

F-179

IONOSPHERIC DATA IN JAPAN

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THE RADIO RESEARCH LABORATORIES
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KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

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SITES OF THE RADIO WAVE OBSERVATORIES

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_0F2	} The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.
f_0F1	
f_0E	
f_0E_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_bE_s	The ordinary wave frequency at which the highest blanketing E_s layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min	That frequency below which no echoes are observed.
$M(3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

- $h'E_s$ The lowest virtual height of the trace used to give the f_oE_s .
- h_pF2 The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to $0.834 f_oF2$.
- 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 $0.969 f_oF2$).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

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

b. Qualifying Symbols

Used as a 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 magneto-ionic component.

c. Description of Standard Types of E_s

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

- l* At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.
- c* An E_s trace showing a relatively symmetrical cusp at or below f_0E . This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.
- h* An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E . The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.
- q* As E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
- r* An E_s trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thick layer included in the E layer tables: $f_0E, h'E$) by the lack of group retardation in the F traces at corresponding frequencies.
- a* An E_s pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.
- s* A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l, h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, q , at frequencies near the E region critical frequency.
- f* An E_s trace which shows no appreciable increase of height with

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

a. Daily Data

Steady flux

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

Variability

Variability is expressed in four grades as follows:

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

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

b. Outstanding occurrences

Starting time

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

Maximum time

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

Time of end

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

Type

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

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

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

1=very poor (very disturbed)	4=normal
2=poor (disturbed)	5=good
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 Hiraiso Radio Wave Observatory near Tokyo.

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

N=normal
U=unstable
W=disturbed

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

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

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

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

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

Circuits and Drop-out intensity

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

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

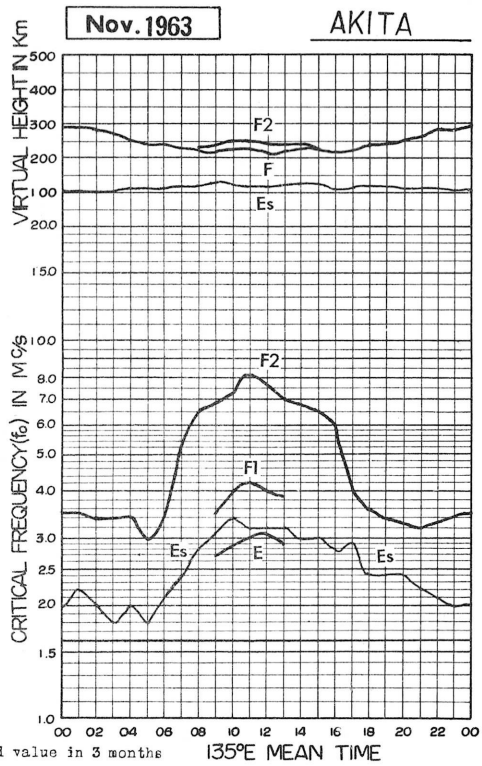
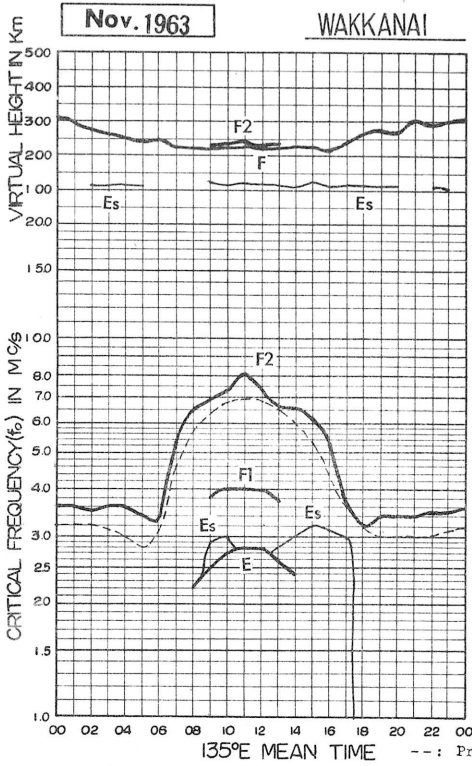
Importances

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

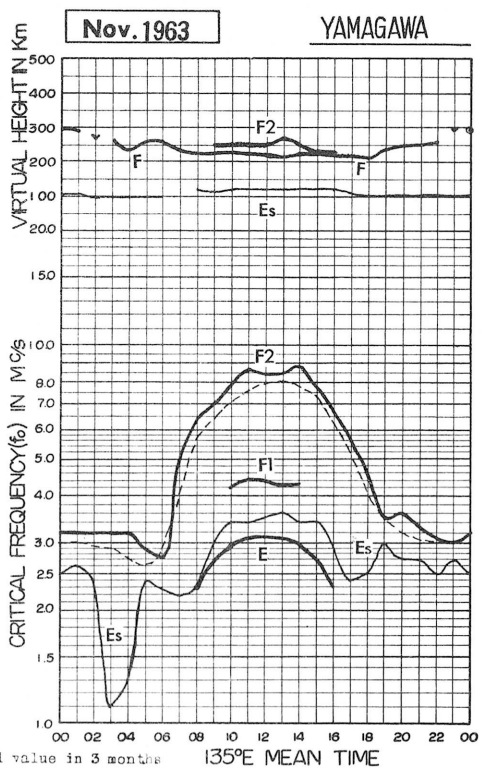
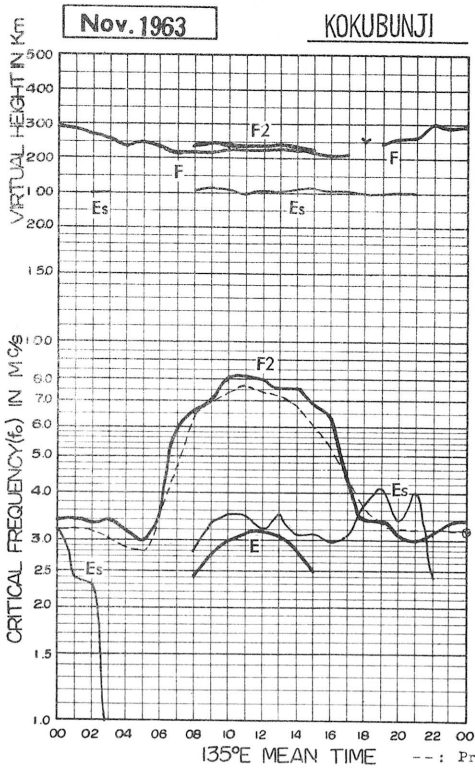
1-	1	1+
2-	2	2+
3-	3	3+

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

Wakkanai

Lat. 45°23.6' N
Long. 141°41.1' E

Nov. 1963

foF2

135° E Mean Time (G. M. T. +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	2.8	2.8	2.7	2.6	2.7	3.0S	3.6	5.0	5.8	6.6	6.6H	8.1	7.6	6.5	6.3	6.4	6.6	5.0	4.3	4.3	3.4	3.5	U3.8S	3.9	
2	4.0	3.8	3.8	I3.6FS	4.0F	4.7F	3.5	5.1	6.0	6.3	7.7	7.6	7.2	I6.7RH	5.9	6.6	6.7	5.1	I4.3A	4.3	4.2	4.0	4.2	3.9	
3	3.9	4.3	4.2	4.4	4.4	3.7S	4.4	6.6S	6.2	6.6	8.0H	8.8	8.6	7.6H	7.1	7.1	6.9	5.0	4.4	3.3	3.4	2.9	3.5	3.3	
4	3.6	I4.3F	4.6	I4.4SF	4.5F	4.0S	4.1	5.8	7.3SH	7.3H	7.0	7.4	7.6	6.6H	7.0	6.3	5.7	5.6	4.6	4.4	4.1F	I4.2F	U4.4F	F	
5	F	F	F	F	F	SF	I4.5S	5.5	6.6	7.1	7.3	8.1	8.4	6.7	6.9	6.0H	6.4	4.5	4.3	4.0	I3.9SF	I3.5FS	F	F	
6	F	F	3.5F	3.6F	I3.8SF	I4.1SF	4.3S	5.8	6.4	7.2	7.3	8.4	8.2	6.6	6.6	6.8	5.8	5.0	4.1	4.3	3.7	4.1	4.1	F	FS
7	FS	F	4.6	5.0F	5.3S	4.0	3.1	5.8	8.3S	9.2H	7.5	9.5	7.8	6.1	9.2	7.1	5.8	4.4	3.3	2.9	I3.5A	3.9	4.4	I4.2F	
8	4.1	3.7	3.3	2.7	2.6	I2.7A	2.8	6.5	7.5	9.3	C	C	C	9.5	7.8	6.4	5.6	A	A	A	3.1	2.7	3.3	3.5	
9	3.7	3.7	3.9	3.7	3.9	4.0	4.2	6.3	7.5	8.4	7.8	9.0	8.5	7.1	7.3	6.8	5.1	3.5	3.5	U3.9S	3.6	3.6	3.8	3.8	
10	3.6	3.5	3.8	3.7	4.3S	F	C	C	C	C	C	C	C	6.8H	7.7	7.9	5.6	3.3	3.0	3.6	3.6	3.3F	3.7F	3.6F	
11	4.0F	4.1	3.7	3.7	I3.6S	3.3	3.3	5.4	5.5	6.4	7.0H	7.2H	6.8	5.9H	6.7	7.5	6.0	3.4	3.1	3.2	2.8	3.2	3.4	I3.4A	
12	3.4	3.5	3.4	3.3	3.6	3.4	3.3	5.1	6.6	6.7H	8.1	7.1	7.1	6.8	5.6H	6.3	6.6	3.4	3.4	3.4	3.7	U3.6S	I3.7FS	FS	
13	FS	FS	F	FS	FS	FS	I3.8S	6.3	6.7	6.7H	7.1H	9.4	8.4	6.7	7.1H	6.4H	5.7	I3.7A	3.2	2.8	3.2	3.3	3.6	U3.8S	
14	I3.9FS	U4.0F	F	FS	FS	FS	3.1	2.9	5.1	6.5	7.6	7.9	7.4	7.8	6.6	6.4	6.9	5.4	3.7	I3.2A	3.0	2.6	2.7	I3.2S	I3.2S
15	3.3	3.3	3.4	3.3	3.0	3.1FS	3.0F	4.6	6.6	6.6	6.6	8.2H	7.3	6.4	7.4	6.6	5.7	I3.6A	2.8	3.2	3.4	3.3	3.4	I3.2FS	
16	I3.2FS	3.2F	I3.1F	3.1F	3.6	3.4	U3.3S	5.0	5.7	7.8	8.1	7.5	7.0H	6.2	6.3	6.3	4.0	4.8	I3.6C	I3.6C	3.5	I3.6F	3.6	3.6	
17	3.6	I3.9SF	4.0	4.0	4.3	3.6	3.5	5.5	6.7H	6.9	8.2	8.1H	7.4	6.1	5.7	6.3	5.3	4.2	3.1	3.4	A	F	F	3.3F	
18	3.7	3.3	I3.6F	3.7	F	SF	A	I4.9S	7.1	7.6	9.3	12.3	11.6	8.1	7.3	6.4	5.3	I4.1A	3.3	3.7	3.8	3.8	U4.1S	3.9F	
19	4.3F	4.1F	F	F	F	F	F	5.1	6.8	7.3	7.3	8.4	7.7	7.2	6.5	6.1	4.8	3.7	3.6	3.8	3.4	I4.0FS	F	F	
20	F	4.0	F	F	F	F	FS	6.6	7.1	6.7H	8.3	9.3	6.6	6.6	6.8	5.9	5.1	3.4	3.0	4.1	F	F	F	I3.3FS	
21	3.1	3.4	3.4	3.6F	3.4	U3.4S	I4.0S	5.3	U7.1HS	7.6	7.0	8.1	6.7	6.3	6.5	5.5	4.3	3.1	3.2	3.8	3.6	4.0	SF	SF	
22	SF	SF	F	F	4.4	4.2	U3.7S	6.0	6.8	U7.4S	7.6	7.5	7.1	6.7	7.3	5.8H	4.3	3.0H	2.7S	2.9	3.3	3.3S	3.3S	U3.4S	
23	I3.3FS	3.2F	3.3F	3.5F	3.1F	U3.4F	3.0	5.0	7.4	6.1	8.7	8.7	7.5	6.0H	7.1	7.1	5.1H	3.3	3.0	3.4	3.5	3.5	3.5S	3.6F	
24	3.6	3.4	3.3	3.5	3.6	3.9	3.4	5.8	6.3	7.1	6.8	7.6H	8.3	6.7	6.4	5.9	4.9	3.1	3.0	3.2	3.3	3.4	3.4	3.3	
25	3.5	3.2	3.3	3.4	2.6	I1.9S	I2.7S	5.0	6.1	7.6H	10.6	9.0H	8.0	6.5	6.8	5.8	5.5	4.9	3.0	2.9	3.2	I3.1FS	3.3S	3.3F	
26	3.3F	3.3	3.4	3.3	3.2	U2.7S	U2.9S	5.5	I6.0S	6.3	6.3	7.3	6.9H	6.4H	6.6	6.1	U4.7S	I3.4A	I3.2A	3.1	3.3	3.4	3.8	3.6	
27	3.4	3.6	3.8	3.7	3.6	3.6	3.0	4.3	5.6	6.0	6.3	6.7	6.6	5.9	5.7	6.2	4.7S	2.9	3.5	2.8	3.4	3.2	3.3	3.6	
28	3.6	3.8	3.8	3.7	3.6	3.7	3.0	4.3	4.5	6.3	7.0	6.5	6.1	6.6	5.8	5.5	5.1	3.9S	3.3S	2.8S	3.6	3.5	C	C	
29	C	C	C	C	C	C	C	C	C	C	6.0	7.5	6.2	6.5	5.9H	5.5	3.8	3.5	2.9	U2.6S	2.7	2.7	3.2	3.3	
30	3.3	3.4F	3.5F	I3.4FS	3.3F	3.2	2.5S	U4.3S	5.9	6.1H	6.1	6.3	6.3H	5.7	5.7	5.7	4.7	3.2	2.8	3.2	3.1	U2.7S	I2.8S	2.8	
31																									
No.	23	24	23	23	23	23	25	28	28	28	28	28	28	30	30	30	30	29	29	29	28	28	23	23	
Median	3.6	3.6	3.5	3.6	3.6	3.4	3.3	5.4	6.6	7.0	7.3	8.1	7.4	6.6	6.6	6.3	5.4	3.7	3.2	3.4	3.4	3.4	3.5	3.5	
U.Q.	3.9	4.0	3.8	3.7	4.3	4.0	3.9	5.8	7.1	7.6	8.0	8.8	8.1	6.7	7.1	6.8	5.8	4.6	3.6	3.8	3.6	3.7	3.8	3.8	
L.Q.	3.3	3.3	3.3	3.3	3.2	3.1	3.0	5.0	6.0	6.5	6.9	7.4	6.8	6.3	6.3	5.9	4.8	3.4	3.0	3.0	3.2	3.2	3.2	3.3	
Q.R.	0.6	0.7	0.5	0.4	1.1	0.9	0.9	0.8	1.1	1.1	1.1	1.4	1.3	0.4	0.8	0.9	1.0	1.2	0.6	0.8	0.4	0.5	0.5	0.5	

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

The Radio Research Laboratories, Japan

foF2

W 1

IONOSPHERIC DATA

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

foF1

135° E Mean Time (G.M.T. +9h)

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										3.6	3.8	4.2	4.1	4.0											
2										U _{3.8} ^L	U _{4.2} ^L	4.0 ^L	4.0												
3										U _{3.8} ^L	4.0	U _{4.2} ^L	U _{4.0} ^L												
4										3.9	3.8	U _{4.0} ^L	U _{4.0} ^L												
5										U _{4.0} ^L	4.0 ^L	4.0 ^L	4.0	4.0											
6										3.8	U _{4.0} ^L	4.0 ^L	4.0	4.0											
7										U _{3.8} ^L	C	A	A	A											
8										U _{3.9} ^L	U _{4.1} ^L	C	C	3.8											
9										C	C	C	3.9 ^L												
10										C	C	C	C	U _{3.8} ^L											
11										3.7 ^L	4.0	4.0	4.0												
12										L	I _{4.0} ^L	I _{4.0} ^L	4.0	3.5											
13										U _{4.0} ^L	U _{4.0} ^L	U _{4.0} ^L	I _{4.0} ^L	U _{3.8} ^L											
14										U _{4.0} ^L	U _{4.0} ^L	3.9	U _{4.0} ^L	L											
15										A	U _{4.0} ^L	U _{4.0} ^L	U _{4.0} ^L												
16										U _{3.9} ^L	4.0 ^L	4.0 ^L	4.0 ^L												
17										4.0 ^L	4.0 ^L	4.0 ^L	I _{4.0} ^A												
18										3.9 ^L	4.0 ^L	4.0 ^L	4.0 ^L	L											
19										4.0 ^L	4.0 ^L	4.0 ^L	3.9 ^L												
20										4.0 ^L	4.0 ^L	4.0 ^L	4.0 ^L												
21										L	3.9 ^L	4.0 ^L	3.9 ^L												
22										3.9 ^L	3.9 ^L	4.0 ^L	U _{3.8} ^L												
23										4.0	U _{4.0} ^L	U _{4.0} ^L	4.0												
24										U _{4.1} ^L	U _{4.1} ^L	3.9 ^L	3.9 ^L												
25										3.5	4.0	U _{4.0} ^L	3.9 ^L	3.9 ^L											
26										4.0	4.0	4.0	4.0	4.0											
27										C	C	C	U _{3.7} ^L	3.3											
28										9	15	17	20	9											
29										3.8	4.0	4.0	4.0	3.8											
30																									
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
G.R.																									

The Radio Research Laboratories, Japan

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

foF1

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foE

Nov. 1963

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	2.35	2.70	2.80	2.80	2.80	2.60	B	B	S	S						
2							S	S	S	2.50	2.55	2.90	2.85	12.60A	2.50	A	A	S	S					
3							S	S	2.20	2.45	2.70	12.75R	2.90	R	B	S	S	S	S					
4							S	S	B	A	A	2.70	2.80	2.70	12.50A	2.10	S	S	S					
5							S	S	12.35R	2.65	2.80	2.95	2.95	2.75	2.50	A	S	S						
6							S	S	S	2.65	12.70B	2.85	2.90	2.85	B	A	S	S						
7							S	S	S	2.65	A	A	A	A	A	A	S	S						
8							S	S	2.20	A	C	C	C	A	A	B	A	S						
9					E		S	S	B	B	B	2.80	B	B	B	B	S	S						
10							C	C	C	C	C	C	C	B	B	B	S	S						
11							S	S	B	B	B	B	B	B	B	S	S	S						
12							S	S	B	2.50	12.60A	12.65B	2.70	12.50B	12.50B	S	S	S						
13							S	S	S	B	12.80B	2.85	2.85	2.50	2.35	A	A	A						
14							S	S	2.35	12.40B	2.75	A	A	A	A	A	A	A						
15							S	S	2.15	2.55	12.75R	2.50	2.50	B	B	S	S	S						
16							S	S	S	A	B	B	B	12.65A	12.45S	S	S	S						
17							S	A	S	2.60	12.75A	2.85	A	A	A	B	S	S						
18							S	S	S	A	B	B	B	A	B	B	S	S						
19							S	S	S	2.40	2.45	12.60A	12.75A	12.70A	B	B	B	S						
20							S	S	S	12.45A	2.80	2.90	2.85	B	B	S	S	S						
21							S	S	2.15	12.45A	2.80	2.85	2.80	2.75	12.40B	S	S	S						
22							S	S	2.20	2.55	2.75	2.85	2.80	12.65A	B	B	S	S						
23							S	S	2.00	12.35A	2.80	2.90	2.85	2.55	2.30	S	S	S						
24					E		S	S	2.20	2.45	2.70	2.70	12.85A	2.75	A	B	S	S						
25							S	S	2.05	2.35	12.45A	12.60A	2.55	12.45B	12.55A	A	S	S						
26							S	S	A	A	2.70	2.80	2.70	2.55	B	S	S	S						
27							S	S	S	2.30	2.55	2.75	2.70	2.65	B	S	S	S						
28							S	S	S	2.60	2.60	2.70	2.75	12.50S	12.30S	S	S	S						
29					C		C	C	C	12.65B	2.80	2.70	2.70	2.55	B	B	S	S						
30					E		S	S	B	B	12.75B	2.80	2.75	2.50	B	B	B	S						
31																								
No.					3				11	19	22	23	21	19	10	1								
Median					E				2.20	2.50	2.70	2.80	2.80	2.60	2.40	2.10								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

W 3

foE

Lat. 45°23.6'N
Long. 141°41.1'E

Wakkanai

IONOSPHERIC DATA

135°E Mean Time (G.M.T. +9h)

foEs

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	2.3	E	1.4	E	J 2.5	S	S	G	G	G	G	G	G	B	B	J 3.3	3.3	E	E	E	E	E	4.0
2	J 2.3	E	E	E	E	E	S	S	S	G	G	G	G	4.3	G	3.8	J 3.3	J 3.3	J 6.5	E	J 5.3	E	E	E
3	E	E	E	E	E	E	S	2.4	G	J 3.1	G	G	G	G	B	S	4.0	3.1	E	3.7	3.7	E	E	3.5
4	E	E	1.6	1.5	E	E	S	S	B	J 3.3	J 4.3	G	3.8	G	2.9	J 5.0	J 4.0	J 5.0	J 3.1	3.0	E	J 3.0	3.0	E
5	E	J 3.0	2.2	E	E	E	S	S	G	G	G	G	3.7	3.5	3.1	4.6M	3.6	S	J 4.3	E	E	J 4.0	J 2.5	E
6	E	E	E	E	E	E	S	S	S	2.8	J 6.3	G	G	G	B	3.8	3.2	2.8	4.4M	3.4	J 7.3	J 5.3	3.9	E
7	E	2.9	3.2	4.8M	3.0	J 2.8	S	S	S	2.9	J 6.0	8.1	5.7	6.1	5.0	5.1	J 3.3	E	E	J 4.3	J 5.3	J 5.0	J 3.4	4.1
8	J 3.4	E	E	E	1.5	3.6	3.2	S	G	2.8	C	C	C	4.4	5.3	2.7	2.9	J 9.0	J 12.8	J 7.4	3.7	E	J 3.1	3.3
9	J 3.9	E	E	1.5	J 2.3	E	C	C	B	3.0	3.4	3.8	3.0	B	B	B	S	S	S	5.0	E	E	E	3.7
10	J 3.9	E	E	E	E	E	C	C	C	C	C	C	C	B	B	B	2.9	3.4	2.9	E	E	E	E	E
11	J 4.0	E	J 2.1	J 2.0	J 2.3	E	S	S	B	3.0	3.9	3.5	3.7	B	B	S	2.5	J 6.3	J 3.1	E	3.9	E	J 3.1	6.1
12	J 3.0	J 2.4	E	J 3.0	J 8.0	3.6	S	S	B	G	3.0	B	G	B	B	2.9	S	S	S	E	S	E	E	E
13	E	E	E	E	J 2.8	2.4	S	S	J 5.3	2.8	2.9	G	G	G	2.8	J 4.3	3.0	4.0	E	E	E	E	E	2.8
14	J 4.3	E	1.7	1.8	J 2.4	J 2.3	S	S	G	2.9	G	3.0	3.2	3.4	3.0	3.4	2.9	2.9	3.3	3.8	2.5	E	S	S
15	E	E	E	1.5	J 2.3	E	S	S	J 3.6	J 4.6	G	3.0	2.9	B	B	2.8	S	J 6.0	3.4	J 3.3	3.2	E	E	4.3
16	E	E	E	J 2.0	J 2.4	3.7	J 3.0	J 4.0	J 4.3	3.4	B	3.0	B	J 5.0	S	3.0	2.9	3.0	C	C	E	E	J 3.3	3.0
17	E	2.5	2.0	E	E	E	S	J 4.1	S	3.0	J 4.0	G	3.9	J 5.4	3.3	B	S	E	E	J 4.3	4.9	4.0	J 3.3	E
18	J 3.4	3.1	E	E	2.0	4.2	J 6.3	S	3.4	3.4	B	B	B	3.0	B	B	J 3.0	J 6.5	J 5.3	J 3.3	J 4.0	J 8.3	J 4.0	3.3
19	J 3.3	E	J 2.8	J 2.4	3.1	E	S	S	2.6	G	3.0	3.8	J 4.3	3.0	B	B	B	B	E	E	E	E	E	E
20	J 3.0	E	E	1.5	E	E	S	S	S	2.9	2.9	G	G	3.0	B	B	S	S	E	E	E	E	E	E
21	E	E	E	E	E	E	S	S	G	J 4.1	G	G	G	G	B	B	S	S	E	E	E	E	E	E
22	E	J 2.5	2.4	2.2	E	E	S	S	G	G	3.0	G	G	2.8	B	B	S	S	S	E	E	E	E	E
23	E	E	E	E	E	E	S	S	3.3	4.0	G	3.1	G	G	G	S	S	S	E	E	E	E	E	E
24	E	E	E	E	E	E	S	S	G	G	G	3.6	4.2M	G	3.0	B	2.3	J 2.5	J 3.1	3.0	E	E	E	E
25	E	E	E	E	E	E	S	2.4	J 2.7	J 4.1	5.0	3.3	3.0	3.0	3.2	3.0	J 3.3	S	E	E	E	E	E	E
26	E	E	E	E	E	E	S	S	3.9	3.4	G	G	G	G	G	2.6	S	J 5.3	J 8.3	4.3	2.4	E	E	E
27	E	E	2.4	E	J 2.5	J 2.4	E	S	S	G	3.0	3.7	4.0	3.0	B	3.3	S	E	E	E	E	E	E	E
28	E	J 4.0	1.8	J 2.4	J 2.8	2.9	2.8	2.8	2.9	3.2	3.0	G	G	S	S	2.3	S	E	E	E	E	E	E	C
29	C	C	C	C	C	C	C	C	C	C	B	B	G	G	B	B	S	S	2.1	E	E	E	E	E
30	E	E	E	E	E	E	S	S	B	B	B	G	G	G	B	B	B	3.0	E	2.5	E	E	E	E
31																								
No.	29	29	29	29	29	28	5	6	16	27	24	26	26	23	11	16	16	26	28	28	30	30	28	28
Median	E	E	E	E	E	E	3.0	3.4	G	2.9	3.0	G	G	2.8	3.0	3.2	3.1	3.0	E	E	E	E	E	E
U.Q.	3.0	2.4	1.9	1.9	2.4	2.4	3.7	4.1	3.4	3.4	3.6	3.3	3.7	3.5	3.3	4.0	3.3	4.0	3.4	3.6	3.7	E	E	3.0
L.Q.	E	E	E	E	E	E	E	2.4	G	G	G	G	G	G	2.8	2.8	2.9	E	E	E	E	E	E	E
Q.R.								1.7							0.5	1.2	0.4							

