G | G | G | S | S | E | E | E | E | E | E | 110 |
| 6 | E | 110 | 105 | E | E | E | S | S | G | G | G | 105 | 120 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | E | E | 110 |
| 7 | 110 | 110 | 110 | 110 | E | 110 | S | S | G | G | C | C | C | C | C | C | C | 110 | E | E | 115 | 115 | 110 | E |
| 8 | E | 110 | E | E | E | E | S | S | 125 | 115 | 110 | 110 | 105 | 105 | 105 | S | S | 105 | E | E | E | E | E | E |
| 9 | E | E | E | E | E | E | E | S | S | 115 | 115 | 110 | 105 | 105 | 105 | 105 | 105 | 100 | 115 | E | E | E | E | E |
| 10 | E | E | E | E | E | E | E | S | S | G | G | G | 110 | G | G | 150 | 115 | 110 | 110 | 110 | C | E | C | C |
| 11 | E | E | E | E | E | E | E | 115 | G | 110 | 110 | 110 | 110 | 105 | S | 105 | 105 | 105 | E | E | 110 | E | E | E |
| 12 | E | 110 | E | 105 | 105 | 120 | E | S | 115 | G | 115 | 110 | 110 | 110 | 110 | S | S | 115 | 110 | 110 | 110 | 115 | E | E |
| 13 | E | 105 | 110 | 105 | 105 | E | E | S | S | 125 | G | B | G | S | C | S | S | 110 | 110 | 110 | 110 | E | E | 110 |
| 14 | E | 110 | 105 | 105 | 105 | 110 | E | 115 | 110 | 110 | 110 | G | G | 105 | 105 | S | 125 | 115 | 110 | 110 | 110 | 110 | 105 | 105 |
| 15 | 105 | 105 | 105 | E | E | E | E | S | 115 | 110 | 110 | 105 | G | B | B | B | 120 | 110 | 115 | 110 | 110 | 125 | E | 115 |
| 16 | E | E | E | 110 | 115 | 125 | 115 | S | 115 | 110 | G | 115 | 115 | 115 | S | S | S | 125 | 115 | 115 | 110 | 110 | E | E |
| 17 | E | E | E | 115 | 115 | 115 | 110 | S | 110 | 110 | 115 | 110 | 110 | 110 | 110 | S | 110 | 120 | 120 | E | E | E | E | E |
| 18 | E | E | E | E | E | 125 | E | S | S | G | G | G | S | S | S | S | S | E | E | E | E | E | E | E |
| 19 | E | E | E | 100 | 100 | E | E | S | S | C | G | G | S | S | S | S | S | E | E | E | E | E | E | E |
| 20 | E | E | E | E | E | E | E | S | 125 | 115 | 115 | 110 | 105 | 105 | 105 | 105 | S | E | E | E | E | E | E | E |
| 21 | E | E | E | E | E | E | E | S | 150 | 145 | 140 | 125 | 130 | 100 | 130 | 175 | S | E | E | E | E | E | E | E |
| 22 | E | 115 | E | E | E | E | E | 140 | 135 | 120 | 135 | 105 | 105 | 115 | 105 | S | S | E | E | E | E | E | E | E |
| 23 | 110 | E | E | 105 | 125 | E | E | S | 105 | 110 | 105 | G | G | 110 | S | 105 | S | E | E | E | E | E | E | 110 |
| 24 | E | 105 | 105 | 105 | 105 | E | E | S | 115 | 110 | 110 | 105 | 105 | S | S | S | S | E | E | E | E | E | E | E |
| 25 | E | E | E | 105 | E | E | 115 | 115 | 120 | 105 | C | C | C | C | C | C | C | 100 | S | E | E | S | E | E |
| 26 | E | 105 | 110 | 105 | 105 | E | E | 120 | 115 | 110 | S | G | 110 | 110 | 120 | 115 | S | E | 115 | 115 | E | 115 | E | E |
| 27 | E | E | E | E | E | E | S | S | 110 | C | G | G | G | G | S | S | S | E | S | 105 | 105 | E | E | E |
| 28 | 105 | 105 | 105 | E | 105 | E | E | S | S | G | S | C | C | C | C | C | C | C | C | C | E | C | 115 | E |
| 29 | E | E | E | E | E | E | E | C | C | G | G | G | G | G | S | S | S | E | E | E | E | E | E | E |
| 30 | 110 | 105 | 105 | 135 | 125 | 115 | 120 | S | S | S | G | G | G | 105 | S | S | S | E | 115 | 115 | 110 | E | E | E |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 9 | 15 | 10 | 14 | 13 | 8 | 6 | 7 | 19 | 19 | 15 | 15 | 14 | 16 | 13 | 10 | 8 | 15 | 13 | 11 | 12 | 9 | 7 | 10 |
| Median | 110 | 110 | 105 | 105 | 105 | 115 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 115 | 110 | 110 | 115 | 110 | 110 |

h'Es

Sweep 1.0 Mc to 18.0 Mc in 1 min (sec) in automatic operation.

The Radio Research Laboratories, Japan.

W 11

# IONOSPHERIC DATA

Nov. 1962

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 | | | | | | | c | | e | | e | e | | | c e | c | | | s | | | | s | s |
| 2 | s | s | | s3 | s2 | | | | e | c | c2 | e | e | | | | | s | s | s | s2 | s | s | s |
| 3 | s2 | s2 | s | | | | | | e | e2 | | | | e | e | e | e | e | | | | s | s4 | s2 |
| 4 | s | | | | s | s | s | c2 | e | c | | | | e | e | | | | | | s2 | s2 | s3 | s |
| 5 | s2 | s2 | | s | | | | c | c | c2 | c | e | | | | | | | | | | | | s |
| 6 | | s2 | s | | | | | | | | | e2 | c e | e2 | e2 | e2 | e3 | s4 | s3 | s2 | s | | | s |
| 7 | s | s | s | s | | s | | | | | | | | | | | | s | | | s | s2 | s2 | |
| 8 | | s | | | | | | | c | c | e | e | e | e | e | | | s2 | | | | | | |
| 9 | | | | | | | | | | e | e | e | e3 | e | e2 | e2 | e2 | s2 | s-s | | | | | |
| 10 | | | | | | | | | | | | | e | | | h | c2 | s3 | s3 | s2 | | | | |
| 11 | | | | | | | | c | | e2 | e | e | c | e | | e | e | s | | | s2 | | | |
| 12 | | s | | s | s2 | s-s | | | e | | e | e | e | e | e | | | s2 | s2 | s | s2 | s | | |
| 13 | | s | s | s | s | | | | | c | | | | | | | | s2 | s3 | s2 | s2 | | | s2 |
| 14 | | s | s | s | s | s | | c2 | e4 | e | e | | | e | e | | c | s | s | s | s3 | s2 | s2 | s |
| 15 | s | s | s | | | | | | c | e | e | e | | | | | e | s2 | s | s2 | s | s | | s |
| 16 | | | | s | s3 | s | s2 | | e | e | | e | e | e | | | | s | s2 | s | s | s2 | | |
| 17 | | | | s | s | s | s | | e2 | e | e | e | e | e | e | | e | s | s | | | | | |
| 18 | | | | | | s | | | | | | | | | | | | | | | | | | |
| 19 | | | | s | s | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | h | h | h | e | e | e2 | e | e2 | | | | | | | | |
| 21 | | | | | | | | | c | c | c | c | c e | e2 | c | c | | | | | | | | |
| 22 | | s2 | | | | | | c | c | c | c | e e | e2 | c e | e c | | | | | | | | | |
| 23 | s | | | s | s | | | | e | e | e | | | e | | e | | | | | | | | s |
| 24 | | s | s | s | s | | | | c | e | e | e2 | e2 | | | | | | | | | | | |
| 25 | | | | s | | | s2 | c2 | c | e2 | | | | | | | | s | | | | | | |
| 26 | | s2 | s | s | s | | | c | c | e2 | | | e | e | e | e2 | | | s2 | s | | s2 | | |
| 27 | | | | | | | | | e | | | | | | | | | | | s3 | s | | | |
| 28 | s | s | s | | s | | | | | | | | | | | | | | | | | s | | |
| 29 | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | s | s | s | s | s | s4 | s | | | | | | | e | | | | | s3 | s2 | s | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

Types of Es

Sweep 10 Mc to 180 Mc in 1 min sec in automatic operation.

The Radio Research Laboratories, Japan.

W 12

# IONOSPHERIC DATA

Nov. 1962 | 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 | 3.8 | 3.7 | 3.7 | 3.6 | 4.1R | 3.3R | I3.8RS | u6.8R | I7.2C | 8.4S | 8.1 | R | R | 7.1 | 7.5 | I8.2R | 6.8R | 4.6R | 3.9 | 4.1 | 3.5 | u3.1R | 3.7 | 3.9 |
| 2 | 3.8 | I3.5A | 3.4R | 3.5 | 3.6 | 3.5F | 3.8 | J6.0R | J7.1S | 7.6 | R | R | J11.1R | 7.4 | I7.0R | 7.3 | 7.2 | 5.7RI | 3.8R | 4.0 | I3.4RI | 3.6RI | 3.6RI | 3.5C |
| 3 | 3.6 | 3.5 | I3.8RS | 3.4 | 3.9 | 3.1 | 3.9 | 6.2S | 7.5 | 7.3 | 8.6RI | 8.4RI | 8.2R | 7.6 | 7.5R | 7.8R | 6.6RI | 5.1CJ | 4.8R | 3.9R | 3.1 | 3.3R | 3.2S | 3.4 |
| 4 | I3.6RS | 3.5 | 3.6 | u3.5R | 4.0 | 2.3 | 3.6 | 6.5R | J8.6R | 10.0S | 7.7 | 9.3S | I9.1S | 8.0 | 6.9 | 7.0R | 6.9 | 5.2R | 4.1 | u4.5R | 3.1 | J3.4SI | 3.4SI | 3.2A |
| 5 | 3.0 | 3.1 | 3.1 | 3.1 | 3.1 | 3.0 | 4.0 | 6.6 | 8.2S | R | R | R | 8.1 | 8.1 | 8.5 | 7.6 | 8.2 | 4.6R | 4.1 | 4.1 | 3.7 | 3.5 | 3.5 | 3.4 |
| 6 | I3.4RS | 3.6 | 3.5 | 3.7 | 3.6 | 2.7 | 3.6 | 6.7R | 8.2SI | 8.1RI | 7.8U | 8.3SI | 8.8SI | C | C | C | C | C | 3.4 | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | I8.6C | 10.7 | 10.5 | 8.1 | 8.1 | 8.3 | 7.9 | 4.8R | 3.9RI | 3.9RS | 3.6S | FS | A | A |
| 8 | FS | S | I4.6ES | 4.5S | 4.1S | I3.5ES | 3.8RS | 7.5S | I8.6R | 7.9 | 7.5 | 9.0 | I9.4R | 9.1R | 6.9 | 7.2 | 7.8S | 6.2R | 3.7 | 4.0 | I3.2S | 2.9S | 3.2S | 3.3S |
| 9 | I3.5ES | 3.8 | I3.8RS | 3.5S | 3.6S | 3.1S | 3.9S | 6.4 | 7.9S | 8.5SI | 8.3SI | 7.6 | 9.1 | 8.3R | 8.8 | I8.6SR | 7.1 | I4.9A | 3.0 | 3.3 | I3.5AI | 3.7SI | 3.6S | 3.8S |
| 10 | 3.3 | 3.4 | 3.5 | 3.6 | I3.8RS | 3.2 | I3.7RS | 6.0 | 7.0 | 7.8 | 7.6 | 7.8 | 8.8 | 9.4 | 9.1 | 7.8 | 6.5 | I4.9S | 3.3 | 3.4 | 3.6 | I3.5SI | I3.3A | 3.3 |
| 11 | 3.4SI | I3.4SI | I3.7S | 4.0 | 4.2S | 2.9SR | 3.5 | 6.8 | 7.5 | 7.0 | 7.4 | 7.8R | 7.8SR | I7.9R | 7.3R | 8.1 | 7.0S | 4.5 | 3.7 | I3.9SR | I3.6SR | 3.3 | I3.2SR | I3.4S |
| 12 | 3.4 | 3.6S | 4.0S | 3.8 | I4.0S | 2.9 | 3.8 | 5.5SR | 7.2SI | 9.0SR | 8.5 | 8.7R | 7.6S | 6.9 | 6.7 | 7.2S | 6.2 | u4.6RI | 4.0SR | 3.7 | I3.2CU | 3.1SU | 2.8R | 3.3 |
| 13 | 3.3 | 3.4 | 3.6R | 3.5RS | 3.6R | 3.5R | 3.8RU | 6.6R | 7.3 | 7.5R | 7.0 | J8.2R | 8.0RU | 8.5R | 6.7R | 7.1R | 6.3RJ | 4.2R | 4.0R | I3.6SR | A | A | 3.1RJ | 3.0R |
| 14 | 3.0 | 3.2R | 3.2 | 3.3 | C | C | C | u6.3R | 7.4R | 7.0 | I8.0RI | 8.4R | 8.7R | 7.8R | 7.6 | 6.5 | 6.6 | J4.6RI | 3.8SI | 3.2A | 2.9 | I3.2A | 3.4 | 3.5 |
| 15 | 3.5 | 3.5 | 3.6 | 3.4 | 3.7R | 3.6 | J4.0R | 5.7R | C | C | C | C | C | C | C | C | C | J4.8R | 5.4RI | 4.3A | I3.8AI | 3.4AI | I3.2SU | 3.1R |
| 16 | 3.4R | 3.6 | 4.5 | 2.5 | I2.5A | 2.3 | I3.6A | 6.5 | 8.7RI | 10.2SR | 11.3RI | 8.8R | 7.1 | 7.4 | 8.2 | 7.8 | 7.0 | J5.1RI | 4.7A | 4.3 | 4.0R | 3.3S | 3.6 | 3.7R |
| 17 | I3.8SR | J3.7R | 3.5 | 3.4 | J3.6R | 3.3 | J3.3R | 5.8 | u7.3R | 8.8 | J10.1RU | 8.8R | 8.1 | 7.2 | 7.0 | 6.6 | 6.6 | J5.1R | 5.0 | u4.3RI | I3.5A | 2.6R | A | A |
| 18 | I3.0A | 2.8 | 2.8RJ | 3.0RU | u3.3R | 2.8RU | 3.1R | 6.2S | 7.5RS | 8.8R | 7.4 | 7.5 | 7.8R | 7.5 | 6.3 | 5.9H | 5.6 | 4.5 | 4.3RI | 4.0ER | I3.5RI | 2.8RS | 2.8R | 3.0 |
| 19 | I3.0R | 3.3 | 3.6 | 3.6S | u4.0R | 4.0 | u4.1R | 5.9R | 6.9 | 7.5 | 7.5 | I8.4R | 7.3 | 7.0 | 6.3 | 6.1 | 5.2RI | 4.6RS | 3.8S | 3.6 | 2.9 | 2.8 | 2.8SI | 3.1 |
| 20 | 3.3 | 3.4 | I3.3ER | I3.4RS | 3.5 | 3.1 | 3.0S | 5.9 | 7.3 | 6.8 | 7.7 | I8.4RS | 7.5 | 7.2 | 7.1 | 6.3 | 5.3 | 4.6 | I3.8RS | 3.4 | 2.9 | 2.5 | 2.8 | I3.2ES |
| 21 | I3.4ES | I3.4F | I3.4F | I3.6F | 3.4 | 2.7 | 2.5 | 5.3S | 6.7S | 6.7 | 7.0 | 7.5 | 8.1 | 7.3 | 6.8 | 6.7 | 6.6H | 4.1RI | 4.3RS | 3.7S | 3.0 | 3.0 | 2.7 | 3.0 |
| 22 | 3.2 | 3.2 | 3.3SI | I3.3C | I3.2C | 3.2 | 3.1F | 6.7S | 7.1S | 7.2 | 8.1RS | 8.1RU | 8.2R | 7.9 | 7.2 | 7.6 | 6.9 | 5.7 | 4.2 | 4.0S | 3.9SI | 4.3SI | 4.4RS | 4.1S |
| 23 | 4.0 | 4.0 | 3.8SI | 4.1 | I3.8ES | 3.8 | I4.2RS | 6.6 | I7.9RS | 7.8 | 7.8SI | 8.4RS | 7.3 | 7.0S | 7.3 | 6.7 | 5.3S | 4.4 | I4.1RS | I3.6RS | FS | FS | FS | FS |
| 24 | FS | 2.9FI | I3.0ES | 3.3F | F | RF | 3.4 | 5.7 | I7.5RS | 7.0 | I7.9R | 8.5R | 7.5 | I7.8R | 6.8RU | 6.7R | 5.8 | 4.0R | 3.5RI | 3.1A | 2.6V | 3.0 | 3.1R | 3.3R |
| 25 | 3.3 | 3.1 | 3.2R | 3.4 | 3.5 | 3.0 | I3.2AU | 5.1R | 6.9 | 7.7SI | 8.6RI | 8.6R | 8.3 | 7.0 | 7.0 | 6.0 | J5.4R | 3.5 | 3.0 | I3.0AU | u4.0R | 2.6RU | 2.8RI | 3.0F |
| 26 | I3.1F | I3.2ES | 3.3 | 3.4RS | 3.4 | 3.3 | 3.1 | J5.8R | 7.0RU | 7.4RI | 7.8RI | 7.9 | 7.3R | 6.3R | 7.0 | u6.0RU | 5.5R | 3.4 | A | A | A | I3.2AI | I3.3AI | 3.1A |
| 27 | I3.0A | 3.3 | 3.0 | 3.0 | 3.0 | 2.6 | 2.8RJ | 5.6R | 7.1RS | 7.2S | 7.8 | u6.9R | 6.8RS | 7.3 | 7.5 | 6.1RU | 4.5S | 3.2 | 3.3S | 2.6SR | 3.1 | 3.1F | 3.5RI | 3.6ES |
| 28 | I3.7SF | I3.7SF | 3.7 | I3.6RS | 3.5 | 3.6R | 3.4 | J5.1S | 7.5 | 7.3R | 7.0 | u7.3R | 6.6 | 7.5RJ | 7.2RU | 5.5RI | 4.2S | 3.4 | 3.8S | 3.6S | 3.3 | 2.5SU | 2.9RU | 3.1R |
| 29 | I3.4RS | 3.5S | 3.4S | 3.5RS | 3.9RU | 3.8S | 3.3RU | 5.3R | 6.6 | 6.7 | 7.1R | 7.8R | 6.9 | 6.6R | 6.3R | 5.8 | I4.6RS | 2.8RS | 3.1 | I3.4RS | 3.7S | RS | RS | I3.8RS |
| 30 | I3.8RS | u3.7R | I3.5F | I3.1F | 2.8F | 2.6F | 2.9 | 4.5 | 6.3 | 7.3 | R | R | R | 7.9R | 6.5 | 6.1 | 6.3 | I4.5RS | 3.4S | 2.5 | 3.1 | 3.1S | 2.7F | 3.5S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 27 | 28 | 29 | 29 | 27 | 27 | 28 | 29 | 28 | 27 | 26 | 25 | 27 | 28 | 28 | 28 | 28 | 29 | 29 | 28 | 26 | 25 | 25 | 26 |
| Median | 3.4 | 3.4 | 3.5 | 3.5 | 3.6 | 3.1 | 3.6 | 6.0 | 7.3 | 7.5 | 7.8 | 8.4 | 8.1 | 7.5 | 7.0 | 6.8 | 6.6 | 4.6 | 3.8 | 3.7 | 3.4 | 3.1 | 3.2 | 3.3 |
| U.Q. | 3.6 | 3.6 | 3.7 | 3.6 | 3.9 | 3.5 | 3.8 | 6.6 | 7.7 | 8.4 | 8.3 | 8.6 | 8.8 | 8.0 | 7.5 | 7.7 | 7.0 | 5.0 | 4.2 | 4.0 | 3.6 | 3.4 | 3.5 | 3.5 |
| L.Q. | 3.2 | 3.2 | 3.3 | 3.3 | 3.4 | 2.8 | 3.2 | 5.6 | 7.0 | 7.2 | 7.5 | 7.8 | 7.3 | 7.2 | 6.8 | 6.1 | 5.4 | 4.2 | 3.4 | 3.4 | 3.1 | 2.8 | 2.8 | 3.1 |
| Q.R. | 0.4 | 0.4 | 0.4 | 0.3 | 0.5 | 0.7 | 0.6 | 1.0 | 0.7 | 1.2 | 0.8 | 0.8 | 1.5 | 0.8 | 0.7 | 1.6 | 1.6 | 0.8 | 0.8 | 0.6 | 0.5 | 0.6 | 0.7 | 0.4 |

foF2

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | C | A | A | L | R | L | L | L | | | | | | | | |
| 2 | | | | | | | | | | A | A | L | A | R | A | | | | | | | | | |
| 3 | | | | | | | | | | L | L | L | A | R | A | L | | | | | | | | |
| 4 | | | | | | | | A | A | A | A | A | L | 4.0 L | 3.6 L | | | | | | | | | |
| 5 | | | | | | | | | L | L | L | R | 4.0 | L | L | | | | | | | | | |
| 6 | | | | | | | | | | L | C | L | 4.0 | C | C | C | | | | | | | | |
| 7 | | | | | | | | | C | C | C | A | L | A | L | | | | | | | | | |
| 8 | | | | | | | | | L | A | L | L | R S | A | A | | | | | | | | | |
| 9 | | | | | | | | | | 4.0 L | R | L | L | L | A | | | | | | | | | |
| 10 | | | | | | | | | | L | L | L | L | L | | | | | | | | | | |
| 11 | | | | | | | | | | L | L | R S | L | A | | | | | | | | | | |
| 12 | | | | | | | | | A | R | L | L | L | A | R | | | | | | | | | |
| 13 | | | | | | | | | L | R | A | A | L | R | L | | | | | | | | | |
| 14 | | | | | | | | | L | R | A | L | R | L | R | L | | | | | | | | |
| 15 | | | | | | | | | C | C | C | C | C | C | C | C | | | | | | | | |
| 16 | | | | | | | | | | L | A | L | A | R | L | L | | | | | | | | |
| 17 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 19 | | | | | | | | L | L | L | L | L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | | | | L | L | L | L | A | | | | | | | | | |
| 21 | | | | | | | | | | | L | L | L | L | | | | | | | | | | |
| 22 | | | | | | | | | | L H | L | L | L | L | | | | | | | | | | |
| 23 | | | | | | | | | | L | A | L | 3.4 L | L | L | | | | | | | | | |
| 24 | | | | | | | | | | L | A | A | L | L | L | | | | | | | | | |
| 25 | | | | | | | | | | L | L H | L | A | A | L | | | | | | | | | |
| 26 | | | | | | | | | L | L | L H | L H | L H | L H | L | | | | | | | | | |
| 27 | | | | | | | | | L | L | R | L | L | L | L | L | | | | | | | | |
| 28 | | | | | | | | | L | L H | L | L | L | L | L | L | | | | | | | | |
| 29 | | | | | | | | | L | L H | R | L | L H | L | S | L | | | | | | | | |
| 30 | | | | | | | | | | L | L | 4.2 | 4.1 | 4.0 H | 3.7 | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | 1 | | 1 | 4 | 2 | 2 | | | | | | | | | |
| Median | | | | | | | | | | 4.0 | | 4.2 | 4.0 | 4.0 | 3.6 | | | | | | | | | |

foF1

Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 2

# IONOSPHERIC DATA

Nov. 1962 | 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 | C | A | A | A | A | R | 2.95 | B | B | | | | | | | |
| 2 | | | | | | | | 2.30 | 2.80 | A | A | A | A | A | I 2.90 A | A | A | | | | | | | |
| 3 | | | | | | | | 2.30 H | 2.80 | A | A | A | A | A | A | A | A | | | | | | | |
| 4 | | | | | | | | A | A | A | A | A | I 3.10 RI | 3.00 R | 2.80 | 2.35 | B | | | | | | | |
| 5 | | | | | | | | A | A | A | A | A | 3.15 RI | 3.00 RI | 2.75 R | 2.30 | B | | | | | | | |
| 6 | | | | | | | | B | 2.60 | I 2.90 R | C | R | 3.15 | C | C | C | C | | | | | | | |
| 7 | | | | | | | | C | C | C | C | A | A | A | A | A | A | | | | | | | |
| 8 | | | | | | | | 2.10 | A | A | A | A | A | A | A | A | 2.25 | | | | | | | |
| 9 | | | | | | | | 2.20 | 2.55 | 2.85 H | R | A | 3.05 | I 2.90 A | A | A | A | | | | | | | |
| 10 | | | | | | | | 2.05 | 2.60 | I 2.90 RI | 3.00 R | 3.10 | I 3.15 A | 3.15 | 2.85 | A | A | | | | | | | |
| 11 | | | | | | | | A | 2.55 | 2.90 | I 3.00 AI | 3.10 R | 3.20 S | A | A | A | A | | | | | | | |
| 12 | | | | | | | | A | A | A | A | R | A | A | A | A | B | | | | | | | |
| 13 | | | | | | | | B | A | R | A | A | A | A | A | 2.30 | A | | | | | | | |
| 14 | | | | | | | | B | A | 2.70 R | A | A | 3.00 R | 3.00 RI | 2.70 RI | 2.45 A | A | | | | | | | |
| 15 | | | | | | | | A | C | C | C | C | C | C | C | C | C | | | | | | | |
| 16 | | | | | | | | A | A | A | B | B | R | R | R | I 2.55 A | B | | | | | | | |
| 17 | | | | | | | | A | A | 2.70 R | 2.90 R | R | B | R | R | A | B | | | | | | | |
| 18 | | | | | | | | 2.10 | 2.70 R | A | I 3.15 R | 3.30 RI | 3.25 B | 3.20 R | 3.00 R | R | B | | | | | | | |
| 19 | | | | | | | | I 2.30 R | S | A | R | R | S | R | R | R | A | | | | | | | |
| 20 | | | | | | | | B | 2.55 | A | R | R | R | R S | A | A | A | | | | | | | |
| 21 | | | | | | | | 1.95 | I 2.45 AI | 2.75 R | A | R | R | A | R | 2.35 | B | | | | | | | |
| 22 | | | | | | | | B | A | A | A | A | A | A | A | A | A | | | | | | | |
| 23 | | | | | | | | A | A | 2.70 | A | A | 2.85 | 2.70 | I 2.50 A | 2.20 | A | | | | | | | |
| 24 | | | | | | | | R S | 2.25 S | A | A | A | A | A | A | A | A | | | | | | | |
| 25 | | | | | | | | | A | 2.50 | 2.90 | 3.00 | A | A | A | A | R | | | | | | | |
| 26 | | | | | | | | R | A | A | 2.95 | 3.00 R | 2.90 R | 2.85 | 2.70 | A | B | | | | | | | |
| 27 | | | | | | | | B | A | A | A | A | 3.25 R | A | A | A | | | | | | | | |
| 28 | | | | | | | | R | 2.25 R | 2.70 RI | 2.90 AU | 3.05 RI | 2.95 A | 2.80 | A | A | | | | | | | | |
| 29 | | | | | | | | S | A | 2.55 RU | 2.95 RI | 3.00 R | 3.05 R | R | S | 2.35 R | | | | | | | | |
| 30 | | | | | | | | B | A | R | A | 3.00 R | 2.90 | 2.75 R | 2.60 | R S | B | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 8 | 11 | 11 | 8 | 8 | 14 | 10 | 10 | 8 | 1 | | | | | | | |
| Median | | | | | | | | 2.15 | 2.55 | 2.70 U | 2.95 | 3.00 | 3.10 | 2.95 | 2.80 | 2.35 | 2.25 | | | | | | | |

foE

Sweep 1.60 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | J3.3 | J2.2 | J2.5 | J3.2 | J3.0 | J3.2 | J2.6 S | J3.3 | C | J8.1 | J7.1 | J3.8 | J3.5 | G | G | B | B | E | E | E | E | E | C | E |
| 2 | J3.6 | J3.1 | J2.5 | J2.3 | J2.0 | E | E | 2.5 | 3.2 | J6.0 | J7.3 | J3.4 | J7.3 | 3.5 | J3.9 | 2.9 | 2.1 | E | J2.4 | J2.3 | J2.8 | J2.9 | 2.4 | C |
| 3 | J3.3 | J2.9 | J3.5 | J2.5 | E | E | E | G | G | J5.2 Y | J5.3 Y | J5.1 | J6.1 | J3.6 | J4.8 | J3.8 | J3.3 | C | E | E | E | 2.5 | E | J2.0 |
| 4 | E | J2.5 | J2.3 | J2.3 | J2.1 | E | E | J3.7 | J7.3 S | J8.1 | J6.4 | J4.4 | G | G | G | G | G | E | E | E | E | J2.3 | J2.5 | J3.4 |
| 5 | J2.2 | J2.3 | E | J2.6 | J2.3 | E | E | 2.7 | J3.7 | 3.5 | 3.6 | J3.5 | G | G | G | G | J2.5 | J2.3 | 2.4 H | 2.3 | E | E | J2.5 | E |
| 6 | J2.1 | J1.8 | E | J2.9 | J1.9 | E | E | G | G | G | C | G | G | C | C | C | C | C | E | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | C | J5.7 | J4.2 | J6.9 | J4.9 | J3.8 | J6.4 | J2.9 | E | E | E | E | J3.0 | J5.0 |
| 8 | J1.8 | J1.9 | E | J1.8 | E | S | E | G | 3.0 | J4.2 | 3.7 | 3.6 | J3.5 | J5.0 | J4.8 | J2.9 | G | E | E | E | E | E | E | E |
| 9 | E | E | E | E | E | E | E | G | G | G | G | 3.2 | 3.0 G | J3.8 | J3.8 | J4.3 | J6.0 | J4.0 | E | J2.3 | J4.0 | J4.0 Y | E | E |
| 10 | J2.6 | E | E | E | E | E | E | G | G | G | G | G | J3.4 | G | G | J2.8 | 2.2 | J3.5 | J2.8 | J3.3 | J1.9 | J2.8 | J3.5 | J2.8 |
| 11 | J2.8 | J2.2 | E | E | E | E | E | 2.5 | 3.0 | 3.0 | 3.2 | G | G | J8.0 Y | J2.9 | J2.6 | J4.3 | J3.5 | J2.5 | J2.1 | J2.5 | J2.5 | J6.3 | S |
| 12 | J1.8 | E | E | E | E | E | E | 2.5 | J4.0 | J3.0 | J3.0 | G | J3.5 | J5.1 | 2.7 | 2.5 | 2.0 | J2.2 | J2.9 S | J2.5 | C | J5.3 S | J5.6 S | J3.0 S |
| 13 | J2.9 | J2.3 S | J3.1 | 2.3 | J2.5 | J2.5 | E | 2.3 | 2.7 | J4.0 | J4.0 | J5.8 | J6.1 | J4.6 | 3.4 | 2.9 | 3.0 | J3.5 | J2.9 | J6.1 S | J3.2 | J6.4 | J3.1 | E |
| 14 | E | 2.4 | 2.3 | 2.3 | C | C | C | B | J3.1 | G | J4.3 | J3.2 | G | G | G | 2.9 | 2.7 | J3.0 | J2.9 | J3.1 | J2.9 | J3.0 | J3.0 | J2.5 |
| 15 | J2.1 | E | E | E | E | 2.3 | E | 2.8 | C | C | C | C | C | C | C | C | C | E | J6.1 | J7.8 | J6.1 | J3.2 | J2.6 | E |
| 16 | E | E | E | E | J3.6 | E | J7.4 | 2.3 | 2.7 | 3.0 | J7.8 | J3.8 Y | J6.7 | J4.3 | J2.6 | 2.4 | G | 2.6 | J5.8 | J6.1 | J3.0 | J3.0 | J2.3 | J2.9 |
| 17 | 2.3 | E | E | J2.6 | J2.6 | J3.3 | 2.4 | 2.3 | 2.7 | G | G | G | G | G | G | 2.7 | J2.6 | J2.3 | J2.5 | J5.0 Y | J3.8 | J2.3 | J4.1 | J4.1 |
| 18 | J2.5 | E | E | E | E | J2.5 | E | G | G | J2.6 | G | G | G | G | G | G | G | E | J1.8 | J2.3 | J2.0 | J2.3 | 2.3 | 2.5 |
| 19 | E | E | E | E | E | E | E | G | 2.4 | 3.0 | G | G | S | G | G | G | J2.9 | J2.6 | 2.5 | S | 2.5 | 2.5 | E | E |
| 20 | E | E | E | E | E | E | E | G | G | 3.0 | 3.5 | 3.4 | 3.5 | G | 4.6 | J3.4 | 2.3 | J2.9 | J2.9 | J2.4 | E | J1.8 | E | E |
| 21 | E | E | E | E | E | E | E | G | 2.7 | G | 3.2 | 3.4 | G | 3.2 | G | G | G | E | E | J2.7 | E | J2.3 | E | E |
| 22 | E | E | J1.9 | C | C | E | E | 2.3 | J2.5 | 3.2 | 3.4 | 3.5 | 3.5 | 3.5 | J3.1 | J3.6 | J2.9 | J2.9 | E | J2.3 | J2.4 | E | E | J1.7 |
| 23 | J2.6 | J1.9 | J2.6 | J2.3 | J2.4 | J2.4 | J2.9 | J2.6 | J2.8 | 2.5 G | J4.0 | 3.7 | 3.2 | G | J2.9 | G | J2.5 | J2.5 | E | E | E | E | E | E |
| 24 | J2.3 | E | J3.7 | J2.4 | J2.5 | J2.4 | J1.9 | G | G | J3.3 | J7.6 | J3.5 | J7.5 | J5.1 Y | J2.5 | J3.0 | J3.4 | J2.6 | J1.9 | J3.8 | 2.5 | 2.5 | E | E |
| 25 | E | 2.5 | J2.5 | E | E | J2.4 | J4.0 | J3.3 | J3.2 | 3.0 | G | G | J7.9 | J7.2 | J3.0 | 2.9 | 2.3 | J2.8 | J2.4 | J4.2 | J2.6 | J2.8 | 2.6 | E |
| 26 | 2.3 | 2.3 | E | E | E | E | E | 2.5 | J2.6 | J3.3 | 3.3 | G | G | G | G | 2.7 | J2.5 | J2.6 | J5.1 S | J5.3 S | J6.1 | J3.0 | J5.2 S | J5.2 S |
| 27 | J5.6 | J3.6 S | J1.9 | E | 2.0 | E | E | 2.0 | 2.5 | 3.5 | 3.1 | 3.1 | 3.2 | 2.9 | 2.8 | 2.5 | 2.4 | J1.9 | E | J2.5 | E | J3.3 S | J1.8 | J3.2 |
| 28 | J2.5 | J2.5 | J2.8 | J2.2 | J1.8 | E | E | S | 2.7 | G | 3.0 | G | 3.3 | G | 3.0 | 2.4 | J2.3 | J2.5 | J1.8 | J2.5 S | J2.0 | E | E | E |
| 29 | E | E | E | E | E | 2.3 | E | J2.4 S | 2.5 | G | G | G | G | G | S | 2.5 | J2.5 | E | E | E | 2.3 S | S | E | E |
| 30 | E | E | E | E | E | E | E | J3.6 | 2.7 | G | 3.2 | G | G | G | G | G | G | E | E | E | E | J2.4 | J2.4 | E |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 29 | 29 | 29 | 28 | 27 | 27 | 28 | 27 | 27 | 28 | 27 | 29 | 28 | 28 | 27 | 27 | 27 | 28 | 30 | 28 | 28 | 28 | 28 | 27 |
| Median | 2.1 | 1.8 | E | E | E | E | E | 2.3 | 2.7 | 3.0 | 3.3 | 3.2 | 3.2 | G | 2.7 | 2.7 | 2.5 | 2.5 | 1.8 | 2.4 | 2.2 | 2.5 | 2.4 | E |
| U.Q. | 2.6 | 2.4 | 2.5 | 2.3 | 2.3 | 2.4 | E | 2.6 | 3.0 | 3.5 | 4.3 | 3.6 | 3.8 | 4.4 | 3.4 | 2.9 | 2.9 | 2.9 | 2.8 | 3.6 | 2.8 | 3.0 | 3.0 | 2.9 |
| L.Q. | E | E | E | E | E | E | E | G | G | G | G | G | G | G | G | G | 2.0 | E | E | E | E | E | E | E |
| Q.R. | | | | | | | | | | | | | | | | | 0.9 | | | | | | | |

