

F — 145

# IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1961

Vol. 13 No. 1

(Including Provisional Data at Showa Base)

Issued in March 1961

Prepared by

THE RADIO RESEARCH LABORATORIES  
MINISTRY OF POSTS AND TELECOMMUNICATIONS  
KOKUBUNJI, TOKYO, JAPAN

# IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1961

Vol. 13 No. 1

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

## CONTENTS

	Page
Site of the radio wave observatories .....	2
Symbols and Terminology .....	2
Graphs of Ionospheric Data .....	8
Tables of Ionospheric Data at Wakkanai .....	9
Tables of Ionospheric Data at Akita .....	21
Tables of Ionospheric Data at Kokubunji .....	33
Tables of Ionospheric Data at Yamagawa .....	47
Data on Solar Radio Emission .....	59
Radio Propagation Conditions .....	61
Table of Provisional Ionospheric Data at Showa Base (Oct. Nov., 1960) .....	63

## 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
Akiya	39°43.5'N.	140°03.2'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

$f_oF2$	The ordinary-wave critical frequency for the $F2$ , $F1$ and $E$ layers respectively.
$f_oF1$	
$f_oE$	
$f_oE_s$	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f_oE_s$	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  $f_0E_s$ .
- $h_pF2$  The virtual height of the  $F2$  layer measured on the ordinary-wave branch at a frequency equal to  $0.834 f_0F2$
- $y_pF2$  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  $h_pF2$  and the virtual height at  $0.969 f_0F2$ ).

**a. Descriptive Symbols**

Used following the numerical value on monthly tabulation sheets.

- A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example  $E_s$ .
- B Measurement influenced by, or impossible because of, absorption in the vicinity of  $f$ -min.
- C Measurement influenced by, or impossible because of, any non-ionospheric reason.
- D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.
- E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.
- F Measurement influenced by, or impossible because of, the presence of spread echoes.
- G Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.
- H Measurement influenced by, or impossible because of, the presence of a stratification
- L Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.
- M Measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.
- O Measurement refers to the ordinary component.
- R Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.
- S Measurement influenced by, or impossible because of, interference or atmospherics.
- V Forked trace which may influence the measurement.
- W Measurement influenced 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 preceding symbol on monthly tabulation sheets.

D	<i>greater than.....</i>
E	<i>less than.....</i>
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:

- $l$  A 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 thick layer included in the  $E$  layer tables:  $f_0E$ ,  $h'E$ ) by the lack of group retardation in the  $F$  traces at corresponding frequencies.
- $a$  An  $E_s$  pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.
- $s$  A diffuse  $E_s$  trace which rises steadily with frequency. This usually emerges from another  $E_s$  trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal  $E_s$  trace,  $l$ ,  $h$  or  $f$ , and frequencies which greatly exceed the  $E$  layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type  $E_s$ ,  $q$ , at frequencies near the  $E$  region critical frequency.
- $f$  An  $E_s$  trace which shows no appreciable increase of height with

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

" 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 6x4 dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

**a. Daily Data**

*Steady flux*

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

*Variability*

Variability is expressed in four grades as follows:

0=no burst

1=a few bursts

2=many bursts

3=exceptionally many bursts

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

**b. Outstanding occurrences**

*Starting time*

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

*Maximum time*

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

*Time of end*

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

*Type*

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

S: simple rise and fall of intensity

C: complex variation of intensity

A: appears to be part of general activity

D: distinct from (i.e. apparently superposed upon) the general

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

*Maximum intensity*

Instantaneous: The highest value above the base level.

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

### C. RADIO PROPAGATION CONDITIONS

#### a. Radio Propagation Quality Figures

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

1=good

4=poor (disturbed)

2=normal

5=very poor (very disturbed)

3=rather poor (unstable)

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 Hiraio 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 weighted averages of the 6-hourly indices of London, WWV and S.F., with half weight given to quality grade 2 (normal). This procedure is taken to avoid the concentration of the whole day indices to grade 2.

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 prepared from the field intensity records on following circuits received at Hiraio. Characteristics of the phenomenon are classified as follows.

*Circuits and Drop-out intensity*

WS ..... WWV 20 Mc, 15 Mc and 10 Mc (Washington)  
 SF ..... WMA-25: 5.0775 Mc, WMA-47: 7.485 Mc, WMF-27A2: 7.712  
           3 Mc WMH-30A2: 10.3873 Mc, WMH-53A2: 13.7773 Mc and  
           WMJ-30A2: 20.8173 Mc (San Francisco)  
 HA ..... WWVH 15 Mc and 10 Mc (Hawaii)  
 TO ..... JJY 15 Mc and 10 Mc (Tokyo)  
 LN ..... GIJ-27: 7.6975 Mc, GIJ 30: 10.9075 Mc, GBJ 34: 14.798 Mc and  
           GIJ-38: 18.4375 Mc (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 and 20 Mc for WWV, WWVH and JJY are marked; 10 Mc ( ' ), 15 Mc (none) and 20 Mc ( " ).

*Start-times and Durations**Types*

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

*Importances*

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

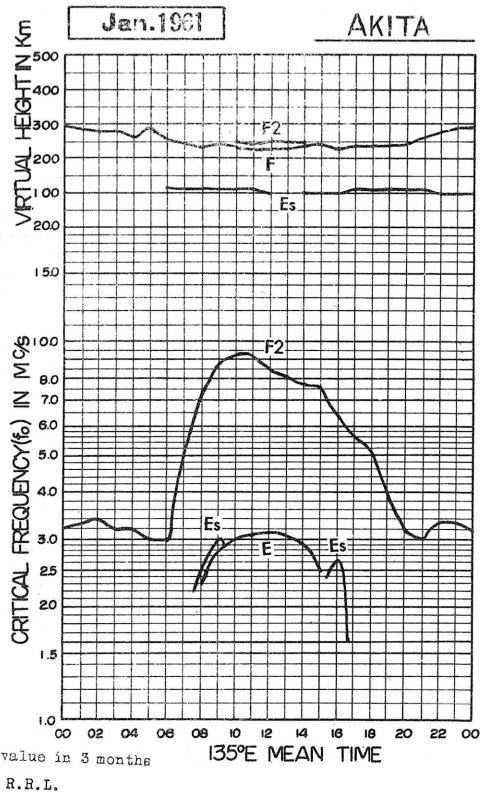
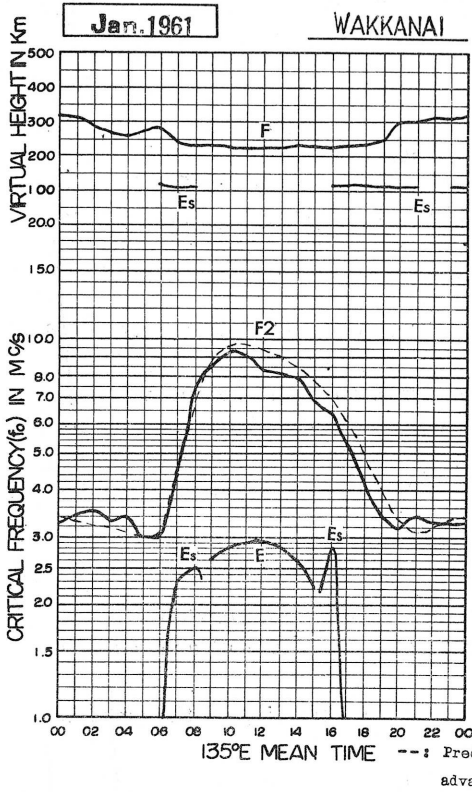
1--	1	1+
2--	2	2+
3--	3	3+

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

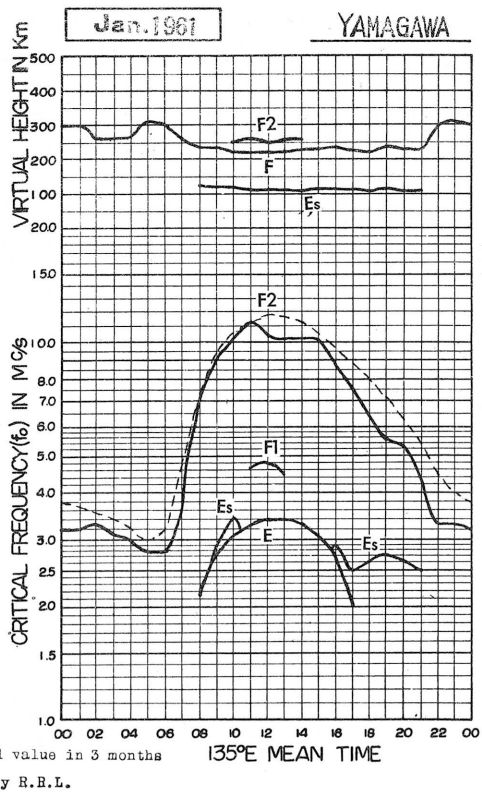
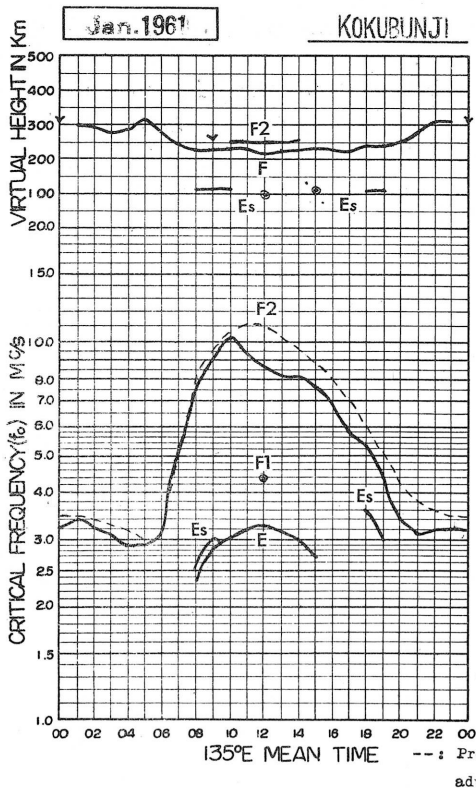
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

Wakkanai

Jan. 1961

135° E Mean Time (GMT. + 9h.)

foF2

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	C	C	C	C	C	C	C	C	10.8	12.0	12.5	9.0	8.2	8.9	7.4	6.7	5.3	4.0	3.2	3.2 A	3.1	3.3	3.3
2	3.3	3.4	3.4	C	C	C	C	C	C	9.3	10.4	9.5-11	8.7	8.0	8.2	7.3	5.6	4.7	4.0	2.8	3.0	3.0	3.3	2.7
3	2.8	3.0	3.1	3.3	3.0	3.0 <sup>SA</sup>	3.0	4.4	6.8	9.6	12.0	10.0	8.0	8.5	7.8	6.9	6.1	5.4	3.5	2.9	2.7	2.9	3.1	3.5
4	2.7	2.6	2.8	2.8	3.0	3.1	3.0	4.3	8.2	9.5	10.8	10.7	8.8	8.1	8.8	7.4	6.3	5.4	4.3	3.3	2.5	2.9	3.1	3.5
5	3.3	3.1	3.2	3.3	3.5	3.0	3.3	4.3 C	7.4 C	9.1	11.2	10.7	8.4	8.2	8.1	6.8	5.6	4.5	4.1	3.0	2.4	2.7 F	2.8 F	2.8
6	3.0	3.0	3.1	3.1	3.0	3.0	2.7	4.3	7.6	9.5	11.3	12.0	9.5	9.0	8.6	8.0	6.5	6.6	4.2 <sup>AS</sup>	2.3	2.4	2.2 F	3.3	3.3
7	3.3	3.3	3.5	3.7	3.5	3.6	3.0	5.0	7.4	9.6	11.1	11.0	7.3	8.9	8.9	8.2	7.0	4.7	4.0	3.3	3.1	3.3	3.5	3.6
8	3.3	3.5	3.5	4.0	3.8	3.4	2.7	4.8	7.4	10.8	11.4	9.6	10.1	9.1	8.6	7.5	7.7	4.5	3.9	4.3	3.7	3.8	3.7	3.7
9	3.1	3.1	3.0	3.2	3.2	3.2	3.1	4.3	7.7	9.9	12.1	11.1	11.0	10.4	8.6	7.7	7.2	4.6	4.5	4.0	3.0	3.5	3.3	3.3
10	3.2	3.3	3.4	3.0	3.2 A	3.2	3.2	4.3	8.8	10.1	10.7	10.3	10.9	8.8	8.6	7.6	7.0	5.0	4.1	3.3	3.2	3.6	3.6	3.2
11	3.6	4.0	F	F	F	F	A	4.2	8.1	8.8	10.3	9.8	9.6	8.2	8.7	6.5	6.7	5.7	3.6 F	3.9 F	3.7 F	3.4 F	F	F
12	F	F	F	F	3.0 F	3.0 F	2.5	4.3	7.0	8.4	8.5	7.8	7.3	7.5	7.5	6.0	6.3	4.8	4.0	3.0	2.9	3.3	3.0	2.8
13	3.0 F	F	F	F	3.5 F	3.6 F	3.3	5.0	6.6	9.4	7.6	8.3 <sup>H</sup>	8.0	7.5	7.5	6.5	5.9	5.2	4.0	3.4	3.0	3.1	3.3	3.3
14	3.4	3.5	3.6	3.3	3.4	2.8	2.9	4.4	9.0	8.6	9.3	8.9	7.7	8.4	8.2	6.8	5.9	5.1	4.2	3.5	2.9	3.6	3.6 F	3.8 F
15	3.6	3.8 F	3.7	3.7	3.4 <sup>S</sup>	3.4	3.8	4.7	7.5	8.5	9.5	7.8	7.0	7.5	7.0	6.7	6.5	5.6	4.7	4.6	4.4	4.1	3.6	3.6
16	3.7	4.0	4.0	4.0	4.3	4.0	3.3	4.2	6.5	7.4	10.0	8.3	7.5	7.2	6.5	7.1	6.6	6.7	6.7	3.0	2.6	3.4	3.0	3.3
17	4.1 <sup>S</sup>	3.6	3.7	3.7	4.4	F	F	4.3	6.7	8.4	8.2	8.6	8.2	7.6	7.5	6.0	6.7	6.5	4.3	3.4	3.3	3.3	3.3 F	3.5 F
18	3.1 F	3.6 F	3.2	3.5 F	3.3	3.0 F	3.3	4.5 <sup>S</sup>	7.8 <sup>S</sup>	C	C	C	C	C	C	C	C	5.1	3.3	3.3	3.3	3.4 F	3.3 F	3.0
19	2.7	2.7	3.3	3.2	2.5	2.9 A	4.2	4.2	7.0	8.8	7.0	8.6	7.3	6.5	7.7	7.1	6.8	5.3	4.0	2.9	3.4	3.5	3.5	3.7
20	3.6	3.2	3.3	3.2	3.3	3.0	2.5 <sup>S</sup>	4.3	5.6	6.6	10.3	9.2	8.9	8.9	7.9	6.4	6.3	6.0	4.5	4.5	4.3	4.0	4.0	4.0
21	3.3	2.5	2.9	3.0	3.0	3.0	2.8	4.3	6.6	8.2	8.1	8.5	7.8	8.6	7.8	7.0	5.6	5.0	4.2 C	3.3 C	2.7	3.0	3.3	3.1
22	3.0	3.3	3.3	3.2	3.3	3.4	3.5	4.5	7.8	8.1	10.1	8.5	7.3	8.1	7.0	6.5	5.3	5.0	3.9	3.0	3.0	3.0	2.8 F	3.0 F
23	3.3 F	3.4 F	3.0	2.6 F	2.3 F	2.5 F	2.2	4.5	6.8	7.1	7.6	7.6	7.5	7.5	7.1	7.2	6.3	4.3	4.0	3.6	3.3	3.4	3.1	3.4
24	3.5	3.5	3.5	3.5	3.4	3.3	3.3	5.0	6.6	7.5	8.1	8.5	8.2	7.5	6.4	6.6	6.0	6.5	A	A	A	A	A	3.3
25	3.3 F	3.3 F	3.6 F	3.0 F	F	F	F	4.5 <sup>S</sup>	6.0	6.6	8.3 <sup>H</sup>	8.7	7.7	7.5	7.3	6.1	6.9	5.0	5.3	3.3 F	3.3	3.4 F	3.7 F	3.6 F
26	4.0	4.0	4.2 F	3.3 F	3.5	3.1	3.0 <sup>S</sup>	4.5	6.2	7.9	8.2	9.7	7.7	7.6	7.0	6.7	5.8	5.3	4.9	3.5	3.6 F	3.8 F	3.6 F	3.8 F
27	3.7	3.8	3.8	3.6	3.5	3.0	2.6	4.7	8.3	8.5	8.8	7.8	7.3	7.7	7.5	6.5	6.1	5.7	4.0	4.2	2.5	3.2	2.9	3.0 F
28	3.3	3.5	3.6	3.4	3.4	3.3	3.0 <sup>S</sup>	4.4	7.4	8.9	7.6 <sup>H</sup>	7.3	8.7	7.6	7.5	6.9	6.5	5.5	5.4	4.2	3.8	4.0	3.9	3.3
29	3.3	3.4	3.5	3.5	3.0	2.8	2.7	5.5	8.2	9.3	8.5	7.6	8.7	7.9	7.4	7.6	6.4	5.6	5.1	3.6	3.6	4.0	3.6 F	3.7
30	3.7	4.0	4.0 F	4.1	4.0 F	3.6 F	3.1	5.4	7.8	7.3	8.1	7.7	8.6	8.5	8.6	6.6	5.8	5.9	6.0	3.9	3.3	3.6	3.5 F	3.9
31	3.9 <sup>S</sup>	3.8	3.7	3.6	3.8	3.5	2.8	5.2	6.8	7.7	8.3	8.1	7.7	7.1	7.7	7.2	6.1	6.3	4.4 A	4.0	2.8	3.5	F	F
No.	2.9	2.8	2.7	2.6	2.7	2.6	2.6	2.9	2.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.0	3.0	3.0	2.9	2.8	2.7
Median	3.3	3.4	3.5	3.3	3.4	3.0	3.0	4.5	7.4	8.6	7.4	7.2	8.3	8.2	8.0	6.9	6.4	5.3	4.1	3.4	3.2	3.4	3.3	3.3
U.L	3.6	3.7	3.7	3.6	3.5	3.4	3.1	5.0	7.8	9.4	10.7	10.0	9.0	8.8	8.6	7.4	6.7	5.9	4.5	3.9	3.4	3.6	3.6	3.6
L.Q	3.2	3.2	3.2	3.1	3.0	3.0	2.7	4.3	6.6	7.9	8.2	8.5	7.7	7.6	7.5	6.5	6.0	5.0	4.0	3.0	2.8	3.2	3.1	3.1
Q.L	3.4	3.5	3.5	3.5	3.5	3.4	3.4	3.7	1.2	1.5	2.5	1.5	1.3	1.2	1.1	0.9	0.7	0.9	0.5	0.9	0.6	0.4	0.5	0.5

