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IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1963

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THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

F — 170

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THE RADIO RESEARCH LABORATORIES

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CONTENTS

SITES OF THE RADIO WAVE OBSERVATORIES

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

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

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

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

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

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

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

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

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

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

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

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

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

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

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

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

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

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

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

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

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

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

O Measurement refers to the ordinary component.

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D *greater than.....*

E *less than.....*

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

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

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

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

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

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

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

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

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

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

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

a. Daily Data

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

Variability Variability is expressed in four grades as follows:

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

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

b. Outstanding occurrences

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

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

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

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

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

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

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

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

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

N=normal
U=unstable
W=disturbed

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

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

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

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

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

Circuits and Drop-out intensity

W S .....WWV 20 Mc, 15 Mc and 10 Mc (Washington)
S F .....Various commercial circuits (San Francisco)
H A .....WWVH 15 Mc and 10 Mc (Hawaii)
T O .....JJY 15 Mc and 10 Mc (Tokyo)
S H .....BPV 15 Mc and 10 Mc (Shanghai)
L N .....Various commercial circuits (London)

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

Start-times and Durations

Types

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

Importances

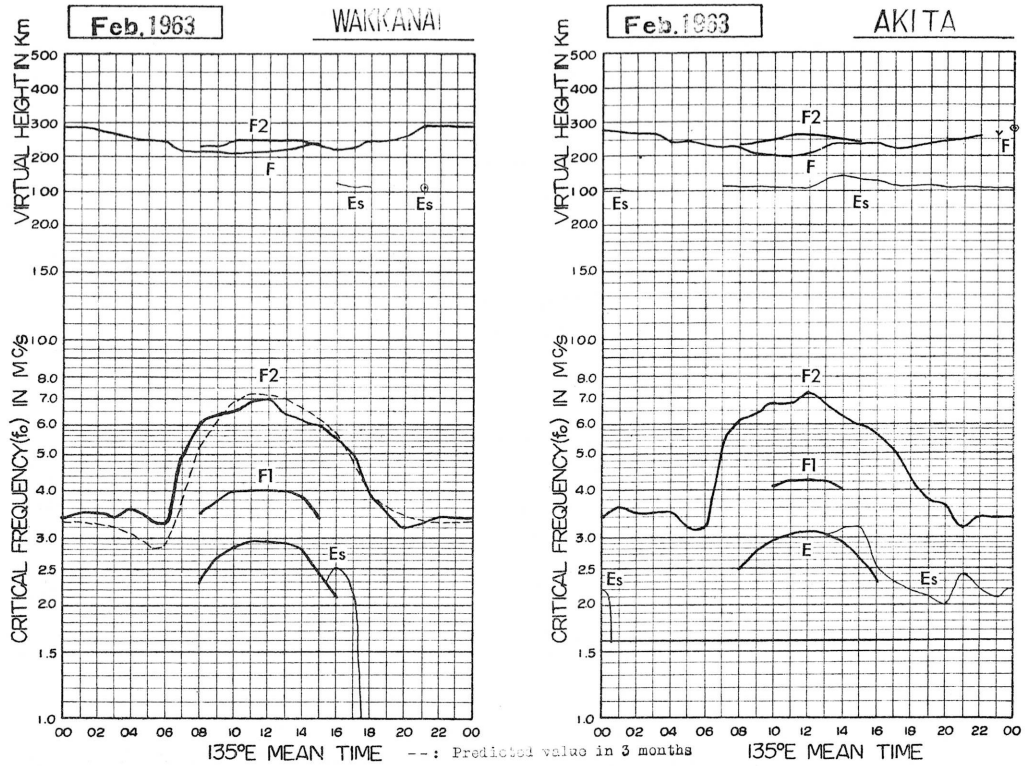
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

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

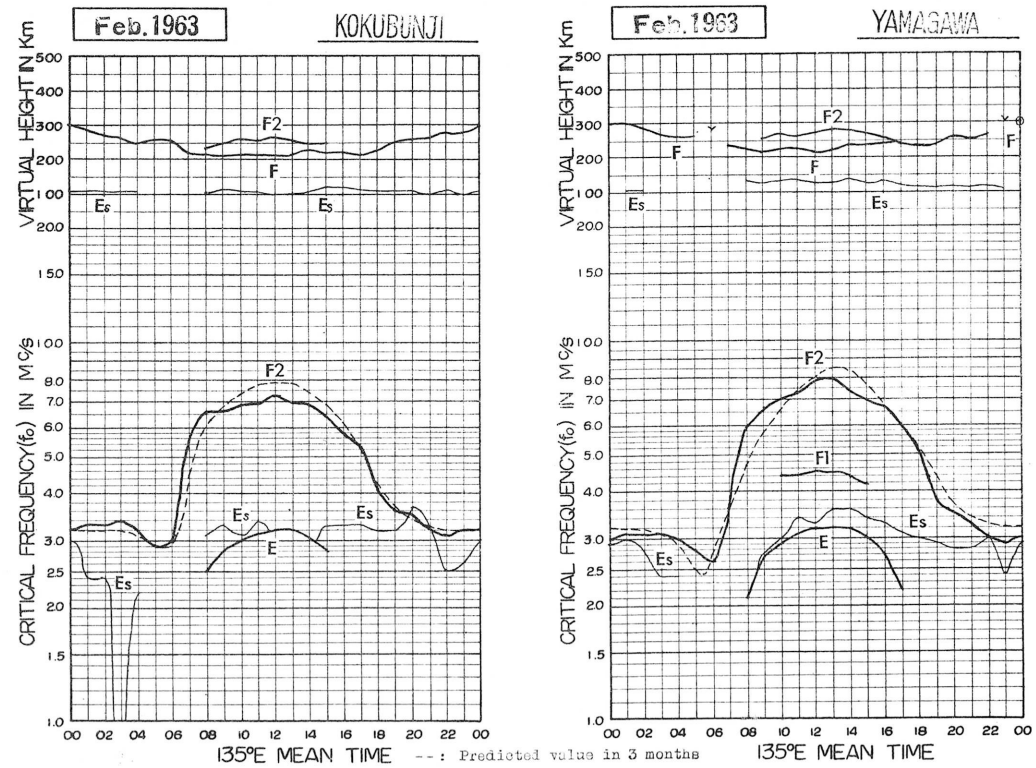
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.9	2.6	2.6	2.8	2.8	A	A	A	5.6	6.3	6.5	7.1	6.6	7.1	6.5	5.5	5.0	5.4	I3.7A	2.9	2.8	3.2	3.3	3.3
2	3.5	3.4	3.6F	F	F	F	FS	4.2	5.0H	5.3	6.0	6.6	6.1	5.3	6.3	5.8	5.0	4.0	3.8	3.1	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	5.5	5.4	5.7	5.8	5.8	5.5	5.1	4.3	3.9	2.9	2.9	U3.3F	3.3	3.1
5	3.2	3.3	3.3	3.0	3.0	3.0	2.7	4.2	5.7	5.9	5.4	6.3	5.8	5.8	5.6	5.8	5.4	4.3	4.0	4.0	I2.8S	3.2	I3.4SF	U3.3S
6	3.1	2.8	3.0	3.1	3.1	3.0	2.4	4.3	5.4	6.0	6.0	6.3	6.5	5.8	5.3	5.2	4.6	3.8	3.1	I2.9A	2.8	2.8	3.0	3.3
7	3.3	3.3	3.2	3.3	3.1	3.1	2.3	4.0	6.0	7.6	7.2	6.5	6.3	5.6	5.5	5.6	5.0	4.0	3.3	3.3	I2.8A	I3.0A	3.0	I3.3AS
8	3.3	3.4	3.4	3.3	3.3	3.4	3.3	5.0	5.6	5.7	6.3	6.4	6.7	6.4	5.6	5.2	5.4	4.3	3.7	3.4	2.7	2.9	2.9	U3.3SF
9	U3.3SF	U3.6SF	3.3	3.4	3.3	3.1	2.7	4.3	5.3	5.7	6.3	6.4	6.5	6.0	6.1	5.6	5.3	3.7	3.0	3.6	3.3	3.4	3.5	U3.3S
10	SF	SF	SF	U3.6SF	U3.9SF	2.8	3.0	4.7	C	C	C	C	C	C	C	C	C	4.0	4.3	4.3	4.8	4.1	4.0	3.3
11	3.1	U3.3FS	U3.2FS	3.1	I3.0A	3.0	2.9	5.6	7.5	6.4	7.0	6.6	6.2H	6.4	6.4	7.6	5.8	4.4	4.0	3.6	I2.6S	2.7	3.3	3.0
12	U3.3SF	I3.1SF	3.2F	3.0	3.0	3.0	U2.6S	4.8	6.8	6.5	7.1	6.4	5.8	7.8	6.6	6.1H	6.0	4.9	3.9	4.2	4.0	2.6	3.1	3.5
13	3.8	3.5	3.3	3.2	3.4	3.4	I3.4SA	4.1	6.3	6.6	6.0	6.3	U7.3S	6.4	6.3	5.3	5.5	5.0	3.9	3.4	3.0	2.9	3.2	3.4
14	3.6	2.9	3.1	2.8	3.0	I2.6A	2.8	I4.4S	5.4	A	A	A	6.8	7.6	7.0	5.7	5.8	5.3	4.1	3.4	3.0	3.3	3.3	3.4
15	3.4	3.4	3.6	3.4	3.8	3.4	2.6H	4.5	6.3	U7.2S	6.4	6.9	7.3	7.2	6.2	6.1	5.5	5.1	3.4	3.4	3.4	3.7	4.0	4.0
16	4.0	4.1	3.8	3.7	3.6	2.7	2.7	4.9	7.0	7.2	6.1	7.9	7.2	6.3	5.9	6.1	5.6	4.6	3.6	3.4	3.3	3.3	3.3	3.4
17	3.4	3.5	3.5	3.5	3.7	3.1	3.1	4.8	5.4	6.3	6.3	7.0H	7.6	6.9	6.8	6.1	5.5	5.1	3.9	3.0	2.8	3.0	3.2	3.4
18	3.3	3.5	3.6	3.5	3.6	3.6	3.3	5.0	5.9	6.0	7.4	7.3	7.2	5.9	5.7	5.9	5.0	4.9	4.0	3.4	3.5	3.6	U4.3S	SF
19	SF	SF	SF	SF	SF	3.6	I4.4SF	5.8	6.1H	6.3	6.3	7.1	7.8H	7.0	6.3	5.9	4.8	5.3	4.1	3.8	3.5	3.3	3.0	3.0
20	3.2	3.3	3.3F	3.3F	3.3F	3.3F	3.7	6.1	5.7	6.1	U6.5S	5.8	6.8	6.4	5.8	6.3	5.3	4.7	3.8	4.3	4.4	4.3	4.1	3.6
21	3.7	4.0	4.0	4.2	4.2	4.3	4.2	5.0	U6.4S	6.8	6.6	7.3	5.7	5.5	6.2	6.8	5.9	5.0	3.7	4.1	U4.2S	3.6	3.7	U3.9S
22	3.8	3.9	4.1	4.2	4.3	U4.0SF	U4.0S	5.2	U6.9S	6.7	7.2	7.1	7.8	7.5	6.8	6.0	5.8	5.7	4.1	4.8	3.1	3.4	U3.3SF	I3.5SF
23	U3.8SF	3.6	3.6	3.7	3.7	3.9	3.7	5.0	6.5	U6.6S	6.5	7.6	7.8	6.5	6.3	5.8	6.2	5.8	4.4	5.0	U4.5S	3.6	3.9	3.8
24	4.0	4.1	4.1	4.1	4.3	4.3	5.6	6.2	5.5	6.1	7.1	8.2	8.5	8.3	7.0	6.5	5.5	5.6	3.9	4.0	4.1	3.7	U4.2S	I4.3SF
25	U4.3S	I4.0SF	I4.2SF	U4.2S	I4.0SF	3.7	4.4	U6.7S	6.7	6.7	6.6	7.9	7.7	7.3	7.3	U6.3S	6.2	U6.3S	3.8	3.3	3.1	U3.3S	3.4	3.5
26	U3.6S	4.3	U4.3S	U4.3S	U4.3S	U3.8S	4.3	6.7	U6.4S	7.0	6.5	7.1	7.2	6.8	6.3	6.2	6.0	5.5	4.7	3.6	3.3	3.4	3.7	3.8
27	U4.1S	U3.8S	SF	SF	SF	SF	I3.7S	5.2	6.3	U6.6S	6.8	7.3	8.9	6.9	5.9H	6.2H	5.8	6.5	5.6	3.5	3.1	3.2	3.4	3.4
28	3.5	3.6	3.8	3.6	3.7	3.6	3.5	5.4	U6.5S	U6.3S	6.7	6.9	7.1	6.8	5.9	7.2	6.1	5.0	4.8	3.8	3.8	3.7	3.6	3.5
29																								
30																								
31																								
No.	24	24	23	23	23	23	24	25	25	24	25	25	26	26	26	26	26	27	27	27	26	26	26	25
Median	3.4	3.5	3.5	3.4	3.6	3.4	3.3	5.0	6.1	6.4	6.5	6.9	7.0	6.4	6.2	6.0	5.5	5.0	3.9	3.5	3.2	3.3	3.4	3.4
U.Q.	3.8	3.8	3.8	3.7	3.9	3.7	3.8	5.5	6.5	6.7	6.9	7.2	7.6	7.1	6.5	6.2	5.8	5.4	4.1	4.0	3.8	3.6	3.7	3.6
L.Q.	3.3	3.3	3.2	3.1	3.1	3.0	2.7	4.4	5.6	6.0	6.2	6.4	6.3	5.9	5.8	5.6	5.1	4.3	3.7	3.3	2.8	3.0	3.2	3.3
Q.R.	0.5	0.5	0.6	0.6	0.8	0.7	0.9	1.1	0.9	0.7	0.7	0.8	1.3	1.2	0.7	0.6	0.7	1.1	0.4	0.7	1.0	0.6	0.5	0.3

foF2

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

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

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

10

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											ᵘ3.9ᴸ	ᵘ4.0ᴸᴴ	4.0	4.0	ᵘ3.8ᴸ	ᵘ3.0ᴸ								
2										ᵘ3.3ᴸ	3.2	3.9	4.0		ᵘ3.9ᴸ	3.2								
3									C	C	C	C	C	C	C	C								
4									C	C		4.0	4.0	4.0	3.7									
5												4.0	4.0	3.8	ᵘ3.8ᴸ									
6										3.3	ᴵ3.9ᴬ	ᵘ4.0ᴸ	4.1	4.0										
7											4.0	4.0	4.0	3.7										
8										3.5	4.0	4.0ᴴ	4.1	4.0	ᵘ3.9ᴸ									
9											ᵘ3.9ᴸᴴ	4.1	4.0	ᵘ4.0ᴸ										
10									C	C	C	C	C	C	C	C								
11										ᵘ3.7ᴸ	3.4	ᵘ3.8ᴸ	ᵘ4.0ᴸ	ᵘ4.0ᴸ										
12										ᵘ3.9ᴸ	4.0	ᵘ3.9ᴸ	4.0	4.0	ᵘ3.8ᴸ									
13										ᵘ3.6ᴸᴴ	3.9ᴸᴴ	3.9	3.9ᴴ	3.9										
14										A	A	A	A	4.0	3.9	3.4								
15										3.2	ᵘ3.9ᴸ	4.0	4.1	ᵘ4.0ᴸ	ᵘ3.8ᴸ									
16									ᵘ3.6ᴸ	ᵘ3.8ᴸ	4.0	3.6	4.0	3.9	3.9	3.2								
17										ᵘ3.7ᴸ	3.8	ᵘ4.2ᴸ	3.7	4.1	4.1									
18											4.0ᴴ	4.2	4.1	4.1	ᵘ4.0ᴸ	ᵘ3.4ᴸ								
19											3.8	4.1ᴴ	4.0	4.1	4.0									
20									ᵘ3.4ᴸ	3.7	3.9	4.0	4.1ᴴ	ᵘ4.4ᴸ										
21									ᵘ3.5ᴸ	ᵘ3.8ᴸ	3.9	4.0ᴴ	4.0	3.7		ᵘ3.7ᴸ								
22									ᴸ	4.0	ᵘ4.0ᴸ	4.1	4.2	4.0	3.9									
23										ᵘ3.8ᴸ	4.1	4.1	4.1	4.0										
24										ᵘ3.7ᴸ	4.1	4.2ᴴ	4.2ᴸᴴ	4.1	4.0	ᵘ3.7ᴸ								
25									ᵘ3.5ᴸ	ᵘ4.0ᴸᴴ	4.1	4.2	4.2ᴴ	4.1ᴴ	ᴵ4.0ᴸ									
26										3.8	4.0	4.0	4.1ᴴ	ᵘ4.1ᴸ	ᵘ4.0ᴸ									
27									ᴸ	4.0	4.1	4.2	4.1	4.1										
28									ᵘ3.8ᴸ	3.9	4.1	4.2	ᵘ4.3ᴸᴴ	4.1	3.9									
29																								
30																								
31																								
No.									5	18	23	25	25	25	17	7								
Median									ᵘ3.5	ᵘ3.8	4.0	4.0	4.0	4.0	3.9	ᵘ3.4								

foF1

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

The Radio Research Laboratories, Japan.

W 2

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	S	2.35	2.00	I2.70S	2.70	I2.55B	2.35	S	S							
2								S	S	2.35	2.65	2.80	2.85	2.75	2.55	2.20	S							
3								C	C	C	C	C	C	C	C	C	C							
4								C	C	C	2.80	2.90	2.85	2.90	B	S	S							
5								S	B	2.70	I2.80B	2.95	2.95	2.85	I2.65B	I2.40B	B							
6								S	S	2.50	I2.80A	2.90	2.90	2.85	2.60	S	S							
7								S	2.30	2.65	2.90	2.95	I2.95A	A	A	A	S							
8								S	S	2.50	2.85	2.90	2.85	2.85	2.70	2.15	S							
9								S	S	2.35	2.75	2.95	2.95	2.80	2.70	2.40	S							
10								S	C	C	C	C	C	C	C	C	C							
11								S	A	2.35	2.70	2.85	2.85	2.85	2.70	2.35	S							
12								S	S	2.45	2.70	2.90	2.85	2.90	2.70	I2.25S	S							
13								S	S	2.35	2.50	2.80	2.95	2.75	2.60	I2.30S	S	S						
14								S	A	A	A	A	A	A	2.75	I2.35S	S							
15								S	S	2.60	I2.85A	2.95	2.90	2.90	2.75	I2.40S	2.05							
16								S	2.30	2.65	2.85	2.95H	2.90	2.85	2.80	2.40	2.05							
17								S	2.25	2.70	2.85	2.95	2.95	3.00	2.90	2.50	S	S						
18								S	2.20	2.70	2.90	2.95	3.00	3.00	2.80	2.50	S	S						
19							S	S	2.25	I2.50A	I2.85A	2.90	3.00	3.00	2.90	2.50	S	S						
20								S	2.35	2.70	2.85	3.00	2.90	2.80	2.85	2.60	2.15	S						
21							S	S	2.30	2.65	2.90	3.00	2.95	2.85	2.75	2.45	2.05	S						
22								S	2.50	2.70	I2.85A	3.00	I3.00A	I2.95A	2.85	A	S	S						
23								S	2.25	2.70	2.80	2.95	2.95	3.00	2.90	2.50	S	S						
24								S	2.30	2.60	2.85	I2.95A	3.00	3.00	2.90	2.50	S	S						
25								S	2.35	I2.75S	2.90	3.05	3.00	3.00	2.85	2.65	S	S						
26								S	2.35	2.70	2.95	3.05	3.00	2.95	2.80	2.60	2.10	S						
27								S	2.45	2.85	2.95	3.00	2.95	3.00	2.90	2.60	2.30	S						
28								S	2.40	2.70	2.95	3.00	3.00	2.95	2.85	2.55	2.25	S						
29																								
30																								
31																								
No.									14	24	25	25	25	24	24	21	7							
Median									2.30	2.65	2.85	2.95	2.95	2.90	2.80	2.45	2.10							

foE

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

The Radio Research Laboratories, Japan.

W 3

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	1.3	1.8	3.0	4.8	6.5	11.3	S	G	G	S	7.3Y	B	G	S	2.6	2.3	4.6	2.4	3.3	3.0	E	E
2	E	E	E	E	5.0	2.6	2.3	S	2.5	G	G	G	G	G	G	2.5	S	2.5	3.1	E	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	G	G	G	G	B	S	S	E	E	E	6.0	3.1	2.5	E
5	E	E	E	E	E	E	2.8	S	B	G	B	G	G	G	B	B	B	3.3	2.5	E	S	2.3	2.4	E
6	E	2.1	2.1	1.5	1.4	E	E	S	S	2.9	5.5	3.3	G	G	G	S	S	E	E	5.3	E	3.0	E	E
7	2.8	2.4	E	E	E	E	E	S	G	G	G	G	4.0	3.3	3.4	4.9	3.4	E	3.3	3.3	3.3	3.1	5.3	3.4
8	3.3	4.0	E	E	E	E	E	2.8	2.6	G	G	G	G	G	G	3.0	S	E	E	E	E	E	E	E
9	E	E	E	E	E	E	4.3	2.5	S	G	G	3.2	3.2	2.9	3.2	2.8	2.5	2.5	E	2.5	E	E	E	E
10	E	E	E	E	E	E	E	S	C	C	C	C	C	C	C	C	C	E	E	E	E	2.5	E	E
11	E	E	2.3	2.6	6.3	3.0	E	S	4.1	G	G	G	G	G	3.3	3.1	2.5	3.3	E	2.5	2.1	2.4	E	E
12	E	E	E	E	E	2.4	E	S	S	G	G	G	G	G	G	S	2.4	E	E	E	E	3.0	E	E
13	E	2.5	E	E	E	E	3.0	S	S	G	G	G	G	G	G	S	S	S	E	E	E	2.4	2.3	3.0
14	E	3.0	2.3	E	E	3.0	2.5	2.5	6.0	8.3	9.6	13.0	8.0	5.0	G	S	S	2.7	E	E	E	E	E	E
15	E	E	E	E	E	E	E	S	2.5	G	4.0	G	G	G	G	S	G	2.1	2.7	E	E	E	E	E
16	E	2.0	E	E	E	E	E	S	G	G	3.3	G	G	G	G	G	G	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	S	S	E	E	E	3.3	E	E
18	E	E	E	E	E	E	E	S	G	3.5	G	G	G	G	G	G	S	S	E	E	E	E	E	E
19	E	E	E	E	E	E	S	S	G	3.4	3.3	G	G	G	G	G	2.7	S	E	E	E	E	E	E
20	E	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
21	E	E	E	E	E	E	S	S	G	G	G	3.4	G	G	G	G	G	S	E	E	E	E	E	E
22	2.4	2.5	E	E	E	E	E	S	G	G	3.6	G	5.3	3.3	3.3	2.8	3.0	S	3.0	E	2.4	E	E	E
23	E	E	E	E	E	E	E	2.4	G	G	G	G	G	G	G	3.3	2.9	S	E	E	E	E	E	E
24	E	E	E	E	E	E	E	S	G	G	G	3.3	G	G	G	G	S	S	2.4	3.0	E	E	E	E
25	E	E	E	E	E	E	E	S	2.6	3.0	G	G	G	G	G	G	S	S	E	E	E	E	E	E
26	E	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	2.5	S	2.3	E	E	E	E	E
27	E	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	2.8	2.5	E	E	E	E	E	E
28	E	E	2.1	E	E	E	E	S	G	G	G	G	G	G	G	G	3.0	S	E	2.3	2.8	E	E	E
29																								
30																								
31																								
No.	26	26	26	26	26	26	24	5	19	25	25	25	26	25	24	18	15	15	27	27	25	26	26	26
Median	E	E	E	E	E	E	E	2.5	G	G	G	G	G	G	G	G	2.5	2.1	E	E	E	E	E	E
U.Q.	E	2.0	E	E	E	E	E	7.0	2.5	G	G	G	G	G	G	2.8	2.9	2.5	2.4	2.3	E	2.5	E	E
L.Q.	E	E	E	E	E	E	E	2.4	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
Q.R.								4.6																

foEs

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			E	E	2.2	A	A	A	S			S	G	B		S	G	E	A	E	E	E		
2					E	E	E	S	G							G	S	E	2.5		C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C					B	S	S				E	E	E	
5							E	S	B		B				B	B	B	E	E		S	E	E	
6		E	E	E	E			S	S	G	4.2	G				S	S			A		E		
7	E	E						S					3.0	3.0	3.0	3.3	3.0		E	E	A	A	E	AS
8	E	E						G	2.2							G	S							
9							E	G	S			2.6	2.6	G	G	G	G	E		E				
10								S	C	C	C	C	C	C	C	C	C					E		
11			E	2.0	A	2.2		S	2.4						G	G	G	3.2		E	A	E		
12						E		S	S							S	G					E		
13		E					A	S	S							S	S	S				E	E	E
14		E	E			A	E	G	4.7	A	A	A	4.7	3.0		S	S	E						
15								S	G		2.9					S		E	E					
16		E						S			G													
17								S									S	S				E		
18								S		G							S	S						
19							S	S		2.8	3.0						G	S						
20								S										S						
21							S	S				G						S						
22	E	E						S			3.2		3.1	3.0	2.5	2.7	G	S	E		E			
23								G								G	G	S						
24								S				3.0					S	S	E	E				
25								S	G	3.0							S	S						
26								S									G	S	E					
27								S									G	G						
28			E					S									G	S		E	E			
29																								
30																								
31																								
No.																								
Median																								

f_bEs

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

The Radio Research Laboratories, Japan.

W 5

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

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Feb. 1963 | f-min | 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	E2.00S	E1.50S	E	E	E	E1.70S	E2.00S	E2.00S	E2.00S	2.00	2.00	E2.70S	2.00	2.90	2.00	E2.20S	E2.00S	E2.00S	E1.90S	E1.90S	E1.80S	E1.90S	E2.00S	E2.00S
2	E2.00S	E2.00S	E1.50S	E	E	E1.60S	E2.00S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.10	2.00	2.00	E2.30S	E2.00S	E2.00S	E2.00S	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	2.00	2.50	2.30	2.40	2.90	E2.70S	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
5	E2.00S	E1.80S	E	E	E	E	E1.90S	E2.00S	2.35	2.00	3.00	2.50	2.50	2.30	2.90	2.80	2.50	E2.00S	E2.00S	E2.00S	S	E2.00S	E2.00S	E1.90S
6	E2.00S	E1.70S	E1.50S	E	E	E1.20S	E2.00S	E2.00S	E2.30S	2.00	2.00	2.50	2.40	2.10	2.00	E2.50S	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
7	E2.00S	E1.70S	E2.00S	E1.70S	E	E1.70S	E1.80S	E2.00S	2.00	2.00	2.10	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
8	E2.00S	E1.80S	E2.00S	E1.60S	E	E1.50S	E2.00S	E2.00S	E2.00S	2.00	2.10	2.00	2.00	2.10	2.00	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
9	E2.00S	E2.00S	E1.70S	E	E	E1.65S	E2.00S	E2.00S	E2.40S	2.00	2.00	2.00	2.00	2.00	2.10	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
10	E2.00S	E1.70S	E1.60S	E	E	E1.60S	E2.00S	E1.90S	C	C	C	C	C	C	C	C	C	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
11	E2.00S	E1.70S	E	E	E	E2.00S	E2.00S	E2.00S	E2.00S	1.90	2.00	2.00	2.00	2.10	2.10	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.85S	E2.00S	E2.00S
12	E2.10S	E	E1.80S	E	E	E1.80S	E2.00S	E2.00S	E2.20S	2.00	2.00	2.00	2.10	2.05	2.00	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.80S
13	E2.00S	E1.80S	E1.70S	E1.70S	E	E1.70S	E2.00S	E2.00S	E2.15S	2.00	2.00	2.00	2.00	2.00	2.20	E2.40S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
14	E2.00S	E1.40S	E	E	E	E1.80S	E2.00S	E2.00S	E2.00S	2.00	2.05	2.05	2.00	2.00	2.10	E2.50S	E2.30S	E2.00S	E1.80S	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S
15	E2.00S	E1.60S	E1.50S	E	E	E	E2.00S	E2.00S	E2.00S	2.00	2.00	2.00	2.05	2.30	2.10	E2.50S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
16	E2.00S	E1.50S	E1.50S	E	E	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.05	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
17	E2.00S	E1.70S	E1.70S	E1.60S	E	E1.60S	E2.00S	E1.90S	2.00	2.00	2.00	2.10	2.10	2.15	2.00	2.00	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
18	E2.00S	E1.70	E1.70S	E2.00S	E	E1.80S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.10	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
19	E2.00S	E1.50S	E	E	E	E1.70S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.10	2.00	2.50	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00	E2.00S
20	E2.00S	E2.00S	E	E	E	E1.50S	E2.00S	E2.00S	2.00	2.00	2.10	2.30	2.30	2.15	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
21	E2.00S	E1.80S	E1.70S	E	E1.70S	E1.80S	E2.00S	E2.00S	1.90	2.00	2.00	2.00	2.05	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
22	E2.00S	E1.70S	E1.80S	E1.70S	E	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S
23	E2.00S	E1.20S	E	E	E	E2.00S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.05	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
24	E2.00S	E2.00S	E	E1.50S	E	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.30S	E2.00S	E1.80S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S
25	E2.00S	E	E	E	E	E1.90S	E2.00S	E2.00S	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
26	E2.00S	E2.00S	E2.00S	E	E	E1.90S	E2.00S	E2.00S	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
27	E2.00S	E1.90S	E	E	E	E1.50S	E2.00S	E2.10S	2.00	2.00	2.00	2.00	2.05	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
28	E2.00S	E1.90S	E	E	E	E2.00S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
29																								
30																								
31																								
No.	26	26	26	19	25	26	26	26	21	25	26	25	26	26	26	19	26	27	27	27	25	26	26	26
Median	E2.00	E1.70	E1.50	E	E	E1.70	E2.00	E2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00

f-min

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

The Radio Research Laboratories, Japan.