foEs

Sweep 1.60 Mc to 20.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | $f_bEs$ | 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 | 2.8 | 2.0 | 2.0 | 2.7 | 2.2 | 2.0 | 2.1 | 3.0 | C | 5.7 | 5.6 | $^{u}3.8^{R}$ | $^{E}3.5^{R}$ | | | B | B | | | | | | C | |
| 2 | 3.0 | A | 2.2 | 1.8 | 1.8 | | | 2.4 | G | 5.5 | 7.3 | 3.4 | 6.7 | $^{E}3.5^{R}$ | $^{E}3.9^{R}$ | 2.9 | 2.0 | | 2.0 | 1.8 | 2.6 | $^{E}2.9^{R}$ | 1.8 | C |
| 3 | 2.5 | 2.0 | $^{E}3.5^{R}$ | 1.8 | | | | | | 3.7 | 3.3 | 3.7 | 4.6 | $^{E}3.6^{R}$ | 4.7 | 3.3 | 2.7 | C | | | | 1.8 | | 1.7 |
| 4 | | 1.8 | 1.8 | 2.2 | 2.1 | | | $^{E}3.7^{R}$ | 5.6 | 5.5 | 5.3 | $^{E}4.4^{R}$ | | | | | | | | | | 2.1 | 2.1 | A |
| 5 | 2.0 | 1.7 | | 1.8 | 1.8 | | | 2.6 | 2.0 | 3.5 | 3.6 | $^{E}3.5^{R}$ | | | | | 2.1 | 2.0 | 2.0 | 1.8 | | | 1.8 | |
| 6 | 2.1 | 1.8 | | 2.0 | 1.8 | | | | | | C | | | C | C | C | C | C | | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | C | 4.7 | 3.3 | 4.3 | 3.1 | 2.8 | 4.2 | 2.0 | | | | | A | A |
| 8 | 1.7 | 1.8 | | 1.8 | | S | | | 2.8 | $^{E}4.2^{R}$ | 3.1 | 3.2 | 3.4 | 5.0 | $^{E}4.8^{R}$ | 2.9 | | | | | | | | |
| 9 | | | | | | | | | | | | $^{u}3.2^{R}$ | $^{2.5^{G}}$ | 3.7 | $^{E}3.8^{R}$ | $^{u}4.3^{R}$ | 5.7 | A | | 2.1 | A | 1.7 | | |
| 10 | 2.4 | | | | | | | | | | | | 3.3 | | | 2.6 | 2.1 | $^{E}3.5^{R}_{S}$ | 2.8 | 1.7 | 1.8 | 1.9 | A | 1.8 |
| 11 | 1.8 | 2.2 | | | | | | 2.3 | 2.8 | 3.0 | 3.2 | | | 5.5 | 2.9 | 2.5 | $^{u}4.3^{R}$ | 2.8 | 2.5 | 2.0 | 2.3 | 1.9 | 2.4 | S |
| 12 | 1.7 | | | | | | | 2.3 | 4.0 | 3.0 | $^{E}3.0^{R}$ | | 3.2 | 4.7 | $^{u}2.7^{R}$ | 2.5 | 2.0 | 1.9 | 2.2 | 1.8 | C | S | 1.7 | 1.8 |
| 13 | 1.8 | 1.8 | 1.9 | 1.7 | 2.0 | 1.9 | | 2.3 | $^{u}2.7^{R}$ | $^{u}3.5^{R}$ | $^{E}4.0^{R}$ | 4.7 | 3.4 | 4.0 | 3.2 | 2.5 | 3.0 | A | 2.0 | 1.8 | A | A | 2.0 | |
| 14 | | 1.9 | 1.8 | 1.9 | C | C | C | B | 2.8 | | 4.3 | $^{u}3.2^{R}$ | | | | 2.9 | 2.4 | 2.9 | 2.9 | A | 2.0 | A | 1.9 | 1.9 |
| 15 | 1.8 | | | | | 1.8 | | 2.4 | C | C | C | C | C | C | C | C | C | | 3.8 | A | A | A | 2.0 | |
| 16 | | | | | A | | A | 2.3 | $^{u}2.7^{R}$ | $^{u}3.0^{R}$ | 5.5 | $^{E}3.8^{R}$ | 5.8 | 4.2 | $^{E}2.6^{R}$ | $^{u}2.4^{R}$ | | 2.0 | A | 3.1 | 2.1 | 2.0 | 2.0 | 2.0 |
| 17 | 2.0 | | | 1.9 | 2.0 | 1.8 | 1.8 | 2.2 | $^{u}2.7^{R}$ | | | | | | | $^{u}2.7^{R}$ | 2.1 | 1.8 | 2.4 | 2.6 | A | 1.9 | A | A |
| 18 | A | | | | | 2.1 | | | | 2.2 | | | | | | | | | 1.8 | 1.9 | 1.8 | 2.0 | 2.0 | 2.0 |
| 19 | | | | | | | | | $^{E}2.4^{R}$ | $^{u}3.0^{R}$ | | | S | | | | $^{u}2.9^{R}$ | A | 2.4 | S | 1.9 | 2.1 | | |
| 20 | | | | | | | | | | $^{u}3.0^{R}$ | 3.2 | 3.4 | 3.2 | | 4.3 | 3.2 | $^{u}2.3^{R}$ | $^{u}2.9^{R}$ | $^{u}2.9^{R}$ | 2.3 | | 1.9 | | |
| 21 | | | | | | | | | 2.6 | | 3.2 | 3.3 | | 3.1 | | | | | | 2.0 | | 1.8 | | |
| 22 | | | 1.7 | C | C | | | 2.1 | 2.5 | 3.0 | 3.2 | 3.2 | 3.3 | 3.1 | 3.1 | 2.7 | 2.8 | 2.9 | | 2.1 | 1.8 | | | E |
| 23 | 1.8 | 1.8 | 1.9 | 1.8 | 1.9 | 1.8 | $^{u}2.9^{R}$ | 2.3 | 2.6 | $^{2.4^{G}}$ | 4.0 | 3.7 | 2.4 | | 2.8 | | 2.4 | 2.0 | | | | | | |
| 24 | 1.8 | | 2.2 | E | E | E | 1.7 | | | 3.0 | 7.2 | $^{E}3.5^{R}$ | 3.5 | 3.6 | $^{E}2.5^{R}$ | $^{u}3.0^{R}$ | $^{E}3.4^{R}$ | $^{u}2.6^{R}$ | $^{u}1.9^{R}$ | A | 1.9 | 1.9 | | |
| 25 | | 1.9 | 2.0 | | | 1.9 | A | $^{u}3.3^{R}$ | 3.0 | 2.5 | | | 5.7 | 5.8 | 3.0 | 2.9 | 2.1 | 2.6 | 2.2 | A | $^{E}2.6^{R}$ | $^{u}2.2^{R}$ | 1.9 | |
| 26 | 1.8 | 1.9 | | | | | | 2.1 | 2.6 | $^{u}3.3^{R}$ | 3.0 | | | | | 2.6 | 2.1 | 2.0 | A | A | A | A | A | A |
| 27 | A | 1.8 | 1.9 | | 1.8 | | | 2.0 | 2.5 | 2.9 | $^{u}3.1^{R}$ | $^{u}3.1^{R}$ | 2.9 | $^{u}2.9^{R}$ | $^{u}2.8^{R}$ | 2.4 | 2.0 | 1.8 | | 1.8 | | 1.9 | $^{u}1.8^{R}$ | 2.3 |
| 28 | 2.0 | 2.1 | 2.0 | 1.8 | 1.7 | | | S | 2.6 | | $^{u}3.0^{R}$ | | 3.0 | | 3.0 | $^{u}2.4^{R}$ | 2.2 | $^{u}2.5^{R}$ | 1.8 | 1.8 | 1.8 | | | |
| 29 | | | | | | 1.8 | | 2.1 | 2.5 | | | | | | S | 2.5 | $^{E}2.5^{R}$ | | | | 1.8 | S | | |
| 30 | | | | | | | | 3.0 | 2.7 | | 3.2 | | | | | | | | | | | 1.8 | 1.8 | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bEs$ Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 5

# IONOSPHERIC DATA

Nov. 1962 | 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 | 1.90 | 1.75 | 1.75 | 1.75 | 1.85S | 1.80 | 1.75 | 1.75 | I1.75C | 2.00 | 1.70 | 1.90 | 1.75 | 2.00 | 1.90 | 2.20 | 2.05 | 1.75 | 2.00 | 2.00 | 1.75 | 2.05 | E2.60C | 1.70 |
| 2 | 1.70 | 1.75 | 1.70 | 1.75 | 1.70 | 1.75 | 1.90 | 1.80 | 1.75 | 2.00 | 2.00 | 2.10 | 2.00 | 2.05 | 2.00 | 2.05 | 1.70 | 1.75 | 1.80 | 1.75 | 2.00 | 1.90 | 1.75 | I1.70C |
| 3 | 1.70 | 1.75 | 1.80 | 1.75 | 1.75 | 1.75 | 1.80 | 2.05 | 1.80 | 2.00 | 2.00 | 2.00 | 1.95 | 1.75 | 1.75 | 1.90 | 1.70 | I1.80C | 1.80 | 1.70 | 1.75 | 1.75 | 1.80 | 1.65 |
| 4 | 1.80 | 1.75 | 1.75 | 1.80 | 1.70 | 1.80 | 1.95 | 1.75 | 1.80 | 1.80 | 2.00 | 1.95 | 1.95 | 1.75 | 2.20S | 1.80 | 1.95 | 1.75 | 2.10 | 1.70 | 1.75 | 1.70 | 1.75 | 1.80 |
| 5 | 1.75 | 1.70 | 1.75 | 1.65 | 1.70 | 1.70 | 1.75 | 1.90 | 1.75 | 2.00 | 2.10 | 2.50 | 2.00 | 2.05 | 2.00 | 2.00 | 2.00 | 1.90 | 1.75 | 1.80 | 1.75 | 1.75 | 1.80 | 1.70 |
| 6 | 1.75 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.80 | 2.05 | 1.70 | 2.00 | I2.00C | 2.10 | 1.95 | C | C | C | C | C | 1.70 | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | I1.80C | 1.75 | 2.00S | 1.80 | 1.70 | 1.70 | 1.75 | 1.80 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.75 |
| 8 | 1.65 | 1.65 | E | 1.70 | E | E1.90S | 1.70 | 1.75 | 1.80 | 1.80 | 1.75 | 1.75 | 1.75 | 2.20 | 1.80 | 1.70 | 1.70 | 1.80 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 |
| 9 | E | E | 1.75 | E | E | E | 1.70 | 1.80 | 1.75 | 1.80 | 1.95 | 1.90 | 2.25 | 1.80 | 1.75 | 1.75 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.70 | 1.70 | E |
| 10 | 1.65 | E | 1.75 | E | E | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 2.00 | 1.70 | 1.70 | 1.70 | 1.80 | 1.75 | 1.65 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.75 | 1.75 |
| 11 | 1.75 | E | E | 1.70 | E | 1.75 | E | 1.70 | 1.70 | 1.80 | 1.80 | 1.80 | 1.80 | 1.70 | 1.75 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.75 | 1.70 | 1.70 | I1.75S |
| 12 | 1.70 | 1.65 | E | 1.75 | 1.70 | 1.70 | 1.65 | 1.70 | 1.70 | 1.80S | 1.75 | 1.80 | 1.75 | 1.80 | 1.75 | 1.70 | 1.80 | 1.75 | 1.75 | 1.80 | I1.70C | 1.75 | 1.70 | 1.75 |
| 13 | 1.75 | 1.75 | 1.75 | 1.65 | 1.75 | 1.75 | 1.75 | 1.85 | 1.90 | 2.20 | 2.00 | 2.05 | 1.75 | 1.95 | 1.80 | 1.85 | 1.75 | 1.80 | 1.80 | 1.75 | 1.75 | 1.80 | 1.80 | 1.80 |
| 14 | 1.85 | 1.85 | 1.75 | 1.80 | C | C | C | 2.20 | 1.80 | 2.35 | 2.20 | 2.10 | 1.85 | 2.35 | 2.25 | 2.00 | 1.75 | 1.80 | 1.90 | 1.75 | 1.70 | 1.80 | 1.80 | 1.70 |
| 15 | 1.75 | 1.75 | 1.80 | 1.85 | 1.75S | 1.80 | 1.85 | 1.80 | C | C | C | C | C | C | C | C | C | 2.00 | 1.90 | 1.75 | 1.80 | 1.75 | 1.80 | 1.75 |
| 16 | 1.80 | 1.75 | 2.00 | 1.75 | 1.75 | 1.80 | 1.80 | 1.80 | 1.80 | 1.90 | 3.30 | 3.20 | 2.00 | 2.25 | 2.10 | 1.85 | 2.10 | 2.00 | 1.80 | 1.75 | 1.75 | 1.80 | 1.75 | 1.80 |
| 17 | 1.85 | 1.75 | 1.80 | 1.90 | 1.75 | 1.75 | 1.75 | 1.80 | 2.00 | 1.95 | 2.00 | 2.30 | 3.30 | 2.20 | 2.00 | 1.85 | 1.85 | 1.80 | 1.75 | 1.75 | 1.80 | 1.90 | 1.75 | 1.85 |
| 18 | 1.75 | 2.00 | 1.85 | 1.80 | 1.75 | 1.75 | 1.95 | 1.85 | 1.80 | 2.05 | 2.00 | 2.05 | 3.50 | 1.95 | 2.15 | 2.55 | 2.00 | 1.70 | 1.75 | 1.75 | 1.75 | 1.70 | 1.80 | 1.85 |
| 19 | 2.00 | 1.80 | 1.75 | 1.85 | 2.00 | 1.90 | 1.85 | 2.05 | 2.00S | 2.00 | 2.00S | 2.00 | E3.30S | 2.05 | 2.20 | 2.00 | 2.05 | 1.75 | 2.05 | 1.75 | 1.90 | E1.95S | 1.80 | 1.75 |
| 20 | 1.75 | 1.80 | 1.75 | 1.70 | 1.75 | 1.70 | 1.70 | 1.85 | 1.70 | 1.80 | 2.05 | 2.00 | 2.05 | 2.00 | E2.45S | 1.90 | 1.80 | 1.70 | 1.75 | 1.75 | 1.75 | 1.70 | 1.80 | 1.70 |
| 21 | 1.75 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.70 | 1.65 | 1.70 | 1.80 | 2.00 | 2.00 | 1.90 | 1.95 | 1.90 | 1.70 | 1.80 | 1.80 | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.65 |
| 22 | E | 1.80 | 1.70 | C | I1.70C | 1.70 | 1.70 | 1.70 | 1.65 | 1.70 | 1.70 | 1.75 | 1.70 | 1.65 | 1.75 | 1.70 | 1.70 | 2.00 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | E |
| 23 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.75 | 1.70 | 1.75 | 2.00 | 1.80 | 1.70 | 1.70 | 1.65 | E | E | E | E | E | E |
| 24 | E | E | E | E | E | E | E | 1.70 | 1.70 | 1.90 | 2.00 | 2.20 | 1.85 | 2.00 | 2.00 | 2.00 | 2.10 | 1.80 | 1.85 | 1.90 | 1.80 | 1.80 | 1.95 | 1.90 |
| 25 | 1.85 | 1.85 | 1.80 | 1.85 | 1.90 | 1.85 | 1.85 | 1.85 | 1.85 | 1.80 | 1.85 | 1.85 | 1.90 | 1.90 | 1.85 | 1.85 | 1.75 | 1.85 | 1.80 | 1.85 | 1.85 | 1.85 | 1.90 | 1.90 |
| 26 | 1.80 | 1.85 | 1.85 | 1.80 | 1.80 | 1.85 | 1.85 | 1.90 | 1.85 | 1.90 | 1.95 | 1.95 | 1.80 | 1.80 | 1.85 | 1.75 | 1.75 | 1.85 | 1.75 | 1.80 | 1.80 | 1.80 | 1.70 | 1.80 |
| 27 | 1.75 | 1.70 | 1.90 | 1.80 | 1.75 | 1.75 | 1.85 | 1.70 | 1.75 | 1.80 | 1.80 | 1.80 | 1.80S | 2.00S | 1.90 | 1.75 | 2.00 | 1.80 | 1.80 | 1.80 | 2.00 | 1.70 | 1.80 | 1.80 |
| 28 | 1.75 | 1.80 | 1.75 | 1.80 | 1.70 | 1.70 | 1.75 | 1.80 | 1.70 | 1.75 | 2.00 | 1.85 | 1.95 | 1.95 | 2.15 | 1.85 | 1.80 | 1.75 | 1.70 | 1.75 | 1.75 | 1.70 | 1.80 | E2.70S |
| 29 | 1.90 | 1.80 | 1.80 | 1.80 | 1.75 | 1.80S | 1.75S | 1.75S | 1.75 | 1.70 | 1.85 | 1.75 | 1.95 | 2.00S | 1.90 | 1.85 | 2.00S | 1.80 | 2.00 | 1.80 | 1.80 | E2.70S | 1.75 | 1.80 |
| 30 | 1.80 | 1.80 | E | E | E | 1.75 | 1.70 | 1.75 | 1.75 | 2.00 | 1.95 | 2.10 | 2.10 | 2.05 | 2.00 | 1.95 | 1.90 | 1.85 | 1.70 | 1.80 | 1.70 | 1.70 | 1.75 | 1.70 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 29 | 29 | 29 | 28 | 28 | 27 | 28 | 29 | 28 | 28 | 29 | 29 | 28 | 28 | 27 | 28 | 28 | 29 | 30 | 29 | 29 | 27 | 28 | 28 |
| Median | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.80 | 1.75 | 1.85 | 2.00 | 1.95 | 1.90 | 2.00 | 1.90 | 1.85 | 1.80 | 1.80 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 |

f-min

Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 6

# IONOSPHERIC DATA

Nov. 1962 | 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 | 2.60 | 3.00 | 2.85 | 3.00 | 3.30R | 3.65R | I3.10S U | 3.60R | I3.50C | 3.45S | 3.30 | R | R | 3.65 | 3.30 | I3.50R | 3.70R | 3.50R | 3.00 | 3.20 | 3.00 | U3.15R | 3.00 | 2.70 |
| 2 | 3.20 | I2.90A | 2.95R | 2.80 | 3.10 | 3.20F | 3.20 | J3.55R | J3.70S | 3.55 | R | R | J3.50R | 3.40 | I3.45R | 3.50 | 3.60 | 3.40R | I3.15R | 3.10 | I2.90R | I2.70R | I2.80F | I2.70C |
| 3 | 2.80 | 2.75 | I2.90S | 2.95 | 3.10 | 3.30 | 3.15 | 3.60S | 3.40 | 3.35 | 3.40R | I3.35R | I3.45R | 3.40 | 3.50R | 3.45R | 3.50R | I3.30C | J3.15R | 3.45R | 3.05 | 3.05R | 2.80S | 2.70 |
| 4 | I2.80S | 2.90 | 3.05 | U3.00R | 3.30 | 2.80 | 3.05 | 3.45R | J3.40R | 3.40S | 3.45 | 3.25RS | I3.55S | 3.30 | 3.35 | 3.50R | 3.50 | 3.50R | 3.00 | U3.15R | 3.00 | I2.75S | I2.75S | I2.90A |
| 5 | 3.05 | 2.95 | 2.95 | 3.00 | 3.25 | 3.00 | 3.30 | 3.65 | 3.30S | R | R | R | 3.55 | 3.40 | 3.40 | 3.40 | 3.50 | 3.30R | 3.20 | 3.20 | 3.15 | 3.05 | 2.90 | 2.85 |
| 6 | I2.95S | 2.90 | 3.15 | 3.20 | 3.35 | 2.85 | 3.20 | 3.50R | 3.50S | I3.45R | I3.45C | 3.15RS | U3.40S | C | C | C | C | C | 2.85 | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | I3.25C | 3.25 | 3.40 | 3.50 | 3.35 | 3.50 | 3.60 | 3.65R | 3.10RI | 3.10S | 3.50S | FS | A | A |
| 8 | FS | S | I3.20E | 3.20S | 3.30SU | 2.95E | 3.05S | 3.50S | I3.50R | 3.55 | 3.50 | 3.20 | I3.40R | 3.55R | 3.55 | 3.50 | 3.35S | 3.80R | 3.05 | 3.15 | I3.15S | 2.85S | 2.70S | 2.80S |
| 9 | I2.85E | 2.90 | I3.10S | 3.35S | 2.95S | 3.25S | 3.05S | 3.50 | 3.45S | 3.40SI | 3.50S | 3.55 | 3.35 | 3.35R | 3.40 | I3.45S | 3.60 | I3.35A | 3.05 | 3.05 | I3.00A | I3.00S | I3.05S | 2.95S |
| 10 | 2.90 | 2.85 | 2.90 | 2.95 | I3.15S | 3.35 | I3.45S | 3.50 | 3.65 | 3.75 | 3.55 | 3.30 | 3.25 | 3.40 | 3.30 | 3.55 | 3.50 | I3.40S | 3.15 | 3.05 | 3.10 | I3.20S | I3.05A | 2.95 |
| 11 | 2.85SI | I2.95S | I2.95S | 3.05 | 3.35S | 3.50S | 3.05 | 3.60 | 3.65 | 3.65 | 3.50 | 3.55R | 3.55S | I3.50R | 3.45R | 3.35 | 3.50S | 3.20 | 3.00 | I3.15S | I3.15S | 3.10 | I3.20S | I2.85S |
| 12 | 3.00 | 2.85S | 3.10S | 3.15 | I3.25S | 3.20 | 3.25 | 3.45S | 3.55SI | 3.40S | 3.40 | 3.55R | 3.50S | 3.50 | 3.45 | 3.50S | 3.55 | U3.15R | I3.30S | 3.55 | I3.30CI | 3.15SU | U3.05R | 3.00 |
| 13 | 2.80 | 2.90 | 2.80R | 2.95S | 3.05R | 3.20R | 3.00RU | 3.55R | 3.70 | 3.75R | 3.55 | J3.20R | 3.40RU | 3.40R | 3.45R | 3.55R | 3.60RI | J3.45R | 3.25R | I3.35S | A | A | 2.90RI | J3.05R |
| 14 | 2.95 | 2.90R | 2.95 | 3.05 | C | C | C | U3.70R | 3.65R | 3.55 | I3.50R | I3.40R | 3.35R | 3.45R | 3.50 | 3.55 | 3.50 | J3.60R | I3.50S | I3.45A | 2.90 | I2.80A | 2.90 | 2.85 |
| 15 | 2.95 | 2.95 | 2.80 | 2.90 | 3.10R | 3.00 | J3.50R | 3.50R | C | C | C | C | C | C | C | C | C | J2.90R | 3.30R | I3.50A | I3.10AI | 2.60AI | 2.60SU | 2.40R |
| 16 | 2.65R | 2.80 | 3.35 | 3.70 | I3.10A | 2.75 | I3.10A | 3.40 | 3.35RI | 3.30S | 3.45RI | 3.55R | 3.40 | 3.20 | 3.20 | 3.50 | 3.55 | J3.25RI | 3.20A | 3.10 | 3.30R | 3.00S | 3.05 | 2.85R |
| 17 | I3.00S | J3.00R | 3.00 | 2.75 | J3.00R | 2.95 | J3.20R | 3.60 | U3.40R | 3.40 | J3.05RU | 3.45R | 3.20 | 3.35 | 3.50 | 3.50 | 3.50 | J3.45R | 3.10 | U3.35R | I3.30A | 3.20 | A | A |
| 18 | I3.00A | 2.90 | 2.90RI | J3.00R | U3.20R | 3.40RU | 3.15R | 3.60S | 3.55S | 3.50R | 3.50 | 3.40 | 3.35R | 3.60 | 3.50 | 3.20H | 3.40 | 3.35 | 3.35RI | I3.35S | I3.20S | I3.10S | 2.85R | 3.05 |
| 19 | I3.00R | 2.90 | 2.90 | 2.90S | U3.05R | 3.00 | U3.10R | 3.60R | 3.60 | 3.60 | 3.75RI | 3.65R | 3.55 | 3.55 | 3.65 | 3.50 | 3.50RI | 3.45S | 3.50S | 3.30 | 3.20 | 3.20 | 3.15S | 2.80 |
| 20 | 2.90 | 3.00 | I2.90S | I3.00S | 3.10 | 2.95 | 3.05S | 3.45 | 3.60 | 3.25 | 3.45 | I3.40S | 3.45 | 3.45 | 3.55 | 3.55 | 3.40 | 3.40 | I3.25S | 3.15 | 3.15 | 3.20 | 2.95 | I2.75S |
| 21 | I2.80S | I2.85F | I2.95F | I3.00F | 3.30 | 3.35 | 2.95 | 3.30S | 3.60S | 3.65 | 3.45 | 3.50 | 3.20 | 3.40 | 3.55 | 3.35 | 3.60H | 3.20RI | 3.20S | 3.30S | 3.05 | 3.00 | 2.65 | 2.60 |
| 22 | 2.75 | 2.65 | 2.80S | I2.80C | I2.75C | 2.65 | 2.75F | 3.45S | 3.65S | 3.50 | 3.25RS | 3.15RS | U3.50R | 3.40 | 3.40 | 3.45 | 3.40 | 3.65 | 3.15 | 3.20S | 2.85SI | I2.70SR | I2.80S | I2.60S |
| 23 | 2.80 | 2.90 | 2.80S | 3.15 | I3.10S | 3.00 | I3.05S | 3.40 | I3.55S | 3.45 | 3.40S | I3.45S | 3.45 | 3.55S | 3.45 | 3.65 | 3.45S | 3.10 | I3.25S | I3.45S | FS | FS | FS | FS |
| 24 | FS | 2.95F | I3.05S | 2.80F | F | RF | 3.10 | 3.40 | I3.65S | 3.60 | I3.40R | 3.50R | 3.40 | J3.35R | 3.50R | U3.50R | 3.60 | 3.25R | 3.40RI | 3.40A | 3.10V | 3.00 | 2.70 | 2.50R |
| 25 | 3.05 | 2.75 | 2.80R | 3.20 | 3.20 | 3.05 | I3.20A | U3.50R | 3.50 | 3.50S | I3.25R | I3.35R | 3.45 | 3.55 | 3.55 | 3.65 | J3.70R | 3.30 | 3.65 | I3.30AU | 3.45R | 2.70RI | U2.60RI | 2.70F |
| 26 | I2.80F | I3.00E | 3.10 | 3.00S | 3.25 | 3.30 | 3.30 | J3.45R | 3.50RU | 3.40RI | 3.50R | 3.55 | 3.65R | 3.60R | 3.60 | U3.50R | U3.70R | 3.50 | A | A | A | I3.30A | I2.85A | I2.70A |
| 27 | I2.60A | 2.95 | 2.95 | 3.10 | 3.25 | 3.10 | 3.15RS | J3.40R | 3.80S | 3.60S | 3.45 | U3.50R | 3.20R | 3.45 | 3.65 | 3.80R | U3.80S | 3.40 | 3.35S | 3.45S | 3.20 | 3.30F | 2.85RI | 2.80S |
| 28 | I2.95E | I2.90S | 3.00 | I2.90S | 3.00 | 3.10R | 3.30 | J3.45S | 3.75 | 3.45R | 3.55 | U3.55R | 3.20 | 3.55RI | J3.70RU | 3.65R | I3.60S | 3.25 | 3.35S | 3.50S | 3.40 | 3.20S | U2.80RU | 3.20R |
| 29 | I3.10S | 3.10S | 3.00S | 3.15S | 3.10RU | 3.00S | 3.10RU | 3.60R | 3.65 | 3.75 | 3.40R | 3.60R | 3.50 | 3.40R | 3.70R | 3.75 | I3.65S | 3.30S | 3.20 | I3.25S | 3.00S | RS | RS | I3.10S |
| 30 | I3.00S U | 2.90RI | I2.90F | I2.95F | 2.95F | 3.00F | 2.95 | 3.35 | 3.55 | 3.50 | R | R | R | 3.60R | 3.65 | 3.50 | 3.60 | I3.35S | 3.25 | 2.90 | 2.95 | 2.75S | 2.80F | 2.95 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 27 | 28 | 29 | 29 | 27 | 27 | 28 | 29 | 28 | 27 | 26 | 25 | 27 | 28 | 28 | 28 | 28 | 29 | 29 | 28 | 26 | 25 | 25 | 26 |
| Median | 2.90 | 2.90 | 2.95 | 3.00 | 3.10 | 3.05 | 3.10 | 3.50 | 3.55 | 3.50 | 3.45 | 3.45 | 3.40 | 3.45 | 3.50 | 3.50 | 3.55 | 3.35 | 3.20 | 3.30 | 3.10 | 3.05 | 2.85 | 2.80 |

M(3000)F2

Sweep 1.60 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | C | A | A | L | R | L | L | L | | | | | | | | |
| 2 | | | | | | | | | | A | A | L | A | R | A | | | | | | | | | |
| 3 | | | | | | | | | | L | L | L | A | R | A | L | | | | | | | | |
| 4 | | | | | | | | A | A | A | A | A | L | [I 3.90 L] | 4.10 L | | | | | | | | | |
| 5 | | | | | | | | | L | L | L | R | 3.90 | L | L | | | | | | | | | |
| 6 | | | | | | | | | | L | C | L | 4.00 | C | C | C | | | | | | | | |
| 7 | | | | | | | | | C | C | C | A | L | A | L | | | | | | | | | |
| 8 | | | | | | | | | L | A | L | L | R S | A | A | | | | | | | | | |
| 9 | | | | | | | | | | 3.85 L | R | L | L | L | A | | | | | | | | | |
| 10 | | | | | | | | | | L | L | L | L | L | | | | | | | | | | |
| 11 | | | | | | | | | | L | L | R S | L | A | | | | | | | | | | |
| 12 | | | | | | | | | A | R | L | L | L | A | R | | | | | | | | | |
| 13 | | | | | | | | | L | R | A | A | L | R | L | | | | | | | | | |
| 14 | | | | | | | | | L | R | A | L | R | L | R | L | | | | | | | | |
| 15 | | | | | | | | | C | C | C | C | C | C | C | C | | | | | | | | |
| 16 | | | | | | | | | | L | A | L | A | R | L | L | | | | | | | | |
| 17 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 19 | | | | | | | | L | L | L | L | L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | | | | L | L | L | L | A | | | | | | | | | |
| 21 | | | | | | | | | | | L | L | L | L | | | | | | | | | | |
| 22 | | | | | | | | | | L H | L | L | L | L | | | | | | | | | | |
| 23 | | | | | | | | | | L | A | L | [I 4.20 L] | L | L | | | | | | | | | |
| 24 | | | | | | | | | | L | A | A | L | L | L | | | | | | | | | |
| 25 | | | | | | | | | | L | L H | L | A | A | L | | | | | | | | | |
| 26 | | | | | | | | | L | L | L H | L H | L H | L H | L | | | | | | | | | |
| 27 | | | | | | | | | L | L | R | L | L | L | L | L | | | | | | | | |
| 28 | | | | | | | | | L | L H | L | L | L | L | L | L | | | | | | | | |
| 29 | | | | | | | | | L | L H | R | L | L H | L | S | L | | | | | | | | |
| 30 | | | | | | | | | | L | L | 3.80 | 3.85 | 3.80 H | 4.15 | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | 1 | | 1 | 4 | 2 | 2 | | | | | | | | | |
| Median | | | | | | | | | | 3.85 | | 3.80 | 3.95 | 3.85 | 4.10 | | | | | | | | | |

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

The Radio Research Laboratories, Japan.

A 8

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | I240C | 240 | 270A | 260 | 230 | 245 | 255 | 255 | | | | | | | | |
| 2 | | | | | | | | | | 245 | 270 | 280 | 245 | 245 | 280R | | | | | | | | | |
| 3 | | | | | | | | | | 255 | 250 | 255 | 250 | 265 | 250 | 250 | | | | | | | | |
| 4 | | | | | | | | 255 | 250 | 240 | 260 | 245 | 240 | 245 | 245 | | | | | | | | | |
| 5 | | | | | | | | | 255 | 250 | 245 | 245 | 245 | 255 | 250 | | | | | | | | | |
| 6 | | | | | | | | | | 245 | I245C | 250 | 250 | C | C | C | | | | | | | | |
| 7 | | | | | | | | | C | C | I275C | 260 | 245 | 250 | 245 | | | | | | | | | |
| 8 | | | | | | | | | 230 | 240 | 235 | 250 | 230 | 240 | 240 | | | | | | | | | |
| 9 | | | | | | | | | | 245 | 245 | 230 | 250 | 245 | 250 | | | | | | | | | |
| 10 | | | | | | | | | | 230 | 240 | 240 | 255 | 255 | | | | | | | | | | |
| 11 | | | | | | | | | | 235 | 260 | 245 | 240 | 260 | | | | | | | | | | |
| 12 | | | | | | | | | 235 | 250 | 230 | 230 | 245 | 250 | 255 | | | | | | | | | |
| 13 | | | | | | | | | 220 | 225 | 250 | 260 | 265 | 255 | 250 | | | | | | | | | |
| 14 | | | | | | | | | 225 | 235 | 235 | 260 | 245 | 250 | 245 | 235 | | | | | | | | |
| 15 | | | | | | | | | C | C | C | C | C | C | C | C | | | | | | | | |
| 16 | | | | | | | | | | 230 | 245 | 225 | I250A | 265L | 265 | 235 | | | | | | | | |
| 17 | | | | | | | | | 250L | 250L | 245 | 235 | 240 | 250 | 240 | | | | | | | | | |
| 18 | | | | | | | | | 225 | 230 | 230 | 250 | 250L | 235 | 235 | | | | | | | | | |
| 19 | | | | | | | | 230 | 225 | 225 | 230 | 235 | 240 | 240 | 235 | | | | | | | | | |
| 20 | | | | | | | | | | | 250 | 250 | 250 | 250 | 240 | | | | | | | | | |
| 21 | | | | | | | | | | | 255 | 250 | 250 | 255 | | | | | | | | | | |
| 22 | | | | | | | | | | 270 | 245 | 250 | 250 | 250 | | | | | | | | | | |
| 23 | | | | | | | | | | 245 | 250 | 250 | 250 | 245 | 250 | | | | | | | | | |
| 24 | | | | | | | | | | 235 | I245A | 240 | 240 | 245 | 250R | | | | | | | | | |
| 25 | | | | | | | | | | 240 | 240 | 250 | 250 | 255 | 230 | | | | | | | | | |
| 26 | | | | | | | | | 230 | 230 | 245 | 245 | 235 | 240 | 255 | | | | | | | | | |
| 27 | | | | | | | | | 220 | 230 | 250 | 245 | 235 | 260 | 230 | 215 | | | | | | | | |
| 28 | | | | | | | | | 230 | 245 | 240 | 250 | 250L | 250 | 230 | 215 | | | | | | | | |
| 29 | | | | | | | | | 230 | 230 | 250R | 250 | 255 | 250R | 225S | 220 | | | | | | | | |
| 30 | | | | | | | | | | 255 | 265 | 255 | 275 | 250 | 240 | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 2 | 14 | 26 | 29 | 29 | 29 | 28 | 24 | 7 | | | | | | | | |
| Median | | | | | | | | 240 | 230 | 240 | 245 | 250 | 250 | 250 | 245 | 235 | | | | | | | | |

