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IONOSPHERIC DATA IN JAPAN

FOR JULY 1963

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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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

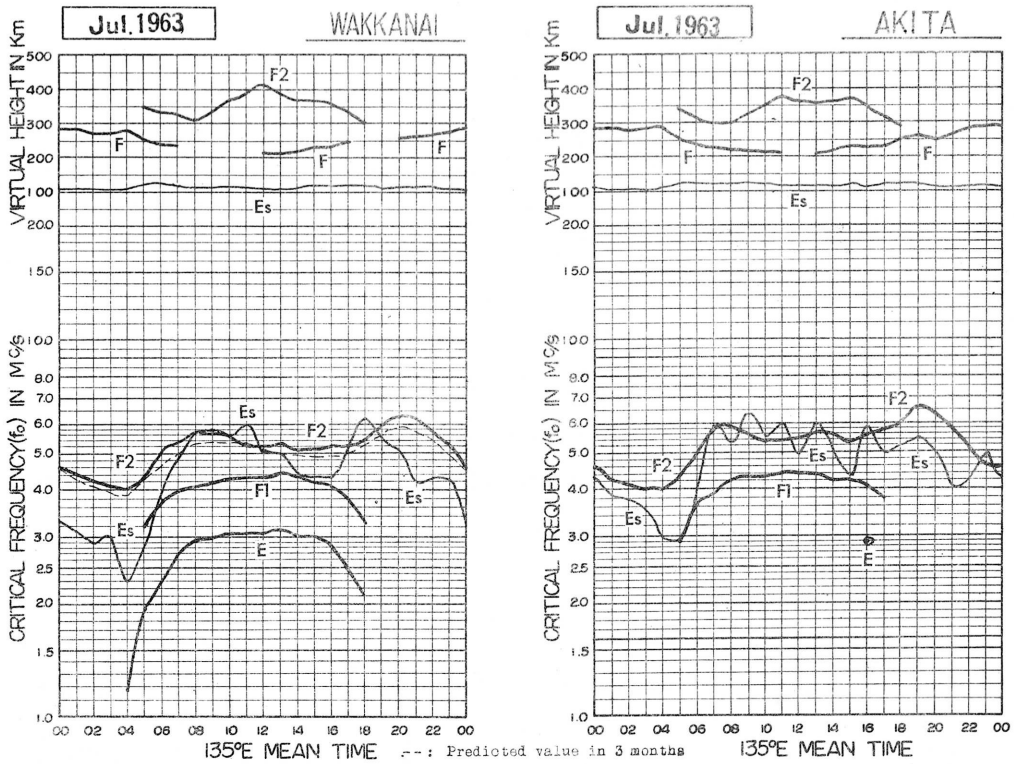
Importances

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

1−	1	1+
2−	2	2+
3−	3	3+

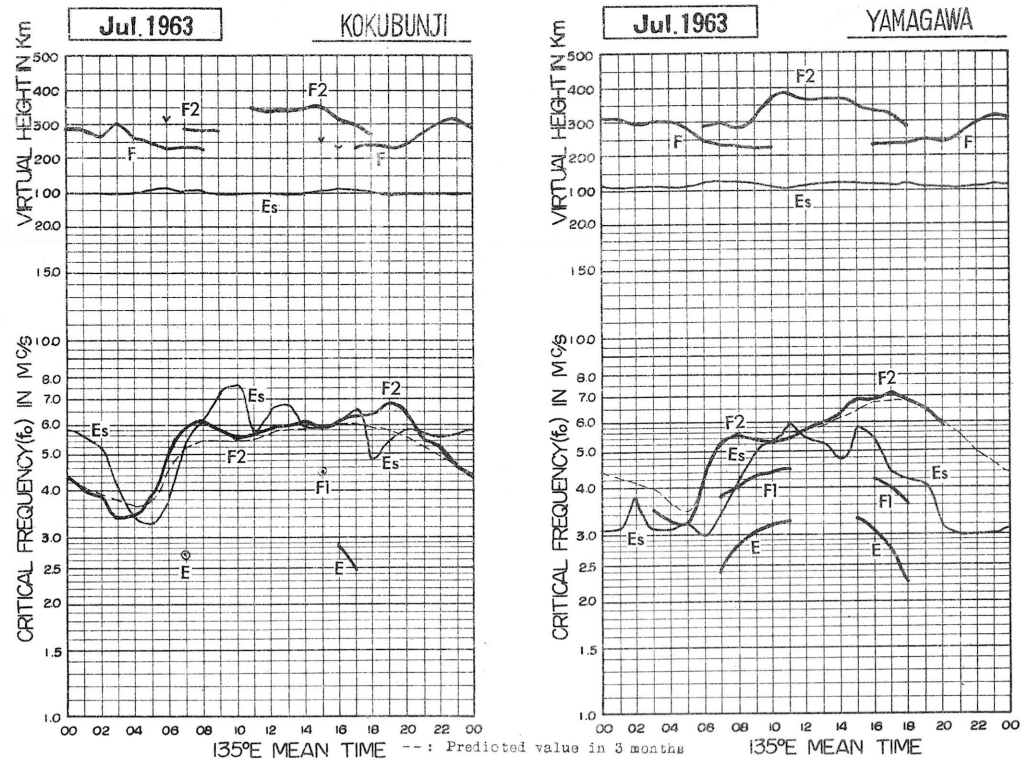
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

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

Jul. 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	A	SF	A	A	SF	$I4.5^{A}$	$I4.4^{A}$	4.4	5.3	A	A	A	$I4.8^{A}$	$I4.9^{A}$	5.1	5.0	5.1	5.3	$I5.2^{A}$	$I5.3^{A}$	6.0	6.2	A	A
2	SF	$I4.4^{SF}$	4.2	4.3	4.3	4.6	5.5F	6.0	5.7	5.9	5.0	$I5.1^{A}$	5.3	4.9	5.1	5.2	5.3	5.0	5.3	5.2	5.8	6.3	$I5.2^{SF}$	5.8^{F}
3	5.4^{SF}	4.6	$U4.6^{S}$	$I4.3^{SF}$	$U4.3^{S}$	5.4	6.0	6.6	7.3	7.3	6.3	5.0	5.0	5.5	5.3	5.1	5.1	$I5.1^{A}$	5.7	6.9	6.7	6.3	$U5.7^{SF}$	$U5.5^{SF}$
4	$I4.3^{FS}$	$U4.1^{S}$	$I4.3^{SF}$	$U3.9^{S}$	3.9H	4.7	6.1	6.6	6.3	A	A	A	A	5.3	5.5	5.3	5.1	$I5.5^{A}$	5.8	6.6	7.3	5.8	4.7	4.9
5	4.8	$I4.8^{F}$	$I4.4^{SF}$	$I4.3^{SF}$	4.3	4.7	5.0	5.4	6.6	6.5H	5.7	4.8	$I4.9^{A}$	$I5.0^{A}$	5.2	5.5	5.6	6.0	6.5	6.1	6.3	5.3	4.8	4.6
6	4.4	SF	SF	SF	$U4.5^{SF}$	5.1	5.4	$I5.0^{A}$	$I5.3^{A}$	5.3	5.9	6.0	$I5.5^{A}$	$I5.3^{A}$	5.0	5.0	5.7	6.1	6.9	7.1	6.0	$U6.3^{S}$	6.1	5.0
7	$U4.6^{S}$	4.5	$U4.6^{S}$	$U4.5^{SF}$	$I4.6^{SF}$	5.0	5.6	6.8	6.3	5.5	$I5.7^{A}$	5.0	5.3	5.7	5.6	5.7	5.6	5.9	6.3	7.2	8.3	8.1	6.8	6.3
8	$U5.6^{SF}$	4.9	4.5^{F}	4.8^{F}	$I4.2^{FS}$	4.5	$I5.3^{A}$	5.8	A	A	A	A	5.0	5.3	4.8	$I4.8^{A}$	$I4.6^{A}$	$I4.5^{A}$	4.5	5.2	$I6.0^{A}$	6.4^{F}	$U5.7^{SF}$	$I5.2^{SF}$
9	$U4.7^{SF}$	$I4.1^{SF}$	$I3.7^{A}$	$I3.7^{A}$	3.6	4.1	4.7	$I4.6^{A}$	5.3	5.7	5.2	$I5.5^{A}$	6.4	$I5.1^{A}$	$I4.9^{A}$	5.1	5.7	5.7	5.5	6.0	5.9	5.8	5.7	5.6
10	5.1	5.0	4.2	3.9	$U3.8^{S}$	4.3	5.3	5.1	5.5	$I5.3^{A}$	5.0	5.1	$I5.2^{A}$	5.2	5.4	6.5	6.8	6.8	6.0	6.4	6.8	$U6.0^{SF}$	$U6.3^{SF}$	$I6.0^{SF}$
11	5.0^{F}	5.3^{F}	$I5.0^{SF}$	$I5.0^{SF}$	5.0	5.3	4.8	$I4.8^{A}$	$I5.2^{A}$	$I5.4^{A}$	5.5	$I5.3^{A}$	5.0	A	A	R	5.0	5.3	$I6.0^{A}$	$I6.6^{A}$	$U7.3^{S}$	6.3	5.0	4.9
12	$I4.3^{SF}$	$U4.3^{S}$	$I4.4^{SF}$	$I4.1^{SF}$	$U3.8^{SF}$	5.0	$I5.0^{A}$	5.3	$I6.2^{A}$	7.2	6.3	$I5.6^{A}$	5.2	5.4	5.1	5.2	5.6	5.0	$I5.4^{A}$	6.1	$I6.8^{S}$	6.6	6.0	5.3
13	4.8	4.6	4.2	$U4.1^{S}$	$U4.2^{SH}$	5.1	5.8	6.7	$I5.3^{A}$	5.4	5.8	5.7	5.7	5.4	5.3	5.1	5.4	5.0	5.2	$I5.8^{A}$	6.2	SF	FS	SF
14	SF	4.3	4.2	4.0	4.1	5.1	6.3	6.9	6.9	6.4	$I5.8^{A}$	$I5.3^{A}$	5.3	6.1	5.4	5.1	4.8	A	A	A	6.3	6.0	$U6.3^{S}$	$I5.2^{A}$
15	$U4.8^{S}$	4.6	$U4.3^{S}$	$I4.2^{SF}$	4.3^{F}	4.6	5.8	$I6.2^{A}$	$I6.3^{A}$	A	A	A	A	A	A	A	5.1	$I5.2^{A}$	$I5.7^{A}$	$I6.8^{A}$	7.6	$I7.1^{SF}$	$I6.9^{A}$	5.5F
16	SF	SF	A	SF	SF	C	6.0^{F}	6.5	7.6	7.1	6.8	$U6.3^{R}$	5.9	A	A	A	$I5.4^{A}$	5.5	6.2	6.6	7.0	7.0	$I6.3^{S}$	SF
17	SF	SF	SF	SF	3.3H	3.8	A	A	A	A	A	$I5.1^{R}$	5.2	5.6	5.0	A	A	A	A	7.3	$I7.1^{S}$	6.1	6.0	6.3
18	5.0	5.1	$U4.3^{SF}$	$I4.3^{A}$	$I4.5^{SF}$	4.5	4.1	$I4.4^{A}$	$I6.0^{R}$	A	A	A	A	A	R	A	A	A	A	5.5	5.8	$U6.3^{S}$	5.8	5.5F
19	4.0	3.8	3.6	$I3.4^{F}$	$I3.4^{F}$	$I4.0^{F}$	4.4	4.5	$I4.4^{A}$	$I4.3^{A}$	4.6	5.1	$I4.8^{R}$	4.5	$I4.7^{A}$	4.7	$I4.7^{A}$	$I4.9^{A}$	5.4	$I5.8^{A}$	6.2	5.6	5.0	4.8
20	4.3	4.1	3.9	3.7	3.8	$I4.2^{A}$	5.1	5.4	$I6.0^{A}$	5.4	5.0	5.3	$I5.0^{R}$	5.4	5.5	5.4	5.2	$U5.1^{S}$	5.4	6.1	6.6	6.3	5.7	5.2
21	$I4.6^{A}$	$I4.4^{A}$	$I4.3^{FS}$	$I4.3^{F}$	$I3.8^{F}$	$I3.7^{A}$	5.1	5.8	5.3	4.9	4.9	5.2	5.4	5.0	5.3	$I4.9^{R}$	5.3	$I5.7^{A}$	6.6	8.0	$U8.5^{S}$	$U7.4^{S}$	6.3	6.0
22	4.6	5.0^{F}	$I4.9^{SF}$	$U4.3^{S}$	$U4.3^{S}$	3.9	4.2	W	$I4.5^{A}$	$I4.6^{R}$	4.8	A	R	A	A	A	A	A	4.8	$I5.2^{A}$	5.6	$I6.1^{FS}$	$U5.0^{F}$	$U4.1^{S}$
23	$I3.9^{SF}$	$U4.3^{FS}$	$I3.8^{F}$	3.3^{F}	3.1	3.7	4.4	5.3	5.1	A	A	R	$I4.5^{R}$	$I4.5^{A}$	$I4.5^{R}$	$I4.4^{R}$	4.4	$I4.5^{A}$	5.0	5.6	6.5	$U6.6^{S}$	$I5.5^{SF}$	5.2
24	3.9	$U4.3^{S}$	$I4.3^{SF}$	4.3^{SF}	$U4.6^{F}$	3.7	$I4.2^{A}$	4.6	4.9	R	A	A	A	A	A	A	A	5.1	5.0	$I5.2^{A}$	5.0	5.1^{S}	$I4.7^{A}$	$I4.3^{SF}$
25	4.0	3.7	3.7	$I3.5^{FS}$	$I3.7^{F}$	$I4.3^{A}$	5.3^{F}	$I5.5^{A}$	5.7	A	A	A	A	A	5.1	5.5	6.0	C	C	C	C	C	C	C
26	SF	SF	SF	SF	SF	4.0H	5.0	A	A	A	A	A	A	$I5.0^{A}$	5.1	4.8	$I4.6^{R}$	$I4.4^{A}$	$I4.8^{A}$	$I5.8^{A}$	$I5.4^{S}$	A	SF	SF
27	SF	SF	3.6^{F}	3.1^{F}	3.1	3.9H	A	A	A	A	5.6	A	A	A	5.8	5.0	$I5.3^{A}$	5.5	5.6	$I5.8^{A}$	A	SF	SF	$U5.3^{S}$
28	$I4.7^{SF}$	$I4.6^{SF}$	$I4.3^{SF}$	$I4.0^{SF}$	4.0^{F}	4.3H	A	A	C	C	C	C	C	C	C	C	C	C	A	5.4	5.7	5.7	$I5.4^{A}$	$I4.8^{A}$
29	$U4.6^{S}$	$I4.1^{FS}$	4.0	3.7	3.6	4.3	5.0	6.3	5.8	A	A	A	A	A	A	A	$I5.0^{A}$	5.1	$I5.2^{A}$	$I5.8^{A}$	6.4	$I6.0^{SF}$	$I5.6^{SF}$	5.0
30	$U4.7^{S}$	$U4.4^{S}$	$U4.1^{SF}$	$I4.1^{SF}$	$I4.1^{SF}$	$I4.2^{SF}$	5.5	6.5	$I6.0^{A}$	6.0	5.1	4.9	$I5.4^{A}$	6.0	$I5.3^{A}$	5.3	5.7	5.7	6.3	6.5	6.0	5.5	$I4.9^{SF}$	$I4.3^{A}$
31	$I3.7^{A}$	3.8	$I3.7^{SF}$	3.4^{F}	$I3.5^{F}$	$I3.5^{C}$	5.0	5.2	5.4	5.6	$I5.4^{R}$	4.9	5.0	$I4.8^{A}$	4.6	4.9	4.6	5.1	5.2	5.6	5.9	5.2	F	F
No.	24	25	26	26	28	30	28	26	26	18	19	18	21	21	23	22	26	25	26	29	29	27	25	25
Median	$U4.6$	4.4	$U4.2$	$U4.1$	$U4.0$	4.3	5.1	5.4	5.7	5.6	5.5	5.2	5.2	5.3	5.1	5.1	5.2	5.2	5.4	6.0	6.3	6.2	$U5.7$	5.2
U.Q.	4.8	4.7	4.4	4.3	4.3	4.7	5.6	6.5	6.3	6.4	5.8	5.5	5.4	5.4	5.4	5.3	5.6	5.7	6.2	6.6	6.9	6.4	6.2	5.5
L.Q.	4.3	4.0	3.9	3.7	3.6	4.0	4.8	5.0	5.3	5.3	5.0	5.0	5.0	5.0	5.0	4.9	5.0	5.0	5.2	5.6	5.9	5.8	5.0	4.8
Q.R.	0.5	0.7	0.5	0.6	0.7	0.7	0.8	1.5	1.0	1.1	0.8	0.5	0.4	0.4	0.4	0.4	0.6	0.7	1.0	1.0	1.0	0.6	1.2	0.7