W 6

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.40	3.10	3.10	2.95	3.20	A	A	A	3.55	3.50	3.50	3.30	3.35	3.40	3.65	3.60	3.35	3.40	^{E}3.40^{A}	3.15	2.85	2.80	2.95	3.05
2	3.10	2.95	2.90^{F}	F	F	F	FS	3.45	3.40^{H}	3.40	3.50	3.50	3.45	3.30	3.50	3.45	3.50	3.30	3.20	3.25	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	3.70	3.60	3.55	3.50	3.50	3.65	3.65	3.45	3.35	3.35	2.85	^{U}2.85^{F}	3.15	3.10
5	3.05	2.95	2.80	2.95	2.95	3.05	3.20	3.80	3.70	3.60	3.70	3.50	3.60	3.60	3.55	3.45	3.55	3.15	3.30	3.25	^{E}3.15^{S}	2.90	^{E}2.95^{SF}	^{U}2.95^{S}
6	3.25	3.10	3.00	3.15	3.15	3.45	3.45	3.35	3.55	3.50	3.30	3.50	3.60	3.75	3.60	3.55	3.50	3.40	3.25	^{E}3.10^{A}	3.25	3.05	3.00	2.95
7	3.10	2.80	2.95	2.95	3.30	3.55	3.15	3.50	3.35	3.45	3.25	3.55	3.70	3.70	3.60	3.60	3.60	3.55	3.10	3.35	^{E}3.20^{A}	^{E}3.00^{A}	3.00	^{E}2.95^{AS}
8	2.95	3.25	3.25	3.30	3.05	3.10	3.15	3.40	3.80	3.50	3.35	3.45	3.45	3.50	3.65	3.55	3.70	3.45	3.35	3.55	3.15	3.10	3.10	^{U}2.75^{SF}
9	^{U}3.05^{SF}	^{U}2.90^{SF}	3.05	3.10	3.25	3.05	3.35	3.50	3.60	3.50	3.50	3.45	3.55	3.35	3.60	3.70	3.60	3.45	3.20	3.35	3.35	3.00	3.10	^{U}3.20^{S}
10	SF	SF	SF	^{U}3.15^{SF}	^{U}3.05^{SF}	3.20	3.35	3.70	C	C	C	C	C	C	C	C	C	3.20	2.95	3.00	3.15	3.00	3.25	3.05
11	2.90	^{U}2.75^{FS}	^{U}2.85^{FS}	2.80	^{E}2.90^{A}	2.85	3.05	3.40	3.45	3.55	3.55	3.55	3.25^{H}	3.45	3.45	3.40	3.60	3.65	3.25	3.40	^{E}3.40^{S}	2.95	3.05	2.80
12	^{U}3.10^{SF}	^{E}2.90^{SF}	2.90^{F}	2.95	3.05	3.35	^{U}3.10^{S}	3.40	3.55	3.45	3.55	3.45	3.45	3.35	3.50	3.30^{H}	3.65	3.30	3.20	3.35	3.45	3.00	2.85	2.90
13	3.05	3.10	3.05	3.00	3.10	3.20	^{E}3.30^{SA}	3.55	3.60	3.65	3.65	3.60	^{U}3.50^{S}	3.45	3.55	3.60	3.65	3.20	3.60	3.40	3.25	2.90	2.80	2.95
14	3.15	2.85	2.90	2.85	2.85	^{E}3.20^{A}	3.20	^{E}3.45^{S}	3.50	A	A	A	3.40	3.40	3.35	3.50	3.45	3.45	3.45	3.45	3.00	3.05	2.95	3.25
15	3.05	2.95	3.00	3.05	3.20	3.55	3.00^{H}	3.40	3.50	^{U}3.45^{S}	3.45	3.50	3.55	3.45	3.65	3.55	3.45	3.65	3.30	3.15	3.20	3.05	2.95	2.95
16	3.00	2.95	3.00	3.25	3.55	3.15	3.05	3.45	3.55	3.55	3.35	3.30	3.45	3.50	3.45	3.50	3.55	3.35	3.35	3.35	3.05	3.10	3.05	3.10
17	2.95	3.15	3.10	3.05	3.05	3.25	3.25	3.70	3.70	3.65	3.35	3.15^{H}	3.55	3.60	3.55	3.50	3.65	3.65	3.35	3.10	3.20	2.90	3.15	3.10
18	3.35	3.15	3.15	3.15	3.25	3.35	3.35	3.65	3.55	3.50	3.55	3.40	3.45	3.55	3.50	3.70	3.60	3.55	3.45	3.30	3.15	3.05	^{U}2.90^{S}	SF
19	SF	SF	SF	SF	SF	3.15	^{E}3.30^{SF}	3.65	3.60^{H}	3.35	3.50	3.50	2.80^{H}	3.55	3.50	3.65	3.55	3.30	3.40	3.35	3.35	3.35	3.00	3.05
20	3.05	2.75	3.05^{F}	3.05^{F}	3.00^{F}	3.35^{F}	3.35	3.65	3.65	3.75	^{U}3.70^{S}	3.60	3.55	3.45	3.45	3.50	3.50	3.45	3.05	3.25	3.20	3.25	3.20	3.25
21	3.05	3.05	2.95	2.95	3.00	3.00	3.20	3.60	^{U}3.60^{S}	3.45	3.50	3.45	3.50	3.55	3.40	3.50	3.50	3.60	3.30	3.15	^{U}3.30^{S}	3.15	3.10	^{U}3.20^{S}
22	3.15	3.00	2.95	2.80	3.00	^{U}2.95^{SF}	^{U}3.40^{S}	3.55	^{U}3.60^{S}	3.35	3.30	3.30	3.25	3.45	3.55	3.35	3.50	3.50	3.15	3.35	2.95	3.20	^{U}2.80^{SF}	^{E}3.10^{SF}
23	^{U}2.90^{SF}	3.05	3.10	3.20	3.25	3.25	3.35	3.60	3.60	^{U}3.50^{S}	3.10	3.30	3.45	3.40	3.50	3.60	3.40	3.50	3.45	3.30	^{U}3.35^{S}	3.35	3.05	3.05
24	3.00	3.00	2.95	2.95	3.00	3.05	3.40	3.55	3.75	3.45	3.35	3.35	3.40	3.30	3.45	3.55	3.55	3.20	3.35	3.15	3.40	3.10	^{U}3.15^{S}	^{E}3.15^{SF}
25	^{U}3.05^{S}	^{E}3.05^{SF}	^{E}3.00^{SF}	^{U}2.90^{S}	^{E}3.05^{SF}	3.20	3.40	^{U}3.60^{S}	3.60	3.60	3.35	3.35	3.30	3.45	3.20	^{U}3.25^{S}	3.50	^{U}3.35^{S}	3.40	3.35	3.15	^{U}2.95^{S}	3.00	3.10
26	^{U}3.05^{S}	2.80	^{U}3.00^{S}	^{U}3.00^{S}	^{U}3.05^{S}	^{U}3.05^{S}	3.25	3.60	^{U}3.50^{S}	3.45	3.45	3.40	3.45	3.40	3.40	3.45	3.65	3.55	3.35	3.35	3.05	3.20	2.80	2.95
27	^{U}3.05^{S}	^{U}2.95^{S}	SF	SF	SF	SF	^{E}3.40^{S}	3.65	3.50	^{U}3.50^{S}	3.30	3.25	3.45	3.60	3.20^{H}	3.55^{H}	3.45	3.45	3.65	3.50	3.20	2.90	2.95	3.05
28	3.05	3.05	3.05	3.00	2.95	3.25	3.25	3.55	^{U}3.55^{S}	^{U}3.50^{S}	3.45	3.20	3.40	3.55	3.45	3.55	3.60	3.60	3.25	3.20	3.05	3.10	3.05	2.90
29																								
30																								
31																								
No.	24	24	23	23	23	23	24	25	25	24	25	25	26	26	26	26	26	27	27	27	26	26	26	25
Median	3.05	3.00	3.00	3.00	3.05	3.20	3.30	3.55	3.55	3.50	3.45	3.45	3.45	3.45	3.50	3.55	3.55	3.45	3.35	3.35	3.20	3.05	3.00	3.05

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

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

Feb. 1963 | **M(3000)F1** | 135° E Mean Time (G.M.T. + 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											ᵁ3.90ᴸ	ᵁ3.85ᴸᴴ	3.85	3.75	ᵁ3.85ᴸ	ᵁ4.00ᴸ								
2										ᵁ3.95ᴸ	4.05	3.85	3.80		ᵁ3.85ᴸ	4.05								
3									C	C	C	C	C	C	C	C								
4									C	C		4.00	4.00	3.85	4.05									
5												3.75	4.00	3.95	ᵁ4.05ᴸ									
6										3.25	ᴱ3.75ᴬ	ᵁ4.00ᴸ	3.85	4.00										
7											4.00	4.00	3.90	4.05										
8										4.15	4.00	3.85ᴴ	3.80	3.95	ᵁ4.10ᴸ									
9											ᵁ4.05ᴸᴴ	3.90	4.00	ᵁ3.95ᴸ										
10									C	C	C	C	C	C	C	C								
11										ᴱ4.10ᴸ	4.15	ᵁ3.95ᴸ	ᵁ4.00ᴸ	ᵁ3.90ᴸ										
12										ᵁ3.95ᴸ	4.05	ᵁ4.05ᴸ	4.00	3.75	ᵁ3.70ᴸ									
13										ᵁ4.00ᴸᴴ	3.85ᴸᴴ	3.85	3.85ᴴ	3.90										
14										A	A	A	A	3.75	3.85	4.10								
15										4.05	ᵁ4.05ᴸ	4.00	3.85	ᵁ3.95ᴸ	ᵁ3.95ᴸ									
16									ᵁ4.00ᴸ	ᵁ4.10ᴸ	4.00	4.30	4.00	3.90	3.95	4.05								
17										ᵁ4.05ᴸ	4.15	ᵁ4.00ᴸ	4.05	3.80	3.60									
18											4.00ᴴ	3.80	3.85	3.90	ᵁ4.00ᴸ	ᵁ3.90ᴸ								
19											4.10	3.70ᴴ	4.05	3.90	3.95									
20									ᵁ4.20ᴸ	4.05	3.95	4.00	3.85ᴴ	ᵁ3.65ᴸ										
21									ᵁ4.00ᴸ	ᵁ3.95ᴸ	4.10	3.95ᴴ	4.10	4.10		ᵁ3.80ᴸ								
22									L	3.95	ᵁ4.00ᴸ	3.90	3.80	3.85	3.85									
23										ᵁ3.95ᴸ	3.90	4.10	3.90	4.00										
24										ᵁ4.05ᴸ	3.85	3.80ᴴ	3.85ᴸᴴ	3.80	3.80	ᵁ4.00ᴸ								
25									ᵁ4.05ᴸ	ᵁ3.95ᴸᴴ	3.90	3.80	3.95ᴴ	3.85	ᴱ3.80ᴸ									
26										4.00	4.05	4.15	3.80ᴴ	ᵁ3.90ᴸ	ᵁ4.00ᴸ									
27									L	4.00	4.15	3.85	3.95	3.90										
28									ᵁ4.00ᴸ	3.90	3.90	4.05	ᵁ3.70ᴸᴴ	3.90	3.90									
29																								
30																								
31																								
No.									5	18	23	25	25	25	17	7								
Median									ᵁ4.00	ᵁ4.00	4.00	3.95	3.90	3.90	3.90	ᵁ4.00								

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											245	260	260	255	235	235								
2										250	260	250	260		260	245								
3									C	C	C	C	C	C	C	C								
4									C	C		260	250	260	260									
5												255	245	245	250									
6										240	255	240	250	240										
7										___	250	250	245	240										
8										235	245	250	255	250	245									
9											250	255	250	U265L										
10									C	C	C	C	C	C	C	C								
11										225	240	250	250	260										
12										240	245	245	250	260	255									
13										225	240	250	250	250										
14										A	A	A	255	260	260	240								
15										235	250	240	245	250	240									
16									240	230	235	245	240	250	250	250								
17										230	245	270H	240	260	255									
18											260	245	240	245	250	235								
19											255	240	230	250	240									
20									225	220	235	250	250	275										
21									235	240	250	250	230	245		250								
22									240	250	255H	265	270	250	250									
23										230	270	265	250	250										
24										235	270	250	255	260	250	240								
25									225	230	260	260	245	245	275L									
26										245	250	275	250	260	255									
27									240	240	250	285	265	240										
28									235	245	265	265	255	245	250									
29																								
30																								
31																								
No.									7	18	23	25	26	25	17	7								
Median									235	235	250	250	250	250	250	240								

h'F2

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

The Radio Research Laboratories, Japan.

W 9

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	300	300	300	285	A	A	A	235	240	230	230 H	235	230	240	220	235	235	₮260A	265	350	305	310	290
2	295	320	285	250	265	260	315	230	220H	205	200	230	225	220	250	230	230	240	260A	260	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	225	240	220	230	230	245	225	235	235	255	350	300	290	290
5	305	290	295	290	275	260	260	205	215	230	225	225	235	220	235	245	225	240	260	240	₮300S	300	320	290
6	260	265	290	270	250	230	260	230	220	200	₮230A	240	225	225	220	200H	225	225	255	₮300A	270	305	300	300
7	290	310	320	280	250	225	300	235	235	235H	220	230	240	215	210H	₮235A	₮220A	215	265	250	₮290A	₮315A	310	₮325AS
8	305	310	275	255	250	250	260	225	220	210	220	200H	235	235	225	240	220	230	250	235	260	275	280	330
9	315	300	290	260	230	260	260	220	220	215	215	220	240	225	240H	235	225	225	260	250	250	280	275	280
10	300	280	285	265	250	265	260	220	C	C	C	C	C	C	C	C	C	260	300	300	250	275	250	270
11	315	300	310	350	₮330A	350	310	250	225	220	205	205	240	240	250	250	225	₮220A	250	250	₮280A	325	285	340
12	270	300	300	280	265	235	265	220	225	220	230	220	210	230	215	225H	215	235	250	250	235	350	350	305
13	295	290	270	295	250	255	₮250A	215	245	200H	185H	210	185H	225	240	230	220	240	220	255	265	310	345	310
14	275	280	300	305	260	₮235A	285	220	A	A	A	A	A	225	225	225	225	225	230	250	300	285	300	280
15	305	300	290	295	250	210	240	230	225	200	230	210	215	225	230	215	225	210	250	250	285	300	290	295
16	285	280	275	250	215	240	310	240	225	225	215	195	230	210	225	215	230	215	250	250	270	280	285	275
17	300	260	275	290	250	235	250	215	215	225	200	220	205	210	215	230H	225	210	235	275	250	325	290	285
18	290	270	260	270	250	235	240	210	220	210H	190H	230	210	230	225	235	220	215	225	250	260	300	280	300
19	270	275	250	260	255	250	250	215	210	215	195	190H	215	245	235	240	225	235	240	250	245	255	290	300
20	295	300	280	270	275	240	250	220	210	210	205	220	190H	225	230	240	235	220	260	265	255	250	230	255
21	285	265	290	270	260	250	235	225	240	215	200	190H	210	205	245	240	230H	220	250	260	250	265	275	255
22	260	290	275	300	270	290	220	210	240	220	215	210	215	225	225	210H	225	220	270	225	250	260	310	300
23	300	270	250	255	240	250	225	215	220H	225	205	180	250	240	230	240	240	220	220	250	235	250	260	280
24	275	275	270	285	260	250	220	215	210	200	240	200H	200H	225	210	240	220	215	225	250	240	275	250	300
25	240	255	260	275	255	260	245	220	215	205H	205	220	210H	190H	240	240	230	220	210	245	270	300	300	270
26	295	280	300	260	240	250	250	230	220	200	210	185	200H	220	240	245	225	220	225	245	275	275	290	290
27	275	285	275	270	275	240	225	215	220	220	210	195	185	240	230H	250H	240	225	210	225	260	300	300	285
28	300	300	275	260	270	255	240	230	225	210	195	200	185H	245	225	250	230	225	235	240	285	260	285	300
29																								
30																								
31																								
No.	26	26	26	26	26	25	25	25	24	24	25	25	25	26	26	26	26	27	27	27	26	26	26	26
Median	290	290	280	270	255	250	250	220	220	215	210	210	215	225	230	240	225	225	250	250	260	290	290	290

h'F

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

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			s	s	s2	s2	s2	Ca					e				c	s	s5	s	s2	s		
2					s	s2	s		c							c		s	s					
3																								
4																					s	s2	s2	
5							s											s	s			s	s	
6		s	s	s	s					h	e2	c								s3		s		
7	s	s											e	e	e	e	e		s	s	s3	s	s2	s
8	s	s						e	e							c								
9							s2	e				e	e	e	h	h	c	s		s				
10																						s		
11			s	s2	s4	s2			e						h	c	c	s2		s	s	s		
12						s											c					s2		
13		s					s2															s	s	s
14		s2	s			s3	s	c	e2	e3	e3	e4	e3	e2				s						
15									c		e							s	s					
16		s									e													
17																						s		
18										e														
19										e	e						c							
20																								
21												e												
22	s	s									e2		e	e	e	e	c		s2		s			
23								c								c	c							
24												e							s	s				
25									e	e														
26																	h		s					
27																	c	c						
28			s														e			s	s			
29																								
30																								
31																								
No.																								
Median																								

The Radio Research Laboratories, Japan.

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

W 12

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F^S	F	2.5^S	F	F^S	F^S	A	A	A	$^J6.2^R$	6.9	6.5	7.3	6.7	6.7	5.7	5.1	4.9^S	4.4^S	2.8^S	A	F^S	3.9^S	3.6^S
2	3.6	3.6^S	3.5	3.5	3.6	$^I2.9^E_S$	$^I2.8^E_S$	4.6^S	5.1	6.2	6.7	C	C	C	C	C	C	5.1	4.1^S	3.4^S	F^S	F^S	F	F
3	F	F	3.1^F	$^I3.0^F$	$^I2.6^F$	$^I2.6^F$	$^I2.6^E_S$	4.0	4.9	5.2	5.8	6.1	6.0	5.7	5.7	5.9	5.1	5.2	4.7^S	3.4^S	2.7^S	A	F^S	F
4	F	3.5^F	F	F	F	F^S	F^S	$^I4.6^R_S$	5.1^S	5.6	5.8	6.0	5.6	5.6	5.7	6.0	5.1	4.6	4.1^S	3.6^S	3.1	3.4^E_S	F^S	F^S
5	F^S	F^S	$^I3.0^F$	$^I3.0^F$	3.0	3.3^F	2.9^F	$^I4.4^R_S$	5.3	5.9	6.2	6.1	6.6	5.6	5.4	5.7	5.6	A	A	A	A	A	A	A
6	F^S	F	F	F	F	3.4	2.7^F	4.6	5.7	6.1	6.3^R	6.7	7.2	6.1	5.6	5.0	4.9	4.4^R	3.0	3.5	3.6^S	3.1	3.2	$^I3.3^A$
7	$^I3.4^F_S$	3.6	3.4^S	3.4	3.5^S	2.8^S	2.5	4.6	5.7	6.7	6.6	6.8	6.7	5.7	5.6	$^I5.6^C$	5.4	4.6	3.5	4.0	3.7^S	3.5^S	3.2	3.3
8	3.5	3.6^S	3.6	3.6	3.2	3.1	3.1^S	5.3^S	6.7	5.7	5.8	7.0	7.0	6.4	6.2	5.3	5.1^S	4.2	3.6	3.6	3.1	3.1	3.0	$^I3.5^E_S$
9	$^I3.6^R_S$	$^I3.6^E_S$	$^I3.5^E_S$	$^I3.7^E_S$	3.5^S	3.0^S	3.1^S	$^I4.4^E_S$	5.7	6.3^R	6.1	6.6	6.3	6.4	6.3^Z	$^I5.8^C$	5.1	$^I4.4^R_S$	3.1	3.1	$^I3.2^R_S$	$^I3.0^R_S$	$^I3.1^E_S$	$^I3.2^E_S$
10	$^I3.3^E_S$	$^I3.4^R_S$	3.3^F	3.4	3.4	3.0	3.0^S	$^I5.3^R_S$	6.1	6.3	6.8^R	8.7^R	8.0	$^I8.5^R_S$	7.8	$^I6.4^C$	$^I5.7^C$	$^I5.0^R_S$	3.6	4.3^S	R^S	R^S	R^S	$^I3.0^S$
11	3.1^S	3.5^S	F^S	F^S	F^S	A	S	6.1	$^I8.2^R_S$	7.1	6.6	6.5	6.5	6.7	6.5	6.9	7.0	5.1	A	A	A	2.7^S	3.2^S	R^S
12	F	F^S	3.3	3.1	A	A	A	A	6.9^S	7.5	7.6	6.7	6.1	6.8	7.3	6.3	6.2	5.1	4.5^S	$^I4.3^R_S$	$^I3.8^R_S$	3.1^S	$^I2.6^A$	3.1^S
13	F	F	F^S	F^S	3.5^S	$^I3.2^E_S$	3.6^S	5.9	6.2	7.6	6.9	6.8	7.1	6.9	7.5	6.6	5.7	4.3	$^I4.6^R_S$	4.1	4.0^S	3.1	3.4^E_S	$^I3.6^R_S$
14	$^I3.6^F_S$	$^I3.4^F_S$	3.4^F	3.4^F	3.3^F	3.1^F	2.9^S	$^I4.7^R_S$	6.1	6.3^R	7.1	7.2	7.5	7.4	6.3	6.5	5.9	5.1^R	4.9^S	R^S	A	F^S	R^S	3.3^S
15	$^I3.4^R_F$	3.6^S	$^I3.4^F$	$^I3.4^F$	$^I3.8^R_S$	$^I2.8^E_S$	$^I3.0^E_S$	$^I4.8^R_S$	$^I6.2^R_S$	7.1^S	6.8	8.0	7.2	7.6	6.6	6.2	5.4	5.0	4.1^S	3.8^S	3.8^S	R^S	R^S	R^S
16	R^S	F^S	$^I4.5^R_S$	4.1	$^I3.8^E_S$	$^I3.4^E_S$	$^I4.0^E_S$	$^I5.1^R_S$	7.4	$^I7.7^R_S$	7.1	7.4	7.6	6.6	6.2	5.7	6.2	5.1	$^I4.3^R_S$	4.0^S	3.8^S	$^I3.8^R_S$	R^S	R^S
17	F^S	$^I4.0^E_S$	$^I4.0^E_S$	3.8^S	3.8	3.3	3.3^S	$^I5.2^R_S$	6.0	6.1	6.8	7.4	7.3	7.4	6.5^H	6.0	5.9	4.8	$^I3.9^A$	$^I3.6^R_S$	3.8^S	3.1^S	$^I3.4^R_S$	$^I3.5^R_S$
18	3.8^S	3.9^S	3.6^S	3.9^S	3.7^S	$^I3.2^R_S$	3.2^S	$^I5.2^R_S$	5.9	6.4^R	6.3	7.1	7.2	6.8	6.3	6.1	5.6	5.0	3.8^S	3.5^S	$^I3.6^R_S$	3.6^S	4.0^S	R^S
19	F^S	$^I4.0^R_S$	$^I4.0^R_S$	$^I3.8^R_S$	$^I3.6^R_S$	3.6^S	$^I4.0^E_S$	5.9	6.2	6.6	6.7	$^I6.8^R_H$	7.2	6.8	6.4	6.0	5.5	4.9^S	5.1	4.0^S	3.7^S	2.7	3.1	3.1
20	3.2^S	3.3	3.1	3.1	3.1^S	3.2	3.4	5.9	6.0	5.7	5.9^H	6.3	6.0	6.3	7.0	$^I6.6^C$	6.1	5.2	4.1^S	R^S	R^S	R^S	3.9	3.3^S
21	3.4	$^I3.6^R_S$	$^I3.6^R_S$	R^S	F^S	F^S	R^S	6.1^S	$^I7.2^R_S$	6.4	7.2	6.7	7.1	5.8	5.8	C	C	C	4.3	3.9^S	4.0^S	$^I4.0^R_S$	F^S	F^S
22	3.6^S	$^I3.6^E_S$	3.6	3.6	C	C	C	C	C	6.6	8.0	C	C	7.0	E	C	C	5.4	4.6	4.4^S	3.1	3.3	3.4^F	3.5
23	F	F^S	3.9^F	$^I3.7^F$	3.7	$^I3.4^F$	3.5	5.1	6.5	6.9	7.1	7.9	7.9	7.6	6.1^H	6.0	6.3	6.1	4.3	4.4	3.9^S	3.7^S	$^I3.6^E_S$	3.7
24	3.9^S	4.0	4.1	3.8^S	4.0	4.0^F	5.0^S	6.0	5.9	6.2	7.1	8.0	$^U8.8^R$	9.2^R	$^I8.7^R_S$	6.6	5.5	5.2	4.6^S	4.5	4.0^S	3.5	3.9^S	4.3^S
25	F	F	F	F	F	R^S	4.3^S	5.0^S	7.7^R_S	6.8	6.8	7.6	7.7	7.4	C	C	C	6.0	4.0^S	3.1	3.0	$^I3.2^R_S$	$^I3.4^E_S$	$^I3.4^E_S$
26	$^I3.4^E_S$	$^I3.7^R_S$	$^I3.8^R_S$	$^I3.8^R_S$	$^I3.8^R_S$	$^I3.8^R_S$	$^I4.4^R_S$	$^I6.6^R_S$	$^I6.9^R_S$	6.6	6.6	7.4^S	7.0	7.7	7.2^S	6.8	6.4	5.5	4.5	4.0^S	3.8^S	3.4	3.5	$^I3.6^R_S$
27	$^I3.8^R_S$	$^I3.9^E_S$	$^I3.7^E_S$	3.5^F	$^I3.2^F$	3.0^F	3.8	$^I5.6^R$	6.2	7.1	7.2	6.6	7.2	7.9	6.1	7.0	6.6^R	6.1	5.0^R_S	3.4	2.9	3.1	3.2	3.4
28	3.4^S	3.4	3.4	3.3	3.3	$^I3.2^E_S$	$^I3.8^R_S$	6.1	6.6^R	7.6^R_S	6.8^S	6.6^R	6.8	7.8^S	6.1^R	6.0	5.8	5.3	4.4^S	4.3^S	3.7^S	3.8^R_S	3.8^R	3.9
29																								
30																								
31																								
No.	16	19	23	21	20	21	22	25	26	28	28	26	26	27	25	24	24	26	26	24	21	20	19	19
Median	3.4	3.6	3.5	3.5	3.5	3.2	3.2	5.2	6.2	6.4	6.8	6.8	7.2	6.8	6.3	6.0	5.6	5.1	4.3	3.8	3.7	3.2	3.4	3.4
U.Q.	3.6	3.9	3.8	3.8	3.8	3.4	3.8	5.9	6.7	7.0	7.1	7.4	7.3	7.6	6.8	6.6	6.2	5.2	4.6	4.2	3.8	3.6	3.8	3.6
L.Q.	3.4	3.5	3.3	3.4	3.2	3.0	2.9	4.6	5.7	6.2	6.3	6.6	6.6	6.3	6.0	5.8	5.2	4.8	3.9	3.4	3.1	3.1	3.2	3.3
Q.R.	0.2	0.4	0.5	0.4	0.6	0.4	0.9	1.3	1.0	0.8	0.8	0.8	0.7	1.3	0.8	0.8	1.0	0.4	0.7	0.8	0.7	0.5	0.6	0.3

foF2

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

The Radio Research Laboratories, Japan.