h'F2 | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 9

# IONOSPHERIC DATA

Nov. 1962 | 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 | 390 | 320 | 320 | 320A | 270 | 220 | 250 | 230 | C | A | A | I225A | I230A | 205 | 240 | I245B | 220 | 205 | 255 | 245 | 245 | 275 | I290C | 300 |
| 2 | I255A | I295A | 300A | 315 | 270 | 255 | 230 | 230 | 240 | I230A | I220A | 210 | I220A | I230A | I240A | 245 | 220 | 215 | 235A | 250 | I285A | I295A | 320 | I330C |
| 3 | I335A | 320 | I305A | 280 | 255 | 240 | 240 | 235 | 235 | 225A | 220 | 250 | I210A | 240 | I250A | 250 | 225 | I225C | 240 | 220 | 250 | 270 | 310 | 340 |
| 4 | 320 | 305 | 265 | 290 | 225 | E300S | 255 | A | A | A | A | A | 235 | 240 | 225 | 240 | 230 | 215 | 255 | 240 | 260 | 330A | 320 | I305A |
| 5 | 275A | 295 | 295 | 295 | 245 | 270 | 235 | 240 | 240 | 245 | 220 | I220A | 210 | 240 | 245 | 240 | 240 | 210 | 255 | 245 | 230 | 270 | 290 | 290 |
| 6 | 300 | 295 | 255 | 270 | 240 | 265 | 250 | 230 | 240 | 245 | I225C | 220 | 205 | C | C | C | C | C | 270 | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | I225C | I230A | 240 | I235A | 230 | 240 | 230 | 215 | 245 | 270 | 220 | 320 | I310A | I295A |
| 8 | 295 | 250 | 240 | 250 | 240 | E280S | 270 | 245 | 225 | I220A | 200 | 200 | I210A | I225A | I240A | 245 | 235 | 205 | 255 | 240 | 245 | 300 | 320 | 320 |
| 9 | 300 | 290 | 245 | 240 | 265 | 240 | 240 | 220 | 240 | 220 | 205 | 205 | 220 | I220A | I240A | 230 | 240A | I245A | 250 | 290 | I280A | 265 | 280 | 270 |
| 10 | I285A | 320 | 300 | 295 | 250 | 225 | 230 | 220 | 225 | 230 | 205 | 205 | 185 | 245 | 245 | 240 | 210 | A | A | 255 | 260 | 250 | I280A | 285 |
| 11 | 295 | I300A | 280 | 255 | 240 | 200 | 270 | 240 | 225 | 220 | 205 | 205 | 210 | I215A | 230 | 245 | 225 | 235 | I265A | 255 | 245 | 245 | I285A | I300S |
| 12 | 280 | 300 | 280 | 250 | 245 | 230 | 245 | 220 | I230A | 200H | I220A | I210R | 220 | I215A | 235 | 230 | 215 | 205 | 250 | 235 | I265C | I275S | 290 | 310 |
| 13 | 330 | 320 | 300 | 300 | 275 | 235 | 235 | 210 | 225 | I230A | I220A | I240A | 220A | I240A | 235 | 240 | 220 | I240A | 230 | 250 | A | A | 275A | 290 |
| 14 | 310 | 315 | 300 | 290 | C | C | C | 215 | 220 | 205 | I200A | 205 | I250R | 240 | 240 | 235A | 225 | 225 | 240A | I250A | 300A | I300A | 315 | 305 |
| 15 | 300 | 300 | 305 | 310 | 275 | 275 | 210 | 215 | C | C | C | C | C | C | C | C | C | 250 | 255 | I220A | I260A | I325A | 355 | 400 |
| 16 | 300 | 340 | 250 | 215 | I290A | 365R | I275A | 230 | 230 | 230 | A | A | A | A | 250 | 250 | 225 | 240 | I250A | I260A | 250 | 285 | 320 | 290 |
| 17 | 280 | 265 | 295 | 305 | 300 | 275 | 245 | 220 | 215 | 225 | 220R | 220 | 210 | 210 | 240 | 235 | 230 | 220 | 255 | 225 | I245A | 295 | A | A |
| 18 | A | 275A | 305 | 290 | 285 | 250 | 275 | 230 | 230 | 205 | 225 | 225 | 200R | 250 | 220R | 225 | 220 | 215 | 235 | 250 | 220 | I260A | 325 | 300 |
| 19 | 300 | 295 | 280 | 285 | 275 | 250 | 250 | 230 | I225R | 230 | 210 | 210R | 220 | 235 | 240 | 230 | 235A | I230A | 230 | 235 | 255 | 280 | 285 | 325 |
| 20 | 300 | 290 | 295 | 275 | 255 | 240 | 260 | 235 | 230 | 220 | 230 | 230 | 240 | 230 | I240A | 230 | 230 | 230 | I250A | 255A | 260 | I255A | 305 | 340 |
| 21 | 325 | 290 | 315 | 275 | 245 | 240 | E270E | 240 | 240 | 235 | 235 | 220 | 210 | 240 | 245 | 235 | 220 | 240 | 230 | 250 | 250 | 255 | E325E | 340 |
| 22 | 320 | 335 | 315 | I300C | I325C | 330 | 290 | 215 | 230 | 220 | 240 | 245 | 235 | 245 | 240 | 240 | 240 | 215 | 245 | 240 | 275A | 315 | 290 | 315 |
| 23 | 320A | 270 | 300A | 250 | 255 | 265 | I270A | 245 | 240 | 210 | I200A | I205A | 200 | 240 | 240 | 230 | 210 | 245 | 230 | 230 | E280E | 255 | E340E | E280E |
| 24 | 295A | 290 | I290A | 290 | 240 | 250 | 240 | 225 | 230H | 220 | A | A | 225 | I245A | 235 | 225 | 220A | 235A | 240 | I250A | 290A | 300 | 340 | 340 |
| 25 | 300 | 330 | 340 | 275 | 255 | 255 | I255A | 225 | 225 | 200 | 220H | 205H | A | A | 235 | 220 | 220 | 270A | 240 | I255A | I245A | I255A | 345 | 330 |
| 26 | 330 | 295 | 270 | 285 | 260 | 250 | 225 | 230 | 225 | I220A | 190H | 205H | 200H | 200H | 250 | 225 | 210 | 210 | A | A | A | A | I325A | I325A |
| 27 | I315A | 300 | 305 | 270 | 250 | 275 | 255 | 230 | 225 | 225 | 205H | 225 | 230 | 225 | 240 | 225 | 205 | 235 | 230 | 250 | 255 | 255 | 300 | I310A |
| 28 | 290S | 305 | 300 | 300 | 285 | 255 | 230 | 220 | 225 | 200H | 215 | 210 | 200 | 200H | 235 | 220 | 210 | 250 | 250 | 230 | 220 | 250 | 300 | I290S |
| 29 | 255 | 280 | 290 | 270 | 280 | 250 | 255 | 225 | 230 | 210H | 215H | 200 | 215H | I240S | I235S | 235 | 215 | 235 | 260 | 250 | 260 | 255S | 265 | 300S |
| 30 | 280 | 295 | 275 | 275 | 295 | 295 | 245 | 240A | 240 | 240 | 240 | 245 | 210 | 205H | 220 | 240 | 230 | 225 | 240 | E290E | 300 | 330A | 305 | 270 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 29 | 29 | 29 | 28 | 26 | 27 | 28 | 26 | 26 | 25 | 26 | 27 | 26 | 28 | 28 | 28 | 28 | 28 | 27 | 26 | 27 | 26 | 28 |
| Median | 300 | 295 | 295 | 285 | 260 | 250 | 250 | 230 | 230 | 220 | 220 | 215 | 215 | 235 | 240 | 235 | 220 | 230 | 250 | 250 | 255 | 275 | 305 | 305 |

h'F

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 10

30

# IONOSPHERIC DATA

Nov. 1962 | 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 | 110 | 105 | 110 | 105 | 110 | 110 | 105 | 115 | C | 110 | 105 | 105 | 105 | G | G | B | B | E | E | E | E | E | C | E |
| 2 | 110 | 105 | 105 | 105 | 105 | E | E | 170 | 140 | 120 | 115 | 110 | 110 | 105 | 110 | 125 | 120 | E | 120 | 115 | 110 | 115 | 110 | C |
| 3 | 110 | 105 | 105 | 105 | E | E | E | G | G | 115 | 115 | 110 | 105 | 105 | 105 | 105 | 105 | C | E | E | E | 110 | E | 110 |
| 4 | E | 110 | 105 | 105 | 110 | E | E | 120 | 115 | 110 | 110 | 110 | G | G | G | G | G | E | E | E | E | 105 | 120 | 120 |
| 5 | 120 | 110 | E | 110 | 110 | E | E | 130 | 125 | 125 | 120 | 110 | G | G | G | G | 105 | 105 | 105 | 105 | E | E | 115 | E |
| 6 | 105 | 105 | E | 105 | 100 | E | E | G | G | G | C | G | G | C | C | C | C | C | E | C | C | C | C | C |
| 7 | C | C | C | C | C | C | C | C | C | C | C | 115 | 110 | 105 | 105 | 110 | 105 | 110 | E | E | E | E | 120 | 110 |
| 8 | 110 | 110 | E | 110 | E | S | E | G | 125 | 120 | 120 | 110 | 110 | 105 | 100 | 105 | G | E | E | E | E | E | E | E |
| 9 | E | E | E | E | E | E | E | G | G | G | G | 115 | 110 | 110 | 105 | 100 | 100 | 100 | E | 120 | 115 | 120 | E | E |
| 10 | 110 | E | E | E | E | E | E | G | G | G | G | G | 120 | G | G | 105 | 130 | 120 | 120 | 110 | 115 | 105 | 105 | 110 |
| 11 | 105 | 105 | E | E | E | E | E | 150 | 145 | 145 | 135 | G | G | 105 | 105 | 110 | 105 | 105 | 105 | 120 | 110 | 110 | 110 | S |
| 12 | 105 | E | E | E | E | E | E | 120 | 115 | 120 | 110 | G | 110 | 105 | 110 | 115 | 125 | 110 | 110 | 110 | C | 110 | 110 | 105 |
| 13 | 105 | 110 | 110 | 110 | 105 | 105 | E | 150 | 125 | 115 | 110 | 110 | 110 | 110 | 125 | 140 | 130 | 115 | 120 | 120 | 110 | 115 | 110 | E |
| 14 | E | 105 | 105 | 105 | C | C | C | B | 115 | G | 110 | 110 | G | G | G | 145 | 125 | 120 | 120 | 115 | 110 | 105 | 105 | 105 |
| 15 | 105 | E | E | E | E | 120 | E | 125 | C | C | C | C | C | C | C | C | C | E | 120 | 120 | 120 | 120 | 125 | E |
| 16 | E | E | E | E | 125 | E | 120 | 125 | 120 | 125 | 115 | 120 | 115 | 115 | 120 | 120 | G | 140 | 125 | 115 | 115 | 115 | 115 | 115 |
| 17 | 115 | E | E | 110 | 110 | 115 | 120 | 120 | 125 | G | G | G | G | G | G | 115 | 115 | 115 | 115 | 115 | 110 | 115 | 105 | 105 |
| 18 | 110 | E | E | E | E | 105 | E | G | G | 120 | G | G | G | G | G | G | G | E | 115 | 105 | 105 | 105 | 100 | 100 |
| 19 | E | E | E | E | E | E | E | G | 125 | 120 | G | G | S | G | G | G | 110 | 100 | 100 | S | 105 | 100 | E | E |
| 20 | E | E | E | E | E | E | E | G | G | 125 | 120 | 120 | 125 | G | 120 | 120 | 115 | 110 | 105 | 110 | E | 105 | E | E |
| 21 | E | E | E | E | E | E | E | G | 150 | G | 120 | 140 | G | 120 | G | G | G | E | E | 110 | E | 130 | E | E |
| 22 | E | E | 120 | C | C | E | E | 145 | 130 | 135 | 130 | 120 | 130 | 105 | 105 | 105 | 140 | 130 | E | 105 | 110 | E | E | 110 |
| 23 | 110 | 110 | 110 | 105 | 105 | 105 | 120 | 115 | 110 | 110 | 105 | 105 | 105 | G | 105 | G | 105 | 105 | E | E | E | E | E | E |
| 24 | 110 | E | 110 | 105 | 110 | 100 | 100 | G | G | 120 | 105 | 110 | 105 | 105 | 105 | 100 | 100 | 105 | 105 | 115 | 110 | 105 | E | E |
| 25 | E | 120 | 105 | E | E | 125 | 120 | 115 | 115 | 120 | G | G | 105 | 105 | 105 | 105 | 105 | 105 | 100 | 115 | 110 | 110 | 115 | E |
| 26 | 105 | 110 | E | E | E | E | E | 115 | 110 | 110 | 125 | G | G | G | G | 175 | 115 | 150 | 115 | 110 | 110 | 110 | 110 | 115 |
| 27 | 110 | 115 | 115 | E | 115 | E | E | 130 | 120 | 125 | 135 | 130 | 105 | 120 | 120 | 125 | 110 | 105 | E | 130 | E | 110 | 105 | 110 |
| 28 | 105 | 105 | 105 | 105 | 105 | E | E | S | 170 | G | 125 | G | 110 | G | 170 | 155 | 110 | 105 | 130 | 120 | 115 | E | E | E |
| 29 | E | E | E | E | E | 120 | E | 120 | 110 | G | G | G | G | G | S | 110 | 110 | E | E | E | 130 | S | E | E |
| 30 | E | E | E | E | E | E | E | 120 | 120 | G | 105 | G | G | G | G | G | G | E | E | E | E | 115 | 120 | E |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 18 | 15 | 12 | 13 | 12 | 9 | 6 | 17 | 20 | 19 | 20 | 17 | 17 | 14 | 16 | 20 | 21 | 19 | 17 | 20 | 17 | 21 | 17 | 12 |
| Median | 110 | 110 | 110 | 105 | 110 | 110 | 120 | 120 | 120 | 120 | 115 | 110 | 110 | 105 | 105 | 110 | 110 | 110 | 115 | 115 | 110 | 110 | 110 | 110 |

h'Es

Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | f | f | fz | fz | f | f | f | lz | | lz | lz | l | l | | | | | | | | | | | |
| 2 | fz | fz | fz | f | fz | | | h | h | h | Cz | C | lz | l | l | C | Cz | | f | f | f | fz | f | |
| 3 | f | fz | fz | fz | | | | | | l | l | lz | lz | lz | l3 | lz | lz | | | | | f | | f |
| 4 | | f | fz | fz | fz | | | Cz | lz | lz | l | Cz | | | | | | | | | | f | fz | f4 |
| 5 | f | f | | f | fz | | | h | hz | h | C | C | | | | | l | f | f | f | | | f | |
| 6 | f | f | | fz | f | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | Cz | lz | lz | lz | l | lz | f | | | | | fz | fz |
| 8 | f | f | | f | | | | | h | Cz | C | C | l | lz | lz | l | | | | | | | | |
| 9 | | | | | | | | | | | | C | l | lz | lz | lz | lz | fz | | fz | fz | f | | |
| 10 | fz | | | | | | | | | | | | h | | | lz | h | fz | fz | f | f | fz | fz | fz |
| 11 | fz | fz | | | | | | hz | h | h | h | | | lz | lz | lz | l3 | fz | f | f | fz | fz | f | |
| 12 | fz | | | | | | | hz | Cz | Cz | l | | l | lz | l | C | C | f | f | f | | fz | fz | fz |
| 13 | f | f | f | f | f | fz | | h | C | Cz | l | lz | l | l | C | h | h | fz | f4 | fz | fz | fz | f | |
| 14 | | f | f | f | | | | | C | | l | l | | | | h | h | fz | fz | fz | fz | f3 | f | fz |
| 15 | f | | | | | f | | h | | | | | | | | | | | fz | fz | f | f | f | |
| 16 | | | | | f4 | | fz | C | C | h | C | C | lz | l | C | C | | f | fz | fz | fz | fz | f | f |
| 17 | fz | | | f | f | f | f | C | h | | | | | | | C | C | f | f | f | fz | f | fz | fz |
| 18 | fz | | | | | fz | | | | C | | | | | | | | | f | fz | f | f | f | f |
| 19 | | | | | | | | | h | C | | | | | | | l | f | f | | f | f | | |
| 20 | | | | | | | | | | h | C | C | h | | C | C | l | f3 | fz | fz | | f | | |
| 21 | | | | | | | | | h | | C | h | | C | | | | | | fz | | f | | |
| 22 | | | f | | | | | hz | h | h | hz | h | h | lz | l | lz | hz l | f | | fz | f | | | f |
| 23 | fz | fz | fz | f | f | f | f3 | lz | l3 | lz | lz | lz | l | | l | | lz | fz | | | | | | |
| 24 | fz | | fz | fz | f | f | f | | | l | lz | lz | l | l | l | l | lz | lz | f | fz | f | fz | | |
| 25 | | f | f | | | fz | f3 | fz | lz | C | | | lz | lu | l | lz | l | fz | fz | fz | fu | f | f | |
| 26 | f | f | | | | | | Cz | lz | l3 | h | | | | | h C | l | f | fz | f3 | fz | fz | fz | f3 |
| 27 | f3 | fz | f | | f | | | h | Cz | h | h l | h l | l | h | C | h | f | f | | f | | fz | f | fz |
| 28 | f | fz | fz | f | f | | | | h | | C | | l | | h | h | fz | fz | f | fz | f | | | |
| 29 | | | | | | f | | Cz | Cz | | | | | | | l | f | | | | f | | | |
| 30 | | | | | | | | C3 | C | | l | | | | | | | | | | | f | fz | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

Types of Es | Sweep 160 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

A 12

# IONOSPHERIC DATA

Nov. 1962 | 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 | u 3.6 S | 3.5 S | I 3.6 A | 3.7 | 3.9 | 3.2 | 4.0 S | 6.2 | 7.0 | 8.3 u | 8.2 R | J 9.5 R | 10.1 R | 8.7 | 7.4 | J 8.2 R | 7.5 | 5.0 R | 4.0 S | I 4.0 S | 3.8 u | 3.4 R | 3.6 | J 3.6 F |
| 2 | 3.8 | 3.3 | 3.4 | 3.3 | 3.8 | 3.3 u | 3.7 R | J 6.3 R | 7.3 | 7.6 | 8.7 | 9.1 | 7.8 | 8.3 | J 8.3 R | 7.5 R | 6.2 | 5.9 | 4.5 | J 4.4 S | 3.2 u | 3.1 S | I 3.3 S | 3.2 R |
| 3 | 3.4 | 3.4 | 3.7 | 3.5 | 3.8 | I 2.7 S | 3.6 u | 6.5 R | 8.7 | 7.3 | J 8.9 R | 9.7 | u 10.1 R | 9.6 R | 7.2 | 7.7 | 6.9 | 5.9 u | 3.9 R | 4.0 | 3.6 | 3.6 | 3.5 | 3.6 |
| 4 | 3.7 | 3.7 | 3.8 | 3.6 | 4.0 R | 2.9 R | 4.0 | 6.1 R | J 7.8 R | C | C | C | C | C | C | C | C | C | C | C | C | I 3.2 S | 3.5 R | 3.5 |
| 5 | 3.4 | 3.3 | 3.4 | C | C | 3.0 | 4.1 | 6.0 | I 8.4 C | 9.8 | 10.1 | 8.2 | u 8.3 R | C | C | u 7.5 R | J 7.4 R | C | 3.8 | 4.2 | I 4.0 S | I 3.4 C | I 3.3 C | 3.2 |
| 6 | 3.3 | 3.5 | 3.6 | 3.7 | 3.0 | 2.5 | 3.8 | 7.0 | J 6.6 R | I 7.7 C | J 8.9 R | J 7.7 S | I 7.6 R | 8.5 | 9.0 | 8.0 S | I 6.6 C | J 5.4 S | 4.2 S | 3.9 | u 4.0 S | 3.9 S | 4.0 | 3.9 S |
| 7 | I 3.8 C | 3.6 | 3.7 F | 4.8 S | 2.7 | 2.9 | 4.5 R | 6.6 S | 7.9 S | 7.9 | 8.1 | J 10.2 R | 9.5 | 9.2 | 7.9 | I 8.4 C | 7.7 | 5.1 | I 3.9 C | I 3.9 C | 3.8 | 3.2 | 3.2 S | I 3.4 C |
| 8 | 3.4 | 3.8 | 3.3 | 3.4 | 3.3 | J 3.2 S | 3.8 | u 7.5 S | 8.9 | 8.9 | 8.8 R | 8.0 | 9.0 | 9.3 | 8.5 | 7.5 | 6.7 | 6.7 | 3.9 | 4.0 | 3.5 | 3.1 | 3.0 | 3.4 |
| 9 | u 3.5 S | u 3.8 S | 3.7 | 3.4 | 3.1 | 3.0 | 3.9 | 6.4 | 8.2 | J 9.1 R | D 10.3 C | J 8.7 C | 8.9 C D | 9.7 C | J 9.3 C | u 8.8 C | u 7.9 C | I 5.3 C | I 4.2 C | u 3.8 C | I 3.8 C | I 3.9 C | I 3.7 C | I 3.7 C |
| 10 | I 3.6 C | J 3.5 C | u 3.6 C | J 3.6 C | J 4.3 C | J 3.1 C | L 4.1 C | J 6.7 C | u 7.1 C | C | C | C | 7.9 | u 10.4 R | 9.0 | 8.0 | 6.7 | 5.0 | I 3.1 A | 3.1 S | I 3.6 A | 3.4 | 3.3 | I 3.1 A |
| 11 | 3.1 | 3.2 | I 3.4 A | 3.7 | 4.2 | I 4.0 C I | 4.7 C | 5.9 | 8.9 | u 7.9 R | 7.1 | 7.7 | 8.0 | 7.9 | 8.1 | 6.8 | 7.0 | 5.0 | 3.5 | I 3.8 A | u 3.9 S | u 3.2 S | 2.9 | I 3.0 A |
| 12 | 3.1 | 3.3 S | 3.5 | J 3.8 R | 3.4 | 3.0 R | 3.9 | 5.7 | u 7.1 S | I 8.1 A | 10.1 R | 7.8 | 7.7 R | C | C | C | 6.9 | 5.0 | 3.7 | 3.7 | 3.2 | u 2.7 S | 2.9 A | I 3.0 A |
| 13 | I 3.1 A | I 3.2 A | 3.5 | 3.4 | 3.5 | 3.1 | J 3.8 S | 6.8 | 6.3 R | 7.0 | I 8.1 A I | 7.9 A | 8.6 | 9.4 | 8.0 R | 6.7 | 6.7 | 4.5 R | 4.8 R | 3.0 S | 3.1 S | 2.5 | I 2.8 S | 3.0 S |
| 14 | J 3.1 S | I 3.0 C | 3.2 | 3.2 | 3.3 | 3.3 | 3.8 S u | 6.5 S | 6.5 S | 7.2 | 7.8 | 8.6 | 8.3 | 8.8 | 8.9 | u 7.7 S | 6.3 R | 4.5 | I 3.7 A | I 3.1 A | u 2.5 S | 2.9 S | 3.2 | 3.3 |
| 15 | u 3.3 S | J 3.3 S | 3.3 | 3.2 | 3.4 | 3.4 | 3.8 | 5.7 | 6.9 | 7.7 | 7.5 | 8.9 | 9.2 | 9.4 | 8.9 | 7.8 | 5.8 | 5.0 | 6.4 | 4.0 | u 2.5 S | I 2.9 A | u 2.8 S | I 3.0 A |
| 16 | I 3.1 A | 3.3 | 4.0 | I 2.3 A | I 2.2 A | 2.4 | 3.2 | 6.5 | 8.4 | 10.1 | 11.1 | 8.4 | 7.0 | 7.5 | 8.2 | 8.8 | 6.9 | 5.8 | 4.8 | I 4.1 A | 3.7 | 3.2 | u 3.0 S u | 4.0 R |
| 17 | 4.0 | 3.4 | 3.4 | 3.3 | 3.3 | 3.1 | 3.7 | 6.3 | 7.4 R | 8.5 | 8.8 | 10.0 | 8.3 | 7.0 | 6.4 | 6.6 | 6.1 | 6.2 R | 5.2 | 4.6 | u 3.1 S | I 2.8 A | 3.1 | 3.0 |
| 18 | 3.0 | 2.9 | 2.8 | 2.9 | 3.0 | 2.9 R | 3.2 | 6.5 | 7.9 | 8.7 | 7.9 | 7.6 | 7.6 | 7.8 R | 6.7 | 6.1 | 6.2 | 5.2 | 4.5 | u 3.7 S | I 3.5 S u | 2.5 F | J 2.5 S | 2.9 |
| 19 | 2.9 | 2.9 | 3.2 | 3.2 | 3.2 | 3.1 | 3.2 | 6.7 | 7.8 | 7.0 | 8.1 | 8.9 | 7.5 | 6.9 | 6.7 | 5.9 R | 5.3 R | 4.9 | 4.4 | 3.0 | u 2.5 S | 2.5 | 2.7 S | 3.0 |
| 20 | 3.1 | 3.1 | 3.3 | 3.4 | 3.1 | 2.6 | 3.1 | 6.0 | J 7.5 R | 6.6 | 8.2 | 8.8 | 7.5 | 8.1 R | 6.7 | 6.0 | 5.7 | 4.8 R | 4.1 R | 3.0 | 3.1 | u 2.6 S | 2.5 | 2.9 |
| 21 | 3.2 | 3.1 | 3.3 | 3.5 | 3.5 | 2.6 | 2.6 R | 5.2 R | 6.2 | I 6.6 C | 6.9 | 7.6 | 7.5 | 8.0 | 7.2 | 6.9 | 5.9 | 4.6 | 4.3 | 3.1 | 3.0 | 3.0 | 2.8 | I 3.0 A |
| 22 | 3.1 | 3.2 | 3.3 | 3.5 | 3.4 | 3.7 | 3.7 u | 7.5 R | 6.9 | 6.8 H | 8.1 R | 8.1 | 8.5 | 8.1 | J 7.1 R | 7.3 R | 6.9 | 6.4 | I 4.2 A | I 3.9 A | I 3.9 A | 3.6 | 4.0 S | 4.0 |
| 23 | 3.9 | 3.8 | 3.9 | 4.1 | 3.7 | 3.8 | 4.1 S u | 7.4 S | u 7.5 A | 7.8 | u 8.0 R | 9.0 | 7.4 R | u 7.6 R | 7.6 | 7.1 | 5.7 | 4.2 | 4.8 | 4.0 | 2.5 | J 3.0 S | I 3.0 S J | 3.4 F |
| 24 | 3.1 | I 2.8 A | 3.0 | 3.3 | 3.3 | J 3.4 F | 3.4 | J 6.2 S | 7.4 | 8.1 R | J 8.4 R | I 8.0 R | u 7.9 R | 8.1 | 7.7 | 6.6 | 6.0 | 3.7 | I 3.0 S | 3.2 | 2.4 | A | A | A |
| 25 | J 3.1 S | 3.9 | 3.0 | 3.6 | 3.5 | 2.4 | 2.7 S | 5.6 | 6.2 R | J 7.6 R | 8.4 | 10.1 | 9.6 | 7.9 R | 7.3 | 6.6 | 5.3 | 4.0 | 3.1 | J 2.5 S | I 3.2 A | 2.4 | L 2.4 S u | Z 7 S |
| 26 | I 3.0 F | I 3.4 F | 3.2 | 3.0 | 3.1 | 2.7 | 2.9 | 5.2 | 7.2 | 8.2 | 7.8 R | 8.0 | 7.3 R | 7.4 R | 6.7 | 6.5 | 5.8 S | 4.2 R | 3.2 S | 2.7 | 2.5 | L 2.7 A | u 3.3 S u | 3.0 S |
| 27 | 3.0 | 3.0 | 3.1 | 3.2 | 3.3 | 2.6 S | I 3.4 S | 6.3 S | 7.7 S | 7.0 | 7.8 R | 7.8 R | 7.3 | 7.8 R | u 8.0 R | 7.4 R | 5.5 R | 3.2 | 3.1 S | 3.0 S | 3.1 | 3.8 | 3.4 S | 3.7 S |
| 28 | 4.0 S | 4.0 S | 3.9 F | 4.0 | I 3.8 C | 3.7 | 4.4 S | 5.0 | 6.7 S | 6.9 | 8.9 | 7.0 | 6.9 | 7.8 R | u 7.3 S | 6.8 | 4.9 | 3.7 | u 4.5 R | 3.9 | L 2.7 A | 2.7 | 2.6 S | 2.9 |
| 29 | 3.1 | 3.1 | 3.2 | 3.4 | 3.4 | 3.4 | 4.0 S u | 6.0 S | 7.7 S | 6.1 | J 7.1 R | 8.4 | 7.4 | 6.4 | 6.2 | 5.9 | J 5.3 R | 3.7 | J 2.9 R | I 2.8 A | 3.5 | 3.3 | 3.5 | 3.7 |
| 30 | u 3.4 R | 3.4 | 3.4 | 3.3 | J 3.2 R | 2.4 | 2.8 | 5.9 | 5.5 | 6.8 | 8.3 | J 9.0 R | 9.2 | 7.4 | 6.2 | 6.1 | J 6.2 R | 4.2 | J 3.1 R | 2.5 | J 3.2 R L | 3.2 F | 3.6 | 3.3 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 28 | 28 | 28 | 29 | 27 | 27 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 |
| Median | 3.2 | 3.3 | 3.4 | 3.4 | 3.4 | 3.0 | 3.8 | 6.3 | 7.4 | 7.7 | 8.2 | 8.4 | 7.9 | 8.1 | 7.6 | 7.2 | 6.2 | 5.0 | 4.0 | 3.8 | 3.2 | 3.1 | 3.2 | 3.2 |
| U.Q. | 3.6 | 3.5 | 3.6 | 3.6 | 3.8 | 3.3 | 4.0 | 6.6 | 7.9 | 8.2 | 8.8 | 9.0 | 9.0 | 9.2 | 8.3 | 7.8 | 6.9 | 5.4 | 4.5 | 4.0 | 3.8 | 3.4 | 3.5 | 3.6 |
| L.Q. | 3.1 | 3.1 | 3.2 | 3.2 | 3.2 | 2.7 | 3.2 | 5.9 | 6.9 | 7.0 | 7.8 | 7.8 | 7.5 | 7.6 | 6.7 | 6.6 | 5.8 | 4.2 | 3.4 | 3.0 | 2.8 | 2.7 | 2.8 | 3.0 |
| Q.R. | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.8 | 0.7 | 1.0 | 1.2 | 1.0 | 1.2 | 1.5 | 1.6 | 1.6 | 1.2 | 1.1 | 1.2 | 1.1 | 1.0 | 1.0 | 0.7 | 0.7 | 0.6 |

foF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | U 4.0 L | L | L | L | L | S | S | | | | | | | | |
| 2 | | | | | | | | | | L | L | A | A | A | S | S | | | | | | | | |
| 3 | | | | | | | | | | | L | A | L | S | S | | A | | | | | | | |
| 4 | | | | | | | | | L | C | C | C | C | C | C | C | C | C | | | | | | |
| 5 | | | | | | | | | C | L | S | L | S | C | C | | | C | | | | | | |
| 6 | | | | | | | | | | C | L | L | L | L | L | L | C | | | | | | | |
| 7 | | | | | | | | | | L | L | L | S | L | L | C | | | | | | | | |
| 8 | | | | | | | | | | L | L | A | L | A | A | | | | | | | | | |
| 9 | | | | | | | | | | C | C | C | C | L | C | C | C | C | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | L | L | S | S | | | | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | |
| 12 | | | | | | | | | | A | L | A | | C | C | C | | | | | | | | |
| 13 | | | | | | | | | L | L | A | A | A | L | L | | | | | | | | | |
| 14 | | | | | | | | | | | L | L | | L | L | | | | | | | | | |
| 15 | | | | | | | | | | 3.8 | L | L | L | L | L | L | | | | | | | | |
| 16 | | | | | | | | A | | | L | L | L | A | A | | | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | | | | | | | | | | |
| 19 | | | | | | | | | | L | U 4.1 L | U 4.8 L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 21 | | | | | | | | | | C | L | | L | L | L | | | | | | | | | |
| 22 | | | | | | | | | L | | | L | L | L | | | | | | | | | | |
| 23 | | | | | | | | A | A | A | A | A | L | | L | | | | | | | | | |
| 24 | | | | | | | | | | A | A | | L | L | A | L | | | | | | | | |
| 25 | | | | | | | | | | | | L | L | A | | L | | | | | | | | |
| 26 | | | | | | | | | L | | S | L | L | L | L | | | | | | | | | |
| 27 | | | | | | | | | | | | S | S | | L | L | | | | | | | | |
| 28 | | | | | | | | | | L | L | L | S | L | L | | L | | | | | | | |
| 29 | | | | | | | | | L | L | L | L | U 4.2 L | L | | | | | | | | | | |
| 30 | | | | | | | | | | L | S | L | L | L | L | L | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | 2 | 1 | 1 | 1 | | | | | | | | | | | |
| Median | | | | | | | | | | U 3.9 | U 4.1 | U 4.8 | U 4.2 | | | | | | | | | | | |

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 2

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | S | S | S | S | R | S | S | S | S | | | | | | |
| 2 | | | | | | | S | $^{u}$z.40$^{R}$ | S | S | S | A | A | A | S | A | A | S | | | | | | |
| 3 | | | | | | | S | R | S | S | S | A | S | S | S | A | S | S | | | | | | |
| 4 | | | | | | | B | R | A | C | C | C | C | C | C | C | C | C | | | | | | |
| 5 | | | | | | | S | S | C | S | S | S | S | C | C | A | S | C | | | | | | |
| 6 | | | | | | | S | S | A | C | S | S | S | S | S | S | C | S | | | | | | |
| 7 | | | | | | | S | S | S | S | S | A | S | A | S | C | S | S | | | | | | |
| 8 | | | | | | | S | B | $^{u}$z.60$^{R}$ | A | S | A | S | A | A | S | S | $^{u}$z.00$^{S}$ | | | | | | |
| 9 | | | | | | | S | S | $^{u}$z.40$^{R}$ | C | C | C | C | C | C | C | C | C | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | B | R | S | $^{I}$z.65$^{S}$ | S | S | | | | | | |
| 11 | | | | | | | C | C | C | S | S | S | R | S | S | S | S | | | | | | | |
| 12 | | | | | | | S | S | $^{u}$z.60$^{S}$ | A | A | A | S | C | C | C | A | | | | | | | |
| 13 | | | | | | | S | S | $^{u}$z.50$^{S}$ | z.65$^{R}$ | A | A | A | A | z.85$^{R}$ | S | A | | | | | | | |
| 14 | | | | | | | S | A | A | S | S | A | S | S | S | S | S | | | | | | | |
| 15 | | | | | | | S | A | R | S | S | S | B | S | S | S | A | | | | | | | |
| 16 | | | | | | | S | A | A | A | R | R | R | A | A | R | A | | | | | | | |
| 17 | | | | | | | S | S | A | S | A | R | R | z.50$^{R}$ | $^{I}$z.55$^{S}$ | $^{u}$z.60$^{R}$ | $^{u}$z.00$^{R}$ | | | | | | | |
| 18 | | | | | | | S | S | A | S | S | S | S | S | S | S | S | | | | | | | |
| 19 | | | | | | | S | S | $^{u}$z.60$^{S}$ | S | S | S | S | S | S | S | S | | | | | | | |
| 20 | | | | | | | S | S | $^{I}$z.55$^{R}$ | $^{u}$z.75$^{R}$ | $^{I}$3.00$^{R}$ | $^{I}$3.05$^{S}$ | S | A | R | z.60 | A | | | | | | | |
| 21 | | | | | | | S | z.45 | $^{I}$z.60$^{S}$ | C | S | A | S | S | A | $^{I}$z.50$^{R}$ | $^{I}$z.10$^{S}$ | | | | | | | |
| 22 | | | | | | | S | S | $^{I}$z.40$^{R}$ | $^{u}$z.65$^{S}$ | $^{I}$3.00$^{S}$ | 3.10 | $^{I}$3.10$^{R}$ | S | A | S | S | | | | | | | |
| 23 | | | | | | | S | A | A | A | A | A | A | A | S | S | A | | | | | | | |
| 24 | | | | | | | S | S | S | A | A | A | R | A | A | A | S | | | | | | | |
| 25 | | | | | | | S | z.00$^{S}$ | A | A | A | S | B | A | A | S | S | | | | | | | |
| 26 | | | | | | | S | $^{I}$1.80$^{S}$ | $^{I}$z.20$^{S}$ | A | S | S | S | $^{I}$z.90$^{S}$ | $^{I}$z.80$^{S}$ | z.50 | S | | | | | | | |
| 27 | | | | | | | S | S | R | S | S | S | S | S | S | S | S | | | | | | | |
| 28 | | | | | | | S | S | z.30 | z.60$^{S}$ | $^{u}$3.00$^{R}$ | S | A | A | A | A | S | | | | | | | |
| 29 | | | | | | | S | S | A | z.50$^{S}$ | $^{I}$z.90$^{R}$ | S | S | R | A | R | S | | | | | | | |
| 30 | | | | | | | S | S | R | S | S | S | S | R | $^{I}$z.70$^{R}$ | $^{I}$z.60$^{S}$ | z.10 | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 4 | 10 | 5 | 4 | 2 | 1 | 2 | 4 | 6 | 3 | 1 | | | | | | |
| Median | | | | | | | | $^{u}$z.20 | $^{u}$z.50 | z.65 | $^{u}$3.00 | $^{u}$3.10 | $^{u}$3.10 | $^{u}$z.70 | $^{u}$z.75 | $^{u}$z.60 | $^{u}$z.10 | $^{u}$z.00 | | | | | | |