Sweep 1.0 Mc to 7.0 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

W 1

foF2

IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foF1

Jan. 1961

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									C															
3									C															
4																								
5																								
6																								
7																								
8																								
9																								
10											L													
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19									C	C	C	C	C	C	C	C								
20											U <sub>4.0</sub> L													
21											L													
22																								
23											L													
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.												1												
Median											U <sub>4.0</sub>													

Sweep 1.0 Mc to 17.0 Mc in 1 min 1 sec in automatic operation.

foF1

The Radio Research Laboratories, Japan.

W 2

Lat. 45° 23.6' N  
Long. 141° 41.1' E

**Wakkanai**

**IONOSPHERIC DATA**

135° E Mean Time (GMT.+9h.)

foE

Jan. 1961

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	S	S	S	S	S	A	A									
2									C	A	A	I <sub>300</sub> <sup>S</sup>	3.00	2.90	S	S									
3									C	A	A	A	S	2.95	2.80	2.20									
4									A	I <sub>260</sub> <sup>A</sup>	3.00	I <sub>300</sub> <sup>A</sup>	3.00	3.00	2.65	S									
5									C	2.60	2.95	3.00	3.05	2.85	2.55 <sup>S</sup>	S									
6									S	2.50	I <sub>280</sub> <sup>A</sup>	2.95	3.00	2.95	S	S									
7									A	A	2.85	3.00	3.00	2.95	S	S									
8									S	2.60	2.95	I <sub>300</sub> <sup>S</sup>	3.00	I <sub>285</sub> <sup>S</sup>	S	S									
9									S	2.40	I <sub>260</sub> <sup>S</sup>	S	S	S	S	S									
10									S	S	2.55	2.70	2.80	S	S	S									
11									S	2.60	S	S	I <sub>285</sub> <sup>S</sup>	S	S	S									
12									S	I <sub>260</sub> <sup>S</sup>	I <sub>280</sub> <sup>S</sup>	2.60	I <sub>265</sub> <sup>S</sup>	2.55	S	S									
13									A	I <sub>250</sub> <sup>S</sup>	I <sub>260</sub> <sup>S</sup>	2.90	I <sub>290</sub> <sup>S</sup>	I <sub>270</sub> <sup>S</sup>	2.45	2.10	S								
14									S	A	S	A	A	A	A	S									
15									S	S	S	2.80	I <sub>280</sub> <sup>S</sup>	I <sub>270</sub> <sup>A</sup>	S	A									
16									S	S	2.65	I <sub>275</sub> <sup>S</sup>	I <sub>280</sub> <sup>S</sup>	I <sub>275</sub> <sup>S</sup>	S	S									
17									A	A	A	A	A	A	A	S									
18									S	C	C	C	C	C	C	S									
19									A	2.60	2.75	2.90	2.90	2.85	2.50	S									
20								S	I <sub>230</sub> <sup>S</sup>	2.55	2.65	I <sub>275</sub> <sup>A</sup>	I <sub>270</sub> <sup>B</sup>	2.35	S	S									
21									S	S	S	S	S	S	S	S									
22									S	S	2.85	I <sub>300</sub> <sup>A</sup>	2.90	2.50	2.15	S									
23									S	S	I <sub>280</sub> <sup>S</sup>	I <sub>275</sub> <sup>S</sup>	I <sub>280</sub> <sup>S</sup>	I <sub>275</sub> <sup>S</sup>	2.50	S									
24									A	2.60	I <sub>280</sub> <sup>A</sup>	I <sub>290</sub> <sup>A</sup>	I <sub>300</sub> <sup>A</sup>	2.90	2.80	2.20	S								
25									2.10	2.50	2.80	2.90	3.00	2.90	2.60	2.30	S								
26									S	2.10	2.60	2.85	3.00	2.95	2.65	S									
27									2.10	2.70	2.95	2.85	2.90	2.70	2.60	S									
28									A	2.50	2.80	2.95	2.90	2.70	2.70	S									
29									S	2.15	2.75	I <sub>295</sub> <sup>A</sup>	3.00	S	S	A									
30									S	S	S	S	S	S	A	2.50 <sup>S</sup>									
31									S	2.70	B	B	B	B	B	2.35	S								
No.									4	16	19	21	20	21	14	7									
Median									2.10	2.60	2.80	2.90	2.95	2.85	2.60	2.20									

Sweep 1.0 Mc to 17.0 Mc in 1 min 50 sec in automatic operation.

The Radio Research Laboratories, Japan.

foE

W 3

# IONOSPHERIC DATA

**Wakkanai**

Lat. 45° 23.6' N  
Long. 141° 41.1' E

135° E Mean Time (GMT. + 9h.)

foEs

Jan. 1961

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	C	C	C	C	C	C	C	C	S	S	S	S	S	S	3.0	J11.2	E	J4.6	4.2	J6.3	J4.2	J4.3	J3.3
2	J3.5	J3.0	E	C	C	C	C	C	C	J6.2	J6.3	S	S	G	G	G	2.7	J4.3	J3.8	J3.8	J2.8	J3.0	E	E
3	E	E	E	E	J4.3	2.3	J2.9	J3.0	J5.2	J5.0	J5.2	J5.0	S	G	G	G	S	E	E	E	E	J2.4	E	2.8
4	E	E	E	E	E	E	E	E	J5.0	J3.3	G	J4.3	G	G	G	S	S	E	E	E	E	E	E	E
5	E	E	E	E	E	E	J2.3	C	C	G	G	G	G	G	S	S	E	E	E	E	S	E	E	E
6	E	E	E	E	E	J4.2	J3.1	E	S	G	J5.5	G	G	G	S	S	J5.3	J5.3	J2.9	J2.3	J3.0	E	E	E
7	E	E	E	E	E	E	J2.3	J2.8	J4.2	2.7	G	G	G	G	S	S	J4.8	J10.5	J3.3	J3.1	E	E	E	E
8	E	E	E	E	E	J4.3	J4.5	J3.0	S	G	G	S	S	S	S	S	S	E	E	E	J3.0	E	E	E
9	E	E	E	E	E	J2.1	J2.3	J4.3	S	G	S	S	S	S	S	S	S	E	E	E	E	J2.3	E	E
10	E	E	E	E	E	J3.0	J3.3	2.2	S	S	G	J5.0	G	G	S	S	S	E	E	E	J6.5	J5.3	E	E
11	E	E	E	E	E	1.9	J2.5	J3.8	S	G	S	S	S	S	S	S	S	E	E	E	E	E	J2.5	E
12	E	E	E	E	E	E	E	E	S	S	S	S	S	S	G	G	S	E	E	E	E	E	E	J2.3
13	E	E	E	E	E	E	E	E	S	S	S	S	S	S	G	G	S	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	S	3.0	S	4.0	J4.6	J3.3	4.0	S	3.0 <sup>M</sup>	E	E	E	E	E	E	E
15	2.6	E	E	E	E	E	E	E	S	S	S	G	S	3.0	S	J3.0	J3.1	J2.9	J2.8	J2.2	E	E	J3.0	J2.3
16	E	E	E	E	E	E	E	E	S	S	S	S	S	S	S	S	S	E	E	E	E	E	E	E
17	2.9	J3.6	J3.3	J2.5	E	E	E	E	S	J5.0	J6.3	J5.3	7.0	5.0	J5.3	J3.3	S	E	E	E	J2.3	J2.9	J4.0	J2.3
18	E	E	E	E	E	E	E	E	S	C	C	C	C	C	C	C	C	E	J3.2	J5.2	J3.6	J3.0	E	E
19	E	E	E	E	E	J2.3	J4.3	J5.3	J2.4	G	G	G	G	G	G	S	J3.1	J3.2	J3.0	J2.2	E	J2.4	E	J2.0
20	J2.3	J2.3	J1.9	E	E	J2.0	E	2.7	S	S	S	G	G	B	G	2.6	2.2	J3.2	E	J2.3	E	E	E	E
21	E	E	E	J5.3	J4.5	J5.1	E	E	S	S	S	S	S	S	S	S	J3.3	J3.3	C	C	E	E	E	E
22	E	E	E	J3.5	J2.1	J4.2	J2.9	E	S	S	S	G	G	G	G	S	S	E	E	E	E	E	E	E
23	E	E	E	E	E	E	J2.1	J2.3	S	S	S	S	S	S	S	3.4	S	E	E	E	E	E	E	E
24	E	E	E	E	E	E	2.0	E	J3.3	2.6	G	J3.3	3.6	3.6	G	G	S	2.9	J5.2	J6.5	J5.3	J6.0	J3.0	E
25	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	2.5	G	E	E	E	J2.3	J3.5	E	J2.0
26	J2.3	E	E	E	E	E	E	E	G	G	G	G	3.7	G	G	S	S	E	E	E	J2.3	E	E	E
27	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	S	S	E	E	E	J2.8	E	E	E
28	E	E	E	E	E	E	E	E	J5.2	G	G	G	G	G	G	S	S	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	G	G	3.1	G	S	S	S	J4.8	J8.3	E	J3.3	E	E	E	E	E
30	E	E	E	E	E	E	E	E	S	S	S	B	S	B	J3.3	G	S	E	E	E	J2.2	J2.0	E	J2.3
31	E	E	E	E	E	E	E	E	S	G	B	B	B	B	B	G	2.3	E	J5.3	E	E	J2.3	E	E
No.	30	30	30	29	29	29	29	24	12	19	18	19	18	16	17	11	12	30	30	30	30	31	31	31
Median	E	E	E	E	E	E	E	E	2.3	2.5	G	G	G	G	G	G	2.8	E	E	E	E	E	E	E
U. Q	E	E	E	E	2.0	2.2	2.4	3.1	4.6	3.0	3.3	4.0	3.3	G	3.2	3.0	3.2	2.9	3.0	3.3	2.8	3.0	E	2.1
L. Q	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E
Q. R																								

Sweep 1.0 Mc to 12.0 Mc in 1.0 min. in automatic operation.

foEs

The Radio Research Laboratories, Japan.

**W 4**

# IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

**Wakkanai**

Jan. 1961

f<sub>o</sub>E<sub>s</sub>

135° E Mean Time (GMT.+ 9h.)

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	C	C	C	C	C	C	C	C	S	S	S	S	S	S	2.7	4.9		2.6	E	A	A	2.4	2.4
2	2.3	E		C	C	C	C	C	C	2.8	3.1	S	S	S	S	S	E	E	2.9	E	E	E	E	E
3					E	E	As	E	3.0	3.0	3.2	3.2	S			S	S							E
4									2.6	2.8		3.2				S	S							
5									C							S	S			S				
6						E	E	E	C	3.0						S	S	4.0	AS	E	E			
7							E	E	3.2	2.6						S	S	E	E	E	2.8			
8							E	E	S			S	S	S	S	S	S				E	E		
9							E	E	S		S	S	S	S	S	S	S				E	E		
10						E	E	A	S	S	S	S	S	S	S	S	S			E	E	E		
11							E	A	S	S	S	S	S	S	S	S	S			E	E	E		
12									S	S	S	S	S	S	S	S	S							E
13									2.1	S	S	S	S	S	S	S	S							E
14									S	2.8	S	3.6	3.2	3.0	4.0	S	2.2							E
15	E								S	S	S	S	S	3.0	S	2.3	E	E						E
16									S	S	S	S	S	4.0	S	2.7	S	S						E
17	E	E	E	E					4.0	2.7	2.9	3.0	3.0	4.0	4.3	2.7	S	S						E
18									S	C	C	C	C	C	C	C	C	E	E	E	E	E	E	E
19									S	C	C	C	C	C	C	C	3.0	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	S	S	S	S	3.0	B	S	S	S	E	E	E	E	E	E	E
21									S	S	S	S	S	S	S	S	S	E	E	E	E	E	E	E
22									S	S	S	S	2.9	S	S	S	S	E	E	E	E	E	E	E
23									S	S	S	S	S	S	S	S	S	E	E	E	E	E	E	E
24									S	S	S	3.0	3.1	S	S	S	S	E	A	A	A	A	A	E
25									2.3								S	E	E	E	E	E	E	E
26	E												4			S	S							
27																S	S							
28									2.4							S	S							
29										3.0						S	S	E						
30									S	S	S	S	S	B	3.3	S	S							E
31									S	B	B	B	B	B	B		S	A						
No.	5	3	4	5	8	10	12	14	8	6	6	6	6	3	6	4	9	9	10	14	13	15	17	10
Median	E	E	E	E	E	E	E	E	2.5	2.8	3.0	3.1	3.0	3.0	3.2	2.5	2.2	E	E	E	E	E	E	E

Sweep 1.0 Mc to 17.0 Mc in 1 <sup>min</sup>/<sub>sec</sub> in automatic operation.

The Radio Research Laboratories, Japan.

f<sub>o</sub>E<sub>s</sub>

W 5



Lat. 46° 28.6' N  
Long. 141° 41.1' E

# IONOSPHERIC DATA

## Wakkanai

135° E Mean Time (GMT.+ 9h.)