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

The Radio Research Laboratories, Japan

foEs

IONOSPHERIC DATA

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

135° E Mean Time (G.M.T. +9h)

f_oE_s

Nov. 1963

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	S	S	S						B	B	G	G						2.5	
2	E					E	S	S	S				3.0			2.7	2.4	2.5	A		2.5	E			
3							S	G		G					B	S	3.0	2.4		3.0	E			E	
4			E	E			S	S	B	2.7	3.1		3.6		2.8	3.6	G	G	E	E		E	E	E	
5			E	E			S	S					G	2.5	G	3.1	2.6	S	E		2.6	E	E		
6							S	S	S	G	G				B	2.9	2.2	G	3.0	2.5	E	E	E	E	
7			E	2.2	E	E	S	S	S	G	3.0	6.8	4.0	4.2	4.0	4.0	G		2.6	A	E	E	E	E	
8	E				E	A	2.6	S		2.8	C	C	C	2.8	3.4	G	2.7	A	A	A	2.6		E	2.5	
9					E		S	S	B	G	G	G	G	B	B	G	S	S	S	3.0				E	
10	E						C	C	C	C	C	C	C	B	B	B	2.6	2.5	2.5						
11	2.6		E	E	E		S	S	B	G	3.5	G	G	B	B	S	2.4	G	E		2.6	E	A	A	
12	E		E	E	E		S	S	B	B	3.0	B		B	B	G	S	S	S	S					
13					E		S	S	G	G					G	2.5	2.5	A					E	E	
14	E		E	E	E		S	S	G	G		2.9	3.1	3.0	2.9	2.5	2.2	E	A	E	E	E	S	S	
15				E	E		S	S	3.5	4.3		G	G	B	B	G	S	A	E	E	E	E	E	E	
16				E	E		2.4	2.5	3.8	2.4	3.0	B	B	B	2.7	S	G	E	C	C					
17			E	E			S	2.4	S	2.5	3.0		4.0	3.0	2.7	B	S		E	A	2.5	E	E	E	
18	E	E				E	A	2.5	S	3.0	B	B	B	2.9	B	B	G	A	2.8	2.5	E	E	2.5	E	
19	E	E	E	E	E		S	S	G	G	G	3.5	3.0	2.8	B	B	B	E							
20	E						S	S	S	2.5	2.5		B	B	B	S	S								
21							S	S		2.5					B	S	S								
22			E	E	E		S	S		2.5				2.8	B	B	S	S	S						
23						E	S	S	3.3	2.9		2.2			S	S	S								
24							S	S			G		2.9		2.5	B	G	E	E	E					
25						S	S	G	G	G	3.1	3.0	G	G	2.6	2.4	2.1	S							
26							S	S	2.7	2.6					B	G	S	A	A	2.5	E				
27			E		E		S	S	S		G	G	3.6	G	B	3.0	S								
28			E	E	E		2.0	G	G	G				S	S	G	S					C	C	C	
29	C	C	C	C	C		C	C	C	C	B			B	B	S	S	G							
30							S	S	B	B	B			B	B	B	B	E							
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

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

The Radio Research Laboratories, Japan

W 5

f_oE_s

Lat. 45°24.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

Nov. 1963

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	2.90	2.85	3.00	3.10	3.05	3.35 ^S	3.35	3.50	3.60	3.60	3.35 ^H	3.45	3.40	3.60	3.50	3.50	3.45	3.40	3.35	3.50	3.25	2.95	U3.15 ^S	2.80
2	2.70	2.90	2.95	I3.05 ^F	3.00 ^F	3.35 ^F	3.45	3.55	3.55	3.35	3.40	3.45	3.35	I3.40 ^H	3.40	3.20	3.45	3.35	I3.20 ^A	3.10	3.15	3.05	3.10	3.05
3	2.90	3.00	3.00	3.20	2.95	3.45 ^S	3.20	3.50 ^S	3.60	3.50	3.25 ^H	3.30	3.40	3.50 ^H	3.25	3.45	3.45	3.20	3.50	3.35	3.05	3.20	3.05	3.05
4	3.15	I3.00 ^F	3.25	I3.20 ^F	3.15 ^F	3.25 ^S	3.30	3.50	3.40 ^S	3.55 ^H	3.45	3.40	3.70	3.50 ^H	3.45	3.50	3.40	3.40	3.30	3.50	3.10 ^F	I2.90 ^F	U3.20 ^F	F
5	F	F	F	F	F	SF	I3.45 ^S	3.50	3.40	3.55	3.50	3.45	3.55	3.60	3.55	3.35 ^H	3.60	3.40	3.30	3.25	I3.15 ^H	I3.15 ^S	F	F
6	F	F	2.85 ^F	2.85 ^F	I3.05 ^S	I3.30 ^S	3.50 ^S	3.75	3.75	3.80	3.35	3.60	3.45	3.80	3.40	3.55	3.65	3.35	3.15	3.25	3.05	2.95	FS	FS
7	FS	F	2.85	3.05 ^F	3.20 ^S	3.60	3.15	3.50	3.30 ^S	3.50 ^H	3.20	3.40	3.35	3.30	3.50	3.65	3.50	3.40	3.35	3.00	I2.90 ^A	2.80	2.85	I2.80 ^F
8	2.75	3.05	3.05	2.90	3.10	I2.85 ^A	3.05	3.15	3.15	3.60	C	C	C	3.40	3.45	3.45	3.55	A	A	A	3.25	2.90	2.75	2.95
9	2.85	2.90	3.10	3.20	3.10	3.25	3.10	3.60	3.45	3.70	3.35	3.45	3.45	3.30	3.35	3.75	3.60	3.15	2.85	U2.95 ^S	2.80	3.05	2.95	2.90
10	2.70	2.85	2.90	3.00	3.30 ^S	F	C	C	C	C	C	C	C	3.25 ^H	3.40	3.55	3.65	3.10	3.50	3.15	3.35	2.80 ^F	3.05 ^F	2.95 ^F
11	2.95 ^F	2.95	3.05	3.05	I2.95 ^S	2.80	3.35	3.55	3.50	3.50	3.15 ^H	3.40 ^H	3.65	3.40 ^H	3.45	3.45	3.70	3.25	3.30	3.15	3.00 ^A	2.90	2.95	I2.90 ^A
12	2.95	2.85	2.95	3.05	3.15	3.30	3.20	3.55	3.65	3.45 ^H	3.40	3.40	3.50	3.30	3.75 ^H	3.35	3.50	3.30	3.10	3.30	3.20	U3.35 ^S	I2.95 ^S	FS
13	FS	SF	F	FS	FS	FS	I3.10 ^S	3.55	3.45	3.35 ^H	3.40 ^H	3.50	3.45	3.65	3.45 ^H	3.45 ^H	3.55	I3.40 ^A	3.25	3.05	2.75	2.80	3.00	U3.00 ^S
14	I2.95 ^S	U3.15 ^F	F	FS	FS	FS	3.15	3.10	3.55	3.45	3.20	3.40	3.50	3.50	3.50	3.45	3.60	3.40	I3.35 ^A	3.35	3.10	2.90	I2.90 ^S	I2.95 ^S
15	2.95	3.05	3.05	3.25	3.35	3.25 ^S	3.35 ^F	3.50	3.65	3.50	3.20	3.30 ^H	3.40	3.45	3.50	3.50	3.85	I3.35 ^A	2.95	3.05	3.25	3.10	2.80	I3.00 ^S
16	I3.05 ^S	3.05 ^F	I3.00 ^F	2.95 ^F	3.05	3.40	U3.05 ^S	3.65	3.55	3.50	3.70	3.45	3.45 ^H	3.45	3.35	3.55	3.55	3.35	I3.25 ^H	3.35 ^H	3.15	I3.10 ^F	3.25	2.90
17	3.05	I3.05 ^F	3.05	3.05	2.90	3.35	3.30	3.45	3.70 ^H	3.60	3.40	3.50 ^H	3.50	3.70	3.55	3.40	3.45	3.40	3.35	3.45	A	F	F	2.75 ^F
18	2.90	2.75	I2.90 ^F	2.95	F	SF	A	I3.45 ^S	3.40	3.30	3.05	3.25	3.40	3.45	3.55	3.65	3.60	I3.30 ^A	3.05	3.05	2.95	3.00	U3.15 ^S	3.00 ^F
19	2.80 ^F	2.95 ^F	F	F	F	F	F	3.65	3.55	3.55	3.45	3.45	3.40	3.45	3.55	3.60	3.60	3.10	3.35	3.25	3.05	I2.90 ^S	F	F
20	F	3.05	F	F	F	F	FS	3.65	3.65	3.50 ^H	3.50	3.55	3.40	3.55	3.55	3.70	3.60	3.30	3.00	2.95	F	F	F	I3.15 ^S
21	3.15	3.05	3.05	3.05 ^F	3.05	U3.25 ^S	I3.10 ^S	3.40	U3.40 ^S	3.10	3.45	3.60	3.50	3.50	3.60	3.50	3.45	3.30	3.05	3.20	3.10	3.00	SF	SF
22	SF	SF	F	F	3.05	3.05	U3.25 ^S	3.40	3.70	U3.40 ^S	3.55	3.45	3.55	3.65	3.55	3.50 ^H	3.30	2.85 ^H	3.05 ^S	3.10	3.05	3.10 ^S	3.05 ^S	U3.20 ^S
23	I3.05 ^S	3.10 ^F	3.05 ^F	2.85 ^F	2.80 ^F	U2.90 ^F	3.25	3.30	3.50	3.60	3.30	3.55	3.55	3.40 ^H	3.30	3.55	3.15 ^H	3.40	3.20	3.05	3.10	2.90	2.70 ^S	3.05 ^F
24	3.10	2.90	3.10	3.10	3.10	3.35	3.30	3.60	3.50	3.40	3.45	3.40 ^H	3.35	3.60	3.25	3.60	3.45	3.45	3.10	3.20	3.25	3.05	2.90	2.90
25	2.85	2.80	2.95	3.20	3.60	I2.75 ^S	I3.15 ^S	3.45	3.35	3.20 ^H	3.45	3.30 ^H	3.65	3.60	3.50	3.60	3.35	3.55	3.10	3.20	2.80	I2.80 ^S	2.90 ^S	2.90 ^F
26	3.05 ^F	3.05	3.10	3.05	3.15	U3.15 ^S	U3.10 ^S	3.50	I3.55 ^S	3.50	3.40	3.55	3.40 ^H	3.55 ^H	3.65	3.50	U3.45 ^S	I3.25 ^A	I3.05 ^A	3.15	3.05	2.95	3.15	3.15
27	2.95	2.85	2.90	3.20	3.05	3.30	3.05	3.50	3.50	3.60	3.55	3.30	3.65	3.55	3.50	3.70	3.60 ^S	2.95	3.15	3.20	3.25	3.05	2.95	3.10
28	3.05	3.05	3.10	3.05	C	C	C	3.45	3.80	3.40	3.40	3.55	3.60	3.50	3.60	3.50	3.35	3.30 ^S	3.70 ^S	2.95 ^S	3.15	3.10	C	C
29	C	C	C	C	C	C	C	C	C	C	3.65	3.45	3.55	3.60	3.55 ^H	3.65	3.45	3.35	3.45	3.10 ^S	3.05	2.95	3.05	2.80
30	3.05	2.95 ^F	2.85 ^F	I3.00 ^S	3.35 ^F	3.45	3.20 ^S	U3.50 ^S	3.40	3.15 ^H	3.60	3.35	3.60 ^H	3.55 ^H	3.50	3.50	3.45	3.40	3.20	3.15	3.25	I2.95 ^S	I2.80 ^S	2.85
31																								
No.	23	24	23	23	23	23	25	28	28	28	28	28	30	30	30	30	30	30	29	29	28	28	23	23
Median	2.95	3.00	3.00	3.05	3.10	3.25	3.20	3.50	3.50	3.40	3.45	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.20	3.15	3.10	2.95	2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

W 7

Sweep 1.0 Mc to 18.2 Mc in .40 sec in automatic operation

M(3000)F2

The Radio Research Laboratories, Japan

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

M(3000)F1

Nov. 1963

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										4.15	4.20	3.85	3.90	4.00											
2										U _{3.90} L	U _{3.85} L	4.00													
3										U _{4.00} L	4.05	3.95	U _{3.80} L												
4											4.05	3.95	A												
5												3.75L	U _{3.90} L												
6										4.20	U _{4.00} L	3.95L	4.00	4.00											
7												A	A	A											
8										U _{4.10} L	C	C	C	3.70											
9										U _{4.00} L	U _{3.75} L		3.85L												
10										C	C	C		U _{4.00} L											
11										4.05L		4.00	3.95												
12											L	I _{3.90} L	3.95	4.05											
13												U _{3.75} L	I _{3.95} L	U _{4.00} L											
14											U _{4.00} L	3.90	U _{4.00} L	L											
15										A	U _{4.10} L		U _{4.00} L												
16										U _{3.90} L	3.90L	3.90L													
17											4.00L		I _{4.00} A												
18												3.80L	4.00L	L											
19											4.05L	4.00L	4.10L												
20												3.95L													
21											L	4.10L	4.00L	4.05L											
22												4.00L	3.80L	3.95L											
23											3.95	U _{4.00} L													
24													3.85L												
25											U _{3.90} L		4.05L	3.90L											
26														4.00											
27																									
28											4.10														
29											3.70	U _{4.00} L													
30											C		U _{4.05} L	3.95											
31																									
No.										9	15	17	19	9											
Median										4.05	4.00	3.90	4.00	4.00											
U.Q.																									
L.Q.																									
Q.R.																									

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

M(3000)F1

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

G. M. I.

foF2

Jan. 1962

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.5	5.1	F	F	C	5.2F	F	5.4F	4.9	5.2	5.5	5.1	5.1	5.0	5.0	5.0	L	L	C	C	C	C	C	C
2	C	C	C	C	C	C	5.9	6.0	6.5	B	C	B	6.9	6.5R	6.0	5.6	5.4	B	B	B	B	B	B	F
3	4.8F	F	5.2R	5.6	6.0	6.0	6.0	5.8F	5.7	S	5.8	5.7S	5.4	5.4S	5.4	5.0R	4.8	4.9R	5.0R	4.5	4.4	F	F	F
4	F	F	7.1	7.3	6.7F	7.0F	7.2	6.9	6.7	6.8	6.5	6.6	6.0	5.4	4.7	5.1R	5.2	5.3	5.6	5.9S	5.4S	5.4S	4.6	5.2R
5	5.7	6.2	6.9S	7.4	7.3	7.2S	7.2	7.5	7.6	6.8	6.0	5.7	5.8	5.1	5.0R	4.7R	S	5.4	5.3S	5.2S	5.3S	A	5.7	5.4S
6	5.8	6.5S	7.5	7.9	7.6	F	7.5F	7.6	7.6	7.2	6.6	6.0	5.5	5.7	5.2R	5.1	5.1	5.1	5.3H	5.3	5.4F	5.3R	5.49R	4.4F
7	4.8	4.9R	5.6	5.4	5.8	6.2	6.8	7.4	6.3	6.0	5.8	5.4	5.2	5.4	C	5.2	5.3	5.8	5.8F	F	A	A	A	S
8	4.8	5.0	F	5.2	C	6.2	6.0F	6.1	5.6	S	5.3	5.0	5.2	4.7	4.7	5.1	5.2	5.0R	4.7	3.6	3.6	3.4S	4.0S	F
9	F	F	5.6	F	F	6.3F	6.8F	6.5F	6.3F	6.2	6.2	5.4	5.6	5.3S	C	5.9	5.4	F	4.0	B	B	A	A	S
10	R	R	A	B	B	B	F	5.5	F	5.4	4.4	5.4	R	A	R	R	A	A	A	3.2	A	B	B	B
11	3.8	B	B	B	B	R	B	B	5.0	B	4.7R	B	5.2	S	S	5.2	5.0	S	4.0	3.2	3.8R	3.9	3.4	3.7F
12	4.0	4.5F	5.0R	5.2F	5.2	5.1F	5.4	5.1	4.9R	4.9R	5.0	S	5.0	4.8R	4.9	4.7	4.9R	4.6R	4.6R	4.4	4.0	3.4	F	3.8
13	C	4.7F	4.8	4.5F	5.7F	F	6.6	6.4	5.5	5.7	5.8	6.0	5.3	4.7R	5.4	5.8	5.4R	5.1	A	5.4	4.4	3.8F	3.8F	4.1F
14	4.9F	S	6.0	7.2	4.7F	F	6.5	6.4	5.7	5.8	5.7	C	5.4	5.2	C	5.5	B	B	4.6S	A	S	A	A	A
15	R	B	R	4.8	5.0	S	5.0R	5.4	5.2	B	B	R	R	R	4.8R	4.5	B	4.7R	4.8	4.0	3.2	3.2	B	B
16	4.0	4.4F	4.6	4.4R	4.5F	F	F	B	5.1	5.2	R	R	B	B	B	B	B	4.6	B	3.3	3.3R	4.0	R	B
17	R	4.3	F	F	F	5.1	5.2	5.2	5.4	5.7	5.2R	S	4.8R	R	4.8	5.2R	4.9R	5.0	5.0	4.5	C	C	C	C
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No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

No Observation

Sweep 1.0 Mc to 20.0 Mc in 2.0 sec in automatic operation

The Radio Research Laboratories, Japan

foF2

IONOSPHERIC DATA

foF1

G.M.T.

Jan. 1962

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	R	32	36	39	B	4.0	4.2 ^H	4.2	4.3 ^H	4.3	4.3 ^{HR}	4.3 ^R	HR	R	4.0	L	3.4	C	L	C	C	C	C	C
2	C	C	C	C	C	C	4.2	4.2 ^S	R	B	C	B	B	B	B	B	B	3.3	B	B	B	B	B	27
3		32	33	36	38	4.0 ^R	4.0	S	S	R	S	R	4.1 ^S	S	R	B	L	L	L	L	L	L	L	L
4	3.0	33	35	38	4.0 ^H	4.0 ^H	4.2 ^H	4.3	4.2 ^R	4.2 ^R	R	4.2 ^{HR}	4.2 ^H	4.1	3.8	L	L	L	L	S	L	L	L	L
5	3.0	33	35	38	3.9	B	B	B	S	A	A	A	4.2	4.2	4.1	L	L	L	A	L	C	L	L	L
6	2.9	3.1	34	37	B	B	A	A	4.2	HR	C	4.3	4.2	A	L	3.8 ^L	L	L	L	L	L	A	A	A
7	2.8	3.3	34	36	S	4.0 ^R	R	4.2 ^H	4.2	4.3	4.2	4.2	4.1 ^H	C	L	4.0 ^L	L	L	C	C	C	C	C	C
8	2.8	3.4	34	R	3.8	3.8	4.0 ^H	4.0 ^R	4.0	4.1	S	4.2 ^{HR}	4.1	4.1	L	3.7	3.7 ^L	L	L	L	A	A	A	A
9	L	3.2	3.3	S	3.7	R	3.9	C	4.1 ^{HR}	4.2	4.2 ^R	4.2	4.2	A	B	3.8	3.8 ^L	3.3	L	A	A	A	A	A
10	S	A	B	B	4.0 ^F	B	B	3.8 ^R	3.8	4.0	4.0 ^R	3.9	A	R	B	S	S	A	A	S	B	A	A	A
11	B	R	A	B	B	3.9	R	B	4.2 ^R	B	B	4.0	4.0	3.7 ^R	B	S	3.5	3.4	L	L	L	L	L	L
12	L	3.2	3.4	A	3.7	3.9	R	4.0	4.1 ^R	4.1 ^R	4.2 ^R	4.2	4.0	4.1	L	L	3.7	L	L	L	L	L	L	L
13	2.7	R	3.4	3.6	3.7	3.8	4.0	B	R	R	4.2 ^R	4.2 ^{HR}	4.2	4.2	4.0	3.8	3.8	B	B	A	A	A	A	B
14	2.8 ^R	3.0	3.4	3.6	3.7	4.0	4.0	4.0	A	A	4.4	4.2	4.2	4.1	4.0	3.9	3.8	B	B	A	A	A	A	B
15	A	B	A	A	3.9	4.0	4.0 ^{HR}	B	4.0	B	B	4.2 ^R	R	4.0 ^R	3.9	S	3.8	3.8	B	B	B	B	B	B
16	B	3.3	S	A	3.7	3.8	4.0	4.0	B	4.3	4.3	4.2	3.9 ^R	B	B	B	3.7	B	B	B	B	B	B	C
17	B	3.4	R	R	3.7	B	4.0	S	4.2 ^R	R	R	4.3	4.2	4.2	4.0	4.0	3.7	L	2.9	C	C	C	C	C
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No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

No Observation

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

The Radio Research Laboratories, Japan

foF1

IONOSPHERIC DATA

foF1

G. M. T.

Jan. 1962

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330	
1	3.2	3.2	3.7	4.0	C	4.0	4.2	4.3	4.3	4.2	R	4.3	4.2	4.2 ^H	4.0 ^L	L	L	L	C	C	C	C	C	C	
2	C	C	C	C	C	C	R	R	B	B	C	B	B	B	B	B	S	S	B	B	B	B	B	B	
3	3.2	3.3	3.5	3.8	3.9	4.0 ^R	R	S	R	S	4.2 ^S	S	S	R	3.9	3.3						L	2.9		
4	3.2 ^H	3.4	3.6	3.8	4.0	4.1	4.2	4.2	R	4.3 ^H	4.3	4.2 ^R	4.2	4.0	L	L	L	L	L	L				L	
5	3.2 ^L	3.4	A	4.0	3.9	4.1 ^R	B	S	S	A	A	A	R	R	L	L	S	L	L	A	A			2.7	
6	3.0	3.3	3.6	3.7	B	A	4.1 ^R	4.2	R	HR	4.2	4.2 ^R	4.2	4.0	4.0 ^L	L									
7	2.8	3.4	3.4	3.7	3.8 ^R	R	4.0	A	4.3 ^H	4.2	4.3	S	4.0 ^R	4.1	C	3.9 ^L	L	2.9		A	A	A	A		
8	2.8	3.4	R	3.8	C	3.9	4.0	R	4.1	S	4.2	4.2	4.1	4.0	3.8	3.7	3.5	L	L					L	
9	3.2 ^L	3.2	3.5	3.6	3.8	4.0	4.0	4.1 ^R	4.1 ^R	4.3	4.2	4.2	4.1	B	C	3.9	L	L	B	B	A	A	A	S	
10	A	A	A	B	B	B	3.8	3.9	4.0	4.0	4.0	3.9	R	A	A	A	A	A	A	A	A	B	B	B	
11	3.0	B	B	B	B	R	B	B	R	B	3.9 ^R	B	4.0 ^R	S	S	L	L	S						2.8	
12	L	3.4	3.5 ^{HR}	3.6	3.8	4.0	3.9	4.1	R	4.2 ^{HR}	4.2	4.0 ^S	4.0	4.0	3.8	L	L	L							
13	C	3.2	3.5	R	3.7	3.9	4.0	4.0 ^R	B	4.2 ^R	4.2 ^H	4.2 ^R	4.2	L	S	L			A						
14	2.8	A	3.5	3.7	3.8	4.0	R	4.2	A	A	4.3	C	4.2	4.0	C	3.8	B	B	R	A	S	A	A	A	
15	A	B	A	A	3.9	S	4.0 ^R	4.1 ^R	R	B	B	R	4.2 ^R	3.9	3.9	3.8	B	B							
16	3.1	3.4	A	3.5	3.6	3.8	4.0	B	4.1 ^R	4.3	4.3	4.1 ^R	B	B	B	B	B	L	B						
17	A		3.6 ^R	3.6	3.8	3.9 ^R	4.0	4.0 ^R	R	R	4.4	S	4.2 ^L	4.2 ^R	4.0	3.9 ^L	L	L	L	C	C	C	C	C	
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L. Q.																									
Q. R.																									