foE

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 3

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | 4.7 | 3.1 | 2.4 | 2.1 | S | S | S | S | S | S | S | 2.9 | S | S | S | S | S | S | S | S | S | S |
| 2 | S | S | S | E | 2.1 | E | S | G | S | S | S | 10.4 | 4.9 | 4.8 | S | 3.0 | 2.4 | S | S | S | S | S | S | S |
| 3 | S | S | E | E | E | S | S | G | 3.2 | S | S | 5.3 | S | S | S | 4.2 | 6.0 | 3.7 | 4.0 | E | S | S | 1.9 | 3.8 |
| 4 | 3.0 | 2.9 | 2.9 | 2.4 | 3.0 | S | B | G | 2.8 | C | C | C | C | C | C | C | C | C | C | C | C | 2.4 | S | 2.5 |
| 5 | 3.7 | S | S | C | C | S | S | S | C | S | S | S | S | C | C | 4.1 | 4.0 | C | 3.1 | S | S | C | C | S |
| 6 | S | S | S | E | E | S | S | S | G | C | S | S | S | S | S | S | C | S | E | S | S | E | S | S |
| 7 | C | S | 4.4 | 2.9 | 2.3 | 2.1 | S | S | S | S | S | 3.7 | S | 5.1 | S | C | S | S | C | C | C | S | 3.1 | C |
| 8 | 5.3 | 2.7 | 2.4 | E | E | S | S | B | G | 4.1 | 4.3 | 4.8 | S | 4.8 | 4.4 | S | S | G | S | S | 2.4 | S | S | S |
| 9 | S | S | E | E | E | S | S | S | G | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | B | G | S | S | 3.3 | 3.4 | 3.1 | 3.0 | 3.1 | 2.5 | 2.5 | 3.1 |
| 11 | 3.5 | 4.1 | 4.0 | 3.7 | 3.4 | C | C | C | 3.2 | S | S | S | G | S | S | S | S | S | 2.4 | 4.2 | S | S | S | 5.9 |
| 12 | 3.0 | S | 2.3 | E | E | S | S | S | G | 8.2 | 4.9 | 4.8 | S | C | C | C | 3.7 | 3.5 | 3.8 | 2.7 | 2.3 | 3.7 | 3.7 | 3.8 |
| 13 | 3.9 | 3.9 | 4.1 | 3.0 | 2.4 | 2.4 | S | S | G | 4.4 | 6.0 | 8.0 | 6.7 | 5.0 | 4.5 | S | 2.3 | 2.7 | E | S | S | S | S | E |
| 14 | S | C | E | 1.2 | 1.2 | S | S | 2.5 | 2.5 | 3.8 | S | 3.7 | S | S | S | 3.1 | S | 4.1 | 5.3 | 4.0 | S | S | S | S |
| 15 | S | E | E | E | 2.1 | 2.2 | S | 3.5 | G | S | S | S | B | S | S | S | 3.8 | S | 3.7 | 2.4 | 2.4 | 4.2 | 3.8 | 4.0 |
| 16 | 3.5 | 2.3 | 2.4 | 2.8 | 2.8 | 2.6 | 3.0 | 6.5 | 3.9 | 3.6 | 3.8 | G | G | 5.4 | 4.9 | G | 3.6 | S | 3.7 | 5.2 | 8.0 | 5.0 | 4.8 | S |
| 17 | S | 3.1 | E | 1.6 | 2.4 | 2.4 | 2.2 | S | 3.0 | 3.4 | 3.1 | G | G | G | S | G | 2.3 | 3.2 | 3.8 | 3.2 | 2.7 | 2.8 | S | S |
| 18 | S | S | E | 2.2 | E | S | S | S | 2.7 | G | S | S | S | S | S | S | S | 2.4 | S | 2.5 | 3.0 | S | S | S |
| 19 | S | E | E | E | E | S | S | S | G | S | S | S | S | S | S | S | 2.4 | S | S | S | S | S | S | S |
| 20 | S | S | E | E | 2.1 | 2.1 | S | S | G | G | 3.2 | 3.4 | 4.2 | 3.4 | G | G | 3.8 | S | S | 2.4 | 2.7 | 2.5 | 2.4 | S |
| 21 | E | S | E | E | E | S | 2.1 | G | S | C | S | 4.0 | 4.0 | S | 4.0 | G | G | S | S | S | 2.4 | 3.0 | 2.5 | 3.4 |
| 22 | 2.4 | 2.4 | E | 3.2 | 2.1 | 2.0 | S | S | S | 4.4 | 3.9 | 3.8 | G | G | 3.8 | S | S | 3.9 | 7.9 | 6.0 | 5.0 | 3.7 | 3.9 | 2.4 |
| 23 | 2.9 | 2.8 | 3.6 | 4.0 | 3.9 | 4.5 | 8.7 | 6.7 | 7.1 | 5.0 | 4.1 | 7.2 | 3.6 | 3.9 | S | S | 3.5 | 3.2 | 2.5 | S | S | S | S | S |
| 24 | 4.8 | 4.5 | 2.9 | 3.8 | 2.2 | E | S | S | 3.5 | 5.5 | 5.2 | 3.9 | 2.8 | 4.1 | 5.1 | 3.5 | S | 2.4 | 2.5 | 2.6 | 2.5 | 3.7 | 4.8 | 3.1 |
| 25 | 2.1 | 2.4 | 3.7 | 3.4 | 3.5 | 2.1 | 3.1 | 2.6 | 3.6 | 3.9 | 3.4 | G | B | 4.8 | 3.8 | S | S | 3.1 | 3.0 | S | 5.7 | 2.4 | S | 2.9 |
| 26 | 2.3 | 2.2 | E | 2.0 | 1.7 | S | S | S | S | 2.7 | S | S | S | S | S | G | S | S | S | 2.3 | 2.3 | 3.3 | S | S |
| 27 | S | 2.3 | 3.4 | E | E | S | S | S | G | 3.5 | 4.2 | S | S | S | S | S | S | S | 2.2 | S | S | 2.1 | 3.4 | S |
| 28 | 2.3 | 4.0 | 2.5 | 2.3 | C | E | S | 2.9 | G | G | G | S | 2.3 | 3.8 | 2.3 | 2.9 | S | S | S | 3.2 | 3.9 | S | S | S |
| 29 | S | S | E | E | E | S | S | S | 2.1 | G | G | G | S | G | 3.2 | 2.3 | S | S | S | 5.1 | 3.5 | 2.6 | S | S |
| 30 | S | S | 2.1 | E | E | S | S | S | G | S | G | S | S | 2.5 | G | S | 2.7 | 2.2 | S | S | S | S | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 14 | 15 | 26 | 28 | 27 | 13 | 5 | 10 | 22 | 16 | 14 | 16 | 11 | 16 | 11 | 12 | 14 | 13 | 16 | 15 | 15 | 15 | 11 | 11 |
| Median | 3.0 | 2.7 | 2.2 | 1.4 | 2.1 | 2.1 | 3.0 | 2.6 | G | 3.7 | 3.8 | 3.8 | G | 3.8 | 3.8 | G | 3.4 | 3.2 | 3.1 | 3.0 | 2.7 | 2.8 | 3.4 | 3.1 |
| U. Q. | 3.7 | 3.9 | 3.4 | 3.0 | 2.4 | 2.4 | 5.9 | 3.5 | 3.2 | 4.4 | 4.3 | 5.0 | 4.2 | 4.8 | 4.5 | 3.3 | 3.8 | 3.6 | 3.8 | 4.2 | 3.9 | 3.7 | 3.9 | 3.8 |
| L. Q. | 2.3 | 2.3 | E | E | E | E | 2.2 | G | G | G | 3.1 | G | G | G | G | G | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 |
| Q. R. | 1.4 | 1.6 | | | | | 3.7 | | | | 1.2 | | | | | | 1.4 | 1.2 | 1.4 | 1.8 | 1.5 | 1.3 | 1.4 | 1.3 |

foEs

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

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | A | 1.9 | 1.9 | 2.0 | S | S | S | S | S | S | S | E 2.9 S | S | S | S | S | S | S | S | S | S | S |
| 2 | S | S | S | | E | | S | | S | S | S | 4.7 | 4.8 | 4.8 | S | E 3.0 S | E 2.4 S | S | S | S | S | S | S | S |
| 3 | S | S | | | | S | S | | 3.2 | S | S | 4.8 | S | S | S | 4.2 | 5.5 | 3.2 | 3.0 | | S | S | 1.9 | 2.8 |
| 4 | 2.2 | 2.0 | 1.9 | 1.6 | 2.5 | S | B | | 2.8 | C | C | C | C | C | C | C | C | C | C | C | C | S | S | 2.1 |
| 5 | 2.8 | S | S | C | C | S | S | S | C | S | S | S | S | C | C | 4.1 | 3.5 | C | 2.5 | S | S | C | C | S |
| 6 | S | S | S | | | S | S | S | | C | S | S | S | S | S | S | C | S | | S | S | | S | S |
| 7 | C | S | E | 2.5 | 2.0 | E | S | S | S | S | S | 3.4 | S | 4.6 | S | C | S | S | C | C | C | S | 2.1 | C |
| 8 | 2.0 | 1.8 | 1.7 | | | S | S | B | | 3.8 | 4.2 | 4.6 | S | 4.6 | 4.4 | S | S | | S | S | 2.0 | S | S | S |
| 9 | S | S | | | | S | S | S | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | B | | S | S | 3.1 | 2.8 | A | 2.4 | A | E | E | A |
| 11 | 2.6 | 2.6 | A | 1.9 | 1.9 | C | C | C | 3.2 | S | S | S | | S | S | S | S | S | U 2.1 S | A | S | S | S | A |
| 12 | 2.0 | S | 1.3 | | | S | S | S | | A | 3.5 | 4.5 | S | C | C | C | 2.9 | 2.1 | 2.9 | 2.0 | 2.1 | 2.0 | A | A |
| 13 | A | A | 2.1 | 2.0 | 1.8 | 1.8 | S | S | | 3.5 | A | A | 5.2 | 4.1 | 3.3 | S | 2.0 | 2.2 | | S | S | S | S | |
| 14 | S | C | | 1.1 | E 1.2 S | S | S | E 2.5 S | E 2.5 S | 3.8 | S | 3.7 S | S | S | S | 3.1 | S | 4.0 | A | A | S | S | S | S |
| 15 | S | | | | 1.5 | 1.8 | S | 2.6 | | S | S | S | B | S | S | S | 3.2 | S | 2.8 | 1.9 | S | A | 2.1 | A |
| 16 | A | E | 1.6 | A | A | E | 2.3 | 5.1 | 2.8 | 3.5 | 3.6 | | | 5.4 | U 4.9 S | | 3.0 | S | 3.1 | A | 2.0 | 2.5 | 1.9 | S |
| 17 | S | 2.2 | | 1.6 | 2.0 | E | 2.2 | S | 2.9 | S | 3.1 | | | | S | | G | 2.1 | 2.2 | 2.1 | U 2.5 S | A | S | S |
| 18 | S | S | | E | | S | S | S | 2.7 | | S | S | S | S | S | S | S | S | S | 2.1 | 2.1 | S | S | S |
| 19 | S | | | | | S | S | S | | S | S | S | S | S | S | S | U 2.2 S | S | S | S | S | S | S | S |
| 20 | S | S | | | E | 1.7 | S | S | | | 3.1 | 3.4 | 3.2 | 3.3 | | | 3.1 | S | S | 2.0 | 1.9 | U 2.2 S | 1.9 | S |
| 21 | | S | | | | S | 2.0 | | S | C | S | U 4.0 S | U 4.0 S | S | 3.3 | | | S | S | S | 1.9 | 2.1 | E | A |
| 22 | 1.8 | 1.6 | | 2.1 | 1.4 | E | S | S | S | U 4.4 S | 3.9 | 3.8 | | | 3.3 | S | S | 3.3 | A | A | A | 2.6 | 3.3 | 2.0 |
| 23 | 2.2 | E | 2.2 | 2.2 | 2.0 | 3.0 | 1.9 | 6.1 | A | 4.8 | 4.1 | 5.7 | 3.5 | 3.6 | S | S | 2.5 | 2.8 | 2.0 | S | S | S | S | S |
| 24 | 2.8 | 2.1 | 1.9 | 2.8 | 1.2 | | S | S | 3.4 | 5.1 | 4.2 | 3.9 | E 2.8 R | 3.4 | 4.6 | 3.0 | S | U 2.4 S | S | 2.6 | 2.1 | A | A | A |
| 25 | 2.1 | E | 2.0 | 2.0 | 2.4 | 1.9 | 2.1 | 2.5 | 3.1 | 3.2 | 3.3 | | B | 4.3 | 3.2 | S | S | 2.6 | 2.2 | S | A | 1.8 | S | U 2.0 S |
| 26 | 1.8 | 1.7 | | E | E | S | S | S | S | E 2.7 S | S | S | S | S | S | | S | S | S | 1.9 | E 1.9 A | A | S | S |
| 27 | S | E | 1.3 | | | S | S | S | | G | E 4.2 S | S | S | S | S | S | S | S | E | S | S | E | 2.1 | S |
| 28 | 2.0 | E 2.8 A | 1.9 | 1.6 | C | | S | G | | | | S | E 2.3 S | 2.7 | E 2.3 S | E 2.9 S | S | S | S | 3.0 A | A | S | S | S |
| 29 | S | S | | | | S | S | S | E 2.1 S | | | | S | | 3.1 | E 2.3 S | S | S | S | A | 2.1 | 2.5 S | S | S |
| 30 | S | S | 1.2 | | | S | S | S | | S | | S | S | E 2.5 S | | S | 2.7 | 2.2 | S | S | S | S | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

foEs

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

The Radio Research Laboratories, Japan.

K 5

# IONOSPHERIC DATA

Nov. 1962 | 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 | E2.00 S E1.70 S | 1.25 | 1.30 | 1.65 | E1.90 S | E1.95 S | E2.60 | E3.25 S | E3.30 S | E3.80 S | E3.30 S | E4.10 S | E2.50 S | E4.10 S | E3.70 | E3.00 S | E2.10 S | E1.50 S | E1.90 S | E1.50 S | E2.00 S | E1.80 S | E1.70 S |
| 2 | E1.95 S | E1.80 S | E1.80 S | 1.10 | 1.20 | 1.50 | E1.80 S | 1.80 | E4.10 S | E3.20 S | E4.30 S | E2.90 S | E3.20 S | E2.60 S | E4.60 S | 1.90 | 1.90 | E2.00 S | E2.10 S | E2.00 S | E1.90 S | E1.50 S | E2.00 S | E2.00 S |
| 3 | E1.80 S | E1.90 S | 1.20 | E | E | S | E2.10 S | E2.10 S | E2.80 S | E3.80 S | E4.00 S | E3.00 S | E4.00 S | E4.30 S | E4.30 S | E2.70 S | E2.50 S | E2.10 S | E1.60 S | 1.20 | E2.10 S | E1.60 S | E1.50 S | E1.50 S |
| 4 | E1.60 S | E1.50 S | 1.00 | E | 1.10 | E1.50 S | 1.60 | 1.90 | E1.90 S | C | C | C | C | C | C | C | C | C | C | C | C | E2.00 S | E2.00 S | E1.70 S |
| 5 | E1.20 S | E1.50 S | E1.90 S | C | C | E1.80 S | E2.10 S | E2.70 S | C | E3.20 S | E4.20 S | E3.30 S | E4.50 S | C | C | E2.10 S | E2.50 S | C | E1.70 S | E2.10 S | S | C | C | E1.50 S |
| 6 | E2.00 S | E1.80 S | E1.50 S | 1.40 | 1.40 | E1.50 S | E1.80 S | E2.50 S | E1.80 S | C | E3.80 S | E3.80 S | E3.95 S | E3.60 S | E3.10 S | E3.00 S | C | E2.00 S | 1.40 | E1.70 S | E1.90 S | 1.30 | E1.85 S | E1.95 S |
| 7 | C | E1.50 S | 1.40 | 1.45 | E1.55 S | E1.70 S | E1.85 S | E2.70 S | E2.95 S | E3.50 S | E3.10 S | E3.10 S | E4.00 S | 2.10 S | E3.10 S | C | E2.10 S | E1.60 S | C | C | E2.10 C | E1.80 S | E1.70 S | C |
| 8 | E1.40 S | E1.50 S | 1.20 | 1.10 | E | E1.40 S | E1.50 S | 2.20 | E1.90 S | E2.70 S | E3.00 S | 3.10 | E3.50 S | E3.10 S | 1.80 | E3.50 S | E2.70 S | E1.50 S | E1.70 S | E1.80 S | E1.50 S | E1.90 S | E1.50 S | E1.80 S |
| 9 | E1.50 S | E1.70 S | 1.20 | 1.20 | 1.00 | E1.50 S | E1.90 S | E2.70 S | 1.90 U | 3.30 CU | 3.10 U | 3.50 CU | 4.10 CU | 3.10 CU | 3.95 CU | 3.30 | 3.20 U | 1.80 C | C U | 1.70 C | C | C | C | C |
| 10 | C | 1.90 CU | 1.70 CU | 1.70 CU | 1.20 CU | 1.70 CU | 1.70 U | 2.50 U | 2.20 C | C | C | C | 3.20 | E2.50 S | E3.90 S | E3.20 S | E1.80 S | E1.60 S | E1.80 S | E1.50 S | E1.50 S | E1.50 S | E1.60 S | 1.10 |
| 11 | E1.50 S | E1.40 S | E1.50 S | E | 1.00 | C | C | E2.20 | E2.50 C | E3.10 S | E3.10 S | E3.30 | 2.10 | E3.80 S | E2.80 S | E3.00 S | E2.70 S | E1.60 S | 1.50 S | E1.90 S | E1.50 S | E2.00 S | E1.80 S | E1.50 S |
| 12 | E1.60 S | E1.50 S | 1.20 | 1.00 | 1.10 | E1.70 S | E1.50 S | E2.50 S | E1.90 S | E2.10 S | E2.80 S | 2.50 | E4.00 S | C | C | C | 1.50 | E1.60 S | E1.50 S | E1.30 S | E1.40 S | E1.90 S | 1.20 | E1.60 S |
| 13 | E1.50 S | 1.40 | E | E | E | E1.50 S | E1.80 S | E2.45 S | 1.80 | 1.55 | 2.45 | 2.95 | 2.80 | 3.00 | 2.00 | E3.00 S | 1.85 | 1.40 | 1.50 | E1.95 S | E2.00 S | E1.85 S | S | 1.50 |
| 14 | E2.05 S | C | 1.15 | E | E | E1.90 S | E1.90 S | 1.40 | 1.70 | E2.10 S | 3.30 S | 2.10 | E3.50 S | E3.70 S | E3.10 S | E2.50 S | E2.60 S | 1.50 S | E1.50 S | E1.50 S | E2.10 S | E1.50 S | E1.50 S | E2.20 |
| 15 | E2.30 S | 1.40 | 1.20 | 1.10 | E | E1.30 S | E1.80 S | E1.50 S | E1.50 S | E3.30 S | E3.50 S | E3.40 S | 4.50 | E4.00 S | E3.10 S | E2.60 S | 1.90 | E2.10 S | E1.50 S | E1.70 S | E1.50 S | E1.80 S | E1.70 S | E1.50 S |
| 16 | E1.50 S | E1.50 S | 1.00 | E | 1.20 | E1.50 S | E1.60 S | E1.90 S | 1.90 | 1.70 | 2.10 | 2.10 | 2.10 | 2.90 | 2.20 | E2.10 S | E1.60 S | E2.00 S | E1.60 S | E1.50 S | E1.80 S | E1.60 S | E1.50 S | E1.80 S |
| 17 | E1.50 S | 1.40 | 1.10 | 1.10 | E1.50 S | E1.70 S | E1.70 S | E2.20 S | 1.70 | E2.70 S | 1.90 | 2.10 | E2.10 S | 2.00 | E3.00 S | 1.70 | 1.50 | E1.50 S | E1.50 S | E1.60 S | E1.60 S | E1.70 S | E1.90 S | E1.90 S |
| 18 | E1.50 S | E1.70 S | E1.40 S | 1.10 | E | E1.50 S | E2.00 S | E2.20 S | E1.90 S | E2.10 S | E3.50 S | E3.20 S | E3.20 S | E3.30 S | E3.20 S | E2.40 S | E2.50 S | E1.90 S | E1.90 S | E1.50 S | E1.70 S | E1.50 S | E2.00 S | E2.00 S |
| 19 | E1.50 S | 1.40 | 1.20 | 1.10 | 1.10 | E1.50 S | E1.80 S | E2.20 S | E1.80 S | E3.10 S | E3.10 S | E3.30 S | E3.30 S | E3.20 S | E3.10 S | 3.10 | E1.90 S | E1.50 S | E1.80 S | E1.90 S | E1.60 S | E1.80 S | E2.00 S | E1.50 S |
| 20 | E1.60 S | E1.50 S | 1.20 | 1.20 | 1.20 | E1.50 S | E1.50 S | E2.50 S | E1.80 S | 1.70 | E2.10 S | E2.30 S | E2.90 S | E2.60 S | 2.10 | 1.90 | 1.70 | E2.00 S | E1.50 S | E1.90 S | E1.70 S | E1.40 S | E1.40 S | E1.60 S |
| 21 | 1.20 | E1.50 S | 1.00 | 1.20 | 1.30 | E1.50 S | E1.50 S | 1.40 | E2.60 | C | E3.20 S | E2.90 S | E3.10 S | E3.80 S | 2.20 | 1.80 | E1.60 S | E1.90 S | E1.50 S | E1.60 S | E1.40 S | E1.50 S | E1.70 S | 1.40 |
| 22 | E1.50 S | E1.50 S | 1.00 | 1.20 | 1.10 | E1.60 S | E1.70 S | E2.10 S | E2.70 S | 2.10 S | E3.10 S | 2.10 | 1.80 | 1.80 | 1.90 | E3.00 S | E2.50 S | E1.70 S | E1.60 S | E1.80 S | E1.40 S | E1.80 S | E1.50 S | E1.50 S |
| 23 | E1.50 S | E1.50 S | 1.00 | 1.00 | E | E1.50 S | E1.50 S | E1.70 S | E2.10 S | 1.90 | E2.50 S | 2.30 | E2.50 S | E2.60 S | E3.10 S | 3.10 | E1.90 S | E1.90 S | E1.50 S | E1.90 S | E2.10 S | E1.60 S | E1.90 S | E1.50 S |
| 24 | E1.50 S | 1.20 | E | E | E | 1.30 | E1.80 S | E2.50 S | E2.60 S | E2.20 S | 2.10 | 1.80 | 1.90 | 1.70 | 2.00 | 1.70 | E2.50 S | E1.80 S | E1.50 S | 1.40 | E1.50 S | 1.40 | E1.50 S | 1.30 |
| 25 | E1.40 S | E1.50 S | E1.40 S | E | E | E1.50 S | E1.50 S | E1.50 S | 1.70 | 1.80 | 1.80 | E2.00 S | 3.10 | E2.70 S | E2.30 S | E2.60 S | E2.20 S | 1.30 | 1.30 | E1.50 S | 1.30 | E1.40 S | S | E1.70 S |
| 26 | E1.40 S | 1.10 | 1.10 | 1.00 | E | E1.50 S | E1.50 S | E2.10 S | E2.80 S | 2.00 | E3.20 S | E3.20 S | E3.00 S | E3.30 S | E2.85 S | 1.95 | E2.00 S | E1.90 S | E1.85 S | 1.50 | 1.25 | E1.70 S | E2.15 S | E1.55 S |
| 27 | E1.90 S | E1.65 S | 1.20 | 1.05 | 1.05 | E1.85 S | E2.00 S | E2.00 S | 1.90 | E2.70 S | E2.85 S | E4.00 S | E3.25 S | E4.00 S | E2.95 S | E2.70 S | E2.15 S | E2.00 S | E1.75 S | E1.85 S | E1.85 S | E1.85 S | E1.70 S | E1.90 S |
| 28 | E1.85 S | 1.45 | 1.15 | 1.05 | C | 1.50 | E2.00 S | E1.90 S | 1.95 | 1.80 | 2.00 | E3.15 S | 2.05 | 1.95 | 2.00 | 2.00 | E2.00 S | E2.00 S | E1.95 S | E1.60 S | E1.95 S | E1.90 S | E1.90 S | E1.90 S |
| 29 | E1.70 S | E1.55 S | 1.45 | 1.10 | E | E1.90 S | E1.80 S | E2.00 S | 1.95 | 1.85 | 1.80 | E2.10 S | E3.10 S | E2.50 S | E1.90 S | E1.80 S | E2.20 S | E1.60 S | E1.70 S | E1.50 S | E1.60 S | E1.90 S | E1.50 S | E1.70 S |
| 30 | E1.60 S | E1.50 S | 1.10 | 1.00 | 1.00 | E1.60 S | E1.90 S | E2.60 S | 1.90 | E2.95 S | E1.90 S | E3.20 S | E3.10 S | 1.90 | 2.10 | E3.10 S | E1.70 S | E1.80 S | E1.80 S | E1.60 S | E1.50 S | E1.70 S | E1.80 S | E1.50 S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 29 | 24 | 29 | 26 | 28 | 29 | 30 | 29 | 26 | 28 | 28 | 29 | 27 | 27 | 27 | 28 | 28 | 27 | 28 | 27 | 28 | 26 | 28 |
| Median | E1.50 | E1.50 | 1.20 | 1.10 | 1.00 | E1.50 | E1.80 | E2.20 | E1.90 | E2.45 | E3.10 | E3.05 | E3.20 | E2.90 | E2.95 | E2.60 | E2.05 | E1.80 | E1.60 | E1.65 | E1.60 | E1.70 | E1.70 | E1.60 |

f-min

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

The Radio Research Laboratories, Japan.

K 6

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | 2.90$^{S}$ | A | 3.05 | 3.60 | 3.30 | 3.45$^{S}$ | 3.50 | 3.40 | 3.35 | $^{U}$3.30$^{R}$ | $^{J}$3.20$^{R}$ | 3.35$^{R}$ | 3.45 | 3.40 | $^{J}$3.30$^{R}$ | 3.55 | 3.55$^{R}$ | 3.45$^{S}$ | S | 3.40 | $^{U}$3.05$^{R}$ | 3.00 | $^{J}$3.00$^{F}$ |
| 2 | 3.20 | 3.10 | 2.85 | 3.05 | 3.15 | 3.40 | $^{U}$3.35$^{R}$ | $^{J}$3.50$^{R}$ | 3.50 | 3.25 | 3.00 | 3.30 | 3.35 | 3.25 | $^{J}$3.20$^{R}$ | 3.35$^{R}$ | 3.40 | 3.55 | 3.35 | $^{J}$3.40$^{S}$ | 3.40 | $^{U}$3.15$^{S}$ | S | 2.90$^{R}$ |
| 3 | 2.85 | 3.00 | 3.30 | 3.20 | 3.65 | S | 3.20 | $^{U}$3.55$^{R}$ | 3.30 | 3.25 | $^{J}$3.15$^{R}$ | 3.00 | $^{U}$3.05$^{R}$ | 3.35$^{R}$ | 3.50 | 3.35 | 3.35 | 3.35 | $^{U}$3.40$^{R}$ | 3.10 | 3.05 | 3.00 | 3.05 | A |
| 4 | 2.75 | 3.00 | 3.00 | 3.30 | 3.60$^{R}$ | 3.45$^{R}$ | 3.50 | 3.35$^{R}$ | $^{J}$3.45$^{R}$ | C | C | C | C | C | C | C | C | C | C | C | C | S | 3.05$^{R}$ | 3.05 |
| 5 | 3.05 | 3.05 | 3.05 | C | C | 3.05 | 3.25 | 3.50 | C | 3.35 | 3.45 | 3.35 | $^{U}$3.25$^{R}$ | C | C | $^{U}$3.55$^{R}$ | $^{J}$3.30$^{R}$ | C | 3.00 | 3.25 | S | C | C | 3.05 |
| 6 | 2.95 | 3.25 | 3.15 | 3.30 | 3.75 | 2.95 | 3.25 | 3.45 | $^{J}$3.60$^{R}$ | C | $^{J}$3.40$^{R}$ | $^{J}$3.40$^{S}$ | R | 3.25 | 3.40 | 3.45$^{S}$ | C | $^{J}$3.35$^{S}$ | 3.20$^{S}$ | 3.05 | $^{U}$3.30$^{S}$ | 3.00$^{S}$ | 3.00 | 2.80$^{S}$ |
| 7 | $^{I}$3.00$^{C}$ | 3.00 | 2.80$^{F}$ | 3.25$^{S}$ | 3.25 | 3.00 | 3.00$^{R}$ | 3.25$^{S}$ | 3.20$^{S}$ | 3.30 | 3.20 | $^{J}$3.25$^{R}$ | 3.25 | 3.25 | 3.30 | C | 3.45 | 3.55 | C | C | 3.25 | 3.05 | 2.65$^{S}$ | C |
| 8 | 3.00 | 3.25 | 3.40 | 3.25 | 3.40 | $^{J}$2.80$^{S}$ | 3.05 | $^{U}$3.30$^{S}$ | 3.60 | 3.45 | 3.25$^{R}$ | 3.25 | 3.30 | 3.25 | 3.35 | 3.40 | 3.25 | 3.30 | 3.35 | 3.30 | 3.25 | 3.30 | 2.95 | 2.90 |
| 9 | $^{U}$3.10$^{S}$ | $^{U}$3.10$^{S}$ | 3.20 | 3.25 | 3.50 | 3.35 | 3.35 | 3.50 | 3.55 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 3.20 | $^{U}$3.25$^{R}$ | 3.25 | 3.40 | 3.55 | 3.50 | A | 3.25$^{S}$ | A | 3.25 | 3.40 | A |
| 11 | A | 3.00 | A | 3.25 | 3.55 | C | C | 3.35 | 3.60 | $^{U}$3.55$^{R}$ | 3.25 | 3.20 | 3.20 | 3.05 | 3.50 | 3.40 | 3.40 | 3.55 | 3.30 | A | $^{U}$3.30$^{S}$ | $^{U}$3.55$^{S}$ | 3.05 | A |
| 12 | 3.00 | 3.00$^{S}$ | 3.05 | $^{J}$3.35$^{R}$ | 3.60 | 3.10$^{R}$ | 3.55 | 3.50 | $^{U}$3.55$^{S}$ | A | 3.40$^{R}$ | 3.35 | 3.25$^{R}$ | C | C | C | 3.70 | 3.55 | 3.25 | 3.35 | 3.40 | $^{U}$3.05$^{S}$ | A | A |
| 13 | A | A | 2.80 | 3.05 | 3.35 | 3.30 | $^{J}$3.40$^{S}$ | 3.55 | 3.30$^{R}$ | 3.55 | A | A | 3.25 | 3.40 | 3.45$^{R}$ | 3.45 | 3.65 | 3.50$^{R}$ | 3.00$^{R}$ | 3.30$^{S}$ | 3.05$^{S}$ | 3.20 | S | 2.95$^{S}$ |
| 14 | $^{J}$2.80$^{S}$ | C | 2.85 | 3.05 | 3.10 | 3.25 | 3.25$^{S}$ | $^{U}$3.60$^{S}$ | 3.50$^{S}$ | 3.45 | 3.25 | 3.30 | 3.05 | 3.25 | 3.35 | $^{U}$3.50$^{S}$ | 3.55$^{R}$ | A | A | A | S | 2.95$^{S}$ | 2.80 | 2.95 |
| 15 | $^{U}$3.00$^{S}$ | $^{J}$2.95$^{S}$ | 3.05 | 2.95 | 3.30 | 3.25 | 3.60 | 3.55 | 3.45 | 3.25 | 3.25 | 3.25 | 3.25 | 3.30 | 3.40 | 3.55 | 3.60 | 3.30 | 3.30 | 3.70 | $^{U}$3.20$^{S}$ | A | $^{U}$2.80$^{S}$ | A |
| 16 | A | 2.80 | 3.55 | A | A | 2.85 | 3.05 | 3.30 | 3.25 | 3.40 | 3.25 | 3.50 | 3.50 | 3.10 | 3.20 | 3.35 | 3.30 | 3.25 | 3.40 | A | 3.25 | A | $^{U}$3.00$^{S}$ | $^{U}$3.05$^{F}$ |
| 17 | 3.15 | 3.30 | 3.00 | 3.05 | 3.30 | 3.05 | 3.20 | 3.55 | 3.55$^{R}$ | 3.55 | 3.05 | 3.35 | 3.25 | 3.35 | 3.35 | 3.30 | 3.35 | 3.55$^{R}$ | 3.35 | 3.55 | $^{U}$3.50$^{S}$ | A | 2.80 | 3.05 |
| 18 | 3.25 | 3.20 | 2.95 | 3.00 | 3.25 | 3.40$^{R}$ | 3.20 | 3.40 | 3.40 | 3.55 | 3.50 | 3.25 | 3.35 | 3.35$^{R}$ | 3.50 | 3.25 | 3.35 | 3.65 | 3.35 | $^{U}$3.10$^{S}$ | FS | $^{U}$3.30$^{F}$ | $^{J}$3.00$^{S}$ | 2.95 |
| 19 | 3.00 | 3.05 | 3.05 | 3.25 | 3.20 | 3.00 | 3.25 | 3.45 | 3.55 | 3.35 | 3.45 | 3.25 | 3.35 | 3.30 | 3.55 | 3.40$^{R}$ | 3.45$^{R}$ | 3.20 | 3.60 | 3.40 | $^{U}$3.30$^{S}$ | 3.05 | 3.00$^{S}$ | 3.00 |
| 20 | 2.80 | 3.25 | 3.20 | 3.30 | 3.60 | 3.05 | 3.25 | 3.35 | $^{J}$3.50$^{R}$ | 3.30 | 3.40 | 3.25 | 3.45 | 3.20$^{R}$ | 3.45 | 3.55 | 3.45 | 3.25$^{R}$ | 3.60$^{R}$ | 3.40 | 3.50 | A | 2.95 | 3.00 |
| 21 | 2.85 | 3.00 | 3.05 | 3.25 | 3.60 | 3.35 | 3.05$^{R}$ | 3.50$^{R}$ | 3.50 | C | 3.40 | 3.30 | 3.25 | 3.25 | 3.35 | 3.35 | 3.50 | 3.75 | 3.40 | 3.10 | 3.35 | 3.10 | 3.00 | A |
| 22 | 2.95 | 2.95 | 3.00 | 3.05 | 2.85 | 2.75 | 3.00 | $^{U}$3.55$^{R}$ | 3.60 | 2.85$^{H}$ | 3.30$^{R}$ | 3.25 | 3.30 | 3.35 | $^{J}$3.25$^{R}$ | 3.55$^{R}$ | 3.45 | 3.45 | A | A | A | 2.65 | A | 2.75 |
| 23 | 2.75 | 3.00 | 2.95 | 3.05 | 3.15 | A | 3.25$^{S}$ | $^{U}$3.50$^{S}$ | A | 3.20 | $^{U}$3.25$^{R}$ | 3.55 | 3.25$^{R}$ | $^{U}$3.30$^{R}$ | 3.30 | 3.70 | 3.40 | 3.30 | 3.25 | 3.65 | S | $^{J}$3.25$^{S}$ | S | $^{J}$3.05$^{F}$ |
| 24 | 3.25 | A | 3.00 | 3.05 | 3.55 | $^{J}$3.00$^{F}$ | 3.25 | $^{J}$3.50$^{S}$ | 3.50 | 3.50$^{R}$ | $^{J}$3.10$^{R}$ | R | $^{U}$3.25$^{R}$ | 3.25 | 3.40 | 3.50 | 3.45 | 3.45 | S | 3.55 | 3.10 | A | A | A |
| 25 | $^{J}$2.80$^{S}$ | 2.80 | 2.95 | 3.30 | 3.60 | 3.15 | 3.20$^{S}$ | 3.55 | 3.30$^{R}$ | $^{J}$3.45$^{R}$ | 3.20 | 3.25 | 3.25 | 3.45$^{R}$ | 3.45 | 3.50 | 3.60 | 3.40 | 3.50 | $^{J}$3.10$^{S}$ | A | 3.05 | S | $^{U}$2.70$^{S}$ |
| 26 | F | F | 3.25 | 3.05 | 3.30 | 3.05 | 3.20 | 3.50 | 3.45 | 3.50 | 3.45$^{R}$ | 3.35 | 3.25$^{R}$ | 3.25$^{R}$ | 3.25 | 3.50 | 3.55$^{S}$ | 3.40$^{R}$ | 3.25$^{S}$ | 3.20 | 3.00 | A | $^{U}$2.80$^{S}$ | $^{U}$2.70$^{S}$ |
| 27 | 3.00 | 3.00 | 2.95 | 3.00 | 3.60 | 3.20$^{S}$ | S | 3.30$^{S}$ | 3.25$^{S}$ | 3.25 | 3.45$^{R}$ | 3.30$^{R}$ | 3.15 | 3.25$^{R}$ | $^{U}$3.40$^{R}$ | 3.40$^{R}$ | 3.15$^{R}$ | 3.30 | 3.45$^{S}$ | 3.45$^{S}$ | 3.05 | 3.05 | 3.00$^{S}$ | 2.80$^{S}$ |
| 28 | 2.80$^{S}$ | 2.85$^{S}$ | 2.90$^{F}$ | 2.90 | C | 3.00 | 3.35$^{S}$ | 3.35 | 3.45$^{S}$ | 3.30 | 3.40 | 3.55 | 3.30 | 3.20$^{R}$ | $^{U}$3.30$^{S}$ | 3.55 | 3.30 | 3.15$^{R}$ | $^{U}$3.15$^{S}$ | 3.15 | A | 3.20 | 3.20$^{S}$ | 3.15 |
| 29 | 3.25 | 3.25 | 3.00 | 3.05 | 3.05 | 3.10 | 3.25$^{S}$ | $^{U}$3.35$^{S}$ | 3.40$^{S}$ | 3.55 | $^{J}$3.25$^{R}$ | 3.25 | 3.55 | 3.55 | 3.70 | 3.55 | $^{J}$3.60$^{R}$ | 3.40 | $^{J}$3.35$^{R}$ | A | 3.25 | 3.25 | 2.85 | 2.95 |
| 30 | $^{U}$3.05$^{R}$ | 3.00 | 3.20 | 3.05 | $^{J}$3.20$^{R}$ | 3.05 | 3.20 | 3.70 | 3.50 | 3.15 | 3.30 | $^{J}$3.25$^{R}$ | 3.55 | 3.35 | 3.55 | 3.55 | $^{J}$3.55$^{R}$ | 3.35 | $^{J}$3.60$^{R}$ | 3.50 | $^{J}$3.20$^{R}$ | F | 2.95 | 3.05 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 24 | 25 | 27 | 27 | 26 | 26 | 27 | 29 | 27 | 24 | 26 | 25 | 27 | 26 | 26 | 26 | 27 | 26 | 23 | 21 | 20 | 20 | 21 | 21 |
| Median | 3.00 | 3.00 | 3.00 | 3.05 | 3.40 | 3.10 | 3.25 | 3.50 | 3.50 | 3.35 | 3.30 | 3.25 | 3.25 | 3.25 | 3.40 | 3.45 | 3.45 | 3.40 | 3.35 | 3.30 | 3.25 | 3.10 | 3.00 | 3.00 |

M(3000)F2 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 7

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | "3.80 | L | L | L | L | S | S | | | | | | | | |
| 2 | | | | | | | | | | L | L | A | A | A | S | S | | | | | | | | |
| 3 | | | | | | | | | | | L | A | L | S | S | | A | | | | | | | |
| 4 | | | | | | | | | L | C | C | C | C | C | C | C | C | C | | | | | | |
| 5 | | | | | | | | | C | L | S | L | S | C | C | | C | C | | | | | | |
| 6 | | | | | | | | | | C | L | L | L | L | L | L | C | | | | | | | |
| 7 | | | | | | | | | | L | L | L | S | L | L | C | | | | | | | | |
| 8 | | | | | | | | | | L | L | A | L | A | A | | | | | | | | | |
| 9 | | | | | | | | | | C | C | C | C | L | C | C | C | C | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | L | L | S | S | | | — | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | |
| 12 | | | | | | | | | | A | L | A | | C | C | C | | | | | | | | |
| 13 | | | | | | | | | L | L | A | A | A | L | L | | | | | | | | | |
| 14 | | | | | | | | | | | L | L | | L | L | | | | | | | | | |
| 15 | | | | | | | | | | S | L | L | L | L | L | L | | | | | | | | |
| 16 | | | | | | | | A | | | L | L | L | A | A | | | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | | | | | | | | | | |
| 19 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 21 | | | | | | | | | | C | L | | L | L | L | | | | | | | | | |
| 22 | | | | | | | | | L | | | L | L | L | | | | | | | | | | |
| 23 | | | | | | | | A | A | A | A | A | L | | L | | | | | | | | | A |
| 24 | | | | | | | | | | A | A | | L | L | A | L | | | | | | | | |
| 25 | | | | | | | | | | | | L | L | A | | L | | | | | | | | |
| 26 | | | | | | | | | L | | S | L | L | L | L | | | | | | | | | |
| 27 | | | | | | | | | | | | S | S | | L | L | | | | | | | | |
| 28 | | | | | | | | | | L | L | L | S | L | L | | L | | | | | | | |
| 29 | | | | | | | | | L | L | L | L | L | L | | | | | | | | | | |
| 30 | | | | | | | | | | L | S | L | L | L | L | L | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| Median | | | | | | | | | | "3.80 | | | | | | | | | | | | | | |