Jan. 1961

M(3000)F2

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	C	C	C	C	C	C	C	C	335	335	360	335	330	345	340	315	320	315	345	315 A	390 A	270	280
2	275	275	295	C	C	C	C	C	C	345	335	330	350	315	340	340	330	340	360	320	290	285	290	280
3	270	285	295	290	290	300	310 SA	330	325	335	335	330	340	330	335	340	330	340	335	315	295	390 F	285	290
4	300	310	275	285	275	290	315	325	340	340	340	340	340	335	330	335	320	335	350	310	310	275	275	275
5	305	285	305	310	300	320	305	320 C	340 C	350	340	340	335	325	325	325	345	320	345	335	290	390 F	285 F	285
6	275	275	295	305	310	320	310	310	335	330	325	335	330	320	330	340	325	335	340 AS	375	270	265 F	305	290
7	280	285	285	315	315	310	295	310	320	335	340	335	335	315	335	340	345	325	330	310	290	290	285	285
8	290	285	285	310	340	325	320	315	330	330	340	345	320	330	335	340	340	335	290	315	285	330	270	310
9	290	270	280	270	270	285	295	335	340	320	330	315	325	330	325	330	335	330	335	350	265	265	265	260
10	270	275	310	300	385 A	305	300 A	300	330	320	335	310	330	340	350	340	345	305	340	335	285	290	340	280
11	270	265	F	F	F	F	A	310	340	350	350	350	345	330	350	365	330	350	320 F	300 F	295 F	285 F	F	F
12	F	F	F	F	300 F	320 F	330	330	335	365	365	365	340	345	345	345	345	330	340	335	310	305	335	280
13	285 F	F	F	F	275 F	300 F	335	340	360	370	340	340	340	335	360	355	345	335	345	325	335	290	295	290
14	290	285	305	335	325	295	275	320	335	350	340	365	325	335	350	345	340	320	320	335	345	295	305	280 F
15	305	305 F	295	280	290 S	335	330	345	335	330	345	335	335	340	340	350	335	340	345	330	330	315	325	285
16	295	290	290	285	305	325	345	335	345	360	315	350	355	340	340	360	335	310	360	355	290	340	280	290
17	295 S	295	285	290	285	F	35	360	360	355	345	345	345	345	340	340	315	345	340	345	320 AS	390 F	360 F	295 F
18	280 F	315 F	290	315 F	320	300 F	295 S	320 S	350 S	C	C	C	C	C	C	C	C	310	275	335	275	390 F	290 F	310
19	265	280	275	350	275	280	285 A	310	350	355	365	365	340	335	330	350	360	330	355	310	290	325	285	285
20	295	285	295	265	270	290	300 S	310	365	340	330	340	335	345	365	375	320	315	330	345	295	275	290	290
21	340	250	260	260	265	265	295	310	355	355	340	345	345	340	345	355	345	330	335	300 C	280	270	280	275
22	265	290	305	280	275	280	325	325	335 S	325	345	345	320	335	360	355	355	330	335	295	285	315	380 F	260 F
23	245 F	255 F	310	300 F	295 F	280 F	285	330	345	365	350	345	335	345	365	360	345	325	325	330	330	290	285	275
24	275	285	285	285	295	305	310	330	345	345	340	365	325	335	330	340	325	330	330	A	A	A	A	250
25	275 F	280 F	315 F	300 F	F	F	FS	355 S	355	385	380 H	365	345	335	340	335	335	335	320	345	300 F	390 F	285 F	280 F
26	280	295	315	280 F	300	300 F	310 S	340	345	350	330	345	340	325	345	360	345	320	340	315	285 F	290 F	285 F	280 F
27	270	290 F	305	315	320	290	310	320	330	345	340	350	340	345	365	340	330	335	310	350	290	330	285	280 F
28	290	280	295	295	295	310	315 S	340	345	345	330 H	320	335	325	335	355	325	325	330	340	290	300	310	280
29	290	270	290	320	305	285	295	325	325	340	330	345	345	330 H	330	335	345	330	345	320	315	310	285 F	280
30	270	275	280 F	295	325 F	285 F	290	335	345	340	320	330	345	345	345	335	335	345	340	345	275	310	270 F	290
31	280 S	280	295	320	315	350	320	340	355	320	330	335	335	330	330	335	335	335	340 A	335	285	35	270 F	F
No.	29	28	27	26	27	26	26	29	29	30	30	30	30	30	30	30	30	30	31	30	30	29	28	29
Median	280	285	295	300	295	300	325	340	345	340	340	340	335	335	340	340	345	330	335	330	290	270	285	280

The Radio Research Laboratories, Japan.

Sweep / sec Mc to / sec Mc in / min sec in automatic operation.

M(3000)F2

W



# IONOSPHERIC DATA

Lat.  $45^{\circ}23.6'N$   
 Long.  $141^{\circ}41.1'E$

**Wakkanai**

135° E Mean Time (GMT.+ 9h.)

M(3000)F1

Jan. 1961

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									U															
3									U															
4																								
5																								
6																								
7																								
8																								
9																								
10											L													
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19									C	C	C	C	C	C	C	C								
20											U <sub>4.00</sub> L													
21												L												
22																								
23												L	L											
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.												1												
Median												U <sub>4.00</sub>												

Sweep 1.2 Mc to 17.2 Mc in 1 min sec in automatic operation.

M(3000)F1

The Radio Research Laboratories, Japan.

W 8

IONOSPHERIC DATA

Lat. 45° 23.6' N  
 Long. 141° 41.1' E

Wakkanai

R/F2

Jan. 1961

135° E Mean Time (GMT.+ 9h.)

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

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 17.0 Mc in 1 min in automatic operation.

R/F2

W 9

Lat. 45° 23.6' N  
Long. 141° 41.1' E

IONOSPHERIC DATA

Wakkanai

135° E Mean Time (GM.T.+9h.)

R'F

Jan. 1961

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	C	C	C	C	C	C	C	C	235	235	230	230	230	245	225	240A	250	270	250	300A	350A	410	350
2	390	320	290	C	C	C	C	C	C	235	240	230	230	220	240	230	230	240	250	275	310	350	315	370
3	385	325	300	285	320	300	SA	230	220	240	245	225	230	230	230	230	225	230	235	250	350	375	300	300
4	335	310	350	350	340	270	250	270	240	235	235	220	225	235	245	220	215	230	235	240	315	445	350	330
5	285	300	285	250	250	245	310	245	235	235	235	230	225	225	235	230	215	230	240	235	430S	400	400	350
6	350	350	300	260	240	275	250	240	230	235	245	230	230	235	235	225	230	250A	250	250	540S	590	360	310
7	325	335	325	270	250	250	225	250	260	340	240	235	220	240	245	210	210	235	250	260	295A	305	315	315
8	310	320	290	250	230	260	290	250	230	235	235	235	220	235	245	235	220	230	230	285	300	250	320	340
9	270	320	320	300	375	320	300	250	230	230	245	240	240	240	235	230	225	230	230	240	360	360	375	375
10	350	310	280	245	270A	350A	320A	240	240	250	235	225	240	250	240	225	220	225	250	250	320	345	250	300
11	320	310	300	295	260	300	320A	260	230	220	235	225	230	230	230	225	235	215	250	250	270	285	310	310
12	305	310	300	290	270	250	280	235	220	225	230	220	220	240	245	210	235	220	240	255	270	275	250	380
13	350	300	330	315	300	270	250	215	220	230	215	225	220	230	235	220	235	230	235	260	260	275	340	320
14	310	305	295	250	250	300	320	240	210	230	230	220	230	240	245	230	225	235	235	235	360	360	310	300
15	295	280	290	300	285	225	250	225	230	235	240	220	230	240	235	220	235	225	250	250	320	250	250	300
16	320	300	300	300	260	225	220	245	225	240	230	220	230	230	245	250	245	220	215	220	270	300	365	310
17	275	300	330	320	295	270	240	235	225	230	225	230	230	230	240A	220	230	220	240	240	270	320	365	295
18	310	270	250	255	245	225	270	250	230	C	C	C	C	C	225	220	220	220	240	250	280	250	270	250
19	350	270	275	235	250	320	310A	260	220	240	240	220	205	225	240	225	220	230	230	260	280	250	310	320
20	280	310	285	300	320	310	250	270	230	240	245	225	225	240	240	220	235	250	250	270	270	310	285	265
21	235	300	315	310	285	300	270	250	235	245	230	220	225	250	235	225	225	250	240	240	330	320	310	290
22	225	285	270	310	305	310	250	230	250	230	245	225	210	235	225	230	220	230	245	280	295	270	350	310
23	350	300	250	260	210	285	310	245	230	220	220	215	240	240	240	230	225	230	250	250	270	300	290	310
24	300	300	300	265	285	260	255	230	220	230	225	210	220	230	230	230	225	245	A	A	A	A	A	375
25	350	320	260	250	260	300	270	210	210	230	230	225	225	230	230	230	245	225	225	270	300	360	335	325
26	310	270	250	230	260	260	260	245	220	240	230	210	220	220	240	225	225	225	235	255	310	300	295	340
27	335	325	260	270	235	275	330	260	240	220	230	225	220	225	250	235	240	220	265	240	345	265	310	335
28	320	310	300	270	265	260	250	210	240	235	220	215	215	245	230	240	230	230	250	260	300	295	250	315
29	325	335	300	260	240	280	310	245	230	225	225	220	220	250	235	220	225	225	270	275	260	310	320	320
30	310	300	285	265	225	260	290	240	230	230	225	225	245	240	225	225	225	230	230	225	310	300	310	320
31	315	320	275	260	245	220	265	230	225	230	225	220	225	245	240	240	225	230	230A	230	245	365	335	255
No.	30	30	29	29	29	29	28	29	29	30	30	30	30	30	30	30	30	30	31	30	28	30	30	310
Median	320	310	290	270	260	275	280	245	230	235	230	225	230	240	240	230	235	230	240	250	300	300	310	310

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 17.1 Mc in 1 min in automatic operation.

W10

Lat. 46° 23.6' N  
Long. 141° 41.1' E

# Wakanai

## IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

R'Es

Jan. 1961

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

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 17.0 Mc in 1 min in automatic operation.

R'Es

W 11

# IONOSPHERIC DATA

Lat. 45° 28.6' N  
Long. 141° 41.1' E

## Wakanai

135° E Mean Time (GMT.+ 9h.)

Jan. 1961

Types of Es

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	f2	f							f2	f	f	f					f3	f	f2	f3	f2	f3	f2	f
3					f	f2	f2	f2	f2	f	f	f						f	f2	f	f	f	f	f
4									f2	f	f	f												
5							f											f3	f2	f	f2			
6						f2	f		f	f	f							f	f2	f	f2			
7						f2	f2	f2	f	f	f								f	f	f	f		
8						f2	f2	f2	f	f	f								f	f	f	f		
9					f	f	f	f											f	f	f	f		
10				f	f4	f3	f3	f				f							f	f3	f2	f2		
11			f	f		f	f4	f2															f	f
12																								
13									f				f											
14									f	f	f	f	f	f				f	f					
15	f																	f	f					
16	f	f2	f2	f					f2	f2	f	f	f2	f2										
17									f2	f2	f	f	f2	f2										
18									f	f	f	f	f	f										
19									f2	f2	f	f	f	f										
20	f																							
21																								
22																								
23																								
24																								
25																								
26	f																							
27																								
28																								
29																								
30																								
31																								
No.																								
Median																								

Sweep 1.0 Mc to 12.0 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

W 12

Types of Es

# IONOSPHERIC DATA

Lat.  $39^{\circ} 43.5'$  N  
Long.  $140^{\circ} 08.3'$  E

## Akita

135° E Mean Time (GM.T. + 9h.)

Jan. 1961

foF2

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	32	33	32	34	34	39	30	51	71	105R	132	111	85	78	79H	80	66	61	51	143S	26	30	33F	36F
2	36F	38	36S	33	33	28	30	54	70	95	125	110H	91	86	70	76	66	46	45	133A	134A	30	35	29
3	31	33	34	31	31	30	30	50R	69	92	106	108R	87	77	75	75	61	50	48	37	27	30	31	35
4	32	29	30	29	30	29	29	51	68	108R	126	107	194R	83	75	75	61	50	48	36	27	26	30	31
5	33	34	37	30	31	25	27	51	75	196R	117	110	107	92	81	76	59	50	46R	133R	125R	25S	29	30
6	F	F	F	F	30F	28	28	51S	75	91	120	116	106R	93R	93R	76	67	65	50	A	A	28F	12A	33F
7	32	F	F	F	F	30F	31	53	73	88	116	111	90	89	89	83	79	56	41	33	32	32	124A	35
8	33	134R	36	39	38S	33	C	C	C	C	118C	106	93	100R	89	93	78	54	40	47	139R	36	31	33
9	30	30	30	31	31	31	34A	58	76R	84	102R	109	106	100R	89	85	74	66	59	40	136R	31	35	34
10	32	33F	31	30	126C	29	140A	50	178C	117R	126	111	110H	104R	194R	81	71	53	45	40R	36	36	36	31
11	33	33	35	35	43	33	142R	50F	85	121	117R	102R	88	81	82	76	53	63	58	43	40R	30	33	134R
12	133R	132S	35	F	F	F	R	R	172R	83	90	80	73	69	79	74	53	60	43	136R	29	29	32	29
13	30	31	31	30F	F	F	R	148R	70	83	79	82H	82	84	192R	79	58	62	50	40	30	131F	34F	138F
14	39F	38F	39	33	34F	32	31	52R	193R	192R	91	81H	80	81H	75	73	59	50	50	42R	33	31	33	F
15	F	F	134F	134F	135F	138F	29	41K	71	91	91	85	80H	90	90	84	60	60	52	50	54	35	25	28
16	130A	132R	32	31	34	36	30	44	62	75	83	81	74	66	63	69	76	67	59	30	24	25	29	29
17	30	30F	F	F	39	F	RF	56R	71R	75	89	84	83	79	75	70	56	66	C	C	C	29S	A	F
18	F	29F	33F	30	29	28	28	150S	78	87	78	78	73	80	78R	65	51	50	50	140R	33	F	F	38F
19	130F	139F	30	26	26	25	25	142R	76R	79	192K	91	72	70	66	76	68	58	51	142A	34	F	F	F
20	35R	136R	136R	34	35	35R	33	43	186R	83	192K	92	85	86	86	75	56	54	52A	45A	41E	41	45R	142R
21	30	29	27	29	28	28	28	150R	71S	86	115	192R	80	77	86	73	57	51	53	132R	131A	32	33	29
22	30	29	31	31	33	33	33	136R	64	105	91	195R	84	86	78	60	64	45R	137R	131R	130R	130R	A	F
23	F	29	31F	128F	126F	24	27	144R	170R	86	91	75	71	76	75	70	60	55	35	33	33	R	R	F
24	40	36F	35	32	32	33	130R	56	74	79	82	82	85	89	199C	168C	65	61	56	33	30	26	31	33
25	34	134F	35	35	32	31	32	57	76	67	80	81	88	71	74	69	65	61	51	136R	29	30	134F	34
26	36	33	31	31	31	128F	25	50	170R	69	82	76	81	76	172C	172C	62C	53	54R	146R	35	135F	34	33F
27	F	F	39	32	33	30	29	46R	77	190R	93R	102R	79	70	78	77	67	60	51R	36R	31	26	30	30
28	32	34	34	34	33	30	29	453R	78	85	94	75	90	81	73	73	68	60	55	144R	142R	137R	35	35
29	136R	137R	40	35	32	29	29	56	81	192R	94	194R	86	78H	80	83	75	55	56	48	39R	35	33	32
30	35R	138R	34R	36	34	34	34	57	78	92	86	92	97R	80	78	77	64	56	60	45	F	R	R	F
31	138F	40	140R	38	137R	30	28	52R	72	80	78	88	77	74	73	77	75	54	53	136R	30	34R	134S	R
No.	26	27	28	27	28	28	27	29	30	30	31	31	31	31	31	30	30	30	30	29	28	27	25	25
Median	32	33	32	32	32	30	30	51	74	88	92	92	85	81	78	76	64	56	51	40	32	30	33	33
U.Q.	35	36	36	34	34	33	33	54	78	92	117	108	91	89	86	79	68	61	54	44	36	35	34	35
L.Q.	30	30	31	30	30	28	28	49	70	83	86	81	80	76	75	72	59	53	46	36	30	29	31	30
Q.R.	05	06	05	04	04	05	05	05	08	09	31	27	11	13	11	07	09	08	08	08	06	06	03	05

IONOSPHERIC DATA

Lat. 38° 43.5' N  
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+9h.)

foF1

Jan. 1961

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																									
3																									
4										L	L	L													
5																									
6																									
7												L	L												
8																									
9												L	L	L											
10														L	L										
11											L	L	L	L											
12											L	L	L	L											
13												L	L	L	L										
14											L	L	L	L	L										
15												L	L	L	L										
16																									
17											L	A	L	L	L	L									
18											L	L	L	L	L	L									
19											L	L	L	L	L	L									
20											L	S	L	L	L	L									
21										L	L	L	L	L	L	L									
22										L	L	L	L	L	L	L									
23										L	L	L	L	L	L	L									
24										L	L	L	L	L	L	L									
25										L	L	L	L	L	L	L									
26										L	L	L	L	L	L	L									
27										L	L	L	L	L	L	L									
28										L	L	L	L	L	L	L									
29										L	L	L	L	L	L	L									
30										L	L	L	L	L	L	L									
31										L	L	L	L	L	L	L									
No.												1	1												
Median											4.3	4.0													

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

foF1

The Radio Research Laboratories, Japan. A 2

IONOSPHERIC DATA

Lat. 39° 48.5' N  
Long. 140° 03.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

foE

Jan. 1961

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								B	R	290	↑305	↑310 <sup>B</sup>	315	305	295	285	B							
2									R	280	305	320	320	A	A	A	A							
3									A	285	310	335	345	330	305	270	B							
4									A	C	320	325	330	315	295	C	C							
5									245	290	310	320	330	320	295	↑240 <sup>R</sup>	B							
6									A	280	305	310	325	A	A	A	C							
7								B	A	↑285	↑305 <sup>A</sup>	320	325	325	300	R	B							
8								C	C	↑300	↑320 <sup>B</sup>	320	310	295	250	A	A							
9									R	270	300	315	320	300	280	245	B							
10									C	270	295	300	305	300	280	240	B							
11									A	A	A	305	300	290	245	B	B							
12									B	280	300	↑305 <sup>R</sup>	300	285	250	B	B							
13									↑220	↑270	↑295 <sup>A</sup>	305	A	A	A	A	A							
14									210	270	295	305	310	295	275	225	R							
15									220	260	285	↑300 <sup>R</sup>	↑305	↑300 <sup>R</sup>	290	250	B							
16									230	275	↑290 <sup>R</sup>	305	305	305	295	↑265 <sup>R</sup>	200							
17									R	A	300	↑305 <sup>A</sup>	↑310 <sup>A</sup>	300	A	A	A							
18									220	↑270 <sup>A</sup>	300	305	315	R	A	A	A							
19									A	A	A	310	310	300	280	250	R							
20									230	270 <sup>H</sup>	290	300	300	295	↑270 <sup>R</sup>	220	B							
21									S	275	S	A	↑305 <sup>A</sup>	300	290	245	C							
22									A	280	300	310	305	305	290	255	B							
23									B	↑280	↑300 <sup>R</sup>	305	310	R	A	A	A							
24									A	A	A	A	310	A	C	C	A							
25									↑215	↑270 <sup>A</sup>	300	305	310	305	295	270	A							
26									A	280	305	310	325	320	↑290 <sup>C</sup>	C	C							
27									A	↑270	↑300 <sup>S</sup>	325	320	305	295	260	210							
28									↑240	250	↑300 <sup>H</sup>	305	315	320	305	270	B							
29									250	295	305	315	320	310	295	275	A							
30								B	250	290	305	325	330	320	305	270	A							
31								B	245 <sup>H</sup>	275	305	↑315 <sup>R</sup>	↑320 <sup>R</sup>	310	305	285	A							
No.									12	25	27	28	30	25	24	21	2							
Median									230	280	300	310	315	305	295	250	205							