The Radio Research Laboratories, Japan

foF2

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

W 1

IONOSPHERIC DATA

Jul. 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						I3.2A	I3.6A	4.0	A	A	A	A	A	A	A	4.3	4.1	A	A					
2						3.5L	3.7	A	A	A	A	A	A	I4.5A	4.3	4.3	4.1	A	A					
3					2.7	3.3	3.7	A	A	A	A	4.4	4.4	4.4	4.3	4.2	I4.1A	I3.8A	I3.3A	A				
4						3.4	3.7	A	A	A	A	A	A	I4.5R	4.4	I4.2A	4.1	A	A					
5						3.4	3.9	I4.0A	4.2	4.3	4.3	R	A	A	A	4.3	I4.1A	I4.0A	3.4					
6						3.4	A	A	A	A	A	A	A	A	A	4.3	4.1	3.8	A					
7						U3.3L	3.9	4.0	A	A	A	4.3	4.4	4.4	4.3	4.2	4.0	3.8	A					
8					2.5	A	A	A	A	A	A	A	I4.3A	4.3	I4.2A	A	A	A	A					
9							3.7	I4.0A	A	A	A	A	A	A	A	4.2	I4.0A	3.6	3.3	A				
10						3.2	3.6	4.0	A	A	A	A	I4.5A	I4.4A	4.3	4.2	4.0	3.8	3.3					
11						I3.2A	3.7	I4.0A	I4.1A	A	A	A	A	A	A	R	4.2	A	A					
12							A	A	A	A	A	A	4.3	4.3	4.3	4.2	3.9	A	A					
13							3.7	A	A	A	A	A	I4.3A	4.4	4.3	4.2	4.1	3.9	3.4					
14						3.4	3.7	I4.0A	A	A	A	A	4.4	4.3	4.4	4.3	A	A	A					
15						3.8	A	A	A	A	A	A	A	A	A	A	4.0	A	A					
16						I3.3C	I3.7A	A	A	A	A	A	A	A	A	A	A	A	A					
17						3.0	A	A	A	A	A	R	A	I4.3A	A	A	A	A	A					
18						3.1	I3.4A	A	A	A	A	A	A	A	R	A	A	A	A					
19						3.1	I3.5A	3.8	I4.1A	I4.2A	4.2	4.2	U4.3R	I4.1A	I4.2A	4.2	I4.0A	I3.7A	A	A				
20						A	I3.8A	4.2	I4.1A	I4.3A	4.3	I4.3R	I4.3R	4.4	4.3	4.1	4.1	3.8	3.3					
21						A	A	I3.9A	I4.1A	4.2	4.3	4.4	4.3	I4.3A	I4.3R	I4.1A	4.1	I3.7A	3.4	A				
22						2.9	3.3	3.7	I4.0A	U4.2R	4.2	A	R	A	A	A	A	A	A	A				
23						2.9	3.3	I3.7A	A	A	A	R	U4.3R	I4.2A	4.1	U4.1R	I3.9A	I3.8A	3.3	A				
24						2.8	I3.2A	I3.7A	3.9	U4.1R	A	A	A	A	A	A	A	I3.5A	A	A				
25						A	A	A	A	A	A	A	A	A	A	4.1	A	C	C	C				
26							A	A	A	A	A	A	A	A	I4.1A	4.0	I3.9A	I3.6A	A					
27							A	A	A	A	4.3	A	A	A	I4.3A	4.2	I3.9A	3.6	U3.3L					
28							A	A	C	C	C	C	C	C	C	C	C	C	A					
29						3.1	3.9	3.8	A	A	A	A	A	A	A	A	I4.0A	3.6	A					
30						3.4	A	A	A	4.3	4.3	A	A	A	A	4.2	4.1	3.7	A					
31							3.6	3.9	3.9	A	A	A	A	A	4.1	R	A	A	A					
No.					2	20	20	15	8	7	7	5	11	14	16	20	21	16	9					
Median					2.6	3.2	3.7	4.0	U4.1	U4.2	4.3	4.3	U4.3	U4.4	4.3	4.2	4.1	3.8	3.3					
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

W 2

IONOSPHERIC DATA

Jul. 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					A	2.10	2.45	2.80	2.95	3.10	3.20	3.15	3.00	3.05	3.00	3.00	2.85	I 2.55A	2.10	S				
2					1.30	2.00	2.60	2.85	3.00	3.05	3.05	3.10	3.20	3.25	3.00	2.90	A	A	A	S				
3					A	2.10	2.60	2.90	2.95	3.00	3.25	3.35	3.15	I 3.10A	3.20	3.00	3.00	2.60	A	S				
4					A	A	2.50	2.90	3.05	3.15	3.15	3.10	3.05	A	A	A	2.90	A	A	S				
5					1.25	2.05	2.60	2.90	3.00	3.05	3.15	3.05	3.20	3.20	3.30	3.10	2.90	2.50	2.10	S				
6					A	1.95	2.50	2.85	3.00	3.05	3.15	3.00	3.10	3.15	3.10	3.10	2.85	2.70	2.15	S				
7					1.20	2.00	2.45	2.85	3.00	3.00	3.05	3.15	3.25	3.15	3.00	3.00	2.90	2.65	2.10	S				
8					1.25	1.75	2.30	2.60	2.90	3.00	2.95	3.25	3.20	3.00	A	A	A	A	A	S				
9					A	2.05	2.45	2.80	3.00	3.15	3.15	3.20	3.10	3.20	3.00	I 2.85A	2.60	A	A	S				
10					A	2.00	2.45	2.80	3.00	3.05	3.05	3.20	3.25	I 3.20B	3.15	3.00	2.90	2.25	2.00	S				
11					I 1.30A	1.80	2.20	2.70	2.90	2.95	3.00	I 2.95B	A	A	A	A	A	2.65	2.15	S				
12					A	1.85	2.30	2.85	2.95	3.05	3.15	3.15	3.10	3.00	I 2.95A	I 2.95A	2.85	2.55	2.10	S				
13					E	2.10	2.55	2.80	3.00	3.05	3.05	3.00	I 3.10A	I 3.20A	I 3.20A	3.10	A	A	A	A				
14					E	1.95	2.60	2.90	3.05	3.10	3.05	3.10	3.00	3.15	3.05	I 3.05A	I 2.85A	2.50	2.05	S				
15					A	2.05	2.50	2.90	2.95	3.05	3.05	3.00	2.95	I 2.95A	2.95	2.90	2.70	2.65	2.05	S				
16					E	I 1.85C	I 2.50A	2.90	2.95	3.05	3.10	3.10	3.15	3.10	3.05	2.95	I 2.80A	2.50	2.15	S				
17					1.15	2.00	2.40	2.70	2.95	3.00	3.10	3.00	A	A	A	3.15	I 2.95A	2.45	2.05	S				
18					E	1.95	2.20	2.55	2.90	3.00	3.00	3.00	A	A	A	3.10	2.85	2.45	2.05	S				
19					1.10	1.95	2.15	2.60	2.75	2.85	3.00	3.00	3.00	3.30	3.15	3.00	2.85	2.35	S	S				
20					A	1.65	2.20	2.70	2.95	3.00	3.05	3.20	3.25	3.05	I 2.95A	2.75	I 2.80A	2.75	S	S				
21					E	1.70	2.20	2.60	2.80	2.90	3.00	I 3.20A	R	A	A	I 3.10A	2.80	2.10	S	S			E	
22			E		1.15	1.50	2.15	2.50	2.80	2.95	3.00	I 2.90A	I 2.95A	2.95	I 3.00A	I 3.10A	2.85	2.50	2.00	S				
23				E	1.20	1.75	2.25	2.65	2.90	2.95	3.00	3.00	3.05	3.15	2.95	2.90	2.80	2.40	S	S				
24					E	1.80	2.20	2.55	2.95	2.95	3.00	3.00	I 3.00A	3.10	3.15	3.00	2.85	2.30	2.00	S				
25					1.10	2.00	2.15	2.50	2.80	2.95	3.00	3.05	3.05	3.00	I 2.95A	3.00	2.80	C	C	C				
26					1.15	1.90	2.25	2.70	2.95	3.00	3.10	3.10	3.00	2.95	I 3.00A	I 3.00A	2.90	2.45	S	S				
27					A	1.50	2.25	2.65	3.00	3.00	3.05	A	A	A	A	3.15	2.85	2.45	S	S				
28					A	1.90	2.20	2.70	C	C	C	C	C	C	C	C	C	C	S	S				
29					A	A	2.15	2.50	2.90	3.05	3.10	3.05	2.95	A	A	A	2.80	2.40	S	S				
30					A	A	2.25	2.80	2.95	I 2.95A	3.05	3.00	3.00	A	A	A	2.95	2.50	S	S				
31					A	C	2.25	2.70	2.90	3.05	3.10	3.05	3.05	2.90	3.00	3.05	2.85	2.35	S	S				
No.			1	1	17	27	31	31	30	30	30	29	25	22	21	25	26	24	14				1	
Median			E	E	1.15	1.95	2.30	2.70	2.95	3.00	3.05	3.05	3.05	3.10	3.00	3.00	2.85	2.50	2.10				E	
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45°23.6' N
Long. 141°41.1' E

Jul. 1963

foEs

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	6.3	3.0	5.2	7.4	3.5	4.6	14.6	3.4	4.8	5.3	8.0	7.3	5.0	6.5	6.0	7.0	3.3	5.3	10.8	6.5	6.3	7.3	6.2	7.3
2	E	E	2.3	3.0	G	G	3.5	5.3	6.3	9.3	8.5	6.8	4.2	4.5	3.6	G	3.8	3.5	4.2	12.0	6.0	3.8	8.3	5.0
3	3.3	4.3	3.6	2.8	2.2	3.0	3.7	5.0	9.3	6.3	5.0	G	G	3.8	3.5	3.5	5.0	12.0	8.0	3.2	3.8	4.3	6.3	5.3
4	3.3	3.5	2.2	F.	2.3	3.0	3.6	5.5	5.6	8.6	7.3	8.0	7.8	3.6	3.9	7.8	3.5	7.3	5.4	5.1	4.3	5.0	E	E
5	E	E	E	E	G	2.5	4.0	4.3	3.5	3.8	3.9	3.8	7.3	8.1	4.9	4.3	4.5	7.6	3.0	2.5	3.3	3.5	2.4	4.1
6	3.3	3.0	3.3	3.1	2.3	G	5.3	5.3	6.6	5.3	7.4	8.3	7.2	9.3	5.3	G	3.4	3.3	4.0	4.3	8.3	3.9	E	4.3
7	E	2.4	E	2.3	2.3	2.6	3.0	3.9	5.5	5.8	12.0	4.0	4.0	4.3	3.9	G	G	3.2	4.0	4.3	3.3	3.3	5.0	3.8
8	4.8	E	3.1	1.9	2.4	4.3	6.3	10.4	6.2	5.2	6.8	6.8	3.8	G	4.3	6.4	4.9	8.3	5.3	5.0	7.8	4.1	6.2	5.2
9	3.2	3.1	5.4	5.3	3.0	2.3	3.2	4.4	5.1	5.6	5.1	6.0	6.5	5.4	7.0	3.6	4.3	4.1	3.3	3.0	3.0	4.0	3.0	2.4
10	2.6	2.2	E	E	2.0	2.7	2.8	3.3	4.3	7.2	12.0	5.1	6.3	5.0	4.3	3.3	3.5	3.1	2.5	3.3	9.5	6.0	5.3	5.3
11	3.5	5.3	3.0	3.1	2.5	3.5	3.4	6.1	7.2	7.1	4.4	8.3	7.3	9.3	7.3	3.3	4.0	4.3	8.0	8.0	6.3	5.3	3.0M	4.3
12	7.3	6.0	6.3	4.3	3.0	3.3	5.3	5.3	6.4	7.1	5.3	9.3	5.0	3.9	3.5	3.5	G	5.1	8.5	5.3	6.0	3.1	2.8	2.6
13	3.0	3.1	2.0	E	1.2	2.5	4.0	6.5	6.6	5.0	7.8	7.0	4.8	4.0	4.0	G	4.0	3.2	6.3	10.6	9.3	4.0	5.2	6.1
14	4.3	3.0	E	2.1	2.4	G	4.0	6.0	6.3	6.3	6.3	7.6	3.7	G	3.7	4.3	5.8	9.5	6.1	11.3	4.3	5.3	5.8	7.3
15	5.0	4.3	4.3	2.3	2.8	2.3	5.1	D	D	12.3	9.0	9.5	12.1	9.3	9.0	6.8	3.3	7.2	8.3	10.3	4.3	5.3	9.3	5.1
16	3.5	4.1	6.1	3.1	1.3	C	4.1	4.5	5.3	7.2	4.3	5.4	4.9	6.0	5.9	7.0	6.4	4.3	4.3	5.4	5.0	4.5	8.3	6.0
17	5.4	3.1	2.3	3.0	G	2.8	7.2	4.8	5.6	5.8	5.9	3.9	5.1	4.4	4.3	6.6	13.3	6.3	8.8	5.4	5.1	2.4	5.1	2.8
18	2.8	5.3	2.8	4.2	3.0	2.9	3.4	5.0	4.5	5.2	8.0	5.4	5.9	5.0	3.6	4.8	8.3	8.3	8.3	5.3	4.4	5.1	3.1	4.1
19	2.5	2.4	2.4	2.4	2.1	3.0	4.3	3.8	6.5	4.3	G	3.3	G	4.3	6.3	5.6	8.0	7.1	6.5	6.5	3.5	5.1	2.4	2.5
20	2.3	E	2.1	2.8	2.3	4.8M	4.3	3.6	6.6	4.3	3.9	3.6	4.0	3.8	4.1	4.5	4.0	5.3	3.0	3.1	4.3	3.2	2.4	4.3
21	7.3	6.3	10.4	6.3	4.3	5.0	6.3	5.6	4.3	3.8	4.3	3.8	G	4.9	3.8	4.3	4.3	11.5	8.3	5.0	4.3	4.0	E	2.6
22	E	2.3	E	3.0	G	2.0	2.7	3.3	5.0	G	4.0	6.1	3.8	5.3	5.2	5.3	5.5	8.1	6.5	6.4	6.3	3.5	3.3	2.5
23	E	E	E	E	G	G	3.2	4.3	5.1	5.3	5.8	3.6	G	5.1	3.7	G	4.0	6.0	3.3	4.4	4.2	4.3	5.0	5.3
24	4.1	3.2	3.1	2.8	3.0	2.5	4.4	4.0	G	G	4.2	5.6	6.2	8.3	5.0	13.0	6.2	4.2	11.2	10.0	5.1	7.3	5.0	4.1
25	3.2	3.3	3.1	2.3	2.2	4.2	6.0	10.0	5.6	7.3	8.0	6.5	7.4	12.3	6.3	4.4	10.0	C	C	C	C	C	C	C
26	8.0	3.0	E	E	G	2.8	4.5	6.1	6.9	6.3	12.0	D	4.8	5.3	4.5	4.0	4.0	5.3	7.3	6.3	7.3	6.0	3.3	2.3
27	2.3	1.7	2.9	3.0	7.3	3.0	5.3	11.6	6.3	9.5	5.0	9.0	D	10.1	4.7	3.8	7.3	3.5	3.3	5.8	13.3	3.0	3.6	2.8
28	5.6	3.1	5.3	6.3	2.3	2.5	5.0	6.0	C	C	C	C	C	C	C	C	C	C	9.3	8.3	5.6	3.0	6.3	6.3
29	2.5	4.3	5.3	3.0	3.0	2.6	3.3	3.5	5.3	8.3	5.5	6.1	9.0	7.1	7.2	6.3	6.0	3.8	11.8	7.1	4.3	5.3	4.3	4.3
30	3.1	3.5	2.5	6.1	2.7	2.8	3.9	5.0	8.0	3.8	3.8	5.3	7.3	8.3	7.0	3.3	G	3.1	5.3	5.6	5.3	6.3	4.3	5.1
31	5.3	5.3	3.6	3.0	2.3	C	2.7	3.3	3.7	6.0	4.3	4.3	4.5	5.0	G	4.0	5.1	4.9	6.3	5.3	8.0	2.5	3.0	2.5
No.	31	31	31	31	31	29	31	31	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30
Median	3.3	3.1	2.9	3.0	2.3	2.8	4.0	5.0	5.6	5.8	5.6	6.0	5.0	5.0	4.4	4.3	4.3	5.3	6.3	5.4	5.1	4.2	4.3	4.3
U.Q.	5.0	4.3	4.3	3.1	3.0	3.2	5.1	6.0	6.6	7.2	8.0	7.6	7.3	8.1	6.0	6.3	6.0	7.8	8.3	7.1	6.3	5.3	5.8	5.3
L.Q.	2.5	2.3	2.0	2.1	1.3	2.4	3.4	3.9	5.0	5.0	4.3	4.0	4.0	4.3	3.8	3.3	3.8	3.6	4.0	4.4	4.3	3.5	3.0	2.6
Q.R.	2.5	2.0	2.3	1.0	1.7	0.8	1.7	2.1	1.6	2.2	3.7	3.6	3.3	3.8	2.2	3.0	2.2	4.2	4.3	2.7	2.0	1.8	2.8	2.7