M(3000)F1 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 8

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | 250 | 250 | 275 | 250 | 250 | 250 | 245 | | | | | | | | |
| 2 | | | | | | | | | | 250 | 260 | 250 | 230 | 255 | 250 | 240 | | | | | | | | |
| 3 | | | | | | | | | | | 255 | 260A | 250 | 245 | 245 | | E250A | | | | | | | |
| 4 | | | | | | | | | 240 | C | C | C | C | C | C | C | C | C | | | | | | |
| 5 | | | | | | | | | C | 255 | 240 | 245 | 255 | C | C | | | C | | | | | | |
| 6 | | | | | | | | | | C | 265 | 245 | 265 | 275 | 250 | 230 | C | | | | | | | |
| 7 | | | | | | | | | | 250 | 255 | 255 | 245 | 260 | 250 | C | | | | | | | | |
| 8 | | | | | | | | | | 245 | 240 | 250A | 260 | 250 | 245 | | | | | | | | | |
| 9 | | | | | | | | | | C | C | C | C | C | C | C | C | C | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | 250 | 260 | 230 | 225 | | | | | | | | |
| 11 | | | | | | | | | | 225 | 240 | 255 | 255 | 250 | 250 | 230 | | | | | | | | |
| 12 | | | | | | | | | | A | 250 | 230 | | C | C | C | | | | | | | | |
| 13 | | | | | | | | | 250L | 230 | A | A | 275 | 255 | 255 | | | | | | | | | |
| 14 | | | | | | | | | | | 250 | 240 | | 250 | 250 | | | | | | | | | |
| 15 | | | | | | | | | | 230 | 240 | 260 | 260 | 255 | 245 | 225 | | | | | | | | |
| 16 | | | | | | | | E255A | | | 255 | 230 | 250 | 300A | 270A | | | | | | | | | |
| 17 | | | | | | | | | | 250 | 255 | 250 | 250 | 240 | 240 | | | | | | | | | |
| 18 | | | | | | | | | 235 | 240 | 240 | 250 | 240 | 250 | | | | | | | | | | |
| 19 | | | | | | | | | | 240 | 240 | 260 | 255 | 250 | 245 | | | | | | | | | |
| 20 | | | | | | | | | | 230 | 250 | 250 | 255 | 255 | 240 | | | | | | | | | |
| 21 | | | | | | | | | | C | 250 | | 275 | 260 | 245 | | | | | | | | | |
| 22 | | | | | | | | | 225 | | | 255 | 250 | 260 | | | | | | | | | | |
| 23 | | | | | | | | E260A | A | 250A | 240 | E250A | 250 | | 250 | | | | | | | | | |
| 24 | | | | | | | | | | 230 | E250A | | 250 | 260 | E250A | 225 | | | | | | | | |
| 25 | | | | | | | | | | | | 255 | 255 | 230 | | 225 | | | | | | | | |
| 26 | | | | | | | | | 255 | | 245 | 240 | 250 | 260 | 250 | | | | | | | | | |
| 27 | | | | | | | | | | | | 250 | 275 | | 245 | 230 | | | | | | | | |
| 28 | | | | | | | | | | 230 | 260 | 230 | 275 | 265 | 255 | | 275 | | | | | | | |
| 29 | | | | | | | | | 220 | 230 | 260 | 255 | 250 | 240 | | | | | | | | | | |
| 30 | | | | | | | | | | 250 | 260 | 255 | 250 | 250 | 230 | 235 | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | 2 | 6 | 17 | 23 | 24 | 26 | 24 | 22 | 10 | 2 | | | | | | | |
| Median | | | | | | | | E260 | 240 | 240 | 250 | 250 | 250 | 255 | E250 | 230 | E260 | | | | | | | |

h'F2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 9

41

# IONOSPHERIC DATA

Nov. 1962 | 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 | 340 | 325 | I300A | 280 | 255 | 245 | 240 | 225 | 230 | 205 | E240S | 225 | I235S | E230S | I210S | I235S | 210 | 210 | 245 | 250 | 245 | E295S | 295 | 305 |
| 2 | 255 | 260 | 320 | 295 | 245 | 245 | 245 | 225 | 245 | 225 | F255S | I210A | I220A | I210A | I225S | I205S | 210 | 215 | 225 | 225 | 250 | 255 | E310S | E345S |
| 3 | 310 | 320S | 250 | 250 | 205 | I215S | 255 | 230 | 235 | E245SE | 250S | I245A | 245 | I235S | I220S | 230 | I225A | 220 | E250A | 255 | 255 | 300 | 260 | E355A |
| 4 | E350A | 300A | 300A | 250A | 250A | 255 | 210 | 225 | 235 | C | C | C | C | C | C | C | C | C | C | C | C | S | E310SE | 355A |
| 5 | E340A | 295 | 285 | C | C | 265 | 255 | 225 | I230C | 235 | I240S | 200 | S | C | C | 225 | 225A | C | E310A | 255 | I250S | I265SI | 290C | 300 |
| 6 | 310 | 275 | 250 | 230 | 215 | 310 | 255 | 230 | 225 | I225C | 230 | 235 | 230 | 240 | 220 | 245 | I220C | 205 | 225 | 275 | 250 | 280 | 260 | 280 |
| 7 | I270C | 255 | 305 | 245 | 250 | 305 | 255 | 225 | 225 | 230 | 205 | 225 | I235SE | 250S | 215 | I210C | 225 | 200 | I240SI | 250C | 250 | 305 | E370A | I350C |
| 8 | 290A | 255A | 230 | 245 | 210 | 305 | 255 | 240 | 230 | 245AE | 245AI | 220A | 200 | I240A | I220A | 230 | 210 | 220 | 225 | 250 | 255 | 245 | 320 | 310 |
| 9 | 295 | 255 | 245 | 225 | 225 | 260 | 230 | 225 | 235 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 205 | 210 | I215SI | I230S | 205 | 210 | A | E290A | A | 250 | 250 | A |
| 11 | E320AE | 340A | A | 260 | 225 | I205CI | 225C | 225 | 245 | 225 | 205 | 200 | 210 | 230 | 220 | E245S | 225 | 205 | 260 | I270A | 245 | 245 | E310SI | 310A |
| 12 | 310A | 300 | 290 | 250 | 215 | 260 | 225 | 215 | 220 | A | E250AI | 225A | 230 | C | C | C | 210 | 210 | 270A | 250A | 230A | 310A | A | A |
| 13 | A | A | 300A | 300A | 225 | 255 | 235 | 225 | 200 | 220 | A | A | A | 265 | 240 | 230 | 225 | 225 | 240 | 250 | 255 | 255 | I290S | 325 |
| 14 | E345SI | 310C | 275 | 260 | 255 | 265 | 210 | 210 | 210 | 230 | 225 | 210 | 230 | 245 | E250S | 230 | 215 | E250A | A | A | E350S | 310 | 345 | 320 |
| 15 | E350S | 300 | 295 | 300 | 250 | 260 | 220 | 225 | 225 | 205 | 225 | 225 | E260BE | 260S | 240 | 205 | 210 | 245 | 230 | 205 | E300S | A | 390AI | 390A |
| 16 | I365A | 315 | 225 | I240A | I330A | 340 | 310 | I225A | 230 | 235 | E250A | 215 | I215SI | 230AI | I250A | 230 | 225 | 235 | 230 | I250A | 250AE | 350A | 300A | 280 |
| 17 | 255 | 260 | 295 | 255 | 300A | 270 | 245 | 220 | 225 | 210 | 210 | 205 | 210 | 210 | 210 | 235 | 225 | 220 | 230 | 220 | E250SI | 320A | 310 | 295 |
| 18 | 260 | 260 | 300 | 265 | 250 | 250 | 260 | 230 | 230 | 210 | 225 | 210 | 225 | E255S | 240 | 215 | 225 | 210 | 230 | 275 | 255 | 250 | E350SE | 310S |
| 19 | 290 | 260 | 300 | 255 | 260 | 260 | 255 | 225 | 225 | 210 | 205 | 200 | 205 | 225 | 235 | 230 | 215 | 215 | 220 | 225 | 250 | 300 | E310S | 305 |
| 20 | 305 | 285 | 275 | 250 | 205 | 295 | 260 | 220 | 230 | 210 | 230 | 230 | 225 | 245 | 225 | 230 | 225 | 220 | 230 | 250 | 250AE | 350A | 315 | 310 |
| 21 | 305 | 310 | 295 | 255 | 220 | 210 | E300A | 230 | 230 | I225C | 225 | E250AE | E260SE | 255SE | E245S | 230 | 225 | 205 | 245 | 260 | 250 | E300A | 275 | I355A |
| 22 | 340A | 310 | 300 | 300A | 315 | 320 | 300 | 215 | E240S | 245H | 250AE | 255A | 225 | 210 | 240 | 230 | 225 | 230 | I250A | I250A | A | E390AE | 410A | 310 |
| 23 | 350A | 260 | 310 | 260 | 260 | E350A | 250 | A | A | A | A | I215A | 210 | E250A | 240 | 225 | 210 | E250A | 250A | 210 | E410S | 250 | 310 | 310 |
| 24 | E310AE | 350A | 310AE | 340A | 220 | 250 | 250 | 225 | 235 | I220A | I220AE | 250A | 210 | 210 | I220A | 230 | 225 | E245AI | 250S | 250AE | 340A | A | A | A |
| 25 | 350A | 350 | 350A | 260 | 250 | 300A | E300A | 210 | 225 | 250A | 250A | 210 | 210 | I220A | 245 | 210 | 205 | 240A | 260 | 255 | A | E310A | S | 370 |
| 26 | E350A | 310 | 230 | 255 | 240 | 260 | E250S | 230 | 240 | 230 | 230 | 225 | 220 | 245 | 230 | 230 | 215 | 225 | 230 | 255 | E320A | A | 355 | 350 |
| 27 | 305 | 300 | 290 | 275 | 230 | 275 | 285 | 230 | 230 | 250 | 245 | I220S | 225 | 250 | 235 | 220 | 205 | 240 | 245 | 230 | 280 | 245 | 305 | 300 |
| 28 | 305 | E340A | 305 | 300 | I270C | 275 | 225 | 205 | 230 | 210 | 225 | 220 | 235 | 260 | 230 | 230 | 210 | 245 | 250 | E245AI | 240A | 285 | 305 | 300 |
| 29 | 265 | 270 | 280 | 270 | 250 | 265 | 245 | 225 | 230 | 210 | 210 | 205 | 210 | 230 | 235 | 225 | 210 | 215 | 230 | I230A | 260AE | 300A | 320 | 300 |
| 30 | 295 | 300 | 265 | 250 | 230 | 310 | E295S | 225 | 210 | 200 | I220S | 235 | 210 | 230 | 220 | E240S | 230 | 210 | 245 | 260 | 260 | 330 | 310 | 295 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 21 | 25 | 28 | 27 | 28 | 28 | 26 | 28 | 27 | 24 | 19 | 23 | 24 | 21 | 24 | 25 | 28 | 24 | 24 | 26 | 20 | 18 | 19 | 23 |
| Median | 305 | 300 | 295 | 255 | 250 | 260 | E250 | 225 | 230 | 225 | 225 | 220 | 220 | 230 | 230 | 230 | 220 | 220 | 240 | 250 | 250 | 275 | 305 | E310 |

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

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | 105 | 105 | 110 | 105 | S | S | S | S | S | S | S | 100 | S | S | S | S | S | S | S | S | S | S |
| 2 | S | S | S | E | 105 | E | S | G | S | S | S | 105 | 105 | 105 | S | 100 | 100 | S | S | S | S | S | S | S |
| 3 | S | S | E | E | E | S | S | G | 115 | S | S | 105 | S | S | S | 110 | 110 | 110 | 110 | E | S | S | 115 | 105 |
| 4 | 105 | 105 | 100 | 100 | 100 | S | B | G | 110 | C | C | C | C | C | C | C | C | C | C | C | C | 105 | S | 105 |
| 5 | 110 | S | S | C | C | S | S | S | C | S | S | S | S | C | C | 100 | 100 | C | 100 | S | S | C | C | S |
| 6 | S | S | S | E | E | S | S | S | G | C | S | S | S | S | S | S | C | S | E | S | S | E | S | S |
| 7 | C | S | 110 | 110 | 110 | 110 | S | S | S | S | S | 110 | S | 110 | S | C | S | S | C | C | C | S | 115 | C |
| 8 | 105 | 105 | 105 | E | E | S | S | B | G | 115 | 115 | 110 | S | 100 | 100 | S | S | G | S | S | 110 | S | S | S |
| 9 | S | S | E | E | E | S | S | S | G | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | B | G | S | S | 130 | 120 | 110 | 105 | 105 | 105 | 105 | 100 |
| 11 | 100 | 105 | 105 | 105 | 105 | C | C | C | 130 | S | S | S | G | S | S | S | S | S | 110 | 105 | S | S | S | 105 |
| 12 | 105 | S | 105 | E | E | S | S | S | G | 105 | 105 | 105 | S | C | C | C | 105 | 105 | 105 | 105 | 105 | 110 | 105 | 100 |
| 13 | 105 | 105 | 105 | 100 | 105 | 105 | S | S | G | 115 | 110 | 110 | 115 | 115 | 115 | S | 115 | 120 | E | S | S | S | S | E |
| 14 | S | C | E | 105 | 105 | S | S | 110 | 115 | 110 | S | 110 | S | S | S | 140 | S | 115 | 110 | 105 | S | S | S | S |
| 15 | S | E | E | E | 110 | 110 | S | 110 | G | S | S | S | B | S | S | S | 100 | S | 110 | 105 | 105 | 115 | 115 | 110 |
| 16 | 110 | 125 | 105 | 105 | 125 | 160 | 115 | 115 | 110 | 115 | 115 | G | G | 110 | 105 | G | 105 | S | 115 | 115 | 120 | 115 | 115 | S |
| 17 | S | 105 | E | 120 | 100 | 115 | 145 | S | 105 | 110 | 110 | G | G | G | S | G | 115 | 105 | 105 | 100 | 105 | 100 | S | S |
| 18 | S | S | E | 110 | E | S | S | S | 110 | G | S | S | S | S | S | S | S | 105 | S | 105 | 100 | S | S | S |
| 19 | S | E | E | E | E | S | S | S | G | S | S | S | S | S | S | S | 105 | S | S | S | S | S | S | S |
| 20 | S | S | E | E | 105 | 105 | S | S | G | G | 120 | 115 | 110 | 115 | G | G | 110 | S | S | 105 | 100 | 105 | 100 | S |
| 21 | E | S | E | E | E | S | 185 | G | S | C | S | 110 | 110 | S | 105 | G | G | S | S | S | 115 | 110 | 115 | 110 |
| 22 | 110 | 110 | E | 105 | 105 | 105 | S | S | S | 115 | 125 | 115 | G | G | 105 | S | S | 105 | 110 | 105 | 105 | 105 | 100 | 105 |
| 23 | 105 | 105 | 105 | 105 | 105 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | S | S | 100 | 100 | 100 | S | S | S | S | S |
| 24 | 110 | 110 | 100 | 100 | 110 | E | S | S | 150 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | S | 100 | 105 | 100 | 100 | 105 | 100 | 100 |
| 25 | 100 | 105 | 105 | 105 | 105 | 110 | 115 | 110 | 110 | 105 | 105 | G | B | 105 | 105 | S | S | 100 | 100 | S | 110 | 110 | S | 105 |
| 26 | 105 | 105 | E | 105 | 105 | S | S | S | S | 125 | S | S | S | S | S | G | S | S | S | 110 | 110 | 105 | S | S |
| 27 | S | 115 | 110 | E | E | S | S | S | G | 125 | 115 | S | S | S | S | S | S | S | 105 | S | S | 125 | 115 | S |
| 28 | 110 | 110 | 105 | 105 | C | E | S | 110 | G | G | G | S | 110 | 105 | 105 | 105 | S | S | S | 115 | 115 | S | S | S |
| 29 | S | S | E | E | E | S | S | S | 115 | G | G | G | S | G | 115 | 110 | S | S | S | 115 | 110 | 100 | S | S |
| 30 | S | S | 110 | E | E | S | S | S | G | S | G | S | S | 100 | G | S | 155 | 135 | S | S | S | S | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 13 | 13 | 14 | 15 | 16 | 10 | 5 | 6 | 11 | 12 | 11 | 12 | 7 | 12 | 9 | 7 | 13 | 12 | 14 | 14 | 15 | 14 | 11 | 10 |
| Median | 105 | 105 | 105 | 105 | 105 | 110 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 110 | 105 | 105 | 105 | 115 | 105 |

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



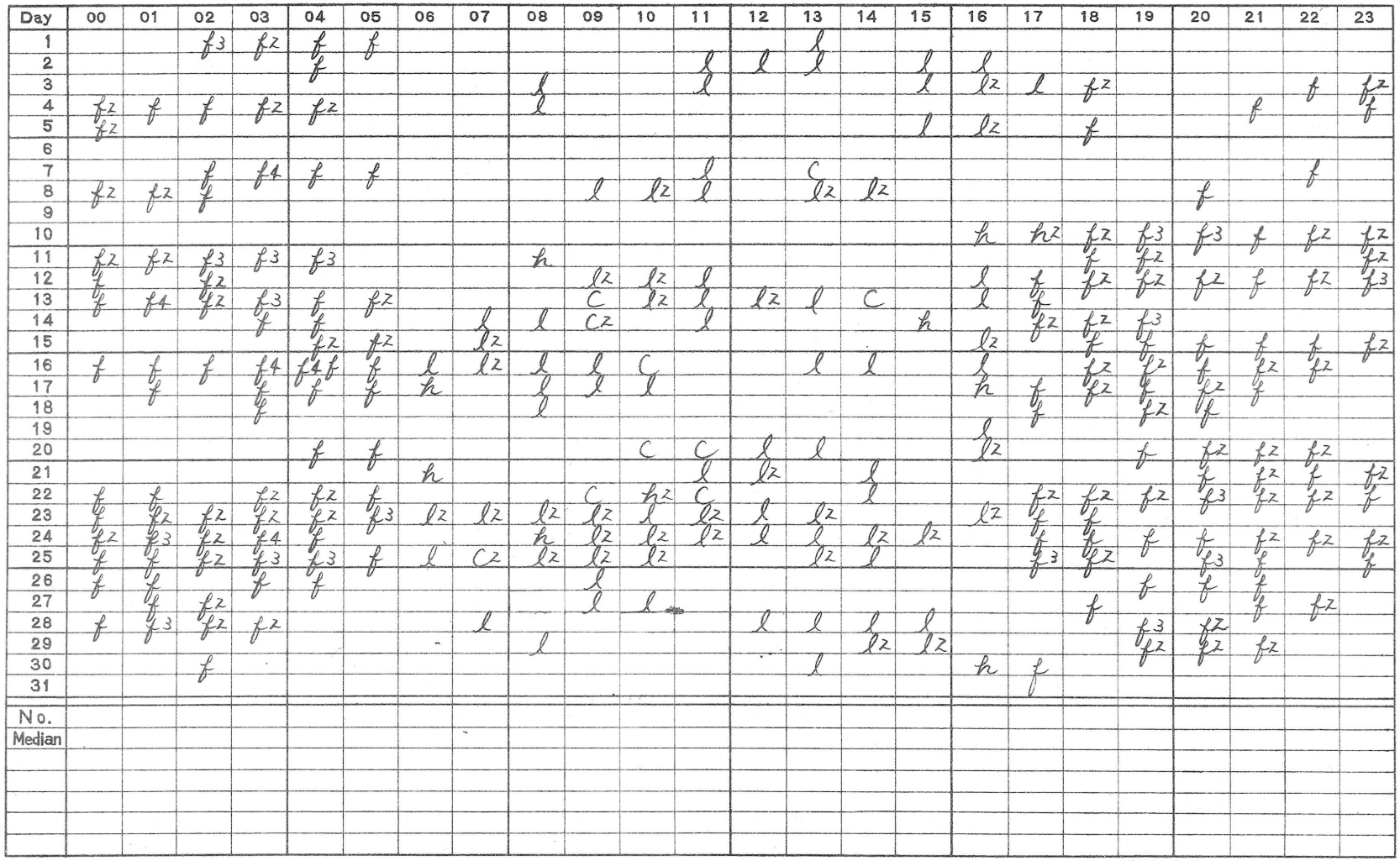
Nov. 1962

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 | | | f3 | fz | f | f | | | | | | | | | | | | | | | | | | |
| 2 | | | | | f | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | fz | f | f | fz | fz | | | | | | | | | | | | | | | | | | | |
| 5 | fz | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | f | f4 | f | f | | | | | | | | | | | | | | | | | | |
| 8 | fz | fz | f | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | fz | fz | f3 | f3 | f3 | | | | | | | | | | | | | | | | | | | |
| 12 | f | | fz | | | | | | | | | | | | | | | | | | | | | |
| 13 | f | f4 | fz | f3 | f | fz | | | | | | | | | | | | | | | | | | |
| 14 | | | | f | f | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | fz | fz | | | | | | | | | | | | | | | | | | |
| 16 | f | f | f | f4 | f | f | | | | | | | | | | | | | | | | | | |
| 17 | | f | | | f | f | | | | | | | | | | | | | | | | | | |
| 18 | | | | f | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | f | f | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | f | f | | fz | fz | f | | | | | | | | | | | | | | | | | | |
| 23 | f | f | fz | fz | f | f3 | | | | | | | | | | | | | | | | | | |
| 24 | fz | f3 | fz | f4 | f | | | | | | | | | | | | | | | | | | | |
| 25 | f | f | fz | f3 | f3 | f | | | | | | | | | | | | | | | | | | |
| 26 | f | f | | f | f | | | | | | | | | | | | | | | | | | | |
| 27 | | f | fz | | | | | | | | | | | | | | | | | | | | | |
| 28 | f | f3 | fz | fz | | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | f | | | | | | | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

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

Nov. 1962 | hpF2 | 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 | 370S | A | 330 | 280 | 275 | 275S | 255 | 255 | 255 | "265R | J300R | 255R | 255 | 250 | J260R | 230 | 230R | 255S | S | 250 | "305R | 310 | J340F |
| 2 | 280 | 300 | 355 | 310 | 285 | 255 | "270R | 250R | 250 | 270 | 305 | 265 | 260 | 290 | J275R | 255R | 250 | 245 | 260 | J255S | 265 | "290S | S | 355R |
| 3 | 355 | 345 | 270 | 280 | 225 | S | 295 | "260R | 285 | 270 | J285R | 310 | "315R | 255R | 250 | 255 | 255 | 255 | "255R | 300 | 305 | 315 | 305 | A |
| 4 | 370 | 330 | 330 | 280 | 250R | 255R | 250 | 255R | J260R | C | C | C | C | C | C | C | C | C | C | C | C | S | 315R | 320 |
| 5 | 340 | 310 | 310 | C | C | 300 | 270 | 250 | C | 275 | 255 | 255 | "270R | C | C | "245R | J260R | C | 320 | 290 | S | C | C | 310 |
| 6 | 335 | 300 | 290 | 260 | 220 | 330 | 285 | 250 | J240R | C | J265R | J250S | R | 295 | 260 | 245S | C | J255S | 295S | 350 | "295S | 355S | 335 | 360S |
| 7 | J345C | 330 | 305H | 275S | 270 | 350 | 310R | 270S | 280S | 275 | 285 | J290R | 280 | 280 | 275 | C | 255 | 245 | C | C | 270 | 330 | 400S | C |
| 8 | 310 | 290 | 265 | 270 | 245D | 360S | 310 | "280S | 255 | 260 | 270R | 290 | 290 | 280 | 270 | 255 | 270 | 260 | 265 | 280 | 280 | 270 | 350 | 350 |
| 9 | "330D | "300S | 280 | 275 | 255 | 280 | 260 | 250 | 255 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 280 | "285R | 270 | 255 | 230 | 240 | A | 300S | A | 285 | 260 | A |
| 11 | A | 340 | A | 290 | 250 | C | C | 260 | 250 | "250R | 270 | 300 | 280 | 310 | 255 | 250 | 250 | 250 | 290 | A | "270S | "250S | 320 | A |
| 12 | 340 | 325S | 305 | J280R | 240 | 300R | 255 | 250 | "250S | A | 270R | 255 | 280R | C | C | C | 230 | 245 | 290 | 260 | 255 | "310S | A | A |
| 13 | A | A | 355 | 315 | 260 | 285 | J255S | 240 | 260R | 245 | A | A | 295 | 280 | 265R | 270 | 245 | 255R | 325R | 290S | 305S | 305 | S | 355S |
| 14 | J360S | C | 340 | 305 | 300 | 300 | 295S | "225S | 230S | 260 | 270 | 260 | 310 | 280 | 265 | "255S | 240R | A | A | A | S | 345S | 370 | 340 |
| 15 | "350S | J330S | 330 | 330 | 270 | 280 | 245 | 240 | 250 | 280 | 275 | 290 | 285 | 280 | 275 | 250 | 245 | 275 | 260 | 230 | "300S | A | "395S | A |
| 16 | A | 370 | 255 | A | A | 360 | 330 | 260 | 280 | 265 | 295 | 255 | 255 | 305 | 300 | 255 | 260 | 280 | 250 | A | 290 | A | "340S | "310F |
| 17 | 305 | 295 | 330 | 305 | 330 | 305 | 260 | 250 | 245R | 260 | 305 | 260 | 280 | 255 | 255 | 275 | 260 | 250R | 260 | 230 | "250S | A | 350 | 300 |
| 18 | 290 | 280 | 330 | 305 | 280 | 260R | 280 | 250 | 260 | 255 | 255 | 280 | 255 | 260F | 250 | 275 | 255 | 240 | 260 | "305S | FS | "280F | J350S | 345 |
| 19 | 330 | 300 | 310 | 280 | 290 | 310 | 285 | 250 | 245 | 260 | 255 | 285 | 270 | 260 | 255 | 250R | 250R | 280 | 240 | 250 | "265S | 330 | 320S | 330 |
| 20 | 350 | 300 | 300 | 280 | 230 | 300 | 290 | 260 | J255R | 260 | 260 | 275 | 260 | 270R | 255 | 250 | 250 | 270R | 250R | 255 | 250 | A | 330 | 350 |
| 21 | 355 | 340 | 330 | 280 | 240 | 255 | 330R | 260R | 250 | C | 260 | 270 | 300 | 280 | 260 | 255 | 250 | 230 | 260 | 300 | 260 | 300 | 310 | A |
| 22 | 350 | 340 | 340 | 325 | 350 | 375 | 330 | "240R | 240 | 340H | 285R | 285 | 265 | 280 | J280R | 255R | 250 | 250 | A | A | A | A | A | 370 |
| 23 | 380 | 310 | 340 | 305 | 270 | A | 290S | "260S | A | 280 | "270R | 260 | 290R | "295F | 270 | 240 | 250 | 270 | 280 | 230 | S | J295S | S | J340F |
| 24 | A | A | 340 | 340 | 255 | J340H | 280 | J250S | 260 | 250R | J305R | R | "280R | 290 | 260 | 245 | 255 | 250 | S | 255 | A | A | A | A |
| 25 | J380S | 360 | 350 | 280 | 250 | 300 | 300S | 250 | 260R | J275R | 290 | 290 | 290 | 250R | 250 | 240 | 225 | 255 | 260 | J310S | A | 340 | S | "390S |
| 26 | F | F | 270 | 310 | 260 | 310 | 285 | 255 | 260 | 245 | 260R | 265 | 265R | 270R | 270 | 245 | 240S | 255R | 280S | 300 | 345 | A | "380S | "405S |
| 27 | 350 | 350 | 340 | 325 | 260 | 320S | S | 260S | 275S | 270 | 255R | 260R | 295 | 275R | "355R | 245R | 285R | 270 | 265S | 265S | 315 | 305 | 345S | 355S |
| 28 | 370S | 370S | 355H | 365 | C | 330 | 260S | 255 | 255S | 260 | 275 | 240 | 275 | 275R | "295S | 245 | 280 | 315 | "305R | 300 | A | 290 | 310S | 325 |
| 29 | 305 | 305 | 330 | 310 | 305 | 300 | 295S | "250S | 250S | 250 | J280R | 280 | 250 | 250 | 245 | 255 | J240R | 255 | J260R | A | 290 | 300 | 365 | 340 |
| 30 | "320R | 330 | 305 | 300 | J280R | 325 | 305 | 230 | 250 | 290 | 280 | J290R | 250 | 265 | 240 | 250 | J250R | 270 | J250R | 260 | J300R | F | 350 | 310 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 23 | 25 | 27 | 27 | 26 | 26 | 27 | 29 | 27 | 24 | 26 | 25 | 27 | 26 | 26 | 26 | 27 | 26 | 23 | 21 | 19 | 19 | 21 | 21 |
| Median | 345 | 330 | 330 | 305 | 260 | 300 | 285 | 250 | 255 | 260 | 270 | 275 | 280 | 280 | 260 | 250 | 250 | 255 | 260 | 280 | 280 | 305 | 340 | 345 |

hpF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 13

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | 60$^{S}$ | A | 60 | 90 | 75 | 50$^{S}$ | 55 | 95 | 80 | $^{U}$80$^{R}$ | $^{J}$55$^{R}$ | 100$^{R}$ | 60 | 100 | $^{J}$85$^{R}$ | 70 | 75$^{R}$ | 85$^{S}$ | S | 95 | $^{U}$90$^{R}$ | 90 | $^{J}$60$^{F}$ |
| 2 | 80 | 90 | 85 | 90 | 110 | 85 | $^{U}$70$^{R}$ | $^{J}$55$^{R}$ | 55 | 80 | 85 | 75 | 95 | 60 | $^{J}$85$^{R}$ | 90$^{R}$ | 80 | 55 | 90 | $^{J}$90$^{S}$ | 85 | $^{U}$80$^{S}$ | S | 60$^{R}$ |
| 3 | 85 | 55 | 95 | 115 | 75 | S | 70 | $^{U}$55$^{R}$ | 60 | 80 | $^{J}$80$^{R}$ | 95 | $^{U}$75$^{R}$ | 75$^{R}$ | 60 | 80 | 95 | 85 | $^{U}$90$^{R}$ | 95 | 90 | 85 | 90 | A |
| 4 | 95 | 75 | 70 | 70 | 50$^{R}$ | 65$^{R}$ | 65 | 85$^{R}$ | $^{J}$50$^{R}$ | C | C | C | C | C | C | C | C | C | C | C | C | S | 85$^{R}$ | 80 |
| 5 | 85 | 90 | 90 | C | C | 90 | 80 | 60 | C | 60 | 60 | 90 | $^{U}$80$^{R}$ | C | C | $^{U}$55$^{R}$ | $^{J}$85$^{R}$ | C | 80 | 65 | S | C | C | 90 |
| 6 | 75 | 55 | 90 | 90 | 50 | 75 | 65 | 70 | $^{J}$60$^{R}$ | C | $^{J}$60$^{R}$ | $^{J}$75$^{S}$ | R | 55 | 60 | 75$^{S}$ | C | $^{J}$95$^{S}$ | 65$^{S}$ | 50 | $^{U}$55$^{S}$ | 50$^{S}$ | 65 | 90$^{S}$ |
| 7 | $^{I}$75$^{C}$ | 70 | 60$^{F}$ | 75$^{S}$ | 80 | 55 | 90$^{R}$ | 130$^{S}$ | 125$^{S}$ | 65 | 70 | $^{J}$60$^{R}$ | 70 | 70 | 70 | C | 60 | 60 | C | C | 85 | 55 | 85$^{S}$ | C |
| 8 | 85 | 65 | 65 | 80 | 55 | $^{J}$85$^{S}$ | 95 | $^{U}$65$^{S}$ | 45 | 50 | 80$^{R}$ | 60 | 50 | 65 | 65 | 65 | 80 | 90 | 85 | 70 | 70 | 80 | 60 | 90 |
| 9 | $^{U}$50$^{S}$ | $^{U}$80$^{S}$ | 85 | 80 | 55 | 55 | 80 | 60 | 45 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 80 | $^{U}$65$^{R}$ | 80 | 65 | 70 | 70 | A | 50$^{S}$ | A | 65 | 60 | A |
| 11 | A | 60 | A | 65 | 50 | C | C | 70 | 50 | $^{U}$55$^{R}$ | 80 | 55 | 80 | 95 | 50 | 80 | 75 | 55 | 60 | A | $^{U}$80$^{S}$ | $^{U}$50$^{S}$ | 60 | A |
| 12 | 60 | 75$^{S}$ | 80 | $^{J}$60$^{R}$ | 65 | 80$^{R}$ | 55 | 60 | $^{U}$55$^{S}$ | A | 55$^{R}$ | 75 | 70$^{R}$ | C | C | C | 50 | 55 | 60 | 85 | 90 | $^{U}$80$^{S}$ | A | A |
| 13 | A | A | 90 | 85 | 85 | 60 | $^{J}$80$^{S}$ | 60 | 85$^{R}$ | 55 | A | A | 55 | 50 | 55$^{R}$ | 45 | 45 | 55$^{R}$ | 80$^{R}$ | 55$^{S}$ | 95$^{S}$ | 50 | S | 50$^{S}$ |
| 14 | $^{J}$80$^{S}$ | C | 100 | 95 | 75 | 55 | 60$^{S}$ | $^{U}$80$^{S}$ | 75$^{S}$ | 60 | 85 | 85 | 75 | 75 | 75 | $^{U}$55$^{S}$ | 60$^{R}$ | A | A | A | S | 60$^{S}$ | 80 | 70 |
| 15 | $^{U}$55$^{S}$ | $^{J}$75$^{S}$ | 70 | 75 | 80 | 70 | 55 | 60 | 65 | 75 | 75 | 60 | 65 | 60 | 50 | 55 | 55 | 65 | 80 | 60 | $^{U}$70$^{S}$ | A | $^{U}$55$^{S}$ | A |
| 16 | A | 85 | 50 | A | A | 85 | 65 | 90 | 70 | 60 | 55 | 55 | 55 | 75 | 55 | 75 | 90 | 70 | 70 | A | 65 | A | $^{U}$60$^{S}$ | $^{U}$80$^{F}$ |
| 17 | 65 | 55 | 75 | 100 | 70 | 80 | 95 | 50 | 55$^{R}$ | 40 | 80 | 75 | 65 | 80 | 85 | 65 | 70 | 55$^{R}$ | 80 | 70 | $^{U}$55$^{S}$ | A | 95 | 85 |
| 18 | 60 | 70 | 85 | 95 | 80 | 85$^{R}$ | 75 | 90 | 65 | 50 | 55 | 70 | 100 | 70$^{R}$ | 60 | 75 | 85 | 50 | 95 | $^{U}$75$^{S}$ | FS | $^{U}$65$^{F}$ | $^{J}$55$^{S}$ | 60 |
| 19 | 70 | 90 | 90 | 70 | 70 | 90 | 65 | 65 | 55 | 70 | 65 | 65 | 60 | 85 | 45 | 70$^{R}$ | 65$^{R}$ | 90 | 55 | 90 | $^{U}$75$^{S}$ | 70 | 80$^{S}$ | 70 |
| 20 | 90 | 60 | 65 | 70 | 70 | 95 | 60 | 80 | $^{J}$55$^{R}$ | 85 | 60 | 75 | 50 | 65$^{R}$ | 65 | 50 | 65 | 85$^{R}$ | 50$^{R}$ | 90 | 60 | A | 75 | 50 |
| 21 | 85 | 60 | 60 | 70 | 60 | 95 | 65$^{R}$ | 50$^{R}$ | 55 | C | 65 | 80 | 50 | 65 | 80 | 80 | 60 | 80 | 70 | 100 | 80 | 80 | 95 | A |
| 22 | 60 | 70 | 65 | 75 | 90 | 90 | 75 | $^{U}$60$^{R}$ | 60 | 105$^{H}$ | 55$^{R}$ | 65 | 85 | 50 | $^{J}$70$^{R}$ | 50$^{R}$ | 70 | 60 | A | A | A | A | A | 110 |
| 23 | 85 | 90 | 70 | 85 | 105 | A | 60$^{S}$ | $^{U}$50$^{S}$ | A | 75 | $^{U}$80$^{R}$ | 45 | 60$^{R}$ | $^{U}$45$^{R}$ | 70 | 40 | 95 | 80 | 70 | 65 | S | $^{J}$55$^{S}$ | S | $^{J}$60$^{F}$ |
| 24 | A | A | 60 | 60 | 50 | $^{J}$60$^{F}$ | 70 | $^{J}$55$^{S}$ | 50 | 55$^{R}$ | $^{J}$75$^{R}$ | R | $^{U}$70$^{R}$ | 60 | 60 | 65 | 60 | 90 | S | 50 | A | A | A | A |
| 25 | $^{J}$65$^{S}$ | 80 | 55 | 70 | 50 | 65 | 55$^{S}$ | 55 | 80$^{R}$ | $^{J}$40$^{R}$ | 80 | 60 | 60 | 65$^{R}$ | 60 | 70 | 65 | 85 | 55 | $^{J}$80$^{S}$ | A | 60 | S | $^{U}$75$^{S}$ |
| 26 | F | F | 80 | 75 | 85 | 90 | 70 | 60 | 55 | 60 | 60$^{R}$ | 90 | 85$^{R}$ | 75$^{R}$ | 75 | 60 | 60$^{S}$ | 95$^{R}$ | 70$^{S}$ | 55 | 60 | A | $^{U}$70$^{S}$ | $^{U}$70$^{S}$ |
| 27 | 50 | 45 | 65 | 80 | 45 | 45$^{S}$ | S | 90$^{S}$ | 100$^{S}$ | 75 | 55$^{R}$ | 95$^{R}$ | 70 | 85$^{R}$ | $^{U}$75$^{R}$ | 85$^{R}$ | 80$^{R}$ | 75 | 55$^{S}$ | 50$^{S}$ | 75 | 95 | 60$^{S}$ | 90$^{S}$ |
| 28 | 85$^{S}$ | 85$^{S}$ | 65$^{F}$ | 65 | C | 70 | 90$^{S}$ | 95 | 65$^{S}$ | 100 | 50 | 60 | 70 | 80$^{R}$ | $^{U}$65$^{S}$ | 60 | 60 | 60 | $^{U}$65$^{R}$ | 70 | A | 70 | 45$^{S}$ | 45 |
| 29 | 55 | 50 | 70 | 90 | 95 | 90 | 60$^{S}$ | $^{U}$95$^{S}$ | 95$^{S}$ | 50 | $^{J}$70$^{R}$ | 70 | 55 | 55 | 35 | 50 | $^{J}$60$^{R}$ | 85 | $^{J}$80$^{R}$ | A | 65 | 85 | 75 | 70 |
| 30 | $^{U}$80$^{R}$ | 75 | 65 | 90 | $^{J}$75$^{R}$ | 70 | 50 | 50 | 60 | 80 | 60 | $^{J}$60$^{R}$ | 50 | 70 | 60 | 50 | $^{J}$55$^{R}$ | 85 | $^{J}$50$^{R}$ | 50 | $^{J}$65$^{R}$ | F | 65 | 95 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 23 | 25 | 27 | 27 | 26 | 26 | 27 | 29 | 27 | 24 | 26 | 25 | 27 | 26 | 26 | 26 | 27 | 26 | 23 | 21 | 19 | 19 | 21 | 21 |
| Median | 75 | 70 | 70 | 75 | 70 | 80 | 65 | 60 | 60 | 60 | 70 | 70 | 70 | 65 | 65 | 65 | 65 | 75 | 70 | 70 | 75 | 70 | 70 | 70 |