No Observation

foF1

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 1962

foE

G. M. T.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	2.15	2.30	2.45	B	R	R	R	R	R	R	R	R	2.90 ^R	R	2.50	2.15	C	A	C	C	C	C	C	
2	C	C	C	C	C	C	R	R	3.10 ^R	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	
3	A	A	1.80	A	R	B	B	B	B	B	A	A	A	S	B	B	B	2.00	A	A	A	E	A	A	
4	1.50	1.85	2.10	2.40	2.50	2.80	2.70 ^R	R	B	2.75	A	3.00 ^R	3.00 ^R	2.90 ^R	B	R	2.20	1.85	A	A	A	A	A	A	
5	1.60	1.80	2.15	2.35	2.70	B	B	B	A	3.25	R	3.10	3.10 ^R	B	B	R	2.40	2.00	1.80	S	A	A	A	A	
6	A	1.75	2.10	2.10	B	B	A	2.85	2.80	3.00	C	A	2.85	A	2.60	2.60	2.20	2.10	2.00	1.70	C	A	A	1.50	
7	A	1.80	2.00	2.25	S	R	R	2.90	3.00	3.05	2.80	A	2.80	A	C	2.40	2.25	1.80	A	A	A	B	B	B	
8	1.70 ^R	A	2.30	A	2.60 ^R	2.60	2.75	R	R	3.00	S	2.90	A	2.90 ^R	2.80	2.50	2.25	2.10	1.75	C	C	C	B	B	2.00
9	R	A	R	S	R	B	2.90 ^R	C	R	R	R	R	R	A	B	2.50	A	B	1.75	A	A	A	A	B	A
10	A	A	B	B	R	B	B	B	B	B	3.00 ^R	3.00 ^R	2.60	A	B	2.60	A	A	A	A	B	A	A	2.35	
11	B	2.65	A	B	B	R	R	B	B	B	B	R	B	B	B	S	B	B	B	A	B	B	2.00	2.05	
12	A	2.50	2.60	2.80	2.60	R	R	R	3.00 ^R	3.00	2.90	2.85	R	2.60 ^R	2.50 ^R	2.25	2.10	R	1.85	1.70	1.60	1.40	1.80	B	
13	A	A	R	2.80 ^R	B	R	R	B	B	B	3.00	3.10 ^R	B	R	2.20	A	2.30	B	B	B	A	B	A	A	
14	A	A	1.70	A	A	2.80	R	3.00	3.00	3.00	3.00	2.70	2.75	A	A	2.60	2.30	2.30	B	B	B	B	B	B	
15	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	S	B	B	B	B	1.80	1.70	B	B	
16	B	1.80	S	A	3.00	2.90	2.90	B	B	B	R	2.80	R	R	B	B	B	B	B	B	B	B	B	B	
17	B	B	2.40	2.80	2.90 ^R	B	B	S	R	R	R	B	2.90	B	B	R	2.20	2.20	2.00	1.70	C	C	C	C	
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No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

No Observation

Sweep 1.2 Mc to 2.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

foE

IONOSPHERIC DATA

foE

G. M. T.

Jan. 1962

Day	0030	0130	0230	0330	0430	0530	0630	0750	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	A	2.30	2.40	2.70	C	R	R	R	R	R	R	3.00 ^R	R	2.80 ^R	2.45	2.40	2.10	1.70	C	C	C	C	C	C
2	C	C	C	C	C	C	R	R	B	B	C	B	B	B	B	B	B	B	B	B	B	B	B	A
3	A	1.80	2.10	2.60	2.70 ^R	B	B	S	B	A	A	B	A	B	B	S	A	1.70	A	1.60	1.50	A	A	1.40
4	1.55	1.80	2.05	2.40	2.60 ^R	2.80 ^R	2.90	R	R	A	A	R	3.00 ^R	R	B	2.50	2.00	1.75	A	A	A	A	A	A
5	1.65	2.00	2.20	2.55	B	B	B	A	A	3.20	A	3.10	A	B	R	2.40	S	1.80	1.30	A	A	A	A	A
6	1.60	1.80	2.00	2.20 ^R	B	A	2.85	2.85 ^R	2.90	3.10	2.80 ^R	R	2.85	2.60 ^R	2.60	2.50	2.10	2.00	1.90	1.60	A	A	A	1.70
7	1.60	1.80	2.10	2.40	2.60	2.65 ^R	2.85	2.95	3.00 ^R	2.85	A	A	2.80 ^R	2.80	C	2.35	2.25	1.70	B	A	B	B	B	B
8	1.70	A	2.20	2.60	C	2.75	R	3.00	3.00	S	3.00	2.95 ^R	A	A	2.70	2.35	2.25	1.80	B	1.70	1.60	B	B	B
9	A	2.15	B	R	A	R	2.80	3.00	B	3.20 ^R	3.00 ^R	R	2.80	B	C	2.35	2.15 ^H	B	B	B	B	A	A	S
10	A	A	A	B	B	B	B	B	B	B	R	2.80	A	R	R	A	A	A	A	A	A	A	B	B
11	A	B	B	B	B	A	B	B	B	B	B	B	B	S	S	B	B	S	B	B	2.00 ^R	1.80	A	A
12	A	R	A	A	2.60	2.60	R	3.00	B	3.00	2.90	R	2.60	2.60	2.50	R	1.90	A	R	1.60	1.50	1.60	B	A
13	C	2.50	2.80	B	3.00	3.00 ^R	R	B	B	3.00	2.95	R	B	2.40	S	B	B	B	1.80	A	A	B	A	A
14	A	B	A	A	2.70	2.80	B	3.00	3.00	3.10	3.00	C	R	2.40 ^R	C	2.70 ^H	B	B	B	B	S	B	B	B
15	B	B	A	A	2.60	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	1.70	3.00	B	B
16	A	2.10	A	2.85	2.90	2.90	3.10	B	B	B	3.00	2.90	R	B	B	B	B	2.20	B	B	A	B	B	B
17	B	R	2.70	2.90	R	B	B	R	3.15	B	B	S	R	B	B	2.65	2.10	2.10	1.80	1.60	C	C	C	C
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No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

No Observation

foE

Sweep 1.0 Mc to 20.2 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

foEs

G. M. I.

Jan. 1962

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	28	25	G	G	B	G	G	G	G	G	G	G	G	G	G	G	24	C	1.8	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	24	B	B	B	B	B	B	B	3.6
3	63	52	3.0	2.8	G	B	B	B	4.6	B	5.0	3.5	3.2	S	B	B	B	2.5	5.1	5.2	3.2	E	2.0	2.4	
4	60	38	2.7	2.7	G	G	G	G	B	3.2	3.1	G	G	G	B	G	2.7	2.5	3.2	2.4	3.6	2.5	3.1	3.2	
5	22	44	2.9	6.5	4.0	B	B	B	3.3	5.0	6.5	7.7	6.5	B	B	G	3.4	3.2	4.0	S	3.6	6.9	4.1	3.2	
6	26	27	2.8	3.7	B	B	B	5.4	G	3.2	C	4.4	3.3	0.1	G	G	3.2	4.6	G	G	C	1.9	1.7	G	
7	21	26	3.6	3.5	S	G	G	3.5	4.2	3.5	4.6	5.3	G	3.2	C	3.0	2.5	3.5	3.2	3.3	2.5	3.7	4.4	3.7	
8	22	28	3.4	3.0	G	G	G	G	G	3.3	S	3.1	5.1	G	B	2.7	G	G	G	C	C	B	B	G	
9	G	24	G	S	G	B	B	C	G	3.2	G	G	6.1	B	G	G	2.4	B	G	2.8	3.7	5.1	6.1	4.5	
10	4.1	3.8	3.9	5.1	G	B	B	B	G	3.2	G	G	3.9	2.5	9.5	G	4.3	5.4	5.0	1.7	6.1	6.3	4.0	3.4	
11	B	G	5.9	B	B	G	G	B	B	B	B	G	B	B	B	S	B	B	2.3	B	B	2.6	2.7	2.5	
12	2.5	G	G	3.6	G	G	G	G	G	3.4	3.5	3.2	G	G	G	5.3	2.7	G	G	G	G	G	G	2.5	
13	2.5	2.4	G	G	B	G	G	B	3.3	3.7	3.2	G	B	G	2.8	2.8	5.2	4.3	5.4	5.4	6.0	2.8	1.7	3.2	
14	2.0	3.4	4.5	6.2	6.2	3.3	G	4.1	6.1	7.5	5.8	3.5	3.2	3.4	5.4	G	G	B	B	4.6	5.0	7.4	5.3	5.9	
15	3.9	B	4.0	4.5	4.0	B	B	B	B	B	B	B	B	B	B	S	B	B	4.6	G	G	B	B	B	
16	B	24	S	3.8	G	G	G	B	B	B	G	3.8	G	B	B	B	B	B	B	B	B	B	B	B	C
17	B	B	G	G	G	B	B	S	G	B	G	B	3.1	B	B	6.7	2.8	G	G	G	C	C	C	C	
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No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

No Observation

foEs

Sweep 1.0 Mc to 22.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

G.M.T.

foEs

Jan. 1962

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330	
1	28	G	G	G	C	G	G	G	G	G	G	G	G	G	28	G	22	20	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	G	B	B	C	B	B	B	B	B	38	B	B	B	B	B	B	B	B
3	53	54	27	G	G	B	B	S	B	46	34	B	28	B	B	S	31	60	24	G	24	24	24	24	52
4	27	28	27	27	G	G	G	G	G	32	34	G	G	G	B	G	34	36	27	34	36	36	21	29	20
5	28	37	80	52	B	B	B	36	35	63	40	62	36	B	G	33	S	29	26	35	36	69	30	27	
6	30	28	27	26	B	61	42	33	32	G	38	G	31	G	G	29	92	G	G	G	20	27	19	G	
7	19	27	35	37	28	G	31	46	46	46	46	38	39	G	C	26	27	28	B	30	28	40	36	38	
8	41	26	26	G	C	G	G	G	33	S	35	36	39	36	G	G	G	G	28	G	G	B	B	B	G
9	22	25	B	B	27	34	38	32	34	G	G	G	G	B	C	G	G	B	B	B	59	43	35	S	
10	36	43	58	B	B	B	66	32	B	37	G	G	28	60	G	42	53	53	57	34	52	67	B	B	
11	64	B	B	B	B	35	B	B	B	B	B	B	B	S	S	B	B	S	B	B	G	24	28	20	
12	22	G	28	36	G	G	G	G	37	35	37	G	30	G	45	27	27	24	G	G	G	G	23	23	
13	C	G	G	B	G	G	G	B	B	32	31	31	B	32	S	B	62	86	84	35	52	15	20	25	
14	28	46	69	85	35	38	42	50	85	52	39	C	G	32	C	G	B	B	26	49	S	46	50	47	
15	40	B	46	34	G	S	B	B	B	B	B	B	B	B	B	B	B	46	31	G	G	37	B	B	
16	26	26	33	G	31	G	61	B	B	B	32	31	B	B	B	B	B	G	B	B	26	28	38	B	
17	35	G	G	G	G	B	B	G	36	B	B	S	G	B	B	G	27	G	G	G	C	C	C	C	
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No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

No Observation

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

The Radio Research Laboratories, Japan

foEs

IONOSPHERIC DATA

G. M. I.

f-min

Jan. 1962

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	1.80	1.80	1.20	1.45	B	2.10	1.80	1.80	2.20	1.85	2.20	2.00	1.90	1.85	1.35	1.40	1.20	C	1.20	C	C	C	C	C
2	C	C	C	C	C	C	1.60	2.80	1.70	4.30	C	B	4.70	5.70	5.10	5.00	4.90	2.10	B	B	B	1.80	1.10	1.10
3	1.20	1.30	1.35	1.30	1.80	3.10	3.25	3.60	3.00	3.60	1.80	1.65	1.60	S	3.30	3.60	2.80	1.60	1.30	1.15	1.15	E	E	1.20
4	1.20	1.10	1.20	1.20	1.20	1.20	1.30	1.40	3.40	1.60	1.80	1.35	1.40	1.35	3.20	2.10	1.20	1.30	1.30	1.20	1.20	1.10	1.10	1.10
5	1.20	1.40	1.20	1.30	1.60	5.10	5.40	5.70	3.00	2.20	2.10	1.80	2.05	3.20	3.30	1.80	1.80	1.50	1.20	S	1.20	1.00	1.00	1.40
6	1.30	1.10	1.30	1.30	5.70	5.70	1.50	1.50	1.40	1.65	C	1.90	2.30	1.75	1.80	1.70	1.40	1.40	1.20	1.20	C	1.30	1.10	1.05
7	1.20	1.20	1.20	1.30	S	1.70	1.20	1.30	1.35	1.20	1.30	1.30	1.30	1.20	C	1.20	1.20	1.20	1.20	1.20	1.30	1.60	1.75	1.65
8	1.35	1.35	1.25	1.20	1.20	1.25	1.40	1.40	1.50	1.60	S	1.45	1.40	1.40	1.40	1.20	1.40	1.20	1.20	C	C	1.45	1.80	1.30
9	1.35	1.50	1.75	5.50	2.30	3.00	1.80	C	1.80	2.20	1.80	1.80	1.70	1.70	5.60	1.45	1.50	2.30	1.40	1.70	1.30	1.20	3.50	1.35
10	2.10	1.90	3.40	3.70	2.05	B	B	3.20	3.30	3.30	1.80	1.40	1.80	1.60	5.00	1.40	1.20	1.25	1.25	1.20	5.00	2.20	1.75	1.50
11	B	1.70	2.10	B	B	2.10	2.00	B	3.50	B	B	1.60	3.50	3.25	4.20	S	3.45	2.20	1.35	2.05	1.80	1.20	1.20	1.60
12	1.60	1.20	1.80	1.60	1.80	2.20	1.80	1.30	1.75	1.70	1.60	1.40	1.20	1.40	1.60	1.40	1.35	1.35	1.40	1.20	1.20	1.15	1.40	1.60
13	1.70	1.60	1.60	1.60	3.00	1.75	1.80	3.40	3.10	3.00	1.30	1.55	3.20	1.20	1.40	1.50	2.30	4.40	2.10	1.70	1.30	1.40	1.20	1.20
14	1.30	1.30	1.20	1.35	1.25	1.20	1.40	1.65	1.50	1.70	1.80	1.70	1.80	1.80	1.40	1.30	1.35	B	B	2.00	3.45	3.00	1.70	5.50
15	2.10	B	3.30	2.15	1.50	3.40	3.10	4.40	3.35	B	B	3.40	3.80	3.35	3.00	S	3.35	4.60	2.10	1.20	1.20	2.10	B	B
16	B	1.40	S	2.10	1.50	1.25	1.25	3.30	B	3.60	1.80	1.80	1.65	B	B	B	B	B	B	1.80	1.70	B	B	C
17	B	3.00	2.10	1.30	1.80	4.30	3.20	S	2.10	3.50	2.40	4.00	1.45	3.20	3.10	2.20	1.75	1.80	1.40	1.20	C	C	C	C
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No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

No Observation

f-min

Sweep / 0 Mc to 200 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 1962

f-min

G.M.I.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330	
1	160	135	120	160	C	230	175	215	180	180	180	180	180	180	130	140	125	120	C	C	C	C	C	C	C
2	C	C	C	C	C	C	160	180	515	B	C	B	540	535	500	485	320	B	B	B	B	B	B	B	B
3	110	120	120	200	160	315	330	520 ^S	350	180	210	325	180	330	330	250	220	130	120	130	120	E	E	110	120
4	120	120	120	120	125	120	130	220	180	160	180	165	150	185	290	120	180	145	120	120	105	105	110	110	120
5	120	120	120	130	330	335	500	300	300	220	315	180	185	320	180	190	S	120	115	120	110	100	115	115	120
6	120	120	135	170	520	210	140	190	160	150	155	180	220	180	180	140	145	120	120	120	120	110	110	120	120
7	120	120	120	130	120	130	130	125	130	145	125	180	125	125	C	120	120	120	180	120	150	160	140	140	205
8	135	140	120	120	C	140	140	180	170	S	150	140	135	125	140	125	120	120	160	120	115	140	180	180	120
9	125	170	175	220	210	230	210	180	300	190	180	170	150	460	C	140	130	220	235	B	530	125	150	S	S
10	190	170	170	B	B	B	310	320	305	310	180	135	175	170	120	130	120	175	120	120	200	500	B	B	B
11	170	B	B	B	B	210	B	B	330	B	360	B	360	S	S	335	300	S	320	170	120	140	135	150	150
12	175	160	135	160	150	175	140	140	330	170	130	180	120	190	150	180	120	145	125	120	110	105	180	130	130
13	C	170	160	300	175	175	220	325	440	175	145	165	315	170	420 ^S	300	290	350	180	135	135	120	120	120	120
14	130	160	130	120	120	130	310	140	180	150	130	C	160	175	C	220 ^S	B	B	165	300	S	220	180	180	180
15	200	B	230	280	180	S	300	340	330	B	B	365	370	320	300	305	B	205	180	120	130	120	B	B	B
16	180	130	160	200	160	120	180	B	340	345	180	225	B	B	B	B	B	180	B	180	120	170	190	B	B
17	220	210	140	190	180	300	320	175	240	350	340	S	180	330	290	180	150	150	140	130	C	C	C	C	C
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No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

No Observation

f-min

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

IONOSPHERIC DATA

Jan. 1962

KFZ

G.M.T.

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	395	405	360	405	B	380	F	F	480	R	R	450	360	380	410	L	L	C	L	C	C	C	C	C
2	C	C	C	C	C	C	375	400	R	385	C	B	355	R	350	315	300	305	B	B	B			370
3	400	400	440	400	375	400	400	S	380	370	S	475	S	S	S	300	L	L						
4	350	330	350	380	350	350	350	350	350	350	325	355	315	300	280	L	L	L		S				
5	315	335	325	325	330	350	370	350	330	325	330	375	310	350	350	L	L	L	275					
6	310	340	320	320	325	350	375	320	325	315	C	300	335	A	310	315	L	L		C				
7	L	335	320	350	S	375	375	350	300	350	330	365	400	350	C	L	300	280			A	A	A	A
8	390	380	380	500	410	430	405	380	350	380	S	385	400	450	450	370	330	L	L	C	C			
9	L	340	330	335	350	370	360	C	350	350	325	360	380	370	335	365	L	L	L		A	A	A	A
10	S	340	R	R	F	B	B	410	R	425	400	590	520	R	F		S	A	A	S	B	A	A	R
11	B	440	A	B	B	R	R	B	R	B	B	415	420	450	390	S	340	305	310					
12	L	360	435	400	345	500	R	350	430	425	400	535	435	400	L	325	300	280						
13	350	390	400	400	410	370	350	340	350	435	350	365	330	345	390	S								
14	390	350	350	320	330	355	350	325	360	415	365	370	330	350	350	350	380	B	B	A	A	A	A	B
15	R	B	R	R	F	R	435	430	425	B	B	R	R	R	R	S	395							
16	B	360	S	R	R	R	490	500	B	R	R	R	S	B	B	B	B	B	B		B	B	B	B
17	B		400	R	465	450	410	S	420	425	R	375	R	R	R	365	320	L	275		C	C	C	C
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Median																								
U.Q.																								
L.Q.																								
Q.R.																								

No Observation

KFZ

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

G. M. T.

K12

Jan. 1962

Day	00:30	01:30	02:30	03:30	04:30	05:30	06:30	07:30	08:30	09:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:30	21:30	22:30	23:30	
1	400	380	350 ^F	410 ^F	C	480	F	390	475	410	425	350	390	350	L	L	L	L	C	C	C	C	C	C	C
2	C	C	C	C	C	C	R	R	400	B	C	B	350	335	350	380	S	B	B	B	B	B			
3	370	405	420	380	360	405	380	S	430	S	S	S	400	380	300	275	L						L	370	
4	360	375	325	360	335	350	345	340	350	350	330	325	330	300	L	L	L							325	
5	320	330	335	335	320	350	375	340	310	325	375	350	R	325	L	L	S	L	L	L		A		305	
6	345	335	330	315	345	380	330	325	325	320	325	325	350	300	315	L	L	270			A	A	A		
7	L	375	325	405	410	R	345	320	R	330	305	350	380	350	C	320	L	L			A	A	A	L	
8	F	375	450	420	C	370	375	380	370	S	350	380	370	400	380	340	295	L	L	B	B	A	A	S	
9	330	325	335	335	370	380	345	340	350	360	305	400	380	400	C	320	L	L	A	A	A	B	A	B	
10	R	R	A	B	B	B	B	395	475	380	600	530	R	A	R	R	A	A	A	A	A	B	B	B	
11	500	B	B	B	B	R	B	B	R	B	490	B	R	S	S	350	305	S						380	
12	L	375	430	380	375	450	385	450	R	450	R	S	350	385	335	L	L	L							
13	C	375	410	400 ^F	390	360	350	350	400	375	380	340	340	L	350	285		L	A						
14	380	365	340	320	320	350	350	340	365	430	380	C	425	335	C	325	B	B	R	A	S	A	A	A	
15	R	B	R	450	380	S	R	430	420	B	B	R	R	R	R	450	B	L	B					B	
16	400	410	R	430	440	470	R	B	R	460	425	R	B	B	B	B	B	L	B			C	R	B	
17	R		500	480 ^F	F	450	425	410	450	375	440	S	L	R	415	320	L	L	L		C	C	C	C	
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Median																									
U.Q.																									
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No Observation

K12

IONOSPHERIC DATA

Jan. 1962

R'F

G. M.F.

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	R	R	225	210	B	230	200 ^H	200	190 ^H	200	200 ^H	250	190 ^H	215	240	230	225	C	225	C	C	C	C	C
2	C	C	C	C	C	C	200	215	200	B	C	B	B	B	B	B	B	250	B	B	B	275	275	300
3	350	300	250	250	225	220	205	230	S	210	S	230	220	S	250	B	230	245	250	250	265	275	285	300 A
4	245	250	225	225	200 ^H	200 ^H	190 ^H	230	220	225	200	200 ^H	215 ^H	210	230	200	230	240	250	250	250	230	235	290
5	265	A	250	A	250	B	B	B	S	A	A	A	230	225	230	225	230	A	245	S	245	A	280	275
6	250	250	240	A	B	B	A	A	200	195 ^H	C	A	225	A	220	225	240	275	235 ^H	250	C	260	260	250 ^H
7	250	225	A	A	S	250	230	210 ^H	250	215	250	230	205	210 ^H	C	230	230	A	250	250	310	A	A	A
8	305	270	A	R	240	230	210 ^H	205	230	220	S	200 ^H	220	240	225	225	230	230	250	C	C	250	225	280
9	250	230	200	S	200	200	190	C	200 ^H	230	200	225	215	A	B	225	225	240	250	270	A	A	A	F
10	S	A	B	B	250	B	B	230	200	210	240	245	A	R	B	250	S	A	A	S	B	A	A	A
11	B	R	A	B	B	300	R	B	235	B	B	245	230	240	B	S	B	235	270	250 ^H	300 ^H	270	315	R
12	325	R	300	A	285	220	215	200	200	230	200	215	200	225	210	225	225	250	240	250	265	250	300	315
13	A	R	240	240	250	225	220	B	200	200	235	215 ^H	225	215	225	220	280	300	280	270	250	265	265	270
14	290	260	260	235	230	225	200	A	A	A	250 ^A	215	225	220	215	230	250	B	B	A	A	A	A	B
15	A	B	A	A	270	R	190 ^H	B	220	B	B	230	250	225	230	S	290 ^B	B	275	260	270	290	B	B
16	B	300	S	A	260	230	205	220	B	275	225	225	205	B	B	B	B	B	B	250	285	B	B	C
17	B	350	290	R	220	B	200	S	225	225	230	240	200	230	220	235	240	215	245	250	C	C	C	C
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Median																								
U.Q.																								
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No Observation

R'F

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 1962

R'F

G.M.T.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330	
1	360	R	220	220	C	200	200	200	210	230	200	200	215	220 ^H	250	235	225	235	C	C	C	C	C	C	C
2	C	C	C	C	C	C	225	200	B	B	C	B	B	B	B	B	S	S	B	B	B	B	250	300	300
3	270	275	250	225	220	200	200	S	230	S	225	230	S	240	250	220	E 275 ^A	280	240	250	255	255	280	E 300 ^A	250
4	240 ^H	235	230	200	215	205	230	220	E 245 ^R	220 ^H	200	230	230	200	200	230	230	250	250	240	240	240	240	250	285
5	250	A	A	A	245	225	B	S	S	A	A	A	225	225	230	A	S	240	245	255	250	A	270	250	
6	260	280	250	235	B	225	230	230	195	185 ^H	A	200	230	225	235	250	240	250	260 ^H	230	250	265	260	265	
7	245	250	A	A	250	225	220	A	230 ^H	210	275	205	225	225	C	230	230	240	230	285	A	A	A	300	
8	280	315	R	245	C	225	200	250	215	S	225	220	A	230	225	250	230	215	260	240	250	250	275	265	
9	230	220	B	230	200	200	230	200	200	200	205	225	225	B	C	215	240	260	270	B	B	A	A	S	
10	A	A	A	B	B	B	250	205	200	230	215	250	R	A	250	A	A	A	A	A	A	A	B	B	
11	A	B	B	B	B	R	B	B	225	B	250	B	E 270 ^B	S	S	270	260	S	275	275	290	280	R	325	
12	E 375 ^R	R	250 ^H	A	230	200	210	220	220	210 ^H	200	220	220	210	230	225	230	220	220	235	250	260	270	315	350
13	C	R	265	230	235	225	225	220	B	245	215 ^H	235	220	215	S	245	315	290	A	245	230	265	275	280	
14	230	A	265	240	250	225	R	A	A	A	210	C	220	210	C	225	B	B	R	A	S	A	A	A	
15	A	B	A	A	215	S	200	235	225	B	B	250	235	205	230	250	B	275	280	290	290	R	B	B	
16	R	300	A	290	275	205	225	B	230	235	225	220	B	B	B	B	B	250	B	260	320	290	A	B	
17	A	320	310	250	E 285 ^R	205	210	260	240	210	225	S	240	230	200	255	235	270	250	250	C	C	C	C	
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Median																									
U.Q.																									
L.Q.																									
Q.R.																									