The Radio Research Laboratories, Japan

foEs

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

IONOSPHERIC DATA

Jul. 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	A	E	A	A	2.2	A	A	G	4.3	A	A	A	A	A	4.5	3.7	G	4.1	A	A	3.2	5.2	A	A
2			E	E			G	4.2	4.6	4.3	4.6	A	E4.2R	4.3	G		3.5	4.1	3.7	4.2	4.1	2.6	4.0	E
3	E	2.6	2.3	E	1.6	G	3.5	4.8	4.2	4.4	4.5			3.6	G	G	4.7	A	4.2	2.7	2.2	E	4.7	E
4	E	E	E		1.7	2.4	3.4	5.0	5.2	A	A	A	A	E3.6R	3.5	4.5	G	A	5.0	4.7	2.8	3.3		
5						G	3.5	4.1	G	G	G	E3.8R	A	A	4.3	G	4.3	4.6	G	G	2.5	2.9	E	3.2
6	E	E	E	E	1.8		4.3	A	A	5.0	4.5	4.5	A	A	4.2		G	G	3.7	4.2	4.0	2.5		E
7		E		E	G	G	G	G	4.3	4.3	A	G	G	G	G			G	3.3	4.6	3.0	2.8	4.0	3.1
8	3.9		E	E	2.1	4.1	A	4.5	A	A	A	A	E3.8R		4.3	A	A	A	4.0	4.7	A	4.2	4.3	5.0
9	E	2.5	A	A	2.5	1.8	G	A	4.2	4.8	4.5	A	5.9	A	A	3.2	4.2	3.3	3.0	2.7	E	2.8	2.7	E
10	2.5	E			1.7	G	G	G	4.2	A	4.5	4.4	A	4.8	G	G	G	G	G	3.2	E	3.1	3.0	4.0
11	2.8	3.1	2.5	2.5	2.4	3.2	G	A	A	A	E4.4R	A	4.5	A	A	3.2	3.3	4.1	A	A	5.5	4.2	2.5	3.2
12	4.0	3.3	E	E	1.5	3.1	A	4.8	A	4.3	4.3	A	4.1	G	3.4	3.4		4.6	A	4.6	5.0	E	E	E
13	E	E	E		G	G	3.4	5.8	A	4.3	4.4	4.4	4.3	3.5	3.6		3.6	3.0	3.0	A	4.8	3.1	3.1	3.2
14	E	E		E	E		3.4	5.0	4.2	5.4	A	A	3.9		G	3.8	4.4	A	A	A	3.0	2.6	2.9	A
15	3.1	2.5	3.0	E	2.5	G	4.8	A	A	A	A	A	A	A	A	A	G	A	A	A	3.5	4.8	A	E
16	A	3.2	A	E	G	C	3.7	4.1	4.2	6.4	4.3	4.7	4.6	A	A	A	A	4.2	4.0	4.5	4.3	4.3	A	4.0
17	2.6	E	E	E		G	A	A	A	A	A	A	4.6	4.4	E4.3R	A	A	A	A	4.1	A	E	3.5	2.7
18	E	2.3	E	A	2.2	2.7	3.4	A	A	A	A	A	A	A	A	A	A	A	A	5.0	3.3	4.1	2.6	3.1
19	2.2	E	E	E	G	G	4.0	G	A	A		G		4.2	A	G	A	A	3.7	A	2.6	3.4	E	E
20	E		E	E	G	A	3.9	G	A	4.3	G	E3.6R	A	G	3.5	4.0	3.2	G	3.0	G	3.6	2.2	E	3.8
21	A	A	2.1	E	2.2	A	4.1	4.4	4.2	G	G	3.6		4.4	E3.8R	A	G	A	G	3.1	E	3.2		E
22		E		E		G	G	G	A		G	A	A	A	A	A	A	A	3.4	A	4.6	2.6	E	E
23							G	4.0	4.8	A	A	G		A	G		3.9	A	3.0	4.1	4.0	2.1	2.8	3.4
24	2.5	E	E	E	2.2	G	A	4.0			A	A	A	A	A	A	A	4.0	3.3	A	2.4	4.2	A	2.5
25	E	E	E	E	2.0	A	4.3	A	5.0	A	A	A	A	A	4.3	G	4.2	C	C	C	C	C	C	C
26	E	E				2.6	4.6	A	A	A	A	A	A	A	4.2	3.4	A	A	A	A	E	A	E	E
27	E	E	E	E	2.0	G	A	A	A	A	G	A	A	A	4.4	G	A	3.1	3.0	A	A	E	3.0	E
28	3.7	2.2	E	E	1.8	G	A	A	C	C	C	C	C	C	C	C	C	C	A	4.2	4.8	E	A	A
29	E	E	3.1	1.8	2.0	2.0	2.8	G	4.2	A	A	A	A	A	A	A	A	3.3	A	A	3.0	2.7	E	2.5
30	2.4	2.2	E	E	2.1	2.4	3.8	4.5	A	3.5	G	4.5	A	4.8	A	3.2		G	4.1	5.3	4.6	4.0	3.3	A
31	A	3.1	2.0	E	1.9	C	G	G	3.6	5.2	A	4.3	4.3	A		E4.0R	4.2	4.4	4.1	4.2	3.0	E	E	E
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foEs

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

The Radio Research Laboratories, Japan

W 5

13

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E4.90S	E	E	E	E	1.20	1.90	2.10	2.00	2.00	2.20	2.50	2.05	2.50	2.10	2.00	2.00	1.85	E2.00S	E4.90S	E4.90S	E2.00S	E2.00S	E2.00S
2	E4.90S	E	E4.50S	E	E	E	1.90	1.90	2.00	2.00	2.20	2.20	2.50	2.50	2.60	2.00	2.05	1.90	1.80	E2.00S	E2.00S	E4.80S	E4.85S	E4.85S
3	E4.90S	E	E	E	E	1.20	1.85	2.15	2.15	2.20	2.35	2.20	2.15	2.10	2.70	2.00	2.00	1.85	1.80	E2.00S	E2.00S	E4.90S	E4.70S	E4.90S
4	E2.00S	E4.20S	E	E	E	E	2.00	2.00	2.05	2.25	2.15	2.10	2.10	2.80	2.50	2.20	2.00	2.00	1.90	E2.00S	E2.00S	E4.90S	E4.60S	E4.90S
5	E4.90S	E	E	E	E	E	1.80	2.20	2.30	2.00	2.60	2.00	2.05	2.60	2.00	2.15	2.60	1.80	1.90	E1.95S	E2.00S	E4.80S	E4.90S	E2.00S
6	E4.80S	E	E	E	E	1.20	1.85	2.00	2.20	2.10	2.50	2.60	2.50	2.00	2.00	2.10	2.00	2.00	E2.00S	E4.90S	E4.90S	E2.00S	E4.85S	E4.70S
7	E2.00S	E4.80S	E	E	E	E	1.85	2.00	2.15	2.15	2.15	2.50	2.50	2.60	2.50	2.50	2.00	2.00	1.95	E2.10S	E4.70S	E4.70S	E4.70S	E4.85S
8	E4.70S	E	E	E	E	1.15	1.80	1.95	2.00	2.70	2.00	2.60	2.10	2.50	2.30	2.70	2.30	1.80	1.80	E4.90S	E4.85S	E4.85S	E4.65S	E2.00S
9	E4.80S	E	E	E	E	1.20	1.80	2.00	2.10	2.60	2.50	2.40	2.50	2.20	2.30	2.40	2.00	1.85	E4.80S	E4.85S	E2.00S	E4.90S	E4.80S	E4.90S
10	E4.80S	E4.90S	E	E	E	1.15	1.80	2.00	2.15	2.20	2.30	2.20	2.50	3.20	2.25	2.15	2.20	1.85	1.85	E4.70S	E4.80S	E4.70S	E4.70S	E4.85S
11	E4.90S	E	E	E	E	E	1.85	1.85	2.15	2.20	2.50	3.00	2.70	2.20	2.05	2.00	2.00	1.85	1.85	E2.00S	E4.80S	E4.80S	E4.70S	E4.70S
12	E4.90S	E	E	E	E	E	1.85	2.00	2.00	2.00	2.20	2.15	2.10	2.15	2.60	2.10	2.00	1.85	1.85	E2.00S	E4.80S	E4.85S	E4.90S	E4.80S
13	E4.85S	E	E	E	E	1.70	1.85	2.00	2.20	2.50	2.15	2.10	2.80	2.50	2.40	2.15	2.15	1.90	1.85	E4.80S	E4.90S	E4.90S	E4.85S	E4.90S
14	E4.90S	E4.60S	E	E	E	E	2.00	2.00	2.00	2.10	2.65	2.05	2.45	2.25	2.10	2.20	2.00	1.90	E4.90S	E2.20S	E4.90S	E2.00S	E4.90S	E4.90S
15	E4.85S	E	E	E	E	E	1.95	2.00	2.00	2.15	2.00	2.20	2.65	2.90	2.70	2.10	2.15	2.00	2.00	E2.20S	E4.60S	E4.90S	E2.00S	E4.80S
16	E4.95S	E	E	E	E	C	2.15	2.15	2.20	2.15	2.50	2.20	2.40	2.40	2.50	2.00	2.15	1.90	1.80	E4.85S	E4.90S	E4.70S	E4.80S	E4.80S
17	E2.00S	E4.40S	E	E	E	E	2.00	2.10	2.60	2.60	2.25	2.70	2.30	2.50	2.20	2.25	2.20	1.90	1.95	E4.90S	E2.00S	E2.00S	E4.90S	E2.00S
18	E4.80S	E4.50S	E	E	E	E	2.00	2.00	2.00	2.20	2.20	2.20	2.15	2.15	2.50	2.00	2.05	1.90	E2.00S	E4.95S	E2.00S	E4.85S	E2.00S	E2.00S
19	E4.90S	E4.60S	E	E	E	E	1.90	2.00	2.00	2.10	2.60	2.40	2.50	2.40	2.00	2.10	2.00	2.00	E4.90S	E2.00S	E4.90S	E4.90S	E4.90S	E2.00S
20	E4.85S	E4.50S	E	E	E	E4.40S	2.00	2.00	2.10	2.15	2.50	2.50	2.15	2.20	2.60	2.10	2.20	2.00	E2.05S	E2.00S	E4.80S	E4.85S	E4.90S	E4.70S
21	E4.50S	E4.50S	E	E	E	E	2.00	1.90	2.15	2.50	2.30	2.10	2.60	2.15	2.15	2.00	2.15	1.85	E4.90S	E4.90S	E4.90S	E2.00S	E4.80S	E2.00S
22	E2.00S	E	E	E	E	E	E2.00S	2.00	2.00	2.45	2.00	2.20	2.60	2.35	2.50	2.15	2.15	2.00	1.85	E4.90S	E4.85S	E4.85S	E4.70S	E4.90S
23	E2.00S	E4.50S	E	E	E	E	1.90	2.00	2.15	2.15	2.15	2.15	2.40	2.20	2.10	2.15	2.00	1.90	E2.00S	E2.00S	E2.00S	E4.90S	E2.00S	E2.00S
24	E4.90S	E4.70S	E	E	E	1.10	1.90	2.00	2.15	2.40	2.15	2.50	2.50	2.10	2.15	2.10	2.00	1.80	E4.85S	E2.00S	E4.85S	E4.90S	E2.00S	E4.80S
25	E4.90S	E4.50S	E	E	E	1.10	2.00	2.00	2.00	2.05	2.15	2.60	2.10	2.80	2.50	2.00	2.15	C	C	C	C	C	C	C
26	E2.00S	E	E	E	E	1.10	2.00	2.15	2.10	2.20	2.15	2.20	2.45	2.40	2.95	2.45	2.20	2.00	E4.90S	E4.90S	E4.95S	E2.00S	E4.85S	E2.00S
27	E4.85S	E	E	E	E	E	1.85	1.90	2.05	2.00	2.20	2.10	2.50	2.10	2.00	2.00	2.00	2.00	E4.90S	E2.00S	E2.00S	E4.80S	E2.00S	E4.90S
28	E4.60S	E	E	E	E	1.15	2.00	2.00	C	C	C	C	C	C	C	C	C	C	E2.00S	E4.90S	E4.80S	E4.90S	E2.00S	E4.90S
29	E4.85S	E	E	E	E	E4.80S	1.85	2.00	2.10	2.00	2.15	2.20	2.50	2.10	2.40	2.10	2.10	1.90	E2.00S	E4.90S	E2.00S	E4.90S	E4.90S	E2.00S
30	E4.85S	E4.70S	E	E	E	E4.50S	E2.00S	2.00	2.15	2.50	2.50	2.15	2.20	2.05	2.20	2.20	2.00	1.85	E2.00S	E2.00S	E2.00S	E2.00S	E4.80S	E4.90S
31	E4.85S	E4.70S	E	E	E	C	E4.90S	2.00	2.05	2.05	2.20	2.40	2.10	2.15	2.70	2.20	2.00	2.00	E2.10S	E2.00S	E4.95S	E2.00S	E4.90S	E4.90S
No.	31	17	30	31	31	26	29	31	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30
Median	E4.90	E	E	E	E	E	1.90	2.00	2.10	2.15	2.20	2.20	2.45	2.30	2.35	2.10	2.00	1.90	E4.90	E2.00	E4.90	E4.90	E4.90	E4.90
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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	A	SF	A	A	SF	E3.05A	E2.80A	2.55	2.95	A	A	A	E2.70A	E2.70A	2.95	2.95	3.00	3.00	E3.00A	E3.05A	2.95	2.90	A	A
2	SF	E2.90SF	3.00	3.25	3.00	3.05	2.80F	3.05	3.15	3.00	2.85	E2.80A	3.10	2.80	3.00	2.95	3.05	3.15	3.25	3.05	3.05	2.95	E2.95SF	3.10F
3	3.05SF	2.85	U3.20S	E2.85SF	U2.85S	3.05	2.95	2.90	3.55	3.30	3.15	3.00	2.60	3.15	3.00	2.95	3.05	E3.00A	3.00	3.05	3.15	3.00	U3.00SF	U3.25SF
4	E3.15FS	2.95	E3.00SF	U2.95S	2.85H	2.95	3.05	3.05	3.35	A	A	A	A	2.85	3.10	3.00	3.05	E3.00A	2.95	2.90	3.20	3.30	3.00	2.85
5	2.90	E2.85F	E2.80SF	E3.00SF	3.15	2.85	2.80	2.70	3.05	2.80H	3.50	2.45	E2.80A	E2.65A	2.75	2.80	2.75	2.95	2.95	2.95	3.15	3.00	2.75	2.85
6	2.75	SF	SF	SF	U3.15SF	3.25	3.15	E3.05A	E3.00A	2.95	2.85	3.25	E3.15A	E3.10A	3.00	2.50	2.80	2.90	2.95	3.15	2.95	U3.00S	3.00	2.85
7	U2.85S	2.90	U2.85S	U2.90SF	E3.00SF	3.05	2.95	3.10	3.50	3.00	E3.15A	2.80	2.80	2.95	3.05	3.05	3.00	3.00	2.95	2.80	2.90	3.10	2.95	2.85
8	U3.00SF	2.85	2.90F	2.90F	E2.85FS	2.90	E3.00A	2.95	A	A	A	A	2.90	3.20	2.85	E3.05A	E3.10A	E2.80A	3.15	2.75	E2.95A	2.80F	U3.00SF	E3.15SF
9	U2.75SF	E2.90SF	E2.85A	E3.05A	3.20	3.00	3.20	E2.65A	2.90	3.05	2.90	E2.85A	3.10	E2.85A	E2.65A	2.80	2.75	3.00	2.90	3.05	3.00	2.85	2.85	2.75
10	2.95	3.00	2.95	2.90	U3.00S	2.80	3.25	3.20	3.35	E3.05A	2.80	2.65	E2.35S	2.90	2.85	2.80	2.75	3.10	3.00	3.15	3.00	U2.90SF	U3.00SF	E3.00SF
11	3.00F	2.85F	E2.90SF	E2.95SF	3.00	3.20	3.15	E3.05A	E3.05A	E3.05A	3.05	E3.15A	2.80	A	A	R	2.75	2.90	E3.00A	E2.95A	U3.15S	3.15	3.05	2.90
12	E2.85SF	U2.80S	E2.90SF	E2.90SF	U3.00SF	3.20	E3.05A	3.05	E3.15A	3.25	3.25	E3.10A	2.90	3.25	2.90	3.10	3.05	3.05	E3.10A	3.10	E3.05S	3.05	3.15	3.00
13	3.10	3.05	2.95	U2.95S	U2.85SH	3.15	3.00	3.60	E3.05A	3.05	3.20	3.15	3.10	3.00	3.15	3.00	3.20	3.05	2.90	E3.00A	2.80	SF	FS	SF
14	SF	3.00	3.10	3.00	2.95	3.15	3.15	3.10	3.30	3.30	E2.95A	E2.60A	2.85	3.25	3.15	3.20	2.90	A	A	A	3.00	2.85	U3.00S	E3.00A
15	U2.90S	2.90	U3.00S	E2.90SF	2.85F	3.00	3.10	E3.25A	E3.20A	A	A	A	A	A	A	A	3.35	A	A	A	2.95	E3.00SF	E2.95A	2.90F
16	SF	SF	A	SF	SF	C	3.00F	2.90	2.90	3.15	3.10	U3.25R	3.20	A	A	A	E3.05A	3.00	3.10	2.90	2.95	3.10	E2.80A	SF
17	SF	SF	SF	SF	2.75H	2.90	A	A	A	A	A	E3.05R	2.85	3.15	2.50	A	A	A	A	3.10	E3.05S	2.90	2.70	3.05
18	2.80	2.95	U2.90SF	E2.75A	E2.85SF	2.90	2.70	E2.90A	E2.95R	A	A	A	A	A	R	A	A	A	A	3.05	2.75	U2.85S	3.10	2.95F
19	2.90	2.95	3.05	E2.75F	E2.85F	E2.80F	2.95	3.00	E2.85A	E2.75A	2.50	3.15	E2.80R	2.45	E2.75A	2.80	E2.90A	E3.00A	3.15	E2.95A	2.90	3.05	2.95	3.00
20	2.90	2.95	2.95	2.95	3.05	E3.00A	3.40	3.10	E3.40A	3.20	2.85	3.05	E2.75R	2.85	3.10	3.05	2.95	U3.15S	3.20	3.05	3.05	2.95	3.00	3.10
21	E3.00A	E2.85A	E2.80FS	E2.80F	E2.95F	E2.95A	3.35	3.40	3.55	3.00	2.85	2.90	3.00	3.05	3.05	E2.80R	2.95	E2.85A	2.75	2.90	U2.95S	U2.95S	2.85	3.00
22	2.60	2.80F	E2.95SF	U2.90S	U3.00S	2.65	2.75	W	E2.90A	E2.85R	3.20	A	R	A	A	A	A	A	2.95	E2.95A	2.85	E2.95FS	U3.20F	U2.95S
23	E2.80SF	U2.70FS	E2.80F	2.90F	2.80	2.70	2.75	3.30	3.15	A	A	R	E2.65R	E2.65A	E2.60R	E2.70R	2.75	E2.75A	2.90	3.00	2.90	U3.20S	E2.90SF	3.25
24	2.80	U2.80S	E2.80SF	U2.85SF	U2.70F	2.65	E2.65A	2.70	3.10	R	A	A	A	A	A	A	A	3.20	3.20	E3.05A	3.00	2.95S	E2.95A	E2.95SF
25	2.85	2.95	3.05	E3.00FS	E2.90F	E2.90A	2.65F	E3.00A	3.35	A	A	A	A	A	2.75	2.90	2.95	C	C	C	C	C	C	C
26	SF	SF	SF	SF	SF	2.80H	2.80	A	A	A	A	A	A	E2.85A	3.05	3.20	E2.75R	E2.75A	E2.90A	E3.05A	E3.10S	A	SF	SF
27	SF	SF	3.05F	3.15F	2.90	2.90H	A	A	A	A	3.20	A	A	A	3.10	3.00	E3.10A	3.20	3.05	E3.15A	A	SF	SF	U2.85S
28	E2.70SF	E2.80SF	E2.90SF	E2.85SF	3.00F	3.00H	A	A	C	C	C	C	C	C	C	C	C	C	A	3.15	2.80	2.85	E2.80A	E2.90A
29	U2.70S	E2.85FS	2.85	3.00	2.95	3.05	2.95	3.45	3.30	A	A	A	A	A	A	A	E3.15A	3.35	E3.15A	E2.95A	2.85	E3.00SF	E3.15SF	3.00
30	U3.00S	U3.00S	U2.95SF	E2.95SF	E3.05SF	E2.95SF	2.95	3.10	E3.10A	3.15	2.85	2.65	E2.85A	3.00	E2.95A	3.00	3.00	2.95	2.85	3.10	3.00	2.90	E2.80SF	E2.75A
31	E2.70A	2.90	E3.00SF	2.95F	E3.15F	E3.00C	2.90	2.80	2.80	2.85	E3.00R	2.65	2.70	E2.55A	2.45	E2.85R	2.65	2.95	3.00	3.05	2.95	2.95	F	F
No.	24	25	26	26	28	30	28	27	26	18	19	18	21	21	23	22	26	24	25	28	29	27	25	25
Median	U2.90	2.90	U2.95	U2.90	U2.95	3.00	2.95	3.05	3.10	3.05	3.00	2.95	2.85	2.95	2.95	2.95	3.00	3.00	3.00	3.05	2.95	2.95	U2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F2 Sweep 1.0 Mc to 18.0 Mc in 4.0 sec in automatic operation