ypF2

Sweep 1.0 Mc to 21.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

K 14

# IONOSPHERIC DATA

Nov. 1962 | 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 | 3.3 | 3.1 | $3.1^{S}$ | $J_{3.5}^{S}$ | $4.5^{S}$ | 2.2 | $2.5^{S}$ | $I_{5.8}^{S}$ | $7.4^{S}$ | 8.4 | $9.2^{S}$ | $9.3^{S}$ | 8.9 | $J_{11.2}^{S}$ | 9.1 | $8.3^{H}$ | 8.7 | $6.9^{S}$ | $5.4^{S}$ | 3.3 | 3.8 | C | C | C |
| 2 | 3.1 | 3.2 | 3.0 | $3.3^{S}$ | $3.7^{S}$ | $2.9^{S}$ | 2.3 | 5.2 | $I_{6.5}^{S}$ | $I_{7.1}^{H}$ | 7.9 | 8.7 | 10.4 | 11.3 | $J_{10.2}^{S}$ | $J_{9.8}^{S}$ | $7.1^{SH}$ | $6.7^{S}$ | 5.9 | 4.7 | $I_{4.8}^{S}$ | $J_{3.9}^{S}$ | $J_{4.0}^{S}$ | 3.2 |
| 3 | 3.2 | 3.4 | 3.2 | $3.7^{S}$ | $4.2^{S}$ | 2.8 | 2.7 | 5.7 | 6.8 | $J_{7.9}^{H}$ | 8.0 | 9.0 | 8.8 | 9.2 | $I_{9.7}^{S}$ | $I_{8.9}^{S}$ | $J_{7.6}^{S}$ | $7.4^{S}$ | 6.0 | $J_{4.2}^{S}$ | $I_{4.8}^{S}$ | 3.4 | 3.1 | $3.3^{S}$ |
| 4 | 3.2 | 3.4 | $J_{3.5}^{S}$ | $3.9^{S}$ | $I_{4.1}^{S}$ | 2.2 | 2.3 | $5.3^{S}$ | $I_{7.5}^{S}$ | $J_{8.4}^{S}$ | $I_{9.4}^{S}$ | $J_{9.8}^{S}$ | 8.9 | 10.4 | $J_{11.8}^{S}$ | 8.7 | $7.9^{H}$ | $J_{7.5}^{S}$ | $J_{6.3}^{S}$ | $3.3^{S}$ | 4.9 | $3.6^{S}$ | $3.3^{S}$ | $I_{3.3}^{S}$ |
| 5 | $I_{3.3}^{S}$ | 3.3 | $3.5^{S}$ | 3.4 | 2.7 | 2.3 | 2.6 | 5.7 | $J_{7.9}^{S}$ | 9.0 | $11.1^{S}$ | 9.1 | $J_{7.5}^{S}$ | 8.9 | $J_{9.8}^{S}$ | $8.1^{H}$ | 7.6 | $I_{7.3}^{S}$ | 4.2 | $J_{3.6}^{S}$ | $J_{4.3}^{S}$ | $J_{3.6}^{S}$ | 3.1 | 2.8 |
| 6 | 3.0 | 3.3 | $3.3^{S}$ | 3.2 | 2.6 | 2.1 | 2.5 | 5.6 | $J_{7.8}^{S}$ | $7.8^{S}$ | 8.6 | $J_{9.8}^{S}$ | $6.9^{H}$ | $9.3^{S}$ | $J_{10.1}^{S}$ | $8.5^{S}$ | 6.6 | $6.5^{S}$ | $5.8^{S}$ | $3.2^{S}$ | $4.4^{S}$ | S | S | S |
| 7 | $I_{3.3}^{S}$ | $I_{3.6}^{S}$ | 3.1 | $J_{3.8}^{S}$ | $J_{3.5}^{S}$ | 2.5 | $3.0^{S}$ | $5.8^{S}$ | $I_{7.4}^{S}$ | $7.2^{S}$ | 8.5 | 10.8 | $9.4^{S}$ | $J_{9.9}^{S}$ | $I_{10.0}^{S}$ | $J_{9.8}^{S}$ | 8.8H | $I_{7.7}^{S}$ | $I_{5.3}^{S}$ | $I_{3.7}^{S}$ | S | S | S | S |
| 8 | S | 3.8 | $I_{3.6}^{A}$ | 3.2 | $J_{3.2}^{S}$ | $I_{2.8}^{S}$ | $I_{3.3}^{S}$ | $J_{5.6}^{S}$ | $8.6^{S}$ | 8.5 | 8.9 | 9.0 | $8.6^{H}$ | $I_{9.7}^{S}$ | 11.3 | 8.6 | $7.0^{S}$ | 6.6 | 6.5 | $I_{4.4}^{S}$ | $I_{4.1}^{S}$ | 4.3 | $I_{3.4}^{S}$ | $I_{3.2}^{S}$ |
| 9 | $3.6^{H}$ | $J_{3.9}^{S}$ | $I_{3.3}^{S}$ | $3.2^{S}$ | $3.5^{S}$ | 2.5 | 2.5 | $5.2^{S}$ | $I_{6.4}^{S}$ | 8.3 | $9.6^{S}$ | 9.0 | $I_{7.5}^{S}$ | 10.4 | $11.3^{S}$ | $10.7^{S}$ | $J_{8.2}^{S}$ | 6.9 | $5.4^{S}$ | $J_{3.6}^{S}$ | $I_{3.9}^{S}$ | $I_{4.0}^{S}$ | $I_{3.5}^{S}$ | $I_{3.2}^{S}$ |
| 10 | 3.3 | $I_{3.1}^{S}$ | 3.0 | 3.3 | $I_{3.5}^{S}$ | $3.5^{S}$ | $I_{2.6}^{S}$ | 5.0 | 6.7 | 7.0 | $J_{7.5}^{S}$ | 7.8 | $7.5^{H}$ | 9.2 | $J_{10.1}^{S}$ | $J_{10.1}^{S}$ | $I_{8.0}^{S}$ | $J_{6.3}^{S}$ | 4.3 | $I_{4.0}^{S}$ | $J_{3.7}^{S}$ | $I_{4.0}^{S}$ | 3.8S | 3.0 |
| 11 | 3.2 | $3.2^{S}$ | 3.3 | $J_{3.5}^{S}$ | $I_{4.1}^{S}$ | $I_{2.8}^{S}$ | 2.5 | $J_{4.3}^{S}$ | $J_{7.8}^{S}$ | $I_{8.9}^{S}$ | $J_{8.0}^{S}$ | $7.3^{S}$ | $J_{7.3}^{S}$ | $J_{8.7}^{S}$ | $J_{10.6}^{S}$ | 7.8 | $J_{8.2}^{S}$ | $J_{7.6}^{S}$ | $I_{5.8}^{S}$ | $I_{4.2}^{S}$ | $5.4^{S}$ | $I_{4.4}^{A}$ | 3.1 | $3.2^{S}$ |
| 12 | 3.3 | $J_{3.8}^{S}$ | $J_{3.5}^{S}$ | $I_{3.5}^{S}$ | $I_{3.3}^{S}$ | 2.8 | 3.2 | 5.6 | $6.6^{H}$ | $I_{7.4}^{H}$ | $9.3^{S}$ | 8.4 | 7.3 | 8.3 | $J_{8.0}^{S}$ | 7.9 | $J_{7.8}^{SH}$ | 6.9 | 5.1 | S | C | C | C | C |
| 13 | 2.9 | 3.2 | $3.2^{S}$ | $I_{3.8}^{S}$ | $4.4^{S}$ | 2.6 | 2.7 | $J_{5.0}^{S}$ | $6.2^{S}$ | $I_{7.0}^{SH}$ | $J_{8.0}^{SH}$ | 8.6 | $J_{8.7}^{SH}$ | 11.3 | $I_{11.6}^{S}$ | $I_{10.6}^{S}$ | $J_{8.2}^{S}$ | $I_{6.8}^{S}$ | $I_{4.9}^{S}$ | $I_{4.0}^{S}$ | $I_{3.5}^{S}$ | $I_{4.5}^{S}$ | $I_{3.7}^{S}$ | 3.0 |
| 14 | 2.9 | 2.9 | $3.0^{S}$ | 3.1 | $3.4^{S}$ | 3.0 | $I_{3.6}^{S}$ | 5.5 | $6.2^{SH}$ | 6.8 | $J_{7.8}^{S}$ | $8.8^{S}$ | 9.2 | $I_{10.5}^{S}$ | $I_{11.3}^{S}$ | $I_{11.4}^{S}$ | $I_{8.9}^{S}$ | $I_{7.1}^{S}$ | $J_{5.0}^{S}$ | $I_{4.4}^{S}$ | $J_{3.8}^{S}$ | 2.9 | 3.0 | 3.1 |
| 15 | $3.2^{S}$ | 3.2 | $I_{3.2}^{S}$ | 3.2 | 3.4 | 3.1 | 2.8 | $J_{5.0}^{S}$ | 6.6 | 6.1 | $6.9^{H}$ | 8.9 | $I_{10.0}^{S}$ | 11.6 | $J_{11.8}^{S}$ | $J_{10.0}^{S}$ | $6.0^{H}$ | $J_{6.2}^{S}$ | $I_{6.0}^{S}$ | 4.9 | $3.2^{S}$ | $J_{3.4}^{S}$ | $3.5^{S}$ | A |
| 16 | A | S | $I_{5.6}^{S}$ | $J_{3.4}^{S}$ | 2.3 | 2.2 | $J_{1.9}^{S}$ | $5.8^{S}$ | $J_{7.8}^{S}$ | $J_{7.8}^{S}$ | $I_{9.1}^{C}$ | 11.6 | $I_{8.1}^{A}$ | 7.7 | $8.7^{S}$ | 9.1 | $J_{7.3}^{S}$ | $J_{7.6}^{S}$ | $J_{6.4}^{S}$ | $3.3^{S}$ | $I_{3.7}^{S}$ | $J_{4.2}^{S}$ | $J_{3.5}^{S}$ | $J_{3.4}^{S}$ |
| 17 | $I_{3.5}^{A}$ | 4.0 | $I_{3.5}^{S}$ | $J_{3.5}^{S}$ | $J_{3.4}^{S}$ | $3.1^{S}$ | 3.2 | $6.0^{S}$ | $6.4^{S}$ | $7.0^{S}$ | $J_{9.5}^{S}$ | $J_{9.7}^{S}$ | 8.9 | $8.0^{S}$ | 7.5 | $J_{7.5}^{S}$ | $J_{6.6}^{S}$ | $6.2^{S}$ | 5.7 | 5.0 | $J_{4.7}^{S}$ | $I_{4.2}^{S}$ | 4.0 | $I_{3.0}^{S}$ |
| 18 | 2.9 | 2.7 | 2.8 | 2.9 | 3.0 | $2.9^{S}$ | 2.8 | $J_{5.3}^{S}$ | $I_{6.7}^{S}$ | $I_{7.4}^{S}$ | $7.8^{S}$ | $I_{7.6}^{S}$ | $J_{7.7}^{S}$ | 8.6 | $J_{7.9}^{S}$ | $I_{7.6}^{S}$ | $I_{7.2}^{S}$ | $I_{6.7}^{S}$ | $J_{4.3}^{S}$ | $J_{3.7}^{S}$ | $3.4^{S}$ | $3.4^{S}$ | 2.9 | 2.7 |
| 19 | 2.9 | 3.0 | 3.0 | 3.1 | $3.3^{S}$ | 2.8 | 3.0 | $5.2^{S}$ | $J_{7.4}^{S}$ | $J_{7.3}^{S}$ | $J_{7.1}^{S}$ | $7.3^{S}$ | 7.8 | 8.7 | $8.2^{S}$ | 7.9 | $6.9^{S}$ | 5.1 | $I_{4.6}^{S}$ | 4.2 | $J_{2.9}^{S}$ | 2.9 | 2.6 | 2.7 |
| 20 | 3.1 | 3.1 | 3.4 | 3.3 | $J_{4.1}^{S}$ | 2.8 | $2.7^{S}$ | $4.4^{S}$ | $I_{6.8}^{S}$ | $I_{6.9}^{S}$ | $J_{7.8}^{S}$ | 8.8 | 8.3 | 8.8 | $J_{8.7}^{S}$ | $I_{6.8}^{S}$ | $6.3^{S}$ | $I_{6.3}^{S}$ | $4.4^{S}$ | $I_{3.7}^{S}$ | $J_{3.2}^{S}$ | $I_{2.5}^{S}$ | $J_{2.4}^{S}$ | 2.8 |
| 21 | $I_{3.0}^{S}$ | $3.3^{S}$ | $J_{3.4}^{S}$ | S | S | $I_{2.5}^{S}$ | $2.3^{S}$ | 4.2 | 5.8 | 7.3 | $8.4^{S}$ | 9.0 | 7.1 | $J_{8.0}^{S}$ | 9.0 | $I_{7.4}^{S}$ | $J_{6.4}^{S}$ | $I_{6.3}^{S}$ | $I_{4.4}^{S}$ | $I_{4.0}^{S}$ | $J_{4.0}^{S}$ | $I_{3.7}^{S}$ | 3.1 | 3.2 |
| 22 | $3.2^{S}$ | 3.5 | $J_{3.5}^{S}$ | 3.8 | $3.4^{S}$ | $3.4^{S}$ | $I_{3.6}^{S}$ | 5.6 | $J_{7.2}^{S}$ | $I_{6.6}^{SH}$ | $I_{7.8}^{SH}$ | 8.2 | 8.1 | 8.0 | 8.5 | 8.8 | $J_{7.7}^{S}$ | $I_{5.7}^{S}$ | $J_{5.0}^{S}$ | $J_{4.0}^{S}$ | 3.2 | $3.3^{S}$ | $3.3^{S}$ | $3.3^{S}$ |
| 23 | $3.4^{S}$ | $J_{3.6}^{S}$ | 3.6 | $J_{3.6}^{S}$ | $J_{3.8}^{S}$ | $I_{3.6}^{S}$ | 3.9 | $U_{6.2}^{S}$ | $I_{6.5}^{S}$ | $I_{6.9}^{C}$ | $8.5^{SH}$ | $9.1^{H}$ | $J_{7.8}^{S}$ | $I_{7.8}^{S}$ | $J_{7.6}^{SH}$ | $8.2^{S}_{H}$ | 6.3 | 5.4 | $J_{4.0}^{S}$ | $J_{4.4}^{S}$ | 3.2 | $3.1^{S}$ | $I_{3.0}^{S}$ | $I_{2.9}^{S}$ |
| 24 | $3.3^{S}$ | $I_{2.9}^{S}$ | 3.0 | $I_{3.0}^{S}$ | $I_{3.1}^{S}$ | $I_{2.2}^{S}$ | 2.4 | $J_{4.8}^{S}$ | $I_{6.7}^{S}$ | $J_{7.8}^{S}$ | $7.0^{S}$ | 7.9 | 8.4 | 8.9 | $I_{10.0}^{S}$ | $8.6^{S}$ | $6.9^{S}$ | 5.5 | $3.4^{S}$ | $3.0^{S}$ | 3.0 | 2.4 | 2.3 | $2.5^{S}$ |
| 25 | 3.0 | $2.9^{S}$ | 3.0 | 3.2 | 3.6 | 2.6 | $J_{2.1}^{S}$ | 4.6 | $I_{6.5}^{SH}$ | $I_{7.2}^{S}$ | $J_{7.4}^{SH}$ | $J_{9.8}^{S}$ | $J_{9.8}^{S}$ | 8.7 | 7.7S | 8.3 | $J_{7.2}^{S}$ | 5.2 | 4.0 | 3.6 | $I_{3.4}^{S}$ | $J_{2.5}^{S}$ | 2.9 | $I_{2.6}^{S}$ |
| 26 | 2.8 | $I_{3.0}^{S}$ | $J_{3.5}^{S}$ | $3.3^{S}$ | S | S | $2.6^{S}$ | $I_{4.2}^{S}$ | $I_{7.2}^{S}$ | $J_{8.0}^{S}$ | $J_{8.2}^{S}$ | $7.7^{S}$ | $6.9^{S}$ | $I_{8.0}^{S}$ | $J_{7.6}^{S}$ | $7.2^{S}$ | 6.8 | 5.9 | $J_{4.6}^{S}$ | $I_{3.4}^{S}$ | 3.2 | S | S | S |
| 27 | 3.0 | 2.9 | $J_{3.2}^{S}$ | $I_{3.3}^{S}$ | 3.2 | 2.8 | $2.6^{S}$ | 4.4 | $J_{7.2}^{S}$ | $6.9^{H}$ | $I_{7.5}^{SH}$ | $I_{8.4}^{S}$ | $9.3^{S}$ | $7.3^{S}$ | 7.0 | $I_{7.4}^{S}_{H}$ | $J_{6.1}^{S}$ | 4.8 | 3.1 | $J_{2.6}^{S}$ | $J_{2.6}^{S}$ | 2.9 | 3.1 | 2.6 |
| 28 | 2.8 | 3.1 | $3.3^{S}$ | 3.0 | $I_{3.2}^{S}$ | 3.2 | $I_{3.6}^{S}$ | $I_{4.7}^{S}$ | 5.7 | $5.7^{H}$ | $J_{7.5}^{S}$ | $I_{8.0}^{S}$ | 6.7 | 8.4 | $I_{8.9}^{S}_{H}$ | $I_{7.1}^{S}_{H}$ | $J_{6.2}^{S}$ | $I_{5.8}^{S}$ | $I_{4.8}^{S}$ | $3.2^{S}$ | 3.2 | 2.8 | 2.7 | $I_{3.0}^{S}$ |
| 29 | $3.0^{S}$ | $3.0^{S}$ | $3.1^{S}$ | 2.9 | $3.3^{S}$ | 2.7 | 3.0 | $I_{4.9}^{S}$ | $I_{6.0}^{SH}$ | $6.6^{H}$ | $7.0^{S}$ | $J_{8.2}^{S}$ | 7.2 | $J_{7.7}^{S}$ | $J_{6.4}^{S}$ | 6.8 | $5.9^{S}$ | 5.3 | $3.3^{S}$ | 2.9 | $I_{3.2}^{S}$ | 3.0 | 2.9 | $2.9^{S}$ |
| 30 | 2.6 | $I_{3.0}^{S}$ | $I_{3.2}^{A}$ | 3.3 | $3.3^{S}$ | 2.9 | $2.5^{S}$ | $I_{5.0}^{S}$ | $5.7^{H}$ | 5.6 | $7.5^{S}$ | 9.2 | $J_{10.1}^{S}$ | 11.1 | $9.2^{S}$ | $I_{6.9}^{S}_{H}$ | $I_{6.5}^{S}$ | $J_{6.1}^{S}$ | $I_{4.2}^{S}$ | 2.9 | 3.0 | $3.1^{S}$ | $I_{3.2}^{S}$ | $I_{3.4}^{S}$ |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 29 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 28 | 25 | 25 | 24 |
| Median | 3.2 | 3.2 | 3.2 | 3.3 | 3.4 | 2.8 | 2.6 | 5.2 | 6.7 | 7.2 | 8.0 | 8.8 | 8.2 | 8.8 | 9.2 | 8.3 | 7.2 | 6.4 | 5.0 | 3.7 | 3.6 | 3.4 | 3.1 | 3.0 |
| U.Q. | 3.3 | 3.4 | 3.5 | 3.5 | 3.8 | 3.0 | 3.0 | 5.6 | 7.4 | 7.9 | 8.9 | 9.2 | 8.9 | 10.4 | 10.2 | 9.1 | 7.9 | 6.9 | 5.8 | 4.2 | 4.2 | 4.0 | 3.5 | 3.2 |
| L.Q. | 3.0 | 3.0 | 3.1 | 3.2 | 3.2 | 2.5 | 2.5 | 4.8 | 6.4 | 6.9 | 7.5 | 8.2 | 7.5 | 8.0 | 8.0 | 7.5 | 6.5 | 5.8 | 4.3 | 3.3 | 3.2 | 2.9 | 2.9 | 2.8 |
| Q.R. | 0.3 | 0.4 | 0.4 | 0.3 | 0.6 | 0.5 | 0.5 | 0.8 | 1.0 | 1.0 | 1.4 | 1.0 | 1.4 | 2.4 | 2.2 | 1.6 | 1.4 | 1.1 | 1.5 | 0.9 | 1.0 | 1.1 | 0.6 | 0.4 |

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 1

# IONOSPHERIC DATA

Nov. 1962 | foF1 | 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 | L | L | L | LH | L | | | | | | | | | |
| 2 | | | | | | | | | | | L | 4.4 | 4.0 | $I_{4.7}^{A}$ | $I_{4.5}^{L}$ | L | | | | | | | | |
| 3 | | | | | | | | | | | L | $I_{4.4}^{A}$ | L | LH | L | $I_{3.9}^{L}$ | $I_{3.0}^{L}$ | | | | | | | |
| 4 | | | | | | | | | | L | L | $4.6^{L}$ | $I_{4.4}^{L}$ | L | L | L | | | | | | | | |
| 5 | | | | | | | | | | | L | $I_{4.5}^{L}$ | $I_{4.4}^{L}$ | 4.5 | L | | | | | | | | | |
| 6 | | | | | | | | | | L | L | 4.3 | | L | L | L | L | | | | | | | |
| 7 | | | | | | | | | | | L | L | 4.4 | $4.8^{L}$ | L | L | | | | | | | | |
| 8 | | | | | | | | | | | L | $I_{4.6}^{L}$ | 4.5 | L | L | A | | | | | | | | |
| 9 | | | | | | | | | | | L | L | L | L | $4.4^{L}$ | L | | | | | | | | |
| 10 | | | | | | | | | | | L | | L | L | L | L | | | | | | | | |
| 11 | | | | | | | | | | | L | $4.2^{L}$ | 4.3 | LH | $4.5^{L}$ | L | | | | | | | | |
| 12 | | | | | | | | | | | L | L | L | $4.3^{L}$ | L | A | | | | | | | | |
| 13 | | | | | | | | | | | | L | | 4.7 | $I_{4.3}^{L}$ | L | | | | | | | | |
| 14 | | | | | | | | | | | L | L | L | L | L | | | | | | | | | |
| 15 | | | | | | | | | | | | 4.5 | A | $4.3^{L}$ | L | | | | | | | | | |
| 16 | | | | | | | | | | | | L | A | | L | L | | | | | | | | |
| 17 | | | | | | | | | | | A | A | A | A | A | A | A | | | | | | | |
| 18 | | | | | | | | | | | L | L | LH | L | L | | | | | | | | | |
| 19 | | | | | | | | | | | L | L | L | L | L | L | | | | | | | | |
| 20 | | | | | | | | | | | L | 4.5 | $I_{4.6}^{L}$ | L | L | | | | | | | | | |
| 21 | | | | | | | | | | L | L | $4.5^{L}$ | L | L | $4.4^{L}$ | A | L | | | | | | | |
| 22 | | | | | | | | | | | | $I_{4.4}^{L}$ | 4.5 | $I_{4.3}^{A}$ | A | | | | | | | | | |
| 23 | | | | | | | | | | | | | 4.5 | A | | | | | | | | | | |
| 24 | | | | | | | | | | | | LH | $I_{4.3}^{L}$ | $I_{4.5}^{LH}$ | L | L | | | | | | | | |
| 25 | | | | | | | | | | | | LH | 4.5 | 4.3 | $3.6^{H}$ | 3.6 | | | | | | | | |
| 26 | | | | | | | | | | | L | L | L | L | LH | 3.4 | | | | | | | | |
| 27 | | | | | | | | | | | | 4.4 | 4.3 | 4.3 | L | | | | | | | | | |
| 28 | | | | | | | | | | | LH | | L | $4.6^{H}$ | | | | | | | | | | |
| 29 | | | | | | | | | | | 4.0 | 4.1 | $I_{4.3}^{H}$ | 4.3 | 3.7 | | | | | | | | | |
| 30 | | | | | | | | | | | $4.2^{H}$ | 4.5 | LH | 4.5 | $4.2^{L}$ | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | 2 | 14 | 13 | 13 | 8 | 3 | 1 | | | | | | | |
| Median | | | | | | | | | | | 4.1 | 4.4 | 4.4 | 4.5 | 4.4 | 3.6 | $U_{3.0}$ | | | | | | | |

foF1

Sweep 10 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 2

# IONOSPHERIC DATA

Nov. 1962 | 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 | 2.30 | 2.80 | 3.00 | $3.10^{R}$ | 3.20 | $I_{3.10^{R}}$ | 3.10 | 2.80 | 2.35 | S | | | | | | |
| 2 | | | | | | | | S | 2.50 | 2.80 | 2.95 | 3.00 | A | A | A | A | A | S | | | | | | |
| 3 | | | | | | | | S | $2.50^{H}$ | 2.80 | 3.15 | A | A | 3.20 | 3.10 | 2.75 | 2.45 | A | | | | | | |
| 4 | | | | | | | | S | 2.30 | 2.70 | 2.85 | 3.00 | 3.25 | 3.20 | 3.05 | 2.70 | 2.20 | A | | | | | | |
| 5 | | | | | | | | S | 2.25 | 2.70 | 2.95 | $I_{2.90^{A}}$ | 2.90 | 3.20 | 3.10 | 2.85 | 2.40 | S | | | | | | |
| 6 | | | | | | | | S | $2.45^{H}$ | 2.80 | 3.00 | 3.15 | $3.15^{R}$ | $I_{3.20^{R}}$ | 3.10 | 2.60 | 2.00 | S | | | | | | |
| 7 | | | | | | | | S | 2.30 | 2.80 | 3.10 | 3.20 | 3.20 | 3.20 | 3.05 | 2.80 | $I_{2.40^{A}}$ | S | | | | | | |
| 8 | | | | | | | | S | 2.50 | 2.85 | 3.00 | $3.10^{R}$ | $I_{3.10^{R}}$ | 3.00 | 2.80 | A | A | S | | | | | | |
| 9 | | | | | | | | S | $2.30^{H}$ | 2.70 | 2.90 | $I_{3.10^{R}}$ | 3.20 | 3.10 | 3.00 | 2.70 | 2.15 | S | | | | | | |
| 10 | | | | | | | | S | 2.10 | 2.70 | 3.05 | 3.15 | 3.25 | 3.20 | 3.10 | 2.80 | 2.30 | S | | | | | | |
| 11 | | | | | | | | S | 2.40 | 2.80 | $2.90^{H}$ | $I_{3.10^{R}}$ | R | R | 3.10 | 2.85 | 2.50 | A | | | | | | |
| 12 | | | | | | | | S | $I_{2.30^{A}}$ | 2.70 | 2.90 | A | A | A | A | A | A | A | | | | | | |
| 13 | | | | | | | | S | $I_{2.35^{A}}$ | 2.80 | 3.00 | $I_{3.05^{R}}$ | 3.05 | 3.00 | 2.90 | 2.60 | 2.20 | S | | | | | | |
| 14 | | | | | | | | S | $I_{2.30^{A}}$ | 2.80 | 3.00 | 3.15 | $I_{3.30^{C}}$ | 3.20 | $I_{3.15^{H}}$ | 2.95 | 2.40 | S | | | | | | |
| 15 | | | | | | | | S | 2.20 | A | A | A | A | 3.30 | 3.05 | 2.80 | 2.35 | A | | | | | | |
| 16 | | | | | | | | S | 2.40 | 2.80 | $I_{2.95^{C}}$ | 3.00 | $I_{2.95^{A}}$ | $I_{3.15^{R}}$ | $I_{3.05^{R}}$ | 2.80 | 2.30 | S | | | | | | |
| 17 | | | | | | | | S | A | A | A | A | A | A | A | A | A | A | | | | | | |
| 18 | | | | | | | | S | 2.35 | 2.75 | 2.90 | $I_{3.05^{A}}$ | 3.10 | $I_{3.05^{R}}$ | 3.00 | 2.70 | 2.30 | S | | | | | | |
| 19 | | | | | | | | S | 2.30 | 2.70 | 3.00 | 3.10 | 3.20 | $3.10^{R}$ | 2.90 | 2.80 | A | A | | | | | | |
| 20 | | | | | | | | S | 2.25 | 2.75 | 3.00 | 3.00 | A | A | A | A | A | A | | | | | | |
| 21 | | | | | | | | S | $2.35^{H}$ | 2.75 | 3.00 | 3.10 | 3.00 | A | A | A | A | S | | | | | | |
| 22 | | | | | | | | S | 2.20 | 2.65 | 2.95 | 3.10 | 3.10 | 3.00 | 2.80 | $I_{2.50^{A}}$ | $2.30^{H}$ | S | | | | | | |
| 23 | | | | | | | | S | 2.15 | $I_{2.65^{C}}$ | $I_{2.95^{A}}$ | $I_{3.05^{A}}$ | $I_{3.10^{R}}$ | $I_{3.00^{A}}$ | $2.90^{H}$ | A | A | A | | | | | | |
| 24 | | | | | | | | S | $I_{2.20^{A}}$ | 2.70 | 2.90 | 2.90 | $I_{2.90^{A}}$ | 3.05 | 3.00 | 2.70 | 2.30 | A | | | | | | |
| 25 | | | | | | | | S | 2.15 | 2.70 | $I_{2.75^{A}}$ | 3.00 | 3.00 | 3.00 | 2.95 | 2.75 | A | S | | | | | | |
| 26 | | | | | | | | S | 2.10 | $2.65^{H}$ | 3.00 | 3.05 | 3.00 | 3.00 | $I_{2.90^{A}}$ | 2.70 | 2.20 | S | | | | | | |
| 27 | | | | | | | | S | 2.20 | $I_{2.60^{A}}$ | A | A | 3.00 | $I_{3.20^{R}}$ | 2.95 | 2.70 | A | S | | | | | | |
| 28 | | | | | | | | S | 2.15 | $I_{2.60^{A}}$ | 2.95 | 3.10 | 3.05 | 3.00 | $I_{2.90^{A}}$ | A | A | A | | | | | | |
| 29 | | | | | | | | S | 2.10 | 2.70 | 2.90 | A | A | A | 2.90 | 2.60 | $2.25^{H}$ | S | | | | | | |
| 30 | | | | | | | | S | 2.10 | $2.70^{H}$ | $2.90^{H}$ | A | A | A | 2.90 | 2.60 | 2.10 | S | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | 29 | 28 | 27 | 23 | 21 | 22 | 25 | 22 | 19 | | | | | | | |
| Median | | | | | | | | | 2.30 | 2.70 | 2.95 | 3.10 | 3.10 | 3.10 | 3.00 | 2.70 | 2.30 | | | | | | | |