Sweep 4.0 No to 20.0 No in 20 min in automatic operation.

foE



IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

foEs

Jan. 1961

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	J24	J24	E	E	E	E	G	G	B	B	G	G	G	G	G	B	J24	E	E	E	J28	E	J23
2	J28	E	E	E	E	E	E	E	26	33	G	G	G	J33	J33	31	J27	J28	J48	J83	J53	E	E	J24
3	J23	J23	E	E	J20	J26	J28	J28	J26	34	G	G	40	274	J36	G	J35	J24	J24	22	22	E	E	J19
4	J50	E	E	E	E	E	E	E	J31	C	3.19	39	G	G	30	C	C	C	E	22	21	J24	J23	E
5	E	E	E	E	E	E	E	E	G	G	G	J34	279	G	G	G	B	J23	J18	22	E	S	E	E
6	E	E	E	E	J28	E	J38	J38	J28	G	G	G	G	J37	30	26	J30	J23	J60	J60	J50	E	J38	J25
7	J24	E	E	J18	E	E	E	B	3.1	J4.5	G	G	G	G	G	G	B	J24	J28	E	E	E	J41	J20
8	E	J28	J24	E	E	E	E	C	C	C	C	B	G	G	G	G	J23	J24	E	E	E	E	J20	J24
9	J21	E	E	E	E	E	E	J37	G	3.1	G	G	G	G	G	G	B	E	E	E	J20	J60	J22	E
10	E	E	E	E	E	E	E	J28	C	30	G	G	G	G	G	G	B	E	E	E	E	J32	J23	E
11	E	E	E	E	E	J24	J26	J23	J52	J39	35	J34	284	G	G	G	B	E	E	E	E	E	E	E
12	E	S	E	E	E	E	E	E	B	G	G	G	G	G	G	G	B	E	E	E	E	E	E	J20
13	J26	J28	22	E	E	E	E	E	G	J29	J37	32	J38	J36	J32	J31	23	J28	E	E	E	E	J19	E
14	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	B	E	E	E	E	E	E	E
16	J36	22	E	E	E	E	E	E	G	G	G	G	G	G	G	G	B	E	E	E	E	E	E	E
17	J23	E	E	E	E	E	E	E	G	J43	35	J83	J25	J45	J48	J45	J26	J19	C	C	C	J20	J50	J23
18	E	E	E	E	E	E	E	E	G	35	G	G	38	J31	J33	27	J28	E	E	E	J20	J27	J26	E
19	E	E	E	J18	E	E	E	J24	J40	J38	36	G	32	G	G	30	G	J35	J18	J33	J24	E	E	E
20	E	E	E	E	E	E	E	E	G	G	G	G	G	G	30	26	B	J34	J52	J35	J24	J20	21	J23
21	E	E	E	E	E	E	E	E	S	30	S	J49	31	G	G	30	J40	J43	J19	J29	60	J24	J22	E
22	E	E	E	E	E	E	E	J22	J25	J29	299	309	G	G	J35	G	B	E	E	E	E	J29	J28	E
23	E	E	E	E	E	E	E	E	B	B	G	G	G	G	G	33	J24	E	J18	J19	E	J22	J23	E
24	J28	J20	24	E	E	E	E	25	J63	J49	J44	J60	J46	J37	C	C	J31	J32	J24	J25	J23	J18	22	E
25	J28	J20	E	E	E	E	E	E	J28	J35	J35	J37	G	G	G	G	J24	E	E	E	E	E	E	E
26	J26	E	E	E	E	E	E	E	J37	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E
27	J18	E	E	E	E	E	E	E	25	J38	S	279	G	G	3.1	C	C	E	E	E	E	E	E	J33
28	25	E	E	E	E	E	E	E	J28	G	J35	G	G	G	G	G	J24	E	J23	J29	E	E	E	E
29	E	E	E	E	E	E	E	E	J24	G	G	269	G	G	269	G	B	E	J30	E	E	J22	E	J18
30	E	E	E	E	E	E	E	E	G	G	G	32	G	G	39	32	J78	J28	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	G	33	35	G	G	G	G	G	27	23	J61	22	E	E	E	E
No.	31	30	31	31	30	31	30	27	25	28	26	29	31	31	29	29	18	30	30	30	30	30	30	31
Median	E	E	E	E	E	E	E	G	25	30	G	G	G	G	G	G	26	E	E	E	E	E	E	E
U.Q	25	E	E	E	E	E	E	30	30	35	35	33	31	27	32	28	30	24	24	25	21	23	23	23
L.Q	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	23	E	E	E	E	E	E	E
G.R																	07							

Sweep 1.6 sec No to 2.0 No in 2.0 sec in automatic operation.

foEs

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+9h.)

Jan. 1961

fEs

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								B	B					B	E			E	E	E	E
2	20	E			E	E	E	25	26	24			3.1	3.1	3.1	3.1	24	E	22	A	E	E		E
3	E							26	26	20		3.9	2.5A	2.5A	20	C	G	E	E	E	E	E	20	E
4	E							23	23		2.4	3.1	2.5		25	C	C	E	E	E	E	S		
5								E				2.5	2.5A				B	E	E	A	A	S		
6					E	E	E	1.8	26				3.2	3.0	2.6	2.6	2.6	2.1	4.4	A	A	A	20	20
7	20			E				B	26	29	3.1						B	E	20			A	E	
8								C	C	C	C	B					20	E				E	E	23
9	E							A	20	29							B					E	E	
10					C			A	C	22							B					E	E	
11						E	E	E	29	30	3.3	3.2	2.4A				B					E	E	
12			S					E	B	29	3.3	3.2	3.8	3.1	3.1	2.5	2.2	2.5					E	
13	22	2.5	E														B							
14																								
15																								
16	A	E																						
17	E																							
18										3.0	2.6	5.6	3.5	2.3	3.0	4.0	2.5	1.9	C	C	C	20	20	20
19										2.9	3.0	2.4	3.4	3.1	3.0	2.5	2.1	3.0	E	E	E	20	21	
20					E	E	E	E	2.5	2.9	3.0		G		3.0	G	B	E	A	A	E	E	E	E
21									S	2.4	S	4.4	3.1		3.0	2.6	2.5	E	E	2.6	A	E	E	E
22										2.0	2.4	2.4			2.0	2.6	2.6	E	E	2.6	E	E	E	E
23										2.0	2.4	2.4			2.0	2.6	B	E	E	2.6	E	E	A	E
24										2.0	B	3.5	2.3	2.2	2.0	3.2	B		E	E	E	2.1	2.0	E
25	24	E	E					E	2.5	3.3	3.4	3.5	2.3	3.2	C	C	2.4	2.5	1.8	E	2.0	E	2.0	E
26	24	E							2.5	3.0	2.1	2.7			C	C	2.2	2.2	E	E	2.0	E	2.0	
27	E								2.5	2.9	2.1	2.7	2.5		C	C	C							2.1
28	E								2.3	2.9	3.3	2.4	1.9	1.9	1.9	G	G	2.0	E	E		E	E	E
29									2.6		3.3	2.5	2.1	2.1	2.1	B	B	E	E	E	E	E	E	E
30									1.7		3.2	2.5	3.5	3.5	3.5	2.3	2.3	E	E	E	E	E	E	E
31										3.3	3.5	3.2	3.2	3.2	3.2	2.6	2.6	E	3.1	E	2.0	S		
No.	13	7	4	3	3	4	9	12	14	16	12	11	10	8	12	10	14	15	14	14	10	14	15	12
Median	E	E	E	E	E	E	E	E	2.5	2.9	3.2	3.1	2.8	3.1	3.0	2.6	2.3	2.5	2.5	2.5	2.0	2.0	2.0	2.0

The Radio Research Laboratories, Japan.

Sweep 1.60 Mc to 2.00 Mc in 20 sec in automatic operation.

fEs

Lat. 39° 43.5' N  
Long. 140° 08.2' E

**Akita**

**IONOSPHERIC DATA**

135° E Mean Time (GMT. + 9h.)

f-min

Jan. 1961

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	E	1.75	2.00	2.05	3.05	3.40	2.00	2.05	2.00	2.00	2.20	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	1.65	1.80	1.80	2.00	2.00	2.00	2.00	2.00	1.65	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	1.80	2.00	2.00	2.05	1.90	1.90	2.00	2.20	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	1.65	1.50 <sup>c</sup>	1.90	1.90	2.05	2.00	1.95	C	C	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	1.70	2.00	2.00	2.20	2.05	2.00	1.70	1.70	1.90	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	1.70	1.80	2.00	2.00	2.00	2.00	2.00	1.95	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	1.65	2.00	2.00	2.40	2.40	2.40	2.00	2.05	2.05	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	C	I	1.90 <sup>c</sup>	3.40	2.30	2.00	2.00	1.65	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	1.70	1.75	2.00	2.05	2.00	1.95	1.95	1.90	2.00	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	C	1.80	1.80	1.80	1.90	1.80	1.80	1.70	1.80	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	1.70	1.65	1.70	1.70	2.20	2.10	2.05	2.10	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	2.40	2.00	2.20	2.00	1.90	2.05	2.00	1.80	2.00	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	1.70	1.95	1.90	1.80	1.65	1.90	1.70	1.65	1.65	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	1.80	2.00	2.05	2.05	2.05	2.05	1.95	1.95	1.65	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	1.70	1.70	1.70	2.00	2.05	1.90	2.00	2.00	2.00	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	1.70	2.00	2.50	2.30	2.05	2.10	2.05	2.00	1.65	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	1.80	1.65	1.65	1.80	1.75	1.65	1.65	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	1.70	2.80	1.65	1.90	2.00	1.70	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	1.65	E	1.65	1.90	1.70	1.70	2.00	1.70	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	1.80	1.90	2.00	2.05	1.95	2.00	2.00	1.95	2.35	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	2.80 <sup>s</sup>	2.00	5.00 <sup>s</sup>	2.05	2.40	1.95	1.95	1.250 <sup>c</sup>	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	1.70	E	1.95	2.05	1.65	E	1.65	2.10	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	2.40	2.90	2.05	2.50	2.45	2.00	2.05	2.00	2.00	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	1.80	1.70	1.95	1.95	1.80	1.65	1.70	1.65	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	1.65	1.65	1.65	1.70	2.05	1.80	2.00	1.70	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	1.70	2.00	1.80	2.05	1.90	2.00	I	2.00 <sup>c</sup>	1.90 <sup>c</sup>	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	1.65	1.70	1.340 <sup>s</sup>	2.00	2.00	1.70	1.65	1.90	1.85	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	1.65	2.05	1.70	1.80	2.00	2.00	2.00	2.05	2.05	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	1.75	1.95	1.90	2.00	2.00	2.00	1.70	2.00	1.80	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.70	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	1.80	1.70	1.95	2.05	2.00	2.00	2.00	2.00	1.70	E	E	E	E	E	E	E
No.	31	30	31	31	30	31	30	29	28	29	29	31	31	31	31	30	28	30	30	30	30	30	30	31
Median	E	E	E	E	E	E	E	E	1.70	1.80	2.00	2.00	2.00	2.00	2.00	1.95	1.80	E	E	E	E	E	E	E

Sweep 1.60 Mc to 2.00 Mc in 20 <sup>min</sup> sec in automatic operation.

The Radio Research Laboratories, Japan.

f-min

IONOSPHERIC DATA

Lat. 39° 48.6' N  
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

M(3000)F2

Jan. 1961

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	255	275	255	270	285	280	305	335	325	320R	335	335	330	320	325M	355	340	330	335	350R	375	275	255F	280F
2	270F	285	315S	275	270	245	305	335	345	325	340	335M	350	350	330	340	345	330	315	330A	310A	285	305	260
3	265	280	295	290	285	300	315	340R	340	340	325	335R	350	345	330	330	345	330	315	330	310	270	285	290
4	290	260	265	245	270	275	290	335	330	315	335	335	350R	340	345	C	C	C	330	310	315	305	245	270
5	275	270	310	315	325	270	305	310	340	330R	340	340	320	335	335	350	340	305	330R	340R	315R	285	250	275
6	F	F	F	F	305F	295	305	315	345	330	335	325	335R	325R	350R	355	345	325	345	A	A	255F	260A	290F
7	290	F	F	F	F	270F	325	C	350	325	330	330	315	335	330	340	340	325	320	310	315	280	270A	290
8	280	280R	285	310	320S	305	C	C	C	C	335C	330	330	325R	330	325	340	320	320	300	310R	295	290	305
9	285	275	270	275	260	245	300A	325	325R	345	320R	330	320	330R	330	330	330	320	340	310	320R	260	260	275
10	250	275F	295	305	295C	250	280A	310	310C	325R	330	320	320M	330R	340R	345	350	335	320	320R	310	310	320	295
11	275	275	265	295	320	305	315R	325F	325	345	335R	345R	340	345	330	365	360	325	360	330	330R	275	280	310R
12	305R	300S	290	F	F	F	R	R	360R	360	360	370	355	335	350	365	340	340	330	C	C	280S	A	F
13	295	295	290	275F	F	F	R	R	365	360	355	310M	345	320	335R	365	330	355	340	330	330R	315	315	320
14	300F	290F	310	280	290F	285	295	305	330R	350R	360R	325M	350	320M	350	350	340	315	325	340R	335	305	280	F
15	F	F	290F	280F	300F	335F	335	340R	350	345	330	335	315M	315	340	355	350	335	330	315	350	340	295	280
16	280A	280R	285	270	300	340	335	330	335	350	335	335	355	345	345	320	340	345	340	345	300	285	305	280
17	275	305F	F	F	285	F	R	R	340R	355R	340	350	345	330	340	360	340	340	C	C	C	280S	A	F
18	F	300F	305F	315	295	275	305	320S	370	355	340	360	360	340	360R	370	340	325	330	320R	280	F	F	310F
19	280F	290F	285	310	315	280	260	310R	345R	340	340R	340	360	340	345	340	355	345	315	315A	275	F	F	F
20	290R	305F	290R	275	260	295R	320	300	345R	340	340R	350	340	335	335	355	345	310	320A	310A	290R	310	300R	310R
21	305	240	260	260	280	300	290A	310R	340S	330	340	360R	325	320	340	360	360	320	345	340R	310A	290	285	310
22	275	310	300	280	260	275	310R	325	330	340	340	330	340	335	340	350	355	340R	305R	310R	310R	310E	A	F
23	F	295	330F	300F	280F	260	300	330R	350R	340	350	330	325	330	330C	340C	330	325	350	325	305	275	R	F
24	300	315F	320	295	295	305	310R	330	355	340	345	320	340	330	330C	340C	330	325	350	325	305	275	295	275
25	265	285F	305	295	315	290	290	250	370	360	350	320	340	350	335	340	340	340	320	330R	260	270	275F	280
26	285	305	305	310	310	310F	290	340	340R	350	355	330	340	350	340C	355C	340C	325	320R	310R	315	315F	295	280F
27	F	F	310	320	305	280	285	330R	335	350R	315R	340R	370	335	340	340	345	330	335R	325R	330	295	275	280
28	280	275	290	285	310	285	315	340R	330	330	345R	335	325	355	340	345	360	330	305	335R	300R	310R	305F	305
29	275	280	290	320	345	280	285	320	330	340	340	320M	345	330	330	340	345	320	320	310	310R	300	305	255
30	270R	275R	310R	325	325	285	295	320	345	345	345	335	340R	350	325	340	360	325	335	335	F	R	R	275R
31	260F	280	300R	320	330R	305	320	330R	355	335	315	330	320	335	330	335	345	315	340	320R	275	280R	255S	R
No.	26	27	28	27	28	28	27	29	30	30	31	31	31	31	31	30	30	30	30	29	28	27	25	25
Median	280	280	295	300	285	305	330	345	340	340	335	335	340	335	335	345	345	325	330	325	310	285	280	280

# IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

## Akita

135° E Mean Time (GMT.+ 9h.)