W 7

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						[3]3.25A	[3]3.65A	4.00	A	A	A	A	A	A	A	3.70	3.80	A	A					
2						3.50	3.60	A	A	A	A	A	A	A	3.80	3.75	3.70	A	A					
3					3.35	3.40	A	A	A	A	A	4.10	3.90	3.90	4.00	3.70	A	A	A	A				
4						3.65	A	A	A	A	A	A	A	[3]3.75R	3.65	[3]3.60A	3.50	A	A					
5						3.30	[3]3.30A	[3]3.55A	3.80	3.75	4.00	R	A	A	A	3.55	[3]3.60A	[3]3.50A	3.45					
6						3.60	A	A	A	A	A	A	A	A	A	3.65	3.40	3.40	A					
7						[U]3.65L	3.45	3.80	A	A	A	4.15	3.90	3.70	3.65	3.80	3.70	3.50	A					
8					3.40	A	A	A	A	A	A	A	[4]4.00A	3.95	[3]3.85A	A	A	A	A					
9							3.80	[3]3.60A	A	A	A	A	A	A	A	3.60	A	A	A	A				
10						3.25	3.85	3.75	A	A	A	A	[3]3.85A	[3]3.65A	3.55	3.60	3.75	3.70	3.90					
11						A	3.80	[3]3.65A	[3]3.95A	A	A	A	A	A	A	R	3.70	A	A					
12							A	A	A	A	A	A	A	3.95	3.75	3.55	3.80	A	A					
13							A	A	A	A	A	A	A	3.90	3.75	3.80	3.50	3.60	A					
14						3.45	[3]3.65A	[3]3.80A	A	A	A	A	3.90	4.20	3.65	3.55	A	A	A					
15						3.05	A	A	A	A	A	A	A	A	A	A	3.50	A	A					
16						C	A	A	A	A	A	A	A	A	A	A	A	A	A					
17						3.40	A	A	A	A	A	R	A	[3]3.85A	A	A	A	A	A					
18						A	[3]3.65A	A	A	A	A	A	A	A	R	A	A	A	A					
19						3.55	[3]3.55A	3.80	[3]3.80A	[3]3.90A	4.00	3.85	[U]3.90R	[3]3.75A	[3]3.80A	3.60	[3]3.65A	A	A	A				
20						A	[3]3.60A	3.65	[3]3.80A	[3]3.90A	3.90	[4]4.05R	[4]4.00R	3.65	3.75	[3]3.75A	3.65	3.70	[3]3.80A					
21						A	A	[3]3.80A	[4]4.10A	4.05	4.05	3.85	3.95	[4]4.00A	[3]3.90R	[3]3.85A	3.60	[3]3.55A	3.30	A				
22						3.30	3.45	3.80	[3]3.70A	[U]3.80R	3.85	A	A	A	A	A	A	A	A	A				
23						3.45	3.60	[3]3.65A	A	A	A	R	[U]3.95R	[4]4.00A	3.90	[U]3.65R	[3]3.50A	[3]3.30A	A	A				
24						3.45	[3]3.45A	[3]3.55A	3.85	[U]3.85R	A	A	A	A	A	A	A	A	A	A				
25						A	A	A	A	A	A	A	A	A	A	3.80	A	C	C	C				
26							A	A	A	A	A	A	A	A	[3]3.80A	3.75	[3]3.70A	[3]3.35A	A					
27							A	A	A	A	3.90	A	A	A	[3]3.80A	3.65	[3]3.75A	3.60	A					
28							A	A	C	C	C	C	C	C	C	C	C	C	A					
29						3.55	3.55	3.75	A	A	A	A	A	A	A	A	[3]3.75A	A	A					
30						3.25	A	A	A	3.95	4.00	A	A	A	A	3.65	3.60	3.55	A					
31							3.35	3.60	A	A	A	A	A	A	3.75	R	A	A	A					
No.					2	17	16	15	7	7	7	5	9	13	16	20	19	11	4					
Median					3.40	3.45	3.60	3.75	[U]3.80	[U]3.90	4.00	4.05	[U]3.90	3.90	3.80	3.65	3.65	3.55	3.60					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

Jul. 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						[3]340A	[4]410A	480	300	A	A	A	[4]430A	445	400	400	360	350	A					
2						300	355	300	315	330	415	[4]430A	360	430	375	380	345	340	290					
3					320	320	320	320	235	290	300	400	470	330	360	360	360	[3]355A	320	365				
4						375	310	350	300	A	A	A	A	405	350	350	360	A	A					
5						350	400	410	325	340	270	525	[5]520A	[4]475A	425	400	395	320	300					
6						280	300	[3]370A	[3]355A	400	385	300	[3]325A	[3]350A	375	465	385	325	295					
7						300	350	290	270	370	[3]325A	445	435	385	355	345	350	315	305					
8					320	[3]365A	[3]330A	335	A	A	A	A	450	330	425	[3]370A	[3]375A	[4]405A	375					
9							300	[4]460A	375	330	380	[3]390A	[3]380A	[4]495A	[4]460A	415	350	315	305	260				
10						370	390	300	290	[4]400A	[5]550A	435	[4]400A	415	400	320	310	290	300					
11						305	295	[3]360A	[3]355A	[3]335A	350	[3]345A	440	A	A	R	380	360	A					
12							A	350	[3]320A	285	300	[3]360A	370	315	405	345	330	[3]305A	[3]310A					
13							300	[3]290A	[3]355A	360	310	325	325	365	345	370	320	345	330					
14						300	290	280	275	300	[3]380A	[4]475A	410	320	320	350	400	A	A					
15						370	305	[3]285A	[3]285A	A	A	A	A	A	A	A	310	A	A					
16						[3]320C	310	315	290	[3]300A	285	305	310	A	A	A	A	330	275					
17						390	A	A	A	A	A	[3]365R	415	330	500	A	A	A	A					
18						330	445	[3]390A	[3]385A	A	A	A	A	A	R	A	A	A	A					
19						430	[3]340A	365	[4]430A	[4]460A	505	350	[4]455R	560	[4]445A	420	[4]415A	[3]365A	300	A				
20						A	275	335	[3]295A	340	420	360	[4]435R	370	345	345	370	325	270					
21						A	295	275	270	375	415	400	365	370	360	[4]415A	360	[3]350A	330	290				
22						400	400	W	A	R	330	A	R	A	A	A	A	A	335	A				
23						420	390	300	A	A	A	R	[4]480R	[5]550A	[4]475R	[4]460R	420	[4]420A	335	305				
24						450	[4]445A	430	345	R	A	A	A	A	A	A	A	310	290	A				
25						A	A	A	A	A	A	A	A	A	430	370	345	C	C	C				
26							[3]360A	A	A	A	A	A	A	[4]400A	365	340	[4]475A	[4]415A	A					
27							A	A	A	A	315	A	A	A	320	360	[3]335A	300	300					
28							A	A	C	C	C	C	C	C	C	C	C	C	A					
29						320	360	270	290	A	A	A	A	A	A	A	[3]330A	295	A					
30						400	320	305	[3]310A	320	430	460	[3]395A	330	[3]365A	365	340	340	300					
31							350	390	400	[3]345A	[3]375A	460	450	[4]465A	600	[4]400R	[4]400A	385	[3]325A					
No.					2	21	26	26	23	17	19	18	21	21	23	22	25	23	20	4				
Median					320	350	335	335	310	340	375	395	415	390	375	370	360	340	300	300				
U.Q.																								
L.Q.																								
Q.R.																								

h'F2 | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 9

IONOSPHERIC DATA

Jul. 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	I300A	290	I335A	I310A	300	I265A	I245A	225	A	A	A	A	A	A	A	250	225	A	A	A	I275A	A	A	A
2	255	250	265	250	250	250	240	A	A	A	A	A	A	A	220	225	240	A	A	A	I270A	275A	I255A	260
3	260	270A	265	290	260	260	A	A	A	A	A	210	215	200	200	225	A	A	A	I250A	245	250	I250A	245
4	260	305	260	235	260H	240	A	A	A	A	A	A	A	I205A	210	I235A	260	A	A	A	245A	I265A	275	290
5	300	275	260	275	240	270	I250A	I250A	240	225	210	A	A	A	A	270	I245A	I245A	275	260	245A	280A	300	I310A
6	320	320	300	265	275	250	A	A	A	A	A	A	A	A	A	230	260	250	A	A	A	275A	250	270
7	300	290	285	270	275	255	240	245	A	A	A	210	230	235	230	230	225	230	I250A	I260A	I265A	250A	I265A	270
8	I280A	270	305	270	A	A	A	A	A	A	A	A	I210A	195	I210A	A	A	A	A	A	A	310	315	I290A
9	265	300A	I300A	I265A	265	250	225	I250A	A	A	A	A	A	A	A	220	A	A	A	A	250	295A	290A	295
10	290	255	220	265	280	265	235	250	A	A	A	A	I205A	I215A	225	240	240	225	230	I250A	260	I260A	I265A	I270A
11	290A	I295A	300A	260A	280	I255A	240	I240A	I220A	A	A	A	A	A	A	225	230	A	A	A	A	I250A	260A	I275A
12	I290A	I270A	315	300	275	A	A	A	A	A	A	A	A	210	220	230	230	A	A	A	A	255	255	250
13	260	280	250	250	275H	235	A	A	A	A	A	A	A	190	230	230	260	230	A	A	A	A	I260A	I255A
14	285	260	255	265	260	245	I240A	I230A	A	A	A	A	215	190	250	260	A	A	A	A	A	290A	A	A
15	A	280A	I290A	275	300A	250	A	A	A	A	A	A	A	A	A	A	260	A	A	A	A	A	A	265
16	I295A	I295A	I285A	255	260	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
17	300A	250	255	310	295H	275	A	A	A	A	A	A	A	I230A	A	A	A	A	A	A	A	265	I300A	270A
18	295	280	260	I320A	340	I275A	I245A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	260A	I265A
19	285	290	270	350	370	250	I250A	250	I215A	I210A	200	220	215	I240A	I250A	240	I250A	A	A	A	250A	I255A	270	275
20	260	290	270	295	280	I260A	I235A	235	I250A	I230A	250	I210A	I220A	235	220	I230A	250	255	I235A	270	I265A	260	265	A
21	A	A	315	305	300	I305A	I265A	I240A	I215A	205	205	220	210	I200A	I200A	I245A	270	I260A	250	I270A	255	I265A	250	250
22	275	310	270	300	295	260	250	230	I250A	215	215	A	A	A	A	A	A	A	A	A	A	275A	250	285
23	310	285	280	280	300	255	265	I250A	A	A	A	200	210	I205A	230	240	I255A	I260A	I265A	I280A	I270A	240	275A	I270A
24	320A	295	290	290	330	265	I275A	235	220	A	A	A	A	A	A	A	A	A	A	A	280	I300A	I325A	370A
25	330	300	275	250	350A	A	A	A	A	A	A	A	A	A	A	240	A	C	C	C	C	C	C	C
26	265	300	275	260	260	I250AH	A	A	A	A	A	A	A	I210A	I230A	250	I235A	I265A	I265A	I255A	250	I280A	320	275
27	280	300	280	270	320	255H	A	A	A	A	195	A	A	A	I220A	250	I230A	250A	A	A	A	295	I300A	280
28	I315A	295	260	310	285	270H	A	A	C	C	C	C	C	C	C	C	C	C	A	A	A	290	I290A	I290A
29	275	315	I300A	290	290	220	240	220	A	A	A	A	A	A	A	A	I230A	A	A	A	A	260A	250	290
30	270	265	260	295	310	260	A	A	A	210	220	A	A	A	A	225	225	235	A	A	A	I270A	I315A	I325A
31	I315A	I300A	290	270	275	I260C	285	250	A	A	A	A	A	A	240	A	A	A	A	A	I260A	240	315	310
No.	29	30	31	31	30	27	17	15	7	6	7	6	9	14	16	21	19	11	7	8	15	25	26	26
Median	290	290	275	275	280	255	245	240	U220	210	210	210	215	U210	220	235	240	250	U250	U260	260	265	270	275
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