foE

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 3

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | E | S | E | S | G | 2.4 | G | G | G | 3.3 | G | 3.2 | 3.3 | 2.6 | G | S | $J_{2.3}$ | 2.3 | C | C | C |
| 2 | S | S | S | S | E | S | S | S | G | 3.1 | 3.2 | 3.2 | 4.0 | $J_{5.3}$ | $J_{4.3}$ | $J_{3.6}$ | 3.0 | 5.8 | $5.8^{M}$ | 2.5 | 3.9 | 2.7 | 2.1 | S |
| 3 | S | S | S | E | E | S | S | G | 2.8 | 3.1 | 3.4 | $J_{6.6}$ | 4.6H | G | G | $2.7^{G}$ | $2.0^{G}$ | 3.8 | 2.5 | S | $J_{2.4}$ | S | S | $J_{2.0}$ |
| 4 | S | S | S | E | E | S | S | $J_{2.2}$ | 2.8 | 3.2 | 3.3 | 3.7 | G | G | G | 3.2 | 2.7 | $J_{2.3}$ | S | S | S | 3.0 | S | S |
| 5 | S | 2.2 | S | $J_{2.2}$ | 1.1 | S | S | 2.1 | 2.7 | 3.0 | 3.3 | 5.0 | 3.5 | $2.4^{G}$ | G | $J_{2.2}{}^{G}$ | $2.1^{G}$ | 2.0 | 2.1 | S | S | S | 2.4 | 2.3 |
| 6 | 3.2 | 2.5 | $J_{2.1}$ | 2.5 | 2.1 | S | S | G | G | $2.5^{G}$ | $4.3^{M}$ | 3.6 | $2.7^{G}$ | $3.1^{G}$ | G | 3.0 | 2.4 | S | S | S | S | S | S | S |
| 7 | S | S | S | S | E | S | S | G | G | 3.2 | 3.7 | 3.8 | 3.5 | $J_{5.4}$ | G | G | 2.5 | G | S | S | S | S | 2.3 | $J_{2.3}$ |
| 8 | $3.2^{M}$ | $3.6^{M}$ | $5.9^{M}$ | $J_{2.9}$ | 2.7 | 2.5 | 2.7 | S | $2.2^{G}$ | 3.0 | 3.2 | 3.7 | 3.7 | 3.6 | 3.2 | 6.0 | $J_{3.9}$ | $J_{3.2}$ | 3.2 | $J_{2.3}$ | S | S | S | S |
| 9 | S | S | $J_{2.4}$ | S | S | S | S | G | G | 3.2 | G | 3.5 | 3.5 | 3.4 | 3.3 | 3.0 | 2.5 | 1.9 | S | 2.6 | S | S | S | S |
| 10 | S | S | S | S | S | 2.7 | 2.3 | S | 2.6 | 3.3 | 3.5 | 4.3 | 3.7 | 4.4 | 3.5 | 3.3 | 2.8 | 2.1 | S | S | S | 2.3 | S | 2.7 |
| 11 | S | S | S | 2.2 | 3.0 | 2.4 | S | $J_{2.5}$ | G | G | 3.0 | G | $2.9^{G}$ | G | 3.5 | 3.3 | $J_{3.4}$ | $4.9^{M}$ | $5.8^{M}$ | 2.8 | S | $5.8^{M}$ | 2.8 | S |
| 12 | S | S | 3.1 | 3.0 | 2.7 | S | S | S | 2.4 | 2.8 | $2.8^{G}$ | 3.2 | 3.0 | $J_{4.8}$ | $J_{3.3}$ | $4.9^{M}$ | $3.8^{M}$ | $J_{5.1}$ | $3.3^{M}$ | 3.0 | C | C | C | C |
| 13 | S | S | S | S | 2.4 | 2.3 | S | S | $4.4^{M}$ | 3.1 | 3.5 | 3.8 | $J_{5.3}$ | 3.8 | 3.6 | 3.3 | 2.9 | $J_{2.5}$ | S | 2.6 | 2.8 | S | 2.9 | 3.0 |
| 14 | S | S | 2.9 | S | S | S | S | S | 2.9 | G | G | G | G | G | G | G | G | 1.8 | 2.3 | 2.3 | S | S | S | S |
| 15 | 2.1 | 2.9 | 2.8 | S | 2.7 | 2.2 | 2.6 | S | 2.6 | $J_{3.6}$ | 3.8 | 3.8 | 4.5 | 3.8 | $2.7^{G}$ | 2.8 | $2.1^{G}$ | $J_{2.7}$ | $4.2^{M}$ | 3.0 | $3.8^{M}$ | $2.9^{M}$ | 2.8 | $4.1^{M}$ |
| 16 | $5.7^{M}$ | $3.2^{M}$ | 2.3 | 2.3 | $J_{3.0}$ | S | S | S | G | 3.5 | C | $J_{5.3}$ | $J_{8.5}$ | $2.9^{G}$ | $2.9^{G}$ | G | G | S | $2.8^{M}$ | S | S | $J_{3.2}$ | $3.6^{M}$ | $3.9^{M}$ |
| 17 | $5.8^{M}$ | 2.9 | $J_{3.7}$ | 2.7 | $2.8^{M}$ | 2.3 | S | 2.9 | $J_{4.2}$ | 6.1 | $J_{6.8}$ | $J_{8.7}$ | 9.5 | $J_{8.7}$ | $9.0^{M}$ | 8.0 | 5.8 | 4.3 | $5.7^{M}$ | $3.6^{M}$ | 2.8 | $3.3^{M}$ | $J_{2.7}$ | 2.3 |
| 18 | S | S | 2.1 | E | S | 2.1 | S | S | G | 3.1 | 3.1 | 3.1 | G | G | $2.9^{G}$ | G | G | S | S | 2.1 | $J_{2.4}$ | 2.2 | S | S |
| 19 | S | 2.3 | 2.4 | 2.4 | S | S | S | S | 2.9 | 3.1 | $2.9^{G}$ | $3.0^{G}$ | G | G | G | G | $J_{2.5}$ | $J_{2.9}$ | $J_{2.6}$ | $J_{2.4}$ | S | S | S | S |
| 20 | S | S | S | S | S | S | S | S | 2.7 | 2.9 | 3.5 | 3.6 | 3.7 | $J_{4.1}$ | $J_{5.3}$ | $J_{5.2}$ | $J_{4.3}$ | $J_{2.5}$ | 2.9 | $J_{2.2}$ | S | S | S | S |
| 21 | S | S | S | S | S | S | S | 2.1 | G | 2.9 | 3.3 | 3.7 | 3.9 | $J_{5.1}$ | $J_{5.2}$ | 6.1 | 3.2 | $J_{2.3}$ | 2.7 | S | S | S | S | S |
| 22 | S | S | S | 2.5 | E | S | 2.8 | 2.6 | G | G | 3.2 | 3.4 | 3.6 | $J_{8.4}$ | $J_{4.9}$ | 3.0 | G | S | S | 2.4 | S | S | S | S |
| 23 | S | S | 2.4 | S | E | S | 2.7 | 2.6 | G | C | 3.1 | 3.1 | $2.9^{G}$ | 7.3 | 3.0 | $J_{3.3}$ | 3.8 | 3.0 | S | S | S | S | S | S |
| 24 | 2.4 | $J_{2.5}$ | $2.5^{M}$ | 3.0 | E | S | $J_{2.4}$ | $J_{2.4}$ | $J_{3.6}$ | $2.1^{G}$ | $J_{2.4}{}^{G}$ | 3.2 | 3.2 | $3.0^{G}$ | G | $J_{2.6}{}^{G}$ | 3.0 | 3.1 | 3.0 | S | $J_{2.2}$ | S | S | S |
| 25 | S | S | S | E | S | S | S | S | $1.9^{G}$ | G | $J_{3.7}$ | $2.2^{G}$ | $2.9^{G}$ | $J_{2.7}{}^{G}$ | G | G | $J_{2.4}$ | S | S | S | $J_{2.3}$ | S | S | S |
| 26 | S | S | S | $J_{2.2}$ | 2.4 | 2.1 | S | S | G | G | 3.2 | 3.4 | 3.3 | 3.4 | 3.4 | 2.8 | 2.4 | S | 2.2 | $J_{2.4}$ | 2.8 | 3.1 | 2.9 | S |
| 27 | S | S | S | 2.4 | $J_{2.0}$ | S | S | S | 2.5 | 2.7 | $J_{3.3}$ | $J_{3.8}$ | G | 3.9 | 3.4 | 2.9 | 3.2 | S | S | S | S | 2.4 | S | S |
| 28 | S | S | S | S | S | 2.8 | S | 2.2 | $2.1^{G}$ | 2.9 | G | G | G | G | 3.8 | 3.1 | 3.8 | 2.1 | $J_{2.5}$ | S | S | S | S | S |
| 29 | S | S | S | S | S | S | S | S | 2.6 | G | G | 3.1 | 3.2 | $J_{3.7}$ | $2.8^{G}$ | G | G | S | S | S | 2.3 | S | S | S |
| 30 | S | S | 3.2 | S | S | S | S | S | G | G | G | 3.2 | 3.3 | $J_{5.2}$ | G | G | G | S | S | S | $J_{2.2}$ | $3.1^{M}$ | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 6 | 8 | 13 | 17 | 18 | 10 | 6 | 14 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 21 | 16 | 15 | 12 | 11 | 9 | 8 |
| Median | 3.2 | 2.7 | 2.5 | 2.3 | 2.0 | 2.3 | 2.6 | 2.2 | G | 2.9 | 3.2 | 3.4 | 3.3 | 3.5 | 3.1 | 3.0 | 2.6 | 2.5 | 2.8 | 2.4 | 2.4 | 3.0 | 2.8 | 2.5 |
| U.Q. | 5.7 | 3.0 | 3.2 | 2.6 | 2.7 | 2.5 | 2.7 | 2.5 | 2.7 | 3.2 | 3.5 | 3.8 | 3.7 | 4.6 | 3.5 | 3.3 | 3.2 | 3.5 | 3.8 | 2.8 | 2.8 | 3.2 | 2.9 | 3.4 |
| L.Q. | 2.4 | 2.4 | 2.4 | E | E | 2.1 | 2.4 | G | G | G | G | 3.1 | G | G | G | G | G | 2.0 | 2.5 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 |
| Q.R. | 3.3 | 0.6 | 0.8 | | | 0.4 | 0.3 | | | | | 0.7 | | | | | | 1.5 | 1.3 | 0.5 | 0.5 | 0.8 | 0.5 | 1.1 |

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

# IONOSPHERIC DATA

Nov. 1962 | $f_bEs$ | 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 | S | S | | S | | S | | G | | | | G | | G | G | G | | S | 2.3 | 1.9 | C | C | C |
| 2 | S | S | S | S | | S | S | S | | G | G | G | 3.6 | 4.7 | 3.4 | 3.0 | 2.4 | 3.2 | 2.5 | 2.3 | A | 1.9 | E | S |
| 3 | S | S | S | | | S | S | | G | G | $E_{3.4}^{R}$ | 4.3 | 3.4 | | | $2.6^{G}$ | $1.9^{G}$ | 2.1 | E | S | 2.3 | S | S | 2.0 |
| 4 | S | S | S | | | S | S | G | 2.7 | 3.2 | 3.2 | 3.4 | | | | 3.2 | 2.6 | 2.3 | S | S | S | 2.4 | S | S |
| 5 | S | 2.2 | S | 1.9 | E | S | S | 2.0 | G | G | 3.3 | 3.7 | 3.5 | $2.4^{G}$ | | $2.0^{G}$ | $2.0^{G}$ | G | 1.9 | S | S | S | 2.0 | 2.2 |
| 6 | 2.3 | E | E | 1.8 | E | S | S | | | $2.5^{G}$ | 2.6 | $2.5^{G}$ | $2.4^{G}$ | $E_{3.1}^{R}$ | | G | 2.4 | S | S | S | S | S | S | S |
| 7 | S | S | S | S | | S | S | | | G | 3.6 | 3.8 | $E_{3.5}^{R}$ | 3.7 | | | G | | S | S | S | S | E | E |
| 8 | A | 2.5 | A | 1.9 | 2.1 | 1.9 | 1.9 | S | $2.1^{G}$ | G | $E_{3.2}^{R}$ | 3.6 | 3.6 | 3.6 | $E_{3.2}^{R}$ | 4.7 | 3.3 | 2.7 | 2.6 | E | S | S | S | S |
| 9 | S | S | 1.9 | S | S | S | S | | | 3.2 | | 3.5 | 3.5 | 3.4 | $E_{3.3}^{R}$ | 3.0 | 2.4 | G | S | E | S | S | S | S |
| 10 | S | S | S | S | S | E | 1.9 | S | G | 3.3 | 3.5 | 4.1 | 3.7 | 4.0 | 3.4 | 3.2 | 2.8 | 2.0 | S | S | S | 2.0 | S | 2.4 |
| 11 | S | S | S | E | A | A | S | 2.5 | | | G | | $E_{2.9}^{R}$ | | 3.5 | G | 2.3 | 2.0 | 4.1 | E | S | A | E | S |
| 12 | S | S | 1.9 | 1.9 | 1.9 | S | S | S | 2.4 | 2.5 | G | $E_{3.2}^{R}$ | $E_{3.0}^{R}$ | 3.7 | 3.3 | 4.1 | 2.7 | A | 1.9 | A | C | C | C | C |
| 13 | S | S | S | S | 2.1 | E | S | S | 2.9 | $E_{3.1}^{R}$ | 3.5 | 3.7 | 4.3 | 3.6 | 3.6 | 3.3 | 2.8 | 2.3 | S | 1.9 | E | S | 2.3 | 2.2 |
| 14 | S | S | 2.5 | S | S | S | S | S | 2.4 | | | | | | | | | 1.8 | E | E | S | S | S | S |
| 15 | E | 2.1 | 1.9 | S | 1.8 | E | E | S | G | 3.5 | $E_{3.8}^{R}$ | 3.8 | $E_{4.5}^{R}$ | 3.8 | $2.6^{G}$ | 2.3 | $2.0^{G}$ | 2.5 | 4.1 | A | 2.3 | 1.9 | 2.0 | A |
| 16 | A | 1.9 | E | E | 1.8 | S | S | S | | 3.2 | C | 4.2 | A | $E_{2.9}^{R}$ | $E_{2.9}^{R}$ | | | S | 2.0 | S | S | 2.3 | 1.9 | 2.5 |
| 17 | A | 2.4 | 2.4 | E | 1.9 | 2.0 | S | 1.9 | 2.5 | 4.6 | 4.7 | 5.1 | 8.1 | 4.1 | 4.3 | 4.7 | 4.3 | 3.7 | 3.6 | 2.6 | 2.1 | 2.4 | 2.0 | 1.9 |
| 18 | S | S | E | | S | E | S | S | | 3.0 | 2.7 | $E_{3.1}^{R}$ | | | $2.7^{G}$ | | | S | S | E | 2.0 | E | S | S |
| 19 | S | 2.0 | 1.9 | E | S | S | S | S | G | G | $2.9^{G}$ | $2.7^{G}$ | | | | | 2.5 | 2.6 | 2.6 | 1.9 | S | S | S | S |
| 20 | S | S | S | S | S | S | S | S | G | G | 3.2 | 3.3 | 3.4 | 3.8 | 4.0 | 3.7 | 3.4 | 2.1 | A | 2.0 | S | S | S | S |
| 21 | S | S | S | S | S | S | S | 2.1 | | 2.9 | G | 3.6 | 3.5 | 4.0 | 3.5 | 4.8 | 2.4 | 1.8 | 2.0 | S | S | S | S | S |
| 22 | S | S | S | E | | S | E | 2.0 | | | G | G | 3.5 | 7.0 | 4.5 | 2.9 | | S | S | E | S | S | S | S |
| 23 | S | S | 2.0 | S | | S | E | G | | C | G | $E_{3.1}^{R}$ | $E_{2.9}^{R}$ | 7.3 | 2.6 | 3.1 | 3.2 | 2.3 | S | S | S | S | S | S |
| 24 | E | 1.9 | E | 1.8 | | S | 1.8 | 2.2 | A | $2.0^{G}$ | G | 3.1 | 3.2 | $2.7^{G}$ | | $2.4^{G}$ | G | A | 2.3 | S | E | S | S | S |
| 25 | S | S | S | | S | S | S | S | $1.9^{G}$ | | 3.2 | $2.2^{G}$ | $2.6^{G}$ | $2.5^{G}$ | | | 2.4 | S | S | S | A | S | S | S |
| 26 | S | S | S | 1.8 | 2.0 | 1.8 | S | S | | | G | G | 3.3 | 3.3 | 3.2 | 2.6 | G | S | E | A | 2.0 | A | A | S |
| 27 | S | S | S | A | E | S | S | S | 2.5 | 2.6 | 3.3 | 3.6 | | 3.9 | $E_{3.4}^{R}$ | 2.9 | 2.7 | S | S | S | S | E | S | S |
| 28 | S | S | S | S | S | 1.9 | S | 1.7 | $2.0^{G}$ | 2.7 | | | | | 3.7 | 2.9 | 3.6 | 2.0 | 2.4 | S | S | S | S | S |
| 29 | S | S | S | S | S | S | S | S | G | | | 3.1 | $E_{3.2}^{R}$ | 3.7 | $2.7^{G}$ | | | S | S | S | E | S | S | S |
| 30 | S | S | A | S | S | S | S | S | | | | $E_{3.2}^{R}$ | 3.3 | 3.5 | | | | S | S | S | 2.0 | E | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

$f_bEs$

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 5

# IONOSPHERIC DATA

Nov. 1962 | 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 | $E_{1.70}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | 1.35 | $E_{1.80}^{S}$ | 1.20 | $E_{1.90}^{S}$ | 2.00 | 1.80 | 1.80 | 1.75 | 1.90 | 1.80 | 1.95 | 1.90 | 1.90 | 1.70 | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | C | C | C |
| 2 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | $E_{1.60}^{S}$ | E | $E_{1.60}^{S}$ | $E_{1.80}^{S}$ | 2.00 | 1.70 | 1.90 | 1.95 | 1.90 | 2.40 | 2.10 | 2.00 | 1.80 | 1.70 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ |
| 3 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | | 1.80 | E | $E_{1.60}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 1.80 | 1.90 | 2.20 | 2.10 | 2.00 | 2.00 | 2.00 | 1.80 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ |
| 4 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | | 1.80 | 1.70 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 1.90 | 1.90 | 1.80 | 2.25 | 2.25 | 2.20 | 1.85 | 1.80 | 1.80 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.85}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ |
| 5 | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{1.70}^{S}$ | | E | E | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.80 | 1.90 | 1.85 | 1.80 | 1.80 | 1.85 | 1.90 | 1.80 | $E_{1.60}^{S}E_{1.80}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | |
| 6 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | | E | 1.20 | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.90 | 1.70 | 1.80 | 1.85 | 1.80 | 1.80 | 1.80 | 1.90 | 2.00 | 1.80 | 1.90 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | |
| 7 | $E_{1.80}^{S}$ | $E_{2.00}^{S}E_{1.90}^{S}$ | | $E_{1.80}^{S}$ | E | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 1.80 | 1.90 | 1.95 | 2.00 | 2.00 | 1.90 | 2.00 | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.90}^{S}$ | $E_{1.75}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.80}^{S}$ | |
| 8 | $E_{1.80}^{S}$ | $E_{1.75}^{S}E_{1.80}^{S}$ | | 1.40 | $E_{1.70}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 1.90 | 2.00 | 2.00 | 2.00 | 2.00 | 1.85 | $E_{1.70}^{S}E_{1.80}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{1.60}^{S}$ | |
| 9 | $E_{1.70}^{S}$ | $E_{1.60}^{S}E_{1.80}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.80}^{S}$ | | $E_{1.70}^{S}$ | 1.80 | 1.75 | 1.90 | 1.90 | 2.20 | 2.20 | 2.00 | 2.00 | $E_{1.70}^{S}E_{1.60}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | $E_{2.00}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | |
| 10 | $E_{1.80}^{S}$ | $E_{1.60}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}E_{1.80}^{S}$ | | 2.00 | 1.80 | 1.75 | 2.00 | 2.25 | 2.00 | 2.00 | 1.90 | 1.95 | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.60}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.10}^{S}E_{1.65}^{S}$ | |
| 11 | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{2.00}^{S}$ | | $E_{1.80}^{S}$ | E | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.75}^{S}$ | $E_{1.70}^{S}$ | 1.80 | 1.90 | 2.00 | 1.60 | 2.00 | 2.00 | 1.90 | $E_{1.60}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{2.30}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | |
| 12 | $E_{1.70}^{S}$ | $E_{2.00}^{S}E_{1.80}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.75}^{S}$ | 1.70 | 1.70 | 2.00 | 1.80 | 1.90 | 1.90 | 1.70 | 1.85 | $E_{1.70}^{S}E_{1.75}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | C | C | C | C |
| 13 | $E_{1.70}^{S}$ | $E_{1.80}^{S}E_{1.70}^{S}$ | | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | 1.70 | 2.00 | 2.00 | 2.20 | 2.20 | 1.80 | 2.00 | 1.70 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ |
| 14 | $E_{1.60}^{S}$ | $E_{1.90}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | 1.90 | 1.70 | 1.80 | 1.90 | 1.90 | 2.30 | 2.20 | 2.00 | 2.20 | 1.70 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}$ |
| 15 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.80}^{S}$ | | $E_{1.90}^{S}$ | E | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | 1.90 | 1.80 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.20 | 2.00 | 1.85 | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ |
| 16 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.80}^{S}$ | | $E_{1.60}^{S}$ | 1.20 | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | 1.80 | 1.90 | $I_{1.90}^{C}$ | 2.00 | 2.00 | 2.20 | 1.90 | 2.00 | 1.80 | 1.90 | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ |
| 17 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.60}^{S}$ | | $E_{1.80}^{S}$ | E | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | 1.60 | 1.90 | 2.00 | 2.20 | 2.00 | 1.90 | 1.80 | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ |
| 18 | $E_{1.70}^{S}$ | $E_{1.80}^{S}E_{1.70}^{S}$ | | E | $E_{1.60}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | 1.90 | 2.00 | 1.70 | 1.80 | 2.00 | 1.95 | 2.40 | 2.00 | 2.00 | 1.80 | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.00}^{S}$ | $E_{2.00}^{S}$ |
| 19 | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{2.10}^{S}E_{1.80}^{S}$ | | $E_{1.80}^{S}$ | 1.85 | 1.80 | 1.90 | 2.05 | 1.90 | 2.10 | 1.80 | 2.20 | $E_{1.65}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{2.00}^{S}E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | |
| 20 | $E_{1.90}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | 1.80 | 1.85 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.70 | $E_{1.60}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.90}^{S}E_{2.20}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | |
| 21 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | 1.85 | 1.75 | 1.95 | 2.00 | 2.10 | 1.90 | 1.90 | 1.80 | $E_{1.65}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}E_{2.00}^{S}$ | $E_{1.70}^{S}$ | $E_{2.00}^{S}$ | |
| 22 | $E_{1.90}^{S}$ | $E_{1.80}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | 1.30 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.60}^{S}$ | 2.00 | 1.80 | 1.90 | 1.85 | 1.90 | 1.90 | 1.90 | $E_{1.60}^{S}E_{1.80}^{S}$ | | $E_{1.60}^{S}$ | $E_{1.60}^{S}$ | $E_{2.00}^{S}E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | |
| 23 | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.90}^{S}$ | | $E_{1.60}^{S}$ | 1.30 | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | 1.80 | $I_{1.75}^{C}$ | 1.80 | 1.90 | 1.80 | 1.80 | 1.60 | 1.70 | $E_{1.70}^{S}$ | $E_{1.60}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.50}^{S}$ | S | S | |
| 24 | $E_{1.60}^{S}$ | $E_{1.80}^{S}E_{1.70}^{S}$ | | E | E | S | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | 1.40 | 1.60 | 1.60 | 1.90 | 1.90 | 1.90 | 1.80 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{2.10}^{S}$ | $E_{1.90}^{S}$ | |
| 25 | $E_{1.80}^{S}$ | $E_{2.00}^{S}E_{1.70}^{S}$ | | 1.20 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{2.00}^{S}$ | | $E_{2.00}^{S}$ | $E_{1.60}^{S}$ | $E_{1.80}^{S}E_{1.70}^{S}$ | | 1.70 | 1.80 | 1.70 | 1.90 | 1.85 | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.90}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | S |
| 26 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | 1.20 | E | 1.40 | $E_{1.80}^{S}E_{1.80}^{S}$ | | 1.80 | 1.80 | 1.90 | 1.60 | 2.00 | 2.00 | 2.10 | 1.90 | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.90}^{S}$ | S | | |
| 27 | $E_{1.70}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | $E_{1.60}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | 1.80 | 1.60 | 1.95 | 1.80 | 1.90 | 1.90 | 1.60 | 1.70 | 2.10 | $E_{1.80}^{S}$ | $E_{1.70}^{S}$ | $E_{2.00}^{S}$ | $E_{1.80}^{S}E_{1.90}^{S}$ | $E_{1.80}^{S}$ | |
| 28 | $E_{1.90}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | $E_{1.80}^{S}$ | $E_{1.80}^{S}$ | $E_{1.80}^{S}E_{1.60}^{S}$ | | 1.90 | 1.70 | 1.70 | 1.80 | 2.00 | 2.00 | 2.00 | 1.70 | $E_{1.70}^{S}$ | $E_{1.60}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}E_{1.80}^{S}$ | $E_{2.00}^{S}$ | | |
| 29 | $E_{1.80}^{S}$ | $E_{2.00}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.70}^{S}$ | $E_{1.80}^{S}$ | $E_{1.90}^{S}E_{1.90}^{S}$ | | 1.90 | 1.80 | 2.00 | 1.90 | 2.10 | 1.90 | 1.80 | 1.80 | $E_{1.70}^{S}$ | 2.00 | $E_{1.80}^{S}$ | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{1.70}^{S}$ | $E_{1.70}^{S}$ | |
| 30 | $E_{1.70}^{S}$ | $E_{1.60}^{S}$ | $E_{1.70}^{S}E_{1.70}^{S}$ | | $E_{1.90}^{S}$ | $E_{2.00}^{S}$ | $E_{2.00}^{S}E_{1.80}^{S}$ | | 1.80 | 1.75 | 1.90 | 2.10 | 2.00 | 2.20 | 1.80 | 1.80 | $E_{1.80}^{S}$ | $E_{1.70}^{S}E_{1.75}^{S}$ | | $E_{1.90}^{S}$ | $E_{1.90}^{S}$ | $E_{2.00}^{S}E_{2.10}^{S}$ | $E_{2.00}^{S}$ | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 28 | 27 | 25 |
| Median | $E_{1.80}$ | $E_{1.85}$ | $E_{1.80}$ | $E_{1.70}$ | $E_{1.65}$ | $E_{1.80}$ | $E_{1.80}$ | $E_{1.80}$ | 1.80 | 1.80 | 1.90 | 1.90 | 2.00 | 2.00 | 1.90 | 1.90 | $E_{1.70}$ | $E_{1.70}$ | $E_{1.80}$ | $E_{1.80}$ | $E_{1.80}$ | $E_{1.80}$ | $E_{1.90}$ | $E_{1.90}$ |

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 6

# IONOSPHERIC DATA

Nov. 1962 | 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 | 2.80 | 2.80 | 2.90$^{S}$ | J3.15$^{S}$ | 3.45$^{S}$ | 3.35 | 3.05$^{S}$ | I3.50$^{S}$ | 3.50$^{S}$ | 3.45 | 3.35$^{S}$ | 3.35$^{S}$ | 2.90 | J3.30$^{S}$ | 3.30 | 3.40$^{H}$ | 3.45 | 3.50$^{S}$ | 3.65$^{S}$ | 3.05 | 3.30 | C | C | C |
| 2 | 2.85 | 2.95 | 2.75 | 2.75$^{S}$ | 3.25$^{S}$ | 3.45$^{S}$ | 3.20 | 3.65 | I3.50$^{S}$ | I3.60$^{SH}$ | 3.35 | 3.35 | 3.20 | 3.35 | J3.35$^{S}$ | J3.55$^{S}$ | 3.40$^{SH}$ | 3.45$^{S}$ | 3.40 | 3.25 | I3.05$^{S}$ | J3.10$^{S}$ | J3.30$^{S}$ | 2.95 |
| 3 | 2.85 | 2.95 | 2.80 | 3.20$^{S}$ | 3.50$^{S}$ | 3.20 | 3.05 | 3.55 | 3.45 | J3.55$^{SH}$ | 3.35 | 3.35 | 3.30 | 3.25 | I3.30$^{S}$ | I3.35$^{S}$ | J3.55$^{S}$ | 3.50$^{S}$ | 3.50 | J3.15$^{S}$ | I3.20$^{S}$ | 3.20 | 3.05 | 2.75$^{S}$ |
| 4 | 2.90 | 2.80 | J3.15$^{S}$ | 3.20$^{S}$ | I3.30$^{S}$ | 3.30 | 2.85 | 3.50$^{S}$ | I3.45$^{S}$ | J3.45$^{S}$ | I3.35$^{S}$ | J3.40$^{S}$ | 3.20 | 3.15 | J3.40$^{S}$ | 3.40 | 3.50$^{HJ}$ | 3.50$^{S}$ | J3.60$^{S}$ | 3.20$^{S}$ | 3.10 | 3.35$^{S}$ | 3.05$^{S}$ | I2.90$^{S}$ |
| 5 | I3.00$^{S}$ | 2.90 | 3.10$^{S}$ | 3.25 | 3.30 | 2.85 | 2.90 | 3.40 | J3.35$^{S}$ | 3.25 | 3.40$^{S}$ | 3.50 | J3.20$^{S}$ | 3.35 | J3.45$^{S}$ | 3.45$^{H}$ | 3.50 | I3.65$^{S}$ | 3.35 | J2.90$^{S}$ | J3.20$^{S}$ | J3.35$^{S}$ | 3.25 | 2.50 |
| 6 | 2.80 | 2.90 | 3.35$^{S}$ | 3.45 | 3.50 | 2.85 | 3.10 | 3.55 | J3.45$^{S}$ | 3.35$^{S}$ | 3.25 | J3.40$^{S}$ | 3.20$^{H}$ | 3.25$^{S}$ | J3.35$^{S}$ | 3.55$^{S}$ | 3.55 | 3.35$^{S}$ | 3.35$^{S}$ | 2.90$^{S}$ | 3.00$^{S}$ | S | S | S |
| 7 | I3.05$^{S}$ | I3.15$^{S}$ | 3.05 | J3.20$^{S}$ | J3.85$^{S}$ | 2.90 | 3.05$^{S}$ | 3.55$^{S}$ | I3.45$^{S}$ | 3.30$^{S}$ | 3.20 | 3.35 | 3.50$^{SJ}$ | 3.25 | SI3.25$^{S}$ | J3.35$^{S}$ | 3.25$^{H}$ | I3.35$^{S}$ | I3.50$^{S}$ | I3.65$^{S}$ | S | S | S | S |
| 8 | S | 3.35 | I3.35$^{A}$ | 3.25 | J3.25$^{S}$ | I3.00$^{SI}$ | 3.00$^{S}$ | J3.25$^{S}$ | 3.40$^{S}$ | 3.40 | 3.35 | 3.30 | 3.10$^{H}$ | I3.20$^{S}$ | 3.45 | 3.45 | 3.55$^{S}$ | 3.30 | 3.40 | I3.25$^{S}$ | I3.10$^{S}$ | 3.10 | I3.10$^{S}$ | I2.80$^{S}$ |
| 9 | 3.10$^{H}$ | J3.35$^{S}$ | I3.05$^{S}$ | 3.15$^{S}$ | 3.40$^{S}$ | 2.95 | 3.05 | 3.45$^{S}$ | I3.50$^{S}$ | 3.35 | 3.35$^{S}$ | 3.50 | I3.10$^{S}$ | 3.15 | 3.30$^{S}$ | 3.40$^{S}$ | J3.65$^{S}$ | 3.50 | 3.35$^{S}$ | J2.90$^{S}$ | I3.10$^{S}$ | I3.30$^{S}$ | I3.25$^{S}$ | I3.30$^{S}$ |
| 10 | 3.10 | I3.20$^{S}$ | 2.85 | 2.75 | I3.25$^{S}$ | 3.50$^{SI}$ | 3.00$^{S}$ | 3.55 | 3.45 | 3.40 | J3.45$^{S}$ | 3.35 | 3.10$^{H}$ | 3.15 | J3.35$^{S}$ | J3.55$^{S}$ | I3.50$^{S}$ | J3.65$^{S}$ | 3.35 | I3.35$^{S}$ | J3.35$^{S}$ | I3.30$^{S}$ | 3.15$^{S}$ | 2.95 |
| 11 | 2.95 | 3.15$^{S}$ | 3.05 | J3.25$^{S}$ | I3.70$^{S}$ | I3.10$^{S}$ | 2.80 | J3.25$^{S}$ | J3.45$^{S}$ | I3.60$^{SJ}$ | 3.55$^{S}$ | 3.40$^{S}$ | J3.25$^{S}$ | J3.20$^{S}$ | J3.50$^{S}$ | 3.25 | J3.40$^{S}$ | J3.35$^{S}$ | I3.50$^{S}$ | I3.00$^{S}$ | 2.95$^{S}$ | I3.20$^{A}$ | 2.80 | 2.90$^{S}$ |
| 12 | 2.90 | J3.00$^{S}$ | J3.15$^{SI}$ | 3.00$^{S}$ | I3.00$^{S}$ | 2.90 | 3.20 | 3.60 | 3.40$^{H}$ | I3.50$^{SH}$ | 3.45$^{S}$ | 3.55 | 3.30 | 3.35 | J3.30$^{S}$ | 3.35 | J3.45$^{SH}$ | 3.60 | 3.20 | S | C | C | C | C |
| 13 | 2.95 | 2.70 | 2.80$^{SI}$ | 2.95$^{S}$ | 3.60$^{S}$ | 3.10 | 3.20 | J3.45$^{SH}$ | 3.55$^{S}$ | I3.40$^{SH}$ | J3.50$^{H}$ | 3.05 | J3.00$^{SH}$ | 3.15 | I3.30$^{S}$ | I3.35$^{S}$ | J3.65$^{S}$ | I3.45$^{SI}$ | 3.50$^{S}$ | I3.30$^{S}$ | I3.15$^{S}$ | I3.10$^{S}$ | I3.00$^{S}$ | 2.95 |
| 14 | 2.85 | 2.85 | 3.00$^{S}$ | 3.00 | 3.30$^{S}$ | 3.00 | I3.40$^{S}$ | 3.65 | 3.55$^{SH}$ | 3.65 | J3.40$^{S}$ | 3.40$^{S}$ | 3.15 | I3.20$^{SI}$ | I3.25$^{S}$ | I3.50$^{S}$ | I3.60$^{S}$ | I3.50$^{SJ}$ | J3.60$^{S}$ | I3.40$^{S}$ | J3.30$^{S}$ | 2.95 | 2.95 | 2.95 |
| 15 | 3.15$^{S}$ | 3.05 | I2.80$^{S}$ | 2.80 | 3.30 | 3.55 | 3.05 | J3.65$^{S}$ | 3.75 | 3.55 | 3.35$^{H}$ | 3.15 | I3.20$^{S}$ | 3.20 | J3.45$^{S}$ | J3.50$^{S}$ | 3.35$^{H}$ | J3.40$^{SI}$ | 3.50$^{S}$ | 3.75 | 3.15$^{S}$ | J3.05$^{S}$ | 2.75$^{S}$ | A |
| 16 | A | S | I3.30$^{SJ}$ | 3.60$^{S}$ | 3.15 | 2.80 | J2.65$^{S}$ | 3.55$^{S}$ | J3.70$^{S}$ | J3.65$^{S}$ | I3.40$^{C}$ | 3.50 | I3.40$^{A}$ | 3.25 | 3.25$^{S}$ | 3.35 | J3.35$^{S}$ | J3.35$^{SJ}$ | 3.45$^{S}$ | 3.10$^{S}$ | I3.35$^{S}$ | J3.10$^{SJ}$ | 3.15$^{S}$ | J2.95$^{S}$ |
| 17 | I3.05$^{A}$ | 3.30 | I3.05$^{SJ}$ | 2.90$^{S}$ | J3.25$^{S}$ | 2.90$^{S}$ | 3.05 | 3.50$^{S}$ | 3.65$^{S}$ | 3.50$^{S}$ | J3.20$^{SJ}$ | 3.50$^{S}$ | 3.35 | 3.40$^{S}$ | 3.25 | J3.25$^{S}$ | J3.45$^{S}$ | 3.70$^{S}$ | 3.50 | 3.40 | J3.15$^{S}$ | I3.15$^{S}$ | 3.20 | I3.15$^{S}$ |
| 18 | 2.95 | 2.95 | 2.95 | 2.90 | 3.15 | 3.00$^{S}$ | 3.05 | J3.50$^{S}$ | I3.55$^{S}$ | I3.50$^{S}$ | 3.45$^{SI}$ | 3.50$^{S}$ | J3.15$^{S}$ | 3.30 | J3.30$^{S}$ | I3.40$^{S}$ | I3.60$^{S}$ | I3.60$^{SJ}$ | 3.35$^{S}$ | J3.25$^{S}$ | 3.20$^{S}$ | 3.05$^{S}$ | 2.95 | 2.95 |
| 19 | 2.95 | 3.00 | 2.85 | 3.00 | 3.25$^{S}$ | 3.20 | 2.95 | 3.50$^{S}$ | J3.70$^{S}$ | J3.70$^{S}$ | J3.55$^{S}$ | 3.65$^{S}$ | 3.15 | 3.30 | 3.30$^{S}$ | 3.40 | 3.50$^{S}$ | 3.40 | I3.55$^{S}$ | 3.20 | J3.50$^{S}$ | 3.45 | 3.00 | 2.95 |
| 20 | 2.80 | 2.95 | 2.80 | 3.10 | J3.35$^{S}$ | 3.20 | 2.95$^{S}$ | 3.45$^{S}$ | I3.40$^{S}$ | I3.50$^{S}$ | J3.45$^{S}$ | 3.40 | 3.25 | 3.25 | J3.45$^{SI}$ | I3.50$^{S}$ | 3.50$^{S}$ | I3.50$^{S}$ | 3.50$^{SI}$ | I3.30$^{S}$ | J3.55$^{S}$ | I3.30$^{SJ}$ | 3.25$^{S}$ | 2.75 |
| 21 | I2.75$^{S}$ | 2.85$^{S}$ | J3.20$^{S}$ | S | S | I3.35$^{S}$ | 2.85$^{S}$ | 3.45 | 3.50 | 3.30 | 3.35$^{S}$ | 3.45 | 3.40 | J3.15$^{S}$ | 3.45 | I3.50$^{S}$ | J3.45$^{S}$ | I3.75$^{S}$ | I3.30$^{S}$ | I3.40$^{S}$ | J3.05$^{S}$ | I3.20$^{S}$ | 2.85 | 2.80 |
| 22 | 2.70$^{S}$ | 2.95 | J3.25$^{S}$ | 2.90 | 3.10$^{S}$ | 2.70$^{S}$ | I2.85$^{S}$ | 3.05 | J3.55$^{S}$ | I3.30$^{SH}$ | I3.30$^{SH}$ | 3.35 | 3.25 | 3.25 | 3.35 | 3.55 | J3.55$^{S}$ | I3.40$^{S}$ | J3.40$^{S}$ | J3.30$^{S}$ | 2.80 | 2.90$^{S}$ | 2.75$^{S}$ | 2.85$^{S}$ |
| 23 | 2.75$^{SJ}$ | 2.80$^{S}$ | 2.85 | J3.10$^{S}$ | J3.20$^{S}$ | I3.10$^{S}$ | 3.20 | U3.50$^{S}$ | I3.50$^{S}$ | I3.30$^{C}$ | 3.45$^{H}$ | 3.30$^{H}$ | J3.40$^{S}$ | I3.20$^{S}$ | J3.35$^{SH}$ | 3.40$^{SH}$ | 3.55 | 3.70 | J3.25$^{S}$ | J3.40$^{S}$ | 3.25 | 2.80$^{S}$ | I3.30$^{S}$ | I2.80$^{S}$ |
| 24 | 2.85$^{S}$ | I2.80$^{S}$ | 2.90 | I2.80$^{S}$ | I3.25$^{S}$ | I2.80$^{S}$ | 3.15 | J3.35$^{S}$ | I3.50$^{S}$ | J3.60$^{S}$ | 3.50$^{S}$ | 3.40 | 3.25 | 3.25 | I3.35$^{S}$ | 3.35$^{S}$ | 3.60$^{S}$ | 3.70 | 3.25$^{S}$ | 3.35$^{S}$ | 3.35 | 2.85 | 2.80 | 2.80$^{S}$ |
| 25 | 2.75 | 2.95$^{S}$ | 2.95 | 3.20 | 3.45 | 3.30 | J2.85$^{S}$ | 3.50 | I3.50$^{SH}$ | I3.40$^{S}$ | J3.40$^{SH}$ | J3.25$^{S}$ | J3.45$^{S}$ | 3.45 | 3.25$^{S}$ | 3.60 | J3.60$^{S}$ | 3.65 | 3.30 | 3.15 | I3.25$^{S}$ | J3.15$^{S}$ | 2.60 | I2.80$^{S}$ |
| 26 | 2.85 | I2.90$^{S}$ | J3.30$^{S}$ | 3.05$^{S}$ | S | S | 3.35$^{SI}$ | 3.20$^{S}$ | I3.25$^{S}$ | J3.75$^{S}$ | J3.65$^{S}$ | 3.45$^{S}$ | 3.40$^{S}$ | I3.35$^{S}$ | J3.30$^{S}$ | 3.45$^{S}$ | 3.70 | 3.50 | J3.70$^{SI}$ | 3.30$^{S}$ | 3.15 | S | S | S |
| 27 | 2.75 | 2.90 | J3.40$^{SI}$ | 3.35$^{S}$ | 3.45 | 3.00 | 2.85$^{S}$ | 3.30 | J3.45$^{S}$ | 3.60$^{H}$ | I3.40$^{SH}$ | I3.30$^{S}$ | 3.55$^{S}$ | 3.30$^{S}$ | 3.40 | I3.50$^{SH}$ | J3.75$^{S}$ | 3.60 | 3.60 | J3.10$^{S}$ | J3.25$^{S}$ | 2.95 | 3.25 | 3.10 |
| 28 | 2.85 | 2.85 | 2.90$^{S}$ | 2.65 | I2.90$^{S}$ | 3.20 | I3.35$^{SI}$ | I3.55$^{S}$ | 3.70 | 3.55$^{H}$ | J3.35$^{SI}$ | I3.60$^{S}$ | 3.20 | 3.20 | I3.50$^{SH}$ | I3.65$^{SH}$ | J3.55$^{S}$ | I3.60$^{S}$ | I3.50$^{S}$ | 3.45$^{S}$ | 3.30 | 2.95 | 3.00 | I2.90$^{S}$ |
| 29 | 2.80$^{S}$ | 3.10$^{S}$ | 3.10$^{S}$ | 3.10 | 3.30$^{S}$ | 3.10 | 3.05 | I3.45$^{S}$ | I3.50$^{SH}$ | 3.55$^{H}$ | 3.45$^{SJ}$ | 3.35$^{S}$ | 3.45 | J3.15$^{S}$ | J3.60$^{S}$ | 3.70 | 3.70$^{S}$ | 3.60 | 3.65$^{S}$ | 3.15 | I3.20$^{S}$ | 3.35 | 3.15 | 2.75$^{S}$ |
| 30 | 3.10 | I3.00$^{S}$ | I2.90$^{A}$ | 3.05 | 3.20$^{S}$ | 3.10 | 3.30$^{SI}$ | 3.50$^{S}$ | 3.60$^{H}$ | 3.55 | 3.40$^{S}$ | 3.30 | J3.20$^{S}$ | 3.55 | 3.50$^{SI}$ | 3.40$^{H}$ | I3.50$^{S}$ | J3.45$^{S}$ | I3.60$^{S}$ | 3.10 | 2.95 | 2.90$^{S}$ | I2.80$^{SI}$ | 3.00$^{S}$ |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 28 | 29 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 28 | 25 | 25 | 24 |
| Median | 2.85 | 2.95 | 3.00 | 3.10 | 3.30 | 3.10 | 3.05 | 3.50 | 3.50 | 3.50 | 3.40 | 3.40 | 3.20 | 3.25 | 3.35 | 3.40 | 3.50 | 3.50 | 3.50 | 3.25 | 3.20 | 3.10 | 3.05 | 2.90 |