No Observation

R'F

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 1962

R'E

G.M.T.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	115	115	115	B	110	110	105	110	105	110	110	105	105	110	105	110	C	A	C	C	C	C	C
2	C	C	C	C	C	C	105	105	105	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B
3	A	A	110	A	120	B	B	B	B	B	A	A	S	A	B	B	B	130	A	B	A	E	A	A
4	125	120	110	105	100	105	105	100	B	105	A	105	110	105	B	130	115	120	A	A	A	A	A	A
5	130	120	110	110	115	B	B	B	A	110	110	105	100	B	B	120	120	120	125	S	A	A	A	A
6	A	115	110	110	B	B	A	100	100	100	C	A	105	A	115	115	120	120	130	C	A	A	A	120
7	A	125	115	115	S	105	100	100	100	100	100	A	100	A	C	100	105	115	A	A	A	B	B	B
8	120	A	120	A	110	100	105	100	100	105	S	105	A	100	110	100	115	115	130	C	C	B	B	130
9	115	A	120	S	120	B	110	C	110	115	110	110	105	A	B	115	A	B	130	A	A	A	B	A
10	A	A	B	B	115	B	B	B	B	B	110	105	110	A	B	110	A	A	A	A	B	A	A	110
11	B	100	A	B	B	115	110	B	B	B	B	100	B	B	B	S	B	B	A	B	B	B	120	110
12	A	120	120	115	115	100	110	100	105	115	100	100	100	110	115	110	110	120	125	125	125	125	130	B
13	A	A	125	115	B	115	105	B	B	B	100	100	B	105	110	A	B	B	125	A	B	A	A	A
14	A	A	120	A	A	100	100	110	105	105	110	110	110	A	A	110	115	B	B	B	B	B	B	B
15	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	S	B	B	B	130	125	B	B	B
16	B	120	S	A	110	105	100	B	B	B	115	105	105	B	B	B	B	B	B	B	B	B	B	C
17	B	B	145	110	115	B	B	S	110	B	120	B	100	B	B	130	120	130	125	125	C	C	C	C
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No Observation

R'E

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

G. M. I.

f'E

Jan. 1962

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	A	11.5	100	110	C	11.5	10.5	110	10.5	10.5	110	100	10.5	110	10.5	110	110	120	C	C	C	C	C	C
2	C	C	C	C	C	C	10.5	10.5	B	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B
3	A	11.5	10.5	11.5	110	B	B	S	A	A	A	B	A	A	B	S	A	12.5	A	R	A	A	A	13.5
4	12.5	11.5	110	110	10.5	10.5	100	11.5	110	A	A	110	110	110	B	11.5	12.5	120	A	A	A	A	A	A
5	11.5	11.5	110	110	B	B	B	A	A	110	A	10.5	A	B	11.5	120	S	11.5	12.5	A	A	A	A	A
6	110	110	11.5	110	B	A	100	100	100	100	100	100	110	11.5	11.5	110	11.5	120	12.5	130	A	A	A	120
7	130	120	11.5	11.5	10.5	100	100	100	100	100	A	A	100	100	C	100	110	11.5	B	A	B	B	B	B
8	12.5	A	11.5	110	C	100	100	110	10.5	S	100	100	A	A	100	110	11.5	12.5	B	130	130	B	B	120
9	A	12.5	B	120	A	10.5	11.5	110	B	110	110	10.5	110	B	C	10.5	110 ^H	B	B	B	B	A	A	S
10	A	A	A	B	B	B	B	B	B	B	10.5	10.5	A	120	110	A	A	A	A	A	A	B	B	B
11	A	B	B	B	B	A	B	B	B	B	B	B	B	S	S	B	B	S	B	B	B	130	130	A
12	A	12.5	A	A	11.5	110	100	100	B	10.5	100	110	10.5	11.5	110	120	11.5	A	130	12.5	12.5	120	B	A
13	C	130	120	B	110	110	120	B	B	10.5	100	110	B	110	S	B	B	B	B	A	B	A	A	A
14	A	B	A	A	100	100	B	100	110	10.5	100	C	110	110	C	F12.5 ^M	B	B	B	B	S	B	B	B
15	B	B	A	A	11.5	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14.5	R	120	B
16	A	120	A	120	110	100	100	B	B	B	110	11.5	B	B	B	B	B	B	140	B	B	A	B	B
17	B	140	120	12.5	110	B	B	110	11.5	B	B	S	11.5	B	B	B	120	130	12.5	120	C	C	C	C
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No Observation

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IONOSPHERIC DATA

R'ES

Jan. 1962

G. M. I.

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	125	130	G	G	B	G	G	G	G	G	G	G	G	G	G	G	140	C	120	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	B	C	B	B	B	B	B	B	B	B	B	B	B	150	125	120
3	115	115	120	110	G	B	B	B	115	B	105	105	G	S	B	B	130	125	120	110	110	E	150	130	
4	125	120	120	125	G	G	G	G	B	110	110	G	G	G	B	G	130	125	125	115	110	110	100	100	
5	135	120	115	120	120	B	B	B	120	125	120	120	125	B	B	G	135	125	125	S	120	100	100	115	
6	115	120	120	110	B	B	105	110	G	120	C	100	105	110	G	G	130	125	G	G	C	135	130	G	
7	125	125	115	115	S	G	G	125	125	120	110	100	G	100	C	130	135	120	110	160	140	125	110	115	
8	125	125	140	110	G	G	G	G	G	125	S	115	100	G	G	150	G	G	G	C	C	B	B	G	
9	G	115	G	S	G	B	G	C	G	120	G	G	G	100	B	G	105	B	G	150	120	110	135	110	
10	130	135	115	150	G	B	B	B	B	B	145	G	130	110	130	G	105	110	110	125	120	100	110	120	
11	B	G	105	B	B	G	G	B	B	B	B	G	B	B	B	S	B	120	120	B	B	150	150	120	
12	130	G	G	150	G	G	G	G	G	130	125	120	G	G	G	125	125	G	G	G	G	G	G	160	
13	130	120	G	G	B	G	G	B	125	120	125	G	B	G	125	115	130	B	125	125	130	150	150	125	
14	120	115	115	110	110	130	G	125	120	115	115	120	125	110	105	G	G	B	B	130	145	120	110	115	
15	100	B	130	110	115	B	B	B	B	B	B	B	B	B	B	S	B	B	125	G	G	B	B	B	
16	B	130	S	120	G	G	G	B	B	B	G	115	G	B	B	B	B	B	B	B	B	B	B	B	C
17	B	B	G	G	G	B	B	S	G	B	G	B	125	B	B	135	130	G	G	G	C	C	C	C	
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No Observation

R'ES

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

The Radio Research Laboratories, Japan

Lat. 35°42.4'N
Long. 139°29.3'E

IONOSPHERIC DATA

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

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Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U 3.4S	3.0	2.9	2.9	3.1	3.0	U 3.9R	5.4R	6.1	6.5	7.4	I 8.2C	I 8.0C	7.4S	6.9	6.5	6.3	6.5	I 5.4A	3.4	I 3.0A	J 3.1R	2.9R	3.4
2	3.5	3.5	I 3.4F	3.5	J 4.8S	3.0R	3.7S	5.9	6.7	J 7.3S	I 6.9A	8.4	8.9	7.0	6.9	6.9	6.7	6.6	I 5.5A	I 3.4A	3.4	3.6	3.5	3.4
3	3.4	3.5	3.7	3.4	3.1	3.7	U 3.7S	J 6.6S	J 7.8S	J 7.4S	9.1	J 10.3R	9.2	J 8.4R	J 8.4R	7.9	7.0	5.9	U 4.1S	4.4S	I 3.1A	3.2	3.4	3.5
4	3.4	3.5	3.4S	3.6	3.1	2.7	3.7S	6.8	6.8S	8.2	J 8.2R	8.1	I 8.0C	J 8.0R	J 8.2R	U 9.5R	6.1S	I 4.6S	J 4.0S	I 4.2A	U 3.7S	2.9R	3.2	3.4
5	3.2S	3.4F	I 3.5F	3.5	3.9	J 2.8R	U 3.6S	J 6.9S	U 7.2S	8.1	7.5S	7.4	I 7.2C	8.1	U 7.9R	7.1	J 6.4S	4.6	3.8	U 3.8S	3.2	I 3.4A	3.2	3.1
6	3.3	3.1	I 2.7F	3.1F	C	C	C	C	C	6.8	I 7.6R	7.8	6.8	7.2S	7.8S	6.9S	6.7	4.7	3.3	3.0	3.0	3.0	3.0	3.4
7	3.4	3.2	3.4	3.7	3.7	I 2.6S	U 3.6S	6.0	J 6.5R	J 9.1S	U 9.7R	I 9.4C	I 8.6C	8.9	J 8.0S	8.5	6.6	4.4S	J 2.8R	U 3.6S	3.4S	I 3.5A	C	C
8	C	C	C	C	C	C	C	C	C	11.0R	10.9R	8.9	7.4S	J 10.4R	9.3	7.4S	J 7.9R	3.9S	4.0	5.0	I 3.0A	I 3.0R	3.0	3.3S
9	3.4	3.5	3.8	3.9	U 3.1S	3.4	3.9	7.1S	8.8	7.4	I 7.9S	J 9.4S	8.6	9.0	J 8.4R	I 7.6R	A	A	A	3.9S	4.0	3.5	I 3.5F	J 3.3S
10	3.4	3.5S	I 3.4F	I 3.6F	3.5	U 3.0R	3.8	5.7	6.8	9.1	J 10.3R	J 10.5R	8.6	J 8.0R	J 8.8R	7.4	6.5	5.8R	U 3.4S	3.3	U 3.5S	3.6	3.5	3.5S
11	3.5S	3.7	U 3.9S	4.0S	J 3.1S	J 4.0S	I 4.1S	5.9	5.9S	J 6.4S	8.4	J 10.3R	8.5	8.2R	8.1	I 7.7S	5.6	I 5.1S	3.4	I 3.4S	U 3.6S	J 3.0R	I 2.9S	3.4
12	U 3.4S	I 3.4C	I 3.4A	3.5	3.9S	I 3.2S	I 4.0S	6.2S	J 8.6R	7.2S	6.9	I 7.6C	8.4	J 8.0R	J 8.1S	6.2	5.8	U 5.2S	U 3.8S	I 3.2S	I 2.9S	I 3.0S	3.0	J 3.5S
13	I 3.4S	I 3.4C	3.1	3.2	3.0	J 3.1S	I 4.5S	J 6.4S	J 7.5S	6.9S	J 8.4S	9.4S	J 8.4R	U 7.4S	7.0	J 6.8R	6.0	3.4S	U 3.5S	I 3.0S	C	C	3.2	3.4S
14	3.7S	3.5	3.0	3.2	2.6	2.9R	J 3.5S	5.9	6.8S	6.5	8.6	I 10.4C	7.3R	J 8.2R	8.2R	I 7.0A	U 5.7S	U 3.9S	U 3.3S	3.3S	I 3.2S	J 3.0S	J 2.9R	3.1
15	U 3.2S	3.5	3.1	3.3	2.9S	3.0	3.3	5.7	5.9	6.6	8.4R	8.2	8.8	U 9.5S	J 8.7R	J 6.4R	I 5.9R	I 4.7S	3.1	3.2	I 3.1A	I 3.2A	3.1	I 3.2S
16	3.4S	I 3.3F	3.4	3.5	3.8	3.1	U 3.5S	U 6.7S	I 6.4S	U 6.7R	7.3	8.3	8.6	8.1	7.3S	6.7	6.6	I 4.5A	I 3.8A	A	A	3.2	3.2	3.4
17	I 3.5A	3.4	I 3.4S	3.4	3.3	3.6	3.5	7.2S	7.1	6.7	7.2	J 8.2R	J 8.0R	J 8.1R	6.0	I 6.9S	6.4	J 5.0S	I 3.7A	I 3.6A	3.3	3.1	3.1	I 3.2S
18	3.4S	3.5	I 3.3F	3.8	3.0	U 3.5S	J 3.9S	A	A	7.2	10.2	12.8	11.3	J 10.5R	7.9	5.9	5.4	4.6S	3.4	3.5S	I 3.6S	4.0S	J 3.6S	3.6S
19	3.4S	3.5	I 3.6S	3.3	3.2	3.4	3.4	7.1	U 7.2S	7.4S	J 8.1S	7.9	7.1	7.5S	J 7.6S	J 8.0S	5.7	J 3.5S	I 3.4S	3.6S	U 3.2R	2.6	3.1	3.6
20	U 3.5S	J 2.9S	2.9	2.9	3.0	3.0	U 3.4S	U 6.8S	U 7.6S	J 7.8S	8.3R	J 7.8R	J 8.0R	6.6	6.9	6.4R	5.4	4.0	J 2.6R	J 2.7R	3.1	3.0	3.0	3.1
21	3.4	3.0	J 3.1S	3.2	3.4	J 3.0R	3.4	U 6.2S	6.4	8.6	8.5	8.6	6.3	7.2S	6.8	6.4	5.0	3.4	2.9	3.1	3.4	2.8	3.1	2.9
22	3.0	3.1S	3.2	3.4	3.2S	2.9	3.2	J 6.7S	6.8R	I 7.3S	J 8.4R	J 8.0R	J 7.8R	J 6.8R	6.2	7.1	5.0	3.5	3.1	3.6	3.1	J 2.9R	I 3.0S	3.2
23	3.2	3.1	3.1	3.3	3.1	2.9	3.7S	5.7S	U 6.6S	J 7.2S	8.8	8.4	J 6.9R	J 7.6R	J 7.5S	7.2	5.2	4.3	3.5	3.2	3.1	3.4	3.5	3.2
24	3.1	3.5	3.5S	3.5	3.4	2.9	3.0	J 5.2S	6.7	I 6.8S	I 7.9R	8.9	6.9	7.1	J 8.1R	6.1	5.0	3.9	U 3.4S	3.0R	J 3.0S	3.4S	U 3.0R	J 3.0R
25	I 2.8S	3.0	3.1	3.4	2.4	2.7	I 3.1S	5.7	U 6.6S	J 7.9S	J 9.9S	9.4S	8.5R	7.0	J 6.5R	6.6	5.5	4.1	J 4.0S	U 3.4S	2.6	2.5	F	F
26	3.3	3.3	3.0	3.0	2.5	2.5	2.5	6.6	7.1	6.7	7.2	8.0	6.9	I 7.0R	6.3	6.8R	J 5.3S	3.6	3.0	3.1	2.8	2.8	2.9	U 3.3S
27	2.7	2.6	2.9	3.0	3.3	2.7	3.0	5.6	5.6	6.4	6.3	6.9	6.7	7.1S	7.2	J 6.5R	4.9	3.1	2.7	I 3.4A	3.4	2.6	2.7	2.8F
28	3.0	3.0	3.2	3.4	3.3	3.2	2.9	U 4.6S	5.3	5.5	U 7.6S	6.7	7.2	5.8	7.2	7.2	6.1	3.3	3.7	3.1	2.8	3.1	3.0	3.0
29	3.0	3.4	3.4	3.6	4.1S	2.7	2.8	5.1R	6.1	J 6.0R	7.0	I 6.6R	6.6H	6.4	5.8R	5.1	6.0	3.8	2.8	3.5S	3.0	2.9	2.5F	I 2.9F
30	3.0	3.0	I 3.0F	3.0	3.2	3.0	2.5R	J 5.1S	6.1R	6.1	J 7.2S	I 7.2S	6.3	6.4	6.0	6.3R	5.5	4.2	I 4.4S	3.4	3.0	2.7S	2.8	2.8
31																								
No.	29	29	29	29	28	28	27	27	30	30	30	30	30	30	30	30	29	29	29	29	28	28	28	28
Median	3.4	3.4	3.3	3.4	3.2	3.0	3.5	6.0	6.7	7.2	8.2	8.2	8.0	7.6	7.6	6.9	5.9	4.3	3.4	3.4	3.1	3.0	3.1	3.3
U.Q.	3.4	3.5	3.4	3.6	3.4	3.2	3.8	6.7	7.2	7.8	8.6	9.4	8.6	8.2	8.1	7.4	6.4	4.8	3.9	3.6	3.4	3.4	3.2	3.4
L.Q.	3.2	3.0	3.0	3.2	3.0	2.8	3.2	5.7	6.1	6.6	7.3	7.8	6.9	7.0	6.9	6.4	5.4	3.7	3.1	3.2	3.0	2.9	2.9	3.1
Q.R.	0.2	0.5	0.4	0.4	0.4	0.4	0.6	1.0	1.1	1.2	1.3	1.6	1.7	1.2	1.2	1.0	1.0	1.1	0.8	0.4	0.4	0.5	0.3	0.3

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

foF2

The Radio Research Laboratories, Japan

K I

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foF1

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	C	C	L	L	A								
2									L	L	A	L	L	L	L	A								
3								L	L	A	A	A	A	L	L	L								
4										L	L	C	L	L	L	L								
5									L	L	L	C	L	L	L	L								
6							C	C	C	L	L	L	L	L	L	L								
7							L	L	L	L	C	C	A	A	A									
8							C	C	C	L	L	L	L	L	L									
9									L	L	L	L	A	A	A									
10									IH	L	L	L	L	L	L	L	A	A						
11									L	L	L	L	L	L	L	L								
12									L		C	L	L	L	L	L								
13										L	L	L	L	L	L	L								
14									L	L	C	L	L	L	A	A								
15									A	A	L	L	L	L	L	L								
16										A	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18								A	A	A	L	L	L	L	L	L								
19										L	L	A	A	L	L	L								
20										L	L	S	L	L	L	L								
21									L	L	L	L	L	L	L	L								
22								L	L	L	L	L	L	L	L	L								
23									L	L	L	L	L	L	L	L								
24										L	L	L	L	L	L	L								
25									L	L	L	L	L	L	L	L								
26									L	L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L								
28										L	L	L	L	L	L	L								
29								L		L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31									L	L	L	L	L	L	L	L								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 35° 42.4 N
Long. 139° 29.3 E

Kokubunji Tokyo

Nov. 1963

foE

135° E Mean Time (G.M.T. +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	28
1							S	B	A	A	S	C	C	A	I3.00S	R	A	S							
2							S	B	A	A	A	A	C	A	R	A	A	S							
3							S	S	A	A	A	A	A	A	A	A	A	S							
4							S	S	S	B	S	I3.15S	I3.20C	I3.20R	I3.00S	A	B	S							
5							S	S	S	2.90	S	S	C	R	2.90	S	S	A							
6							C	C	C	S	S	S	B	A	S	R	B	S							
7							S	B	R	B	S	C	C	A	R	A	S	S							
8							C	C	C	A	A	A	U3.20S	S	S	S	R	S							
9							S	S	B	S	S	S	B	S	B	B	B	S							
10							S	B	B	S	B	B	S	S	S	B	S	S							
11							S	S	S	S	R	S	S	S	A	A	B	S							
12							S	S	S	S	S	C	S	S	I2.85B	S	S	S							
13							S	S	S	S	S	S	S	S	S	S	B	S							
14							S	B	S	A	A	C	R	A	A	A	A	S							
15							S	S	A	A	S	A	A	A	A	R	A	S							
16							S	S	S	S	A	A	A	A	A	A	A	S							
17							S	B	S	S	A	A	A	R	S	R	B	S							
18							S	A	A	A	A	A	A	A	I2.90R	A	A	S							
19							S	B	S	A	A	A	A	A	A	A	A	S							
20							S	B	B	A	A	A	A	A	A	S	S	S							
21							S	S	S	S	R	I3.20S	I3.20S	I2.90S	I2.80R	I2.50B	I2.15B	B							
22							S	B	I2.40R	A	S	S	S	S	I2.70R	B	B	S							
23							S	S	A	I2.70A	I3.05A	3.05	I3.20R	I3.10R	3.05R	R	B	B							
24							S	B	2.55	I2.75R	I3.05S	I3.10S	3.05	I3.10A	I2.80B	S	S	S							
25							S	B	I2.20S	I2.70R	I2.90B	S	A	A	I2.70R	2.40	A	S							
26							S	B	I2.45R	I2.75A	3.05	I3.20A	3.10	I2.95A	2.75	2.45	1.85	S							
27							S	2.10	U2.35R	2.65	2.95	I3.10R	I3.20R	I3.10R	I2.85R	I2.40A	B	S							
28							S	S	2.30	2.65	2.90	I3.00R	I3.00A	I2.90A	I2.70A	2.65	2.05	S							
29							B	B	2.35	I2.70A	I2.85B	I3.00B	3.20	3.05	3.00	2.75	B	S							
30							S	B	2.50	2.85	3.00	I3.10R	I3.10R	3.10R	2.80	2.55	R	B							
31																									
No.							1	8	9	8	9	10	9	15	7	3									
Median							2.10	U2.40	U2.70	U3.00	U3.10	U3.20	U3.10	U2.85	2.50	2.05									
U.Q.																									
L.Q.																									
Q.R.																									