A 1

21

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										A	L^H	L	L	L	L	L								
2										3.2^L	L	C	C	C	C	C								
3										L	L	A	4.2^L	I 4.0^L	L	L								
4										L	L	4.2^L	4.2^L	4.2^L	L	L								
5									L	L	L	L	A	L	L	L								
6										L	L	L	I 4.2^L	4.1^L	4.0^L	L								
7										3.3	I 3.8^L	L	L	L	L	C								
8									L	L	L	L	L^H	L	L	L								
9										L	L	L	L	L	L									
10									L	L	L	L	L	L	L									
11									L	L	L	L^H	L	L										
12									L	L	L	L	L	L	L	L								
13									L	L	4.1	L	L	L	L	L								
14									L	L	L	4.1	4.2^L	I 4.1^L	L	L								
15									L	L	A	L^H	L	L	L	3.1	L							
16									L	L	4.0^L	I 4.2^L_H	L^H	L^H	L	L	L							
17										L	L^H	L^H	L	L	L									
18									L	L^H	4.2^L	I 4.2^L_H	I 4.2^L	I 4.2^L	4.0^L	3.7								
19									L	L	L	L	I 4.3^L_H	I 4.2^L	I 4.0^L	L								
20									L	3.8	3.8^H	L	L	L	L	C								
21									L	4.1^L	I 4.2^L_H	L	L	L	3.6^L	C								
22									C	L	L	C	C	L	C	C								
23										L	L^H	4.1^H	L	L	L	L								
24									L	L^H	L^H	L	4.4	I 4.2^L	I 4.0^L	I 3.8^L	3.2							
25									L	L	L	4.2^L_H	L^H	L	C	C								
26									L	L	L	L^H	L^H	L^H	L	L								
27									L	L	L	I 4.4^L	4.4	L	L	L								
28									L	L	4.5^L	4.4^L	I 4.4^L_H	L	L	L	L							
29																								
30																								
31																								
No.										4	7	8	9	7	5	3	1							
Median										3.6	4.1	4.2	4.2	U 4.2	4.0	3.7	3.2							

foF1

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

The Radio Research Laboratories, Japan.

A 2

22

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	A	A	2.75	I 2.85 A	3.00	3.00 R	2.80	2.45	B							
2								B	A	A	2.80	C	C	C	C	C	C							
3								B	A	A	A	A	3.15 R	A	R	R	2.10							
4								B	A	I 2.70 A	2.95	3.20	3.05	3.00	I 2.80 A	2.60	B							
5								B	A	A	2.95	3.05	3.10	3.05	I 2.90 A	A	A							
6								A	2.50	2.80	3.00	3.05	I 3.10 A	I 3.05 A	2.95	A	A							
7								B	2.40	I 2.70 A	I 2.90 A	3.05	3.20	3.10	3.00	C	A							
8								B	2.25	2.75	2.95	3.10	A	A	A	2.55	A							
9								A	2.35	I 2.65 A	I 2.90 A	3.05	3.05	3.05	I 2.90 A	I 2.65 C	A							
10								A	A	2.75	2.95	I 3.00 A	3.05	3.05	A	C	C							
11								B	A	A	I 2.80 A	3.00	3.10	3.00	A	A	A							
12								A	A	2.70	2.85 S	3.00	3.05	3.00	2.90	I 2.60 A	I 2.30 A							
13								R	A	2.55	I 2.80 S	2.95	3.00	2.95	I 2.85 A	2.65	A							
14								A	A	A	A	A	A	A	A	A	A							
15								B	I 2.30 R	I 2.70 A	I 2.90 A	3.05	I 3.05 A	3.05	2.95	2.55	2.25							
16								B	2.45	2.90	3.00	3.05	3.05	3.05	2.95	2.55	I 2.25 A							
17								A	2.55	2.80	3.00	3.05	3.15	3.05	3.05	A	A							
18								B	2.35	2.75	2.95	3.05	3.10	3.05	3.00	2.75	2.25							
19								B	2.50	2.80	3.00	3.05	3.05	3.05	I 3.00 A	A	A							
20								B	2.40	2.75	3.00	3.00	3.05	3.05	3.00	I 2.75 C	2.50	B						
21								R	2.50	2.80	2.95	3.05	3.05	3.00	2.85	C	C	C						
22								C	C	A	A	C	C	3.05	C	C	C	B						
23								A	2.50	2.80	3.00	3.10	3.10	3.10	2.95	2.70	A	A						
24								1.80	2.55	2.70	3.00	I 3.10 R	3.10	3.05	3.00	A	A	B						
25								1.80	2.55	2.80	3.00	3.10	I 3.10 A	3.05	C	C	C	B						
26								R	2.50	2.75	3.00	I 3.10 A	3.20	3.15	3.05	I 2.80 A	I 2.30 A	B						
27								B	A	2.85	3.05	I 3.10 A	3.20	3.20	3.05	A	A	E						
28								2.05	2.55	2.85	3.15	3.20	3.20 R	3.00	3.00	I 2.75 A	2.35 R	B						
29																								
30																								
31																								
No.								3	16	21	25	24	24	24	20	13	8	1						
Median								1.80	2.50	2.75	2.95	3.05	3.10	3.05	2.95	2.65	2.30	E						

foE

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

The Radio Research Laboratories, Japan.

A 3

23

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	5.1	8.1	16.8	6.1	G	3.1	2.7	G	3.0	G	2.5	2.6	3.3	3.0	4.1	3.8	2.9	2.6
2	2.4	1.9	1.8	E	E	E	2.1	2.4	2.5	2.5	2.9	C	C	C	C	C	C	3.1	3.5	2.7	3.5	3.0	2.9	2.5
3	E	E	E	E	E	E	E	2.5	2.8	3.3	2.9	5.6	3.3	3.2	G	G	G	E	E	2.2	E	6.5	2.9	2.3
4	E	E	E	E	E	E	2.2	2.8	3.5	3.0	G	2.7	G	2.1	2.9	G	2.3	E	E	5.0	7.5	4.3	3.1	2.6
5	2.8	3.0	E	E	E	E	E	G	3.1	2.8	G	3.5	4.1	3.8	3.7	3.1	3.8	5.0	6.5	11.9	8.4	6.0	6.0	5.0
6	3.0	2.6	2.3	2.3	3.5	3.0	E	3.3	G	G	G	2.5	3.5	3.3	3.5	3.2	3.1	2.3	2.8	2.1	3.3	2.9	4.1	4.0
7	3.0	3.0	3.7	3.1	2.3	E	E	G	G	2.8	3.0	G	G	G	G	C	2.5	E	2.5	2.1	E	2.2	E	E
8	E	E	E	E	E	E	E	G	G	2.8	2.2	3.0	7.7	3.5	3.3	G	2.6	2.4	1.8	1.9	E	E	E	E
9	E	E	E	E	E	E	E	3.9	G	2.8	3.8	G	G	3.6	3.6	C	3.4	2.9	2.4	3.4	4.3	3.0	3.3	E
10	2.5	E	3.3	E	E	E	E	G	3.1	G	2.8	2.8	G	G	3.3	C	C	E	E	E	E	2.8	E	S
11	3.0	E	E	E	E	5.8	S	G	3.3	3.0	3.1	3.3	G	3.5	3.7	3.5	4.3	4.8	5.8	6.8	6.1	2.3	1.8	3.1
12	2.3	2.1	E	E	2.9	7.4	7.8	6.8	3.0	G	G	G	G	3.4	3.4	3.5	3.1	2.8	3.8	3.8	2.1	2.4	4.9	2.6
13	3.0	E	E	E	E	2.1	E	G	2.3	G	S	G	G	3.0	3.0	G	2.4	E	1.8	E	2.6	E	E	2.3
14	2.9	2.5	2.8	E	E	E	E	2.1	3.3	3.2	3.2	3.1	3.2	3.5	3.1	3.0	2.5	5.1	3.1	3.6	6.3	4.0	2.2	3.5
15	2.3	1.8	2.0	1.8	E	E	E	G	G	2.8	4.5	3.3	3.4	3.3	2.4	2.1	G	1.9	E	E	E	2.4	3.8	3.1
16	3.3	2.7	1.8	2.1	1.8	2.2	E	2.4	G	G	G	G	2.1	G	G	G	2.3	3.1	2.3	E	E	E	E	E
17	3.3	2.0	E	2.8	2.3	E	2.0	2.3	G	G	G	G	G	G	3.5	3.9	3.8	2.2	4.2	E	E	E	E	E
18	E	E	E	E	E	1.8	E	G	G	G	G	3.2	G	G	G	G	G	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	G	G	G	G	G	G	3.5	4.1	3.2	3.5	E	E	E	E	2.4	E	E
20	E	E	2.2	E	E	1.9	E	G	G	G	G	3.8	3.6	3.5	3.3	C	G	G	1.9	E	E	E	E	E
21	2.3	E	E	E	E	E	E	G	G	G	G	G	G	G	G	C	C	C	E	2.0	E	E	E	E
22	2.0	E	E	E	C	C	C	C	C	2.8	3.3	C	C	G	C	C	C	2.4	1.8	2.0	1.8	3.0	5.0	4.1
23	3.6	2.1	2.0	1.8	2.5	1.8	2.0	2.1	2.4	3.5	3.2	2.9	3.3	G	3.2	3.5	3.3	2.5	2.7	2.2	2.2	1.8	2.1	2.1
24	E	1.7	E	2.3	E	2.1	E	2.1	G	G	G	3.6	G	2.9	3.0	3.5	2.5	G	2.0	2.9	3.3	2.5	2.5	3.5
25	1.8	E	2.3	2.5	2.0	E	E	G	G	G	G	G	3.1	3.5	C	C	C	3.3	2.0	2.9	2.8	2.3	2.4	1.8
26	2.1	E	E	E	E	E	E	G	G	G	G	3.2	G	G	3.6	3.2	2.6	2.1	3.2	2.8	E	2.3	2.3	E
27	E	E	E	E	E	E	E	G	2.7	2.7	3.2	3.2	2.9	G	3.5	3.4	3.3	2.8	2.6	E	E	E	E	E
28	E	E	E	E	E	E	E	G	G	3.4	G	G	G	3.2	3.2	3.2	G	G	E	E	2.3	E	2.3	2.1
29																								
30																								
31																								
No.	28	28	28	28	27	27	26	27	27	23	27	26	26	27	25	20	23	27	23	28	28	28	25	27
Median	2.2	E	E	E	E	E	E	G	G	G	G	G	G	3.0	3.2	3.2	2.5	2.3	2.2	2.1	2.0	2.4	2.2	2.1
U.Q.	3.0	2.0	2.0	1.8	1.8	1.9	E	2.4	3.0	2.9	3.1	3.2	3.3	3.5	3.5	3.4	3.3	2.9	3.2	3.0	3.4	3.0	3.0	3.1
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	2.3	E	E	E	E	E	E	E
Q.R.																	1.0							

foEs

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	5.5		3.0	2.6 Gr		3.0		2.5	2.2	2.7	1.8	A	2.5	2.0	1.7
2	1.9	1.8	1.8				1.7	2.3	E 2.5 R E	2.5 Gr R	U 2.2	C	C	C	C	C	C	2.0	2.9	2.3	1.8	1.8	1.8	1.7
3								2.4	2.7	2.8	2.9 R	5.1	2.8	3.2						1.9		A	2.7	1.7
4							1.7	U 2.8 R S	2.7	2.7		2.5 Gr		2.1 Gr	2.9		2.3			2.2	1.8	1.8	2.3	1.9
5	2.1	2.2							2.5	2.8		3.5	4.1	3.8	3.6	3.0	3.5	A	A	A	A	A	A	A
6	2.3	2.1	1.8	1.8	1.7	1.7		3.0				2.4 Gr	3.5	3.2	2.5	2.7	2.5	2.2	2.1	2.0	2.8	2.8	2.2	A
7	1.9	1.9	1.8	2.4	2.0					2.8	3.0					C	2.4		2.4	1.8		1.8		
8										2.2	2.1 Gr	2.8 Gr	3.2	3.4	3.1		2.5	1.8	1.7	1.7				
9								3.4		2.8	3.5			3.6	3.1	C	3.3	2.6	1.8	1.9	2.0	2.0	2.0	
10	E		2.5						2.5		2.5 Gr	U 2.8 R			3.2	C	C					1.7		S
11	E					A	S		2.9	3.0	U 3.1 R	2.4		3.2	3.5	3.8	4.0	4.6	A	A	A	1.7	1.7	2.0
12	1.8	E			A	A	A	A	2.6					3.2	3.3	3.3	2.8	2.7	3.5	2.8	1.8	1.7	A	2.0
13	1.7					1.7			2.3		S			3.0	3.0		2.3		1.7		1.8			1.7
14	2.0	1.7	1.8					2.0	3.2	2.8	3.2	3.0	3.2	3.1	3.1	2.6	2.3	1.9	2.0	E 3.6 R	A	2.8	2.0	1.7
15	1.7	1.8	1.7	1.8						2.7	4.1	2.5	3.4	2.5	2.2 Gr	1.9 Gr		1.7				1.7	2.8	2.2
16	2.0	E	E	E	E	1.7		1.8					2.1 Gr				U 2.3 R	1.8	1.7					
17	2.0	1.8		E	1.7		1.7	2.0							3.4	3.9	3.5	2.1	A					
18						E						3.2												
19														3.5	3.2	3.2	3.0					1.7		
20			E			1.8						3.8	3.6	3.5	3.3	C			1.7					
21	1.7															C	C	C		1.7				
22	1.7				C	C	C	C	C,	U 2.8 R	3.3	C	C		C	C	C	1.9	1.7	1.7	1.7	E	2.1	2.0
23	1.7	1.7	E	1.7	1.8	1.7	1.7	2.0	1.8 Gr	2.5	2.5	2.0 Gr	2.9		3.2	3.4	3.1	2.0	1.8	2.0	1.7	1.7	1.8	1.7
24		E		E		E		2.0				3.6		2.8 Gr	2.6 Gr	3.3	2.3		1.7	1.7	2.6	1.7	1.7	1.8
25	1.7		E	E	E								3.1	2.4	C	C	C	2.6	1.7	2.0	2.0	1.7	1.7	E
26	1.7											U 3.2 R			3.6	3.2	2.6	2.0	3.0	2.4		1.7	1.8	
27									2.7	2.6 Gr	2.7	3.2	2.3 Gr		3.5	3.4	3.2	2.7	2.6					
28										2.0				U 3.2 R	3.2	3.0					1.7		2.3	1.9
29																								
30																								
31																								
No.																								
Median																								

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

The Radio Research Laboratories, Japan.

A 5

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.70	1.70	1.70	1.70	1.65	E	1.80	1.75	1.85	1.90	1.80	1.80	2.10	2.10	1.85	1.80	1.95	1.90	1.80	1.75	1.80	1.75	1.70	1.70
2	1.80	1.70	1.75	1.70	1.70	1.70	1.65	1.75	1.80	1.75	1.75	C	C	C	C	C	C	1.75	1.90	1.80	1.75	1.75	1.75	1.70
3	1.80	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.80	1.85	1.80	1.80	1.80	1.90	1.95	2.20	1.85	1.70	1.75	1.85	1.80	1.70	1.70	1.70
4	1.65	1.70	1.65	1.70	1.70	1.70	1.70	1.80	1.75	1.85	1.80	1.95	1.75	1.80	1.95	2.25	2.00	1.75	1.75	1.70	1.75	1.75	1.70	1.75
5	1.70	1.75	1.80	1.80	1.70	1.70	1.70	1.80	1.75	2.00	1.95	2.00	2.15	2.70	1.90	2.30	2.20	1.70	1.80	1.80	1.80	1.75	1.70	1.70
6	1.70	1.75	1.75	1.80	1.70	1.70	1.70	1.75	1.80	2.00	2.00	1.90	1.80	1.90	1.75	1.85	1.80	1.80	1.75	1.75	1.80	1.75	1.70	1.70
7	1.70	1.80	1.75	1.70	1.70	1.75	1.80	1.85	1.80	1.90	2.10	2.00	2.00	2.00	2.25	I 2.00 C	1.75	1.70	1.70	1.70	1.80	1.80	1.70	1.75
8	1.75	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.75	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.75	1.70	1.70	1.65	1.70	1.70	1.70	1.65
9	1.65	1.70	E	1.70	1.65	1.65	1.70	1.75	1.75	1.70	1.70	1.75	1.75	1.80	1.80	I 1.70 C	1.70	1.70	1.65	1.70	1.70	1.70	1.65	E
10	E	1.70	1.70	1.65	1.65	E	1.70	1.75	1.70	1.80	1.70	1.70	1.70	1.80	1.90	I 1.70 C	I 1.80 C	1.70	1.70	1.70	1.70	1.70	1.70	S
11	E	E	1.70	1.65	1.65	1.70 I	1.70 S	1.70	1.70	1.80	1.70	1.70	1.70	1.75	1.80	1.75	1.70	1.80	1.75	1.70	1.70	1.70	1.70	1.70
12	1.65	E	1.70	1.65	1.65	1.70	1.70	1.65	1.70	1.75	1.70	1.80	1.70	1.75	2.00	1.80	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.70
13	1.70	1.75	1.75	1.70	E	1.70	1.70	1.70	1.70	1.70	E 2.90 S	1.80	1.70	1.90	1.80	1.75	1.70	1.75	1.70	E	1.70	1.65	1.70	1.70
14	1.70	1.70	E	E	1.70	1.70	1.70	1.70	1.75	1.75	1.75	1.70	1.70	1.80	1.80	1.80	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70
15	1.65	1.70	1.70	1.70	1.80	1.70	1.65	1.80	1.70	1.70	1.75	1.80	1.75	1.75	1.80	1.70	1.70	1.70	1.80	1.70	1.70	1.70	1.70	1.70
16	1.70	E	E	E	E	1.70	1.65	1.75	1.70	1.75	1.75	1.70	1.70	1.75	1.80	1.70	1.80	1.70	1.70	1.70	1.70	E	1.70	1.80
17	1.65	1.70	1.65	E	1.65	E	1.65	1.70	1.70	1.80	1.80	1.75	1.75	1.75	1.70	1.70	1.70	1.70	1.75	1.70	1.65	1.65	1.65	E
18	1.70	1.65	1.65	1.70	E	E	E	1.75	1.70	1.75	2.00	1.75	1.95	1.80	1.75	1.75	1.75	1.80	1.70	E	E	E	E	1.65
19	1.70	1.75	1.70	1.70	1.65	E	E	1.95	1.75	1.80	1.70	1.70	1.90	1.85	2.00	1.75	1.80	1.80	1.70	1.70	1.70	1.70	1.70	1.65
20	1.75	1.70	E	1.70	E	1.65	1.70	1.95	1.70	1.70	1.70	2.00	1.70	2.70	1.85	I 1.80 C	1.70	1.95	1.70	1.70	1.75	1.70	1.75	1.70
21	1.70	1.70	E	1.70	1.75	1.75	1.70	1.75	1.70	1.70	1.70	1.75	1.95	1.80	1.75	C	C	C	1.75	1.70	1.65	1.70	1.70	1.65
22	1.70	E	1.70	E	C	C	C	C	C	1.70	1.70	C	C	1.80	C	C	C	1.70	1.70	1.70	1.70	E	E	1.70
23	1.70	E	E	E	E	1.70	1.70	1.65	1.70	1.75	1.80	1.70	1.70	1.75	1.70	1.75	1.70	1.65	1.75	1.65	1.70	1.70	1.75	1.65
24	1.70	E	1.70	E	E	E	1.65	1.70	1.70	1.70	1.80	1.70	1.75	1.80	1.75	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70
25	1.70	1.70	E	E	E	E	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	C	C	C	1.70	1.70	1.65	E	1.70	1.70	E
26	1.65	E	1.70	1.70	1.70	1.70	1.75	1.75	1.75	1.80	1.95	1.70	2.10	1.90	1.80	1.80	1.75	1.75	1.75	1.75	1.70	1.70	1.80	1.70
27	1.70	1.75	1.75	1.75	1.70	1.70	1.70	1.80	1.85	1.85	1.80	1.80	1.85	1.80	2.20	1.85	1.75	1.70	1.70	E	1.70	1.70	1.70	1.70
28	1.70	1.65	1.70	1.70	1.65	1.65	1.70	1.65	1.70	1.70	1.75	1.80	1.80	1.80	1.70	1.75	1.70	1.85	1.95	1.75	1.70	1.80	2.05	1.75
29																								
30																								
31																								
No:	28	28	28	28	27	27	27	27	27	28	27	26	26	27	25	24	24	27	28	28	28	28	28	27
Median	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.75	1.70	1.75	1.75	1.75	1.75	1.80	1.80	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70

f-min

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

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Fs	F	2.55s	F	Fs	Fs	A	A	A	J3.55R	3.60	3.10	3.60	3.50	3.70	3.65	3.55	3.25s	3.25s	3.15s	A	Fs	3.00s	2.90s
2	3.00	2.90s	2.90	3.00	3.15	I3.05Fs	I3.10Fs	3.50s	3.55	3.75	3.50	C	C	C	C	C	C	3.40	3.30s	3.05	Fs	Fs	F	F
3	F	F	3.00F	I3.30F	I3.40F	I3.25F	I3.20Fs	3.50	3.70	3.60	3.60	3.65	3.60	3.60	3.40	3.60	3.60	3.30	3.40s	3.45s	3.35s	A	Fs	F
4	F	2.95F	F	F	F	Fs	Fs	I3.60Rs	3.75s	3.60	3.65	3.55	3.55	3.45	3.65	3.55	3.55	3.50	3.25s	3.35s	3.10	2.95Fs	Fs	Fs
5	Fs	Fs	I3.05F	I3.05F	3.05	3.10F	3.40F	I3.80Rs	3.65	3.60	3.60	3.60	3.65	3.55	3.40	3.50	3.60	A	A	A	A	A	A	A
6	Fs	F	F	F	F	3.40	3.35F	3.55	3.55	3.40	3.50R	3.45	3.65	3.65	3.60	3.55	3.40	3.60R	3.00	3.15	3.30s	3.05	3.05	I3.00A
7	I3.00Fs	2.95	3.00s	3.05	3.25s	3.30s	2.90	3.40	3.65	3.50	3.40	3.60	3.75	3.60	3.60	I3.55C	3.65	3.50	3.00	3.10	3.05s	3.00s	3.10	2.95
8	2.90	3.00s	3.10	3.15	3.15	3.05	3.05s	3.45s	3.75	3.70	3.40	3.45	3.50	3.50	3.70	3.65	3.50s	3.55	3.40	3.30	3.25	3.05	3.00	I2.95Fs
9	I2.95Rs	I2.90Fs	I3.00Fs	I3.15Fs	3.30s	3.05s	3.20s	I3.45Rs	3.65	3.55R	3.50	3.40	3.35	3.45	3.30L	I3.60C	3.60	I3.50Rs	3.30	3.30	I3.40Rs	I3.25Rs	I2.95Fs	I2.95Fs
10	I3.05Fs	I3.20Rs	3.10F	3.25	3.30	3.05	3.10s	I3.45Rs	3.70	3.50	2.70R	3.35R	2.90	I3.20s	3.40	I3.65C	I3.60C	I3.55Rs	2.65	2.90s	Rs	Rs	Rs	I3.00s
11	3.05s	2.95s	Fs	Fs	Fs	A	S	3.30	I3.50Rs	3.65	3.40	3.45	3.40	3.45	3.45	3.40	3.60	3.50	A	A	A	2.80s	3.00s	Rs
12	F	Fs	3.100	3.00	A	A	A	A	3.50s	3.60	3.55	3.65	3.30	3.30	3.50	3.40	3.60	3.55	3.30s	I3.25Rs	I3.30Rs	3.25s	I2.85A	2.95s
13	F	F	Fs	Fs	3.05s	I3.20Fs	3.10s	3.60	3.55	3.60	3.65	3.25	3.65	3.15	3.60	3.65	3.80	3.45	I3.30Rs	3.15	3.25s	3.15	2.95s	I2.85Rs
14	I3.00Fs	I3.10Fs	2.95F	2.80F	2.95F	3.30F	3.15s	I3.50Rs	3.65	3.50R	3.60	3.55	3.50	3.60	3.55	3.55	3.35	3.60R	3.35s	Rs	A	Fs	Rs	3.10s
15	I3.00Rs	2.80s	I2.90F	I3.00F	I3.40Rs	I3.40Fs	I3.20Fs	I3.40Rs	I3.50Rs	3.45s	3.55	3.65	3.40	3.55	3.65	3.75	3.65	3.40	3.45s	3.20s	3.20s	Rs	Rs	Rs
16	Rs	Fs	I3.15Rs	3.45	I3.35Fs	I3.30Fs	I3.30Fs	I3.35Rs	3.55	I3.60Rs	3.60	3.35	3.35	3.45	3.70	3.50	3.70	3.50	I3.30Rs	3.25s	3.20s	I3.20Rs	Rs	Rs
17	Fs	I3.10Fs	I3.10Rs	3.05s	3.30	3.05	3.20s	I3.50Rs	3.75	3.65	3.60	3.50	3.50	3.55	3.50H	3.35	3.65	3.65	I3.20A	I3.35Rs	3.10s	3.05s	I3.00Rs	I2.95Rs
18	3.10s	3.10s	3.10s	2.85s	3.35s	I3.30Rs	3.20s	I3.55Rs	3.65	3.60R	3.40	3.50	3.60	3.60	3.50	3.45	3.60	3.60	3.45s	3.15	I3.00Rs	2.95s	3.00s	Rs
19	Fs	I3.00Rs	I3.00Rs	I3.00Rs	I3.10Rs	3.10s	I3.35Rs	3.60	3.30	3.65	3.60	I3.50H	3.65	3.50	3.45	3.40	3.60	3.50s	3.30	3.30s	3.30s	3.10	2.90s	2.95
20	2.90s	3.05	3.05	3.00	3.05s	3.15	3.30	3.70	3.80	3.55	3.15H	3.70	3.55	3.40	3.60	I3.60C	3.55	3.45	3.00s	Rs	Rs	Rs	3.20	3.05s
21	2.80	I3.10Rs	I3.10Rs	Rs	Fs	Fs	Rs	3.55s	I3.70Rs	3.50	3.60	3.50	3.40	3.80	3.30	C	C	C	3.35	3.05s	3.05s	I3.05Rs	Fs	Fs
22	3.10s	I3.15Rs	3.15	2.95	C	C	C	C	C	3.60	3.50	C	C	3.40	C	C	C	3.55	3.50	3.25s	3.10	3.00	3.00F	3.05
23	F	Fs	3.05F	I3.20F	3.30	I3.25F	3.50	3.70	3.60	3.65	3.70	3.55	3.45	3.45	3.30H	3.50	3.60	3.60	3.30	3.00	3.10s	3.25s	I3.10Fs	3.00
24	2.90s	3.05	3.00	3.10s	3.10	3.10F	3.40s	3.75	3.60	3.50	3.45	3.25	U3.25R	3.20RI	3.45Rs	3.60	3.65	3.50	3.30s	3.35	3.30s	3.10	2.95s	3.15s
25	F	F	F	F	F	Rs	3.50s	3.60s	3.55Rs	3.55	3.60	3.25	3.35	3.30	C	C	C	3.75	3.35s	3.30	3.10	I3.00Rs	I3.00Fs	I3.00Fs
26	I3.05Fs	I2.90F	I3.00Rs	I3.00Fs	I3.05Rs	I3.05Fs	I3.30Rs	I3.60Rs	I3.65Rs	3.75	3.50	3.55s	3.30	3.50	3.55s	3.65	3.60	3.65	3.35	3.30s	3.20s	3.00	2.95	I3.00Rs
27	I3.10Rs	I3.10Fs	I3.10Fs	3.00F	I3.00F	3.05F	3.20	I3.50R	3.60	3.70	3.50	3.60	3.40	3.45	3.50	3.60	3.50R	3.75	3.65Rs	3.50	3.20	2.95	3.10	2.95
28	3.00s	3.00	3.05	3.10	3.15	I3.20Fs	I3.30Rs	3.65	3.70R	3.70Rs	3.70s	3.40R	3.40	3.40s	3.60R	3.40	3.60	3.65	3.30s	3.20s	3.10s	3.15Rs	3.10R	2.95
29																								
30																								
31																								
No.	16	19	23	21	20	21	22	25	26	28	28	26	26	27	25	24	24	26	26	24	21	20	19	19
Median	3.00	3.00	3.05	3.05	3.15	3.15	3.20	3.55	3.65	3.60	3.55	3.50	3.50	3.45	3.50	3.55	3.60	3.50	3.30	3.25	3.20	3.05	3.00	2.95