M(3000)F1

Jan. 1961

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																								
3																								
4																								
5										L														
6										L														
7										L														
8										L														
9										C														
10										L														
11										L														
12										L														
13										L														
14										L														
15										L														
16										L														
17										L														
18										L														
19										L														
20										L														
21										L														
22										S														
23										L														
24										L														
25										L														
26										L														
27										L														
28										L														
29										L														
30										L														
31										L														
No.																								
Median																								

Sweep 160 Mc to 2200 Mc in 20 sec

The Radio Research Laboratories, Japan.

M(3000)F1

IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+9h.)

R'F2

Jan. 1961

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

The Radio Research Laboratories, Japan.

Sweep 160 Mc to 22.0 Mc in 20 msec in automatic operation.

R'F2

# IONOSPHERIC DATA

Lat. 39° 43.6' N  
Long. 140° 08.2 E

## Akita

135° E Mean Time (GMT.+ 9h.)

RF

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	335	305	310	305	300	285	245	245	240	245	250	240	225	230	245	245	240	245	240	230	210	300	290	290
2	245A	290	260	290	290	300	270	240	230	245	245	245	245	220H	210H	245	240	210	230A	240A	1245A	300	250	240E
3	350	305	280	290	290	275	255	245	230	245	245	240	245	245	240	245	C	220	245	240	240	270	300	290
4	270	330	340	350	330	305	260	220	210	245	245	235	245	240	230	C	C	230	225	255	255	1240A	330	260
5	310	305	250	250	245	290	260	245	245	240	245	235	245	240	230	245	220	215	240	240	245	1275SE	340E	260
6	340E	340	290	250	250	260	250	240	240	240	245	245	245	240	245	290	230	240	A	A	A	1310A	A	A
7	290A	295	280	260	245	290	245	245	230	245	245	215	225	245	245	245	230	210	240A	245	235	260	1320A	290
8	320	1310A	300	250	245	260	C	C	C	C	1230C	245	245	240	245	245	220	220	235	235	245	245	260	270A
9	245	300	280	290	230C	330	1290A	250	245C	245	245	245	245H	240	245	245	230	245	240	245	245	245	240	305
10	245	300	280	290	230C	330	1290A	250	245C	245	245	245	245H	240	245	245	230	245	240	245	245	245	240	305
11	290	300	280	290	260	290	245	245	215	230	240	205	215	205	245	240	210	245	205	245	240	270	290	290
12	270	1260S	280	280	260	290	250	230	215	230	240	210	205	225	240	230	215	245	225	245	245	250	245	280
13	1285A	290A	300	315	340	290	210	205	220	245	230	200	245	200	245	240	210	22	240	230	235	240	305	280
14	265	270	250	240	210	305	300	245	245	245	240	215	245	245	245	245	235	230	230	245	245	260	290	290
15	280	290	265	280	290	245	210	225	210	240	220	205	210	225	245	245	215	230	230	245	230	245	250	290
16	1300A	290	295	305	290	245	215	230	230	245	245	245	245	245	245	250	245	220	225	215	220E	305E	275	280
17	340	280	290	290	290	280	235	215	230	230	235	1240A	215	210	240	240	210	245	C	C	C	A	1265A	300A
18	290	260	250	250	290	230	290	1245S	220	240	225	220	215	240	245	235	230	240	240	1235A	290	260	270	290
19	260	290	280	260	260	260E	300E	245	245	245	240	215	215	215	235	245	230	240	240	1245A	1250A	280	255	260
20	290	255	260	300	330	290	250	245	245	245	240	225	205	205	245	240	205	240	215	240	240	290	290	235
21	250	300E	350E	310	235	300	1270A	245	245	230	1235S	1215A	205	205	245	245	220	240	215	A	A	290	290	235
22	290	260	270	280	320	300	235	240	245	230	210	200	240	220	240	235	245	215	240	230	240	235	1235A	245
23	300E	280	245	250	235	240E	240	230	245	210	220	210	210	245	225	245	240	220	240	245	245	1260A	1245A	290
24	285A	245	250	255	290	280	245	240	225	240	240	225	205	245	1245C	1240C	245	240	240	240	245	1245A	300E	290
25	1315A	295	285	280	255	300	290	245	235	240	225	210	205	245	220	245	245	240	235	240	240	300	1300A	300
26	295	255	265	270	265	270	260	245	240	240	245	240	210	210	1230C	1225C	1240C	235	245	240	240	270	260	1300A
27	330F	240	260	245	255	210	240	245	240	245	220	200H	230	210	245	245	245	225	235	240	215	1250E	280	295
28	305	265	290	290	230	290	250	210	255	245	220	205	210	245	215	245	245	240	245	235	245	260	250	280
29	300	305	280	245	235	270	260	245	240	245	240	220	205	200	245	245	245	240	240	245	220	255	240	230
30	310	300	265	245	245	275	250	250	245	245	240	240	220	200	245	245	230	240	240	240	215	290	300	290
31	300	300	260	250	230	245	245	245	230	245	240	240	230	240	1235H	245	245	215	230A	230	1245A	290	1335S	345
No.	29	30	30	31	31	30	29	30	30	30	31	31	31	31	31	30	30	30	29	28	26	26	30	29
Median	295	290	280	280	265	290	255	245	240	245	240	225	225	245	245	245	230	240	240	240	245	260	275	290

Sweep 1.60 Mc to 2.02 Mc in 20 <sup>min</sup> sec in automatic operation.

RF

The Radio Research Laboratories, Japan.

A 10

Lat. 39° 43.5' N  
Long. 140° 08.2' E

**Akita**

**IONOSPHERIC DATA**

135° E Mean Time (GMT.+9h.)

RES

Jan. 1961

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



IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

Akita

Types of Es

Jan. 1951

135° E Mean Time (GMT.+ 9h.)

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

The Radio Research Laboratories, Japan.

Sweep 1.42 Mc to 2.22 Mc in 2.0 sec in automatic operation.

Types of Es

IONOSPHERIC DATA

Lat. 35°42.4' N  
Long. 139°29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT. + 9h.)

Jan. 1961

foF2

Table with 23 columns (Day 00-23) and rows for various time slots (00-31). Each cell contains numerical values representing ionospheric data. A 'Median' row is provided at the bottom of the data section. The table also includes a 'foF2' label in a separate box.

foF2

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
 Long. 139° 29.3' E

**Kokubunji Tokyo**

foF1

135° E Mean Time (GMT. + 9h.)

Jan. 1961

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												L			L									
3											S				S									
4																								
5																								
6										L		S												
7													S		S									
8													S		S									
9														L										
10											L	L		L										
11											L	L	4.5	L										
12														L										
13												L		L										
14											L	L		L										
15											L	L		L										
16											L	L		L										
17											L	C	4.4	L										
18											L	L		L										
19											L	L	4.3	L										
20											L	L		L										
21										L	L	4.2 <sup>L</sup>	4.7 <sup>L</sup>	L										
22										L	L	4.0 <sup>L</sup>	4.2 <sup>L</sup>	L										
23										L	L	4.0 <sup>L</sup>	4.0 <sup>L</sup>	L										
24										A	L	L	L	L										
25										S	L	L	L	L										
26											L	L	L	L										
27											L	L	4.3 <sup>L</sup>	L										
28										" 4.1 <sup>L</sup>	L	L	L	L	4.0									
29										" 4.5 <sup>L</sup>	L	L	" 4.5 <sup>L</sup>	L	" 4.6 <sup>L</sup>									
30										L	L	L	L	L	L									
31										L	L	L	L	L	L									
No.										1		2	6	2	1									
Median									" 4.1	4.1	4.2	4.4	4.1	" 4.6										

Sweep 1.0 Mc to 2.00 Mc in 2.0 <sup>min</sup> Sec in automatic operation.

foF1

The Radio Research Laboratories, Japan.

**K 2**

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. + 9h.)

foE

Jan. 1961

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	S	S	S							
2								S	S	S	S	S	S	S	S	S	S							
3								S	S	3.05	S	S	S	S	S	S	S							
4								S	S	A	A	S	S	S	S	S	S							
5								S	S	A	A	S	S	S	S	S	S							
6								S	S	S	S	S	S	S	S	S	S							
7								S	S	S	S	S	S	S	S	S	S							
8								S	S	S	S	S	S	S	S	S	S							
9								S	S	S	S	S	S	S	S	S	S							
10								A	A	S	S	A	A	A	A	A	A							
11								A	A	A	A	A	A	A	A	A	A							
12								S	2.45	2.80	3.10	3.25	3.20	3.10	3.10	2.95	A							
13								S	S	2.75	3.00	S	S	S	S	S	S							
14								S	S	S	S	S	S	S	S	S	S							
15								S	S	S	S	S	S	S	S	S	S							
16								S	S	S	S	S	S	S	S	S	S							
17								S	S	S	S	S	S	S	S	S	S							
18								S	2.40	2.85	3.00	3.20	3.25	3.25	3.00	2.70	A							
19								S	2.25	2.85	3.10	3.15	3.20	3.10	3.00	2.60	S							
20								S	A	2.70	3.05	S	S	S	S	A	S							
21								S	A	3.00	3.20	3.05	3.10	2.90	2.55	B	S							
22								S	2.30	2.80	3.05	3.05	3.25	3.10	3.00	R	B							
23								S	A	3.00	3.05	3.15	3.30	R	B	B	S							
24								S	A	A	A	A	A	A	A	A	S							
25								S	2.25	2.60	A	A	A	A	3.00	2.80	S							
26								S	A	3.15	3.30	3.25	3.40	3.20	2.75	A	S							
27								S	A	2.80	3.05	3.15	3.30	3.15	3.05	A	S							
28								S	2.40	2.75	3.00	3.20	3.30	3.25	3.15	A	S							
29								S	2.60	3.05	3.30	3.35	3.30	3.15	3.00	A	S							
30								S	2.30	2.90	3.10	3.35	B	B	B	B	S							
31								S	S	3.05	3.10	3.25	3.35	R	C	2.95	B							
No.									8	15	16	14	14	15	13	12	4							
Median									2.35	2.85	3.05	3.20	3.25	3.15	3.00	2.70	2.70							

The Radio Research Laboratories, Japan.

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

foE

K 3

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

**Kokubunji Tokyo**

135° E Mean Time (GMT.+9h.)

foEs

Jan. 1961

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	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
10	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
13	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
14	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
18	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
19	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
21	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
22	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
23	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
24	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
25	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
26	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
27	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
28	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
29	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
30	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
31	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
No.	4	3	5	17	14	1	3	4	17	22	16	14	18	18	17	16	6	6	10	11	6	8	5	7
Median	2.9	2.2	E	E	E	2.0	3.3	4.0	2.5	3.0	G	G	G	G	G	G	3.2	3.2	3.6	3.0	2.8	2.6	3.8	3.3
U.Q.	3.1	3.3	2.7	2.0	2.0	3.4	4.5	4.5	3.6	3.6	3.1	2.5	2.9	2.9	2.9	2.9	3.6	4.5	5.8	4.9	4.1	3.8	4.2	3.5
L.Q.	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	2.9	2.9	2.3	2.2	2.2	2.6	2.3
Q.R.	E	E	E	E	E	E	E	2.2	G	G	G	G	G	G	G	G	G	1.6	2.9	2.6	1.9	1.6	3.6	1.2

Sweep 1.0 Mc to 2.0 Mc in 2.0 sec in automatic operation.

foEs

The Radio Research Laboratories, Japan.

**K 4**

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

**Kokubunji Tokyo**

135° E Mean Time (GMT. + 9h.)

Jan. 1961

fbEs

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	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
10	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
13	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
14	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
18	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
19	2.8	1.9	S	1.5	E	S	S	S	2.5	3.2	3.0	2.4 <sup>f</sup>	3.5	S	3.3	S	S	S	2.5	2.5	A	1.9	E	3.2
20	2.5	S	AS	E	E	S	A	3.2	2.5	S	S	S	S	S	S	4.0	3.0	4.1	A	2.7	2.8	2.6	2.0	S
21	S	S	S	E	S	S	S	3.5	3.6	3.0	3.0	S	S	S	S	E 2.5 <sup>s</sup>	B	S	2.7	A	S	S	2.3	
22	S	S	S	S	S	S	S	S	2.6	B	B	E 2.7 <sup>s</sup>	B	B	B	2.5 <sup>s</sup>	B	S	1.8	E	2.0	S	S	
23	S	S	S	S	S	S	S	S	2.9	4.8	3.2	3.7	3.5	2.6 <sup>f</sup>	3.7	2.9	S	S	2.9	A	A	2.0	2.6	
24	2.8	S	S	1.8	S	S	S	S	2.9	E 4.4 <sup>s</sup>	3.3	3.7	3.8	3.2	3.2	2.9	S	2.9	S	S	1.8	S	S	
25	S	S	S	S	S	S	S	S	2.4	S	S	S	3.4	3.8	S	2.0	S	2.0	2.2 <sup>s</sup>	S	S	S	2.6	
26	S	2.1	S	S	E	S	S	S	2.5	3.3	3.3	3.4	3.8	3.8	2.1 <sup>f</sup>	S	S	S	E 1.8 <sup>s</sup>	S	S	S	S	
27	S	S	S	E	E	S	S	S	2.5	7.5 <sup>f</sup>	2.8 <sup>f</sup>	2.8 <sup>f</sup>	2.8 <sup>f</sup>	2.8 <sup>f</sup>	2.8 <sup>f</sup>	2.9	S	S	2.1 <sup>s</sup>	2.2	S	S	S	
28	S	S	S	S	1.7	S	S	S	2.4	3.0	2.5 <sup>f</sup>	B	3.6	S	2.9	S	S	S	4.2	2.2	S	S	S	
29	S	S	S	S	S	S	S	S	S	B	B	B	B	3.3	3.2	B	B	2.8	S	S	S	S	S	
30	S	S	S	S	S	S	S	S	S	3.1	C	C	C	E 2.6 <sup>k</sup>	C	3.2	S	S	S	S	S	S	S	
31	S	S	S	S	S	S	S	S	S	S	C	C	C	C	C	3.2	S	S	S	S	S	S	S	
No.	3	2	2	5	6	1	2	4	11	9	8	5	9	6	7	9	4	6	9	9	6	7	5	5
Median	2.8	2.0	A	1.5	E	1.8	A	3.4	2.6	3.2	3.0	3.3	3.4	E 3.0	2.9	2.9	3.2	2.8	2.9	2.7	2.5	2.0	A	2.6

The Radio Research Laboratories, Japan.

K 5

Sweep 1.0 Mc to 26.0 Mc in 20 min in automatic operation.

fbEs







IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

M(3000)F1

Jan. 1961

135° E Mean Time (GMT.+9h.)

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										
2											L				S										
3											S														
4																									
5																									
6										L															
7											S														
8											S	S	S	S											
9																									
10													L	L	L										
11										L	L	L	L	L											
12											L	L	L	L											
13											L	L	L	L											
14											L	L	L	L											
15											L	L	L	L											
16											L	L	L	L											
17											L	L	L	L											
18											L	C	3.95 <sup>L</sup>	L											
19											L	L	L	L											
20											L	3.90 <sup>L</sup>	L	L											
21											L	L	L	L											
22											L	4.25 <sup>L</sup>	3.60 <sup>L</sup>	3.90 <sup>L</sup>	L										
23											L	L	4.20 <sup>L</sup>	L											
24										A	L	L	L	L	L										
25										S	L	L	L	L	L										
26											L	L	L	L	L										
27											L	L	3.95 <sup>L</sup>	L	L										
28											3.70 <sup>L</sup>	L	L	L	L	L									
29											L	L	L	L	4.25 <sup>L</sup>	L									
30										L	L	L	L	L	4.00 <sup>L</sup>	L	L								
31										L	L	L	L	L	L	L									
No.										1	Z	5	Z												
Median										3.70	4.10	3.95	4.10												

Sweep 1.0 Mc to 2.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

M(3000)F1

K 8

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

**Kokubunji Tokyo**

R'F2

Jan. 1961

135° E Mean Time (GMT. + 9h.)

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												750			755									
3												755												
4																								
5																								
6										740														
7																								
8																								
9																								
10																								
11											750	730			755	755								
12												750	745		745									
13																								
14																								
15												745	750											
16											755	745												
17											760	740	730											
18											755	760												
19											740	740												
20											750	750												
21											750													
22											775	740	740											
23											760	750	730											
24											740	750	755	750										
25											755													
26																								
27																								
28											770	750	755	750	750									
29											755	745	745	755	755									
30												750	740	755	755	775								
31											750	755	755	755	750									
											760	760	750	750	760									
No.										8	16	19	15	16	11									
Median										755	750	750	750	750	755									

Sweep 1.0 Mc to 2.0 Mc in 2.0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

R'F2

K 9

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (GMT. + 9h.)

f<sub>o</sub>F

Jan. 1961

Table with columns Day (00-31, No., Median) and rows 00-31. Each cell contains a value representing ionospheric data. Some cells contain superscripted letters (E, S, A) and some contain handwritten notes.

f<sub>o</sub>F

K10

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

**Kokubunji Tokyo**

135° E Mean Time (GMT + 9h.)