Lat. 35°42.4'N
Long. 139°29.3'E

IONOSPHERIC DATA

Kokubunji Tokyo

foEs

135° E Mean Time (G.M.T. +9h)

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.3M	3.1M	2.3	S	2.2	2.3	S	B	3.1Y	3.1	S	C	C	3.8	S	7.0M	J 8.4	8.5M	J 8.6	J 5.7	4.0M	2.5	2.4	S
2	S	S	2.2	E	E	B	2.0	B	J 3.9	3.3S	7.4M	3.9S	B	3.7	4.8	4.9M	J 7.7	S	9.0M	5.6	J 4.6	4.2M	5.9M	3.8M
3	J 3.2	2.2	J 2.5	J 2.5	2.4	2.2	S	S	J 3.6	3.3S	4.9M	5.9	5.9M	J 5.6	4.1	J 4.1	J 3.8	S	J 3.6	J 3.7	J 5.3	2.4	S	
4	S	S	S	E	E	S	S	S	S	3.3S	S	S	C	G	S	3.2Y	B	S	J 4.9S	2.3	S	2.2	S	
5	S	S	S	E	E	S	S	S	S	3.4	S	S	C	2.5G	3.1	3.0	3.1S	2.0	S	S	5.4M	S	S	
6	3.3	S	S	2.6	C	C	C	C	C	S	S	S	B	J 3.9	S	G	B	S	3.1M	S	S	S	S	
7	S	S	2.2	2.4	E	S	S	B	G	B	S	C	C	J 5.8	4.9	J 3.4	S	S	S	S	5.5M	C	C	
8	C	C	C	C	C	C	C	C	C	J 4.9S	J 3.4	J 3.8	G	S	S	S	G	3.1M	3.8M	3.1M	3.5M	S	S	
9	5.8M	3.2M	4.0M	2.0M	3.6	2.5	2.4	S	B	S	S	S	B	6.6	J 4.3	5.9M	6.2M	6.2	5.4M	S	J 3.6	S	S	
10	S	S	S	S	S	S	S	S	B	S	S	B	S	S	S	B	S	S	2.5S	S	S	J 3.4	S	
11	S	S	S	E	E	S	S	S	S	S	S	S	S	S	3.2S	3.4	4.2M	3.1M	3.9M	S	S	2.6M	S	
12	S	C	3.5M	E	E	S	S	S	S	S	S	C	S	S	3.1	3.0	S	S	S	S	S	S	S	
13	S	C	S	E	E	S	S	S	S	S	S	S	S	S	S	3.2	B	S	S	S	C	C	S	
14	S	S	2.3M	E	E	S	2.4	B	S	J 3.3S	3.4	C	S	3.7S	4.4	7.6M	J 3.4S	S	2.5M	2.8M	2.5	S	S	
15	S	S	S	E	E	S	S	S	8.8M	6.1M	G	3.2	J 3.4	3.5S	3.0	G	3.5	2.4	S	J 4.9	3.9M	4.0M	3.8M	
16	S	3.0	E	2.0M	2.3M	S	S	S	S	S	J 5.8	J 6.0	J 4.4S	J 4.3	3.8	3.6	J 4.4	6.2M	3.8S	6.0M	J 7.8	5.3M	J 5.6	
17	4.0M	J 3.1S	J 3.6	4.0M	J 3.0	S	S	B	S	S	J 3.7	J 4.2	J 4.2	3.1	S	G	B	S	6.3M	4.0M	S	S	S	
18	S	S	S	2.5	E	S	S	S	12.5M	J 9.3	7.4	J 4.7	3.2	3.1	G	3.3	2.5	S	J 3.3	S	S	S	S	
19	S	S	S	3.4M	J 1.8	3.0M	S	B	S	J 3.9	J 3.6	5.1M	J 3.7S	3.5S	4.8M	5.8M	2.5S	2.9M	S	S	S	J 2.5S	S	
20	S	S	2.5M	E	E	S	S	B	3.1	2.8	J 3.5	4.0M	D 3.2S	3.4	3.3	S	S	S	S	S	S	S	S	
21	J 4.3S	S	S	E	E	S	S	S	S	S	2.5G	S	G	S	G	B	B	B	S	S	E	S	E	
22	E	E	E	E	E	S	S	G	G	3.0	G	3.1G	S	S	G	B	B	S	S	S	S	S	S	
23	S	S	S	E	E	S	S	2.4	J 2.9	3.1	3.5	2.3G	G	2.9G	2.6G	G	B	B	S	S	S	E	S	
24	2.7M	2.3	E	E	E	S	S	2.3	G	3.8	S	S	G	3.8	3.1S	S	S	S	S	S	S	S	S	
25	S	S	S	E	E	S	S	B	G	3.2S	4.2	G	4.4	J 3.0	G	G	2.3	3.4M	S	2.4	S	S	S	
26	S	E	E	E	E	S	2.0	S	2.4	2.8	3.1	2.9G	3.3S	2.6G	G	2.9	G	S	S	S	J 3.4	3.0M	S	
27	S	J 2.4	2.5	J 2.8	E	J 2.4	S	S	G	G	G	G	G	G	G	2.8	G	S	J 3.5	S	S	S	S	
28	2.4	S	J 3.0	3.0M	2.5	S	S	S	G	3.1	3.8	2.8G	4.3M	J 5.9Y	3.0	G	G	S	S	S	2.5M	S	S	
29	S	2.9	3.4M	J 3.8	2.6	2.4	B	B	3.0M	J 3.4	B	B	G	G	3.9	G	2.9	S	S	J 4.2	2.4	S	2.0	
30	E	E	E	E	E	E	S	B	G	G	G	G	G	G	G	2.8	G	B	2.5M	S	S	S	S	
31																								
No.	10	11	17	27	25	8	3	6	16	20	18	16	17	23	23	24	18	9	12	12	12	11	9	4
Median	3.2	2.4	2.3	E	E	2.4	2.4	2.4	2.8	3.3	3.5	3.5	3.2	3.5	3.1	3.1	3.0	3.1	3.8M	4.1	3.4	4.0M	2.4	2.8
U.Q.	4.0	3.1	3.2	2.5	2.2	2.4	2.4	2.8	3.4	3.6	4.2	4.1	4.2	3.9	4.1	3.8	4.3	6.2	5.8	5.2	4.0	5.3	4.7	3.6
L.Q.	2.4	E	E	E	E	2.1	2.0	2.3	G	3.1	G	G	G	G	G	G	G	2.6	2.8	3.3	2.4	3.0	2.1	E
Q.R.	1.6					0.3	0.4	0.5	0.5								3.6	3.0	1.9	1.6	2.7	2.6		

The Radio Research Laboratories, Japan

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

foEs

K 4

IONOSPHERIC DATA

Lat. 35°42.4'N
Long. 139°28.3'E

Kokubunji Tokyo

Nov. 1963

fbEs

135° E Mean Time (G.M.T. +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	2.8	S	E	S	E	2.0	S	B	3.0	3.0	S	C	C	3.4	S	5.0	2.8	4.0	A	2.7	A	E	2.0	S	
2	S	S	E			B	E2.05	B	3.3	3.3	A	3.6	B	3.5	4.3	4.2	4.3	S	A	A	2.6	2.2	2.2	2.9	
3	2.8	2.0	E	1.8	1.9	2.0	S	S	2.9	3.2S	4.2	5.2	4.7	4.0	3.5	3.9	3.8	S	S	2.2	A	2.3	2.2	S	
4	S	S	S			S	S	S	S	E3.3S	S	S	C		S	3.0	B	S	S	A	2.3	S	2.2	S	
5	S	S	S			S	S	S	S	3.3	S	S	C	E2.5R	3.1	2.9	2.7	2.0	S	S	S	A	S	S	
6	2.1	S	S	E	C	C	C	C	C	S	S	S	B	3.2	S		B	S	2.2	S	S	S	S	S	
7	S	S	E	E	S	S	S	B	B	S	S	C	C	5.4	4.9	3.3	S	S	S	S	S	A	C	C	
8	C	C	C	C	C	C	C	C	C	4.2	3.4	3.8	S	S	S	S	2.7	2.6	2.1	A	A	S	S	S	
9	2.8	2.0	2.1	1.8	2.7	2.3	2.1	S	B	S	S	S	B	6.1	4.3	4.2	A	A	A	S	S	2.1	S	S	
10	S	S	S	S	S	S	S	S	B	S	B	B	S	S	S	B	S	S	E2.5S	S	S	2.6	S	S	
11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	3.2	3.3	3.8	2.6	2.8	S	S	2.2	S	S	
12	S	C	A			S	S	S	S	S	S	C	S	S	E3.1S	2.9	S	S	S	S	S	S	S	S	
13	S	C	S			S	S	S	S	S	S	S	S	S	S	3.2	B	S	S	S	C	C	S	S	
14	S	S	2.0			S	2.1	B	S	3.3	3.4	C	S	3.5	4.0	A	3.4S	S	E	2.2	2.4	S	S	S	
15	S	S	S			S	S	S	4.5	4.7		E3.2S	E3.4S	3.4	E3.0S		3.3	2.1	S	2.2	A	A	2.7	S	
16	S	E	2.5	1.2	1.9	S	S	S	S	S	4.1	4.9	3.8	3.8	3.3	3.5	3.2	A	A	A	A	2.2	2.3	2.7	
17	A	2.2	2.5	2.1	1.5	S	S	B	S	S	3.5	4.1	3.6	3.0	S		B	S	A	A	S	S	S	S	
18	S	S	S	1.7		S	S	A	A	4.5	3.8	3.6	3.2	3.1		3.1	2.5	S	2.6	S	S	S	S	S	
19	S	S	S	2.0	1.5	2.2	S	B	S	3.8	3.3	4.5	3.7S	E3.5S	4.5	4.0	2.5	S	S	S	S	S	2.2	S	
20	S	S	E			S	S	B	3.1	E2.8R	3.3	E4.0S	D3.2S	3.4	3.1	S	S	S	S	S	S	S	S	S	
21	E	S	S			S	S	S	S	S	E2.5R	S		S		B	B	B	S	S	S	S	S	S	
22						S	S	S	2.9		E3.1S	S	S	S		B	B	B	S	S	S	S	S	S	
23	S	S	S			S	S	E2.4S	2.8	3.1	3.1	2.3G		B	2.6G		B	B	S	S	S	S	S	S	
24	S	E				S	S	2.2		3.3	S	S		G	E3.1S	S	S	S	S	S	S	S	S	S	
25	S	S	S			S	S	B		3.2S	3.4		3.8	2.8			2.2	2.1	S	2.0	S	S	S	S	
26	S					1.9	S	2.1	2.6	3.1	2.6G	3.3	2.5G		2.9				S	S	E	E	S	E	
27	S	E	1.7	2.0		1.9	S	G								2.6		S	S	A	S	S	S	S	
28	E	S	E	2.1	1.8		S	S	E3.1R	3.6	E2.8G	3.5	3.6	2.8				S	S	S	2.1	S	S	S	
29	S	E	E	1.8		E	B	B	B	3.3	B	B			3.6		2.8	S	S	2.0	E	S	E	S	
30																2.8	B	1.9	S	S	S	S	S	S	
31																									
No.																									
Median																									
U.I.Q.																									
L.Q.																									
Q.R.																									

The Radio Research Laboratories, Japan

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

fbEs

K 5

IONOSPHERIC DATA

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

Nov. 1963

f_oF₂

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.90S	E1.50S	1.40	E1.50S	1.50	E1.60S	E1.80S	E2.10S	2.10	2.20	E3.50S	C	C	2.20	E4.20S	2.10	1.80	E1.80SE1.50S	E1.80S	E1.50S	E1.80SE1.50S	E1.70S		
2	E1.80S	E1.50S	1.50	1.50	1.00	1.60	E1.80S	2.75	1.70	2.30	2.80	2.80	3.60	2.20	2.20	2.20	1.50	E2.00SE1.80S	E1.50S	E1.50S	E1.50SE1.50S	E1.90S		
3	E1.50S	E1.70S	E1.50S	1.40	1.30	E1.60S	E1.80S	E2.60S	2.05	2.80	2.20	2.30	E3.00S	2.70	2.10	2.30	2.10	E1.80SE1.50S	E1.60S	E1.80S	E1.50SE2.00S	E1.80S		
4	E1.70S	E1.60S	E1.50S	1.20	1.40	E1.60S	E1.50S	E2.80S	E3.10S	2.90	E3.90S	E3.60S	C	2.70	E3.50S	2.10	2.30	E2.10SE2.10S	E2.00S	E2.10S	E1.80SE1.50S	E1.70S		
5	E1.50S	E1.70S	E1.50S	1.50	1.20	E1.80S	E1.60S	E2.20S	E2.80S	2.10	E3.40S	E3.30S	C	2.00	E2.70S	2.20	E2.20S	E1.60SE1.90S	E2.00S	E1.80S	E1.80SE1.90S	E1.70S		
6	E1.60S	E2.10S	E1.50S	1.50	C	C	C	C	C	C	E3.20S	E3.80S	E3.50S	3.80	E3.10S	2.20	2.75	E1.70SE1.70S	E1.70S	E1.80S	E1.80SE1.90S	E1.80S		
7	E1.50S	E2.10S	1.20	1.20	1.10	S	E1.60S	2.30	2.05	3.25	E3.40S	C	C	E3.00S	2.10	1.90	E2.50S	E1.70SE1.70S	E1.90S	E2.60S	E1.50S	C	C	
8	C	C	C	C	C	C	C	C	C	2.10	2.20	2.10	2.85	E3.20S	E3.60S	E2.80S	2.10	E1.90SE1.50S	E1.90S	E1.90S	E2.30SE2.00S	E1.90S		
9	E1.50S	E1.80S	E1.50S	1.05	1.10	E1.60S	E1.50S	E2.80S	2.80	E3.20S	E3.70S	E3.60S	3.60	E3.50S	2.80	2.70	2.20	E2.10SE1.95S	E1.70S	E1.60S	E1.50SE1.50S	E1.50S		
10	E1.90S	E1.60S	E1.50S	E1.90S	E1.80S	E1.80S	E1.60S	1.80	2.80	E3.30S	3.70	3.40	E3.50S	E3.70S	E3.50S	2.70	E2.70S	E1.90SE2.10S	E2.00S	E1.90S	E1.90SE2.10S	E2.10S		
11	E1.90S	E1.80S	E1.70S	1.10	1.00	E1.50S	E1.80S	E2.20S	E2.10S	E3.30S	2.85	2.85	E3.50S	E3.70S	2.75	2.70	2.20	E1.90SE1.80S	E2.20S	E1.80S	E1.90SE1.50S	E1.80S		
12	E1.95S	C	E1.50S	1.10	1.10	E1.50S	E2.10S	E2.60S	E2.70S	E4.20S	E3.50S	C	E3.50S	E3.50S	2.90	E2.60S	E2.60S	E2.00SE2.10S	E2.30S	S	E2.10SE1.60S	E1.90S		
13	E2.00S	C	E1.80S	1.00	1.20	E1.90S	E2.10S	E2.10S	E2.80S	E4.60S	E3.50S	E3.90S	E3.40S	E3.60S	E3.60S	2.20	2.50	E1.90SE1.50S	E2.10S	C	E1.50S	E2.00S		
14	E1.80S	E1.80S	E1.50S	1.10	1.10	E1.90S	E1.80S	2.30	E2.30S	2.80	2.80	C	2.90	2.30	2.20	1.80	E2.00S	E1.90SE1.80S	E1.70S	E1.50S	E1.70SE1.90S	E2.00S		
15	E1.70S	E1.70S	E1.50S	E	E1.80S	E1.50S	E1.60S	E2.10S	2.20	2.20	2.75	2.70	2.80	2.70	2.20	2.10	1.90	E2.00SE1.50S	E1.50S	E1.80S	E1.90SE1.80S	E2.10S		
16	E2.10S	E1.50S	1.20	1.05	1.00	E1.50S	E1.90S	E2.60S	E2.70S	E3.10S	2.10	2.00	2.20	2.20	2.20	2.00	2.00	E1.90SE1.80S	E1.90S	E1.50S	E1.50SE1.50S	E1.50S		
17	1.20	E1.50S	E1.50S	E1.50S	1.00	E1.50S	E1.50S	2.10	E2.70S	E3.60S	2.40	2.10	2.20	2.10	E2.90S	E2.60S	2.70	E2.10SE1.80S	E1.80S	E1.80S	E1.90SE1.50S	E1.50S		
18	E1.90S	E1.80S	E1.50S	1.00	1.20	E1.50S	E1.90S	E1.70S	E1.90S	2.10	2.10	2.10	2.10	2.00	2.15	2.20	2.05	E1.90SE1.80S	E1.90S	E1.80S	E1.90SE1.80S	E1.90S		
19	E1.50S	E1.90S	S	1.10	1.00	E1.50S	E1.50S	2.20	E2.30S	2.20	2.70	2.75	2.50	2.75	2.10	2.00	2.00	E2.00S	S	E2.10S	E1.50S	E1.50S	E1.60S	
20	E1.90S	E2.00S	E1.50S	1.10	1.10	E1.50S	E2.10S	2.20	2.80	2.25	2.80	2.00	2.70	2.55	2.10	E2.70S	E2.50S	E2.10SE2.50S	E2.05S	E2.10S	E1.90SE1.90S	E1.80S		
21	E1.80S	E1.60S	E2.10S	1.50	1.10	E1.50S	E1.80S	E2.30S	E2.70S	E3.60S	2.20	E3.40S	2.65	E3.70S	2.30	2.70	2.30	1.60	E1.70S	E1.90S	1.60	E1.90SE1.80S	1.60	
22	1.50	1.70	1.40	1.50	1.70	E1.80S	E1.80S	1.80	1.80	2.30	2.85	2.70	E3.40S	E3.40S	2.10	2.80	2.20	E1.90SE1.90S	E1.50S	E1.50S	E1.50S	E1.50S	E1.50S	
23	E1.90S	E1.60S	E1.60S	1.10	1.00	E1.50S	E1.90S	E2.10S	2.20	2.25	2.00	2.00	2.40	2.10	1.90	2.10	2.20	1.80	E1.60S	E1.60S	E1.80S	E1.60S	1.40	
24	E1.70S	E1.70S	1.20	1.30	1.60	E1.50S	E1.60S	1.90	1.80	2.05	E3.20S	E3.50S	2.50	3.00	2.80	E2.90S	E2.10S	E1.90SE1.90S	E1.60S	E2.10S	E1.70S	E1.70SE1.70S	E1.50S	
25	E1.70S	E1.60S	E1.80S	1.00	1.00	E1.60S	E1.95S	2.20	2.20	2.10	2.90	2.20	2.00	2.05	1.90	1.90	1.90	E1.60SE1.90S	E1.90S	E1.70S	E1.60SE1.70S	E1.50S		
26	E1.50S	1.60	1.30	1.50	E1.80S	E1.70S	E1.60S	1.70	1.95	2.05	2.10	2.20	2.00	2.00	2.10	1.90	1.55	E1.90SE1.70S	E1.90S	E1.50S	E1.70SE1.90S	E1.80S		
27	E1.70S	1.60	1.50	E1.50S	1.60	E1.70S	E1.50S	1.55	1.90	1.90	1.90	2.30	2.60	2.10	2.10	2.10	2.05	E1.80SE1.70S	E1.60S	E1.60S	E1.70SE1.70S	E1.60S		
28	E1.60S	E1.50S	E1.70S	E1.70S	E1.70S	E1.50S	E1.60S	E2.10S	1.80	2.00	2.00	2.20	2.20	2.20	1.90	2.10	1.50	E1.80SE1.80S	E1.50S	E1.80S	E1.80SE1.60S	E1.80S		
29	E1.60S	E1.80S	E1.50S	E1.60S	1.50	E1.50S	1.80	2.00	1.80	1.90	3.10	3.60	2.20	2.40	2.10	2.00	2.00	E2.00SE1.60S	E1.70S	E1.70S	E1.50SE1.50S	E1.50S		
30	1.40	1.60	1.50	1.20	1.20	1.40	E1.70S	2.00	1.90	1.95	2.10	2.10	2.20	2.10	2.10	2.10	1.70	1.50	E1.60S	E1.90S	E1.60S	E1.70SE1.70S	E1.80S	
31																								
No.	29	27	28	23	24	27	28	28	18	21	21	19	20	21	22	25	24	30	29	30	28	29	28	28
Median	E1.70	E1.60	E1.50	1.10	1.10	E1.50	E1.80	E2.15	2.00	2.20	2.40	2.30	2.55	2.20	2.10	2.10	2.05	E1.90	E1.80	E1.90	E1.80	E1.70	E1.80	E1.80
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

f_oF₂

K 6

Lat. 35°42.4'N
Long. 139°29.3'E

IONOSPHERIC DATA

Kokubunji Tokyo

135° E Mean Time (G.M.T. + 9h)

M(3000)F2

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U3.20S	2.80	3.05	3.05	3.25	3.35	U3.35R	3.50R	3.50	3.50	3.50	C	I3.50C	3.50S	3.35	3.40	3.50	3.40	I3.50A	3.10	I3.10A	J3.15R	2.80R	3.05
2	2.80	2.80	12.80F	3.10	U3.50S	3.25S	3.70	3.40	J3.55S	I3.35A	3.35	3.45	3.70	3.45	3.50	3.45	3.55	3.45	I3.50A	I3.25A	2.90	3.05	2.85	2.80
3	2.90	2.85	3.25	2.90	3.15	3.05	U3.70S	J3.60S	J3.45S	J3.50S	3.20	J3.30R	3.50	J3.35R	J3.45R	3.40	3.55	3.60	U3.25S	3.40S	I3.05A	2.75	2.95	3.10
4	2.95	3.10	3.25S	3.35	3.50	2.95	3.20S	3.70	3.50S	3.50	J3.50R	3.50	I3.40C	J3.35R	J3.40R	U3.60R	3.75S	I3.40S	J3.25S	I3.35A	J3.50S	3.10R	2.80	2.70
5	2.60S	2.70F	I3.00F	3.30	3.35	J3.25R	U3.15S	J3.70S	U3.60S	3.70	3.50S	3.40	I3.35C	3.35	U3.55R	3.40	J3.60S	3.65	3.20	U3.40S	3.00	I3.10A	3.20	2.95
6	2.75	2.85	12.90F	2.95F	C	C	C	C	C	3.60	I3.50R	3.45	3.35	3.30S	3.30S	3.50S	3.70	3.40	3.05	3.35	2.95	2.95	2.90S	2.95
7	3.05	2.80	2.75	3.20	3.50	I3.15S	U3.30S	3.65	J3.50R	J3.50S	U3.60R	I3.40C	I3.40C	3.60	J3.50S	3.55	3.75	3.40S	J2.85R	U3.20S	2.95S	I2.70A	C	C
8	C	C	C	C	C	C	C	C	C	3.45R	3.50R	3.50	3.35S	J3.30R	3.45	3.55S	J3.55R	3.60S	3.00	3.40	I3.10A	I3.25R	2.95	2.65S
9	2.35	3.10	3.15	3.45	U2.90S	2.95	3.35	3.50S	3.75	3.55	I3.35S	J3.40S	3.35	3.55	J3.55R	I3.65R	A	A	A	2.90S	3.25	2.90	I2.75F	J2.75S
10	2.90	2.95S	I3.05F	I3.10F	3.15	U3.35R	3.15	3.70	3.10	3.30	J3.25R	J3.15R	3.50	J3.50R	J3.40R	3.50	3.40	3.30R	U2.90S	3.35	I3.10S	3.30	2.85	3.10S
11	3.10S	3.00	U3.25S	3.10S	J3.20S	J3.45S	I3.45S	3.60	3.30S	J3.40S	3.25	J3.50R	3.65	3.40R	3.70	I3.60S	3.40	I3.40S	3.20	I3.30S	U3.25S	J3.00R	I2.95S	2.95
12	U3.05S	I3.00C	I2.90A	2.90	3.55S	I3.35S	I3.35S	3.40S	J3.60R	3.70S	3.10	I3.30C	3.45	I3.50R	J3.45S	3.55	3.35	U3.30S	U3.40S	I3.25S	I3.15S	I3.00S	2.65	J3.10S
13	I2.90S	I3.10C	3.10	2.95	3.00	J2.85S	I3.35S	J3.45S	J3.60S	3.20S	J3.45S	3.45S	J3.50R	U3.50S	3.50	J3.45R	3.65	3.70S	U3.30S	I3.10S	C	C	2.75	2.95S
14	3.00S	3.25	3.35	3.10	3.35	2.80R	J3.10S	3.65	3.55S	3.35	3.30	I3.40C	3.05H	J3.50R	3.65R	I3.60A	U3.55S	U3.45S	U3.35S	I3.40S	I2.85S	I2.85R	2.85	2.85
15	U2.90S	3.10	2.90	3.10	3.10S	3.15	3.05	3.75	3.55	3.25	3.55R	3.55	3.10	U3.50S	J3.65R	J3.65R	I3.35R	I3.30S	3.25	3.45	I3.00A	I2.90A	3.05	I2.90S
16	2.95S	I3.00F	2.95	2.85	3.15	3.10	U3.15S	U3.70S	I3.60S	U3.60R	3.40	3.50	3.35	3.45	3.55S	3.60	3.45	I3.55A	A	A	3.00	3.00	2.90	2.85
17	I3.00A	2.90	I2.90S	2.90	3.00	3.05	3.45	3.60S	3.65	3.60	3.50	J3.05R	J3.40R	J3.45R	3.50	I3.50S	3.50	J3.40S	I3.30A	I3.20A	3.15	3.00	2.90	I2.80S
18	2.90S	2.85	I2.60F	3.15	3.30	U3.05S	J3.10S	A	A	3.20	3.05	3.30	3.25	J3.25R	3.55	3.40	3.45	3.30S	3.55	2.90S	I2.90S	3.30S	I3.30S	3.15S
19	3.05S	2.95	I3.10S	3.05	2.85	2.95	2.95	3.55	U3.65S	3.50S	J3.45S	3.55	3.40	3.35S	I3.40S	J3.50S	3.55	J3.45S	I3.05S	3.30S	U3.30R	2.90	2.85	3.05
20	U3.35S	I2.95S	2.90	3.05	3.05	3.00	U3.05S	U3.55S	U3.60S	J3.55S	3.60R	J3.45R	J3.30R	3.45	3.50	3.45R	3.70	3.45	J3.40R	I2.80R	3.15	3.30	3.00	2.90
21	2.90	3.00	J3.05S	2.90	3.00	J2.85R	3.25	U3.50S	3.50	3.60	3.40	3.75	3.40	3.50S	3.55	3.45	3.50	3.25	3.15	3.10	3.25	2.80	3.20	3.15
22	3.00	2.90S	3.00	2.95	3.15S	3.10	3.10	J3.65S	3.55R	I3.40S	J3.55R	J3.60R	J3.60R	J3.40R	3.25	3.65	3.60	3.35	2.95	3.20	3.10	J3.05R	I2.95S	3.00
23	3.10	2.95	2.90	2.90	2.90	2.75	3.50S	3.65S	U3.45S	J3.45S	3.65	3.60	J3.30R	J3.45R	J3.45S	3.75	3.65	3.40	3.05	3.15	3.25	3.05	2.85	3.15
24	3.10	2.85	2.90S	3.15	3.25	3.05	3.35	J3.50S	3.55	I3.40S	I3.30R	3.60	3.20	3.40	J3.45R	3.60	3.60	3.45	U3.20S	3.30R	I2.95S	3.05S	U3.15R	I2.70R
25	I2.85S	3.00	3.10	3.20	3.30	2.95	I3.15S	3.35	U3.45S	J3.30S	J3.25S	3.50S	3.65R	3.60	J3.45R	3.55	3.65	3.25	J3.40S	U3.50S	3.05	3.00	F	F
26	3.05	3.05	3.30	3.35	3.20	2.85	2.95	3.40	3.60	3.60	3.30	3.65	3.30	I3.45R	3.50	J3.50R	J3.40S	3.05	3.20	3.20	2.85	2.75	3.10	U3.30S
27	3.20	2.95	3.05	3.10	3.35	3.10	3.35	3.60	3.55	3.45	3.30	3.75	3.45	3.50S	3.45	J3.50R	3.60	3.60	2.95	I3.20A	3.25	3.30	3.00	2.70F
28	2.95	3.00	2.90	2.95	3.10	3.30	3.25	U3.70S	3.55	3.45	U3.40S	3.60	3.75	3.45	3.45	3.65	3.75	3.15	3.25	3.40	2.85	3.30	3.05	3.00
29	3.00	2.95	3.10	3.05	3.40S	3.25	3.20	3.70R	3.45	J3.50R	3.60	I3.45R	3.10H	3.45	3.60R	3.50	3.65	3.65	2.85	3.10S	3.00	3.10	3.05F	I2.90F
30	2.95	2.95	I3.00F	3.05	3.15	3.35	3.60R	J3.30S	3.60R	3.45	J3.45S	I3.40S	3.50	3.60	3.55	3.50R	3.65	3.25	I3.40S	3.25	3.15	3.00S	2.90	2.85
31																								
No.	29	29	29	29	28	28	27	27	27	30	30	29	30	30	30	30	29	29	28	29	28	29	28	28
Median	2.95	2.95	3.00	3.05	3.20	3.10	3.25	3.60	3.55	3.50	3.45	3.45	3.40	3.45	3.50	3.50	3.55	3.40	3.20	3.25	3.10	3.00	2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F2