W 10

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan

W 11

19

IONOSPHERIC DATA

Jul. 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	f5	f3	f4	f4	l2	C2	C4	C	c	c	C2	C	C	C2	C	c	C	l2	C3	C4	f2	f4	f3	f4
2			f	f2			h	C2	c	C2	C2	C3	C	C	C		l	l2	l2	C2	f3	f2	f2	f2
3	f2	f2	f2	f	l	h	c	c	C	C	C			l	C	c	h	C4	C2l2	l	f	f	f3	f
4	f2	f2	f		l	l	c	C	C2	C2	C2	C2	C2	l	l	l	C	C2l2	C2l2	C3	f2	f3		
5						h	C	C	C	C	C	C	C2	C2	h	h	h	C2	h	C	f	f2	f2	f3
6	f2	f2	f2	f2	l		C2	C2	C2	C2	C	C	C2	C2	C		C	C	C	C	f4	f3		f2
7		f		f	C	C	C	C	C2	C2	C5	C	C	C	C			h	C3	C4	f	f2	f5	f2
8	f5		f3	f	h	C2	C2	C2	C2	C2	C	C2	C		l	l	l2	l2	C2l	C3	f3	f2f	f5	f5
9	f2	f2	f5	f3	l2	hl	C	C	C	C	C	C2	C2	C	C	l	C	l2	l2	C	f	f3	f2	f
10	f2	f			lh	h	h	C	C	C3	C2	C	C	C	C	C	C	C	C	C2	f2	f3	f3	f2
11	f2	f2	f2	f2	l	C	C	C2	C2	C2	C	C2	l3	l3	l	l2	lh	C	C4	C3	f5	f2	f	f3
12	f2	f2	f2	f2	l	C	C	C2	C2	C	C	C2	C	C	l	l		C	C3	C3	f2	f2	f2	f2
13	f	f2	f2		l	C	C	C3	C2	C2	C	C	l	l	l		l	l2	Cl	C2l2	ff	f3	ff	f2
14	f2	f		f2	l		C	C2	C	C2	C2	C2	C		C	hl	Cl	C2	C3	C5	f2	f2	f2	f4
15	f2	f2	f2	f	l	l	C2	C4	C2	C2	C2	C2	C3	l2	C2	C2	C	C6	C3	C4	f3	f3	f4	f2
16	f2	f2	f3	f2	C		Cl	C	C	C2	C	C	C	C	C2	C3	C2l2	C2	C2	C3	f2	f	f3	ff2
17	f	f2	f	f2		h	C3	C2	C2	C2	C2	C	l2	l	lh	C2	C2l	C3	C5	C3	f3	f	f3	f
18	f	f2	f	f5	C	C	C2	C2	C2	C	C4	C2	l2	l	l	h	C4	C3	C4	C2	f2	f2	f2	f2
19	f2	f	f	f2	h	C	C2	C	C2	C		C		h	C	C	C2	C4	C3	C3	f	f2	f	f
20	f		f	f	l	C2	C	C	C2	C	C	C	C	C	l	C	l	C2	C	lC	f3	f	f2	f4
21	f4	f5	f2	ff2	C	C2	C2	C2	C2	C	C	l		l	l	hl	C	C3	C	C2	f	f2		f
22		f		f2		C	C	C	C		C	l3	l	C2	h2l	hl	C3	C3	C2	C3	f4	f2	f2	f
23							C	C2	C2	C2	C2	C		C	C		h	C2	C2	C3	f5	f2	f2	f3
24	f2	f2	f	f2	l2	h	C2	C			C	C	l2	C	h	C2	C	C2	C3	C2	f3	f3	f3	f3
25	f2	f2	f2	f	C	C2	C2	C2	C2	C3	C2	C2	C2	C2	l	h	C							
26	f2	f2				h	C2	C3	C2	C2	C2	C2	C	C2	l	Cl	h2	C2	C2	C3	f2	f2	f	f
27	f	f	f	f2	C2l	C	C2	C2	C2	C3	C	l2	l2	l2	l	h	l3	h	C	C2	f2	f2	f2	f
28	ff2	f2	f	f2	l	h	C3	C2											C3	C2	f3	f	f2	f3
29	f	f2	f3	f2	l2	l	C	C	C	C2	C2	C2	C2	l2	l2	l	C	C	C2	C2	f2	f3	f2	f3
30	f2	f2	f2	f2	l2	l	C	C	C3	l	C	C2	l2	l	l2	l		h	C2	C3	f2	f3	f4	f4
31	f2	f2	f2	f3	l2		h	C	C	C3	C	C	C2	C		h	C2	C2	C2	C3	f	f	f	f
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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	R^S	A	R^S	A	4.1^R	4.8^{RS}	5.5	$I_{5.3}{}^A$	5.1	$I_{5.2}{}^A$	5.2	5.0	$I_{5.2}{}^R$	5.4	5.8^R	5.3	5.3	5.3	$I_{5.4}{}^A$	5.4	6.0^F	$I_{5.6}{}^A$	$I_{5.5}{}^A$	A
2	R^S	A	A	$I_{4.2}{}^{RF}$	3.7	4.4	5.5	7.1^R	$J_{6.4}{}^R$	5.3	5.8	5.3	$I_{5.1}{}^R$	$I_{5.4}{}^A$	5.7	6.0	5.8	$I_{5.8}{}^A$	5.6	5.2^{RS}	5.8^R	5.9	A	A
3	A	A	A	R^S	A	4.7^S	5.8^F	6.7	8.4	6.7	R^S	A	A	5.7	5.1	5.2	5.2	5.6	6.2	$I_{6.5}{}^R$	$I_{7.0}{}^R$	$U_{4.6}{}^R$	R	R
4	A	R	R	3.9	3.6	4.5	6.1	6.9	7.6	$I_{5.8}{}^A$	5.6	$I_{5.4}{}^A$	5.4	5.7	$I_{5.7}{}^A$	5.8	A	A	5.6	6.8	RS	F^S	R^S	R^S
5	R^S	R^S	R^F	3.7^F	$I_{4.0}{}^{RF}$	4.4	4.2^H	6.0^H	$I_{6.8}{}^A$	$U_{6.3}{}^{RH}$	A	A	$U_{5.2}{}^R$	5.7	5.7	6.3^R	6.4	$I_{7.2}{}^A$	7.0	$I_{7.3}{}^{RS}$	6.7^R	R^S	A	A
6	R^S	R^S	4.0^R	3.8	$I_{4.0}{}^{RS}$	$U_{4.7}{}^R$	5.4	A	A	5.9^S	6.0	6.0	6.4	5.8	5.8^R	5.9	6.6	7.8^{RS}	7.0	7.0^{RS}	6.6^{RS}	R^S	R^S	R^S
7	R	R^S	4.6	4.4	$I_{4.6}{}^R$	4.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	7.2^{RS}	$I_{6.2}{}^{RS}$	5.1^S
8	R^F	R^F	F^S	R^F	R^F	5.5	$I_{4.9}{}^A$	5.4	A	A	A	A	A	A	A	5.0	$I_{4.9}{}^A$	4.7	5.1	5.9	6.9	$I_{6.1}{}^R{}_S$	A	A
9	A	A	S	F^S	F^S	4.2^S	4.5	$I_{5.0}{}^A$	A	A	5.3	5.9	6.6	5.7	5.8^R	$I_{6.1}{}^A$	7.0^S	6.5	$I_{6.2}{}^A$	$I_{6.6}{}^A$	5.8^{RS}	5.8	5.6	R^S
10	A^S	$J_{4.4}{}^{RS}$	$U_{4.4}{}^{RS}$	$J_{4.3}{}^{RS}$	$J_{4.0}{}^{RS}$	4.8^{RS}	5.0^V	6.3	5.6^R	$U_{5.1}{}^R$	5.4	5.7	$I_{5.6}{}^A$	$I_{5.5}{}^A$	5.9	6.7	7.3^{RS}	7.4^{RS}	$J_{7.7}{}^{RS}$	7.3^{RS}	7.3^{RS}	$I_{6.7}{}^{RS}$	5.8	5.3^R
11	$J_{5.4}{}^R$	$I_{5.2}{}^{RS}$	5.1	$I_{5.0}{}^{RS}$	4.9^{RS}	5.1^R	5.7	$I_{5.2}{}^A$	$I_{5.2}{}^A$	$I_{5.3}{}^A$	$I_{5.3}{}^A$	5.4^R	A	A	R	5.1^R	5.2^R	5.8	6.8	$I_{7.2}{}^A$	$I_{6.8}{}^{AS}$	$I_{6.0}{}^A$	$I_{4.8}{}^{AS}$	$I_{4.6}{}^{RS}$
12	$I_{4.6}{}^{RS}$	$I_{4.6}{}^{RS}$	$I_{4.4}{}^A$	$U_{3.9}{}^{RS}$	$I_{4.2}{}^{RF}{}_H$	4.3^{RS}	$I_{4.8}{}^A$	4.9^R	6.4^F	7.0	$I_{6.1}{}^A$	5.2	5.3	5.5	$I_{5.6}{}^R$	5.5	$I_{5.8}{}^C$	5.9^H	6.1	7.2	R^S	F^S	F^S	R^S
13	R^S	F^S	4.2^{FS}	4.1^S	$I_{4.0}{}^F$	4.4	5.5	5.8	5.2	6.2^V	7.9	$I_{5.7}{}^A$	$I_{5.7}{}^A$	5.7	$I_{5.4}{}^A$	$I_{5.6}{}^A$	5.8	$U_{6.3}{}^R$	C	C	6.8^H	5.7	R^S	R^S
14	F^S	R^S	R^S	R^S	$I_{4.2}{}^{RF}$	$I_{4.5}{}^{RS}$	5.4^S	$I_{6.3}{}^A$	$I_{5.9}{}^A$	6.1^H	5.5	5.4	$J_{5.4}{}^R$	$I_{5.8}{}^A$	6.1	5.2	$I_{5.2}{}^A$	5.4	$I_{5.5}{}^A$	6.0	5.9^S	5.7^S	R^S	A
15	A	A	A	F^S	A	4.1	5.6^S	6.4^F	6.5^F	A	A	A	A	$I_{6.6}{}^A$	$I_{5.6}{}^A$	5.1	5.0^R	$I_{5.2}{}^C$	$I_{6.0}{}^C$	7.0	$I_{7.0}{}^{RS}$	$I_{6.4}{}^A$	R^S	A
16	A	A	A	A	A	4.5^S	$I_{5.2}{}^A$	$I_{6.6}{}^A$	$I_{7.4}{}^A$	7.6	A	A	A	5.7	5.0	5.2	6.1	6.1	6.4	6.6	$I_{6.6}{}^{RS}$	$I_{6.4}{}^{RS}$	A	A
17	A	A	R^S	$I_{4.0}{}^{FS}$	$I_{3.4}{}^F$	A	A	A	A	A	A	A	5.5	$I_{5.6}{}^A$	5.3	$I_{5.4}{}^A$	5.9	6.4	6.3	A	R^S	R^S	$I_{6.0}{}^{RF}$	$I_{5.8}{}^{RF}$
18	A	R^F	F^S	R^S	F^S	R^S	R^F	5.5	$I_{4.9}{}^R$	4.8	$I_{4.7}{}^A$	4.9^R	$J_{4.9}{}^R$	R	A	R	A	A	A	A	5.7	R^S	R^F	4.1^{RH}
19	3.7^S	$I_{3.7}{}^A$	$I_{3.4}{}^A$	3.3	2.9	3.6^S	5.5	5.1	4.5	A	R	R	R	R	$I_{5.2}{}^R$	$I_{5.2}{}^R$	5.3	5.5	6.1	7.1	6.4	5.4	4.8^R	$I_{4.6}{}^R$
20	$I_{4.6}{}^R$	3.9	3.9	$I_{3.9}{}^{RF}$	$I_{3.7}{}^R$	4.0	$J_{4.9}{}^R$	6.1	5.9^R	5.3	R	A	A	A	5.9	5.7	$I_{5.6}{}^A$	$I_{5.4}{}^A$	5.7	6.6	6.0^R	5.8	$I_{5.0}{}^{RS}$	R^S
21	A	R^F	A	A	$I_{3.6}{}^A$	$I_{4.2}{}^A$	$I_{5.0}{}^C$	5.8	5.4^R	$I_{5.1}{}^A$	$I_{5.2}{}^R$	$I_{5.3}{}^R$	$I_{5.5}{}^R$	$I_{5.4}{}^R$	$I_{5.2}{}^R$	5.5	$I_{5.7}{}^A$	6.3	$I_{7.3}{}^A$	A	R^S	R^S	R^F	$I_{6.1}{}^{RF}$
22	6.1	$I_{6.2}{}^{RF}$	$I_{5.9}{}^{RF}$	6.0	$I_{5.0}{}^{RF}$	4.4	4.2	$I_{4.6}{}^R$	4.8	R	R	R	R	R	R	R	A	A	4.9^R	$I_{5.6}{}^A$	A	A	$I_{5.2}{}^{RS}$	R^S
23	A	R^F	3.4	R^F	F	3.3	4.6	$I_{5.4}{}^A$	$I_{4.6}{}^R$	G	R	R	R	R	$I_{4.9}{}^R$	$I_{4.7}{}^R$	4.7	A	A	$I_{6.3}{}^A$	$I_{7.0}{}^{RS}$	6.6	A	A
24	A	3.8^S	$I_{4.1}{}^{FS}$	$I_{3.7}{}^F$	$I_{3.4}{}^F$	3.6^S	4.1	4.9	R	A	A	C	C	C	C	C	C	C	$I_{5.4}{}^A$	4.9^S	$I_{4.8}{}^C$	$I_{4.6}{}^S$	4.6^S	$I_{4.0}{}^{RS}$
25	4.0	4.1^S	$I_{4.0}{}^C$	F^S	F	3.9^S	$I_{5.4}{}^C$	6.6^S	$I_{6.4}{}^C$	$I_{5.9}{}^C$	R	C	5.6^R	5.5	$I_{6.0}{}^C$	6.4	6.8	7.9^S	$U_{7.1}{}^{RS}$	6.6	$I_{6.3}{}^{RS}$	$I_{4.6}{}^{RS}$	$I_{4.6}{}^{RS}$	$I_{4.6}{}^A$
26	$I_{4.6}{}^{RS}$	$I_{4.3}{}^{RS}$	$I_{4.1}{}^{RF}$	$I_{4.0}{}^{RS}$	$I_{4.0}{}^{FS}$	4.1^S	$I_{5.1}{}^A$	$I_{6.2}{}^R$	$I_{6.8}{}^R$	$I_{6.4}{}^A$	6.0	A	R	5.6	5.5	5.4	$I_{5.2}{}^A$	5.0	5.4	6.1^S	6.5	5.1^{RS}	A	A
27	A	R^S	A	A	$I_{3.3}{}^{RF}$	$I_{3.8}{}^A$	$I_{4.7}{}^R$	$I_{6.0}{}^A$	$I_{5.5}{}^R$	$I_{5.4}{}^A$	$I_{5.4}{}^A$	$I_{5.2}{}^R$	5.4	5.8	6.2	5.8	5.6	5.8	5.8	6.3	$I_{5.6}{}^{RS}$	3.9^S	$I_{3.9}{}^{RS}$	R^S
28	A	R^S	R^S	3.7	$I_{3.8}{}^{FS}$	$J_{3.9}{}^{RS}$	4.9	5.2	6.0	$I_{5.2}{}^A$	5.1	5.2	5.3	5.7	5.3	$I_{5.4}{}^A$	5.6	5.6	5.9	5.9	5.1	5.0	R^F	A
29	4.3^S	A	A	A	F^S	A	5.0	6.5	6.1^H	A	A	C	C	A	$I_{5.6}{}^A$	$I_{5.8}{}^A$	5.5	$I_{5.3}{}^{RS}$	5.1	4.7^S	5.3	R^S	R^S	R^S
30	$I_{4.6}{}^{RS}$	4.4^R	4.0	4.1	4.0	4.1	5.6	7.0^S	6.0	6.3	6.0	$I_{5.6}{}^A$	6.0	6.9	7.0	5.4	5.5	6.5	6.7	7.2^S	R^S	A	A	A
31	$I_{3.9}{}^{RS}$	3.7^S	4.1	3.6	$I_{3.6}{}^{RF}$	3.9	4.2	5.5	5.6^R	$I_{5.1}{}^A$	A	A	A	A	A	A	A	A	A	A	A	R^S	R^S	R^S
No.	10	11	15	18	22	28	28	28	25	22	16	15	17	20	24	26	25	24	26	25	23	20	12	9
Median	$U_{4.6}$	4.3	4.1	4.0	$U_{4.0}$	4.4	5.0	5.9	5.9	5.6	5.4	5.4	5.4	5.7	5.6	5.4	5.6	5.8	6.0	6.6	6.4	5.8	$U_{5.1}$	$U_{4.6}$
U.Q.	4.6	4.6	4.4	4.2	4.1	4.6	5.5	6.4	6.4	6.3	6.0	5.7	5.6	5.8	5.8	5.8	6.0	6.4	6.7	7.0	6.8	6.2	5.7	5.6
L.Q.	4.0	3.8	4.0	3.7	3.6	4.0	4.8	5.2	5.2	5.2	5.2	5.2	5.2	5.5	5.3	5.2	5.2	5.4	5.5	5.9	5.8	5.0	4.7	4.4
Q.R.	0.6	0.8	0.4	0.5	0.5	0.6	0.7	1.2	1.2	1.1	0.8	0.5	0.4	0.3	0.5	0.6	0.8	1.0	1.2	1.1	1.0	1.2	1.0	1.2