R'ES

Jan. 1961

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	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
10	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
13	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
14	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
18	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
19	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
21	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
22	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
23	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
24	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
25	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
26	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
27	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
28	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
29	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
30	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
31	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
No.	3	2	2	2	6	1	2	4	10	12	9	7	10	7	7	9	4	6	10	11	6	8	5	6
Median	10.5	10.5	10.5	10.5	10.5	11.5	11.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	10.0	11.0	11.0	10.5	10.5	10.5	10.5	10.5	10.5	10.0

The Radio Research Laboratories, Japan.

Sweep / 0. ... Mc to 20.0 Mc in 20 min in automatic operation.

R'ES

K 11

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

**Kokubunji Tokyo**

Types of Es

Jan. 1961

135° E Mean Time (GMT. + 9h.)

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

Sweep 1.0 Mc to 2.0 Mc in 20 min sec in automatic operation.

Types of Es









# IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

**Yamagawa**

135° E Mean Time (GMT. + 9h.)

fcF1

Jan. 1961

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

Sweep 1.0 Mc to 2.0 Mc in  $\frac{1}{10}$  sec in automatic operation.

fcF1

The Radio Research Laboratories, Japan.

Y 2

# IONOSPHERIC DATA

Lat. 31° 12.5' N  
 Long. 130° 37.7' E

**Yamagawa**

135° E Mean Time (GMT.+9h.)

foE

Jan. 1961

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	2.10	2.90	3.20	3.60	3.45	3.50	A	A	A	A						
2								S	2.15	2.80	3.20	3.40	3.50	3.40	3.40	3.30	A	A	A					
3								S	2.15	2.90	3.30	3.50	3.70	3.60	3.50	3.15	2.70	A	A					
4								S	2.20	2.80	3.30	3.40	3.50	3.50	3.35	3.10	A	A	A					
5								S	A	2.90	3.20	3.40	3.50	3.45	3.30	3.10	2.70	A	A					
6								S	2.15	2.70	3.15	3.30	3.40	3.50	3.35	3.10	2.70	C						
7								A	2.30	A	C	3.50	A	3.50	3.35	3.20	2.60	1.90						
8								S	2.15	2.80	3.15	A	A	3.50	3.40	3.10	2.50	1.90						
9								C	C	2.80	3.10	3.35	3.40	3.45	3.30	3.15	2.65	S						
10								S	A	A	A	A	A	3.35	3.20	2.90	A	A						
11								S	A	2.70	3.10	3.20	3.40	3.30	3.30	3.10	2.60	S						
12								S	2.10	2.75	3.05	3.20	3.35	3.35	3.25	3.00	2.60	1.70						
13								S	2.10	2.70	3.10	3.25	3.35	3.30	3.20	3.00	A	A						
14								S	2.10	2.65	3.00	3.20	3.30	3.30	3.00	2.80	2.60	2.00						
15								S	2.30	2.70	3.05	3.20	3.20	3.10	3.20	3.00	2.70	A						
16								S	2.00	2.75	3.10	3.20	3.25	3.25	3.20	3.00	2.65	S						
17								S	2.10	2.60	3.10	3.25	3.30	3.35	3.30	3.00	2.60	S						
18								S	2.10	2.70	3.00	3.25	3.35	3.40	3.30	3.05	A	A						
19								S	2.00	2.80	3.05	3.20	3.30	3.30	3.20	3.00	A	A						
20								S	A	2.75	3.00	3.25	3.30	3.40	3.30	2.90	2.50	2.00						
21								S	A	A	A	A	3.40	3.40	3.30	3.00	2.55	A						
22								S	2.10	2.70	3.10	3.30	3.30	3.30	3.25	3.00	2.55	A						
23								S	A	2.70	3.00	3.20	3.30	3.40	3.30	A	A	2.00						
24								S	2.20	2.65	3.00	3.30	3.30	3.40	R	R	A	2.30						
25								S	2.15	2.70	2.85	3.30	3.50	3.50	3.40	3.20	2.80	2.15						
26								S	2.10	2.80	A	A	3.50	3.40	3.30	3.10	2.80	A						
27								S	2.20	2.60	A	A	C	C	C	C	2.80	A						
28								S	2.10	2.75	3.10	3.30	3.40	3.50	3.50	3.20	2.80	2.15						
29								S	A	2.70	3.15	3.20	3.40	3.40	3.40	3.20	2.90	A						
30								S	2.30	2.90	3.10	3.40	3.35	3.40	3.40	3.20	2.75	2.20						
31								S	2.25	2.80	3.20	3.40	3.50	3.50	3.50	3.20	3.00	2.30						
N.O.									2.3	2.8	2.6	2.6	2.8	3.0	2.8	2.7	2.2	1.1						
Median									2.15	2.75	3.10	3.30	3.40	3.40	3.30	3.10	2.70	2.00						

Sweep 1.0 Mc to 2.00 Mc in 3.0 sec in automatic operation.

foE

IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT.+9h.)

foEs

Jan. 1951

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	E	S	S	S	G	27 <sup>A</sup>	3.4	3.3 <sup>A</sup>	3.6	3.4 <sup>A</sup>	3.4	4.1	3.8	2.6	3.0	S	52.1	S	S	S
2	S	S	E	E	E	S	S	S	G	G	3.7	4.3	3.8	G	24 <sup>A</sup>	G	2.7	5.7 <sup>M</sup>	S	S	S	S	S	S
3	S	S	1.5	E	1.4	E	S	S	G	G	3.5	G	G	3.8	G	3.9	3.5	3.0	3.2	3.7	6.0 <sup>M</sup>	5.1	S	S
4	S	S	E	E	3.0	S	S	52.2	G	2.9	3.0 <sup>A</sup>	G	G	G	4.0	4.8	3.1	3.1	2.7	2.5	3.7	2.6	S	
5	52.5	S	E	2.0	E	S	S	52.1	2.8	3.0	3.0 <sup>A</sup>	3.0 <sup>A</sup>	3.1 <sup>A</sup>	3.0 <sup>A</sup>	3.1 <sup>A</sup>	3.1 <sup>A</sup>	3.3	2.8	2.6	3.0	5.7	2.6	S	
6	S	S	E	E	E	S	S	S	2.4	G	3.4	3.0 <sup>A</sup>	G	G	2.8	3.1 <sup>A</sup>	2.2 <sup>A</sup>	C	3.4	2.5	2.4	S	S	
7	S	3.0	2.2	3.0	3.3	2.2	52.5	2.4	G	5.1	5.6	G	G	3.3 <sup>A</sup>	3.8	G	2.7	G	S	2.1	S	S	S	
8	S	S	E	E	E	E	S	S	2.4	G	3.8	5.1	4.0	G	2.7 <sup>A</sup>	G	G	G	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	3.1	6.3	3.4	2.8 <sup>A</sup>	2.5 <sup>A</sup>	G	G	G	G	2.3	S	S	S	S	
10	S	S	E	1.9	E	E	S	52.1	5.2	9.0 <sup>S</sup>	7.1	5.0	4.1	2.8 <sup>A</sup>	4.8	3.0	4.8	2.9	2.3	2.8	2.4	2.3	5.2	
11	3.2	2.3	2.4	E	E	S	S	2.2	2.2	3.0	3.1 <sup>A</sup>	G	2.8 <sup>A</sup>	G	G	G	G	G	S	S	S	S	S	
12	S	S	S	E	E	S	S	S	G	G	G	G	G	G	G	G	G	G	G	S	2.3	2.2	2.4	S
13	2.2	S	S	E	E	S	52.0	2.3	G	G	G	G	G	3.0 <sup>A</sup>	3.0 <sup>A</sup>	2.9 <sup>A</sup>	3.0	2.4	S	S	2.4	2.3	S	
14	S	S	E	E	E	S	S	S	G	2.7	2.9 <sup>A</sup>	G	3.4	3.4	2.4 <sup>A</sup>	3.1	2.3 <sup>A</sup>	2.3	S	S	S	S	S	
15	S	S	E	E	E	3.1	S	S	2.3	G	2.2 <sup>A</sup>	3.4	3.9	3.4	3.2	2.1 <sup>A</sup>	2.1 <sup>A</sup>	2.4	2.0	S	S	S	S	
16	S	S	E	E	E	E	S	S	2.2	2.8	G	3.6	3.8	3.7	G	G	2.8	G	S	2.3	S	S	S	
17	S	S	E	E	E	C	C	S	G	G	3.3	G	4.1	3.0 <sup>A</sup>	G	G	G	2.4	2.6	S	S	S	S	
18	S	S	S	E	E	S	S	S	G	2.6 <sup>A</sup>	3.1	3.1 <sup>A</sup>	4.8	3.1 <sup>A</sup>	G	G	2.9	2.5	2.8	2.2	3.7	S	S	
19	S	2.5	2.6	2.6	2.2	2.2	S	S	2.7	3.4	3.5	G	3.3	3.0 <sup>A</sup>	G	G	3.2	3.1	2.9	3.0	2.0	S	5.1	
20	S	S	E	2.3	E	E	S	3.0	3.0	3.5	5.7	3.7	2.6 <sup>A</sup>	G	3.4	3.3	2.7	G	3.6	3.2	2.0 <sup>M</sup>	5.2	3.3	
21	S	2.3	2.3	E	E	S	S	S	3.1	3.8	3.8	3.2 <sup>A</sup>	3.2 <sup>A</sup>	3.1 <sup>A</sup>	3.4	3.3	2.8	2.8	2.2	S	2.1	S	S	
22	S	S	S	E	1.2	S	S	S	G	2.9	G	3.1 <sup>A</sup>	3.2 <sup>A</sup>	G	G	3.1	3.0	3.0	3.4	3.1	2.2	S	2.1	
23	S	S	E	E	E	S	S	S	2.3	3.2	G	G	2.7 <sup>A</sup>	2.7 <sup>A</sup>	2.5 <sup>A</sup>	3.1	3.0	2.5	2.4	2.2	5.9 <sup>M</sup>	5.3	4.2	
24	3.3	S	E	E	E	S	S	S	3.0	4.6	4.3	3.0 <sup>A</sup>	3.0 <sup>A</sup>	3.4 <sup>A</sup>	3.2 <sup>A</sup>	3.3	3.9	2.4	3.0	2.9	3.8	3.7	2.4	
25	2.6	2.3	2.4	E	E	S	S	S	G	2.8	3.4	G	G	G	G	2.5 <sup>A</sup>	G	2.5	2.1	S	S	S	S	
26	S	S	E	E	E	E	S	S	2.5	3.4	3.7	3.8	3.7	3.8	3.5	3.4	3.2	2.6	S	S	S	S	C	
27	S	S	2.3	E	E	S	S	S	G	3.2	3.9	3.6	C	C	C	2.2 <sup>A</sup>	2.2 <sup>A</sup>	3.0	3.0	2.6	S	S	S	
28	S	S	E	E	E	E	S	S	G	3.0	G	G	3.0 <sup>A</sup>	3.0 <sup>A</sup>	2.9 <sup>A</sup>	G	3.0	2.5	S	2.3	3.0	S	2.4	
29	2.3	S	E	E	E	E	S	S	2.4	3.0	3.4	2.5 <sup>A</sup>	C	3.9	2.9 <sup>A</sup>	3.8	3.7	4.0	3.1	2.6	2.6	S	S	
30	S	S	E	E	E	S	S	S	G	G	3.4	3.5	3.5	3.6	3.5	3.4	3.1	G	S	2.4	S	S	S	
31	S	2.5	E	E	E	S	S	S	G	2.7 <sup>A</sup>	3.6	3.9	3.9	3.8	3.8	3.6	3.0	G	G	2.5	3.9	2.1	S	S
No.	6	6	2.5	3.0	3.0	1.2	2	7	3.0	3.1	3.0	3.1	2.9	3.0	3.0	3.0	3.1	2.9	1.8	1.8	1.8	1.0	6	7
Median	2.6	2.4	E	E	E	E	2.2	2.2	G	2.9	3.4	G	G	G	G	G	2.9	2.5	2.6	2.7	2.6	2.5	3.8	3.3
U.R	3.2	2.5	1.8	E	E	E	E	2.4	3.2	3.7	3.8	3.4	3.8	3.4	3.4	3.3	3.2	2.8	3.0	3.0	3.8	3.7	5.2	4.2
L.R	2.3	2.3	E.	E	E	E	E	2.1	G	G	G	G	G	G	G	G	G	G	2.4	2.4	2.3	2.2	2.3	2.4
Q.R	0.9	0.2						0.3											0.7	0.6	1.5	1.5	2.9	1.8

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

foEs

The Radio Research Laboratories, Japan.

Lat. 31° 12.5' N  
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT. + 9h.)

Jan. 1961

f<sub>o</sub>F<sub>2</sub>

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		27A	G	G	G	34A	G	35	G	G	E 17	S	E	S	S	S
2	S	S	S			S	S	S			G	G	G		24A	37	G	G	S	S	S	S	S	S
3	S	S	E/5B		1.4	S	S	S			G	G	G	G		37	33	28	2.6	2.7	E	S	S	S
4	S	S		E		S	S	S		2.5	27A					24	36	G	2.2	3.3	4.5	2.1	S	S
5	E	S		1.8		S	S	S	G	2.5	25A	2.6A	2.8A	2.6A	3.9A	2.6A	4	G	2.2	1.7	2.4	2.2	S	S
6	S	S				S	S	S	G		G	2.9A			2.7A	3.1R	2.2A	C	1.9	S	E	S	S	S
7	S	E	E	E	1.4	E	1.7	1.8	G	3.2	C	4.0		3.9A	G	G	G	S	1.8	S	S	S	S	S
8	S	S	S			S	S	S	G		2.6	3.6	3.9		2.7A			C	C	C	C	C	C	C
9	S	S	C	C	C	C	C	C	G	2.6	G	G	2.8A	2.4A				1.9	S	S	S	S	S	S
10	S	S	S	1.8		S	S	S	G	2.6	8.2	10.3	G	G	2.7A	G	2.6	G	E	2.0	1.8	E	S	2.0
11	1.9	E	1.8	1.8		S	S	S	G	2.3	2.5A	2.7A		2.7A				S	S	S	S	S	S	S
12	S	S	S			S	S	S											S	E	E	E	2.2	S
13	E	S	S			S	E	S		G	G		G	3.0A	2.8A	2.6A	G	2.3	S	S	S	E	S	S
14	S	S	S			S	S	S	G		2.9A	G	3.9	3.4B	G	2.9A	2.0A	G	S	S	S	S	S	S
15	S	S	S			S	S	S	G			G	3.6	3.4			G	G	E	S	S	S	S	S
16	S	S	S			S	S	S	G			G	3.6	3.4			G	S	S	S	2.0	S	S	S
17	S	S	S			C	C	S	G		2.8		4.1	3.0A			G	G	1.9	S	S	S	S	S
18	S	S	S			S	S	S	G	2.6A	G	3.1R	G	2.9A			G	G	2.2	1.9	3.5	S	S	S
19	S	E	E	1.6	1.3	E	S	S	G	3.1	3.2		G	2.5A	2.7A		2.7	2.4	2.6	1.8	S	A	A	A
20	S	S	S	1.8		S	S	S	G	2.5	3.2	2.2	2.4A		G	3.2	G	S	2.5	4.6	A	2.6	2.0	2.0
21	S	E	E			S	S	S	G	2.3	G	3.5	3.9A	3.9A	3.4A	3.1	2.8	2.6	E	S	E	S	S	S
22	S	S	S			S	S	S	G	2.6	G	2.7A	2.5A	2.5A	2.4A	2.8	G	2.6	1.9	2.2	E	S	S	1.9
23	S	S	S	E		S	S	S	G	2.4	G	2.6A	2.6A	2.6A	2.4A	G	G	G	2.0	A	2.1	A	A	2.2
24	2.0	S	S			S	S	S	G	3.3	3.8	3.0A	2.9A	2.9A	3.2A	3.1	3.2	2.1	2.7	2.6	3.1	2.8	2.0	2.1
25	2.3	2.0	2.1			S	S	S	G	G	G				2.5A			2.4	2.1	S	S	S	S	S
26	S	S	S			S	S	S	G	2.3	G	G	3.3	3.2	4.1	G	2.2	G	S	S	S	S	S	C
27	S	S	S	1.8		S	S	S	G	G	G	4.2	C	C	C	C	2.9A	G	2.6	S	E	S	S	S
28	S	S	S				S	S	G	G	G		2.7A	3.0R	2.9A			2.5	S	E	2.1	S	S	2.1
29	E	S	S			S	S	S	G	G	G	2.4A	C	G	2.6A	3.8	3.6	3.7	2.5	2.6	S	S	S	S
30	S	S	S			S	S	S	G	G	G	G	G	G	G	G	3.3A	S	E	S	S	S	S	S
31	S	S	E			S	S	S	G	G	G	G	G	G	3.8	G	G	S	1.9	3.9A	E	S	S	S
No.	6	6	7	7	5	2	2	7	14	22	24	19	22	19	18	18	24	21	18	17	17	9	6	7
Median	E	E	E/1.5	1.8	1.3	E	E	1.8	G	2.3	G	G	G	G	G	2.5	G	G	2.0	2.0	2.0	2.1	2.4	2.1