M(3000)F2 | Sweep 1.60 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

A

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										A	L H	L	L	L	L	L								
2										3.95 L	L	C	C	C	C	C								
3										L	L	A	3.80 LI	4.00 L	L	L								
4										L	L	3.85 L	3.85 L	3.80 L	L	L								
5									L	L	L	L	A	L	L	L								
6										L	L	L	I 3.85 L	3.80 L	3.80 L	L								
7										4.30	I 4.00 L	L	L	L	L	C								
8									L	L	L	L	L H	L	L	L								
9										L	L	L	L	L	L									
10									L	L	L	L	L	L	L									
11									L	L	L	L H	L	L										
12									L	L	L	L	L	L	L	L								
13									L	L	3.85	L	L	L	L	L								
14									L	L	L	3.80	3.85	I 3.80 L	L	L								
15									L	L	A	L H	L	L	L	4.20	L							
16									L	L	3.95 LI	3.95 H L	L H	L H	L	L	L							
17										L	L H	L H	L	L	L									
18									L	L H	4.00 LI	4.05 H L	I 3.90 LI	3.70 L	3.60 L	3.95								
19									L	L	L	L	I 4.00 H L	I 4.00 LI	I 3.85 L	L								
20									L	4.00	4.25 H	L	L	L	L	C								
21									L	3.95 LI	I 3.90 H L	L	L	L	4.15 L	C								
22									C	L	L	C	C	L	C	C								
23										L	L H	4.15 H	L	L	L	L								
24									L	L H	L H	L	3.70	I 3.85 LI	I 3.80 LI	I 3.85 L	4.05							
25									L	L	L	4.05 H	L H	L	C	C								
26									L	L	L	L H	L H	L H	L	L								
27									L	L	L	I 3.95 L	3.85	L	L	L								
28									L	L	3.80 L	3.85 LI	I 3.80 H	L	L	L	L							
29																								
30																								
31																								
No.										4	7	8	9	7	5	3	1							
Median										4.00	3.95	3.95	3.85	U 3.80	3.80	3.95	4.05							

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

The Radio Research Laboratories, Japan.

A 8

28

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										A	260	280	250	260	245	245								
2										245	260	C	C	C	C	C								
3										240	255	255	260	270	260	250								
4										245	250	255	260	270	250	245								
5									220	230	255	250	245	255	250	250								
6										255	245	280	245	250	250	240								
7										245	250	260	245	250	245	C								
8									230	235	255	265	260	270	245	240								
9										240	250	260	285	255	255									
10									235	230	385L	255	300	255	250									
11									235	245	255	245	260	270										
12									245	240	245	245	255	290	260	250								
13									240	245	250	270	245	290L	245	245								
14									245	245	255	260	255	260	245	250								
15									235	250	250	245	250	245	250	240	230							
16									240	240	245	260	255	250	250	240L	230							
17										245	255	265	255	250	250									
18									230	230	260	245	245	250	250	240								
19									235	245	250	280	245	245	260	245								
20									225	245	245H	260	270	290	250	C								
21									235	245	245	260	255	245	245	C								
22									C	260	245	C	C	250	C	C								
23										245	245	255	270	260	250	250								
24									230	245	255	285	275	255	245	245	235							
25									240	245	255	285	280	270	C	C								
26									225	245	250	250	285	250	260	245								
27									240	245	250	250	265	270	255	250								
28									225	240	255	260	255	255	255	270	235							
29																								
30																								
31																								
No.									18	27	28	26	26	27	24	18	4							
Median									235	245	250	260	255	255	250	245	230							

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

The Radio Research Laboratories, Japan.

A 9

29

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E295E	305	E340E	255	E345E	E345E	A	A	A	A	220H	200	245	230	235	230	240	240	I240A	245	A	A	255	285
2	A	E295E	290	280	245	230	235	230	230	230	205	C	C	C	C	C	C	240	245A	I250A	240	280	E290E	E300E
3	E310E	285	270	255	E295E	255	240	230	235	200	225	I220A	210	225	220	245	235	245	220	225	250	I270A	I255A	E300E
4	255	270	E290E	265	260	235	240	240	220	220	210	220	215	205	210	225	235	220	240	240	255	E295E	A	250
5	A	A	E295E	E295E	260	260	225	225	215	200	200	240	I240A	240	I240A	245	240	A	A	A	A	A	A	A
6	A	A	E295E	255	250	235	245	225	240	210	220	245	200	220	220	220	245	220	I240A	255	A	A	A	A
7	A	E295E	E295EI	280A	245	245	E280E	240	235	200	215	205	220	210	210	I230C	240	220	I230A	250	245	255	255	275
8	280	270	250	245	245	255	270	245	230	205	200	195	195H	245	245	210	240	215	235	245	235	250	270	255
9	E295E	290	260	255	245	270	255	230	230	220	220	205	205	I240A	240	I245C	240	220	245	240A	245A	A	A	E290E
10	E290E	265	I260A	245	240	245	250	220	215	210	200	195	240	245	245	I245C	I240C	220	E300E	E290E	255	220	230	S
11	E295E	280	E295E	E295E	E300E	A	S	250	230	230	210	195H	220	245	255	250	240	A	A	A	A	E300E	285	A
12	A	E295E	E295E	290	A	A	A	A	230	235	230	210	205	210	245	I230A	255	230	A	A	240	245	A	A
13	E320E	260	260	265	245	270	255	230	200	200	210	195	235	200	245	240	220	210	235	245	220	250	E280E	E260E
14	A	245	E305E	295	E295E	240	245	220	240	245	215	200	230	245	245	240	230	225	240	A	A	A	245A	E290E
15	295	E305E	E295E	E295E	245	235	245	210	235	200	I210A	200H	235	240	240	200	215	220	215	240	250	270	A	A
16	A	275	245	230	210	245	260	245	230	230	205	200H	195H	200H	220	220	220	210	220	225	240	250	245	260
17	I270A	255	255	290	245	240	245	215	230	200	195H	190H	210	245	240	240	235	210	I230A	230	250	250	E295E	E290E
18	255	245	245	250	245	240	240	230	225	215H	200	200H	200	195	200	215	240	205	205	240	245	260	280	270
19	275	270	255	260	260	245	245	230	210	210	245	210	190H	245	220	235	235	230	240	215	235	220	E280E	255
20	E295E	285	290	E295E	255	250	235	225	200	200	195H	260	245	220	250	I250C	245	240	240	250	245	235	240	230
21	280	290	290	270	245	245	245	245	210	200	200H	195	245	220	200	C	C	C	215	245	245	250	250	240
22	240	255	270	290	C	C	C	C	C	235	245	C	C	245	C	C	C	235	205	240	210	265	I260A	I270A
23	290	255	275	255A	245	230	215	220	240	230	195H	195H	220	245	240	240	235	225	205	245	205	240	255	255
24	290	280	265	265	255	245	225	205	205	190H	190H	245	220	200	245	240	205	205	225	225	I240A	240	265	245
25	290	245	255	280	245	245	220	200	220	200	200	195H	200H	205	C	C	C	210	200	I215A	A	E285E	265	E290E
26	245	275	270	E290E	240	250	240	235	220	200	205	200H	195H	200H	250	245	245	225	240A	240A	245	255	290	280
27	270	250	275	270	E295E	255	240	235	230	205	200	195	200	245	245	I245A	245	230	210	215	245	E290E	275	290
28	285	290	265	275	265	255	240	240	220	205	190	200	190H	240	220	210	225	220	230	225	250	255	265	295
29																								
30																								
31																								
No.	14	22	19	23	21	24	23	25	26	27	28	26	26	27	25	24	24	25	24	23	22	19	18	16
Median	280	270	265	265	245	245	240	230	230	205	205	200	210	230	240	240	240	220	230	240	245	250	260	E260

h'F

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

The Radio Research Laboratories, Japan.

A 10

30

IONOSPHERIC DATA

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

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

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							f3	c3	l3	l2		c	l		h l		h2	f2	f2	f2	f3	f2	f2	f
2	f	f	f				f	c2	l3	l2	l2							f	f2	f2	f2	f2	f2	f
3								c2	l2	l2	l	l2	l	l						f		f3	f2	f
4							f	c3	l2	c		l		l	l		h			f3	f2	f2	f2	f2
5	f2	f2							c	c		h l	h	h	h l	h	h	f2	f7	f3	f5	f2	f4	f3
6	f2	f2	f2	f	f	f		l2				l	l	l2	l	l	l	f	f	f	f2	f2	f3	f3
7	f2	f2	f2	f2	f					h2	h2						c2		f2	f2		f		
8										l	l	l2	l2	l2	l		c3 l2	f	f	f				
9								l3		c	l2			h	h l		c3	f2	f	f2	f2	f	f	
10	f		f						c		l2	l2			h2							f		
11	f					f2			l2	l2	l3	l		h2	h2	h2	h4	f2	f5	f3	f3	f	f	f2
12	f2	f			f2	f2	f3	l2	c					h	h	h2	c2	f3	f2	f2	f2	f2	f4	f2
13	f2					f			l					h	h		h		f		f		f
14	f3	f	f2					c2	c2	h2	c2	c2	h	h	h2	h	h	f	f3	f3	f2	f2	f2	f2
15	f	f	f	f						l2	l2	l	l2	l	l	l		f				f	f3	f2
16	f	f	f	f	f	f		h					l				h	l	f					
17	f2	f		f	f		f	l							h	h2	c4	f	f3					
18						f						h												
19														h	h	h2	h2 l2					f		
20			f			f2						h	h	h	h2				f					
21	f																			f				
22	f									h	c2							c2	f	f	f	f2	f3	f3
23	f2	f2	f	f2	f7	f	f	h3 c	l4	l3	l2	l	l2		h	h2	h5	c2	f	f3	f	f2	f	f
24		f		f		f		h				h		l2	l2	l3	h		f	f	f3	f2	f2	f2
25	f		f	f2	f								l	l2				h4	f	f3	f2	f	f2	f2
26	f											h			h2	h2	h	h2	f2	f2		f2	f	
27									h	l	l2	l2	l		h	h2	h2	h3	f4					
28										l				h	h	h					f		f	f
29																								
30																								
31																								
No.																								
Median																								

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I 2.3R	2.4	2.4	2.3	2.2	I 2.5F	J 3.1S	C	A	A	A	I 7.0A	7.5R u	7.2S	6.4	6.0	5.5	4.6	4.1S	3.6	I 3.5A	I 3.4A	I 3.4A	3.4
2	3.3	3.4	3.4	3.6S	J 3.2S	J 3.0S	J 2.9S	4.5	5.8	6.4S	6.5	6.4S	6.8	6.3	6.1S	5.7	6.2	5.3	I 4.1A	3.3	3.6S	I 3.2A	u 3.2S	I 3.2S
3	u 3.2S	3.2	2.9	3.2	2.3	u 2.5S	I 2.9S	4.8S	5.3	6.0	5.9S	6.8S	6.2	5.8	5.7	6.0	5.7	4.5S	5.0S	u 4.1S	2.9S	u 2.6S	3.0	u 3.0S
4	u 3.0S	3.2Fs	3.2F	3.0F	3.0F	I 2.7S	2.7	5.0	5.7	5.7	6.7	6.8S	6.0	5.7	5.9	5.5	5.5S	4.3	I 4.1A	4.0S	I 3.4A	I 3.2A	J 3.8A	3.2Fs
5	I 3.2A	3.1	3.1S	3.0S	2.6F	2.7S	3.2	C	C	6.3S	6.5	6.6	6.1R	6.0R	5.8	I 5.6C	5.8	5.1	A	A	A	A	A	A
6	A	3.3	3.2	3.2	2.9	3.0	2.7	4.8	J 5.2R	6.4	6.4	6.6	6.6	6.2	I 5.8S	5.5	5.1	4.6	I 3.4S	I 2.9S	3.5	3.2	3.1	3.2
7	3.2	3.3S	3.3S	3.4	3.4	I 2.6S	J 2.4R	4.8	J 6.5S	6.0	u 7.6S	6.9	6.8	5.7	5.7S	I 5.7C	5.3	4.2	3.8	u 3.5S	u 4.2S	3.7S	3.0	3.4S
8	3.3	3.2	3.4	3.0	2.9	2.7S	2.7S	J 5.3S	6.8S	u 5.8R	5.9	6.8	u 7.3S	6.4	6.3	u 5.9R	5.0	4.4	3.4	3.6	3.4	J 2.6R	2.9	2.9
9	3.0	3.1	3.2	3.3	3.2	2.6	2.5	5.1	J 6.6R	6.4	6.3	6.2	6.1	6.9	6.6	5.9	5.4	5.3	I 4.0S	3.2	3.0	2.6	u 2.9S	J 2.9S
10	3.1	3.3	3.5S	3.5	2.9	2.7	2.7S	5.1	7.2S	6.4	5.4	8.6R	J 8.5R	8.6	I 7.3S	J 6.6R	5.6	4.9	3.4	3.5F	4.4	5.0	J 3.0R	2.6
11	2.9R	3.3	3.1	3.1	2.8	2.8	J 2.9R	I 5.8S	D 8.6R	7.1	6.4	6.6	7.3	J 6.4R	6.8	6.6	6.8	6.1	I 4.6A	3.9	A	A	A	3.1
12	2.9	3.1	3.3	3.1	2.6	I 2.8A	3.0	u 5.5S	J 6.5R	J 8.1S	I 9.0C	6.9	6.4R	6.3R	I 8.1S	6.7	5.9R	5.4	4.4	I 4.0A	3.8	J 3.5R	2.6	u 2.5R
13	J 3.0R	I 3.3F	3.3	3.4	3.2	3.0	3.4	J 6.5R	J 6.5R	7.1	I 8.4S	6.9	7.5	6.4	J 8.2R	6.7	5.8	4.6	3.9	I 4.3S	J 4.0R	J 2.7R	3.0	u 3.2S
14	u 3.3S	I 3.3A	3.2	3.2	J 2.9R	3.3	3.2	5.5	6.0	7.0	J 8.1S	7.2	J 7.7R	I 7.2S	6.8	5.8	5.6	5.6	4.2	I 3.9A	I 3.5C	I 3.6S	3.5	I 3.4A
15	I 3.2A	3.3	3.3	3.5	3.7	u 2.9R	J 2.5R	5.4	6.4	6.3	7.2	J 7.9R	J 7.4R	J 7.9R	I 7.4S	6.3	5.4	u 4.7S	4.4	3.6	3.5	3.5	3.6	3.4
16	3.4S	3.6	4.0	3.4	2.9	2.7	3.0	4.9S	J 6.4R	7.3S	J 8.5S	7.1R	8.6S	u 8.1S	7.0S	6.2	5.8	5.3S	3.7S	4.1S	C	C	C	3.7S
17	3.6	3.7S	3.7	4.0S	3.7S	3.1	3.0	5.3S	5.8	6.3	6.9	7.3	J 8.0R	I 7.4S	J 7.8S	J 6.7R	5.9	5.2	3.6	3.4	3.4	3.2	3.0	3.3
18	u 3.3S	J 3.4S	3.1	3.3	3.1	2.9	2.9	5.9	J 6.4S	7.2S	7.3	7.4S	7.8S	7.1S	J 6.3S	6.1S	6.3	5.0S	3.7	3.3	3.5	3.6S	3.8S	3.8
19	3.7	3.7	3.6S	3.7S	3.4	3.4S	3.6	5.9S	u 6.8S	7.3	7.2S	7.8	6.8	7.2S	6.7	6.4	6.3S	5.4S	4.9	4.8S	u 3.5S	2.6	2.8	u 3.4S
20	3.0	3.0S	3.1	3.3	3.1	3.1	3.3S	5.8S	6.6S	5.8S	u 6.3S	5.9R	6.6R	6.2	u 7.3S	u 6.7S	6.0	6.2S	4.7S	4.0S	4.1S	4.1S	3.6	3.0S
21	3.1	3.4	3.5	3.5	3.5	u 3.5S	3.6S	6.8S	u 8.2S	6.8	6.7	6.0	8.3R	6.7S	5.2S	5.5S	6.6S	u 7.4S	5.3S	3.3	3.7	3.5S	3.5	3.5
22	3.3Fs	3.5S	3.5	3.5	3.3	3.3	3.6S	u 6.3S	u 6.7S	J 6.6R	J 7.6R	J 9.3R	J 8.5R	u 7.2R	7.0	7.1S	6.1	5.7	4.5	3.6	I 3.4A	3.1	3.3	3.2
23	3.3	3.4	3.4	3.4	3.4	2.6	3.4S	u 5.0S	u 6.4R	J 7.1S	7.4S	6.4R	7.0	6.9	7.2	6.8	6.1	6.0	J 4.6S	3.5	I 3.6A	3.5	I 3.0A	3.0
24	J 3.1S	3.4	3.6	3.5	3.4	3.2	4.1R	6.1	J 7.3S	7.0	6.8	J 7.4R	9.2	9.4R	I 9.4R	7.1	5.8	5.1R	4.1	u 4.8R	3.6	I 3.4A	3.4	3.6
25	u 3.7S	3.7S	3.5S	3.7	4.1	u 3.5S	4.0S	5.5	u 7.2S	u 7.4R	u 7.4S	6.5	7.6S	9.5S	8.3S	7.0	6.8	6.3	4.3S	2.6	3.0	3.0S	3.2	3.4
26	3.3	3.3	3.5	3.8	3.7S	2.8	u 4.1S	6.4S	u 7.5S	6.6S	6.8	7.3S	7.1	8.6S	u 7.9S	6.7S	6.8S	J 5.9S	J 4.9S	3.8S	u 3.9S	3.1S	3.1	3.3
27	3.5	3.7S	3.2Fs	3.3Fs	3.3Fs	3.3Fs	3.3S	I 6.0S	7.2S	7.1	J 7.4S	7.3	7.2	7.5	7.6S	7.2S	7.0	6.1S	4.3	3.3	2.9	3.1	3.1	3.1
28	3.4	3.4	3.3	3.4	3.2	3.1S	3.5S	6.4S	6.6	7.3S	u 8.0S	6.9	6.7	7.7S	7.3S	6.4	6.4	5.5S	4.1S	4.1S	I 3.6S	3.5S	3.6S	3.4S
29																								
30																								
31																								
No.	27	28	28	28	28	28	28	26	26	27	27	28	28	28	28	28	28	28	27	27	25	25	25	27
Median	3.2	3.3	3.3	3.4	3.2	2.9	3.0	5.5	6.6	6.6	6.9	6.9	7.2	7.0	6.9	6.4	5.8	5.3	4.1	3.6	3.5	3.2	3.1	3.2
U.Q.	3.3	3.4	3.5	3.5	3.4	3.2	3.4	6.0	7.2	7.1	7.6	7.3	7.8	7.6	7.5	6.7	6.2	5.8	4.6	4.0	3.8	3.5	3.5	3.4
L.Q.	3.0	3.2	3.2	3.2	2.9	2.7	2.8	5.0	6.4	6.3	6.4	6.6	6.6	6.3	6.2	5.8	5.6	4.6	3.8	3.3	3.4	3.0	3.0	3.0
Q.R.	0.3	0.2	0.3	0.3	0.5	0.5	0.6	1.0	0.8	0.8	1.2	0.7	1.2	1.3	1.3	0.9	0.6	1.2	0.8	0.7	0.4	0.5	0.5	0.4

foF2

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

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	A	A	A	A	L	L	L	L								
2										S	L	L	S	S	S									
3										S	L	L	L	A	S	S								
4										S	L	L	L	L	S	S								
5								C	C	L	A	L		L		C								
6										L		L	L		A	A	S							
7										S	L	L	L	S	S	C								
8									L	L	L	43 L	L	L	L	L								
9										41 L	L	L	S	L	S									
10									L	L	S	45 L	L	L	L	L								
11										L	L	L	L		AS	L								
12									L	L	C	L	L	S	L									
13									L	A	L	A	A	L	A									
14										L	L	L	L	L	L	L								
15									L		L	L	L	L	A									
16									L	L	S	L	L	L	L	S								
17									35 L	L	L	L	L	L	L	L								
18										L	L	S	A	L	L		L							
19								S	S	L	L	S	L	S										
20									L	L	S	L	L			S								
21									L	L	L	S	45 L	S										
22										L H	L	L	L	L	L	L								
23							A		L	L	L	L	" 45 L	L	L	L								
24									L	L	L	L	" 46 L	L	L	L	L							
25									L	L	L	L	S	L	S									
26									L	L	L	S	S	S	S									
27									L	L	S	L	S	L	S		S							
28									L	L	L	S	L	L	S	S	S							
29																								
30																								
31																								
No.									1	1		2	3											
Median									35	41		44	" 45											

foF1

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

The Radio Research Laboratories, Japan.

K

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							C	C	A	A	A	A	R	S	S	2.55	B	S						
2							S	A	A	A	S	S	S	S	A	S	S	S						
3							S	S	A	A	S	A	R	A	R	S	S	S						
4							S	S	A	S	3.00	3.15^{R}	I3.15^{S}	S	S	S	S	S						
5							S	C	C	2.90	I3.15^{R}	3.40	I3.30^{S}	S	A	C	A	S						
6							S	A	I2.50^{S}	I2.80^{A}	I2.95^{S}	I3.15^{S}	3.20^{R}	A	A	A	A	S						
7							S	S	^{U}2.50^{R}	S	S	S	I3.20^{A}	3.20^{R}	3.15^{R}	C	A	A						
8							S	S	S	R	S	^{U}3.30^{R}	I3.25^{S}	3.20	I3.00^{S}	I2.85^{R}	B	S						
9							S	S	A	S	S	I3.00^{S}	I3.10^{S}	I3.10^{S}	3.05	2.65^{R}	A	S						
10							S	S	S	^{U}2.70^{R}	I2.95^{S}	I3.10^{R}	I3.10^{R}	I3.10^{R}	I2.90^{S}	I2.60^{R}	I2.20^{A}	S						
11							S	S	A	S	R	A	R	S	A	A	A	S						
12							S	A	^{U}2.45^{R}	A	C	A	S	I3.05^{S}	I2.90^{S}	^{U}2.75^{R}	B	B						
13							S	S	S	A	A	A	A	A	A	S	S	S						
14							S	S	I2.10^{R}	I2.50^{A}	I2.80^{A}	I2.95^{R}	I3.10^{S}	I3.00^{R}	I2.75^{A}	A	A	S						
15							S	S	S	S	2.85	I3.10^{A}	A	A	A	A	A	S						
16							S	S	2.55	I2.80^{S}	I3.10^{S}	3.30^{R}	I3.30^{R}	I3.20^{S}	I3.00^{S}	R	S	S						
17							S	S	2.40^{R}	2.75^{R}	2.85	I3.10^{R}	I3.20^{A}	I3.20^{R}	I3.10^{S}	I2.80^{A}	A	S						
18							S	S	S	I2.75^{R}	I3.00^{S}	3.25^{R}	3.35^{R}	3.15^{R}	I3.00^{S}	I2.65^{R}	A	S						
19							S	S	S	I2.60^{R}	I3.05^{S}	S	S	I3.35^{R}	I3.15^{A}	I2.75^{S}	A	A						
20							S	S	R	S	S	S	R	I3.15^{S}	I3.05^{S}	I2.80^{R}	R	S						
21							S	S	2.50^{R}	R	S	I3.10^{S}	3.20	3.15	3.00^{R}	I2.80^{R}	S	S						
22							S	S	2.55^{R}	R	A	A	A	A	A	A	A	S						
23							S	A	S	R	I3.00^{S}	I3.10^{R}	I3.15^{S}	I3.20^{A}	I3.10^{R}	I2.90^{R}	2.40	B						
24							S	S	S	I2.90^{R}	I3.05^{S}	3.20^{R}	3.30^{R}	I3.25^{R}	R	A	A	S						
25							S	S	S	I2.80^{S}	3.10^{R}	I3.15^{S}	3.25^{R}	3.35^{R}	3.05^{R}	I2.80^{R}	S	S						
26							S	S	S	I2.70^{S}	3.20^{R}	I3.40^{S}	3.40	I3.25^{S}	I3.00^{S}	2.65^{S}	2.40^{S}	S						
27							S	S	I2.70^{S}	2.80^{R}	I3.10^{A}	I3.25^{S}	I3.30^{S}	I3.30^{S}	3.25	I2.90^{S}	S	S						
28							S	S	S	2.85	I3.05^{R}	R	A	3.20^{R}	I3.05^{R}	I2.85^{S}	2.50^{R}	A						
29																								
30																								
31																								
No.									9	13	16	17	17	18	17	15	4							
Median									^{U}2.50	^{U}2.80	^{U}3.00	^{U}3.15	^{U}3.20	^{U}3.20	^{U}3.05	^{U}2.80	2.40							

foE

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

The Radio Research Laboratories, Japan.