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

M(3000)F1

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	C	C	L	L	A								
2										L	A	L	L	L		A								
3									L	L	A	A	A	L										
4									L	L	L	L	C	L		L								
5									L	L	L	L	C	L	L									
6							C	C	C	L	L	L	L	L	L	L								
7							C	L	L	L	L	C	C	A	A									
8							C	C	C	L	L	L	L	L										
9									L	L	L	L	L	A										
10									DH	L	L	L	L	L	L	L	A	A						
11									L	L	L	L	L	L	L	L								
12									L	L	C	L	L	L	L									
13										L	L	L	L	L	L									
14									L	L	L	C	L	L	A	A								
15									A	A	L	L	L	L	L									
16											L	A	L	L	L									
17									A	A	L	L	L	L	L									
18								A	A	A	L	L	L	L	L									
19											L	A	L	L	A									
20										L	L	S	L	L	L									
21									L	L	L	L	L	L	L	L								
22									L	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	L								
26									L	L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L								
28										L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L	L								
30										L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F1

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

The Radio Research Laboratories, Japan

K 8

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

R'F2

Nov. 1963

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										240	240	C	C	245		250A									
2										230	A	260		245		230									
3									240	230	260	245	240	245											
4										250	245	C	250	250		225									
5										215	230	240	C	250	240										
6							C	C	C	245	240	230	230	245	250	230									
7								225		245	245	C	C	245	225										
8							C	C	C	245	230			255											
9										225	250	250		245			A	A							
10									260	250	240	245	230	240	240	210									
11											260	240	225	245	230	240									
12									225			C	245	230	240										
13											245		250												
14										250	250	C	220H	240	225	A									
15									240A	260A	245	240	260	250											
16											240	245	255	240											
17											240	240	240	245											
18								A	A	300A	260	245	245		250										
19											240	225													
20										225	240	230	250												
21										250	230	225	230	230	230										
22									230	235	240	230	230	230	245										
23										240	245	230	250	250		215									
24											260	230		245	240										
25									240	250	260		225	240	225										
26										225	240	225	230	250											
27										250		230		250	250	225									
28											250	230	225	230	260										
29											240	240		250											
30										245		255	240	225	230										
31																									
No.								1	7	20	24	22	19	24	15	7									
Median								225	240	245	240	240	240	245	240	225									
U.Q.																									
L.Q.																									
Q.R.																									

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

The Radio Research Laboratories, Japan

K 9

R'F2

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

f_oF

Nov. 1963

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	E300A	310	300	300	240	230	210	210	210	205	220	I205C	I210C	220	E250S	A	220	230	I235A	E280A	I280A	295	310	265
2	300	300	300	270	210	210	210	210	225	220	I205A	250A	230	210	225	I225A	230	210	I250A	E200A	E320A	250	310	E360A
3	350	300	240	300	260	250	210	210	210	220S	I220A	I225A	I230A	225	240	230	230	205	225	I280A	E250A	300	255	255
4	275	275	225	210	200	265	210	210	210	245	230	210	I215C	225	245	225	205	205	250	I245A	225	270	E350A	310
5	295	310	260	230	210	250	245	210	205	210	200	205	I210C	225	210	225	205	205	210	210	300	I255A	250	280
6	345	310	300	300	C	C	C	C	C	210	245	210	230	225	210	205	220	200	260	210	260	305	300	295
7	260	245	310	250	200	I235S	210	205	225	230	225	I230C	I210C	I210A	I210A	225	205	210	310S	250	E320S	A	C	C
8	C	C	C	C	C	C	C	C	C	E245A	210	230	230	245	235	210	230	200	E290A	210	I250A	245	310	E350S
9	E400A	295	245	210	E350A	310	220	225	210	205	220	225	230	I240A	225	230	A	A	A	260	230	280	310	310
10	310	260	305	260	245	225	225	210	185H	225	245	220	225	225	210	205	215	210	E320S	245	255	260	310	260
11	265	255	250	230	210	250	225	210	200	230	230	225	225	230	220	210	240A	240	E300A	225	260	270	300	305
12	260	I280C	I300A	260	210	245	260	225	225	200	245	I215C	245	E245S	230	220	200	225	210	250	I260S	270	380	280
13	260	I260C	270	260	260	E300S	250	210	210	230	220	210	245	245	210	210	205	195	245	260	260	C	C	340
14	255	250	245	245	205	290	250	210	230	210	210	I220C	210	220	I225A	I220A	210	205	225	230	250A	305	340	310
15	300	250	310	240	250	250	260	205	I240A	A	210	210	210	230	220	210	200	200	250	230	I280A	I280A	E320A	310
16	290S	300	260	260	245	250	245	205	210	215	E250A	A	245	245	210	225	210	1210A	I220A	A	A	300	E260A	E350A
17	A	300	310	305	250	245	240	215	210	210	205	245	245	205	205	210	220	210	I215A	I240A	225	E300S	300	I295S
18	300	300	355	240	205	260	250	A	A	A	220	210	220	230	225	205	205	210	E250A	300	E300S	245	250	255
19	245	290	I250S	260	260	300A	255	225	205	230	225	I225A	220	245	I240A	225	205	205	I250S	245	225	260	310A	250
20	245	E300S	300	260	225	300	250	220	210	210	210	I200S	210	210	230	220	205	205	E250S	310	305	245	285	310
21	295	285	300	270	240	270	250	225	200	225	220	210	205	245	245	210	200	210	250	250	210	E310S	250	250
22	300	270	255	275	235	260	250	225	210	205	205	220	225	210	175	215	205	210	295	245	255	255	I260S	255
23	260	280	300	250	250	310	220	205	210	210	230	210	210	230	245	225	205	210	250	210	230	250	295	250
24	310	300	260	245	210	280	210	210	230	245	210	225	220	210	225	205	200	220	250	250	270	260	260	350
25	310	260	270	230	200	260	260	250	225	210	225	230	210	220	205	205	205	210	210	220	300	305	395	275
26	250	255	245	225	260	E350A	310	235	225	210	210	205	210	205	210	205	200	215	225	245	300	305	300	230
27	260	310	305	280	240	290A	245	210	210	205	210	220	245	220	210	205	200	200	310	I250A	225	225	260	330
28	305	300	290	E295A	290	225	230	205	210	210	230	210	225	210	180	225	200	250	225	210	310A	245	250	300
29	300	260	260	270	210	255	250	210	200	225	220	225	225H	205	230	230	210	210	205	305	285	260	250	305
30	310	305	255	250	240	210	205	210	230	220	245	245	210	220	205	225	205	210	210	210	255	275	310	310
31																								
No.	26	28	29	28	27	26	28	27	27	27	29	29	30	29	29	29	29	29	26	28	25	25	27	26
Median	295	290	270	260	240	250	245	210	210	210	220	220	220	225	220	220	205	210	E250	245	260	260	300	295
U.Q.																								
L.Q.																								
Q.R.																								

f_oF

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

The Radio Research Laboratories, Japan

K 10

IONOSPHERIC DATA

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

135°E Mean Time (G.M.T. +9h)

Nov. 1963

f^oF₂

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	S	100	100	S	B	105	100	S	C	C	100	S	110	105	105	100	100	100	100	100	S
2	S	S	100	E	B	130	B	B	100	100	100	B	B	100	110	110	100	S	110	100	100	100	105	100
3	100	100	100	100	100	S	S	S	105	100	100	100	100	100	100	110	105	S	S	100	100	100	100	S
4	S	S	S	E	E	S	S	S	S	120	S	S	C	G	S	105	B	S	S	100	100	S	100	S
5	S	S	S	E	E	S	S	S	S	120	S	S	C	100	125	110	105	105	S	S	S	100	S	S
6	100	S	S	100	C	C	C	C	C	S	S	S	B	100	S	G	B	S	100	S	S	S	S	S
7	S	S	100	100	E	S	S	B	G	B	S	C	C	105	105	100	S	S	S	S	100	C	C	C
8	C	C	C	C	C	C	C	C	C	100	100	100	G	S	S	S	G	105	100	100	100	S	S	S
9	100	100	100	100	100	100	100	S	B	S	S	S	B	110	115	115	110	105	100	S	S	100	S	S
10	S	S	S	S	S	S	S	B	B	S	B	B	S	S	S	B	S	S	95	S	S	105	S	S
11	S	S	S	E	E	S	S	S	S	S	S	S	S	S	135	125	115	115	115	S	S	110	S	S
12	S	C	100	E	E	S	S	S	S	S	S	C	S	S	130	125	S	S	S	S	S	S	S	S
13	S	C	S	E	E	S	S	S	S	S	S	S	S	S	S	120	B	S	S	S	C	C	S	S
14	S	S	100	E	E	S	100	B	S	120	115	C	S	105	100	100	100	S	100	100	100	S	S	S
15	S	S	S	E	S	S	S	S	100	100	G	110	110	110	110	G	105	100	S	100	100	100	100	S
16	S	100	E	100	105	S	S	S	S	S	100	100	100	100	100	100	100	100	90	95	100	100	100	100
17	100	100	100	100	100	S	S	B	S	S	100	100	105	115	S	G	B	S	100	100	S	S	S	S
18	S	S	S	100	E	S	S	100	100	100	100	100	105	105	G	115	110	S	100	S	S	S	S	S
19	S	S	S	105	105	100	S	B	S	110	110	110	110	105	100	100	100	100	S	S	S	S	100	S
20	S	S	100	E	E	S	S	B	S	120	105	105	105	105	100	S	S	S	S	S	S	S	S	S
21	105	S	S	E	E	S	S	S	S	S	S	105	S	G	G	B	B	B	S	S	E	S	S	E
22	E	E	E	E	E	S	S	G	G	115	G	110	S	S	G	B	B	S	S	S	S	S	S	S
23	S	S	S	E	E	S	S	110	115	110	105	100	G	100	100	G	B	B	S	S	S	E	S	S
24	100	100	E	E	E	S	S	155	G	150	S	S	G	125	125	S	S	S	S	S	S	S	S	S
25	S	S	S	E	E	S	S	B	G	115	110	G	110	105	G	G	105	100	S	110	S	S	S	S
26	S	E	E	E	E	S	100	S	150	110	105	105	105	G	E175G	G	G	S	S	S	105	105	S	110
27	S	105	100	105	E	100	S	155	G	G	G	G	G	G	110	G	G	S	S	125	S	S	S	S
28	105	S	100	100	100	S	S	S	G	115	110	105	110	110	105	G	G	S	S	100	S	S	S	S
29	S	105	100	100	100	100	B	B	100	100	B	B	G	G	140	G	135	S	S	115	105	S	100	S
30	E	E	E	E	E	E	S	B	G	G	G	G	G	G	G	180	G	B	130	S	S	S	S	S
31																								
No.	8	8	12	11	8	7	3	5	9	18	14	13	10	18	16	16	13	9	12	12	11	11	8	3
Median	100	100	100	100	100	100	100	150	105	110	105	100	105	105	110	110	105	105	100	100	100	100	100	100
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

f^oF₂

IONOSPHERIC DATA

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

Nov. 1963

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	f2	f2	f		f	f			1	1				1		e2	12	12	f2	f2	f	f	f	f	
2		f					h		12	1	12	1		1	c	1	12	12	f3	f3	f3	f2	f2	f2	
3	f2	f	f2	f2	f2	f			1	1	1	12	12	12	12	12	12			f	f	f2	f	f	
4										h						1				f2	f	f	f		
5										h					h	c	1	1		f2	f	f2	f		
6	f			f2										1					f						
7			f	f										12	e2	1					f2				
8									12	1	1	1		1	1	12	12	1	f2	f	f2				
9	f2	f	f	f	f2	f2	1							1	1	12	12	13	f2		f	f			
10																			f		f	f			
11															h	h	1	1	f2		f				
12															h	h									
13																c									
14							1			h	1			1	12	13	12		f	f	f				
15									12	12	1	1	1	1	1	1	12	1	f2	f	f2	f	f2	f	
16											1	12	1	1	1	1	1	12	f2	f	f2	f	f2	f	
17	f	f	f	f	f	f2					1	1	1	c					f2	f					
18								13		12	12	1	1	1		1	1		f						
19										12	1	12	1	1	12	1	1	1						f	
20									h	1	1	1	1	1	1	1	1	1							
21											1														
22										1		1													
23									1	1	1	1		1	1										
24										h				h	h										
25										c	1		1	1			1	1		f					
26									h	1	1	1	1	1	h		1	1			f	f2	f	f	
27																1			f2						
28										c	c	1	1	1	1						f				
29									1	1	1	1	1	h	h		h			f3	f				
30																h			f						
31																h			f						
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation
The Radio Research Laboratories, Japan
K 12

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

Nov. 1963

f_oF₂

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	U300S	345	340	330	260	260	U255R	245R	245	255	250	C	I250C	250S	270	265	255	250	I260A	300	I305R	J305R	345R	310
2	340	355	I350F	305	J250S	250R	250S	230	250	J250S	I270A	280	245	250	250	260	250	245	I250A	I275A	325	300	345	A
3	360	330	275	345	305	300	U225S	J230S	J260S	J255S	300	J270R	250	J260R	J260R	250	250	245	U280S	255S	I310A	385	320	300
4	325	305	280S	255	240	310	280S	230	250S	255	J260R	255	I260C	J260R	J260R	U250R	220S	I270S	J290S	I270A	U250S	300R	395	390
5	345S	355F	I320F	285	250	J260R	U260S	J240S	U250S	225	J260R	260	I270C	260	U250R	260	J220S	240	270	U250S	345	I300A	275	310
6	370	355	I340F	340F	C	C	C	C	C	255	I255R	260	260	280S	260S	250S	230	245	305	240	300	345	390S	325
7	370	370	355	300	230	I300S	U270S	250	J250R	J260S	U250R	I275C	I260C	250	J245S	250	220	250S	J350R	U280S	340S	A	C	C
8	C	C	C	C	C	C	C	C	C	260R	250R	250	265S	J275R	255	230S	J250R	220S	310	250	I270A	I280R	380	410S
9	400	320	300	290	A	340	255	250S	245	245	I270S	4380S	265	255	J250R	I240R	A	A	A	320S	295	320	I355F	J360S
10	350	310S	I310F	I300F	290	U255R	260	240	300	290	J250R	J300R	250	J250R	J265R	245	255	260R	U330S	280	U310S	280	350	305S
11	305S	305	U295S	300S	J260S	J300S	I250S	245	250S	J255S	295	J250R	245	260R	240	I245S	260	I270S	300	I270S	U285S	J310R	I330S	330
12	U310S	I325C	I340A	320	245S	I245S	I250S	260S	J245R	210S	300	I270C	260	I250R	J250S	250	260	U260S	U250S	I285S	I300S	I305S	400	J310S
13	I320S	I300C	300	310	305	J355S	I280S	J255S	J240S	300S	J260S	260S	4255R	U260S	240	J240R	230	210S	U280S	I290S	C	C	395	320S
14	305S	290	250	295	250	320R	J300S	240	250S	260	270	I260C	305H	J255R	240R	I240A	U235S	U340S	U250S	250S	I300S	J355S	J350R	350
15	U340S	300	310	295	290S	250	300	220	245	290	255R	250	300	U250S	J240R	J230R	I260R	I270S	280	250	I315A	I325A	A	I320S
16	310S	I330F	325	330	290	300	U270S	U220S	I235S	U245R	260	250	280	250	245S	250	250	I225A	A	A	A	345	310	355
17	I330A	330	I330S	325	310	300	255	245S	220	230	250	J305R	J250R	J250R	245	I245S	250	J250S	I255A	I285A	290	310	325	I345S
18	345S	330	I395F	285	255	U305S	J300S	A	A	300	305	260	285	J260R	245	250	245	270S	250	340S	I330S	265S	I290S	300S
19	300S	310	I300S	300	350	310	305	240	U230S	250S	J250S	250	260	270S	I255S	J250S	235	J245S	I305S	260S	U260R	345	355	300
20	U260S	J345S	345	320	295	310	U300S	U250S	U245S	J245S	250R	J250R	245	250	240R	250	225	250	J250R	J350R	305	260	310	325
21	320	310	J310S	325	305	J310R	280	U250S	245	255	250	240	250	250S	250	250	230	265	295	300	260	355	295	285
22	320	320S	315	310	295S	300	300	J250S	250R	I250S	J255R	J245R	J250R	295	250	250	240	255	310	285	295	J300R	I310S	315
23	300	310	320	310	310	355	250S	230S	U250S	J250S	250	250	J255R	J260R	J250S	230	220	260	300	280	260	295	350	295
24	355	345	310S	300	270	305	260	J250S	250	I270S	I280R	250	295	250	J250R	225	230	255	U295S	260R	J315S	310S	U305R	J360R
25	I350S	305	300	295	290	305	I300S	290	U250S	J260S	J295S	250S	235R	245	J250R	250	210	270	J255S	U245S	320	340	F	F
26	300	295	285	255	290	A	320	250	250	250	250	245	260	I250R	250	220R	J250S	295	280	280	320	355	310	U255S
27	295	335	345	300	260	305	255	245	240	255	275	240	255	260S	255	J250R	225	225	325	I280A	270	260	310	380F
28	345	310	320	310	300	265	265	U225S	235	260	U260S	245	225	250	265	250	220	295	270	260	340	275	300	320
29	345	310	300	305	250S	300	290	230R	250	J245R	250	I265R	300H	255	250R	250	245	225	345	305S	300	300	310F	I360F
30	330	330	I330F	305	290	255	220R	J255S	250R	255	J260S	I260S	250	240	250	250R	220	290	I250S	260	300	305S	345	340
31																								
No.	29	29	29	29	27	27	28	27	27	30	30	29	30	30	30	30	29	29	28	29	28	28	27	27
Median	325	320	315	305	290	300	270	245	250	255	260	255	260	250	250	250	235	255	280	280	300	305	330	320
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

f_oF₂

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

ypF2

Nov. 1963

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

ypF2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31°12.5' N
Long. 130°37.7' E

135° E Mean Time (G.M.T. +9h)