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

f<sub>o</sub>F<sub>2</sub>

Y 5

Lat. 31° 12.5' N  
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

f-min

Jan. 1961

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	1.80	1.80	1.20	1.30	1.70	1.80	1.80	1.75	1.90	1.90	2.55	2.00	2.40	2.20	2.00	1.90	1.80	1.70	1.65	1.80	1.60	1.20	1.70
2	1.80	1.70	1.30	1.40	1.10	1.20	1.70	1.70	1.80	1.80	2.20	2.00	1.90	2.00	1.90	2.25	1.90	1.80	1.70	1.75	1.80	1.70	1.90	1.80
3	1.70	2.00	1.15	1.20	E	1.50	1.80	1.70	1.80	1.80	2.00	2.00	2.25	2.20	2.00	1.80	1.80	1.70	1.60	1.75	1.80	1.80	1.90	1.80
4	1.80	1.70	1.25	E	1.10	1.70	1.70	1.60	1.90	1.70	1.75	1.85	2.25	2.00	1.90	1.80	1.80	1.60	1.70	1.60	1.70	1.80	1.80	1.90
5	1.80	1.70	1.70	1.35	1.70	1.80	1.60	1.75	1.70	1.70	1.90	1.80	1.90	1.90	1.90	1.80	1.80	1.70	1.60	1.60	1.70	1.70	1.80	1.80
6	1.80	2.10	1.40	1.20	1.25	1.80	1.70	1.80	1.70	1.90	1.80	1.80	2.40	2.25	2.20	1.90	1.85	1.65	1.60	1.80	1.80	1.85	2.00	1.90
7	1.90	1.80	1.80	1.75	1.25	1.35	1.40	1.50	1.80	1.90	1.80	1.90	1.80	1.90	2.20	2.10	1.80	1.80	1.60	1.50	1.75	1.70	1.80	1.90
8	1.70	1.80	1.70	1.40	1.40	1.70	1.80	1.50	1.70	1.80	1.90	2.05	2.20	2.30	2.10	1.90	1.80	1.75	1.70	1.70	1.70	1.80	1.80	1.90
9	C	C	C	C	C	C	C	C	C	1.80	1.90	2.00	1.90	2.00	1.90	1.90	1.80	1.75	1.70	1.70	1.70	1.80	1.80	1.90
10	1.80	1.80	1.60	1.20	1.20	1.70	1.80	1.80	1.50	1.70	1.85	1.85	1.90	2.00	1.80	1.80	1.80	1.60	1.50	1.60	1.60	1.75	1.75	2.00
11	1.70	1.80	1.10	1.20	1.40	1.70	1.70	1.80	1.70	1.50	1.70	1.90	1.90	2.25	2.20	2.00	1.90	1.70	1.70	1.70	1.80	1.80	1.85	2.00
12	1.80	1.80	1.80	1.00	1.00	1.70	1.70	1.90	1.70	1.80	2.00	2.20	2.10	1.90	2.10	1.80	1.80	1.60	1.50	1.60	1.60	1.75	1.75	1.70
13	1.90	1.70	1.90	1.30	1.30	1.80	1.70	1.90	1.60	1.80	1.90	1.90	1.80	2.05	2.00	1.80	1.65	1.60	1.70	1.70	1.80	1.80	1.80	1.80
14	1.80	1.80	1.70	E	1.00	1.80	1.80	1.90	1.70	1.70	1.80	1.85	1.85	1.90	1.80	1.60	1.80	1.70	1.60	1.70	1.80	1.70	1.90	1.80
15	1.80	1.80	1.70	1.30	E	1.25	1.80	1.70	1.75	1.75	1.70	1.80	1.80	1.80	1.80	1.80	1.90	1.25	1.25	1.30	1.30	1.75	1.70	1.90
16	1.70	1.80	1.20	1.20	E	1.30	1.90	1.80	1.60	1.80	1.80	1.90	2.55	1.90	2.20	1.75	1.70	1.80	1.50	1.50	1.50	1.60	1.90	1.90
17	1.80	1.85	1.25	1.05	1.00	C	C	1.80	1.80	1.75	1.85	2.00	1.80	1.90	2.20	1.80	1.80	1.70	1.70	1.70	1.80	1.80	1.95	1.70
18	1.90	1.80	2.00	E	E	1.80	1.90	1.80	1.70	1.90	1.80	2.00	2.05	2.10	1.80	1.80	1.70	1.80	1.70	1.80	1.80	2.00	1.90	1.70
19	1.80	1.80	1.10	E	E	1.50	1.90	1.80	1.80	1.70	1.80	1.85	1.90	1.90	1.80	1.70	1.25	1.60	1.60	1.70	1.60	1.80	1.80	1.80
20	1.90	1.80	1.80	E	E	1.40	2.00	1.70	1.70	1.50	1.70	1.70	1.80	2.00	1.90	1.90	1.90	1.80	1.80	1.80	1.80	1.70	1.70	1.70
21	1.80	1.80	1.60	1.80	E	1.40	1.80	1.80	1.60	1.70	1.80	1.90	1.90	2.05	1.90	1.90	1.70	1.85	1.70	1.75	1.70	1.90	2.00	1.80
22	2.10	1.80	1.60	1.30	E	1.40	1.80	1.60	1.70	1.70	1.90	1.70	1.70	2.20	2.05	1.85	1.90	1.70	1.70	1.70	1.70	1.80	1.90	1.80
23	1.90	1.80	1.20	1.30	1.20	1.70	1.70	1.80	1.70	1.70	1.70	1.90	1.85	2.20	1.70	1.40	1.70	1.80	1.70	1.70	1.65	1.70	1.90	1.70
24	1.75	1.80	1.40	1.20	E	1.80	1.90	1.80	1.80	1.70	1.80	1.90	1.90	2.05	2.05	1.80	1.90	1.60	1.70	1.75	1.80	1.60	1.85	1.80
25	1.70	1.70	1.80	1.30	1.40	1.75	1.90	1.80	1.80	1.75	1.80	1.90	2.20	2.05	2.05	1.80	2.00	1.80	1.70	1.70	1.80	1.90	2.00	1.80
26	1.80	1.90	1.80	1.80	1.30	1.70	1.60	1.70	1.90	1.70	1.80	1.80	1.90	1.90	1.90	1.80	1.70	1.70	1.70	1.80	1.80	1.90	1.80	1.80
27	1.80	1.70	E	1.80	1.30	2.00	1.90	1.80	1.80	1.70	1.80	1.70	C	C	C	1.90	1.90	1.60	1.80	1.90	1.80	1.90	1.65	
28	1.90	1.90	1.80	1.40	1.30	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	2.20	2.50	1.90	1.90	1.80	1.90	1.80	1.70	1.70
29	1.80	2.00	1.80	1.20	1.20	1.30	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.85	1.85	1.70	1.70	1.70	1.70	1.90	1.90
30	1.70	1.80	1.75	1.30	1.70	1.80	1.70	1.70	1.70	1.80	1.90	2.10	2.30	2.20	2.05	1.90	1.80	1.70	1.80	1.90	1.75	1.70	1.80	1.80
31	1.80	1.90	1.80	1.30	E	1.80	1.80	1.70	1.80	1.80	1.90	2.10	2.05	2.20	2.00	1.90	1.85	1.80	1.70	1.80	1.70	1.80	2.10	1.80
No.	30	30	26	30	30	29	29	30	30	31	31	31	30	30	30	30	31	31	31	30	30	30	30	29
Median	1.80	1.80	1.60	1.25	1.15	1.70	1.80	1.80	1.70	1.80	1.80	1.90	1.90	2.00	1.95	1.80	1.80	1.70	1.70	1.80	1.80	1.80	1.90	1.80

Sweep 1.0 Mc to 2.0 Mc in 0.0001 sec in automatic operation.

f-min

The Radio Research Laboratories, Japan. Y 6



IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT. + 9h.)

M(3000)F1

Jan. 1961

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

The Radio Research Laboratories, Japan.

Y 8

Sweep 1.0 Mc to 20.0 Mc in 0.1 sec in automatic operation.

M(3000)F1

# IONOSPHERIC DATA

Lat. 31° 12.5' N  
 Long. 130° 37.7' E

**Yamagawa**

135° E Mean Time (GM.T. + 9h.)

R'F2

Jan. 1961

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																								
3																								
4																								
5																								
6																		C						
7										C														
8								C																
9																								
10																								
11												250	250											
12											240	250	265	260										
13												255	250											
14																								
15																								
16																								
17																								
18												255	245											
19												275	250	240	240									
20												265	250	250										
21												250	250	245	245									
22												260	250	240	250									
23												250	250	260	275	250								
24												270	255	270	295	290	255							
25																								
26												275	260	265	255	270								
27												280	C	C	C	C								
28												245	250											
29													C											
30												260	270	260	250									
31												285	280	260										
No.										5	13	14	12	5	3									
Median										250	255	250	255	255	255	255								

Sweep 1.0 Mc to 20.0 Mc in 0 sec <sup>min</sup> in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

Y 9



Lat. 31° 12.5' N  
Long. 130° 37.7' E

# Yamagawa

## IONOSPHERIC DATA

135° E Mean Time (GMT. + 9h.)

$f^oF_2$

Jan. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	280	275	300	275	320	280	250	250	235	230	230	205	240	230	240	250	230	225	220	220	210	210	230
2	300	295	260	300	275	295	300	280	245	240	250	235	220	210	230	225	240	240	205	240	235	220	220	230
3	330	270	270	270	250	255	310	270	250	240	230	210	240	215	250	235	240	235	230	250	210	250	275	280
4	275	295	270	280	310	325	310	280	235	245	245	220	220	225	205	205	240	225	215	270	300	245	285	270
5	300	330	275	260	250	330	345	265	250	240	230	210	200	220	240	240	230	220	240	235	225	225	300	300
6	345	360	285	245	245	265	260	275	250	240	225	240	210	225	225	230	235	225	225	240	235	240	320	330
7	325	300	240	230	255	325	310	280	250	240	235	240	225	240	200	240	240	220	215	250	250	230	265	305
8	295	300	280	260	240	260	345	260	240	240	230	230	230	240	230	240	240	230	C	C	C	C	C	305
9	C	C	C	C	C	C	C	C	C	245	245	225	240	240	225	240	245	230	230	C	C	C	C	305
10	280	340	320	300	285	350	300	250	250	300	290	245	235	240	240	240	245	235	230	230	225	225	245	320
11	320	330	300	300	255	255	280	250	230	230	235	230	220	220	225	225	250	220	240	245	215	205	260	280
12	280	300	300	255	270	355	310	255	235	210	220	220	200	225	210	235	240	230	220	225	240	220	330	300
13	305	295	295	265	295	325	300	240	230	230	215	205	210	200	200	255	235	225	235	230	230	260	270	245
14	270	305	250	235	300	340	345	285	240	225	205	240	220	240	200	225	240	225	240	230	250	250	305	265
15	260	320	350	300	290	240	280	270	235	220	190	220	240	230	235	235	240	225	245	255	215	205	255	350
16	315	300	250	275	290	270	245	260	230	200	205	240	225	220	230	240	250	225	210	230	240	210	360	320
17	305	325	260	240	205	260	290	255	230	205	210	220	245	205	230	230	235	220	235	255	205	265	300	305
18	280	240	270	260	220	300	315	255	215	210	200	200	220	205	240	230	230	230	225	265	250	240	250	245
19	245	350	255	245	250	360	310	310	235	230	220	205	230	210	210	210	245	240	220	250	220	240	295	295
20	305	300	255	260	315	305	300	260	250	240	230	230	210	210	240	240	235	230	250	240	360	260	250	250
21	290	350	405	380	305	270	290	285	245	240	225	220	220	210	240	335	240	235	225	230	200	260	255	260
22	290	255	240	390	330	340	300	250	240	250	225	225	200	205	195	250	240	230	230	240	230	220	300	335
23	345	265	210	340	330	310	300	270	245	240	235	205	200	205	205	225	240	240	205	A	330	A	A	330
24	280	260	240	250	250	305	295	260	240	245	250	195	215	200	250	250	240	195	240	240	230	240	345	355
25	325	235	255	260	260	300	275	250	235	240	230	205	220	205	270	230	240	240	220	205	250	290	300	275
26	255	270	275	260	225	350	345	250	225	240	225	210	220	225	240	230	240	240	210	255	225	210	340	315
27	320	295	250	265	290	355	350	290	240	220	215	250	C	C	C	C	250	240	230	220	235	240	350	305
28	305	305	290	245	205	370	330	250	230	235	210	240	220	205	200	250	240	240	220	240	240	250	250	300
29	330	315	255	220	210	255	340	280	240	235	225	210	200	225	215	240	250	250	240	250	240	230	270	350
30	340	310	240	200	360	350	335	270	240	240	235	230	215	225	220	210	255	230	200	275	235	245	300	305
31	330	325	265	245	210	330	300	255	235	240	220	220	250	245	230	225	250	240	220	210	300	225	375	335
No.	30	30	28	30	30	29	30	30	30	30	30	30	30	30	29	30	31	31	30	29	27	29	27	30
Median	300	300	260	260	265	305	300	260	240	240	225	220	220	220	230	235	240	230	225	240	230	240	300	305

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y10

$f^oF_2$

# IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

## Yamagawa

135° E Mean Time (GMT. + 9h.)

f<sub>o</sub>F<sub>2</sub>S

Jan. 1961

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	E	S	S	S	4	120	115	120	115	115	110	110	110	105	105	105	S	S	S	S	
2	S	S	E	E	E	E	S	S	4	4	155	145	150	4	100	4	120	110	S	S	S	S	S	S	
3	S	S	110	E	105	E	S	S	4	4	155	4	4	110	4	145	140	120	105	105	S	S	S	S	
4	S	S	E	E	105	S	S	110	4	110	105	4	4	4	4	105	100	100	105	110	S	S	S	S	
5	100	S	E	100	E	S	S	125	115	110	110	110	105	105	105	105	105	105	105	105	100	100	S	S	
6	S	S	E	E	E	S	S	S	160	4	160	105	4	4	105	105	105	C	110	105	100	S	S	S	
7	S	110	110	110	110	105	105	110	4	125	C	110	4	105	125	4	120	4	C	110	S	S	S	S	
8	S	S	E	E	E	E	S	S	155	4	105	105	105	4	105	4	4	4	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	120	110	110	110	105	105	4	4	4	105	S	S	S	S	S	
10	S	S	E	110	E	E	S	120	110	110	110	110	105	105	105	105	100	100	100	105	110	110	S	110	
11	110	110	105	105	E	S	S	105	130	115	115	4	110	4	4	4	4	S	S	S	S	S	S	S	
12	S	S	S	E	E	S	S	S	4	4	4	4	4	4	4	4	4	4	S	S	105	105	100	S	
13	100	S	S	E	E	S	S	105	105	4	4	4	4	115	115	110	110	140	S	S	S	S	105	100	
14	S	S	E	E	E	S	S	S	4	125	115	4	120	175	105	105	100	140	S	S	S	S	S	S	
15	S	S	E	E	E	110	S	S	110	4	105	155	135	120	130	105	105	105	105	S	S	S	S	S	
16	S	S	E	E	E	E	S	S	135	140	4	130	130	115	4	4	165	4	S	S	S	S	S	S	
17	S	S	E	E	E	C	S	S	4	4	120	4	110	110	4	4	4	100	105	S	S	S	S	S	
18	S	S	S	E	E	S	S	S	4	120	120	115	110	110	4	4	110	110	105	105	100	S	S	S	
19	S	115	110	110	105	105	S	S	140	140	110	4	110	105	105	4	105	105	105	105	100	S	S	105	100
20	S	S	E	105	E	E	S	110	115	105	105	105	105	4	140	120	120	4	S	110	105	105	105	105	
21	S	105	105	E	E	S	S	S	120	120	120	110	110	120	110	110	155	130	110	S	105	S	S	S	
22	S	S	S	E	E	S	S	S	4	120	4	100	100	4	4	110	150	140	120	110	110	S	S	105	
23	S	S	E	105	E	S	S	S	120	110	4	4	105	105	105	105	130	155	135	120	110	110	105	105	
24	105	S	E	E	E	S	S	S	120	110	110	110	105	105	105	100	100	105	150	130	105	100	100	100	
25	100	100	100	E	E	S	S	S	4	150	120	4	4	4	4	100	4	140	120	S	S	S	S	S	
26	S	S	E	E	E	E	S	S	150	120	115	115	115	115	110	110	105	105	S	S	S	S	S	C	
27	S	S	110	E	E	S	S	S	4	115	115	105	C	C	C	C	105	100	100	S	105	S	S	S	
28	S	S	E	E	E	S	S	S	4	115	4	4	105	100	105	4	155	140	S	110	100	S	S	105	
29	105	S	E	E	E	S	S	S	130	130	140	110	C	100	105	140	140	130	100	100	100	S	S	S	
30	S	S	E	E	E	S	S	S	4	4	140	140	135	140	140	135	115	4	S	110	S	S	S	S	
31	S	105	E	E	E	S	S	S	4	100	155	145	140	160	140	130	140	4	S	110	105	105	S	S	
No.	6	6	7	7	S	3	2	7	14	22	24	20	22	20	20	19	25	21	18	18	18	10	6	7	
Median	100	110	110	105	105	105	105	110	125	120	115	110	110	110	105	110	110	110	105	110	105	105	100	105	

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

f<sub>o</sub>F<sub>2</sub>S

Y11

Lat. 31° 12.5' N  
Long. 130° 37.7' E

**Yamagawa**

**IONOSPHERIC DATA**

135° E Mean Time (GMT. + 9h.)