K 3

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	1.7	S	2.3	S	C	C	10.3^{M}	13.8	11.9	7.4^{M}	3.0^{G}	S	S	3.2	4.0	5.2^{M}	5.7^{M}	⌋8.4	5.7^{M}	5.8^{M}	5.4^{M}	3.5
2	3.2^{M}	2.0	3.3^{M}	2.1^{Y}	E	S	S	4.7^{M}	6.0^{M}	⌋3.2	S	S	S	S	⌋3.6	S	S	S	⌋5.7	⌋3.7	⌋2.7	⌋4.5	⌋2.5	⌋2.5
3	2.3	S	S	S	S	S	2.3	S	3.2	⌋3.4^{Y}	S	3.4	G	⌋4.4	G	S	S	S	2.2	S	S	S	S	S
4	S	S	S	S	S	S	S	S	⌋3.7	S	G	G	S	S	S	S	3.7	S	⌋6.1	⌋5.5	⌋5.5	4.4	⌋3.6	⌋2.7
5	⌋5.5	⌋2.7	⌋3.2	2.3	S	S	S	C	C	3.3^{M}	⌋4.4	3.9	3.3^{G}	S	3.4	C	3.2	⌋5.8	⌋9.4	8.7^{M}	11.8^{Y}	6.3^{M}	5.8^{M}	⌋7.8
6	3.3	3.2^{M}	3.2^{M}	⌋2.5	2.3^{M}	S	S	3.2	S	3.3	S	S	3.9^{M}	4.0^{M}	5.3	4.9^{M}	3.5^{M}	3.2	2.4^{M}	S	4.3^{M}	3.2^{M}	2.2	3.0^{M}
7	3.1^{M}	S	5.0^{M}	3.0^{Y}	3.2^{M}	2.3	S	S	G	S	G	S	3.3	G	G	C	⌋3.1	⌋2.8	S	2.3	S	S	S	S
8	S	S	E	S	S	S	S	S	S	G	S	G	S	3.5^{M}	S	G	3.2^{Y}	S	3.2^{Y}	S	S	S	S	S
9	S	S	E	E	E	S	S	S	3.3	3.6	S	S	S	S	G	⌋3.8	⌋4.4	3.3	3.5	2.2	S	S	S	S
10	S	S	S	E	S	S	2.2	S	S	3.3^{S}	S	G	G	G	S	3.3	3.7^{M}	S	S	2.3	2.0^{M}	S	S	S
11	S	S	E	E	2.4^{M}	S	S	S	3.9	3.3^{S}	2.5^{G}	4.3^{M}	3.0^{G}	S	4.2	3.6	4.2	3.6	4.0^{M}	4.6^{M}	5.0^{M}	5.8^{M}	6.2^{M}	2.5^{M}
12	2.1^{M}	2.3	1.9	⌋5.7	6.8	⌋3.8	3.3^{M}	⌋4.4	⌋2.5^{Y}	⌋7.2	C	4.0	S	S	S	3.5	3.3	3.0	⌋4.3	5.4^{M}	2.5	3.2	2.3	2.3^{M}
13	S	2.3	2.5	2.4	2.4	S	S	S	S	5.2^{M}	3.3	6.9^{M}	⌋5.0^{Y}	3.3	4.2	S	S	S	S	S	S	S	S	S
14	S	⌋4.8	4.2^{M}	E	2.1	S	S	S	G	2.9	3.3	3.4	3.3	G	3.3	4.0^{M}	3.1	S	S	⌋5.8	C	2.3^{M}	2.2	3.3^{M}
15	3.7^{M}	2.1	E	E	E	S	S	S	S	S	3.2	4.0^{M}	3.4	3.3	⌋4.9	⌋3.3	3.1^{Y}	S	S	S	S	S	S	S
16	S	S	2.4	3.1	2.3	S	S	S	3.1	S	S	G	G	S	S	G	S	S	S	S	C	C	C	S
17	2.8	S	S	2.4	S	2.5	2.2	S	G	3.0	3.2	G	3.3	G	G	3.4	4.3^{M}	3.2	2.5	S	⌋3.2	3.2^{M}	2.8^{M}	2.3^{M}
18	S	S	F	E	1.8	2.0	S	S	S	G	S	3.8	5.0	G	S	3.3	2.3	S	2.3	2.1	2.3	S	S	S
19	S	S	S	S	S	S	S	S	S	G	S	S	S	G	3.9	3.3	⌋4.3	⌋4.0	⌋3.3	S	3.1	2.3	2.5	S
20	2.4	2.4	2.3	S	2.2	S	S	S	G	S	S	S	G	4.1	4.0	3.2	G	S	2.4	S	S	S	S	S
21	S	S	S	S	S	S	S	S	3.0	3.2	S	S	G	G	G	G	3.3	3.3	S	S	S	S	S	S
22	S	S	S	S	E	S	S	S	G	3.3	3.4	3.4	⌋3.4	3.3	3.3	3.4	3.3	S	2.2	⌋3.2	4.8^{M}	2.4	S	S
23	2.3	2.4^{M}	2.4	E	2.4	2.5	⌋4.0	4.1	S	3.2	S	G	S	3.4	3.1^{G}	3.1	3.3	4.1^{Y}	2.5	3.3^{M}	4.2	2.2	⌋4.2	S
24	S	S	S	F	E	E	S	S	S	3.4	S	3.5	G	G	G	3.2^{M}	⌋2.7^{Y}	S	2.1	2.4	3.7	5.0^{M}	3.3^{M}	S
25	S	S	S	F	2.0^{M}	S	S	S	S	S	G	S	G	G	G	3.2	3.7	⌋5.8	S	S	⌋4.9	S	S	S
26	S	S	S	S	S	S	S	S	S	S	G	S	G	S	S	3.1	3.1	3.1	S	2.4	3.2	S	2.3	⌋2.6
27	S	S	S	S	S	S	S	S	3.3	G	3.0	S	S	S	G	3.6	3.3	3.3	⌋4.3	⌋3.1	⌋2.5	⌋2.6	2.3	S
28	S	S	S	S	S	S	S	S	S	3.3	G	G	3.2	G	G	S	3.5	3.2	2.4	S	S	⌋2.6	2.3	2.2
29																								
30																								
31																								
No.	10	9	16	17	17	6	5	4	15	21	14	18	20	18	20	21	24	15	19	16	17	15	15	11
Median	3.0	2.4	2.4	E	2.2	2.4	2.3	4.2	3.1	3.3	3.1	3.4	G	G	G	3.3	3.3	3.3	3.2	3.2	3.7	3.2	2.5	2.6
U. Q.	3.3	3.0	3.2	2.4	2.4	2.5	3.6	4.6	3.7	3.4	3.3	4.0	3.4	3.4	4.0	3.6	3.7	4.1	4.3	5.4	5.0	5.0	4.2	3.3
L. Q.	2.3	2.2	E	E	E	2.0	2.2	3.6	G	3.0	G	G	G	G	G	3.2	3.1	3.2	2.4	2.4	2.6	2.4	2.3	2.3
Q. R.	1.0	0.8				0.5	1.4	1.0		0.4						0.4	0.6	0.9	1.9	3.0	2.4	2.6	1.9	1.0

foEs

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

The Radio Research Laboratories, Japan.

K

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	E 1.7 R	S	E	S	C	C	A	A	A	A	E 3.0 R	S	S	3.2	2.7	2.8	2.8	2.7	A	A	A	2.8
2	2.2	E	2.6	1.7		S	S	4.1	5.5	2.6	S	S	S	S	3.4	S	S	S	AS	2.2	2.7	AS	2.1	S
3	2.1	S	S	S	S	S	S	S	2.6	2.2	S	E 3.4 S		4.3		S	S	S	E	S	S	S	S	S
4	S	S	S	S	S	S	S	S	2.2	S			S	S	S	S	3.2	S	AS	2.8	AS	AS	E 3.6 A	2.2
5	A	2.2	2.1	E	S	S	S	C	C	3.3	4.4	3.8	E 3.3 S	S	E 3.4 S	C	2.9	2.8	A	A	A	A	A	A
6	A	2.6	2.6	2.1	E	S	S	2.6	S	3.0	S	S	2.9 †	3.9	4.8	4.5	E 3.5 S	2.8	S	S	3.1	2.6	E	2.0
7	2.2	S	2.8	1.9	1.9	S	S	S		S		S	E 3.3 S			C	2.6	2.1	S	E 2.3 S	S	S	S	S
8	S	S		S	S	S	S	S	S		S		S	2.8 †	S		2.8	S	2.6	S	S	S	S	S
9	S	S				S	S	S	2.8	2.9	S	S	S	S		3.5	2.3	2.7	S	2.1	S	S	S	S
10	S	S	S		S	S	2.1	S	S	2.9	S				S	3.2	3.4	S	S	2.1	2.0	S	S	S
11	S	S			1.5	S	S	S	3.5	3.0	E 2.5 R	3.5	E 3.0 R	S	u 4.2 S	3.6	2.6	3.0	A	2.9	A	A	A	2.2
12	1.9	2.0	1.8	2.0	2.3	A	2.1	3.0	B	4.0	C	3.6	S	S	S	3.5	3.1	2.8	4.1	A	2.3	3.0	1.9	2.1
13	S	2.1	E	1.9	1.7	S	S	S	S	4.5	3.3	5.7	4.4	3.3	E 4.2 R	S	S	S	S	S	S	S	S	S
14	S	A	2.7		1.8	S	S	S		2.9	3.3	E 3.4 R	E 3.3 S		E 3.3 S	3.1	2.8	S	S	A	C	S	E	A
15	A	E				S	S	S	S	S	3.2	u 3.8 S	3.3	E 3.3 S	4.5	3.3	2.9	S	S	S	S	S	S	S
16	S	S	E	1.7	1.8	S	S	S	G	S	S			S	S		S	S	S	S	C	C	C	S
17	E	S	S	1.7	S	1.9	2.1	S		3.0	3.2		3.3			3.1	3.5	u 3.2 S	S	S	2.3	2.3	2.2	2.1
18	S	S			E	E	S	S	S		S	3.6	E 4.6 A		S	2.9	2.3	S	E	E	2.1	S	S	S
19	S	S	S	S	S	S	S	S	S		S	S	S		3.7	E 3.3 S	3.5	3.5	E 3.3 A	S	2.8	E	2.2	S
20	2.1	E	E	S	E	S	S	S		S	S	S		4.0	E 4.0 S E	3.2 S		S	2.2	S	S	S	S	S
21	S	S	S	S	S	S	S	S	2.7	3.1	S	S					2.7	2.6	S	S	S	S	S	S
22	S	S	S	S		S	S	S		3.0	3.4	3.4	3.4	u 3.3 R	3.3	3.4	3.0	S	2.2	2.7	A	2.2	S	S
23	2.3	1.8	1.6		1.9	1.9	3.0	2.8	S	3.2	S		S	3.4	E 3.1 R	3.1	3.3	3.5	2.1	2.8	A	2.2	A	S
24	S	S	S				S	S	S	3.4	S	E 3.5 S				3.1	2.7	S	E 2.1 S	2.0	2.0	A	2.2	S
25	S	S	S		E	S	S	S	S	S		S				G	2.8	3.1	S	S	2.2	S	S	S
26	S	S	S	S	S	S	S	S	S	S		S		S	S	G	G	2.5	S	2.2	2.5	S	E	1.9
27	S	S	S	S	S	S	S	S	2.9		E 3.0 S	S	S	S		E 3.6 S	3.2	3.3	E 3.2 A	2.3	E	2.2	2.1	S
28	S	S	S	S	S	S	S	S	S	2.9			E 3.2 S			S	3.0	2.6	2.2	S	S	2.1	E	2.0
29																								
30																								
31																								
No.																								
Median																								

f_bEs

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

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.70S E1.70S 1.40 E1.70S	1.50 E1.80S E1.90C C	E2.10S 2.10 2.00 2.75	2.20 E3.60S E3.05S 2.10	2.05 E1.80S E1.90S E1.70S	E1.90S E1.80S E1.80S E1.80S
2	E1.70S E1.70S E1.50S 1.10	1.60 E1.80S E2.10S E1.80S	E1.90S 2.15 E3.40S 3.40S	E3.60S E3.50S 2.60 E3.60S	E2.70S E2.60S E2.00S E1.70S	E1.85S E1.95S E2.00S E2.00S
3	E2.00S E2.10S E2.00S E2.00S	E1.80S E1.80S E2.00S E2.70S	2.15 2.00 E2.50S 2.65	2.80 2.20 1.80 E4.10S	E2.80S E2.05S E1.80S E2.15S	E2.10S E1.90S E2.00S E2.00S
4	E2.40S E2.45S E2.00S E1.65S	E1.75S S E2.00S E2.20S	2.00 E2.90S 2.60 2.60	E3.50S E3.50S E4.50S E4.55S	E2.70S E2.70S E2.10S E2.10S	E2.00S E2.20S E1.90S E1.85S
5	E1.70S E1.90S E2.00S E1.75S	E1.75S E1.95S 2.55S C	C 2.30 2.60 2.80	2.60 E3.25S 2.10 C	2.10 E1.80S E2.00S E1.90S	E1.80S E1.70S E1.90S E1.70S
6	E1.80S E1.60S 1.50 1.50	1.50 E1.80S E1.80S E1.80S	E2.80S E1.90S E3.40S E3.60S	2.80 2.10 2.20 2.60	2.00 E1.90S E1.90S S	E1.90S E2.00S E1.50S E1.80S
7	E1.70S E2.50S E1.50S E1.80C	1.50 E1.60S E2.70S E2.00S	E2.30S E2.95S E3.10S E3.45S	2.75 2.75 2.30 C	2.15 1.90 E2.00S E2.10S	E2.00S E2.05S E2.10S E1.80S
8	E2.15S E1.75S 1.30 E1.60S	E1.75S E1.95S E2.10S E2.60S	E2.70S 2.20 E3.10S 2.85	E3.60S 2.00 E3.20S 2.10	2.00 E1.90S E2.00S E2.20S	E1.90S E2.30S E1.95S E1.80S
9	E1.50S E1.90S 1.60 1.10	1.20 E1.80S E1.80S E2.00S	E2.00S E2.70S E3.55S 4.10S	E4.40S 4.35S 2.55 2.05	2.00 E2.20S E2.00S E1.80S	E2.15S E2.20S E2.10S E2.15S
10	E2.10S E1.70S E1.65S 1.25	E1.80S E1.85S E1.80S E2.80S	E2.75S E2.10S E3.50S 2.30	2.70 2.60 E3.40S 2.20	1.60 E2.10S E1.80S E1.80S	E1.70S E1.90S E1.90S E2.10S
11	E1.90S E1.80S 1.40 1.20	1.10 E1.80S E1.70S E2.10S	2.00 E2.90S 2.10 2.00	2.20 E3.40S 2.70 1.90	2.10 E1.70S E1.70S E1.90S	E2.00S E1.70S E1.70S E1.70S
12	E1.60S E1.50S 1.30 1.05	1.00 E1.50S E1.60S E1.60S	2.20 2.10 C 2.10	E3.50S E4.20S E4.10S 2.20	2.60 2.00 E2.00S E1.95S	E1.80S E2.00S E1.70S E1.80S
13	E1.80S 1.60 E1.80S 1.50	1.50 E1.50S E1.90S E2.10S	E2.80S 2.15 2.20 2.80	2.25 1.80 2.00 E3.20S	E2.90S E2.20S E2.10S E1.90S	E1.90S E1.90S E2.00S E2.40S
14	U2.00S E1.70S E1.50S 1.40	1.00 E1.90S E2.60S E2.10S	2.25 2.15 2.60 2.40	E3.10S 2.60 E2.80S 2.20	2.10 E2.10S E1.80S E1.80S	C E1.80S E1.50S E1.70S
15	E1.80S E1.80S 1.20 1.50	1.10 E1.90S E1.90S E2.20S	E2.65S E3.00S 2.20 2.20	2.20 2.70 2.10 2.10	2.10 E2.20S E2.60S E2.10S	E1.80S E1.90S E1.90S E2.00S
16	E2.40S E1.90S 1.40 1.00	1.10 E2.00S E1.80S E2.20S	1.70 E3.00S E3.50S 2.80	2.85 E3.80S E3.25S 2.05	E2.70S E2.60S E1.55S E2.15S	C C C E2.10S
17	E2.05S E1.80S E1.95S E1.55S	E1.80S E1.70S E1.80S E2.15S	2.10 2.20 2.60 E2.80S	2.70 E2.80S 2.20 2.10	2.10 E1.90S E1.95S E1.90S	E1.60S E1.80S E1.90S E1.70S
18	E1.95S E1.70S 1.20 1.00	1.00 E1.50S E1.50S E2.30S	E2.80S 2.05 E3.20S 2.70	2.75 2.20 E3.40S 2.10	1.70 E2.20S E1.90S 1.60	E1.85S E1.85S E2.30S E2.05S
19	E1.90S E1.95S E1.60S E1.70S	E1.55S E1.90S E1.80S E2.05S	E3.20S 2.05 E3.20S E3.50S	E3.80S 2.80 2.10 E2.80S	2.05 1.50 E1.80S E1.70S	E2.15S E1.85S E2.00S E1.70S
20	E1.60S E2.10S E1.65S E1.80S	E1.70S E2.05S E2.00S E2.10S	2.10 E3.40S E3.55S E3.75S	3.00 E3.40S E3.55S 2.10	2.10 E2.70S 2.00 E2.00S	E2.10S E2.00S E2.10S E1.90S
21	E2.05S E1.80S E1.70S E1.65S	E1.70S E2.25S E2.05S E2.80S	1.85 2.10 E3.10S E5.10S	2.75 2.70 2.70 2.10	E2.10S E2.10S E2.70S E2.15S	E2.10S E2.10S E1.55S E2.05S
22	E1.75S E2.10S E1.95S E1.55S	E1.05S E1.60S E2.00S E2.60S	2.10 2.10 2.60 2.80	2.20 2.65 2.20 2.20	1.90 E2.10S E1.50S E1.80S	E1.80S E1.80S E1.80S E1.80S
23	E1.80S E1.50S 1.40 1.10	1.00 E1.50S E1.80S E2.10S	E2.80S 2.20 E3.40S 2.80	E3.20S 2.25 2.10 2.20	1.80 2.05 E1.60S E1.90S	E1.50S E1.80S E1.50S E1.50S
24	E1.80S E1.70S E1.50S 1.10	1.10 1.50 E2.00S E2.20S	E2.80S 2.90 E3.20S 2.90	2.80 2.85 2.80 2.20	2.10 E2.25S E1.70S E1.80S	E1.80S E1.50S E2.00S E1.80S
25	E1.60S E1.80S E1.80S 1.20	1.15 E1.80S E1.90S E2.00S	E3.00S E3.05S 2.65 E3.60S	2.70 2.75 2.15 2.10	E2.70S E2.05S E2.05S E2.00S	E2.00S E2.25S E2.10S E1.90S
26	E1.75S E1.70S E1.55S E1.70S	E1.70S E1.75S E2.05S E2.30S	E2.80S E3.05S 2.25 E3.75S	2.80 E4.50S E4.30S 2.10	1.85 E2.10S E2.25S E2.00S	E2.00S E2.05S E1.90S E1.70S
27	E1.90S E1.85S E1.85S E1.70S	E1.55S E2.00S E2.00S S	E2.75S 2.10 2.75 E3.70S	E3.40S E3.90S 2.15 E2.80S	E2.70S E2.10S E1.80S E1.80S	E1.60S E1.70S E1.90S E2.05S
28	E2.25S E2.25S E1.60S E1.60S	E1.70S E2.60S E1.70S E2.60S	E2.75S 2.10 2.65 2.65	2.70 2.10 2.75 E4.60S	2.10 2.10 E2.00S E2.00S	S E1.85S E2.00S E1.90S
29																								
30																								
31																								
No.	28	28	28	28	16	27	28	25	27	19	27	17	19	16	18	19	21	28	28	27	25	27	27	28
Median	E1.80	E1.80	E1.60	E1.50	1.10	E1.80	E1.90	E2.15	E2.30	2.10	E2.75	2.70	2.70	2.60	2.20	2.10	E2.10	E2.10	E2.00	E1.90	E1.90	E1.90	E1.90	E1.80

f-min

Sweep 1.0 Mc to 25.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I3.00R	2.90	3.50	2.80	2.75	I2.80F	J3.25S	C	A	A	A	I3.30A	3.40R	J3.50S	3.45	3.60	3.45	3.50	3.45S	3.35	I3.05A	I2.85A	I3.00A	3.10
2	2.85	2.95	2.90	2.95S	J3.15S	J3.25S	J3.10S	3.45	3.40	3.15S	3.40	3.40S	3.40	3.35	3.30S	3.40	3.30	3.55	I3.30S	3.10	3.30S	I3.25S	U2.90S	U2.90S
3	U2.80S	3.15	2.90	3.45	3.15	U3.30S	I3.10S	3.30S	3.35	3.50	3.35S	3.50S	3.55	3.35	3.25	3.35	3.45	3.40S	3.30S	U3.15S	2.90S	U3.10S	3.10	U2.85S
4	U3.05S	2.80S	2.65F	2.70F	3.05F	I3.15S	3.30	3.45	3.30	3.50	3.50	3.40S	3.30	3.50	3.40	3.45	3.45S	3.50	I3.25S	3.30S	I3.20S	I3.10S	I2.90A	3.00S
5	I3.15A	2.85	2.75S	2.85S	3.05F	3.10S	3.30	C	C	3.30S	3.40	3.50	3.45R	3.35R	3.45	I3.45C	3.45	3.50	A	A	A	A	A	A
6	A	2.90	2.95	3.05	3.15	3.30	3.35	3.50	J3.65R	3.30	3.40	3.35	3.15	3.40	I3.45S	3.60	3.50	3.50	I3.30S	I3.30S	3.45	3.15	2.95	2.95
7	2.85	2.90SI	2.95A	3.20	3.45	I3.50S	I3.20R	3.50	J3.50S	3.40	U3.30S	3.45	3.45	3.50	3.45SI	3.45C	3.55	3.55	3.20	U3.15S	U3.25S	3.05S	3.20	3.05S
8	3.15	3.10	3.25	3.30	3.15	2.90S	2.95S	J3.40S	3.65SU	3.45R	3.35	3.25	U3.40S	3.35	3.20	U3.50R	3.50	3.65	3.25	3.15	3.50	I3.15S	3.10	3.10
9	3.05	2.95	3.15	3.10	3.15	3.25	3.20	3.55	J3.45R	3.40	3.35	3.25	3.30	3.45	3.35	3.35	3.40	3.45	I3.25S	3.30	3.30	3.10	U2.70S	J2.80S
10	2.95	2.90	3.20S	3.35	3.15	3.25	3.05S	3.35	3.65S	3.40	2.95	3.30R	J3.30R	3.40I	3.30SJ	3.45R	3.55	3.30	3.10	2.85F	2.90	3.55	J3.30R	2.80
11	2.85R	2.95	2.90	2.85	2.75	2.85	J2.90R	I3.30S	R	3.65	3.75	3.25	3.40	J3.25R	3.25	3.50	3.35	3.45	I3.40A	3.30	A	A	A	3.10
12	2.75	2.85	2.90	3.05	3.00	I3.05A	3.30	U3.45S	J3.45R	J3.35SC	I3.55C	3.50	3.30R	3.15R	I3.40S	3.40	3.50R	3.55	3.35	I3.25A	3.15	J3.45R	2.95U	3.15R
13	J2.80R	F	2.95	3.20	3.15	3.00	3.05	J3.50R	J3.50R	3.25	I3.40S	3.60	3.25	3.30	J3.40R	3.60	3.45	3.65	3.10	I3.35S	J3.55R	J3.15R	2.90	U3.05S
14	I3.10SI	3.20A	2.85	2.80	J2.90R	3.35	2.95	3.45	3.50	3.30	J3.45S	3.60	J3.50R	I3.50S	3.40	3.60	3.50	3.50	3.30	I3.30I	I3.20QI	I3.10S	3.15	I2.90A
15	I2.90A	2.90	2.75	3.15	3.50	U3.10R	J3.20R	3.45	3.45	3.30	3.65	J3.55R	J3.40R	J3.30A	S	3.65	3.65U	3.60S	3.40	3.10	3.25	3.20	3.35	2.95
16	2.95S	3.10	3.30	3.55	3.45	3.10	3.00	3.50S	J3.60R	3.25SJ	3.60S	3.35R	3.50SU	3.40S	3.55S	3.35	3.45	3.55S	3.10S	3.30S	C	C	C	3.00S
17	2.90	3.05S	3.05	3.15S	3.15S	3.15	3.15	3.55S	3.45	3.40	3.30	3.40	J3.40R	S	J3.45SJ	3.40R	3.60	3.65	3.35	3.25	3.20	3.05	3.00	3.00
18	U3.35SJ	J3.20S	3.20	3.05	3.25	3.15	3.10	3.65	J3.45S	3.45S	3.45	3.40S	3.40S	3.35SJ	3.55S	3.45S	3.50	3.55S	3.20	3.05	2.90	2.90S	2.70S	2.85
19	3.00	2.80	2.80S	2.95S	2.80	3.00S	3.10	3.35S	U3.40S	3.15	3.45S	3.35	3.20	3.45S	3.20	3.30	3.35S	3.45S	3.40	3.35SU	3.15S	3.10	3.00	U2.90S
20	2.95	2.90S	2.95	2.90	3.05	3.20	3.35S	3.40	3.50S	3.45SU	3.40S	3.25R	3.25R	3.20U	3.35SU	3.25S	3.35	3.35S	3.25S	3.00S	3.00S	3.15S	3.05	3.00S
21	3.00	2.75	2.90	2.80	2.95	U2.80S	3.00S	3.25SU	J3.80S	3.35	3.40	3.20	3.35R	3.35	3.50S	3.25S	3.25SU	3.40S	3.40S	3.10	2.90	3.10S	3.10	3.15
22	2.80S	2.90S	2.90	2.85	2.85	2.80	3.05SU	3.30SU	3.35SJ	3.35RJ	3.40RJ	3.45RJ	3.30RU	3.30R	3.40	3.50S	3.60	3.70	3.55	3.20I	I3.20A	2.90	3.05	2.95
23	3.00	2.85	3.10	3.20	3.25	3.25	2.95SU	3.60SU	3.40R	J3.55S	3.40S	3.45R	3.30	3.20	3.35	3.50	3.60	3.50	J3.50S	3.00	A	3.30	I3.00A	3.00
24	J2.90S	3.00	3.05	3.05	3.10	3.20	3.40R	3.60	J3.30S	3.45	3.40	J3.20R	3.25	3.30R	R	3.40	3.45	3.50R	3.45	U3.35R	3.35	A	2.90	3.10
25	U3.00S	2.85S	3.10S	2.95	3.40	U3.30S	3.25S	3.45	U3.45SU	3.40RU	3.40S	3.35	3.15S	3.25S	3.20S	3.20	3.25	3.35	3.50S	3.50	3.00	2.95S	2.95	2.85
26	3.00	2.80	2.90	2.90	3.20S	3.10	U2.90S	3.35SU	3.35S	3.25S	3.25	3.30S	3.10	3.20SU	3.40S	3.50S	3.35S	J3.35SJ	3.25S	3.15SU	3.15S	2.95S	2.85	2.90
27	2.95	3.00A	2.75F	2.80S	2.80S	2.80S	3.05SI	3.40S	3.35S	3.35	J3.25S	3.40	3.00	3.15	3.40S	3.40S	3.45	3.45S	3.50	3.00	3.05	2.85	2.95	2.95
28	2.80	2.90	3.00	2.95	2.90	3.00S	3.15S	3.30S	3.25	3.45SU	3.40S	3.50	3.15	3.25S	3.40S	3.40	3.40	3.60S	3.40S	3.10S	S	2.95S	2.90S	2.90S
29																								
30																								
31																								
No.	27	27	28	28	28	28	28	26	25	27	27	28	28	27	26	28	28	28	27	27	23	24	25	27
Median	2.95	2.90	2.95	3.00	3.15	3.15	3.10	3.45	3.45	3.40	3.40	3.40	3.30	3.35	3.41	3.45	3.45	3.50	3.30	3.20	3.20	3.10	3.00	2.95

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

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	A	A	A	A	L	L	L	L								
2										S	L	L	S	S	S									
3										S	L	L	L	A	S	S								
4										S	L	L	L	L	S	S								
5								C	C	L	A	L		L		C								
6										L		L	L		A	A	S							
7										S	L	L	L	S	S	C								
8									L	L	L	3.95	L	L	L	L								
9										3.85	L	L	S	L	S									
10									L	L	S	3.65	L	L	L	L								
11										L	L	L	L		A S	L								
12									L	L	C	L	L	S	L									
13									L	A	L	A	A	L	A									
14										L	L	L	L	L	L	L								
15									L		L	L	L	L	A									
16									L	L	S	L	L	L	L	S								
17									4.00	L	L	L	L	L	L	L								
18										L	L	S	A	L	L		L							
19								S	S	L	L	S	L	S										
20									L	L	S	L	L			S								
21									L	L	L	S	3.55	S										
22										LH	L	L	L	L	L	L								
23							A		L	L	L	L	U 3.75	L	L	L								
24									L	L	L	L	U 3.65	L	L	L	L							
25									L	L	L	L	S	L	S									
26									L	L	L	S	S	S	S									
27									L	L	S	L	S	L	S		S							
28									L	L	L	S	L	L	S	S	S							
29																								
30																								
31																								
No.									1	1		2	3											
Median									4.00	3.85		3.80	U 3.65											

M(3000)F1

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

The Radio Research Laboratories, Japan.