Nov. 1963

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	F	3.0	3.2	3.4	3.1	2.5 ^H	5.0 ^H	6.5	6.8	8.9	8.1 ^S	8.0	8.6	9.0	17.7 ^S	17.4 ^S	6.8	5.3 ^S	3.3	3.2 ^A	3.2 ^A	3.2 ^A	3.2 ^A	3.0 ^S	
2	3.2	3.1	3.3	3.8 ^S	4.1 ^S	2.2	5.4 ^S	6.0	7.0 ^S	7.1 ^S	8.1 ^S	8.5	8.2 ^S	S	8.9 ^S	8.0 ^S	16.6 ^S	16.5 ^{SH}	4.7 ^A	3.2	3.3 ^S	3.1	2.8		
3	3.0	3.0 ^A	3.2 ^A	3.5	3.7	F	5.2	7.4 ^S	7.6 ^S	8.9	11.1	9.0	9.7 ^S	10.9 ^S	10.9	8.2 ^S	6.1	4.8 ^S	A	A	3.1	S	S	S	
4	3.7	3.8 ^A	3.9 ^S	3.4	3.0 ^S	2.4	5.4 ^{SH}	6.2 ^S	7.7 ^S	7.7 ^S	8.5	7.5 ^S	9.3 ^H	8.8	8.8	17.5 ^S	5.4	4.4	4.7	3.7	3.7 ^S	3.5 ^S	3.0	3.0	
5	3.1	3.2	3.2	3.5 ^S	4.3 ^S	2.3	2.5	5.8	7.1	16.8 ^S	17.1 ^S	8.6	7.7 ^S	8.5	10.6	9.1	17.2 ^S	6.2 ^S	4.6 ^S	3.2	3.6	3.8	3.0	2.8	
6	3.0	3.2	F	F	4.2 ^S	2.7	2.3	5.3 ^S	7.6 ^S	6.7 ^S	6.4	8.0 ^S	7.8 ^S	8.9 ^S	8.8	17.8 ^S	5.8	4.5	3.6	3.9	3.3	3.0	3.0	3.1 ^S	
7	3.5	3.5 ^S	3.3	3.4 ^S	3.1	2.4	4.8 ^S	7.0 ^S	7.0 ^S	8.8 ^S	9.0	8.7	11.1	19.4 ^S	8.1	17.6 ^S	5.9	4.5 ^S	3.5 ^S	3.8 ^S	3.6	3.4	3.4	3.4	
8	3.9 ^S	4.1 ^S	3.1	3.0	3.1	3.2	3.2	6.0 ^S	8.9	19.9 ^S	S	10.4 ^S	8.9	10.3	11.0	11.3	7.2	6.6 ^S	4.5 ^{SH}	4.9 ^S	4.2 ^S	3.1	3.1		
9	3.2	3.6	3.4	3.3	3.1	3.4 ^S	3.9 ^S	6.0 ^S	16.7 ^S	17.1 ^S	10.4 ^S	9.6 ^S	9.5 ^S	11.0	8.6	16.2 ^S	6.0	4.6 ^S	4.7 ^S	5.2 ^S	4.7 ^S	3.4	3.7		
10	3.5	3.7 ^S	3.6 ^S	3.2	S	2.6 ^S	2.6	5.2 ^S	7.0 ^S	8.6	10.7	10.5	9.5 ^S	9.0	9.6 ^S	8.6	7.0 ^{SH}	7.9 ^S	4.9	3.3 ^H	4.1 ^S	3.8 ^S	3.3	3.6 ^S	
11	3.5 ^S	3.4	3.5 ^S	3.5	3.8 ^S	3.6	4.5 ^S	6.1 ^H	16.5 ^{SH}	8.1 ^S	10.0 ^S	10.0 ^S	9.3 ^S	19.0 ^S	6.6	6.3 ^S	6.0 ^S	4.7 ^{SH}	3.2	3.9 ^S	4.2 ^S	3.6 ^S	2.9		
12	3.2	3.2	3.3	3.6	4.3 ^S	2.4	2.6	7.0 ^S	7.2 ^S	8.3 ^S	8.0 ^S	8.2 ^S	8.6	8.3	19.6 ^S	8.7	6.6	5.8 ^H	4.4 ^S	3.4 ^S	3.4	3.1	3.1		
18	3.5 ^S	3.2	3.2	3.3 ^S	3.2	3.3 ^S	5.5	16.6 ^S	17.8 ^S	8.9	10.4 ^S	8.5	7.3 ^S	10.0 ^S	17.2 ^S	16.6 ^S	5.3 ^S	4.1 ^S	3.2	4.1 ^S	3.0	3.2 ^S	3.3		
14	3.5	3.6 ^S	3.3	2.9 ^S	3.3	3.1	3.0	4.9 ^S	16.1 ^S	6.4	8.0 ^S	10.5 ^S	9.0	19.2 ^S	8.6	7.6 ^S	6.2	5.3	4.9 ^S	3.5	3.3	2.8	3.1 ^S		
15	3.2	3.5 ^S	3.4 ^S	3.5 ^S	2.1	2.2	4.9 ^S	5.8	16.3 ^S	17.4 ^S	10.4	10.4	8.4 ^S	10.1 ^S	10.9	17.6 ^S	C	C	C	C	3.5	2.9	2.6 ^S	2.9	
16	3.2	C	C	C	C	C	C	C	C	6.4 ^S	6.6 ^S	8.0 ^S	9.6 ^S	10.4	9.2 ^S	17.7 ^S	6.0	5.9 ^S	4.4 ^S	3.8 ^S	3.2 ^H	2.9	3.1	3.1	
17	3.3 ^S	3.4 ^S	3.2	3.4	3.6 ^S	3.1	3.2	5.0 ^S	16.7 ^{SH}	17.8 ^S	17.0 ^S	8.4	8.4	19.3 ^S	9.0	8.4	6.7 ^H	5.4	5.6 ^S	4.1 ^S	3.6 ^S	3.0	2.9 ^S	2.9	
18	3.1	3.1	3.0	4.2	3.4 ^S	2.7 ^S	3.8 ^S	5.8 ^H	17.1 ^S	10.6	12.2	10.6 ^S	19.4 ^S	8.8	17.3 ^S	6.2 ^S	6.1 ^S	4.5 ^S	4.2 ^S	3.9	3.7	3.7 ^S	3.8		
19	3.6 ^S	3.5 ^S	F	3.0	3.1	3.0 ^S	3.0	6.1	16.8 ^S	17.0 ^S	17.7 ^S	17.8 ^S	7.5 ^S	8.2	8.5	19.0 ^S	6.9 ^S	5.9 ^S	4.6 ^S	3.2	3.0	3.2 ^S	2.4	2.7	
20	3.1 ^S	2.9	2.9 ^S	2.9	3.0	2.6	4.2 ^S	5.5 ^S	16.9 ^S	17.9 ^S	8.1	8.4	8.6	8.1	8.6	8.6	16.8 ^S	5.9	4.3	3.2	3.7	3.3 ^S	3.1	3.0	
21	3.2	3.1	3.1	3.3	3.1	2.9	4.2 ^S	5.1 ^S	16.5 ^S	18.2 ^S	19.8 ^S	9.0	18.2 ^S	18.4 ^S	18.0 ^S	5.7	5.2 ^S	4.2 ^S	3.0 ^S	2.7	2.7	2.7	3.1		
22	3.1	3.1	3.1 ^S	3.3	3.5 ^S	3.1	3.1 ^S	4.7	17.0 ^{SH}	8.7	8.2 ^S	9.0 ^S	8.3	6.9	6.8	17.4 ^{SH}	5.8	5.5	3.8	3.1	3.2	2.7 ^S	2.7	2.6 ^S	
23	2.9	3.1	3.0	3.0	3.0	3.1	3.4	4.1 ^S	5.3	6.7	6.6	8.5	7.1 ^S	8.2	17.5 ^S	17.1 ^S	16.8 ^S	5.5	3.9 ^S	3.5	3.3	3.0 ^S	3.0	2.5 ^S	
24	2.6	3.0 ^S	3.1	3.1	3.2 ^S	2.5	2.5	4.4 ^S	6.5 ^S	6.2 ^H	17.2 ^S	8.7	7.1	8.4	8.4	7.0 ^S	16.3 ^S	5.3	3.6	3.1	3.7 ^S	2.9	3.3 ^S	3.5 ^S	
25	3.2	3.4 ^S	3.1 ^S	3.1	2.7 ^S	C	C	C	6.9 ^S	17.7 ^S	8.8	10.6	9.0	17.6 ^S	6.8	17.6 ^S	5.9 ^H	5.7	4.5	3.3	3.6	2.9	3.3	3.3	
26	3.3 ^S	3.6 ^S	4.1 ^S	2.4	2.3	3.1 ^S	3.9 ^S	4.0 ^S	16.8 ^S	18.3 ^S	S	8.2	16.9 ^S	16.8 ^S	6.7	16.4 ^S	5.8	5.1 ^S	3.6	3.3	3.2 ^S	2.8	2.9		
27	2.9 ^S	3.1	3.2	3.2	3.4 ^S	2.6	2.9	4.4	6.2	6.6	6.4	7.0	7.2	17.6 ^S	17.6 ^S	6.6	6.7	5.4 ^S	3.5	3.6	5.1 ^S	3.0	2.7	2.5	
28	2.7	2.9 ^S	3.0 ^S	3.2	3.4	3.1	2.5	4.4 ^S	5.3 ^S	5.9	8.0 ^S	17.1 ^S	6.1 ^S	6.4 ^S	16.2 ^S	17.9 ^S	7.6 ^S	4.7 ^H	3.9	3.6 ^S	2.9	3.3	3.0	2.7	
29	2.8 ^A	3.0 ^S	3.1 ^S	3.2 ^S	3.7 ^S	3.0	2.5	3.9 ^S	5.6	18.0 ^S	18.3 ^S	17.8 ^S	17.1 ^S	6.9 ^S	6.3	6.0	6.0 ^S	5.9	1.4 ^S	3.7	1.4 ^S	1.9 ^S	2.9	2.9	
30	3.0 ^S	3.2	3.3	3.0	2.8	2.9 ^S	2.5	3.6 ^S	5.5 ^S	16.2 ^S	6.7	16.5 ^S	6.5	6.6	6.4	16.3 ^S	5.9 ^H	5.4 ^S	3.4 ^S	1.4 ^S	2.9 ^S	3.2 ^S	3.4 ^S	3.2	
31																									
No.	29	28	27	28	28	27	28	28	29	30	28	30	30	30	29	30	29	29	28	28	29	30	29	29	29
Median	3.2	3.2	3.2	3.2	3.2	2.9	2.7	5.0	6.5	7.0	8.0	8.6	8.4	8.4	8.9	7.8	6.7	5.8	4.5	3.5	3.6	3.3	3.1	3.0	
U.I.Q.	3.5	3.5	3.3	3.4	3.6	3.1	3.1	5.4	7.0	7.9	8.8	10.4	9.0	9.3	9.6	8.7	7.2	6.0	4.8	4.2	3.9	3.6	3.2	3.2	
L.Q.	3.0	3.1	3.1	3.0	3.0	2.4	2.5	4.4	6.0	6.5	7.1	8.1	7.5	7.6	7.6	7.3	6.1	5.4	4.2	3.2	3.2	3.0	2.9	2.8	
Q.R.	0.5	0.4	0.2	0.4	0.6	0.7	0.6	1.0	1.0	1.4	1.7	2.3	1.5	1.7	2.0	1.4	1.1	0.6	0.6	1.0	0.7	0.6	0.3	0.4	

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

foF2

The Radio Research Laboratories, Japan

Y 1

Lat. 31°12.5 N
Long. 130°37.7 E

Yamagawa

IONOSPHERIC DATA

foF1

Nov. 1963

135° E Mean Time (G.M.T. +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									3.1	3.5	4.4 ^H	I ^H	L	L	L	L	A							
2										I ^H	L	I ^H	I ^H	I ^H	4.5	L								
3										L	L	L	L	4.3	A	A								
4									3.6	L	I ^H	L	4.6	L	4.5	4.1	A							
5									I ^H	L	L	4.5	4.6	5.1 ^H	I ^H	L	L							
6									L	L	L	4.6	4.2	I ^H	I ^H	L	L							
7									L	L	L	4.5 ^H	4.4	4.4	L	L								
8									L	L	L	I ^H	L	L	L	L	A							
9									L	L	L	4.5 ^L	4.4	A	A	A	A							
10									L	L	L	A	I ^H	I ^H	3.8	A								
11										L	L	I ^H	I ^H	A										
12									L	L	L	I ^H	L	L	L	L								
13									L	L	L	4.4	4.4	L	L	4.0	3.0							
14									L	L	L	I ^H	4.4	4.2	L	L	A							
15										L	L	I ^H	4.5	4.5	L	L	C							
16								C		L	L	I ^H	4.6	L	L	L								
17									L	L	L	I ^H	L	L	L	L								
18									4.8 ^L	L	L	L	I ^H	L	L	A	A							
19									C	L	L	L	L	I ^H	L	L								
20									L	L	L	I ^H	4.3	4.2	I ^H	I ^H	3.0							
21									L	L	L	I ^H	L	L	L									
22									L	L	L	4.4	4.6	4.3	3.8									
23									*	L	L	I ^H	I ^H	4.5 ^H	L	L	L	1.9						
24										L	L	L	4.5	L	L	L								
25								C	L	L	L	4.0	L	L	L	I ^H								
26									L	L	L	4.3	4.5 ^L	4.2 ^H	L	L	2.8							
27									L	L	L	L	L	L	L	L								
28									I ^H	L	L	4.3	4.3	L	L	L								
29									L	L	L	4.3	4.4	I ^H	L	L								
30									L	L	L	4.2	4.3	4.4	L	L								
31									L	L	L	4.1	L	L	L	L								
No.									1	3	6	19	18	14	11	4	3	1						
Median									3.1	3.6	4.2	4.4	4.4	4.3	4.3	U ^L	4.0	3.0	1.9					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

foF1

Y 2

Lat. 31°12.5' N
Long. 130°37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

NOV 1963

Nov. 1963

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	2.35	2.75	3.00	A	R	3.25 ^R	3.15	2.90	2.25	S						
2								S	2.40	2.80	3.00	3.20	3.20	3.20	3.20	2.90	2.30	S						
3								S	2.15	2.60	I _{2.90} ^A	A	A	3.10	3.00	3.10	2.40	S						
4								S	2.35	2.50	2.90	3.10	3.15	3.10	2.85	2.90	2.30	S						
5								S	2.30	2.70	3.05 ^H	3.10	3.20	3.15	3.00	2.80	A	A						
6								S	2.30	2.70	2.95	3.00	3.25 ^R	I _{3.20} ^R	3.10	2.80	I _{2.30} ^A	S						
7								S	2.40	2.80	3.10	3.20	3.10	3.20	3.05	2.80	A	S						
8								S	A	2.80	I _{3.00} ^A	3.15	3.20	A	A	2.45	S							
9								S	2.40	2.80	3.00	3.15	3.20 ^R	3.10	3.00	2.70	2.25	S						
10								S	2.20	2.75 ^H	3.00	3.10	3.20	3.10	I _{2.90} ^A	2.80	2.40	S						
11								S	2.15	2.60	2.80	3.00	3.05	3.10	3.00	2.65	2.35	S						
12								S	2.25	2.60	2.90	3.05	3.10 ^R	I _{3.00} ^R	3.00	2.75	2.30	S						
13								S	2.30	2.70 ^H	2.90	3.00	3.10	3.05 ^H	3.00 ^H	2.70	2.20	S						
14								S	2.30	2.70	2.95	3.05	3.10	3.00	3.00	2.70	2.30	S						
15								S	2.20	2.60	2.90	3.10	3.20	3.15	2.95	2.65	C	C						
16								C	2.70	2.95	3.10	3.05	3.00	3.10	3.00	2.70	2.30	S						
17								S	2.30	I _{2.65} ^A	2.95	3.05	3.00	3.10	2.90	2.50	2.20	S						
18								S	A	2.75	A	A	A	A	A	A	A	S						
19								S	I _{2.45} ^C	2.75	3.00	3.05	A	A	A	A	A	S						
20								S	2.35	A	A	A	3.15	I _{3.15} ^A	2.95	2.70	2.20	S						
21								S	2.30	2.75	3.05	3.10	3.10	3.05	2.90	2.60	I _{2.20} ^A	S						
22								S	2.30	2.70	3.00	3.10	3.20	3.15	A	A	A	S						
23								S	2.20	2.60	3.00 ^H	3.05	3.20	A	A	A	A	S						
24								S	2.20	2.70	2.95	3.10 ^H	3.15 ^H	3.15	3.00	2.80	2.30 ^H	S						
25								C	2.20	2.60	2.85	2.90	I _{3.00} ^A	3.00 ^H	I _{2.90} ^R	2.60	2.30	S						
26								S	2.40	2.70	2.95	3.05	3.10	3.10	3.00	2.70	I _{2.25} ^A	S						
27								S	2.05	2.70	2.90	3.10	3.10 ^H	2.95	I _{2.85} ^A	2.70	2.20	S						
28								S	2.10	2.60	3.00	3.20	3.10	3.10	2.95	2.70	2.10	S						
29								S	2.20	2.85	2.90	3.00	3.15 ^R	3.10	3.00	2.60	2.10	S						
30								S	2.20	2.70	2.95	I _{3.00} ^A	3.10	3.10	3.00	2.60	2.00	S						
31																								
No.									27	29	28	26	26	26	25	25	23							
Median									2.30	2.70	2.95	3.10	3.10	3.10	3.00	2.70	2.30							
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

Y 3

NOV 1963

Lat. 31°12.5'N
Long. 130°37.7'E

Yamagawa

IONOSPHERIC DATA

135°E Mean Time (G.M.T. +9h)

foEs

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J _{2.8}	3.2	J _{2.2}	E	E	S	2.1	G	2.3 ^G	J _{3.0}	3.3	3.2	3.5	3.9	4.5	3.5	3.6	2.2	3.5	J _{3.0}	J _{5.4}	J _{5.3}	2.6	S
2	2.8	2.7	2.1	E	E	S	S	2.1	2.4	3.0	3.9	3.4	3.5	3.8	4.4	3.1	3.5	J _{5.1}	3.5 ^M	5.9 ^M	2.8	2.2	2.4	J _{5.3}
3	J _{2.5}	5.9 ^M	5.7 ^M	2.8	3.4	2.8	2.4	2.7	2.6	3.1	3.8	5.3	4.3	3.9	4.2	3.9	3.4	J _{3.2}	2.5	J _{5.3}	J _{4.2}	2.7	3.6 ^M	J _{2.4}
4	J _{2.6}	J _{4.3}	2.3	2.7	E	S	S	G	2.8	3.2	3.7	3.7	3.5	3.7	3.2	3.6	3.9	J _{5.3}	J _{5.2}	J _{4.2}	2.8	2.7	2.3	2.0
5	S	S	E	S	S	2.4	2.4	3.1	3.2	3.1	3.6	4.0	3.6	3.3	3.2	3.4	3.0	3.5	J _{2.7}	J _{2.7}	2.7	3.6 ^M	3.7	3.7
6	S	S	S	1.1	1.2	S	S	2.1	2.7	3.1	G	3.2	G	G	3.4	4.0	3.1	G	2.2	2.2	S	2.4	2.6	S
7	S	2.4	S	S	2.4	1.9	2.0	S	G	3.1	3.2	3.4	3.5	3.5	3.2	3.7	2.4	2.2	2.2	2.2	3.7 ^M	2.7	2.4	4.8 ^M
8	3.7	J _{2.9}	2.5	2.1	S	S	S	S	4.4 ^M	3.7 ^M	3.9	3.9	3.4	J _{3.4}	3.8	J _{3.6}	3.8	2.2	2.7	3.0 ^M	S	S	S	J _{2.3}
9	3.2 ^M	3.4	3.1 ^M	E	3.0 ^M	2.3	S	S	G	3.1	3.2	3.7	3.9	4.5	3.9	4.5	4.9	J _{2.4}	S	J _{2.9}	1.9	J _{3.2}	3.0 ^M	3.0 ^M
10	2.4	2.3	1.8	2.4	1.3	2.4	S	G	2.7	3.2	3.8	4.4	3.8	3.5	3.8	J _{4.7}	3.0	1.8	S	S	S	J _{2.2}	S	2.4
11	S	S	S	E	1.3	S	S	S	G	G	3.5	G	G	3.8	4.2	3.6	3.3	3.0	2.4	2.0	S	S	3.6 ^M	3.5 ^M
12	S	2.4	3.2 ^M	2.4 ^M	E	S	J _{2.3}	S	G	2.8	3.1	G	G	G	3.3	3.3	2.6	1.8	2.3 ^M	S	S	S	S	S
13	S	S	S	S	E	S	S	S	2.8	J _{2.9}	G	G	3.4	G	3.4	3.1	2.4	S	2.3 ^M	S	2.3 ^M	2.2	2.3 ^M	S
14	S	S	3.5	E	2.4 ^M	2.7 ^M	2.2 ^M	S	2.7	3.1	3.3	3.4	G	G	3.4	3.5	3.8	2.5	J _{1.7} S	S	3.1	2.3	S	J _{2.7}
15	2.4	S	S	E	E	S	S	G	3.8	3.5	3.6	3.6	4.3	3.8	3.4	3.0	C	C	C	C	S	3.0 ^M	S	3.6 ^M
16	S	S	C	C	C	C	C	C	C	2.6 ^G	2.9 ^G	3.4	3.8	3.6	3.4	3.0	2.7	2.7	3.2	2.4	S	2.7 ^M	2.4	2.6
17	S	2.1	2.4	3.1 ^M	2.4 ^M	2.9 ^M	2.5	2.7	2.3	J _{3.2}	3.3	3.6	3.4	4.0	3.9	3.6	2.4	G	J _{2.5}	3.0 ^M	4.7 ^M	3.2 ^M	2.8 ^M	2.2
18	2.1	S	S	E	2.4 ^M	S	S	3.2 ^M	2.3	2.6 ^G	3.0	3.6 ^M	5.2	6.1 ^M	J _{5.8}	5.8 ^M	8.8 ^M	6.0 ^{MF}	3.6 ^M	3.6	2.7 ^M	2.2	2.1	2.3
19	2.0	S	S	2.4 ^M	3.0 ^M	3.5 ^M	2.9 ^M	3.5 ^M	C	3.4	5.0	J _{5.3}	J _{5.1}	5.2	J _{5.4}	5.0 ^M	3.0	3.8 ^M	3.4 ^M	3.5 ^M	J _{3.2}	3.0 ^M	3.5 ^M	2.9
20	2.5	2.4	2.3	2.3	2.2	S	S	S	G	2.8	3.2	3.3	2.9 ^G	3.6	2.5 ^G	2.3 ^G	2.7	2.3	2.0	2.4	J _{3.2}	S	S	S
21	S	S	S	E	1.1	2.4	2.3	S	2.5	2.5 ^G	G	2.9 ^G	G	G	3.7	3.6	3.5	J _{2.3}	S	1.9	J _{2.6}	S	2.3	S
22	S	S	S	S	S	S	S	S	G	2.9	3.4	3.6	3.8	3.9	3.5	3.7 ^M	J _{3.2}	S	3.0	3.0 ^M	2.4	S	S	S
23	S	S	S	E	1.1	S	S	S	G	G	4.0	2.7 ^G	G	3.3	3.2	3.2	2.9	2.8	S	S	S	S	S	S
24	S	2.1	S	E	E	S	S	S	3.0	2.8	G	3.4	3.8	3.5	3.6	G	G	G	G	S	S	S	S	S
25	S	2.4	2.4	2.9 ^M	2.3 ^M	C	C	C	2.7	3.4	J _{4.5}	3.3	3.2	G	G	2.8	G	2.4	S	S	S	S	S	S
26	S	S	E	E	S	S	S	S	G	3.1	3.6	3.2	G	3.3	3.6	2.9	J _{2.8}	S	S	S	2.2	2.3	S	S
27	2.2	J _{2.8}	3.4 ^M	2.9 ^M	2.2	2.8 ^M	S	2.2	G	1.9 ^G	3.5	4.7	3.9	4.8	4.8	2.2 ^G	2.4	2.7	2.7 ^M	S	S	S	S	S
28	S	J _{2.2}	S	2.8 ^M	2.2 ^M	2.3 ^M	S	S	2.3	G	3.5	4.9 ^M	3.7	3.3	2.8	2.8	2.8	2.5 ^M	2.1	2.4 ^M	S	3.5 ^M	2.3	S
29	3.6 ^M	S	S	S	E	E	S	S	G	3.2	G	G	3.5	G	2.6 ^G	3.4	2.8	J _{2.3}	2.4	2.0	S	S	S	S
30	S	S	S	S	E	S	S	S	2.4	G	3.6	4.0	G	G	G	G	G	G	2.1	S	S	S	S	S
31																								
No.	13	14	15	23	25	12	9	12	28	30	30	30	30	30	30	30	29	26	21	18	17	18	15	15
Median	2.5	2.6	2.4	1.1	1.3	2.4	2.3	2.2	2.3	3.0	3.4	3.4	3.5	3.6	3.4	3.4	3.0	2.4	2.5	3.0	2.7	2.7	2.5	2.7
U.Q.	3.0	3.2	3.2	2.7	2.4	2.8	2.4	2.9	2.7	3.2	3.7	3.7	3.8	3.9	3.9	3.7	3.5	3.0	3.3	3.6	3.4	3.2	3.5	3.6
L.Q.	2.3	2.3	2.1	E	E	2.3	2.2	G	G	3.0	3.2	G	G	G	3.2	3.0	2.5	2.2	2.2	2.4	2.4	2.3	2.3	2.3
Q.R.	0.7	0.9	1.1			0.5	0.2		0.7	0.5	0.7	0.5			0.7	0.7	1.0	0.8	1.1	1.2	1.0	0.9	1.2	1.3

Sweep 1.0 Mc to 20.9 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

foEs

Y 4

IONOSPHERIC DATA

Nov. 1963

f_oF₂S

135° E Mean Time (G. M. T. +9h)

Yamagawa

Lat. 31°12.5' N
Long. 130°27.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.0	1.9	1.8			S	G		2.2 ^G	2.3	3.2	E _{3.2} R	3.4	3.7	4.4	3.4	3.4	2.1	A	A	A	A	1.9	S
2	1.9	1.7	E			S	S	G	2.3	2.2	3.3	3.4	3.4	3.5	3.5	G	3.2	4.7	E	A	2.2	E	1.7	1.9
3	1.7	A	A	1.8	2.0	1.8	1.8	2.0	2.6	2.9	3.5	3.7	3.8	3.7	E _{4.2} R	3.8	3.3	3.1	2.4	A	A	1.8	1.8	1.7
4	1.7	A	E	1.7		S	S		2.5	3.1	3.5	3.7	3.5	3.3	3.1	3.3	3.8	4.7	3.0	3.7	E	1.8	1.8	E
5	S	S	S	S	S	E	E	1.9	1.8	1.8	3.5	4.0	3.5	3.3	E _{3.2} S	3.3	2.7	2.2	2.0	2.0	1.9	2.3	2.7	2.5
6	S	S	S	E _{1.1} S	E _{1.2} S	S	S	G	G	3.1	E _{3.2} R				3.3	4.0	2.7		2.0	S	E	2.1	S	S
7	S	S	S	S	S	1.7	1.7	S	2.9	1.9	E _{3.2} R	3.4	3.3	3.4	G	3.1	2.4	2.1	1.9	2.6	E	E	E	E
8	2.6	2.9	2.5	E	S	S	S	S	2.5	1.9	3.4	2.3	2.7	3.4	3.5	3.3	3.7	1.8	2.2	E	S	S	S	2.0
9	2.0	2.9	1.2		1.7	1.7	S	S	3.0	E _{3.2} R	3.6	3.9	3.9	4.5	3.9	4.5	A	1.8	S	2.5	1.8	2.6	1.8	1.7
10	E	2.0	1.7	E	E	1.8	S		2.7	3.2	3.7	4.4	3.7	3.4	3.6	4.6	2.6	G	S	S	S	1.9	S	E
11	S	S	S		E _{1.3} S	S	S	S		3.5				3.8	4.1	3.4	3.2	E _{3.0} R	2.0	E	S	S	1.9	1.8
12	S	1.8	1.9	E		S	E	S		G	3.1				G	3.3	2.6	1.8	E	S	S	S	S	
13	S	S	S	S		S	S	S	G	1.9			3.4		3.4	3.1	G	S	S	S	E	1.8	1.8	S
14	S	S	2.0		1.7	1.7	1.7	S	2.6	G	3.3	3.4			3.3	3.1	3.8	2.2	S	S	2.6	E	S	A
15	1.9	S	S			S	S	S	3.5	3.2	3.5	4.0	4.0	3.6	G	E _{3.0} R	C	C	C	C	S	2.0	S	1.7
16	S	C	C	C	C	C	C	C	C	2.5 ^G	2.8 ^G	3.3	3.7	3.6	3.3	G	G	2.6	2.0	1.8	S	1.8	2.1	1.9
17	S	1.8	E	1.9	1.7	1.8	E	1.9	G	3.0	3.2	3.5	3.3	3.4	3.7	3.4	G	E	E	E	2.9	2.5	A	E
18	E	S	S		1.7	S	S	G	2.3	2.5 ^G	E _{3.0} R	G	3.5	3.7	3.3	4.7	4.6	3.3	1.9	2.2	1.9	E	E	1.7
19	E	S	S	E	1.9	2.4	2.0	2.1	C	3.3	4.0	4.0	3.4	3.5	3.2	3.2	2.7	3.6	1.7	2.1	2.5	1.9	2.0	2.0
20	1.8	1.7	1.8	1.6	1.5	S	S	S	E _{2.8} R	3.2	3.3	3.3	2.6 ^G	3.4	2.5 ^G	1.8 ^G	G	G	1.9	2.4	3.1	S	S	S
21	S	S	S		1.1	E	E	S	G	2.3 ^G	2.5 ^G	2.5 ^G			3.6	3.6	2.9	2.1	S	1.9	1.7	S	E	S
22	S	S	S	S	S	S	S	S	2.9	3.3	3.5	3.7	3.6	3.4	2.9	2.9	2.9	S	1.9	1.8	E	S	S	S
23	S	S	S		E	S	S	S	3.4	2.5 ^G		2.5 ^G		3.3	3.1	3.2	2.7	G	S	S	S	S	S	S
24	S	E	S			S	S	S	1.9	2.0	G	3.8	G	G	3.3			S	S	S	S	S	S	S
25	S	E	1.7	1.7	1.2	C	C	C	2.4	3.2	3.4	3.3	E _{3.2} R		G		G	G	S	S	S	S	S	S
26	S	S	S		S	S	S	S	2.9	3.2	G			3.3	G	2.8	2.3	S	S	S	E	1.9	S	S
27	E	2.0	2.7	2.1	E	1.8	S	G	1.8 ^G	3.4	3.6	3.6	3.7	3.4	2.2 ^G	1.9	G	1.8	S	S	E	1.9	S	S
28	S	E	S	1.8	1.7	1.6	S	S	2.2		3.3	3.5	G	3.4	2.6	2.4	2.8	G	E	E	S	1.9	E	S
29	A	S	S	S		S	S	S	G				3.4		2.4 ^G	3.4	2.8	1.9	E	1.9	S	S	S	S
30	S	S	S	S		S	S	S	G		3.4	3.5						E	S	S	S	S	S	S
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_oF₂S