Types of Es

Jan. 1961

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

Sweep 1.0 Mc to 2.0 Mc in 0.5 sec in automatic operation.

Types of Es

## SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

Jan. 1961	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	7	8	8	-	8	0	0	0	-	0
2	6	7	8	-	7	0	0	0	-	0
3	8	8	7	-	8	0	1	0	-	0
4	-	8	7	-	8	-	0	0	-	0
5	8	8	8	-	8	1	1	0	-	1
6	7	7	6	-	7	0	0	0	-	0
7	8	7	8	10	8	0	0	0	1	0
8	8	7	7	-	8	0	0	0	-	0
9	6	5	(5)	-	6	0	0	(0)	-	0
10	7	8	8	-	8	0	0	0	-	0
11	6	7	5	-	6	0	0	0	-	0
12	6	7	(6)	-	6	0	0	(0)	-	0
13	8	6	(8)	-	7	0	0	(0)	-	0
14	6	7	(8)	-	6	0	0	(0)	-	0
15	7	7	(6)	-	7	0	0	(0)	-	0
16	7	6	(7)	-	7	0	0	(0)	-	0
17	7	8	(8)	-	8	0	0	(0)	-	0
18	7	5	-	-	6	0	0	-	-	0
19	7	6	7	-	7	0	0	0	-	0
20	8	7	6	-	7	0	0	0	-	0
21	6	5	6	-	6	0	0	0	-	0
22	5	5	(6)	-	6	0	0	(0)	-	0
23	6	6	7	-	6	0	0	0	-	0
24	7	6	6	-	6	0	0	0	-	0
25	7	7	(7)	-	7	0	0	(0)	-	0
26	8	7	7	-	8	0	0	0	-	0
27	6	7	(7)	-	7	1	1	(0)	-	1
28	9	9	9	-	9	0	0	0	-	0
29	10	7	9	-	9	0	0	0	-	0
30	15	19	19	(53)	18	2	2	2	(2)	2
31	26	30	(17)	-	30	1	1	(0)	-	1

## Outstanding Occurrences

Jan. 1961	Start- time	Dura- tion	Type	Max.	Int.	Max. Time	Remarks
				Inst.	Smd.		
3	0326.3	0.8	CD/4	>1200	230	-	off scale
4	0340.0	0.4	SD/4	>1400	720	-	off scale
29	2148.7	1.2	CD/4	460	150	2149.2	
30	0200	2.8	CD/4	>1600	240	0201.8	off scale
30	0631.2	2	CD/8	1400	400	0631.7	1st part
		5		>1700	700	0634.8	off scale 2nd part

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 1961	Whole Day Index	L. N.				W W V				S. F.				W W V H				Warning				Principal magnetic storms		
		06	12	18		00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	2+	(2	1	2)	2	Z	Z	2	2	2	2	2	1	2	2	2	N	N	N	N				
2	2-	(2	1	2)	2	Z	Z	1	1	2	2	2	1	2	2	2	N	N	N	N				
3	2-	(1	1	1)	1	Z	Z	1	3	2	2	2	1	2	2	2	N	N	N	N				
4	1o	1	-	2	1	Z	Z	1	1	1	1	(1)	2	2	1	1	N	N	N	N				
5	1+	(2	-	2)	1	Z	Z	1	1	1	1	1	2	2	2	1	N	N	N	N				
6	1o	1	-	1	1	Z	Z	1	1	1	1	1	2	2	1	2	N	N	N	N				
7	1+	1	-	2	2	Z	Z	1	(2)	1	1	1	1	2	1	1	N	N	N	N				
8	2o	2	-	2	1	Z	Z	2	(1)	2	2	2	1	2	2	3	N	N	N	N	1617	---		
9	2o	2	-	2	2	Z	Z	2	1	1	2	3	1	1	3	1	N	N	N	N	---	---		
10	2-	2	1	2	1	Z	Z	2	3	1	1	2	1	2	2	1	N	N	N	N	---	02xx	73 <sup>y</sup>	
11	2+	2	2	3	3	Z	Z	2	2	1	1	(3)	1	3	2	3	N	N	N	N				
12	3-	2	2	2	4	Z	Z	2	3	3	1	(2)	1	3	3	3	N	N	N	N				
13	2+	2	3	1	3	Z	Z	2	3	2	1	2	2	2	1	2	N	N	N	N				
14	2-	1	1	1	3	Z	Z	1	3	2	1	1	1	2	1	1	N	N	N	N				
15	2-	1	1	2	2	Z	Z	2	1	2	2	2	2	1	2	1	N	N	N	U				
16	3-	C	3	C	2	Z	Z	1	3	3	3	2	2	3	3	1	U	U	U	U				
[17]	2-	C	C	C	(2)	Z	Z	1	3	2	2	1	2	2	3	2	U	N	N	N				
[18]	1+	C	C	C	(1)	Z	Z	2	2	2	2	1	2	1	2	2	N	N	N	N				
[19]	2-	C	C	C	2	Z	Z	3	1	1	1	2	2	1	2	2	N	N	N	N	13.3	---		
20	3-	C	C	C	3	Z	Z	4	2	1	2	3	1	1	2	2	N	N	N	N	---	22xx	89 <sup>y</sup>	
21	3+	C	C	C	(4)	Z	Z	3	4	3	3	(3)	2	2	3	4	U	N	N	N				
22	3+	C	C	C	(4)	Z	Z	3	3	3	3	3	2	3	4	3	N	N	U	U				
23	2+	C	C	C	(4)	Z	Z	2	3	2	1	2	3	4	3	1	U	U	U	N				
24	2o	(2	2	2)	(2)	Z	Z	1	3	1	2	(1)	1	3	2	2	N	N	N	N				
25	1+	1	-	2	(1)	Z	Z	1	1	2	(2	1)	1	2	1	1	N	N	N	N				
26	1+	1	-	2	(1)	Z	Z	1	2	2	1	2	2	2	2	2	N	N	N	N				
27	2o	1	2	2	(1)	Z	Z	1	3	2	3	3	2	2	2	1	N	N	N	N				
28	3-	2	2	2	(1)	Z	Z	2	3	2	2	2	1	1	2	1	N	N	N	N				
29	2-	1	2	2	(1)	Z	Z	1	2	2	2	(2)	1	1	1	1	N	N	N	N				
30	1+	1	2	2	(1)	Z	Z	1	2	2	1	1	1	1	1	2	N	N	N	N				
31	2-	(2)	1	2	1	-	1	1	3	2	2	1	1	2	1	1	N	N	N	N				

## SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jan. 1961	S W F				S E A			Correspondence					
	Drop-out WS	Drop-out SF	Intensities HA TO	(db) LN	Start- time	Dura- tion	Type	Imp.	Start- time	Dura- tion	Imp.	Flare Noise	Solar Mag.
4	-	-	15	-	02.07	20	S	2-					
30		9	17		01.59	21	S	2-					x
30		42			02.36	15	S	3					

Lat. 69° 00.4' S  
Long. 39° 35.4' E

PROVISIONAL IONOSPHERIC DATA

Showa Base

45° E Mean Time (G.M.T.+3h.)

foF2

Oct. 1960

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	B	F	F	F	B	B	B	B	B	B	B	B	B	B	B	71F	53F	B	41R	B	B	B	B	B
2	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	49R	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	46F	50F	53F	58F	61F	61R	60F	63F	B	67F	73F	82F	60F	60F	41F	40F	38F	R
4	B	B	F	B	B	B	66F	C	C	C	C	C	C	C	C	55R	57F	61F	F	F	44R	R	R	R
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	59R	58F	52F	B	45F	44R	R	R	B
6	B	F	B	B	B	B	44F	B	B	B	B	B	B	B	B	37R	43R	41R	R	F	29F	31F	F	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	43R	B	F	43F	F	F	B	F	B
8	B	B	B	B	B	B	34F	B	B	B	B	B	B	B	B	57F	53F	B	B	47F	32F	B	B	B
9	B	B	51F	B	B	B	46F	B	B	B	B	B	B	B	B	53R	66R	62F	46R	48F	B	B	B	B
10	B	B	B	B	B	B	F	B	B	B	B	B	B	B	B	58F	57F	B	S	60F	B	B	B	B
11	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	R
12	B	B	B	B	B	B	58F	64F	80F	S	84F	86	84F	86R	84F	87R	85F	83F	76F	75F	66F	61F	50F	B
13	B	B	B	B	B	B	59F	69F	80F	83F	82F	90	90R	94R	93F	97	96	90	87F	87F	72F	66F	62F	60F
14	49F	44F	37R	39R	B	R	B	B	62F	71F	80F	99F	97F	101R	101F	94F	87F	88F	81F	73F	73F	67F	60F	53F
15	42F	F	31F	32F	B	B	B	B	52R	B	69F	82	92	90	90F	92F	102	107R	106F	90F	82F	67F	60F	51F
16	B	B	B	B	B	B	46F	49F	54F	62F	68F	66F	66F	67F	67	67F	69F	67F	66F	65F	62F	60F	59F	51F
17	F	F	B	B	B	B	57R	66F	82F	83F	83F	87F	88F	95F	94F	94F	94F	83	82	77F	74F	69F	48F	B
18	B	49F	52F	F	F	F	59F	60R	R	B	B	B	B	65R	B	81F	89F	83F	60F	58F	40F	F	F	B
19	B	B	B	B	B	B	F	46F	44F	B	B	B	B	53F	56F	56F	60F	61F	61F	59F	41F	31R	B	B
20	B	B	40R	45F	F	F	52F	F	50F	57R	64R	70F	66F	71F	79F	84F	80F	90F	80F	68F	43F	S	43F	40F
21	F	F	40R	50F	F	43F	45	62F	78F	74F	75F	76F	79F	82F	81F	77F	76F	69R	68F	65F	62F	52F	R	B
22	R	B	B	R	B	B	62R	72F	81F	83F	82F	85F	83F	86R	90F	91F	90F	88F	82F	80F	70F	66F	60F	63F
23	56F	46F	F	50F	F	50F	54F	54F	59F	74F	85F	87F	89F	91F	95F	92F	89F	83F	63F	89F	74F	70F	62F	52F
24	B	B	40F	43F	46F	F	50F	43F	57F	62F	83F	76F	70F	68F	71	73F	77F	80F	81F	79F	74F	F	F	B
25	F	F	39F	F	F	43F	50F	58F	63F	69F	70F	B	B	B	B	60R	60R	46F	B	F	38F	B	B	34R
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	64R	B	B	B	F	41F	B	B	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	62R	66R	B	53R	55F	42R	41F	F	B
28	F	B	F	42F	B	B	B	B	B	B	B	B	B	B	47R	61R	51F	B	R	R	F	B	B	B
29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	65R	B	58R	44F	47	38R	B	B	B
30	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	54R	B	53F	49F	B	41F	B	B	40F
31	B	F	46R	B	B	B	B	B	B	B	52F	B	B	B	61R	64F	64R	67R	60F	53F	44F	B	B	40R
No.	3	6	10	8	10	13	15	16	13	16	14	14	17	18	21	26	25	21	22	23	19	13	9	8
Median	49	45	42	46	50	50	59	62	71	72	79	81	71	76	77	68	69	63	63	52	46	52	52	46
U.Q.	52	49	46	50	54	58	66	79	83	82	87	90	92	90	92	87	86	81	77	70	66	62	61	56
L.Q.	46	40	39	40	43	44	49	51	55	61	66	66	60	61	60	60	55	58	53	44	41	38	40	40
Q.R.	06	09	07	10	11	14	17	28	28	21	21	24	32	29	32	27	31	23	24	26	25	24	21	16

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

The Radio Research Laboratories, Japan.

foF2

Observed by H. Use



Lat. 69° 00.4' S  
Long. 39° 35.4' E

PROVISIONAL IONOSPHERIC DATA

Showa Base

45° E Mean Time (G.M.T.+3h.)

foF2

Nov. 1960

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	B	C	C	C	C	C	C	C	C	C	C	C	C	U67F	U61F	U65F	U66F	U70F	U60F	52F	U51F	U41F	F	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	F	45F	46R	57R	R	54R	43F	B	B	B	B	B	B	B	59R	69F	62F	62F	S	36R	43R	B	B	B
5	B	B	43F	B	B	50R	B	B	B	B	B	51F	53F	58F	60F	62F	60F	48F	47F	47F	48F	46	51F	50R
6	50R	46F	42F	49F	68F	79F	82F	82F	82F	R	82F	93F	82F	76F	72F	72F	76F	80F	70F	61F	61F	60F	49F	37R
7	47F	46F	45F	F	56F	B	B	59R	67F	B	67F	57F	61F	65F	72F	72F	67F	66F	63F	63F	64F	66F	61F	62F
8	62F	65F	68F	74F	81F	91F	102F	102F	102F	102F	102R	102R	97	90F	80F	74F	70F	71F	71F	69F	69F	72F	66F	60R
9	42R	F	56F	F	R	65F	63F	64F	66F	72F	73F	77F	77F	73F	70F	S	69F	69F	67F	68F	64F	63F	61F	52F
10	R	51R	59F	69F	R	87F	95F	96C	92F	91F	94F	96F	96F	95	92	93R	96	95	81F	77F	69R	69F	51F	47F
11	50F	50F	52F	56F	67F	F	F	73R	73F	74F	82F	78F	76F	74F	76F	84F	72R	53F	55F	53F	55F	52F	54F	57F
12	55F	57F	39F	B	B	R	56F	65F	76F	77F	74F	73F	72F	70F	70F	66F	61F	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	61F	63F	65F	71F	70R	86F	88F	88F	88	89	83R	80	79R	79F	73F	67F	67F	66F	62F	65F	64F	64F	64F	67F
20	63F	60F	53R	B	B	B	B	R	52F	56R	62F	66R	70F	64R	70R	68R	R	68F	B	56F	56F	44	53R	51F
21	51F	51F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	47R	51F	B	55F	58F	65F	68F	69F	73F	71F	57R	51F	46F	47F	44	39R
24	38R	42	50F	50F	B	B	B	R	57F	65F	63F	62R	70F	77F	77F	78F	78F	72	61F	59F	46F	45F	57F	F
25	R	F	R	B	B	B	B	B	B	B	B	B	B	B	B	B	F	49F	47F	F	49F	B	B	39F
26	47F	F	48R	44F	R	B	B	R	B	B	F	F	61F	73R	73F	73F	67F	53F	50F	51F	55	59	55	F
27	45F	F	48F	57F	B	B	52F	56F	59F	55F	50F	B	B	64R	82F	69F	69F	52F	51F	44F	B	B	R	42F
28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
29	47F	44F	47F	50F	50F	50F	63F	70F	79F	82F	82F	78F	73F	70F	74F	74F	76F	70F	61F	57F	57F	57F	50F	40F
30	R	B	51F	54F	57F	54F	F	48R	66F	63F	70F	68F	S	67F	70F	70F	66F	66F	62F	59F	56F	46F	40F	B
31																								
No.	13	12	17	11	8	9	10	11	14	12	13	14	14	20	20	20	20	19	18	19	19	17	17	15
Median	50	50	48	56	62	65	63	70	70	70	73	74	75	72	67	70	71	68	66	60	57	56	57	51
U.Q.	58	58	54	69	69	86	88	93	82	86	82	80	79	75	75	74	72	71	63	63	63	64	60	60
L.Q.	46	46	44	50	53	52	54	59	59	60	65	62	61	63	64	68	66	53	51	51	49	46	50	40
Q.R.	12	12	10	19	16	34	34	34	23	26	17	18	18	18	12	11	06	06	06	12	12	15	10	20

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.0 Mc in 20 <sup>μ</sup>Sec in automatic operation.

foF2

Observed by H. Ose

---

IONOSPHERIC DATA IN JAPAN FOR JANUARY 1961

電波観測報告 第13巻 第1号

---

1961年3月20日 印刷  
1961年3月30日 発行 (不許複製非売品)

編集兼 糟 谷 績  
発行人

東京都小金井市貫井北町4の573

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 国分寺 1211-1214

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

---