foF2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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						L	3.8^{L}	A	A	$I_{4.4}{}^{A}$	4.4^{R}	A	R	A	$I_{4.2}{}^{A}$	4.2^{R}	A	R	A					
2						L	3.8	$I_{4.1}{}^{A}$	$I_{4.3}{}^{A}$	$I_{4.5}{}^{A}$	A	A	R	A	4.4	A	A	A	A					
3						3.4^{L}	$I_{3.8}{}^{A}$	$I_{4.1}{}^{A}$	4.3	4.4^{H}	R^{S}	A	A	A	A	4.3	4.2	3.8^{R}	A					
4						L	A	A	A	A	4.6	$I_{4.7}{}^{A}$	4.7	A	A	A	A	A	A					
5						A	4.0	$I_{4.0}{}^{A}$	$I_{4.2}{}^{A}$	$I_{4.4}{}^{A}$	$I_{4.4}{}^{A}$	A	A	A	R	A	A	A	A					
6							L	A	A	A	$I_{4.3}{}^{R}$	A	A	4.4	$I_{4.4}{}^{A}$	$I_{4.2}{}^{A}$	3.8^{R}	3.8	L					
7						L	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						L	A	A	A	A	A	A	A	A	A	A	A	3.8	A					
9							L	A	A	A	A	A	4.3	$I_{4.4}{}^{A}$	4.3^{R}	A	A	A						
10						L	3.9^{L}	$I_{3.9}{}^{A}$	4.3^{L}	$I_{4.4}{}^{A}$	A	A	A	A	A	$I_{4.2}{}^{R}$	4.1	4.0	L					
11						L	3.8^{L}	$I_{3.9}{}^{A}$	$I_{4.1}{}^{A}$	A	A	R	A	A	A	R	4.0^{R}	A	A					
12						L	A	3.9^{R}	A	A	A	A	$I_{4.4}{}^{A}$	$I_{4.4}{}^{R}$	$I_{4.4}{}^{L}$	4.2^{H}	C	A	A					
13						L	3.7	$I_{3.9}{}^{A}$	4.1	4.3	4.3^{H}	A	A	4.4^{H}	A	A	A	A	C					
14						L	A	A	A	4.4	4.5	$I_{4.5}{}^{A}$	$I_{4.5}{}^{A}$	$I_{4.4}{}^{A}$	4.2	A	A	A	A					
15						3.2^{L}	A	A	4.2	A	A	A	A	A	A	A	A	C	C					
16						L	A	A	A	A	A	A	A	A	4.2	4.2	$I_{4.2}{}^{A}$	3.8	L					
17						A	A	A	A	A	A	A	A	A	A	A	A	3.8^{L}	A					
18						A	A	A	4.1	4.2	$I_{4.2}{}^{A}$	4.2	R	A	A	A	A	A	A					
19						$I_{2.8}{}^{A}$	$I_{3.4}{}^{A}$	3.9	4.2	$I_{4.2}{}^{A}$	4.2	B	A	R	$I_{4.3}{}^{R}$	$I_{4.2}{}^{R}$	4.1	$I_{3.8}{}^{A}$	L					
20						A	A	4.0	$I_{4.1}{}^{R}$	$I_{4.3}{}^{A}$	R	A	A	R	$I_{4.2}{}^{A}$	A	A	A	A					
21						A	C	A	4.2	$I_{4.2}{}^{A}$	4.4^{R}	4.4	$I_{4.4}{}^{R}$	4.5	4.3^{R}	$I_{4.2}{}^{A}$	A	A	A					
22						2.8	$I_{3.2}{}^{A}$	$I_{3.8}{}^{A}$	4.0^{H}	$I_{4.4}{}^{R}$	$I_{4.2}{}^{R}$	R	R	R	4.1^{R}	A	A	A	A					
23						2.7	$I_{3.3}{}^{A}$	$I_{3.8}{}^{A}$	4.0	4.1	$I_{4.2}{}^{A}$	4.3	R	A	$I_{4.2}{}^{RH}$	4.1	A	A	A					
24						2.6	3.1	$I_{3.7}{}^{A}$	A	A	A	C	C	C	C	C	C	C	A					
25						3.0	$I_{3.6}{}^{C}$	3.9	C	C	R^{H}	C	A	4.3^{R}	$I_{4.2}{}^{C}$	4.1	$I_{4.2}{}^{A}$	$I_{3.8}{}^{A}$	L					
26							A	A	A	A	A	A	$I_{4.3}{}^{A}$	4.2	$I_{4.3}{}^{A}$	A	A	3.8	A					
27							3.7^{H}	$I_{3.9}{}^{A}$	$I_{4.2}{}^{A}$	$I_{4.3}{}^{A}$	$I_{4.4}{}^{A}$	4.2	4.3	4.5	4.1	4.3	4.1^{L}	$I_{3.6}{}^{A}$	A					
28							L	$I_{4.0}{}^{A}$	4.1	$I_{4.2}{}^{A}$	4.2	$I_{4.4}{}^{R}$	A	A	A	A	A	L	L					
29							3.7^{L}	4.0	A	A	A	C	C	A	A	A	A	A	A					
30						3.1^{L}	3.6	4.0	4.2	A	A	A	A	4.3^{R}	4.2^{H}	4.3^{H}	4.1	3.7	A					
31							3.4	A	A	A	A	A	A	A	A	A	A	A						
No.						8	16	17	16	15	13	7	7	10	16	12	9	11						
Median						2.9	3.7	$U_{3.9}$	4.2	$U_{4.3}$	4.3	4.4	$U_{4.4}$	4.4	$U_{4.2}$	4.2	4.1	3.8						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1 | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 2

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	R	A	A	A	A	A	B					
2						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
3						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
4						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
5						A	A	A	A	A	A	A	R	R^S	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7						A	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9						A	A	A	A	A	A	R	A	A	A	A	A	A						
10						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
12						A	A	A	A	A	A	A	R	R	A	A	C	A	A					
13						A	A	A	A	A	A	A	A	A	A	A	A	A	C					
14						A	A	A	A	A	R	A	A	A	A	A	2.90	A	A					
15						A	A	A	A	A	A	A	A	A	A	A	A	C	C					
16						A	A	A	A	A	A	A	A	A	A	3.10	$I_{2.80}^R$	2.50	A					
17						A	A	A	A	A	R	R	R	R	A	R	A	A	A					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						A	A	A	A	A	R	B	B	B	R	R	R	A	A					
20						A	A	A	A	R	R	R	R	R	R	A	A	A	A					
21						B	C	A	A	R	R	R	R	R	R	R	R	A	A					
22						B	A	A	A	A	R	A	R	R	R	R	$I_{2.90}^R$	2.55	A					
23						A	A	A	R	A	B	R	R	B	R	R	2.85	A	A					
24						B	A	A	A	A	A	C	C	C	C	C	C	C	A					
25						B	C	A	C	C	R	C	B	B	C	A	A	A	B					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
27						A	A	A	A	A	A	A	A	A	A	A	2.90	A	A					
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
29						A	A	A	A	A	A	C	C	A	R	A	3.00	A	B					
30						A	A	A	A	A	A	A	A	A	3.40	$I_{3.20}^A$	3.00	A	A					
31						E	A	A	A	A	A	A	A	A	A	A	A	A	A					
No.						1									1	2	7	2						
Median						E									3.40	$U_{3.15}$	2.90	2.50						
U.Q.																								
L.Q.																								
Q.R.																								

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

Jul. 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	J6.0	J6.0	J3.8	J3.8	J2.1	2.7	3.2	J6.0	J4.6	J5.0	3.8	J6.0	4.3	J4.6	J5.2	J4.3	J8.5	J5.1	J10.9	J7.3	J6.1	J6.1	J6.1	J7.3S
2	J3.7	J6.3	J7.3	J2.8	J4.9	2.7	3.2	J5.3	J7.1	J8.7	J5.5	J7.8	J3.9	J6.2	3.6	J6.3	J6.2	J8.4	J4.3	J8.5Y	J5.0	J3.8	J8.3	J8.9
3	J8.0	J7.3	J6.0	J5.9	J6.4	J3.0	J6.0	J6.5	J3.8	J3.8	3.7	J9.9Y	J8.3	J8.3	J8.3Y	J3.6	J3.8	J3.8	J3.6	J3.0	J3.0	J7.9	J3.9	J5.0
4	J5.8	J5.0	J5.8Y	J2.4	J3.6	J2.5	J4.3	J5.8	J5.4	J8.5	J6.1	J8.0	J7.7	J6.1	J8.4	J7.9	J6.6	J8.4	J3.9	2.5	J3.1	J3.0	J4.3	J2.8
5	J2.9	J2.9	J2.4	J2.5	J3.0	J3.6	3.2	J5.0	J8.8	J7.3	J5.9	J8.6	J4.5	J6.0	3.5	J6.5	J6.1	J12.5	J6.1	J2.8	J3.0	J4.4S	J6.0	J6.0Y
6	J3.0	J3.2	J5.0	J4.9	J3.8	J3.2	3.8	J8.3	J7.3	J7.5	J4.4	J7.8	4.6	J6.0	J6.3	J4.9	J5.0	J3.9	J3.1	J4.5	J2.8	J4.0	J6.1	J6.0Y
7	J2.9	J2.9	J2.8	J2.8	E	J2.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J6.0	J6.3	J6.0
8	J2.5	J5.6	J3.8	J3.8	J6.1	J2.9	J6.0	J6.0	J12.3	J13.3	J5.9	J5.0	J6.5	J6.3	J5.3	J4.1	J5.3	3.2	J3.9	J3.8	J6.0	J6.1	J6.4	J6.0
9	J5.1	J3.8	J7.1	J2.5	J2.6	J2.5	J3.4	J5.1	J7.4	J6.1	3.5	J3.8	4.2	J6.0	J3.6	J6.5	J5.7	J5.0	J6.5	J6.3	J2.8	J4.1S	J2.5S	J5.1
10	J5.0	J5.7	J3.1S	J2.5	J1.7	J3.0	J3.8	J7.3	3.7	J3.8	J7.5	J5.8	J6.8	J7.1	J3.8	3.9	J3.7	J3.5	2.8	E	J2.8	J1.9S	2.0	J2.8S
11	J4.0	J3.5S	J2.7	J3.8	J2.8	J2.9	3.7	J6.1	J8.0	J7.1	J7.1	4.2	J10.9	J8.8	J4.0	J3.8	3.2	3.9	J5.5	J7.5	J7.2S	J6.1	J3.8	J2.2
12	J2.5	J4.4	J5.1S	J3.8	J3.8	J2.9	J5.1	J5.7	J6.4	J6.3	J7.5	4.5	J4.2	4.1	J5.8	3.6	C	J4.0	J8.3	J10.2Y	J8.8Y	J2.9	J6.0	J5.5
13	J3.6	J2.0	J4.4	J2.9	2.3	2.5	J3.4	J7.0	J4.2	J6.4Y	4.0	J6.7	J6.3	4.1	J7.0	J7.5	J6.6	J5.5	C	C	J5.7	J2.9	J3.5	J3.8
14	J3.6	J3.9	J5.7	J5.4	J3.4	J2.9	J5.4	J7.4	J8.4	3.8	4.0	J4.5	J5.1	J7.5	J7.3	J5.9	J7.4	J7.5	J5.5	J4.5	J5.9	J6.3	J 5.8	J6.5
15	J7.5	J6.5	J6.0	J4.3	J6.5	J4.3	J4.5	J8.3	J4.9	J8.8	J8.9	J9.6	J7.4	J9.3	J6.8	J6.3	J4.5	C	C	J6.1	J6.4	J6.7	J5.8	J5.8
16	J7.9	J7.4	J8.9	J6.5	J7.2	J3.0	J5.3	J7.5	J11.3	J7.2	J10.1	J6.5	J7.5	J6.5	J3.3	4.0	4.7	3.5	J7.2	J5.7	J6.4	J5.0	J7.2	J6.1
17	J5.4	J6.4	J2.8	J3.7	J4.4	J4.3	J9.2	J10.9	J11.4	J10.4	J5.6	J8.0	J5.8	J6.6	J5.8	J11.8	J6.4	J4.3	J6.3	J8.3	J4.6	J3.2	J3.5	J3.8
18	J6.0	J3.8	J5.5	J6.8	J3.8	J4.3	J6.5	J6.0	3.7	J4.3	J5.5	4.1	J3.9	4.2	J6.0	4.2	J6.9	J8.0	J7.8	J7.4	J5.5	J4.9	J6.0	J3.0
19	J4.3	J4.7	J3.8	J3.3	J3.0	J3.3	J5.0	3.2	J3.8	J13.5Y	4.0	5.6	4.5	3.7	G	4.1	3.6	4.2	2.7	J5.5	J3.2	2.5	J3.3	J4.6
20	J3.8	J3.4	J2.0	J3.2	J3.8	J4.3	J4.9	3.6	4.0	J4.5	4.0	J6.3Y	J7.5	J7.4	4.4	4.5	J11.4Y	J6.0	J5.6	J4.6	J5.6	J3.3	J2.6	J4.0
21	J4.5	J3.3	J3.8	J5.6	J4.5	J4.8	C	J4.0	4.1	J6.3	G	G	G	G	4.0	4.1	J7.3	J8.6	J10.7Y	J7.5	J6.3	J5.5	J3.9	J2.8
22	J3.6	J6.6	J2.2	J3.1	J2.5	2.3	J3.8	J3.8	3.0	3.9	G	4.2	3.4	4.0	3.9	4.2	J5.0	J5.6	J4.5	J5.8	J7.5	J5.1	J3.5	J3.7
23	J3.9	J2.7	J2.4	J1.8	2.2	2.4	J3.6	J4.5	J3.8	4.0	4.5	G	4.2	4.2	3.5	3.5	4.0	J5.0	J5.8	J6.4	J6.5	J5.8	J5.9	J4.6
24	J6.7	J5.3	J2.9	J3.6	J2.3	2.1	J3.1	J6.3	3.9	J7.5	J7.6	C	C	C	C	C	C	C	J6.8	J2.0	C	2.1	J3.1	J1.8
25	2.3	2.1	J3.0	J5.5	J1.9	J2.4	C	3.9	C	C	3.6	C	J6.5Y	4.1	C	3.8	J7.2	J6.3	2.5	E	2.1	J3.8	J2.5	J5.3
26	J3.1	J3.5	J3.9	J3.1	J2.8	2.5	J5.0	J14.5	J8.8	J17.9Y	J10.2	J7.0	4.6	3.9	J7.0	J5.1	J7.3	J4.0	J3.2	J3.9	J2.8	J2.9	J4.3	J6.0
27	J7.8	J4.8	J3.9	J3.5	J3.5	J6.5	J9.8	J7.2	J4.0	J5.8	J7.0	3.8	4.6	3.4	3.9	3.6	G	J5.0	J3.8	J2.8	E	2.3	J2.5	J3.0
28	J6.3	J3.9	J3.8	J2.8	J2.5	2.3	J3.3	J4.8	J5.3	J5.0	J5.1	J5.0	J6.0	J8.3	J5.6	J8.8	J6.9	J5.0	J3.8	J2.4	J4.3	J2.5	J3.4	J5.1
29	J3.9	J3.9	J5.5	J5.1	J2.5	J5.9	2.7	J4.3	J5.6	J6.4	J5.2	C	C	J6.0	J7.3	J8.4	J7.5	J4.0	J5.0	J8.6	J5.1	J4.0	J7.8	J3.5
30	J4.3	J3.8	J3.2	J3.9	J3.3	J4.0	3.0	J6.1	J10.3	J10.3	J8.3	J6.6	J8.5	J5.0	G	3.5	3.4	3.2	J3.6	J5.2	J3.0	J5.7	J6.3	J6.0
31	J5.0	J5.8	J2.9	2.2	J1.8	2.0	2.9	J4.1	4.5	J4.9	J5.5	J6.3	J5.0	J5.0	J5.5	J5.6	J5.1	J6.4	J6.4	J6.5	J6.1	J6.0	J2.5	J2.9
No.	31	31	31	31	31	31	28	30	29	29	30	27	28	29	28	29	28	28	28	29	29	31	31	31
Median	4.3	3.9	3.8	3.6	3.0	2.9	3.8	6.0	5.3	6.4	5.5	6.0	5.0	6.0	5.2	4.3	5.9	5.0	5.2	5.5	5.1	4.1	4.3	5.0
U.Q.	6.0	5.8	5.5	4.9	3.8	4.0	5.2	7.2	8.2	8.6	7.1	7.8	7.1	6.8	6.6	6.4	7.0	6.4	6.4	7.4	6.2	6.0	6.1	6.0
L.Q.	3.6	3.4	2.9	2.8	2.3	2.5	3.2	4.5	4.0	4.7	4.0	4.2	4.2	4.1	3.7	3.8	4.2	4.0	3.7	2.9	3.0	2.9	3.3	3.0
Q.R.	2.4	2.4	2.6	2.1	1.5	1.5	2.0	2.7	4.2	3.9	3.1	3.6	2.9	2.7	2.9	2.6	2.8	2.4	2.7	4.5	3.2	3.1	2.8	3.0