K

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	A	A	A	A	260	245	240	230								
2									ˢ	265	255	250	255	255	250									
3										235	260	255	245	260	255	260								
4										240	255	255	275	255	255	250								
5								C	C	250	250[q]	250		280		C								
6										245		250	260		[E]250[AE]	250[AE]	260[q]							
7										255	255	255	255	245	255	C								
8									220	230	260	265	250	260	250	240								
9										230	255	280	270	260	260									
10									230	250	255	280	250	245	250	230								
11										230	230	255	255		250	245								
12									250	255	C	250	260	275	250									
13									230	245	240	230[q]	260[q]	250	260									
14										250	230	250	255	255	245	250								
15									230		230	250	250	250	230									
16									225	245	245	250	250	240	245	250								
17									230	225	260	250	255	260	245	240								
18										245	255	255	255	245	255		225							
19								220	240	255	260	240	265	230										
20									215	230	260	275	260			255								
21									215	255	245	275	260	240										
22										250	255	250	250	265	250	250								
23							[E]350[q]		255	250	250	250	265	250	255	250								
24									250	250	250	280	260	255	250	245	240							
25									245	255	255	260	275	260	260									
26									245	245	260	270	270	275	255									
27									255	250	260	255	270	290	260		245							
28									245	245	245	255	275	270	250	255	255							
29																								
30																								
31																								
No.							1	1	16	26	25	27	27	25	24	15	4							
Median							[E]350	220	235	250	255	255	260	255	250	250	240							

h'F2

Sweep 1.0 Mc to 20.0 Mc in 120 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	295	315	255	355	360	385	255	C	A	A	A	A	245	245	225	225	230	210	250	E250	A	A	A	E305
2	310	300	340	260	245	245	260	E290	E300	205	215	210	I210	210	240	245	245	220	I220	260	255	I280	310	I320
3	340	260	305	265	265	230	I260	220	230	210	225	210	210	I230	I225	I220	240	210	230	215	225	280	260	315
4	305	255	310	295	255	I260	255	220	215	215	205	205	205	210	I205	I220	225	225	I250	250	I260	I310	E340	305
5	I325	305	340	305	265	285	255	C	C	205	I220	E245	245	200	E245	I220	240	210	A	A	A	A	A	A
6	A	E330	E345	260	245	245	250	225	210	205	245	225	E240	E250	A	A	S	220	S	S	260	E290	280	300
7	300	E340	E350	260	230	I240	I285	240	225	205	225	215	225	I210	220	I235	225	205	230	275	225	255	235	260
8	260	255	230	230	255	300	310	230	210	200	205	210	210	245	225	225	210	210	250	255	210	E310	300	275
9	300	300	260	245	225	255	E310	240	230	205	215	240	I230	270	I230	230	225	215	I240	250	250	305	325	345
10	305	280	245	220	245	250	280	235	225	200	I215	225	210	205	E245	225	225	225	250	310	300	210	250	E350
11	310	300	305	290	310	350	310	250	210	210	205	220	210	E260	I240	225	225	205	A	E260	A	A	A	270
12	310	295	300	260	E360	I275	260	240	225	E250	I225	210	205	I200	E260	245	240	205	E310	I260	255	E250	E310	E330
13	355	310	280	250	255	305	260	230	225	I205	225	I205	I210	205	I240	245	210	200	E250	250	210	250	310	E310
14	I260	I270	E350	310	300	250	E330	210	225	210	210	E255	230	210	245	225	225	210	225	I230	I250	I270	250	I280
15	I300	310	310	260	205	260	260	225	205	225	210	E250	210	225	I225	225	205	205	225	250	250	255	250	275
16	E305	270	230	205	230	260	280	210	210	215	210	215	205	240	205	210	225	210	215	230	C	C	C	275
17	270	260	260	245	220	250	255	215	205	200	200	180	205	210	E250	225	225	210	245	245	E295	280	305	280
18	250	250	235	245	205	255	250	225	210	205	200	210	I200	210	215	230	215	205	225	265	260	275	305	280
19	260	280	270	260	260	255	235	200	220	205	215	215	205	I250	265	250	230	225	215	210	260	265	315	250
20	280	305	290	265	260	255	240	210	205	205	200	220	240	260	265	250	230	220	210	250	255	240	250	260
21	285	300	275	280	255	275	250	255	215	210	205	I205	205	250	230	225	240	230	215	255	265	255	230	230
22	265	260	265	280	275	295	250	215	220	170	200	200	210	200	210	210	220	210	205	260	I270	E300	255	300
23	305	305	260	245	250	250	A	205	245	245	225	215	210	210	245	235	230	210	205	E320	I250	245	I250	255
24	305	290	260	250	250	240	245	210	200	245	200	245	240	205	210	220	205	205	225	245	210	A	E300	260
25	260	295	265	270	210	245	245	205	225	235	215	205	I215	235	I250	260	240	215	210	225	305	305	280	280
26	275	305	265	260	235	265	250	220	210	205	210	205	I200	S	S	250	240	215	215	230	255	250	310	305
27	275	255	325	280	265	290	255	I225	205	205	205	225	190	265	I250	255	250	220	250	265	270	305	305	310
28	300	280	270	265	245	E315	245	220	215	220	205	I210	255	220	I230	I230	I230	220	205	250	I250	260	270	300
29																								
30																								
31																								
No.	26	26	25	28	27	27	25	25	25	26	27	24	27	25	22	27	27	28	23	24	23	20	21	23
Median	300	290	270	260	250	255	255	220	215	205	210	210	210	210	230	225	225	210	225	250	255	260	280	280

h'F

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

The Radio Research Laboratories, Japan.

K 19

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

Feb. 1963

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

44

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			f		f				f3	f3	l2	l2	l			C	l	l2	f2	f2	f3	f2	f2	f2
2	f2	f	f2	f				l2	f2	f					l				f	f2	f	f2	f	f
3	f						l		f	l		l		l					f					
4									f								l		f2	f2	f2	f2	f	f
5	f2	f	f	f						f h	l	h	l		l		l	l	f3	f3	f3	f2	f3	f3
6	f2	f2	f	f	f			l2		l			l	l	l	l	l	l	f		f	f2	f	f
7	f		f	f	f	f							l				l	l		f				
8														l			l		f					
9									l2	l						h	l	l2	f3	f				
10							l			h						C	l			f	f			
11					f				l2	l	l	l2	l		h	h l	l	l2	f3	f2	f2	f2	f2	f3
12	f	f2	f	f3	f5	f3	l2	l2	(	l2		h l				C	l	l	f3	f2	f	f	f2	f
13		f	f	f	f					l2	l	l2	l2	l	l2									
14		f2	f2		f2					l	l	C	l		l	l2	l			f2		f2	f	f2
15	f2	f									h	l	l	l	l2	l2	l							
16			f	f	f				h															
17	f			f		f	l			h	h		l			l	l2	l2	f		f2	f	f	f
18					f	f						h	C			l	l		f	f	f			
19															l	l	l	l2	f2		f	f	f	
20	f2	f	f		f									h	h	h			f					
21									C	C							h	l						
22										C	l2	l	l	l	l	l	l		f	f2	f2	f2		
23	f	f2	f2		f2	f2	l2	l		h				l	l	h	h	l2	f	f2	f2	f2	f2	
24										h		h				l	l		f	f	f	f3	f2	
25					f											l	l	l2			f			
26																h	h	h		f	f f		f	f
27									(		l					h	l	l	f3	f2	f	f	f	
28										C			l				C	l	f			f	f	f2
29																								
30																								
31																								
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

K 12

IONOSPHERIC DATA

Feb. 1963 | hpF2 | 135° E Mean Time (G.M.T. + 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I335R	360	255	360	405	I400F	J295S	C	A	A	A	I275A	Z75R	U250S	Z50	Z50	Z50	Z50	Z55S	Z55	I330	I375A	I340A	300
2	355	350	350	320S	J285S	J270S	J300S	A	A	Z90S	Z60	Z50S	Z60	Z60	Z60S	Z60	Z50	Z50	I250A	Z90	Z65S	I300B	U345S	I350S
3	U375S	Z95	335	Z65	Z90	U255S	I285S	Z65S	Z55	Z45	Z65S	Z55S	Z55	Z65	Z75	Z70	Z45	Z95S	Z75S	U255S	Z60S	U305S	Z95	U355S
4	U305S	365E	390F	380F	305F	I290S	Z70	Z35	Z55	Z45	Z55	Z55S	Z75	Z55	Z60	Z50	Z45S	Z45	L270A	Z75S	AS	AS	J345A	325E
5	L290A	350	375S	350S	315F	305S	Z55	C	C	Z90S	Z80	Z50	Z60R	Z85R	Z55	I250C	Z55	Z40	A	A	A	A	A	A
6	A	340	350	310	Z95	Z55	Z55	Z55	J245R	Z95	Z60	Z55	Z95	Z60	I255S	A	A	Z50	S	S	Z60	300	305	310
7	345	350S	A	300	Z55	I240S	I285R	Z55	J245S	Z60	U265S	Z55	Z55	Z50	Z55S	I250C	Z35	Z30	Z75	U285S	U285S	Z95S	Z75	305
8	Z85	Z95	Z75	Z60	300	330S	340S	J250S	Z25S	U250R	Z80	Z95	U260S	Z60	Z90	U250R	Z50	Z40	Z85	300	Z50	I300S	300	300
9	310	325	300	Z95	Z95	Z85	310	Z55	J250R	Z45	Z55	Z80	Z80	Z60	Z60	Z60	Z40	Z55	I275S	Z75	Z80	310	U395S	J365S
10	340	340	Z75S	Z60	Z90	Z70	300S	Z65	Z30S	Z55	310	300R	J275R	Z60	I280S	J250R	Z50	Z60	Z95	355F	350	Z50	J285R	355
11	340R	340	340	350	400	375	J340R	I265S	R	Z50	Z45	Z90	Z80	J300R	Z90	Z50	Z60	Z45	I265A	Z90	A	A	A	300
12	375	305	340	300	A	A	Z95	U255S	J250R	J295S	I250C	Z55	Z80R	300R	I275S	Z75	Z50R	Z45	A	A	300	A	310	U340R
13	J380R	F	340	Z95	300	340	305	J250R	J250R	Z95	I265S	Z45	300	Z55	J300R	Z50	Z50	Z40	305	I280S	J250R	J300R	350	U335S
14	I305S	I320A	355	380	J350R	Z95	350	Z50	Z50	Z85	J260S	Z55	J265R	I260S	Z55	Z50	Z50	Z50	Z80	I285A	I300C	I310S	Z95	L340S
15	A	340	360	305	Z50	U305R	J310R	Z55	Z50	Z60	Z50	J275R	J260R	J275R	S	Z40	Z40	U250S	Z60	300	Z95	Z95	Z65	320
16	310S	305	Z90	Z45	Z50	Z95	305	Z50S	J240R	Z60S	J245S	Z75R	Z55S	U255S	Z50S	Z60	Z50	Z35	Z75S	Z65S	C	C	C	315S
17	315	305S	305	305S	Z65S	Z95	Z85	Z45S	Z45	Z55	300	Z60	J280R	S	J255S	J250R	Z50	Z40	Z55	Z85	300	320	325	320
18	U295S	J285S	Z95	Z95	Z60	Z95	Z95	Z50	J250S	Z60S	Z55S	Z60S	Z65S	Z60S	J255S	Z45S	Z40	Z20S	Z75	305	315	325S	375S	330
19	305	345	340S	335S	345	305S	Z90	Z65S	U255S	Z70	Z15S	Z50	Z75	Z50S	Z70	Z65	Z55S	Z30S	Z50	Z50S	U280S	300	330	U255S
20	320	335S	330	330	310	Z80	350S	Z45S	Z30S	Z40S	U260S	Z85R	Z60R	Z70	U265S	U255S	Z50	Z55S	Z60S	310S	315S	Z80S	300	305S
21	310	355	340	350	315	U345S	300S	Z60S	U225S	Z55	Z50	S	Z70R	Z45S	Z50S	Z65S	Z55S	U245S	Z35	Z85	335	Z95S	Z80	Z85
22	345E	305S	325	345	350	350	300S	U245S	U245S	J260R	J280R	J260R	J290R	U295R	Z65	Z55S	Z45	Z30	Z50	Z95	I300A	320	305	315
23	315	350	310	300	Z95	Z55	A	U250S	U275S	J250S	Z60S	Z55R	Z75	Z80	Z80	Z55	Z50	Z45	J250S	340	A	Z80	I305A	310
24	J320S	330	305S	300	300	Z95	Z65R	Z50	J290S	Z55	Z50	J300R	300	Z90R	R	Z55	Z50	Z50R	Z50	U275R	Z50	A	350	305
25	U310S	340S	320S	330	Z55	U290S	Z80S	Z50	U255S	U255R	U255S	Z70	Z90S	Z90S	Z85S	Z75	Z55	Z50	Z40	Z35	330	330S	315	330
26	325	350	345	345	Z75S	Z90	U305S	Z40S	U250S	Z55S	Z60	Z80S	Z95	Z95S	U255S	Z65S	Z55S	J245S	J260S	Z80S	U290S	300S	355	350
27	305	300S	365E	355E	350E	350E	305S	I245S	Z60S	Z50	J260S	Z55	310	305	Z60S	Z55S	Z50	Z45S	A	355	310	345	315	350
28	345	325	325	315	300	S	Z65S	Z50S	Z60	Z45S	U250S	Z55	Z85	Z80S	Z50S	Z60	Z50	Z40S	Z50S	305S	S	300S	305S	335S
29																								
30																								
31																								
No.	26	27	27	28	27	26	27	25	24	27	27	27	28	27	26	27	27	28	24	25	22	22	25	27
Median	320	340	335	320	300	295	300	250	250	255	260	260	275	260	260	255	250	245	260	285	300	300	310	325

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

The Radio Research Laboratories, Japan.

K 13

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I 45R	55	50	85	45	I 50F	J 50S	C	A	A	A	I 50A	40R	u 45S	50	45	55	50	50S	50	I 55A	I 50A	I 50A	55
2	65	50	55	75S	J 60S	J 70S	J 55S	A	A	90S	55	80S	60	80	100S	60	85	80	I 95A	65	80S	I 70A	u 65S	I 55S
3	u 85S	70	75	80	105	u 100S	I 70S	100S	85	70	55S	45S	50	75	90	55	60	55S	75S	u 75S	100S	u 95S	75	u 75S
4	u 55S	60S	75F	75F	95F	I 80S	90	65	100	60	45	70S	75	45	70	55	65S	75	I 75A	75S	AS	AS	J 60A	75S
5	I 75A	65	65S	90S	90F	60S	100	C	C	60S	30	50	45R	30R	45	I 55C	50	60	A	A	A	A	A	A
6	A	60	50	70	55	65	45	50	J 50R	55	50	50	60	50	I 45S	A	A	50	S	S	45	55	90	90
7	60	55S	A	55	50	I 40S	I 50R	45	J 50S	55	u 85S	50	50	50	50S	I 65C	70	70	75	u 90S	u 65S	70S	80	95S
8	70	65	75	90	75	95S	70S	J 85S	80S	u 45R	40	60	u 60S	60	60	u 50R	50	55	60	55	50	I 50S	60	55
9	75	55	55	65	60	60	45	50	J 50R	70	50	85	60	65	70	80	80	95	I 75S	70	70	90	u 85S	J 85S
10	65	75	90S	85	80	90	100S	85	65S	50	100	45R	J 70R	70	I 60S	J 55R	45	80	60	50F	50	50	J 60R	50
11	60R	60	60	90	55	70	J 60R	I 60S	R	40	20	55	60	J 50R	65	50	60	60	I 60A	55	A	A	A	55
12	70	90	60	60	A	A	55	u 55S	J 45R	J 45S	I 45C	50	50R	55R	I 50S	30	50R	50	A	A	65	A	85	u 45R
13	J 45R	F	60	55	60	60	75	J 45R	J 45R	55	I 45S	35	50	55	J 45R	40	50	55	50	I 40S	J 50R	J 50R	55	u 45S
14	I 70S	I 50A	55	70	J 50R	45	50	50	50	50	J 50S	40	J 40R	I 45S	45	40	45	45	65	I 55A	I 55C	I 50S	45	I 70A
15	A	70	85	50	55	u 50R	J 55R	50	45	50	40	J 30R	J 55R	J 65R	S	30	40	u 45S	50	55	50	50	45	75
16	85S	60	50	55	55	55	90	55S	J 40R	70S	J 60S	100R	80S	u 90S	55S	70	60	75S	85S	85S	C	C	C	85S
17	90	90S	90	95S	100S	95	75	100S	85	45	45	65	J 25R	S	J 45S	J 55R	50	55	50	60	55	70	65	70
18	u 50S	J 50S	55	55	80	50	60	40	J 50S	95S	60	70S	75S	80S	J 50S	65S	65	100S	65	95	95	90S	100S	95
19	100	105	110S	105S	105	95S	110	100S	u 80S	100	90S	100	90	75S	80	75	95S	100S	85	100S	u 95S	65	75	u 55S
20	90	75S	70	100	90	85	95S	105R	100S	85S	u 65S	75R	90R	90	u 85S	u 90S	100	55S	90S	95S	85S	95S	100	100S
21	90	95	65	90	105	u 105S	105S	90S	u 95S	85	60	S	85R	95S	70S	105S	95S	u 70S	115S	90	100	95S	90	80
22	90S	100S	100	95	100	100	100S	u 80S	u 85S	J 50R	J 25R	J 50R	J 60R	u 50R	55	45S	35	50	45	50	I 50A	75	90	80
23	80	55	75	55	50	45	A	u 45S	u 30R	J 40S	50S	45R	40	80	40	45	45	65	J 40S	50	A	65	I 85A	90
24	J 75S	60	55	70	55	55	45R	45	J 40S	50	55	J 50R	45	40R	R	55	55	45R	55	u 45R	60	A	50	55
25	u 85S	60S	70S	70	50	u 50S	65S	55	u 45S	u 75R	u 95S	95	100S	100S	90S	80	95	100	105S	95	70	95S	85	95
26	80	65	70	105	100S	85	u 90S	95S	u 75S	95S	80	70S	65	75S	u 95S	95S	90S	J 105S	J 90S	95S	u 80S	105S	90	90
27	100	100S	90S	105S	105S	95S	110S	I 90S	60S	100	J 80S	95	100	90	70S	85S	80	90S	A	55	70	95	85	55
28	75	85	85	105	125	S	85S	110S	90	60S	u 85S	65	65	85S	80S	75	85	95S	95S	90S	S	100S	95S	65S
29																								
30																								
31																								
No.	26	27	27	28	27	26	27	25	24	27	27	27	28	27	26	27	27	28	24	25	22	22	25	27
Median	75	65	70	80	75	70	70	60	55	60	55	55	60	65	60	55	60	60	70	65	65	70	80	75

ypF2

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

· The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.5	$I_{2.1}^{S}$	$I_{1.8}^{S}$	$J_{1.9}^{S}$	S	A	S	$J_{3.6}^{S}$	S	6.8	6.1^{S}	6.1^{S}	7.1	8.0^{S}	7.3	$J_{6.5}^{S}$	5.7	5.1	A	A	$I_{3.4}^{S}$	S	A	A
2	$I_{3.0}^{A}$	$I_{3.1}^{A}$	A	S	2.7	2.8	2.4^{S}	$J_{3.3}^{S}$	6.8	6.9^{SH}	8.8	9.3	8.7	8.3	7.0	6.3	6.7^{S}	6.2	4.4	3.8	S	S	S	$I_{3.1}^{S}$
3	2.8	3.1	A	$I_{2.4}^{A}$	2.3	S	A	3.2^{S}	$J_{5.3}^{S}$	5.8^{H}	5.8	7.1	7.4^{S}	6.6	$J_{6.3}^{S}$	6.2	6.7	5.7	$I_{4.5}^{S}$	$J_{4.3}^{S}$	$I_{3.6}^{S}$	$I_{2.8}^{S}$	S	C
4	2.7	2.8	3.0	3.2	C	C	C	$J_{2.7}^{S}$	$J_{5.3}^{S}$	5.9	$I_{6.6}^{C}$	$I_{7.0}^{C}$	C	C	C	5.9	$J_{5.3}^{S}$	$I_{5.1}^{A}$	4.5	$I_{4.2}^{S}$	3.5	2.9	2.6	$I_{3.0}^{S}$
5	3.1^{S}	$J_{2.4}^{S}$	$J_{2.5}^{S}$	2.9^{S}	2.5	$I_{2.7}^{S}$	2.9	$J_{4.1}^{S}$	5.5^{H}	5.3	6.3	7.0	6.1^{S}	6.1^{S}	6.3^{S}	6.2	5.8	5.9	5.4	$I_{3.8}^{S}$	S	S	S	2.9
6	2.8	$I_{2.8}^{S}$	3.2	$I_{3.2}^{S}$	2.8	2.9	2.5	$I_{3.3}^{S}$	5.9	$I_{6.3}^{SH}$	7.0	7.3	$I_{7.3}^{S}$	$J_{8.0}^{S}$	$I_{7.1}^{S}$	6.2	5.6	4.8	$I_{4.6}^{S}$	$I_{4.1}^{S}$	$I_{4.0}^{S}$	$U_{3.8}^{S}$	$I_{3.3}^{A}$	2.8
7	3.0	2.9	3.1^{S}	3.2	3.0	2.5	2.2	2.9	$J_{6.4}^{S}$	$J_{6.9}^{S}$	6.6	$J_{7.9}^{S}$	7.4	7.1	6.0	6.2^{B}	5.4	5.2	4.3	3.6	4.4	$I_{4.2}^{S}$	$I_{3.5}^{S}$	$I_{3.1}^{S}$
8	3.1	3.2	$J_{3.2}^{S}$	3.1	2.8	2.7	$I_{2.4}^{S}$	$J_{3.1}^{S}$	6.8	6.4	6.8	$J_{7.8}^{S}$	6.6	6.9	6.4	6.5^{S}	5.5	4.8	$J_{4.6}^{S}$	3.9	$I_{4.2}^{S}$	3.4^{S}	3.0	2.9
9	2.8	2.8	2.8	$I_{3.1}^{S}$	2.9	2.6	2.4	3.0	$I_{6.2}^{S}$	$I_{7.6}^{S}$	6.7	6.6	$J_{8.3}^{S}$	$J_{7.8}^{S}$	6.7	$J_{6.4}^{S}$	6.1	$J_{5.4}^{S}$	4.5^{S}	2.9	$I_{3.0}^{S}$	2.8	$J_{2.4}^{S}$	2.7
10	$I_{2.8}^{S}$	$I_{3.1}^{S}$	3.3	$I_{3.1}^{S}$	3.0	2.5^{S}	$I_{2.5}^{S}$	$I_{3.9}^{S}$	$J_{6.3}^{S}$	6.9	5.7^{H}	9.2	$I_{9.5}^{S}$	7.1	6.6	8.6	6.6	$J_{6.0}^{S}$	4.5	$I_{3.5}^{S}$	$I_{3.2}^{S}$	$I_{3.5}^{S}$	$I_{3.2}^{S}$	2.1
11	2.6^{S}	3.0	2.3	2.5^{S}	2.7	$I_{2.6}^{S}$	3.1^{S}	$J_{3.4}^{S}$	$J_{6.4}^{S}$	$J_{8.2}^{SH}$	$I_{7.0}^{S}$	6.7	8.2	$I_{8.2}^{S}$	$J_{7.6}^{S}$	7.2^{S}	6.9	6.6	$J_{6.6}^{S}$	$I_{3.6}^{S}$	3.2^{S}	2.8	A	A
12	A	A	3.0	3.2^{S}	2.8	2.4	2.9^{S}	$I_{3.3}^{S}$	6.0^{S}	$I_{8.1}^{S}$	$J_{10.1}^{S}$	8.9^{S}	$J_{7.8}^{S}$	7.0	8.8	$J_{8.1}^{S}$	6.9	$J_{6.1}^{S}$	$J_{5.1}^{S}$	$I_{4.5}^{S}$	$I_{4.2}^{S}$	$I_{3.7}^{A}$	3.1	2.5^{S}
13	2.7	3.1	$J_{3.2}^{S}$	3.2	2.8	2.7	$I_{2.6}^{S}$	$I_{4.0}^{S}$	$J_{6.2}^{SH}$	6.6^{H}	$J_{8.5}^{S}$	7.1	6.5^{S}	7.0^{S}	7.3	9.0	6.8	$J_{5.2}^{SH}$	4.9^{S}	$I_{4.3}^{S}$	$I_{4.2}^{S}$	3.5^{S}	2.8	2.9^{S}
14	3.2^{S}	3.8^{S}	2.5^{S}	2.9	2.9	3.0	$I_{2.4}^{S}$	$I_{3.4}^{S}$	5.9^{S}	$I_{7.2}^{S}$	$J_{8.2}^{S}$	7.3	8.3	8.5	C	C	6.8	$I_{6.6}^{S}$	$I_{5.5}^{S}$	$I_{3.6}^{S}$	$I_{3.6}^{S}$	3.6	S	S
15	$I_{2.7}^{S}$	2.8^{S}	2.9	$J_{3.4}^{S}$	$I_{3.5}^{S}$	2.2	2.2	$J_{3.4}^{S}$	$I_{6.0}^{SH}$	6.5^{H}	$I_{8.1}^{S}$	6.8	7.2	8.7	$I_{9.2}^{S}$	6.5	$I_{6.0}^{S}$	5.7	5.2^{S}	4.7^{S}	3.9	$J_{4.1}^{SH}$	$I_{3.4}^{S}$	$I_{2.7}^{S}$
16	$I_{2.9}^{S}$	$I_{3.1}^{S}$	3.3	3.1	$I_{2.4}^{S}$	2.6	2.6	$I_{3.9}^{S}$	5.7^{H}	6.6^{H}	7.0	8.3^{S}	8.6	8.8	7.4^{S}	7.0	5.6	5.7	$J_{5.0}^{S}$	S	S	$I_{3.6}^{S}$	$I_{3.4}^{S}$	3.1^{S}
17	3.3^{S}	3.2^{S}	$I_{2.9}^{S}$	2.8	2.8	$I_{2.8}^{S}$	2.3	3.7	5.5	6.6	$I_{7.1}^{S}$	8.4	8.4	8.5	$J_{7.8}^{S}$	$J_{7.6}^{S}$	6.4	6.0	4.9	3.3	3.1	$I_{3.2}^{S}$	$I_{3.0}^{S}$	3.2
18	$I_{3.3}^{S}$	$J_{3.2}^{S}$	3.1	2.7	2.4	2.4	$I_{2.5}^{S}$	$I_{3.6}^{S}$	5.8	6.7	8.1^{S}	8.2	8.0	7.9^{H}	8.1	6.4	6.4	5.5^{H}	$J_{4.4}^{S}$	$I_{3.8}^{S}$	$J_{3.7}^{S}$	S	S	S
19	$J_{3.6}^{S}$	$J_{3.3}^{S}$	3.2^{S}	3.2	3.2	$I_{3.1}^{S}$	$I_{2.8}^{S}$	$J_{3.9}^{S}$	5.8	$I_{7.3}^{S}$	9.4	$J_{10.3}^{S}$	8.4	8.2	7.2	6.6	6.9	6.6^{S}	5.5	$I_{4.1}^{S}$	$J_{3.3}^{S}$	$I_{3.3}^{S}$	3.0	2.8
20	3.1	3.2^{S}	3.1	3.1	$J_{3.3}^{S}$	$J_{3.1}^{S}$	2.9	3.7	5.6^{H}	$J_{6.1}^{SH}$	$I_{6.4}^{S}$	6.1	6.5	6.6	6.5	$J_{7.8}^{S}$	7.0	$J_{6.3}^{S}$	6.8	$I_{4.9}^{S}$	3.5^{S}	4.0^{S}	3.3^{S}	$I_{2.9}^{S}$
21	3.1^{S}	$I_{3.2}^{S}$	3.2	3.0	$J_{3.2}^{S}$	$J_{3.0}^{S}$	$I_{3.6}^{S}$	5.0^{S}	$I_{6.5}^{SH}$	6.7	$J_{6.0}^{S}$	7.0	$J_{8.0}^{S}$	7.0	$J_{6.5}^{S}$	6.1	7.2	$I_{7.5}^{S}$	5.6	S	S	S	A	S
22	3.0	3.2	$I_{3.0}^{S}$	$J_{2.8}^{S}$	3.0^{S}	$I_{3.0}^{S}$	S	$J_{4.1}^{S}$	5.6	6.5	$I_{7.7}^{S}$	10.0^{S}	8.8	$I_{7.3}^{S}$	$J_{7.7}^{S}$	8.6	7.6	6.6^{S}	$I_{5.2}^{A}$	$I_{4.3}^{S}$	$I_{3.5}^{S}$	$I_{3.3}^{S}$	3.5^{S}	3.4
23	$J_{3.3}^{S}$	3.3^{S}	$I_{3.5}^{S}$	3.5^{S}	$J_{3.7}^{S}$	2.9	2.2	$I_{4.0}^{S}$	6.1	6.8^{S}	$I_{7.0}^{S}$	8.2	6.7	6.8	8.9	$J_{8.0}^{S}$	6.5	6.7	$J_{5.4}^{S}$	3.8	4.0^{S}	$J_{3.1}^{S}$	$I_{2.8}^{S}$	2.8
24	$I_{2.9}^{S}$	3.0^{S}	3.2^{S}	3.2	3.1	$J_{2.7}^{S}$	2.6	$I_{4.4}^{S}$	5.9	$I_{6.0}^{SH}$	7.1	7.9	$J_{9.4}^{S}$	9.1	$J_{10.2}^{S}$	10.0^{S}	7.3^{S}	$I_{6.1}^{S}$	4.7	$J_{3.7}^{S}$	$I_{3.7}^{S}$	$I_{3.2}^{S}$	2.9	3.0^{S}
25	3.2	3.2	$I_{3.2}^{S}$	$I_{3.4}^{S}$	$I_{3.6}^{S}$	3.0^{S}	3.0	4.5^{S}	$J_{6.3}^{SH}$	7.0^{S}	6.7	7.0	8.2	$J_{10.3}^{S}$	$I_{10.3}^{S}$	10.8	7.7^{S}	S	5.5	S	S	3.2	$J_{3.0}^{S}$	3.2
26	3.2	$I_{3.2}^{S}$	3.2	3.3	3.2	3.2	2.8	3.4^{S}	6.6^{H}	$J_{6.3}^{S}$	6.6	7.0	7.7^{S}	9.2	11.0	$J_{10.0}^{S}$	8.4	$J_{6.6}^{S}$	5.5	$I_{4.4}^{S}$	3.3^{S}	$J_{3.2}^{S}$	2.8	$J_{2.8}^{S}$
27	3.1	3.2	$I_{3.2}^{A}$	3.3	3.4^{S}	$I_{3.0}^{S}$	$I_{3.0}^{S}$	$J_{4.3}^{S}$	$J_{6.1}^{SH}$	8.5	7.7	7.4^{S}	6.3^{S}	8.9	$J_{11.0}^{S}$	8.7	8.1	7.0	5.6	3.4	$I_{3.2}^{S}$	3.1	3.2	3.1
28	$J_{3.2}^{S}$	3.2	3.0^{S}	3.0	3.2	3.1	2.4	$J_{3.9}^{SH}$	5.7^{H}	7.0^{S}	7.1	$J_{7.1}^{S}$	6.9	8.2^{S}	9.1	7.6	6.8	$I_{6.1}^{S}$	6.0	4.1	3.3	$I_{3.2}^{S}$	$I_{3.5}^{S}$	$I_{3.4}^{S}$
29																								
30																								
31																								
No.	27	27	26	27	26	25	24	28	27	28	28	28	27	27	26	27	28	27	27	24	23	23	20	22
Median	3.0	3.1	3.1	3.1	3.0	2.8	2.6	3.6	6.0	6.7	7.0	7.3	7.8	8.0	7.4	7.0	6.7	6.0	5.1	$U_{3.8}$	$U_{3.5}$	3.3	3.0	2.9
U.Q	3.2	3.2	3.2	3.2	3.2	3.0	2.9	4.0	6.3	7.0	7.9	8.2	8.4	8.5	8.9	8.6	7.0	6.6	5.5	4.3	4.0	3.6	3.4	3.1
L.Q	2.8	2.9	2.9	2.9	2.8	2.6	2.4	3.3	5.7	6.4	6.6	7.0	6.9	7.0	6.6	6.3	5.9	5.4	4.5	3.6	3.3	3.1	2.8	2.8
Q.R	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.7	0.6	0.6	1.3	1.2	1.5	1.5	2.3	2.3	1.1	1.2	1.0	0.7	0.7	0.5	0.6	0.3