Lat. 31 12.5 N
Long. 130 37.7 E

Yamagawa

IONOSPHERIC DATA

135 E Mean Time (G. M. T. +9h)

M(3000)F1

Nov. 1963

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									4.20	4.35	3.85 ^H	L ^H	L	L	L	L	A							
2									L ^H	L	L	L	L ^H	L ^H	3.55	L								
3									L	L	L	L	L	L	A	A								
4									4.35	L	L	L	L	L	3.75	3.90	A							
5									L ^H	L	L	L	L	L	L	L	L							
6									L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	L	L	L	L							
8									L	L	L	L	L	L	L	L	A							
9									L	L	L	L	L	L	L	L	A							
10									L	L	L	L	L	L	L	L	A							
11									L	L	L	L	L	L	L	L	A							
12									L	L	L	L	L	L	L	L	L							
13									L	L	L	L	L	L	L	L	L							
14									L	L	L	L	L	L	L	L	L	4.35						
15									L	L	L	L	L	L	L	L	L	C						
16									C	C	L	L	L	L	L	L	L							
17									L	L	L	L	L	L	L	L	L							
18									L	L	L	L	L	L	L	L	L							
19									C	L	L	L	L	L	L	L	L							
20									L	L	L	L	L	L	L	L	L							
21									L	L	L	L	L	L	L	L	L							
22									L	L	L	L	L	L	L	L	L							
23									L	L	L	L	L	L	L	L	L							
24									L	L	L	L	L	L	L	L	L							
25									L	L	L	L	L	L	L	L	L							
26									L	L	L	L	L	L	L	L	L							
27									L	L	L	L	L	L	L	L	L							
28									L ^H	L	L	L	L	L	L	L	L							
29									L	L	L	L	L	L	L	L	L							
30									L	L	L	L	L	L	L	L	L							
31									L	L	L	L	L	L	L	L	L							
No.									1	3	6	19	18	14	10	4	3	1						
Median									4.20	4.35	3.90	3.85	3.90	3.95	3.80	3.85	4.30	4.30						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

M(3000)F1

Y 8

Lat. 31°12.5 N
Long. 130°37.7 E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

RF2

Nov, 1963

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									240	235	250	245	245	270	290	240	250								
2										240	250	255	245	290	280	250									
3										230	290	245	240	290	260	245	235								
4										250	255	250	245	270	260	240	225								
5										230	250	255	250	330	260	240	235								
6										240	240	255	255	255	255	250	235								
7										240	250	280	255	270	240	245									
8										255	255	235	290	255	255	235	225								
9										240	260	250	255	265	255	225	230 ^A								
10										255	250	260	240	255	250	230									
11											260	255	245		240										
12										240	235	255	255	280	255	245									
13										250	245	250	240	265	250	220	230								
14										245	260	250	230	280	235	240	230								
15											290	260	260	275	245	220	C	C							
16											275	280	290	270	240	250									
17											240	245	260	240	270	245	240								
18											300	295	245	255	250	245	260	250							
19											230	245	245	250	280	260	255								
20											245	245	270	250	240	255	240	230							
21										230	250	250	235	230	300	275									
22											250	245	250	250	250	250									
23										260	245	260	250	270	275	250	230	205							
24											265	250	260	245	260	230									
25										240	260	290	240	250	230	240									
26											255	245	225	240	250	235	235								
27											245	245	245	270	260	240	240								
28											250	240	250	250	255	255									
29											250	250	255	230	255	255									
30											250	250	245	280	255	245	240								
31																									
No.									4	26	30	30	30	29	30	25	13	1							
Median									240	250	250	250	250	265	255	240	230	205							
U.Q.																									
L.Q.																									
Q.R.																									

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

The Radio Research Laboratories, Japan

Y 9

RF2

Lat. 31°12.5'N
Long. 130°37.7'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

R'F

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	350	300 ^F	295	250	250	E ₃₀₀ ^S	E ₃₀₀ ^{SH}	195 ^H	195	200	205 ^H	205 ^H	200	220	I ₂₄₀ ^A	230	I ₂₁₀ ^A	230	220 ^A	205 ^A	I ₂₆₅ ^A	I ₂₆₀ ^A	E ₂₈₀ ^A	305
2	300	300	300	260	200	E ₃₀₀ ^S	260	220	230	205 ^H	195	205 ^H	210 ^H	200 ^H	200	245	240	230	220 ^H	A	E ₃₀₀ ^A	255	250	275
3	320	I ₂₉₅ ^A	I ₂₄₅ ^A	245	250	300	225	220	235	220	230	235	240	210	A	I ₂₄₅ ^A	I ₂₂₅ ^A	210	210	A	A	250	370	300
4	300	I ₂₈₅ ^A	245	200	225	260	E ₂₅₀ ^S	200 ^H	210	200	235	205	220	190	225	225	A	E ₂₅₅ ^A	255	255	225	230	250	275
5	300	295	305	255	225	240	E ₃₀₀ ^S	235	230	200 ^H	225	245	215	195 ^H	245	235	220	210	220	220	275	235	235	E ₄₂₀ ^A
6	310	300	305	280	230	E ₂₄₀ ^S	E ₂₉₀ ^S	225	220	225	205	200	200	190 ^H	220 ^H	I ₂₃₅ ^A	235	210	220	225	240	260	260	300
7	275	270	310	250	205	310	275	235	230	230	240	195 ^H	230	205	230	215	230	230	225	350	255	255	305	345
8	340	250	E ₃₃₀ ^A	310	300	330	300	245	240	225	240	235	205	205 ^H	240	245	A	220	200	265 ^H	235	270	245	350
9	350	E ₃₃₀ ^A	240	260	265	290	240	230	225	205	200	205	I ₂₃₀ ^A	I ₂₄₅ ^A	225	A	A	210	235	270	245	245	E ₂₅₀ ^A	280
10	270	300	205	300	225	E ₂₅₅ ^A	E ₂₉₀ ^S	240	245	245	250	I ₂₅₀ ^A	220	190 ^H	E ₂₄₀ ^A	I ₂₃₀ ^A	220 ^H	235	205	E ₂₅₀ ^{SH}	270	240	270	280
11	265	255	270	240	255	250	225	225	195 ^H	220 ^H	230	205	190 ^H	250	I ₂₄₀ ^A	235	230	225	205 ^H	240	280	240	240	300
12	295	300	300	270	215	220	280	240	225	210	190	210	200 ^H	225	210	235	230	210 ^H	220	210	275	250	250	290
13	255	240	E ₂₇₅ ^S	290	275	300	260	230	225	220	225	220	195	255	215	215	200	205	210	280	245	250	260	275
14	250	250	250	230	225	275	260	230	230	225	200 ^H	225	230	195	235	205	I ₂₀₅ ^A	205	205	295	E ₂₆₀ ^A	285	280	I ₃₃₀ ^A
15	310	280	245	225	205	E ₃₀₅ ^S	E ₃₀₀ ^S	230	225	240	195	235	245	235	240	230	C	C	C	C	250	245	E ₂₇₀ ^S	310
16	295	C	C	C	C	C	C	C	C	220	200	195	205 ^H	250	230	220	220	210	200	230	210 ^H	300	305	295
17	290	255	330	300	240	275	250	235	210 ^H	235	200	200 ^H	225	190	240	240	195 ^H	210	205	240	E ₃₀₅ ^A	E ₃₀₀ ^A	A	E ₃₂₀ ^S
18	275	300	360	250	205	E ₃₆₀ ^S	205	205	200 ^H	240	245	245	220	225	230	A	A	240	225	240	250	250	290	275
19	250	250	270	290	305	340	260	230	I ₂₂₅ ^G	225	E ₂₄₀ ^A	245	210	195 ^H	230	245	230	220	210	250	E ₂₆₅ ^A	255	E ₃₅₀ ^A	E ₃₂₀ ^A
20	285	260	305	300	280	E ₃₀₀ ^S	285	240	230	210	205	200 ^H	200	195	190 ^H	240	220	210	220	305	E ₃₃₅ ^A	220	245	295
21	295	255	280	240	240	260	265	230	230	195 ^H	210	235	205	240	250	240	225	225	220	235	210	290	E ₃₀₀ ^S	275
22	310	310	315	305	260	260	285	240	210 ^H	240	220	225	235	210	200	220 ^H	225	220	215	230	225	250	250	290
23	290	260	310	260	235	340	210	205	220	235	210	200 ^H	220	200 ^H	205	240	230	205	205	245	250	220	260	E ₂₅₅ ^S
24	340	315	260	245	235	E ₂₆₀ ^S	275	240	240	205 ^H	245	245	235	240	205	230	230	225	200	260	245	250	260	285
25	E ₃₂₀ ^S	300	220	295	230	C	C	C	230	240	240	200	220	225	200	205 ^H	205 ^H	225	220	245	250	250	350	300
26	295	270	230	220	E ₂₅₅ ^S	S	S	245	240	240	240	220	205	220 ^H	220	205	195	225	200	245	250	250	250	295
27	310	305	E ₃₅₀ ^A	275	250	250	255	230	225	225	240	220	225	245	230	200	235	210	210	275	225	215	250	E ₃₃₅ ^S
28	E ₃₄₀ ^S	290	275	285	255	225	280	225	220	200 ^H	240	230	205	220	195	250	230	205 ^H	210	225	E ₂₈₀ ^S	255	225	E ₃₀₀ ^S
29	A	300	265	260	230	200	E ₃₀₀ ^S	240	230	235	220	210	225	215	240	245	230	220	200	245	260	220	255	E ₂₉₅ ^S
30	325	300	255	240	245	240	215	210	230	220	240	230	205	225	205	205	225 ^H	220	210	220	E ₂₅₀ ^S	285	270	260
31																								
No.	27	28	27	29	29	23	21	28	29	30	29	30	30	28	28	28	25	28	29	26	23	29	25	25
Median	295	290	E ₂₇₅	260	240	260	260	230	225	225	225	220	220	210	230	230	225	220	210	245	250	250	255	E ₂₉₅
U.Q.																								
L.Q.																								
G.R.																								

The Radio Research Laboratories, Japan

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

R'F

Y I C

IONOSPHERIC DATA

Lat. 31°12.5' N
Long. 130°37.7' E

Yamagawa

135° E Mean Time (G. M. T. +9h)

RES

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	100	E	E	S	115	G	110	105	145	105	150	140	125	130	110	110	110	105	105	105	100	S
2	100	100	100	E	E	S	145	S	120	110	115	140	130	125	120	145	120	110	110	105	105	105	105	100
3	100	100	100	100	100	100	100	100	120	110	105	105	105	120	115	130	120	110	105	105	100	100	110	105
4	105	100	105	100	E	S	S	G	120	115	115	120	120	120	115	125	110	110	105	105	110	100	100	100
5	S	S	E	S	S	105	100	100	100	100	140	130	130	135	130	120	100	100	100	100	105	105	105	105
6	S	S	S	100	95	S	S	155	140	150	G	125	G	G	150	120	110	G	105	S	100	95	S	S
7	S	S	S	S	100	100	100	S	G	140	140	125	120	125	140	110	110	110	110	105	105	105	105	100
8	105	100	100	100	S	S	S	S	110	105	105	105	100	100	100	95	130	95	110	S	S	S	S	105
9	100	100	105	E	100	100	S	S	G	130	130	140	135	125	130	120	115	110	S	105	105	105	100	105
10	105	105	105	105	100	105	S	G	180	160	140	120	120	120	110	125	130	130	S	S	S	110	S	100
11	S	S	S	E	100	S	S	S	G	G	165	G	G	170	140	140	135	125	120	110	S	S	105	105
12	S	105	105	120	E	S	100	S	G	145	140	G	G	G	155	135	135	125	100	S	S	S	S	S
13	S	S	S	S	E	S	S	S	105	100	G	G	150	G	155	125	120	S	S	S	105	100	100	S
14	S	S	100	E	100	100	100	S	155	140	130	125	G	G	155	130	115	110	S	S	105	105	S	100
15	105	S	S	E	E	S	S	G	G	120	120	120	125	120	125	120	C	C	C	C	S	100	S	105
16	S	G	C	C	C	C	C	C	C	110	110	120	110	115	120	120	130	110	105	105	S	100	100	100
17	S	100	105	105	105	100	105	100	105	100	120	115	110	120	110	110	120	G	125	105	105	100	100	100
18	100	S	S	E	105	S	S	105	110	110	105	105	110	110	110	105	105	105	105	105	105	100	105	105
19	100	S	S	100	100	100	100	100	C	120	110	110	110	110	110	105	105	105	105	105	105	105	105	105
20	100	105	100	100	100	S	S	S	G	110	105	110	105	105	110	110	150	175	150	140	120	S	S	S
21	S	S	S	E	100	100	100	S	150	105	G	105	G	G	160	150	100	100	S	140	105	S	105	S
22	S	S	S	S	S	S	S	S	G	130	120	120	115	110	110	105	105	S	100	100	100	S	S	S
23	S	S	S	E	100	S	S	S	G	G	140	105	G	105	110	110	105	100	S	S	S	S	S	S
24	S	110	S	E	E	S	S	S	120	110	G	150	140	140	130	G	G	G	S	S	S	S	S	S
25	S	105	105	105	100	C	C	C	130	120	110	115	120	G	G	160	G	95	S	S	S	S	S	S
26	S	S	E	E	S	S	S	S	G	140	125	135	G	140	125	120	120	S	S	S	110	105	S	S
27	105	105	100	100	105	100	S	105	G	G	100	155	140	110	105	105	105	100	100	S	S	S	S	S
28	S	105	S	105	105	100	S	S	140	G	155	120	125	120	105	110	150	105	105	100	S	110	110	S
29	105	S	S	S	E	E	S	S	G	170	G	G	150	G	105	160	150	100	100	140	S	S	S	S
30	S	S	S	S	E	S	S	S	150	G	130	110	G	G	G	G	G	G	100	S	S	S	S	S
31																								
No.	13	14	13	12	16	11	9	8	17	25	25	26	22	22	28	28	26	22	20	18	17	18	15	15
Median	105	105	100	100	100	100	100	100	120	115	120	120	120	120	120	120	120	110	105	105	105	105	105	105
U.Q.																								
L.Q.																								
Q.R.																								

RES

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

The Radio Research Laboratories, Japan

Y I I

Lat. 31°12.5'N
Long. 130°37.7'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Nov. 1963

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f3	f2	f2				f		f	f2	h2	f2	h2	h	h	h2	c3	c2	f2	f	f2	f2	f2	
2	f2	f2	f					h2	f2	h	h	h	h	h	h	h	c2	c2	f	f	f3	f	f	f2
3	f2	f3	f4	f2	f5	f2	f2	h2	h	h	c	h2	h2	c	h2	h	h	h	c2	f3	f5	f2	f3	f
4	f2	f3	f	f			c	c2	c	c2	c2	h2	h	c	c	h	c2	f2	f3	f3	f	f	f2	f
5							f	f2	f4	f2	h2	h2	h2	h2	h2	h2	f2	f2	f2	f	f	f2	f2f	f2
6				f				h2	h	hh	h	h	h2	h	h	h	f2	f2	f2	f	f	f2	f	f2
7							f		f2	h	h	h	h2	h	h	c	f2	f2	f	f3	f	f	f	f2
8	f3	f3	f3	f					f2	f2	f2	f	f	f	f2	f2	h2	f2	f3	f2				f2
9	f3	f3	f2				f		h	h	h	h2	h2	h	h	c2	c5	c		f2	f	f3	f2	f2
10	f4	f	f	f2	f	f	f		h	h	h2	h2	h2	h	c	h	h	c				f3		f
11											h	h	h	h	h	h	h	c4	f2	f				f2
12		f	f2	f			f			h	h	h	h	h	h	h	h2	c	f					
13									f	f2			h	h	h	h2	c				f	f	f	
14			f4				f	f2	h	h	h	h		h	h	h	c3	c3	f		f4	f2		f2
15	f2								h	h	h	h	h2	h2	h	h	h2	c3			f2	f2		ff
16										f	f2	h	c	h	h	h	h2	c3	f2	f				f
17		f	f	f2			f2	f2	f	f2	h	h2	c	c2	c2	c2	c2	c2	f	f	f2	f2	f2	f
18	f							f	f2	f2	h	h2	c	f2	f2	c3	f2	f2	f2	f4	f2	f	f	f2
19	f	f	f	f			f2	f2	h	c2	c2	c2	f	f2	f2	f2	f2	f5	f	f2	f2	f2	f3	f4
20	f2	f	f	f			f			f2	f2	f	f	f	f	f	h	h2	f	f3	f4			
21									h2	f	h	f	h2	h2	h2	h2	h2	h			f	f		f
22										h2	h	h2	h	c	f	f2	f3		f	f2				
23											h	f	f	f	f	f2	f2	f2						
24			f2						h2	f	h	h	h	h	h	h	h2	f2						
25			f	f4	f				h2	h2	c2	c	c	h	h	h	f2				f	f		
26										h2	h	h	h	h	h	h	f2							
27	f	f2	f3	f2	f			f2	h	h2	f	h	h	c2	f2h	f	f2	f	f	f	f	f	f	f
28		f		f2	f				h	h	h	h	h	h	h	f2	h2	f	f	f				
29	f2								h	h	h	f	h	h	f	h2	h2	f	f	ff				
30											h		h	h	f	h2	h2	f	f					
31									h	h	h	f	h	h	f	h2	h2	f	f					
No.																								
Median																								
U.Q.																								
L.Q.																								
G.R.																								

Types of Es

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

The Radio Research Laboratories, Japan

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

Note No observations during the following periods:

1st 0000-	11th 0730	20th 0500-	21st 0210
13th 2120-	14th 0010	21st 0500-	0600
14th 2120-	14th 2400	21st 2120-	22nd 0200
15th 2120-	16th 0120	22nd 2120-	23rd 0030
17th 2120-	19th 0300	26th 0100-	0200

" q " means almost quiet level but uncertain owing to receiver instability

Outstanding Occurrences

Nov. 1963	Start- time	Dura- tion	Type	Max.	Int.	Max. Time	Remarks
				Inst.	Smd.		
27	0206.8	0.7	CD/8	1300	290	-	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Nov. 1963	Whole Day Index	L. N.			W W V				S. F.				W W V H				Warning				Principal magnetic storms		
		06 12 18 24	06 12 18 24	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	00 06 12 18	Start	End	ΔH			
1	4+	3	4	4	-	-	-	5	4	5	5	4	4	4	-	4	N	N	N	N			
2	4+	5	4	4	-	-	-	4	4	4	5	4	4	4	-	4	N	N	N	N			
3	5-	4	3	4	-	-	-	5	5	5	5	5	5	4	-	4	N	N	N	N			
4	5-	5	5	4	-	-	-	3	5	5	5	4	4	5	-	5	N	N	N	N			
5	4+	4	4	5	-	-	-	4	5	5	4	4	5	5	-	5	N	N	N	N			
6	5-	5	5	5	-	-	(4)	5	4	4	5	4	4	5	-	5	N	N	N	N			
7	3+	3	3	4	-	-	-	3	3	4	3	3	5	4	-	3	N	N	U	U	01.6	----	102 ^y
8*	4-	3	2	3	-	-	-	4	4	4	5	5	4	4	-	5	U	U	U	U	----	----	
9*	4o	4	3	4	-	-	-	4	5	3	5	4	4	3	-	5	N	N	N	N	----	----	
10*	4o	4	4	4	-	-	-	4	5	5	4	3	4	4	-	4	N	N	N	N	----	21xx	
11	4o	4	3	4	-	-	-	4	4	5	4	3	3	4	(5)	5	N	N	N	N			
12	3+	3	3	3	-	-	-	4	3	4	4	3	4	4	-	4	N	N	N	N			
13	3+	4	4	4	-	-	-	3	3	4	3	3	(4)	3	-	4	N	N	N	N			
14	4-	3	3	4	-	-	-	4	3	4	4	(4)	4	4	-	4	N	N	N	N			
15	4+	4	4	4	-	-	-	5	4	5	4	(4)	5	5	-	5	N	N	N	N			
16	5-	5	4	4	-	-	-	4	4	5	5	5	4	4	-	4	N	N	N	N			
17	4-	5	3	3	-	-	-	3	3	(4)	4	4	5	5	-	4	N	N	N	N	0903	24xx	76 ^y
18	4o	5	5	4	(4)	-	-	3	5	5	3	3	4	3	-	4	N	N	N	N			
(19)	3+	4	(4)	4	-	-	-	5	2	3	2	(3)	4	5	-	4	N	N	N	N			
(20)	4o	3	4	(4)	-	-	(4)	4	4	4	4	4	3	3	-	4	N	N	N	N			
(21)	4o	4	5	5	-	-	-	5	3	4	3	3	4	4	-	4	N	N	N	N			
22	3+	4	4	5	-	-	-	5	3	3	2	2	5	4	-	3	N	N	N	N			
23	4+	4	5	(5)	-	-	-	5	3	4	5	3	4	4	-	4	N	N	N	N			
24	4o	5	4	4	-	-	-	4	3	4	4	C	4	3	-	3	N	N	N	N			
25	4o	3	(3)	3	-	-	-	3	4	5	5	(5)	3	3	-	(3)	N	N	N	N			
26	5-	5	5	4	-	-	-	5	4	5	5	(4)	3	4	-	4	N	N	N	N			
27	5-	(4)	4	(5)	-	-	-	5	4	4	5	5	5	4	-	4	N	N	N	N			
28	4o	(3)	4	3	-	-	-	(4)	4	5	5	(5)	4	4	-	4	N	N	N	N			
29	4+	(4)	5	5	-	-	-	5	4	4	4	(4)	4	3	-	3	N	N	N	N			
30	4o	(3)	3	3	-	-	-	5	5	5	4	4	5	5	-	4	N	N	N	N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

△ = COSMIC EVENT

{} = Regular World Day

- = impossible to evaluate

() = inaccurate

C = artificial accident

---- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAI SO

No Sudden Ionospheric Disturbance was observed during November, 1963.

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1963

第 15 卷 第 11 号

1964年1月20日 印 刷
1964年1月25日 發 行 (不許複製非売品)

編 集 兼
發 行 人

糟

谷

績

東京都小金井市貫井北町4の573

發 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 (0423) (2) 1211 (代)

印 刷 所

山 内 欧 文 社 印 刷 株 式 會 社

東京都豊島区日ノ出町2の228
電 話 (971) 9341