The Radio Research Laboratories, Japan

foEs

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

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.0	A	A	A	1.8	2.0	2.8	A	4.4	A	3.7	4.5	4.2	$U_{4.6}$	$U_{5.2}^{R}$	3.3	5.0	2.8	A	3.9	2.0	A	A	A
2	2.3	A	A	1.8	2.4	2.0	3.0	4.8	5.0	4.7	$U_{5.5}^{R}$	5.2	$U_{3.9}^{R}$	A	3.5	4.4	4.3	A	$E_{4.3}^{R}$	4.3	$U_{5.0}^{R}$	$E_{3.8}^{R}$	A	A
3	A	A	A	3.0	A	2.1	4.3	4.9	3.3	3.6	$E_{3.7}^{RS}$	A	A	5.3	4.5	3.6	3.5	3.4	$E_{3.6}^{R}$	2.5	2.6	2.5	$F_{3.9}^{R}$	$E_{5.0}^{R}$
4	A	1.8	1.9	1.8	2.0	2.1	4.3	5.6	4.8	A	4.2	A	4.1	5.2	A	5.5	A	A	$E_{3.9}^{R}$	2.4	2.6	1.8	1.8	2.5
5	2.1	1.8	1.8	1.8	1.8	$E_{3.6}^{RS}$	3.1	4.7	A	4.9	A	A	$U_{4.5}^{R}$	5.2	3.5	5.2	5.1	A	5.1	1.8	3.0	2.9	A	A
6	2.3	2.3	2.0	1.7	1.7	2.8	3.1	A	A	5.7	3.8	5.2	4.6	4.0	5.5	4.5	3.5	2.7	3.0	$E_{4.5}^{R}$	2.7	5.1	2.8	1.9
7	1.7	1.7	1.7	2.0		2.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	4.3	5.2	3.0
8	1.8	4.0	2.3	3.5	4.7	2.4	A	5.0	A	A	A	A	A	A	A	$E_{4.1}^{R}$	A	2.8	3.5	3.5	$U_{6.0}^{R}$	5.0	A	A
9	A	A	E	E	E	2.0	3.2	A	A	A	$E_{3.5}^{R}$	$E_{3.8}^{R}$	4.2	5.3	$E_{3.6}^{R}$	A	4.7	4.8	A	A	$E_{2.8}^{R}$	2.9^{S}	2.5	2.3
10	A^{S}	$U_{2.6}^{S}$	1.8	1.7	E	2.5	2.8	5.7	3.4	$U_{3.8}^{R}$	4.4	5.0	A	A	$E_{3.8}^{R}$	3.5	3.7	3.1	2.3		1.8	1.8	1.7	2.1
11	1.8	3.0^{AS}	1.7	2.6	1.7	2.1	3.2	A	A	A	A	4.2	A	A	A	3.7	3.2	3.8	5.3	A	A	A	A	2.2
12	2.1	3.4	A	3.0	2.2	2.4	A	3.2	6.0	5.3	A	$E_{4.5}^{R}$	$E_{4.2}^{R}$	$E_{4.1}^{R}$	3.6	3.6	C	3.9	5.3	5.4	3.0	1.8	3.9	4.8
13	3.3	E	1.7	1.7	E	2.0	2.9	5.4	3.4	3.5	4.0	A	A	3.6	A	A	4.9	5.0	C	C	4.9	2.5	3.0	$E_{3.8}^{R}$
14	1.8	3.4	3.6	3.1	2.0	2.5	4.6	A	A	3.8	3.8	$E_{4.5}^{R}$	$E_{5.2}^{R}$	A	3.8	4.3	A	5.0	A	4.3	4.4	3.0	4.7	A
15	A	A	A	3.0	A	2.5	4.0	5.1	3.7	A	A	A	A	A	A	4.3	$U_{4.5}^{R}$	C	C	4.3	6.3	A	5.3	A
16	A	A	A	A	A	2.1	A	A	A	5.7	A	A	A	5.2	$E_{3.3}^{R}$	3.9	4.5	3.1	3.3	4.0	5.2	3.4	A	A
17	A	A	2.8	E	E	A	A	A	A	A	A	A	5.0	A	4.3	A	5.2	3.4	5.2	A	3.5	2.8	$E_{3.5}^{RS}$	3.8
18	A	2.3	1.8	2.4	1.7	4.0	5.0	4.0	3.4	3.9	A	3.8	$U_{3.9}^{R}$	$E_{4.2}^{R}$	A	$E_{4.2}^{R}$	A	A	A	A	5.0	$E_{4.9}^{RS}$	3.3	1.7
19	3.2	A	A	2.0	E	3.2	4.3	3.1	3.5	A	3.9	$E_{5.6}^{R}$	$E_{4.5}^{R}$	$E_{3.7}^{R}$		$E_{4.1}^{R}$	3.5	4.2	$E_{2.7}^{R}$	5.5	2.5	2.0	$E_{3.3}^{R}$	1.7
20	2.0	1.7	1.9	1.8	1.7	3.0	$E_{4.9}^{R}$	3.4	$U_{4.0}^{R}$	$E_{4.5}^{R}$	$E_{4.0}^{R}$	A	A	A	$U_{4.4}^{R}$	$E_{4.5}^{R}$	A	A	3.9	4.5	5.4	$E_{3.3}^{R}$	2.0	3.5
21	A	2.5	A	A	A	A	C	$U_{4.0}^{R}$	3.8	A					3.9	$E_{4.1}^{R}$	A	4.5	A	A	3.2	4.0	3.0	1.8
22	1.8	2.5	E	1.7	E	2.0	3.4	$F_{3.8}^{R}$	$U_{3.0}^{R}$	3.9		$E_{4.2}^{R}$	$E_{3.4}^{R}$	$F_{4.0}^{R}$	3.7	$E_{4.2}^{R}$	A	A	3.8	A	A	A	3.0	1.8
23	A	1.7	1.8	1.8	1.7	2.0	3.5	A	3.4	3.6	$E_{4.5}^{R}$		4.0	$E_{4.2}^{R}$	$U_{3.5}^{R}$	3.5	4.0	A	A	A	5.3	4.5	A	A
24	A	2.0	1.8	2.2	E	1.8	2.7	4.3	$E_{3.9}^{R}$	A	A	C	C	C	C	C	C	C	A	1.7	C	E	1.8	E
25	1.8	1.7	2.4	E	E	1.9	C	3.3	C	C	$U_{3.6}^{R}$	C	5.2	3.6	C	3.6	5.5	5.9	2.3		1.7	2.4	2.0	A
26	2.5	1.7	1.8	2.9	1.8	2.3	A	5.5	5.1	A	5.5	A	$E_{4.6}^{R}$	$U_{3.9}^{R}$	5.2	4.4	A	3.6	$U_{3.2}^{R}$	$E_{3.9}^{RS}$	2.5	2.3	A	A
27	A	2.1	A	A	2.1	A	3.0	A	$E_{4.0}^{R}$	A	A	3.5	3.6	3.4	3.4	3.6		4.2	3.6	2.8		E	2.0	2.3
28	A	3.1	2.5	2.3	1.7	1.9	3.0	4.0	3.7	A	4.0	3.8	4.5	4.7	4.9	A	5.0	2.7	3.4	2.4	2.6	2.3	2.4	A
29	2.5	A	A	A	2.0	A	2.7	2.8	4.8	A	A	C	C	A	A	A	4.6	3.5	3.7	2.4	1.8	3.3	A	2.8
30	3.0	2.5	2.5	3.0	3.0	2.0	2.6	3.3	3.5	5.1	5.0	A	5.4	3.8		3.4	G	3.1	$U_{3.6}^{R}$	4.0	2.6	A	A	A
31	3.0	1.7	2.8	1.7	1.7	1.8	2.7	$U_{4.1}^{R}$	4.2	A	A	A	A	A	A	A	A	A	A	A	A	1.8	1.7	1.8
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bE_s

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Akita

Lat. 39°43.5' N
Long. 140°08.2' E

Jul. 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	1.70	1.70	1.75	1.70	1.75	1.65	1.70	1.70	1.75	1.75	1.80	1.80	1.85	2.00	1.75	1.70	1.75	1.75	1.80	1.75	1.70	1.70	1.65	1.70
2	1.70	1.70	1.65	1.75	1.75	1.70	1.70	1.70	1.80	1.85	1.75	1.90	2.00	1.85	1.95	1.80	1.80	1.75	1.75	1.75	1.75	1.75	1.75	1.70
3	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.75	1.90	1.90	1.80	2.05	1.80	1.80	1.80	1.75	1.75	1.80	1.80	1.75	1.70	1.70
4	1.75	1.70	1.75	1.75	1.80	1.70	1.80	1.75	1.80	1.80	2.00	2.00	2.00	2.00	1.80	1.80	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70
5	1.70	1.70	1.70	1.75	1.70	1.65	1.75	1.70	1.70	1.75	1.80	1.80	1.95	1.90	1.85	1.85	1.75	1.70	1.75	1.75	1.70	1.75	1.75	1.70
6	1.70	1.70	1.65	1.65	1.70	1.65	1.70	1.70	1.75	1.75	1.75	1.85	1.80	1.80	2.00	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70
7	1.70	E	1.70	1.70	1.70	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.70	1.70	1.70
8	1.70	1.70	1.65	1.70	1.70	1.65	1.70	1.70	1.75	1.75	E 2.50 C	1.80	1.95	2.00	1.80	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.70	1.70
9	1.65	E	E	E	E	1.65	1.70	1.65	1.75	1.80	1.90	2.00	1.75 S	1.95	1.90	1.80	1.80	1.75	1.75	1.70	1.65	1.70	1.70	1.65
10	1.75 S	1.65	1.65	1.65	E	1.65	1.75	1.75	1.75	1.80	1.75	1.95	1.90	1.95	1.95	1.80	1.75	1.70	1.70	1.70	1.70	1.75	1.70	E
11	1.75	1.65	1.70	E	1.65	1.70	1.70	1.70	1.80	2.00	2.00	2.00	2.00	2.00	2.00	1.80	1.75	1.75	1.75	1.75	1.70	1.65	1.65	1.65
12	1.70	E	1.70	1.65	E	1.70	1.70	1.75	1.70	1.75	1.80	1.80	2.00	2.00	1.90	2.00	I 1.70 C	1.70	1.70	E	1.70	1.65	1.65	1.70
13	1.65	E	E	1.65	E	E	1.70	1.70	1.70	1.75	1.95	2.00	2.00	2.20	2.00	1.80	1.70	1.70	C	C	1.70	E	E	E
14	E	E	1.65	E	1.65	1.70	E	1.70	1.70	1.70	1.80	1.65	1.95	1.75	1.70	1.70	1.65	1.70	1.70	1.70	E	1.65	1.65	1.65
15	1.65	E	E	1.65	1.65	1.65	1.65	1.65	1.70	1.75	2.00	1.70	1.90	1.70	1.80	1.80	1.70	I 1.70 C	I 1.70 C	E	E	1.65	1.65	E
16	1.65	E	1.65	1.70	1.70	1.65	1.70	1.65	1.75	1.70	1.90	1.90	1.70	2.00	1.80	1.70	1.70	1.70	1.70	E	1.70	E	1.65	E
17	E	1.65	E	E	E	1.65	1.65	1.70	1.70	1.75	1.80	2.15	2.00	2.05	1.90	1.75	1.80	1.80	1.65	1.70	1.65	1.70	1.70	1.70
18	1.65	1.70	1.65	1.65	1.70	1.70	1.70	1.70	1.75	1.70	1.80	2.00	1.80	1.80	2.00	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E
19	E	1.70	1.70	1.65	E	E	1.65	1.65	1.70	1.70	2.00	5.05	3.10	3.40	2.00	2.00	2.00	1.70	1.75	1.70	1.70	1.70	1.70	1.70
20	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.95	2.00	1.95	2.00	2.00	2.10	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70
21	1.65	1.70	1.70	1.70	E	1.70	I 1.70 C	1.75	1.70	1.80	1.90	2.10	2.30	2.00	2.05	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
22	1.70	1.70	E	1.70	E	1.70	1.70	1.70	1.75	1.80	1.85	2.90	2.05	2.00	2.00	2.00	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70
23	1.70	1.70	1.65	1.70	1.70	1.70	1.70	1.80	1.70	1.80	3.30	2.00	2.15	3.40	2.00	1.80	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70
24	1.70	1.70	1.70	1.70	E	1.70	1.70	1.75	1.70	1.80	1.90	C	C	C	C	C	C	C	1.70	E	E 1.70 C	E	E	E
25	E 1.75 C	1.65	1.65	E	E	1.65	I 1.65 C	1.70	I 1.75 C	I 1.80 C	1.80	I 1.90 C	3.85	3.55	I 2.80 C	1.80	1.75	1.70	1.80	1.65	1.70	1.70	1.70	1.70
26	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.85	2.00	1.80	1.80	1.80	2.05	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70
27	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.65	1.75	1.75	1.90	1.90	2.10	1.90	1.80	1.75	1.75	1.70	1.70	1.70	1.70	E	1.65	1.70
28	1.65	1.70	1.70	1.65	1.70	1.70	1.70	1.75	1.75	1.80	1.80	2.00	2.55	1.80	2.10	1.80	1.75	1.70	1.70	1.65	1.70	1.70	1.70	E
29	1.65	1.70	1.70	1.65	1.70	1.70	1.70	1.65	1.80	1.80	1.80	C	C	2.45	2.30	1.90	1.75	1.70	1.80	1.70	1.70	1.70	1.70	1.70
30	1.65	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.70	1.75	2.05	2.10	2.40	2.00	1.80	1.90	1.80	1.70	1.70	1.70	1.70	1.65	1.70	1.70
31	E	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.75	1.80	2.10	2.05	1.95	2.90	1.75	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
No.		31	31	31	31	31	30	30	30	30	29	28	28	29	29	29	29	29	29	29	30	31	31	31
Median	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.75	1.75	1.90	2.00	2.00	2.00	1.90	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