The Radio Research Laboratories, Japan.

foF2

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

Y 1

IONOSPHERIC DATA

Feb. 1963 | foF1 | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												4.2	L	L	L	L								
2											L	4.4	$I_{4.4}^{LH}$	4.4	L	L	L							
3											L	4.4	4.4	4.4	4.3	L	A	A						
4							C				$I_{4.3}^{C}$	$I_{4.3}^{C}$	C	C	C	L								
5											L	$I_{4.4}^{L}$	$I_{4.4}^{L}$	4.5	4.4	4.2	L							
6											L^{H}	4.4	L	4.4	4.4	L	A							
7										L	L	4.4	4.5	4.5	$I_{4.4}^{L}$	L	A							
8										L	L^{H}	4.4^{H}	4.5	$I_{4.4}^{L}$	4.4	A								
9										L	4.3	$I_{4.4}^{L}$	4.5	4.4	4.3	L	L							
10										3.8		4.4	L^{H}	4.3	L	L	L							
11											4.0	4.5	4.5	4.5	4.4^{H}	L	L							
12										L	$I_{4.4}^{L}$	$I_{4.5}^{L}$	4.5	$I_{4.5}^{L}$	$I_{4.4}^{L}$	4.2								
13											L	L^{H}	4.4	$I_{4.5}^{L}$	$I_{4.4}^{L}$	L	L							
14										L^{H}	L	L	L	4.5	C	C	A							
15											L	4.5	L	4.7	$I_{4.3}^{A}$	A								
16											L^{H}	4.4	4.6	4.5	4.5	4.2	L	L						
17										L	L	4.5	4.6	4.5	4.5	4.3^{L}	L	L						
18										L	L	L	4.5^{R}	$I_{4.5}^{L}$	4.5	4.0	L							
19										L^{H}	$I_{4.4}^{LH}$	4.5	4.5	$I_{4.6}^{L}$	4.4	L								
20											L	L	4.5	4.4	4.6	L	L							
21										L	L	L^{H}	$I_{4.4}^{L}$	$I_{4.6}^{LH}$	L	L	L							
22										3.9^{H}	4.3	4.4^{H}	4.5	4.4	4.7^{H}	$I_{4.2}^{L}$	4.0							
23											L	L	4.4	4.4	4.5	L	A							
24											L	L	4.8	4.6	$I_{4.4}^{L}$	L	L	2.8						
25										L^{H}	L	4.5^{H}	4.5^{H}	4.0	4.5	A	A							
26											L	4.5	4.5	4.5	L	4.3	3.6	L						
27										4.2	$I_{4.4}^{L}$	4.5	4.5^{H}	$I_{4.6}^{L}$	$I_{4.4}^{L}$	4.3	3.9							
28										L	$I_{4.4}^{L}$	4.5^{H}	4.4^{H}	4.5	4.4	A	A							
29																								
30																								
31																								
No.										3	8	21	22	26	21	8	3	1						
Median										3.9	$U_{4.4}$	4.4	4.5	4.5	4.4	4.2	3.9	2.8						

foF1

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

The Radio Research Laboratories, Japan.

Y

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	2.00	2.50	2.80	3.00	$I_{3.10}^{A}$	$I_{3.20}^{A}$	3.15	2.90	2.55	1.95						
2								S	1.90	2.25	2.80	3.05	3.20	3.15	$I_{3.20}^{R}$	2.90	2.45	S						
3								S	S	2.30	A	A	A	A	3.20	A	A	A						
4							C	S	S	A	C	C	C	C	C	2.90	2.40	S						
5								S	1.90	$I_{2.65}^{A}$	$I_{2.90}^{A}$	$I_{3.05}^{A}$	$I_{3.15}^{A}$	$I_{2.95}^{A}$	2.90	2.70	2.60	S						
6								S	A	2.55	2.90	3.10	3.20	3.20	A	A	A	S						
7								S	A	2.85	3.05	$I_{3.20}^{R}$	3.30	3.25	3.25	3.05	$I_{2.75}^{A}$	S						
8								S	2.10	2.70	3.00	3.15	3.20	$I_{3.25}^{S}$	3.20	3.00	2.60	S						
9								S	S	2.60	2.90	3.05	3.15	3.25	3.30	3.10	2.75	2.10						
10								S	2.00	2.60	2.90	3.10	3.10	3.20^{R}	3.15	2.95	2.50	2.10						
11								S	2.00	2.60	2.95	3.15	3.20	3.20	3.10	2.90	2.60	1.85						
12								S	2.00	2.60	2.90	3.10	3.20	3.20	3.10	3.05	2.65	2.10						
13								S	2.00	2.60	2.80	2.95	3.10	3.10	3.10	3.00	2.70	S						
14								S	2.00	2.55	2.85	3.05	3.10	3.10	C	C	A	A						
15								S	2.10	2.60	2.85	$I_{3.10}^{S}$	3.20	A	A	A	A	$I_{2.20}^{A}$						
16								S	2.10	2.70	2.90	3.15	3.15	3.10	3.00	3.10	2.70	2.15						
17								S	2.30	2.70	2.95	3.15	3.20	3.30	3.20	3.00	2.75	2.25						
18								S	2.20	2.60	2.90^{H}	3.25	3.30	3.35	3.30	3.10	2.75	2.15						
19								S	2.20	2.70	2.90	$I_{3.00}^{A}$	3.30	3.30	3.20	3.20	2.85	2.20						
20								S	2.10	2.70^{H}	3.00	$I_{3.20}^{R}$	$I_{3.30}^{R}$	$I_{3.30}^{R}$	$I_{3.25}^{R}$	3.00	2.70	2.50						
21								S	2.20	2.65	2.95	$I_{3.15}^{R}$	R	A	A	A	A	2.25						
22								S	2.10	$I_{2.55}^{A}$	$I_{2.90}^{R}$	3.10	$I_{3.20}^{R}$	$I_{3.25}^{R}$	3.20	3.05	2.65	A						
23								S	A	2.75	3.05	3.20^{R}	$I_{3.30}^{R}$	3.30	3.20^{R}	3.10	2.85	2.20						
24								S	2.30	2.70	3.00	$I_{3.10}^{A}$	3.10	3.20	$I_{3.10}^{A}$	3.05^{H}	2.90	2.30						
25								S	2.40^{H}	2.90^{H}	3.00	3.15	3.20	3.30	3.20	3.10	2.70	2.20						
26								S	2.30	2.90	3.20	3.30	3.35	3.30	3.40	3.20	3.00	2.30						
27								S	2.20	2.80	3.00	3.20	3.20	3.25	3.20	3.15	2.85	2.40						
28								S	2.30	2.80	3.05	3.10	3.20	3.20	3.35	3.15	2.90	2.30						
29																								
30																								
31																								
No.									22	27	26	26	25	24	23	23	23	18						
Median									2.10	2.65	2.90	3.10	3.20	3.20	3.20	3.05	2.70	2.20						

foE

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

The Radio Research Laboratories, Japan.

Y 3

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	S	2.8	S	S	G	3.2	3.7	3.5	4.3	4.4	3.6	3.2	3.1	3.8	5.9	5.9^{M}	2.9^{M}	3.1^{M}	5.9^{M}	7.0^{M}
2	4.5^{M}	5.7^{M}	J3.4	3.0^{M}	2.7^{M}	2.7^{M}	S	S	2.3	2.7	3.9	G	G	G	2.7^{G}	3.3	J3.6	2.5	2.8	2.7	2.8	S	3.2^{M}	S
3	5.9^{M}	3.6	2.9	2.8	S	S	2.9^{M}	S	2.1	2.7	3.2	3.3	3.4	3.9	3.1^{G}	3.3	J3.9	J5.1	4.5^{M}	J3.2	3.0^{M}	2.4	2.8^{M}	C
4	S	S	S	S	C	C	C	S	2.1	3.8	C	C	C	C	C	3.3	J3.8	7.2^{M}	J3.9	3.2	2.8	2.6	S	S
5	2.8	2.8	S	2.4^{M}	2.7	S	S	S	2.3	3.2	3.3	4.5	3.3	3.9	3.6	3.4	3.4	4.2	3.0	J2.3	S	S	S	J2.1
6	S	3.0^{M}	3.0	2.8^{M}	1.2	S	S	2.3	J6.1	3.3	3.0	3.5	3.5	3.3	4.5	4.4	5.4	6.0^{M}	3.9	J3.7	3.8	2.9	4.2^{M}	2.9
7	2.7	S	S	S	S	2.5	S	2.1	2.9	3.1	3.3	2.9^{G}	3.6	3.8	3.6	J3.9	J4.8	4.9	J3.3	2.9	2.7	S	S	2.2
8	S	S	S	S	E	S	S	S	G	2.9	3.2	3.6	3.5	S	3.6	4.1	3.6	4.3	S	J3.3	S	2.8	S	S
9	S	S	S	S	3.2	S	S	S	2.4	G	G	G	G	3.8	3.5	3.7	3.3	G	2.8	2.9	3.0	S	S	S
10	S	S	S	S	S	S	S	S	G	G	G	3.5	G	G	J2.4^{G}	2.1^{G}	2.7	G	J2.3	S	S	S	S	S
11	S	S	S	S	2.4^{M}	S	S	S	G	3.0	G	3.8	4.4	4.2	G	G	3.2	2.8	S	2.6	2.3	2.2	3.0	3.9^{M}
12	5.3^{M}	3.8^{M}	2.8	2.4	S	2.2	S	S	2.2	2.7	3.3	3.4	G	3.5	3.5	3.7	3.3	J3.5	J3.3	J2.5	2.6	4.4^{M}	3.7^{M}	S
13	2.4	2.3	S	S	S	2.2	2.7	2.2	2.2	G	G	G	G	G	G	G	G	2.3	J2.4	2.4	S	S	S	S
14	S	S	S	S	2.3	2.7^{M}	S	S	G	2.7	3.0	3.3	3.6	3.3	C	C	9.0^{M}	7.2^{M}	5.9	S	2.3	2.2	S	2.4
15	S	S	2.4	S	S	S	S	S	2.3	3.0	J5.4	S	3.1^{G}	J5.4	6.6^{M}	J5.3	3.9	3.0	S	S	S	E	S	S
16	S	S	S	S	S	S	S	S	G	G	3.1	3.3	3.3	3.3	3.3	G	G	G	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	G	2.9	G	3.6	3.8	3.9	3.8	3.3	2.7^{G}	G	S	S	S	S	S	S
18	S	S	2.4	2.2	1.1	S	S	2.2	G	2.1^{G}	G	3.7	3.7	3.9	4.0	3.6	G	G	S	S	2.4	S	S	S
19	S	S	S	E	E	S	S	S	G	2.9	3.2	3.2	G	G	G	G	G	2.3	2.3	2.3	S	2.8^{M}	3.0	S
20	S	S	S	S	S	2.2	S	S	G	G	G	G	4.0	3.7	3.8	3.5	3.3	2.8	2.6	J3.1	3.1^{M}	S	S	2.3
21	S	S	S	S	S	S	S	2.1	G	G	2.7^{G}	2.9^{G}	2.4^{G}	3.5	3.7	3.5	2.9	3.2	2.7	2.3	S	3.0^{M}	3.8^{M}	S
22	S	S	S	S	S	S	S	S	2.4	2.9	2.9	3.4	3.1^{G}	3.2^{G}	3.7	3.3	3.2	3.8^{M}	5.7	S	S	S	S	S
23	S	S	S	S	S	2.3	S	3.0	3.6^{M}	G	3.4	3.5	G	4.1	4.3	3.9	3.8	3.3	3.8	2.8^{M}	J2.9	3.0^{M}	2.9^{M}	S
24	S	3.0	3.1^{M}	J2.1	S	S	S	S	2.1^{G}	2.6^{G}	3.5	3.5	G	3.7	3.4	G	G	G	S	S	S	S	S	2.4
25	S	2.7	2.2	S	S	S	S	S	G	G	G	G	G	G	G	5.2	5.0^{M}	3.8	3.0	3.0	3.2	2.8	S	S
26	S	S	2.2	S	2.8	S	S	S	G	3.3	3.6	4.1	3.5	3.5	3.8	G	G	G	S	S	J2.4	2.9	3.0^{M}	S
27	3.0	J3.1	3.7	2.9	S	S	S	2.8^{M}	2.9	G	G	3.6	3.7	J5.4	4.4	4.3	3.7	3.8	3.1	3.1	J3.1	S	J2.4	3.2
28	2.7	2.6	S	S	S	S	S	S	2.2^{G}	2.7^{G}	G	G	G	G	4.2	J6.3	4.5	2.9	2.6	S	S	2.9	3.0	2.8
29																								
30																								
31																								
No.	8	10	10	9	10	8	2	7	28	28	27	26	27	26	26	27	28	28	20	18	16	15	12	10
Median	2.9	3.0	2.8	2.4	2.4	2.4	2.8	2.2	G	2.7	3.0	3.4	3.3	3.6	3.6	3.4	3.3	3.1	3.0	2.9	2.8	2.8	3.0	2.4
U,Q	4.9	3.6	3.1	2.8	2.7	2.7		2.8	2.3	3.0	3.3	3.6	3.6	3.9	3.8	3.9	3.8	4.0	3.9	3.2	3.0	3.0	3.8	3.2
L,Q	2.7	2.7	2.4	2.2	1.1	2.2		2.1	G	G	G	G	G	G	G	G	G	G	2.6	2.5	2.5	2.4	3.0	2.3
Q,R	2.2	0.9	0.7	0.6	1.6	0.5		0.7											1.3	0.7	0.5	0.6	0.8	0.9

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	S	A	S	S		2.8	3.7	3.3	3.5	4.2	3.6	3.2	3.1	3.2	A	A	2.2	A	A	A
2	A	A	A	A	1.9	2.0	S	S	G	2.6	2.0				2.5^G	3.3	$E_{3.6}{}^R$	2.4	2.4	E	2.0	S	A	S
3	E	2.4	A	A	S	S	A	S	G	G	3.1	3.3	3.4	3.4	2.5^G	$E_{3.3}{}^R$	3.9	5.1	A	2.4	2.5	2.4	2.0	C
4	S	S	S	S	C	C	C	S	G	3.3	C	C	C	C	C	$E_{3.3}{}^R$	3.6	A	3.7	3.2	E	2.0	S	S
5	1.9	2.0	S	E	1.9	S	S	S	2.2	3.0	3.2	4.0	3.0	3.6	3.6	3.3	3.4	4.1	2.5	2.1	S	S	S	2.1
6	S	A	E	2.0	$D_{1.2}{}^S$	S	S	G	5.2	2.0	2.0	3.5	3.5	3.1	4.0	3.5	4.0	4.3	A	A	A	2.7	A	2.1
7	E	S	S	S	S	E	S	S	2.5	2.4	3.3	2.5^G	3.6	3.7	3.5	3.9	4.2	4.1	2.5	2.0	2.0	S	S	2.0
8	S	S	S	S		S	S	S		2.9	3.2	3.5	$E_{3.5}{}^R$	S	3.5	4.1	3.5	3.4	S	2.6	S	E	S	S
9	S	S	S	S	1.9	S	S	S	G					3.8	3.5	3.6	3.2		2.1	1.9	2.3	S	S	S
10	S	S	S	S	S	S	S	S				3.5			2.3^G	2.0^G	G		2.0	S	S	S	S	S
11	S	S	S	S	1.5	S	S	S		G		3.7	3.8	4.1			3.0	2.8	S	E	E	E	A	A
12	A	A	2.0	E	S	E	S	S	G	G	3.3	3.4		3.5	3.5	3.4	3.3	3.3	2.5	2.3	2.1	A	2.5	S
13	E	1.9	S	S	S	E	2.0	1.9	G									2.2	A	2.4	S	S	S	S
14	S	S	S	S	E	E	S	S		2.7	G	G	3.6	G	C	C	5.3	5.3	4.5	S	E	2.2	S	A
15	S	S	1.9	S	S	S	S	S	G	2.9	G	S	3.0^G	3.8	4.6	4.1	3.4	2.4	S	S	S		S	S
16	S	S	S	S	S	S	S	S			G	$E_{3.3}{}^R$	$E_{3.3}{}^R$	G	3.3				S	S	S	S	S	S
17	S	S	S	S	S	S	S	S		2.9		3.6	3.7	3.8	3.6	G	2.5^G		S	S	S	S	S	S
18	S	S	1.9	2.0	1.1	S	S	G		1.9^G		3.5	3.7	$E_{3.9}{}^R$	3.7	3.4			S	S	2.3	S	S	S
19	S	S	S			3	S	S		G	3.2	G						G	2.0	2.2	S	2.6	2.3	S
20	S	S	S	S	S	1.9	S	S					4.0	3.7	3.8	3.5	3.3	G	2.5	3.0	2.5	S	S	2.0
21	S	S	S	S	S	S	S	G			2.7^G	$E_{2.9}{}^R$	2.3^G	3.5	3.7	3.5	2.9	2.9	E	E	S	2.3	A	S
22	S	S	S	S	S	S	S	S	G	2.8	$E_{2.9}{}^R$	G	$E_{3.1}{}^R$	$E_{3.2}{}^R$	3.6	3.3	3.0	3.8	A	S	S	S	S	S
23	S	S	S	S	S	E	S	A	2.5		3.4	$E_{3.5}{}^R$		4.1	4.1	3.8	3.8	3.3	3.6	E	2.0	2.3	E	S
24	S	2.0	2.2	E	S	S	S	S	2.0^G	2.6^G	3.5	G		3.7	3.4				S	S	S	S	S	2.0
25	S	E	2.0	S	S	S	S	S								4.5	4.3	2.9	E	2.7	A	E	S	S
26	S	S	1.7	S	2.0	S	S	S		3.2	3.6	4.0	3.5	$E_{3.5}{}^R$	$E_{3.8}{}^R$				S	S	2.4	E	2.1	S
27	2.0	2.2	A	1.8	S	S	S	1.9	2.6			3.6	3.7	4.1	4.3	4.2	3.5	$E_{3.8}{}^S$	3.0	2.8	A	S	2.0	E
28	E	E	S	S	S	S	S	S	2.1^G	2.5^G					4.0	6.3	4.3	2.8	E	S	S	E	2.2	2.0
29																								
30																								
31																								
No.																								
Median																								