M(3000)F2

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 7

# IONOSPHERIC DATA

Nov. 1962 | 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 | L | L | L | LH | L | | | | | | | | | |
| 2 | | | | | | | | | | | L | 3.85 | 4.50 | $I_{3.65}^{A}$ | $I_{3.70}^{L}$ | L | | | | | | | | |
| 3 | | | | | | | | | | | L | $I_{3.80}^{A}$ | L | LH | L | $I_{3.75}^{L}$ | $I_{4.00}^{L}$ | | | | | | | |
| 4 | | | | | | | | | | L | L | $3.75^{L}$ | $I_{3.85}^{L}$ | L | L | L | | | | | | | | |
| 5 | | | | | | | | | | | L | $I_{3.80}^{L}$ | $I_{3.90}^{L}$ | 3.75 | L | | | | | | | | | |
| 6 | | | | | | | | | | L | L | 3.95 | | L | L | L | L | | | | | | | |
| 7 | | | | | | | | | | | L | L | 3.85 | $3.55^{L}$ | L | L | | | | | | | | |
| 8 | | | | | | | | | | | L | $I_{3.80}^{L}$ | 4.00 | L | L | A | | | | | | | | |
| 9 | | | | | | | | | | | L | L | L | L | $3.65^{L}$ | L | | | | | | | | |
| 10 | | | | | | | | | | | L | | L | L | L | L | | | | | | | | |
| 11 | | | | | | | | | | | L | $4.00^{L}$ | 3.95 | LH | $3.75^{L}$ | L | | | | | | | | |
| 12 | | | | | | | | | | | L | L | L | $3.70^{L}$ | L | A | | | | | | | | |
| 13 | | | | | | | | | | | | L | | 3.50 | $I_{3.75}^{L}$ | L | | | | | | | | |
| 14 | | | | | | | | | | | L | L | L | L | L | | | | | | | | | |
| 15 | | | | | | | | | | | | 3.60 | A | $3.50^{L}$ | L | | | | | | | | | |
| 16 | | | | | | | | | | | | L | A | | L | L | | | | | | | | |
| 17 | | | | | | | | | | | A | A | A | A | A | A | A | | | | | | | |
| 18 | | | | | | | | | | | L | L | LH | L | L | | | | | | | | | |
| 19 | | | | | | | | | | | L | L | L | L | L | L | | | | | | | | |
| 20 | | | | | | | | | | | L | 3.80 | $I_{3.75}^{L}$ | L | L | | | | | | | | | |
| 21 | | | | | | | | | | L | L | $3.75^{L}$ | L | L | $3.70^{L}$ | A | L | | | | | | | |
| 22 | | | | | | | | | | | | $I_{3.70}^{L}$ | 3.75 | $I_{3.80}^{A}$ | A | | | | | | | | | |
| 23 | | | | | | | | | | | | | 3.70 | A | | | | | | | | | | |
| 24 | | | | | | | | | | | | LH | $I_{3.80}^{L}$ | $I_{3.75}^{L}$ | L | L | | | | | | | | |
| 25 | | | | | | | | | | | | LH | 3.60 | 3.95 | $4.20^{H}$ | 3.95 | | | | | | | | |
| 26 | | | | | | | | | | | L | L | L | L | LH | 4.15 | | | | | | | | |
| 27 | | | | | | | | | | | | 3.65 | 3.65 | 3.95 | L | | | | | | | | | |
| 28 | | | | | | | | | | | LH | | L | $3.75^{H}$ | | | | | | | | | | |
| 29 | | | | | | | | | | | 4.00 | 4.25 | $I_{3.95}^{L}$ | 3.70 | 4.15 | | | | | | | | | |
| 30 | | | | | | | | | | | $3.60^{H}$ | 3.60 | LH | 3.60 | $3.70^{L}$ | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | 2 | 14 | 13 | 13 | 8 | 3 | 1 | | | | | | | |
| Median | | | | | | | | | | | 3.80 | 3.80 | 3.85 | 3.70 | 3.70 | 3.95 | U4.00 | | | | | | | |

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

# IONOSPHERIC DATA

Nov. 1962 | 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 | | | | | | | | | | 250 | 255 | 250 | 240 | 260 | 255 | | | | | | | | | |
| 2 | | | | | | | | | | | 270 | 255 | 255 | 270 | 255 | 240 | | | | | | | | |
| 3 | | | | | | | | | | | 260 | 250 | 255 | 255 | 255 | 245 | 235 | | | | | | | |
| 4 | | | | | | | | | | 250 | 250 | 255 | 245 | 290 | 245 | 240 | | | | | | | | |
| 5 | | | | | | | | | | | 245 | 245 | 255 | 270 | 250 | | | | | | | | | |
| 6 | | | | | | | | | | 250 | 260 | 255 | | 280 | 250 | 235 | 230 | | | | | | | |
| 7 | | | | | | | | | | | 285 | 260 | 250 | 280 | 260 | 245 | | | | | | | | |
| 8 | | | | | | | | | | | 240 | 250 | 250H | 255 | 250 | 240 | | | | | | | | |
| 9 | | | | | | | | | | | 260 | 250 | 250 | 300 | 255 | 245 | | | | | | | | |
| 10 | | | | | | | | | | | 255 | | 250H | 275 | 255 | 250 | | | | | | | | |
| 11 | | | | | | | | | | | 250 | 245 | 255 | 295 | 250 | 250 | | | | | | | | |
| 12 | | | | | | | | | | | 250 | 240 | 260 | 270 | 260 | 250 | | | | | | | | |
| 13 | | | | | | | | | | | | 300 | | 290 | 250 | 250 | | | | | | | | |
| 14 | | | | | | | | | | | 255 | 275 | 285 | 280 | 270 | | | | | | | | | |
| 15 | | | | | | | | | | | | 290 | 275 | 275 | 250 | | | | | | | | | |
| 16 | | | | | | | | | | | | 250 | I250A | | 280 | 255 | | | | | | | | |
| 17 | | | | | | | | | | | 275 | 250 | 310 | 250 | 260 | 285 | 240 | | | | | | | |
| 18 | | | | | | | | | | | 240 | 255 | 255 | 275 | 255 | | | | | | | | | |
| 19 | | | | | | | | | | | 250 | 245 | 280 | 255 | 255 | 265 | | | | | | | | |
| 20 | | | | | | | | | | | 265 | 250 | 275 | 270 | 250 | | | | | | | | | |
| 21 | | | | | | | | | | 270 | 270 | 255 | 255 | 270 | 250 | 255 | 235 | | | | | | | |
| 22 | | | | | | | | | | | | 260 | 280 | 305 | 270 | | | | | | | | | |
| 23 | | | | | | | | | | | | | 260 | 280 | | | | | | | | | | |
| 24 | | | | | | | | | | | | 255 | 280 | 270 | 255 | 240 | | | | | | | | |
| 25 | | | | | | | | | | | | 290 | 255 | 255 | 255 | 240 | | | | | | | | |
| 26 | | | | | | | | | | | 240 | 270 | 250 | 270 | 255 | 250 | | | | | | | | |
| 27 | | | | | | | | | | | | 260 | 255 | 260 | 255 | | | | | | | | | |
| 28 | | | | | | | | | | | 260 | | 285 | 285 | | | | | | | | | | |
| 29 | | | | | | | | | | | 260 | 260 | 255 | 260 | 255 | | | | | | | | | |
| 30 | | | | | | | | | | | 285 | 275 | 280 | 255 | 250 | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | 4 | 22 | 27 | 28 | 29 | 28 | 18 | 4 | | | | | | | |
| Median | | | | | | | | | | 250 | 260 | 255 | 255 | 270 | 255 | 250 | 235 | | | | | | | |

h'F2

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

The Radio Research Laboratories, Japan.

Y 9

# IONOSPHERIC DATA

Nov. 1962 | 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 | 320 | 325 | 310 | 255 | 240 | 255 | $E_{310}^{S}$ | 240 | 240 | 235 | 235 | 225 | 210 | $190^{H}$ | 240 | $245^{H}$ | 250 | 225 | 220 | 290 | 260 | C | C | C |
| 2 | 290 | 300 | 350 | 305 | 250 | 240 | 290 | 225 | 235 | $240^{H}$ | 240 | 205 | 190 | $I_{255}^{A}$ | 250 | 240 | $215^{H}$ | 230 | 250 | 250 | $I_{270}^{A}$ | 250 | 255 | 275 |
| 3 | 320 | 290 | 325 | 260 | 225 | 240 | $E_{280}^{S}$ | 240 | 230 | $235^{H}$ | 240 | $I_{210}^{A}$ | 205 | $195^{H}$ | 245 | 240 | 225 | 230 | 225 | 230 | 255 | 230 | 295 | 335 |
| 4 | 330 | 325 | 275 | 255 | 225 | $E_{265}^{S}$ | $E_{350}^{S}$ | 240 | 235 | 240 | 225 | 225 | 220 | 200 | 245 | 240 | $235^{H}$ | 230 | 225 | 240 | 250 | 260 | 270 | 300 |
| 5 | 310 | 305 | 290 | 255 | 205 | $E_{320}^{S}$ | 305 | 245 | 240 | 240 | 225 | 220 | 205 | 210 | 250 | $210^{H}$ | 245 | 230 | 205 | 285 | 250 | 240 | 255 | $E_{410}^{A}$ |
| 6 | 355 | 300 | 250 | 245 | 210 | $E_{370}^{S}$ | 295 | 240 | 230 | 225 | 210 | 205 | $205^{H}$ | 195 | 250 | 235 | 225 | 225 | 235 | $E_{250}^{S}$ | 290 | 240 | 250 | 270 |
| 7 | 285 | 255 | 280 | 275 | 200 | $E_{350}^{S}$ | 290 | 235 | 240 | 240 | 240 | 240 | 230 | 240 | 230 | 240 | 235H | 230 | 205 | 225 | 275 | 255 | 255 | 350 |
| 8 | $I_{290}^{A}$ | 255 | $I_{250}^{A}$ | 255 | 255 | 305 | 320 | 250 | 245 | 240 | 230 | 210 | 205 | 195 | 250 | $I_{240}^{A}$ | 230 | 225 | 230 | 240 | 240 | 250 | 245 | 390 |
| 9 | $280^{H}$ | 250 | 255 | 270 | 240 | $E_{290}^{S}$ | $E_{280}^{S}$ | 240 | 235 | 245 | 240 | 225 | 200 | 200 | 250 | 225 | 225 | 235 | 205 | 205 | 285 | 250 | 250 | 270 |
| 10 | 270 | 255 | 330 | 345 | 250 | 225 | 310 | 230 | 225 | 240 | 220 | 255 | 210 | 245 | 245 | 245 | 230 | 210 | 205 | 245 | 255 | 260 | 250 | $E_{350}^{A}$ |
| 11 | 290 | 275 | 280 | 270 | $I_{230}^{A}$ | A | 340 | 250 | 245 | 240 | 240 | 220 | 210 | $205^{H}$ | 245 | 230 | 250 | 235 | 235 | 270 | 250 | $I_{260}^{A}$ | 260 | 295 |
| 12 | 295 | 290 | 290 | 300 | 260 | $E_{280}^{S}$ | 250 | 225 | $220^{H}$ | $225^{H}$ | 240 | 225 | 210 | 240 | 245 | $I_{240}^{A}$ | $240^{H}$ | $210^{A}$ | 220 | A | C | C | C | C |
| 13 | 290 | 305 | 295 | 275 | 240 | $E_{280}^{S}$ | 250 | $205^{H}$ | 235 | $250^{H}$ | $250^{H}$ | 225 | $255^{H}$ | 205 | $E_{250}^{A}$ | 240 | 230 | 220 | 205 | 240 | 255 | 255 | 275 | $E_{300}^{A}$ |
| 14 | 305 | 325 | $E_{340}^{A}$ | 285 | 250 | 255 | 245 | 220 | $205^{H}$ | 245 | 240 | 250 | 255 | 245 | 245 | 245 | 225 | 215 | 205 | 225 | 205 | 285 | 305 | 305 |
| 15 | 290 | 305 | 305 | 350 | 270 | 220 | 270 | 235 | 230 | 230 | $250^{H}$ | $E_{250}^{A}$ | A | $E_{270}^{A}$ | 250 | 245 | $225^{H}$ | 240 | 250 | $210^{A}$ | $E_{300}^{A}$ | 280 | 345 | $I_{390}^{A}$ |
| 16 | $I_{345}^{A}$ | 280 | 220 | 245 | $E_{335}^{A}$ | $E_{370}^{S}$ | S | 245 | 230 | 240 | C | A | A | 240 | 215 | 210 | 230 | 235 | 210 | 250 | 290 | 270 | 270 | 330 |
| 17 | A | 255 | 340 | 300 | 260 | 300 | 290 | 235 | 230 | 240 | A | A | A | A | A | A | A | 235 | 250 | 230 | 240 | $E_{305}^{A}$ | 270 | 280 |
| 18 | 290 | 300 | 315 | 260 | 260 | 290 | 290 | 235 | 230 | 230 | 205 | 205 | 205 H | 200 | 250 | 240 | 235 | 220 | 200 | 250 | 255 | 255 | 300 | 320 |
| 19 | 300 | 305 | 305 | 305 | 275 | $E_{260}^{S}$ | 260 | 240 | 240 | 240 | 210 | 210 | 200 | 195 | 225 | 240 | 245 | 220 | 220 | 240 | 225 | 240 | $E_{310}^{S}$ | 320 |
| 20 | 300 | 290 | 290 | 290 | 240 | 270 | 290 | 230 | 240 | 235 | 235 | 230 | 220 | 245 | A | 250 | 245 | 230 | $205^{A}$ | 250 | 230 | 290 | $E_{305}^{S}$ | 350 |
| 21 | 330 | 305 | 270 | 250 | 210 | 200 | $E_{320}^{S}$ | 240 | 235 | 240 | 235 | 250 | 225 | 255 | 245 | $I_{240}^{A}$ | 235 | 225 | 230 | 235 | 245 | 270 | 300 | 345 |
| 22 | 350 | 300 | 275 | 290 | 255 | 345 | 330 | 250 | 235 | $240^{H}$ | $230^{H}$ | 240 | 240 | A | $I_{220}^{A}$ | 245 | 225 | 235 | 210 | 240 | 250 | 290 | 315 | 305 |
| 23 | 320 | 310 | 310 | 300 | 260 | 290 | 270 | 245 | 230 | $I_{240}^{C}$ | $205^{H}$ | $245^{H}$ | 235 | A | $200^{H}$ | $245^{H}$ | 230 | 230 | 240 | 230 | 240 | 270 | $I_{310}^{S}$ | $I_{350}^{S}$ |
| 24 | 290 | 350 | 320 | 320 | 230 | $I_{250}^{S}$ | 300 | 240 | 240 | 250 | 240 | $225^{H}$ | 220 | $230^{H}$ | 245 | 230 | 230 | $210^{A}$ | 250 | 250 | 245 | $E_{305}^{S}$ | S | 370 |
| 25 | 325 | 300 | 300 | 265 | 250 | 250 | S | 250 | $205^{H}$ | 245 | $245^{H}$ | $215^{H}$ | 230 | 230 | $205^{H}$ | 225 | 230 | 210 | 225 | 250 | $I_{245}^{A}$ | 305 | 390 | S |
| 26 | 335 | 330 | 260 | 280 | 290 | 290 | 255 | 255 | 255 | 240 | 230 | 220 | 210 | 220 | $225^{H}$ | 220 | 235 | 210 | 205 | $E_{270}^{A}$ | 260 | A | A | S |
| 27 | 315 | 340 | 290 | $I_{250}^{A}$ | 255 | 265 | 305 | 255 | 240 | $225^{H}$ | $230^{H}$ | 250 | 225 | 230 | 215 | $200^{H}$ | 225 | 205 | 210 | 255 | 305 | 270 | 260 | 300 |
| 28 | 335 | 320 | 295 | 355 | 325 | 275 | 220 | 220 | 230 | $210^{H}$ | $195^{H}$ | 240 | 255 | $210^{H}$ | $255^{H}$ | $240^{H}$ | 250 | 225 | 220 | 225 | 255 | $E_{305}^{S}$ | 305 | $E_{280}^{S}$ |
| 29 | 305 | 290 | 270 | 280 | 255 | 260 | 255 | 240 | $225^{H}$ | $225^{H}$ | 215 | 205 | $205^{H}$ | $E_{260}^{A}$ | 200 | 235 | 235 | 225 | 220 | 255 | 270 | 240 | 270 | 305 |
| 30 | 270 | 290 | $I_{305}^{A}$ | 290 | 275 | 240 | $E_{290}^{S}$ | 240 | $225^{H}$ | 240 | $220^{H}$ | 240 | $230^{H}$ | 225 | 205 | $190^{H}$ | 225 | 225 | 205 | 305 | 300 | 340 | $E_{320}^{S}$ | 290 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 29 | 30 | 29 | 30 | 29 | 21 | 25 | 30 | 30 | 30 | 28 | 27 | 27 | 25 | 27 | 29 | 29 | 30 | 30 | 27 | 28 | 24 | 23 | 24 |
| Median | 305 | 300 | 290 | 280 | 250 | $E_{260}$ | 290 | 240 | 235 | 240 | 230 | 225 | 210 | 220 | 245 | 240 | 230 | 225 | 220 | 240 | 255 | 260 | 270 | 305 |

h'F

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

The Radio Research Laboratories, Japan.

Y 10

# IONOSPHERIC DATA

Nov. 1962 | 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 | S | S | E | S | E | S | G | 120 | G | G | G | 150 | G | 150 | 130 | 130 | G | S | 150 | 110 | C | C | C |
| 2 | S | S | S | S | E | S | S | S | G | 175 | 125 | 130 | 125 | 125 | 120 | 120 | 115 | 105 | 105 | 105 | 105 | 105 | 105 | S |
| 3 | S | S | S | E | E | S | S | G | 150 | 135 | 140 | 115 | 120 | G | G | 120 | 120 | 105 | 110 | S | 105 | S | S | 105 |
| 4 | S | S | S | E | E | S | S | 110 | 130 | 130 | 130 | 125 | G | G | G | 125 | 120 | 105 | S | S | S | 105 | S | S |
| 5 | S | 110 | S | 110 | 105 | S | S | 145 | 125 | 120 | 125 | 115 | 115 | 110 | G | 105 | 105 | 155 | 100 | S | S | S | 110 | 110 |
| 6 | 105 | 105 | 105 | 105 | 105 | S | S | G | G | 105 | 105 | 105 | 105 | 100 | G | 125 | 120 | S | S | S | S | S | S | S |
| 7 | S | S | S | S | E | S | S | G | G | 175 | 140 | 140 | 140 | 140 | G | G | 130 | G | S | S | S | S | 110 | 120 |
| 8 | 110 | 105 | 105 | 105 | 105 | 110 | 105 | S | 110 | E160G | 150 | 135 | 130 | 130 | 130 | 105 | 100 | 100 | 100 | 100 | S | S | S | S |
| 9 | S | S | 115 | S | S | S | S | G | G | 155 | G | 145 | 145 | 140 | 140 | 130 | 120 | 120 | S | 110 | S | S | S | S |
| 10 | S | S | S | S | S | 105 | 105 | S | 135 | 140 | 140 | 130 | 135 | 130 | 135 | 130 | 120 | 120 | S | S | S | 120 | S | 110 |
| 11 | S | S | S | 110 | 105 | 105 | S | 105 | G | G | 140 | G | 110 | G | 155 | 145 | 110 | 110 | 105 | 110 | S | 105 | 105 | S |
| 12 | S | S | 105 | 105 | 105 | S | S | S | 125 | 110 | 110 | 105 | 105 | 105 | 105 | 110 | 110 | 105 | 105 | 105 | C | C | C | C |
| 13 | S | S | S | S | 110 | 120 | S | S | 110 | 140 | 130 | 125 | 120 | 125 | 130 | 125 | 125 | 125 | S | 120 | 110 | S | 105 | 105 |
| 14 | S | S | 105 | S | S | S | S | S | 115 | G | G | G | G | G | G | G | G | 110 | 110 | 105 | S | S | S | S |
| 15 | 105 | 105 | 105 | S | 105 | 105 | 105 | S | 135 | 125 | 120 | 120 | 115 | 145 | 110 | 120 | 120 | 105 | 105 | 105 | 120 | 105 | 125 | 120 |
| 16 | 120 | 120 | 120 | 120 | 150 | S | S | S | G | 140 | C | 125 | 110 | 110 | 110 | G | G | S | 100 | S | S | 125 | 120 | 115 |
| 17 | 110 | 105 | 105 | 105 | 100 | 105 | S | 110 | 110 | 110 | 110 | 110 | 110 | 115 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| 18 | S | S | 105 | E | S | 110 | S | S | G | 155 | 120 | 110 | G | G | 110 | G | G | S | S | 105 | 105 | 100 | S | S |
| 19 | S | 105 | 100 | 100 | S | S | S | S | 160 | 160 | 120 | 120 | G | G | G | G | 105 | 100 | 100 | 100 | S | S | S | S |
| 20 | S | S | S | S | S | S | S | S | 140 | 140 | 130 | 125 | 120 | 120 | 120 | 120 | 110 | 110 | 105 | 105 | S | S | S | S |
| 21 | S | S | S | S | S | S | S | 145 | G | 145 | 140 | 125 | 125 | 120 | 110 | 110 | 110 | 110 | 110 | S | S | S | S | S |
| 22 | S | S | S | 110 | E | S | 105 | 110 | G | G | 140 | 145 | 130 | 120 | 120 | 120 | G | S | S | 105 | S | S | S | S |
| 23 | S | S | 115 | S | E | S | 115 | 110 | G | C | 110 | 110 | 105 | 105 | 105 | 105 | 100 | 105 | S | S | S | S | S | S |
| 24 | 110 | 115 | 110 | 110 | E | S | 110 | 105 | 105 | 105 | 105 | 130 | 110 | 115 | G | 105 | 100 | 105 | 105 | S | 105 | S | S | S |
| 25 | S | S | S | E | S | S | S | S | 120 | G | 105 | 105 | 105 | 110 | G | G | 120 | S | S | S | 135 | S | S | S |
| 26 | S | S | S | 110 | 110 | 105 | S | S | G | G | 145 | 140 | 130 | 130 | 125 | 120 | 130 | S | 120 | 135 | 105 | 105 | 105 | S |
| 27 | S | S | S | 125 | 120 | S | S | S | 160 | 110 | 110 | 110 | G | 155 | 150 | 145 | 125 | S | S | S | S | 125 | S | S |
| 28 | S | S | S | S | S | 105 | S | 105 | 130 | 125 | G | G | G | G | 110 | 110 | 110 | 110 | 105 | S | S | S | S | S |
| 29 | S | S | S | S | S | S | S | S | 105 | G | G | 120 | 120 | 120 | 120 | G | G | S | S | S | 120 | S | S | S |
| 30 | S | S | 105 | S | S | S | S | S | G | G | G | 120 | 120 | 120 | G | G | G | S | S | S | 135 | 130 | S | S |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | 6 | 8 | 13 | 12 | 11 | 9 | 6 | 9 | 18 | 20 | 23 | 26 | 24 | 22 | 20 | 22 | 24 | 19 | 16 | 15 | 12 | 11 | 9 | 8 |
| Median | 110 | 105 | 105 | 110 | 105 | 105 | 105 | 110 | 125 | 140 | 125 | 120 | 120 | 120 | 120 | 120 | 120 | 105 | 105 | 105 | 110 | 105 | 105 | 110 |

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 11

# IONOSPHERIC DATA

**Nov. 1962** | **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 | | | | | | | | | 1 | | | | h | | h | h | c | | | f | f2 | | | |
| 2 | | | | | | | | | | h | h | h | 1 | 12 | 1 | 13 | 12 | 12 | f2 | f5 | f4 | f | f | |
| 3 | | | | | | | | | h | h | h | 1 | 1 | | | 1 | 1 | 1 | f | | f2 | | | f |
| 4 | | | | | | | | 1h | h | h | h | h | | | | c12 | h2 | 12 | | | | f2 | | |
| 5 | | f | | f | f | | | h2 | c2 | h2 | c12 | c1 | c1 | 1 | | 1 | 1 | h | ff | | | | f | f |
| 6 | f3 | f | f | f | f | | | | | 1 | 12 | 1 | 1 | 12 | | c2 | c | | | | | | | |
| 7 | | | | | | | | | | h | h | h | h | h | | | h | | | | | | f | f |
| 8 | f2 | f2 | f3 | f2 | f2 | f2 | f2 | | 1 | h | h1 | h | h | h | h | 1 | 12 | 12 | f3 | f | | | | |
| 9 | | | f | | | | | | | h | | h | h | h | h | h | c | c | | f | | | | |
| 10 | | | | | | f3 | f2 | | h | h | h | h | h | h | h | h | c3 | c | | | | f | | f2 |
| 11 | | | | f | f3 | f | | 1 | | | h | | 1 | | h | h1 | 13h | 12 | f4 | f2 | | f | f2 | |
| 12 | | | f2 | f2 | f | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 | 1 | 13 | f | f3 | | | | |
| 13 | | | | | f | f | | | 13h | h1 | h1 | h | c | h | h | c | c3 | c2 | | f | f | | f2 | f2 |
| 14 | | | f2 | | | | | | 12 | | | | | | | | | c | f | f | | | | |
| 15 | f | f | f | | f | f | f | | c | 12 | 1 | 12 | 1 | h | 1 | 1 | 1 | 12 | f2 | f2 | ff2 | f2 | f | f2 |
| 16 | f2 | f2 | f | f | f | | | | | h | | c | 12 | 1 | 12 | | | | f | | | ff2 | f | f2 |
| 17 | f3 | f2 | f2 | f | f2 | f | | 12 | 12 | 12 | 12 | 12 | 13 | 12 | 12 | 13 | 12 | 13 | f2 | f2 | f2 | f2 | f2 | f |
| 18 | | | f | | | f | | | | h | 1 | 1 | | | 1 | | | | | f2 | f | f | | |
| 19 | | f | f | f | | | | | h2 | h | 1 | 1 | | | | | 12 | 13 | f3 | f2 | | | | |
| 20 | | | | | | | | | h2 | h2 | h | c | 1 | 1 | 12 | 12 | 12 | 12 | f2 | f | | | | |
| 21 | | | | | | | | h2 | | h | h | h | c | 12 | 12 | 12 | 13 | 1 | f | | | | | |
| 22 | | | | f | | | f2 | 1 | | | h | h | h | c2 | c | 12 | | | | f | | | | |
| 23 | | | f | | | | f2 | 12 | | | 1 | 1 | 1 | 13 | 12 | 12 | 12 | 1 | | | | | | |
| 24 | f2 | f | f2 | f2 | | | f2 | 12 | 1 | 1 | 12 | h1 | 1 | 12 | | 12 | 1 | 13 | f5 | | ff | | | |
| 25 | | | | | | | | | 12 | | 13 | 12 | 12 | 12 | | | 1 | | | | f2 | | | |
| 26 | | | | f2 | f2 | f2 | | | | | h | h1 | h | h | 1 | 1 | h | | f | f2 | f4 | f3 | f | |
| 27 | | | | f | f | | | | h | 13 | 12 | 12 | | h | h12 | h1 | c31 | | | | | f | | |
| 28 | | | | | | f2 | | 1 | 1 | 1 | | | | | 12 | 13 | 14 | 1 | f3 | | | | | |
| 29 | | | | | | | | | 1 | | | 1 | 1 | 12 | 12 | | | | | | f | | | |
| 30 | | | f2 | | | | | | | | | 1 | 1 | 1 | | | | | | | f | f | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | | | | | | | | | | | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | | | | | | | |

**Types of Es** | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 12

58

# SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

| Nov. 1962 | Steady Flux | | | | | Variability | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 00-03 | 03-06 | 06-09 | 21-24 | mean | 00-03 | 03-06 | 06-09 | 21-24 | mean |
| 1 | 7 | 8 | 8 | 5 | 7 | 0 | 0 | 0 | 0 | 0 |
| 2 | 6 | 7 | 6 | 8 | 6 | 0 | 0 | 0 | 0 | 0 |
| 3 | 8 | 7 | 8 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 4 | 7 | 8 | 8 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 5 | 7 | 6 | 7 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 8 | 8 | (7) | 8 | 0 | 0 | 0 | (0) | 0 |
| 7 | 7 | 7 | 7 | 12 | 7 | 0 | 0 | 0 | 1 | 0 |
| 8 | 15 | 16 | 11 | (6) | 14 | 1 | 1 | 1 | (0) | 1 |
| 9 | 7 | 8 | 8 | (8) | 7 | 0 | 0 | 0 | (0) | 0 |
| 10 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 1 | 0 |
| 11 | 70 | 21 | 8 | 7 | 30 | 2 | 1 | 0 | 0 | 1 |
| 12 | 7 | 8 | 8 | - | 7 | 0 | 0 | 0 | - | 0 |
| 13 | 7 | 8 | 8 | (7) | 8 | 0 | 0 | 0 | (1) | 0 |
| 14 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 15 | 6 | 7 | 6 | (7) | 6 | 0 | 0 | 0 | (0) | 0 |
| 16 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 17 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 18 | 7 | 7 | 7 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 19 | 8 | 7 | 7 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 20 | 8 | 8 | 8 | - | 8 | 0 | 0 | 0 | - | 0 |
| 21 | 8 | 8 | 8 | 7 | 8 | 0 | 0 | 0 | 0 | 0 |
| 22 | 7 | 8 | 8 | (7) | 7 | 0 | 0 | 0 | (0) | 0 |
| 23 | 7 | 7 | 6 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 24 | 7 | 8 | 8 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 25 | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | |
| 26 | 7 | 7 | 7 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 27 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 28 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 29 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 30 | 8 | 8 | 8 | (8) | 8 | 0 | 0 | 0 | (0) | 0 |

Note No observations during the following periods:

12th 2100 - 13th 0130
20th 2120 - 21st 0100

## Outstanding Occurrences

| Nov. 1962 | Start-time | Dura-tion | Type | Max. Int. | | Max. Time | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | Inst. | Smd. | | |
| 14 | 0120.7 | 2 | CD/4 | 960 | 30 | 0121.0 | |

## RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

| Nov. 1962 | 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 | 4- | 3 4 4 | (3) - - 4 | 3 3 4 4 | 4 4 - 3 | N U U N | | | |
| 2 | 4o | 4 4 3 | - - - 4 | 4 4 4 4 | 4 4 - 4 | N N N N | | | |
| 3 | 3+ | 3 (3) 3 | - - - 4 | 4 3 3 3 | 4 3 - 4 | N N N N | | | |
| 4 | 4- | 4 3 3 | - - - (3) | 4 4 4 4 | 3 3 - 4 | N U N N | | | |
| 5 | 4- | 4 3 4 | - - - (3) | 4 (4) 4 4 | 4 4 - 4 | N N N N | | | |
| 6 | 4- | 3 4 4 | - - - 4 | 4 3 4 4 | 5 (5) - 4 | N N N N | | | |
| 7 | 4o | 4 4 4 | - - - 5 | 4 4 4 4 | 5 4 - 4 | N N N N | | | |
| 8 | 4o | 3 4 4 | - - - (4) | 4 4 4 4 | 4 4 - 4 | N N N N | | | |
| 9 | 4o | 4 3 4 | - - - (5) | 4 4 4 4 | 4 4 - 4 | N N N N | | | |
| 10 | 4o | 4 4 4 | - - - (4) | 3 5 5 4 | (4 4) - 4 | N N N N | | | |
| 11 | 4o | 4 3 3 | - - - (4) | 4 4 5 4 | 4 (4) - 4 | N N N N | | | |
| (12) | 4o | 4 4 4 | - - - (4) | 4 (4 4) 4 | 4 4 (4) 4 | N N N N | | | |
| (13) | 4o | 5 4 4 | - - - 4 | 4 4 4 4 | 4 4 - 4 | N N N N | | | |
| (14) | 4- | 4 4 4 | - - (4) 4 | 4 3 3 3 | 4 4 - 4 | N N N N | | | |
| 15 | 4- | 4 4 3 | - - - 5 | 3 3 (4) 4 | 4 3 - 4 | N N N N | 05.0 | --- | 85γ |
| 16 | 4o | 4 3 4 | - - - 4 | 4 5 5 4 | 4 4 - 3 | N N N N | --- | --- | |
| 17 | 4- | 3 3 3 | - - - 5 | 4 4 4 3 | 4 4 - 4 | N N N N | --- | 03.0 | |
| 18 | 4o | 5 4 4 | - - - C | 3 3 4 4 | 4 3 - 4 | N N N N | | | |
| 19 | 3+ | 4 4 4 | - - - (4) | 3 3 3 3 | 4 4 - 3 | N N N N | | | |
| 20 | 3+ | 3 3 4 | - - - 4 | 3 3 4 4 | 4 4 - 4 | N N N N | | | |
| 21 | 3+ | 3 3 4 | - - - 4 | 3 3 4 3 | 4 5 - 5 | N N N N | 00.4 | --- | 97γ |
| 22 | 3+ | 3 3 C | - - - 3 | 4 4 4 3 | 5 4 - 4 | N N U U | --- | --- | |
| 23 | 4o | C 3 3 | - - - (4) | 4 5 4 4 | 4 4 - 4 | U N N N | --- | 18.0 | |
| 24 | 3+ | (4 3) 5 | - - - 3 | 3 3 4 3 | 4 5 - 4 | N N N N | | | |
| 25 | 4- | (3 3) 3 | - - - 3 | 5 4 4 4 | 4 4 - 4 | N N N N | | | |
| 26 | 3+ | 4 3 4 | - - - 4 | 3 3 3 3 | 4 4 (4) 4 | N N N N | | | |
| 27 | 4o | 5 4 4 | - - - C | 3 3 4 4 | 4 5 (4) 4 | N N N N | | | |
| 28 | 3o | (3 3 3) | - - - 3 | 3 3 4 3 | 4 5 (4) 5 | N N N N | | | |
| 29 | 3o | 3 C C | - - - 3 | 3 4 3 3 | 5 5 - 3 | N N N N | 0615 | --- | 103γ |
| 30 | 3+ | 3 3 3 | - - - 2 | 3 4 4 4 | 4 4 - 4 | N U U U | --- | 2400 | |

* = day of Special World Interval

( ) = Regular World Day

- = impossible to evalute

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

# SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during November, 1962.

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1962
第 14 号　第 11 巻

昭和 38 年 2 月 10 日　印　刷
昭和 38 年 2 月 15 日　発　行
（不許複製非売品）

編集兼発行人　糟谷　績
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発行所　郵政省電波研究所
東京都小金井市貫井北町 4の573
電話 (0423) (2) 1211 (代)

印刷所　山内欧文社印刷株式会社
東京都豊島区日ノ出町 2の228
電話 (971) 9341