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

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Feb. 1963 | f-min | 135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	$E_{1.90}^{S}$	S	S	$E_{2.00}^{S}$	S	$E_{1.80}^{S}$	S	$E_{2.00}^{S}$	$E_{1.80}^{S}$	1.90	1.95	2.00	1.80	1.90	2.20	2.00	1.80	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$
2	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.70	1.80	1.90	2.00	2.00	2.00	2.05	1.80	1.90	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$
3	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	S	$E_{1.90}^{S}$	$E_{2.00}^{S}$	1.90	1.95	2.05	2.00	2.05	2.10	2.00	2.05	1.70	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$	$E_{1.95}^{S}$	C
4	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	C	C	C	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.80	$I_{1.75}^{C}$	$I_{2.05}^{C}$	C	C	C	2.05	1.90	1.85	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$
5	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.90	1.90	1.90	2.00	1.90	2.20	2.05	2.00	2.00	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{2.30}^{S}$	$E_{1.90}^{S}$	S	$E_{1.80}^{S}$
6	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	E	$E_{1.60}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.90	1.70	2.00	1.90	2.10	1.90	1.90	2.00	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
7	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.75}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.60	1.75	1.80	2.30	2.20	1.90	1.90	1.80	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$
8	$E_{2.10}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	1.40	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.80	1.85	1.80	2.10	$E_{4.20}^{S}$	1.80	1.95	1.80	1.80	$E_{1.95}^{S}$	$E_{1.50}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$
9	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	E	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	2.00	1.80	1.85	2.00	1.95	2.05	1.90	1.90	1.90	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$
10	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	S	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.80	1.80	1.70	1.85	1.80	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.85}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
11	$E_{1.70}^{S}$	$E_{1.85}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	E	S	$E_{1.90}^{S}$	$E_{1.80}^{S}$	1.80	1.70	1.80	1.80	1.90	2.00	1.90	1.90	1.65	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$
12	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.80	2.00	2.00	2.00	2.30	2.30	1.85	1.70	1.70	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$
13	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.90	1.80	1.70	2.00	2.25	2.00	2.00	1.90	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.20}^{S}$
14	$E_{1.60}^{S}$	$E_{1.85}^{S}$	$E_{1.70}^{S}$	1.40	$E_{1.70}^{S}$	1.15	S	$E_{1.80}^{S}$	1.90	1.95	1.95	2.00	1.90	2.30	C	C	1.70	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.85}^{S}$
15	S	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	1.95	1.70	1.85	2.00	1.95	1.90	1.80	1.70	1.80	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	1.20	$E_{1.70}^{S}$	$E_{1.70}^{S}$
16	S	S	$E_{1.70}^{S}$	$E_{1.70}^{S}$	S	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	1.90	1.80	1.95	2.20	1.90	2.10	2.00	1.95	1.70	1.70	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$
17	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{1.95}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.65	1.60	1.90	2.10	2.00	2.05	1.90	1.90	1.90	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	$E_{1.80}^{S}$
18	S	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.75}^{S}$	E	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.80	1.70	1.80	1.95	2.10	2.00	2.00	1.95	1.70	1.75	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	S	$E_{1.90}^{S}$
19	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$	E	1.20	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.80	1.75	1.90	2.00	1.90	2.30	1.90	2.20	1.95	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$
20	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.75}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.80	1.90	2.10	2.35	2.20	2.10	2.10	1.75	1.80	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$
21	$E_{2.20}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.80	1.95	1.80	1.90	2.00	1.90	1.90	2.00	1.80	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.65}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$
22	$E_{2.10}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.85	1.90	2.00	2.05	2.05	1.90	1.90	1.80	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.05}^{S}$	$E_{2.20}^{S}$
23	$E_{1.80}^{S}$	$E_{1.95}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	1.80	1.80	1.95	2.00	1.85	2.00	2.05	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$
24	S	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	1.80	2.00	2.00	2.20	1.80	1.90	2.20	1.95	1.75	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{1.90}^{S}$
25	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.80	1.75	1.80	2.00	1.90	1.95	1.90	1.90	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$
26	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	1.80	1.80	2.00	1.95	2.25	1.90	1.80	1.90	1.80	2.10	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$
27	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	1.80	1.85	1.90	1.90	2.00	2.20	$E_{1.60}^{S}$	1.80	1.90	$E_{1.80}^{S}$	$E_{1.95}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$
28	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.50}^{S}$	$E_{1.65}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.70	1.85	2.00	1.80	1.90	1.70	1.65	1.90	1.80	1.80	1.90	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$
29																								
30																								
31																								
No.	24	26	27	28	25	25	24	28	28	28	28	28	27	26	26	27	28	28	28	28	28	28	25	27
Median	$E_{1.90}$	$E_{1.90}$	$E_{1.80}$	$E_{1.80}$	$E_{1.70}$	$E_{1.70}$	$E_{1.80}$	$E_{1.80}$	$E_{1.80}$	1.80	1.85	2.00	2.00	2.00	1.90	1.90	1.80	$E_{1.70}$	$E_{1.80}$	$E_{1.80}$	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.80}$

f-min

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.20	$I_{3.15}^{S}$	$I_{3.10}^{S}$	$J_{2.55}^{S}$	S	A	S	$J_{3.40}^{S}$	S	3.65	3.10^{S}	3.15^{S}	3.10	3.40^{S}	3.35	$J_{3.25}^{S}$	3.45	3.55	A	A	$I_{3.20}^{S}$	S	A	A
2	$I_{3.40}^{A}$	$I_{3.25}^{A}$	A	S	3.35	3.15	3.05^{S}	$J_{3.35}^{S}$	3.55	3.40^{H}	3.30	3.35	3.35	3.40	3.30	3.25	3.50^{S}	3.50	3.45	3.30	S	S	S	$I_{3.20}^{S}$
3	3.30	3.30	A	$I_{3.30}^{A}$	3.50	S	A	3.30^{S}	$J_{3.60}^{S}$	3.55^{H}	3.45	3.50	3.40^{S}	3.40	$J_{3.35}^{S}$	3.25	3.40	3.70	$I_{3.50}^{S}$	$J_{3.25}^{S}$	$I_{3.35}^{S}$	$I_{3.10}^{S}$	S	C
4	2.75	3.05	3.00	3.20	C	C	C	$J_{3.65}^{S}$	$J_{3.60}^{S}$	3.35	$I_{3.40}^{C}$	$I_{3.40}^{C}$	C	C	C	3.45	$J_{3.45}^{S}$	$I_{3.50}^{A}$	3.45	$I_{3.40}^{S}$	3.70	3.30	3.10	$I_{3.20}^{S}$
5	3.05^{S}	$J_{2.90}^{S}$	$J_{3.00}^{S}$	3.40^{S}	3.40	$I_{3.05}^{S}$	3.25	$J_{3.40}^{S}$	3.70^{H}	3.20	3.35	3.45	3.30^{S}	3.35^{S}	3.35^{S}	3.35	3.45	3.40	3.55	$I_{3.20}^{S}$	S	S	S	3.00
6	2.95	$I_{2.80}^{S}$	2.90	$I_{3.10}^{S}$	3.20	3.10	3.30	$I_{3.30}^{S}$	3.40	$I_{3.40}^{S}$	3.30	3.45	$I_{3.20}^{S}$	$J_{3.25}^{S}$	$I_{3.35}^{S}$	3.45	3.70	3.60	$I_{3.40}^{S}$	$I_{3.35}^{S}$	$I_{3.30}^{S}$	$U_{3.25}^{S}$	$I_{3.00}^{A}$	3.05
7	3.05	3.00	3.00^{S}	3.20	3.15	3.05	3.05	3.15	$J_{3.35}^{S}$	$J_{3.55}^{S}$	3.35	$J_{3.35}^{S}$	3.40	3.45	3.45	3.40^{S}	3.60	3.65	3.50	3.15	3.10	$I_{3.45}^{S}$	$I_{3.15}^{S}$	$I_{2.95}^{S}$
8	3.05	3.05	$J_{3.15}^{S}$	3.25	3.20	3.05	$I_{3.00}^{S}$	$J_{3.05}^{S}$	3.60	3.40	3.40	$J_{3.45}^{S}$	3.30	3.40	3.35	3.40^{S}	3.65	3.50	$J_{3.40}^{S}$	3.15	$I_{3.35}^{S}$	3.25^{S}	3.15	3.15
9	3.00	3.00	3.20	$I_{3.30}^{S}$	3.45	3.10	2.90	3.10	$I_{3.35}^{S}$	$I_{3.50}^{S}$	3.60	3.20	$J_{3.20}^{S}$	$J_{3.35}^{S}$	3.40	$J_{3.40}^{S}$	3.50	$J_{3.65}^{S}$	3.60^{S}	3.45	$I_{3.20}^{S}$	3.10	$J_{2.95}^{S}$	2.85
10	$I_{3.00}^{S}$	$I_{3.00}^{S}$	3.10	$I_{3.35}^{S}$	3.55	3.35^{S}	$I_{3.20}^{S}$	$I_{3.25}^{S}$	$J_{3.55}^{S}$	3.50	2.95^{H}	3.05	$I_{3.45}^{S}$	3.25	3.15	3.35	3.45	$J_{3.40}^{S}$	3.20	$I_{3.20}^{S}$	$I_{3.00}^{S}$	$I_{3.30}^{S}$	$I_{3.40}^{S}$	3.25
11	2.85^{S}	3.05	3.15	2.85^{S}	2.70	$I_{3.00}^{S}$	3.10^{S}	$J_{3.40}^{S}$	$J_{3.30}^{S}$	$J_{3.45}^{S}$	$I_{3.50}^{S}$	3.30	3.20	$I_{3.20}^{S}$	$J_{3.25}^{S}$	3.35^{S}	3.50	3.50	$J_{3.50}^{S}$	$I_{3.60}^{S}$	3.20^{S}	3.00	A	A
12	A	A	3.15	3.20^{S}	3.05	3.10	3.45^{S}	$I_{3.10}^{S}$	3.25^{S}	$I_{3.25}^{S}$	$J_{3.45}^{S}$	3.35^{S}	$J_{3.30}^{S}$	3.15	3.30	$J_{3.35}^{S}$	3.55	$J_{3.65}^{S}$	$J_{3.35}^{S}$	$I_{3.30}^{S}$	$I_{3.30}^{S}$	$I_{3.35}^{A}$	3.60	2.85^{S}
13	3.10	3.10	$J_{3.15}^{S}$	3.40	3.25	2.80	$I_{2.90}^{S}$	$I_{3.20}^{S}$	$J_{3.50}^{H}$	3.35^{H}	$J_{3.55}^{S}$	3.50	3.35^{S}	3.15^{S}	3.15	3.55	3.55	$J_{3.40}^{H}$	3.55^{S}	$I_{3.35}^{S}$	$I_{3.55}^{S}$	3.15^{S}	3.05	2.85^{S}
14	2.95^{S}	2.95^{S}	3.35^{S}	2.95	2.80	3.35	$I_{2.90}^{S}$	$I_{3.30}^{S}$	3.40^{S}	$I_{3.45}^{S}$	$J_{3.35}^{S}$	3.30	3.35	3.35	C	C	3.40	$I_{3.50}^{S}$	$I_{3.60}^{S}$	$I_{3.45}^{S}$	$I_{3.40}^{S}$	3.20	S	S
15	$I_{2.85}^{S}$	2.90^{S}	2.85	$J_{3.20}^{S}$	$I_{3.75}^{S}$	2.95	3.15	$J_{3.25}^{S}$	$I_{3.50}^{H}$	3.35^{H}	$I_{3.45}^{S}$	3.65	3.20	3.20	$I_{3.55}^{S}$	3.40	$I_{3.40}^{S}$	3.55	3.55^{S}	3.35^{S}	3.05	$J_{3.40}^{H}$	$I_{3.20}^{S}$	$I_{3.20}^{S}$
16	$I_{2.90}^{S}$	$I_{3.10}^{S}$	2.95	3.40	$I_{3.25}^{S}$	2.90	2.90	$I_{3.50}^{S}$	3.55^{H}	3.50^{H}	3.25	3.35^{S}	3.35	3.60	3.40^{S}	3.45	3.50	3.65	$J_{3.40}^{S}$	S	S	$I_{3.40}^{S}$	$I_{3.15}^{S}$	3.25^{S}
17	3.05^{S}	3.20^{S}	$I_{3.35}^{S}$	3.20	3.00	$I_{3.30}^{S}$	3.15	3.35	3.45	3.55	$I_{3.30}^{S}$	3.35	3.35	3.35	$J_{3.40}^{S}$	$J_{3.45}^{S}$	3.65	3.55	3.55	3.40	3.10	$I_{3.20}^{S}$	$I_{3.00}^{S}$	2.70
18	$I_{3.00}^{S}$	$J_{3.40}^{S}$	3.35	3.50	3.30	3.25	$I_{3.30}^{S}$	$I_{3.60}^{S}$	3.60	3.55	3.60^{S}	3.30	3.30	3.15^{H}	3.45	3.60	3.75	3.90^{H}	$J_{3.40}^{S}$	$I_{3.20}^{S}$	$J_{3.00}^{S}$	S	S	S
19	$J_{3.10}^{S}$	$J_{3.20}^{S}$	3.20^{S}	3.15	3.05	$I_{3.25}^{S}$	$I_{3.30}^{S}$	$J_{3.40}^{S}$	3.50	$I_{3.20}^{S}$	3.50	$J_{3.50}^{S}$	3.40	3.20	3.25	3.35	3.45	3.65^{S}	3.45	$I_{3.40}^{S}$	$J_{3.25}^{S}$	$I_{3.20}^{S}$	3.15	2.90
20	3.00	2.95^{S}	3.05	3.05	$J_{3.35}^{S}$	$J_{3.25}^{S}$	3.45	$I_{3.45}^{S}$	3.55^{H}	$J_{3.70}^{H}$	$I_{3.40}^{S}$	3.30	3.30	3.30	3.10	$J_{3.45}^{S}$	3.45	$J_{3.45}^{S}$	3.70	$I_{3.40}^{S}$	2.95^{S}	3.25^{S}	3.45^{S}	$I_{3.00}^{S}$
21	2.85^{S}	$I_{2.85}^{S}$	2.90	3.05	$J_{3.20}^{S}$	$J_{3.05}^{S}$	$I_{3.20}^{S}$	$I_{3.50}^{S}$	$I_{3.60}^{S}$	3.60	$J_{3.50}^{S}$	3.50	$J_{3.40}^{S}$	3.30	$J_{3.40}^{S}$	3.30	3.35	$I_{3.60}^{S}$	3.50	S	S	S	A	S
22	3.15	2.95	$I_{3.10}^{S}$	$J_{3.25}^{S}$	3.25^{S}	$I_{2.95}^{S}$	S	$J_{3.50}^{S}$	3.45	3.40	$I_{3.30}^{S}$	3.45^{S}	3.50	$I_{3.25}^{S}$	$J_{3.10}^{S}$	3.30	3.70	3.55^{S}	$I_{3.50}^{A}$	$I_{3.55}^{S}$	$I_{3.45}^{S}$	$I_{3.45}^{S}$	3.10^{S}	2.95
23	$J_{2.95}^{S}$	3.00^{S}	$I_{3.10}^{S}$	3.30^{S}	$J_{3.50}^{S}$	3.45	2.80	$I_{3.40}^{S}$	3.60	3.65^{S}	$I_{3.45}^{S}$	3.55	3.45	3.15	3.30	$J_{3.65}^{S}$	3.45	3.60	$J_{3.65}^{S}$	3.40	3.25^{S}	$J_{3.60}^{S}$	$I_{3.25}^{S}$	2.95
24	$I_{2.90}^{S}$	2.85^{S}	3.15^{S}	3.25	3.15	$J_{3.35}^{S}$	3.10	$I_{3.35}^{S}$	3.40	$I_{3.50}^{H}$	3.25	3.15	$J_{3.15}^{S}$	3.10	$J_{3.25}^{S}$	3.40^{S}	3.55^{S}	$I_{3.60}^{S}$	3.60	$J_{3.55}^{S}$	$I_{3.55}^{S}$	$I_{3.45}^{S}$	2.95	3.05^{S}
25	2.95	2.85	$I_{2.95}^{S}$	$I_{3.00}^{S}$	$I_{3.60}^{S}$	3.35^{S}	3.15	3.40^{S}	$J_{3.65}^{H}$	3.55^{S}	3.55	3.30	2.90	$J_{3.30}^{S}$	$I_{3.25}^{S}$	3.45	3.50^{S}	S	3.70	S	S	3.15	$J_{3.15}^{S}$	3.05
26	3.00	$I_{2.90}^{S}$	2.95	3.00	3.15	3.30	3.50	3.70^{S}	3.65^{H}	$J_{3.50}^{S}$	3.30	3.40	3.15^{S}	3.05	3.35	$J_{3.30}^{S}$	3.45	$J_{3.60}^{S}$	3.65	$I_{3.50}^{S}$	3.20^{S}	$J_{3.30}^{S}$	2.65	$J_{2.95}^{S}$
27	3.00	3.05	$I_{2.95}^{A}$	3.05	3.10^{S}	$I_{3.00}^{S}$	$I_{3.00}^{S}$	$J_{3.70}^{S}$	$J_{3.60}^{H}$	3.50	3.55	3.55^{S}	2.95^{S}	3.05	$J_{3.35}^{S}$	3.20	3.55	3.55	3.70	3.45	$I_{3.10}^{S}$	3.10	3.05	3.00
28	$J_{3.15}^{S}$	2.85	3.10^{S}	3.05	3.35	3.40	3.35	$J_{3.85}^{S}$	3.50^{H}	3.45^{S}	3.40	$J_{3.50}^{S}$	3.40	3.15^{S}	3.35	3.40	3.50	$I_{3.40}^{S}$	3.55	3.50	3.15	$I_{3.30}^{S}$	$I_{3.15}^{S}$	$I_{3.10}^{S}$
29																								
30																								
31																								
No.	27	27	26	27	26	25	24	28	27	28	28	28	27	27	26	27	28	27	27	24	23	23	20	22
Median	3.00	3.00	3.10	3.20	3.25	3.10	3.15	3.40	3.55	3.50	3.40	3.40	3.30	3.25	3.35	3.40	3.50	3.55	3.50	$U_{3.40}$	$U_{3.20}$	3.25	3.15	3.00

The Radio Research Laboratories, Japan.

M(3000)F2

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

Y 7

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												4.10	L	A	L	L								
2											L	3.80	$I_{3.80}^{L}{}_{H}$	3.85	L	L	L							
3											L	3.65	3.65	3.70	3.70	L	A	A						
4							C				$I_{3.65}^{C}$	$I_{3.70}^{C}$	C	C	C	L								
5											L	$I_{3.70}^{L}$	$I_{3.80}^{L}$	3.60	3.60	3.65	L							
6											L^{H}	3.70	L	3.65	3.60	L	A							
7										L	L	3.65	3.70	3.60	$I_{3.65}^{L}$	L	A							
8										L	L^{H}	3.60^{H}	3.95	$I_{3.80}^{S}$	3.65	A								
9										L	3.80	$I_{3.85}^{L}$	3.75	3.65	3.65	L	L							
10										3.80		3.50	L^{H}	3.75	L	L	L							
11											3.85	3.80	3.55	3.75	3.80^{H}	L	L							
12										L	$I_{3.75}^{L}$	$I_{3.70}^{L}$	3.65	$I_{3.70}^{L}$	$I_{3.60}^{L}$	3.65								
13											L	L^{H}	3.85	$I_{3.75}^{L}$	$I_{3.60}^{L}$	L	L							
14										L^{H}	L	L	L	3.65	C	C	A							
15											L	3.80	L	3.60	A	A								
16											L^{H}	3.75	3.65	3.60	3.65	3.65	L	L						
17										L	L	3.60	3.70	3.65	3.60	3.70^{L}	L	L						
18										L	L	L	4.00^{R}	$I_{3.80}^{L}$	3.70	3.85	L							
19										L^{H}	$I_{3.65}^{H}$	3.75	3.75	$I_{3.80}^{L}$	3.70	L								
20											L	L	3.70	3.85	3.60	L	L							
21										L	L	L	$I_{3.90}^{L}$	$I_{3.70}^{L}{}_{H}$	L	L	L							
22										3.85^{H}	3.75	3.80^{H}	3.75	3.75	3.55^{H}	$I_{3.70}^{L}$	3.75							
23											L	L	3.85	A	A	L	A							
24											L	L	3.40	3.70	$I_{3.70}^{L}$	L	L	4.25						
25										L^{H}	L	3.80^{H}	3.75^{H}	4.35	3.65	A	A							
26											L	3.80	4.00	3.55	L	3.75	4.15	L						
27										3.65	$I_{3.75}^{L}$	3.85	4.00^{H}	$I_{3.40}^{A}$	A	A	3.80							
28										L	$I_{3.65}^{L}$	3.60^{H}	3.95^{H}	3.85	A	A	A							
29																								
30																								
31																								
No.										3	8	21	22	25	17	7	3	1						
Median										3.80	$U_{3.75}$	3.75	3.75	3.70	3.65	3.70	3.80	4.25						

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												250	300	260	280	260								
2											280	260	255	260	280	290	260							
3											255	270	265	280	280	290	260	250						
4							C				I_{275}^{C}	I_{260}^{C}	C	C	C	270								
5											285	275	280	290	285	280	255							
6											280	250	330	260	260	260	250							
7										250	280	270	265	260	280	260	250							
8										255	270	260	270	275	280	255								
9										250	250	290	280	270	270	270	255							
10										255		300	240	260	310	270	250							
11											265	265	280	290	275	270	255							
12										260	250	255	260	280	275	255								
13											245	245	255	285	290	250	255							
14										250	255	295	275	260	C	C	275							
15											260	240	300	285	250	270								
16											290	270	270	250	280	260	245	240						
17										255	285	270	275	260	260	255	240	240						
18										255	255	280	280	270	260	250	250							
19										260	260	255	255	280	275	275								
20											275	300	285	290	305	280	255							
21										250	255	255	265	280	260	295	280							
22										280	295	255	250	285	300	260	245							
23											255	260	260	290	290	245	250							
24											295	290	300	260	280	275	250	240						
25										255	255	285	290	270	270	260	250							
26											275	275	290	300	270	255	255	240						
27										255	245	245	290	305	255	275	255							
28										260	270	260	255	290	270	280	260							
29																								
30																								
31																								
No.										14	26	28	27	27	26	27	22	5						
Median										255	270	260	275	280	280	270	255	240						

h'F2

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

The Radio Research Laboratories, Japan.

Y 9

IONOSPHERIC DATA

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

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

h'F

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

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	S	155	S	S	G	135	130	140	100	100	140	145	140	130	120	120	115	110	110	110
2	110	110	105	105	105	105	S	S	145	120	115	G	G	G	105	130	120	125	130	125	120	S	105	S
3	105	105	105	105	S	S	150	S	140	135	125	120	120	120	120	115	110	110	105	105	105	105	105	C
4	S	S	S	S	C	C	C	S	140	120	C	C	C	C	C	125	120	110	110	105	105	105	S	S
5	110	110	S	105	105	S	S	S	130	120	120	110	110	120	120	120	130	120	115	115	S	S	S	105
6	S	105	105	105	105	S	S	125	120	120	120	160	140	110	110	105	105	105	105	105	105	110	110	105
7	105	S	S	S	S	105	S	105	105	100	145	105	140	130	130	125	120	110	110	110	105	S	S	100
8	S	S	S	S	E	S	S	S	G	140	140	135	140	S	150	130	120	115	S	110	S	105	S	S
9	S	S	S	S	115	S	S	S	155	G	G	G	G	185	155	145	145	G	120	105	105	S	S	S
10	S	S	S	S	S	S	S	S	G	G	G	150	G	G	110	110	140	G	105	S	S	S	S	S
11	S	S	S	S	130	S	S	S	G	150	G	140	135	140	G	G	130	120	S	110	110	110	110	105
12	105	105	105	115	S	105	S	S	140	E150G	140	140	G	145	145	140	130	120	120	115	110	110	110	S
13	105	105	S	S	S	110	110	110	155	G	G	G	G	G	G	G	G	120	115	110	S	S	S	S
14	S	S	S	S	110	105	S	S	G	140	140	140	130	140	C	C	120	120	110	S	120	110	S	105
15	S	S	105	S	S	S	S	S	150	130	120	S	105	105	105	105	105	105	S	S	S	E	S	S
16	S	S	S	S	S	S	S	S	G	G	140	140	140	140	125	G	G	G	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	G	140	G	140	130	130	130	130	120	G	S	S	S	S	S	S
18	S	S	105	120	120	S	S	120	G	120	G	145	145	145	140	140	G	G	S	S	125	S	S	S
19	S	S	S	E	E	S	S	S	G	140	135	115	G	G	G	G	G	145	120	115	S	140	110	S
20	S	S	S	S	S	115	S	S	G	G	G	G	175	160	165	160	155	175	155	130	110	S	S	105
21	S	S	S	S	S	S	S	110	G	G	110	115	120	120	180	120	180	135	140	120	S	115	115	S
22	S	S	S	S	S	S	S	S	150	110	115	145	115	120	140	140	130	110	110	S	S	S	S	S
23	S	S	S	S	S	115	S	110	105	G	175	170	G	160	150	150	140	125	115	115	110	110	110	S
24	S	110	105	105	S	S	S	S	140	120	170	155	G	125	120	G	G	G	S	S	S	S	S	105
25	S	105	105	S	S	S	S	S	G	G	G	G	G	G	G	150	140	130	125	115	110	110	S	S
26	S	S	105	S	110	S	S	S	G	155	155	140	145	140	170	G	G	G	S	S	120	150	110	S
27	105	105	105	105	S	S	S	150	140	G	G	150	125	125	150	140	140	130	120	110	105	S	110	105
28	105	110	S	S	S	S	S	S	120	110	G	G	G	G	150	140	130	125	115	S	S	125	120	110
29																								
30																								
31																								
No.	8	10	10	8	8	8	2	7	15	18	17	20	17	20	22	21	22	21	20	18	16	14	12	10
Median	105	105	105	105	110	110	130	110	140	125	135	140	130	130	140	130	130	120	115	110	110	110	110	105

h'Es

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

The Radio Research Laboratories, Japan.

Y 11

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						f2				h2	h	h	12	12	h	h	h	c5	f2	f4	f2	f	f	f3
2	f7	f4	f4	f6	f2	f			h	c2	1				1	h	c2	c	f2	f	f		f2	
3	f2	f2	f	f			f		h	h	1	1	1	1	1	12	13	14	f3	f3	f2	f3	f	
4									c	12						c	c2	c2	f5	f3	f	f		
5	f	f		f	f				c	12	12	12	12	h1	c	c	c	c3	f2	f				f2
6		f2	f	f2	f			1	13	1	1	h	h12	12	12	13	12	12	f2	f2	f3	f3	f2	f2
7	f2					f		1	1	12	h1	1	h	h	h	h	13	13	f2	f2	f2			f
8										h	h	h	h		h	h	c2	c2		f3		f		
9					f2				h					h1	h	h	h2		f	f	f3			
10												h			1	1	h1		f					
11					f					h		h	h	h			h2	c3		f	f	f	f2	f4
12	f3	f4	f	f		f			h	h	h	h		h	h	h	h2	c4	f2	f2	f	f2	f2	
13	f	f				f	f	1	h									12	f2	f				
14					f2	f				h	h	h	h	h			12	12	f2		f	f		f2
15			f						h	h	c		12	12	12	1	12	1						
16											h	h	h	h	h									
17										h21		h	h	h	h	h	12							
18			f	f	f2			1		1		h	h	h	h	h					f5			
19										h2	h1	1						h2	f2	f2		f	f2	
20						f							h	h	h	h	h	h	f	f	f2			f
21								1			1	1	1	1	h1	1h	h1	h2	f	f		f	f	
22									h	12	12	h	1	1	h	h	h	13	f2					
23						f3		12	12		h	h		h	h	h	h2	c3	f3	f2	f	f	f	
24		f	f	f					1	1	h1	h1		h	1									f
25		f	f													h2	h2	h3	f	f2	f2	f		
26			f		f					h	h	h	h	h	h						f	f2	f	
27	f2	f2	f3	f				c2	h2			h	h	h	hh	h1	h1	c2	f2f	f	f		f	f2
28	f	f							12	1					h1	h3	h3	c2	f			f	f	f2
29																								
30																								
31																								
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

Y 12

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

Note No observations during the following periods:

1st 0000 - 0800
1st 2140 - 2400
2nd 2140 - 2400
3rd 2140 - 2400
4th 0300 - 0800
17th 2120 - 18th 0823

Outstanding Occurrences

Feb. 1963	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
9	0433.3	0.2	CD/4	470	70	-	
24	0130.3	1.0	CD/4	660	230	0130.5	
28	0323.2	1	CD/4	360	120	0323.3	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Feb. 1963	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1*	3-	4 3 -	- - - 2	2 2 3 (3)	5 (4 5) 5	U U U U			
2	3+	4 4 -	- - - (2)	3 3 4 3	4 4 - (4)	U U N N			
3	3+	3 4 -	- - - 2	3 4 4 4	4 5 - 4	N N N N			
4	4o	4 4 -	- - - (3)	(3) 4 5 4	4 4 - 4	N N N N			
5	4-	5 5 -	- - - 2	3 4 4 (3)	4 4 - 5	N N N N			
6	4-	5 5 -	- - - (2)	3 C 4 4	4 3 - 4	N N N N			
7	4o	5 (5) -	- - - 2	3 3 5 4	4 4 - 3	N N N N			
8	4o	4 5 5	- - - 2	3 3 5 4	4 4 - 4	N N N N			
9	3+	3 3 4	- - - 3	3 4 4 4	4 3 - 4	N N N N	2231	---	108γ
10	3+	4 3 4	- - - 2	3 4 4 (4)	4 3 - 5	U U U U	---	---	
11	3+	3 3 3	- - - 2	3 4 5 3	4 4 - 5	U U U U	---	---	
12	3+	4 3 3	- - - 2	2 4 5 4	4 5 - 4	U U U U	---	---	
13	4-	3 3 3	- - - 3	4 5 5 (4)	5 5 - 4	U N N N	---	---	
14	4-	4 3 3	- - - 2	(4) 4 5 4	5 5 - 3	N N N N	---	1800	
15	4-	3 4 4	- - - 2	3 4 5 4	4 4 - 3	N N N N			
16	4o	3 4 5	- - - 3	3 4 5 (4)	3 4 - 4	N N N N			
17	4o	3 4 4	- - - 4	(4) 4 4 4	4 3 - 4	N N N N			
18	4-	3 4 5	- - - 5	3 3 4 3	4 4 - 4	N N N N			
(19)	4o	3 4 5	- - - 5	3 4 4 3	4 4 - 4	N N N N			
(20)	4-	3 4 4	- - - 5	3 3 4 3	3 3 - 4	N U U U			
(21)	4-	4 4 5	- - - 3	(3) 4 4 3	3 4 - 4	U U N N			
22	4o	4 5 4	- - - 3	4 4 4 4	4 3 - 5	N N N N			
23	4-	4 C C	- - - 3	3 4 4 (4)	4 3 - 4	N N N N			
24	4o	5 5 5	- - - 4	(3) 3 4 4	4 3 - 4	N N N N			
25	4o	4 4 4	- - - 4	3 4 4 4	4 4 - 4	N N N N			
26	4+	5 5 5	- - - 5	3 4 4 4	4 (4) - 4	N N N N			
27	4o	4 3 5	- - - 4	3 4 4 (4)	5 4 - 3	N N N N			
28	5-	4 5 5	- - - 5	4 4 5 4	5 5 - 5	N N N N			

* = day of Special World Interval

( ) = Regular World Day

- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbances was observed during February, 1963.

Supplementary remark:

No Sudden Ionospheric Disturbances was observed during December, 1962.

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1963
第 15 号　第2巻

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