IONOSPHERIC DATA

Jul. 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	R^S	A	R^S	A	3.20^R	2.90^{RS}	3.45	$I_{3.25}{}^A$	3.05	$I_{3.20}{}^A$	2.80	3.15	$I_{2.95}{}^R$	2.80	3.10^R	2.90	3.00	3.05	$I_{3.10}{}^A$	3.10	3.05^F	$I_{2.95}{}^A$	$I_{3.00}{}^A$	A
2	R^S	A	A	$I_{2.95}{}^R$	3.10	2.95	2.90	3.10^R	$U_{3.35}{}^R$	2.80	2.85	3.10	$I_{2.70}{}^R$	$I_{2.95}{}^A$	2.90	3.10	3.15	$I_{3.15}{}^A$	3.20	3.20^{RS}	3.00^R	3.00	A	A
3	A	A	A	R^S	A	2.90^S	2.90^F	3.20	3.45	3.20	R^S	A	A	3.10	2.90	2.80	2.85	3.05	3.30	$I_{3.45}{}^R$	$I_{3.35}{}^R$	$U_{3.10}{}^R$	R	R
4	A	R	R	3.10	2.95	2.95	3.00	3.10	3.35	$I_{3.45}{}^A$	3.15	$I_{3.10}{}^A$	2.80	2.85	$I_{2.95}{}^A$	2.95	A	A	2.95	3.25	R^S	F^S	R^S	R^S
5	R^S	R^S	R^F	3.35^F	$I_{3.05}{}^R$	2.90	3.25^H	2.85^H	$I_{3.25}{}^A$	$U_{3.20}{}^R$	A	A	$U_{2.70}{}^R$	2.85	2.80	2.85^R	2.75	$I_{3.00}{}^A$	3.00	$I_{3.20S}{}^R$	3.20^R	R^S	A	A
6	R^S	R^S	3.00^R	2.95	$I_{3.25S}{}^R$	$U_{3.15}{}^R$	3.20	A	A	$I_{3.10S}{}^A$	2.95	2.90	3.00	3.10	$I_{2.90}{}^R$	2.70	2.90	3.10^R	3.00	$I_{3.20S}{}^R$	3.15^R	R^S	R^S	R^S
7	R^S	R^S	2.90	3.00	$I_{2.95}{}^R$	2.90	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.15^R	3.15^R	3.00^S
8	R^F	R^F	F^S	R^F	R^F	3.30	$I_{2.80}{}^A$	2.85	A	A	A	A	A	A	A	2.65	$I_{2.95}{}^A$	2.80	2.75	3.00	3.10	$I_{3.10S}{}^R$	A	A
9	A	A	S	F^S	F^S	3.40^S	3.15	A	A	A	3.20	3.00	2.95	3.05	2.80^R	$I_{2.80}{}^A$	3.00^S	3.10	$I_{3.05}{}^A$	$I_{3.10}{}^A$	2.95^R	2.80	2.80	R^S
10	A^S	$J_{2.80}{}^S$	$U_{2.95}{}^R$	$J_{3.15}{}^R$	$J_{3.00}{}^R$	3.40^R	3.10^V	3.50	3.60^R	$U_{3.05}{}^R$	3.15	3.00	$I_{2.95}{}^A$	$I_{2.95}{}^A$	3.05	2.90	2.90^R	3.00^R	$J_{3.10}{}^R$	3.05^R	3.15^R	$I_{3.15}{}^R$	3.10	2.80^R
11	$J_{2.80}{}^R$	$I_{2.85}{}^R$	3.00	$I_{3.05}{}^R$	3.15^R	3.20^R	3.20	$I_{3.20}{}^A$	$I_{3.10}{}^A$	$I_{3.05}{}^A$	$I_{2.95}{}^A$	2.85^R	A	A	R	2.75^R	2.85^R	3.00	3.05	$I_{3.25}{}^A$	$I_{3.45}{}^A$	$I_{3.40}{}^A$	$I_{3.05}{}^A$	$I_{2.95}{}^R$
12	$I_{3.00}{}^R$	$I_{2.90}{}^R$	$I_{2.95}{}^A$	$U_{3.10}{}^R$	$I_{3.30H}{}^{RF}$	2.90^R	$I_{3.15}{}^A$	2.95^R	3.10^F	3.35	$I_{3.10}{}^A$	2.90	2.70	2.95	$I_{3.10}{}^R$	2.95	$I_{3.05}{}^C$	2.95^H	3.05	3.00	R^S	F^S	F^S	R^S
13	R^S	F^S	3.10^F	3.00^S	$I_{2.95}{}^F$	3.00	3.15	3.20	3.10	2.90^V	3.60	$I_{3.15}{}^A$	$I_{3.15}{}^A$	3.00	$I_{2.80}{}^A$	$I_{2.90}{}^A$	2.95	$U_{3.10}{}^R$	C	C	2.95^H	3.35	R^S	R^S
14	F^S	R^S	R^S	R^S	$I_{2.95}{}^R$	$I_{3.10}{}^R$	3.20^S	$I_{3.40}{}^A$	$I_{3.30}{}^A$	3.15^H	3.35	2.85	$J_{2.85}{}^R$	$I_{3.10}{}^A$	3.25	3.15	$I_{3.00}{}^A$	3.15	$I_{3.20}{}^A$	3.15	3.05^S	2.90^S	R^S	A
15	A	A	A	F^S	A	3.10	3.20^S	3.30^F	3.35^F	A	A	A	A	$I_{3.30}{}^A$	$I_{3.15}{}^A$	2.95	3.00^R	$I_{3.00}{}^C$	$I_{3.10}{}^C$	3.20	$I_{3.15}{}^R$	$I_{3.05}{}^A$	R^S	A
16	A	A	A	A	A	3.00^S	$I_{3.05}{}^A$	$I_{3.05}{}^A$	$I_{3.05}{}^A$	3.20	A	A	A	3.20	2.75	2.70	3.05	3.15	3.15	3.20	$I_{3.15}{}^R$	$I_{3.20S}{}^R$	A	A
17	A	A	R^S	$I_{2.90S}{}^R$	$I_{2.85}{}^F$	A	A	A	A	A	A	A	3.00	$I_{3.00}{}^A$	2.90	$I_{2.85}{}^A$	2.95	3.20	3.05	A	R^S	R^S	$I_{2.80}{}^R$	$I_{3.00}{}^R$
18	A	R^F	F^S	R^S	F^S	R^S	R^F	3.30	$I_{2.95}{}^R$	2.90	$I_{2.70}{}^A$	2.70^R	R	R	A	R	A	A	A	A	2.90	R^S	R^F	3.10^H
19	3.00^S	$I_{3.00}{}^A$	$I_{3.00}{}^A$	2.90	2.80	2.70^S	3.30	3.20	3.20	A	R	R	R	R	$I_{3.10}{}^R$	$I_{3.20}{}^R$	3.20	3.00	3.05	3.20	3.10	3.20	3.00^R	$I_{3.00}{}^R$
20	$I_{3.00}{}^R$	2.90	2.90	$I_{3.00}{}^R$	$I_{2.95}{}^R$	3.10	$J_{3.05}{}^R$	3.35	3.50^R	3.25	R	A	A	A	3.05	3.00	$I_{3.15}{}^A$	$I_{3.10}{}^A$	3.20	3.20	2.95^R	3.00	$I_{2.95S}{}^R$	R^S
21	A	R^F	A	A	$I_{3.00}{}^A$	$I_{3.15}{}^A$	$I_{3.25}{}^C$	3.45	3.45^R	$I_{3.25}{}^A$	$I_{3.10}{}^R$	$I_{3.00}{}^R$	$I_{3.00}{}^R$	$I_{3.00}{}^R$	$I_{2.95}{}^R$	2.90	$I_{2.90}{}^A$	2.90	$I_{2.90}{}^A$	A	R^S	R^S	R^F	$I_{2.95}{}^R$
22	3.00	$I_{2.85}{}^R$	$I_{2.85}{}^R$	3.05	$I_{2.85}{}^R$	2.85	2.65	$I_{2.80}{}^R$	3.15	R	R	R	R	R	R	R	A	A	2.95^R	$I_{3.00}{}^A$	A	A	$I_{2.95}{}^R$	R^S
23	A	R^F	2.85	R^F	F	2.65	2.95	$I_{3.25}{}^A$	$I_{2.80}{}^R$	G	R	R	R	R	$I_{2.95}{}^R$	$I_{2.95}{}^R$	2.90	A	A	$I_{2.95}{}^A$	$I_{3.05}{}^R$	3.20	A	A
24	A	2.85^S	$I_{3.00}{}^R$	$I_{2.95}{}^F$	$I_{2.95}{}^F$	2.30^S	2.55	2.85	R	A	A	C	C	C	C	C	C	C	$I_{3.25}{}^A$	3.05^S	$I_{3.00}{}^C$	$I_{2.95}{}^S$	2.90^S	$I_{2.80}{}^R$
25	2.70	2.85^S	$I_{3.10}{}^C$	F^S	F	2.65^S	$I_{3.10}{}^C$	3.30^S	$I_{3.30}{}^C$	$I_{3.05}{}^C$	R	C	3.10^R	2.95	$I_{3.00}{}^C$	3.00	2.90	3.10^S	$U_{3.25}{}^R$	2.90	$I_{3.10}{}^R$	$I_{3.00}{}^R$	$I_{3.00}{}^R$	$I_{2.85}{}^A$
26	$I_{2.90}{}^R$	$I_{2.95}{}^R$	$I_{3.00}{}^R$	$I_{3.10}{}^R$	$I_{3.10}{}^F$	3.05^S	$I_{3.00}{}^A$	$I_{2.95}{}^R$	$I_{2.95}{}^R$	$I_{2.90}{}^A$	2.75	A	R	3.00	2.95	3.00	$I_{3.10}{}^A$	2.95	3.05	2.95^S	3.25	3.20	A	A
27	A	R^S	A	A	$I_{3.20}{}^R$	$I_{3.20}{}^A$	$I_{2.90}{}^R$	$I_{3.20}{}^A$	$I_{3.30}{}^R$	$I_{3.15}{}^A$	$I_{3.10}{}^A$	$I_{2.90}{}^R$	3.00	2.95	3.10	2.95	3.00	3.20	3.15	3.20	$I_{3.25S}{}^R$	2.90^S	$I_{2.90S}{}^R$	R^S
28	A	R^S	R^S	3.00	$I_{3.10}{}^F$	$J_{3.30}{}^R$	3.10	3.05	3.30	$I_{2.90}{}^A$	2.95	2.90	2.90	3.10	3.15	$I_{3.20}{}^A$	3.20	3.10	3.30	3.15	3.00	3.00	R^F	A
29	2.90^S	A	A	A	F^S	A	3.10	3.25	3.40^H	A	A	C	C	A	$I_{3.10}{}^A$	$I_{3.10}{}^A$	3.20	$I_{3.20S}{}^R$	3.40	3.00^S	3.10	R^S	R^S	R^S
30	$I_{3.10S}{}^R$	3.10^R	3.20	3.05	3.00	2.80	3.10	3.30^S	3.10	3.30	3.40	$I_{2.90}{}^A$	3.00	3.10	3.50	3.00	2.90	3.05	3.10	3.25^S	R^S	A	A	A
31	$I_{2.80S}{}^R$	3.00^S	3.20	3.20	$I_{3.05}{}^R$	3.30	2.65	3.15	3.05^R	$I_{2.85}{}^A$	A	A	A	A	A	A	A	A	A	A	A	R^S	R^S	R^S
No.	10	11	15	18	22	28	28	27	25	22	16	15	16	20	24	26	25	24	26	25	23	20	12	9
Median	$U_{2.95}$	2.90	3.00	3.00	$U_{3.00}$	3.00	3.10	3.20	3.25	$U_{3.10}$	3.10	2.90	2.95	3.00	3.00	2.95	3.00	3.10	3.10	3.15	3.10	3.10	$U_{3.00}$	$U_{2.95}$
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F2 Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 7

27

IONOSPHERIC DATA

Akita

Lat. 39°43.5' N
Long. 140°08.2' E

Jul. 1963

M(3000)F1

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						L	3.60^{L}	A	A	A	4.10^{R}	A	R	A	$I_{3.65}^{A}$	3.55^{R}	A	R	A					
2						L	3.40	A	A	A	A	A	R	A	3.75	A	A	A	A					
3						3.45^{L}	$I_{3.55}^{A}$	$I_{3.60}^{A}$	3.95	3.95^{H}	R^{S}	A	A	A	A	3.85	3.60	3.80^{R}	A					
4						L	A	A	A	A	4.15	$I_{4.10}^{A}$	4.00	A	A	A	A	A	A					
5						A	3.55	$I_{3.60}^{A}$	$I_{3.65}^{A}$	$I_{3.75}^{A}$	$I_{3.80}^{A}$	A	A	A	R	A	A	A	A					
6							L	A	A	A	$I_{3.80}^{R}$	A	A	3.90	$I_{3.60}^{A}$	$I_{3.55}^{A}$	3.70^{R}	3.55	L					
7						L	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						L	A	A	A	A	A	A	A	A	A	A	A	3.60	A					
9							L	A	A	A	A	A	3.95	A	A	A	A	A						
10						L	3.40^{L}	$I_{3.30}^{A}$	3.75^{L}	$I_{3.65}^{A}$	A	A	A	A	A	$I_{3.55}^{R}$	3.45	3.40	L					
11						L	3.55^{L}	$I_{3.65}^{A}$	$I_{3.75}^{A}$	A	A	R	A	A	A	R	3.60^{R}	A	A					
12						L	A	3.90^{R}	A	A	A	A	A	$I_{3.70}^{R}$	$I_{3.75}^{L}$	3.65^{H}	C	A	A					
13						L	3.80	$I_{3.70}^{A}$	3.65	3.85	3.85^{H}	A	A	4.30^{H}	A	A	A	A	C					
14						L	A	A	A	4.00	3.95	$I_{4.20}^{A}$	$I_{4.00}^{A}$	$I_{4.00}^{A}$	4.15	A	A	A	A					
15						3.45^{L}	A	A	3.80	A	A	A	A	A	A	A	A	C	C					
16						L	A	A	A	A	A	A	A	A	3.75	3.60	$I_{3.45}^{A}$	3.70	L					
17						A	A	A	A	A	A	A	A	A	A	A	A	3.55^{L}	A					
18						A	A	A	4.15	4.20	$I_{3.90}^{A}$	3.80	R	A	A	A	A	A	A					
19						$I_{3.20}^{A}$	$I_{3.50}^{A}$	3.65	3.80	$I_{4.00}^{A}$	4.00	B	A	R	$I_{3.65}^{R}$	$I_{3.55}^{R}$	3.30	A	L					
20						A	A	3.65	$I_{4.10}^{R}$	A	R	A	A	R	$I_{3.65}^{A}$	A	A	A	A					
21						A	C	A	3.80	$I_{4.10}^{A}$	3.95^{R}	3.90	$I_{4.00}^{R}$	$I_{3.75}^{R}$	3.70^{R}	A	A	A	A					
22						3.25	$I_{3.70}^{A}$	$I_{3.60}^{A}$	3.95^{H}	$I_{4.35}^{R}$	$I_{4.05}^{R}$	R	R	R	3.75^{R}	A	A	A	A					
23						3.20	$I_{3.55}^{A}$	$I_{3.75}^{A}$	4.05	4.10	$I_{4.15}^{A}$	4.00	R	A	$I_{4.00}^{RH}$	3.70	A	A	A					
24						3.35	3.60	A	A	A	C	C	C	C	C	C	C	C	A					
25						2.85	$I_{3.25}^{C}$	3.70	C	C	R^{H}	C	A	3.55^{R}	$I_{3.65}^{C}$	3.75	$I_{3.50}^{A}$	$I_{3.70}^{A}$	L					
26							A	A	A	A	A	A	$I_{3.80}^{A}$	$I_{4.00}^{A}$	$I_{3.75}^{A}$	A	A	A	A					
27							3.40^{H}	$I_{3.70}^{A}$	$I_{4.00}^{A}$	$I_{4.05}^{A}$	$I_{4.00}^{A}$	4.25	3.90	3.55	4.10	3.70	3.55^{L}	A	A					
28							L	A	A	A	4.05	R	A	A	A	A	A	L	L					
29							3.55^{L}	3.55	A	A	A	C	C	A	A	A	A	A	A					
30						3.10^{L}	3.60	3.60	3.70	A	A	A	A	3.90^{R}	4.00^{H}	3.45^{H}	3.70	3.55	A					
31							3.50	A	A	A	A	A	A	A	A	A	A	A						
No.						8	16	14	14	11	13	6	6	9	15	11	9	8						
Median						3.20	3.55	$U_{3.65}$	3.80	$U_{4.00}$	4.00	4.05	$U_{4.00}$	3.90	$U_{3.75}$	3.60	3.55	3.60						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F1

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

IONOSPHERIC DATA

Jul. 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						300^{L}	260	I_{305}^{A}	350	I_{335}^{R}	410	350	I_{375}^{R}	400^{A}	I_{360}^{A}	390	I_{360}^{A}	335^{A}	A					
2						345^{L}	350	290	250^{A}	405	I_{385}^{A}	I_{375}^{A}	I_{470}^{R}	I_{400}^{A}	365	325	330	I_{310}^{A}	300^{A}					
3						360	350	300	255	300	I_{320}^{RS}	A	A	I_{345}^{A}	405	415	395	350	285					
4						345	305	310	250	I_{300}^{A}	350	I_{395}^{A}	445	A	A	A	A	A	A					
5						A	430	355	I_{295}^{A}	305^{H}	A	A	465	I_{400}^{A}	400	360^{A}	370^{A}	A	A					
6							310	A	A	A	355	375	345	345	I_{375}^{A}	390	345	300	300					
7						345	C	C	C	C	C	C	C	C	C	C	C	C	C					
8						255	I_{315}^{A}	A	A	A	A	A	A	A	A	I_{400}^{A}	I_{385}^{A}	420	345					
9							300^{L}	A	A	A	330^{R}	350	345	I_{350}^{A}	390	I_{350}^{A}	325	300						
10						280	310	I_{275}^{A}	260	350	350	355^{A}	A	A	350	350	320	315	260					
11						270^{L}	300	I_{275}^{A}	I_{325}^{A}	I_{355}^{A}	I_{370}^{A}	400	A	A	R	435	400	335	305^{A}					
12						330	I_{300}^{A}	355	I_{330}^{A}	295	A	R	I_{350}^{A}	370	360^{L}	375	I_{330}^{C}	325	A					
13						345	295	I_{290}^{A}	345	350	250	I_{300}^{A}	I_{320}^{A}	375	A	A	350	330	C					
14						335	I_{270}^{A}	I_{310}^{A}	I_{305}^{A}	320	305	I_{350}^{A}	I_{330}^{A}	I_{340}^{A}	320	335	I_{370}^{A}	I_{320}^{A}	I_{295}^{A}					
15						345	300	295	275	A	A	A	A	I_{300}^{A}	I_{330}^{A}	325	A	C	C					
16						280^{L}	I_{340}^{A}	I_{320}^{A}	I_{295}^{A}	295	A	A	A	A	440	450	315	295	295					
17						A	A	A	A	A	A	A	A	I_{370}^{A}	380	I_{380}^{A}	370^{A}	295	A					
18						A	I_{310}^{A}	300	I_{395}^{R}	400	I_{470}^{A}	445	R	R	A	R	A	A	A					
19						I_{410}^{A}	290	325	340	A	R	B	R	R	R	I_{345}^{R}	345	345	300					
20						290^{A}	I_{335}^{A}	280	295	I_{290}^{A}	R	A	A	A	345	I_{355}^{A}	I_{320}^{A}	I_{320}^{A}	295					
21						A	C	270	290	I_{335}^{A}	I_{370}^{R}	I_{385}^{R}	I_{360}^{R}	I_{385}^{R}	I_{420}^{R}	I_{380}^{R}	I_{350}^{A}	345	I_{325}^{A}					
22						355	440	I_{400}^{A}	350	R	R	R	R	R	R	R	A	A	330^{A}					
23						455	355	I_{275}^{A}	I_{390}^{R}	G	R	R	R	R	I_{395}^{R}	I_{390}^{R}	400	A	A					
24						495	460	I_{385}^{A}	A	A	A	C	C	C	C	C	C	C	I_{275}^{A}					
25						405	I_{325}^{C}	270	I_{280}^{C}	I_{335}^{C}	R	C	A	I_{355}^{R}	I_{350}^{C}	340	I_{340}^{A}	I_{290}^{A}	250					
26							I_{340}^{A}	I_{340}^{A}	315	A	A	A	A	355	I_{360}^{A}	350	I_{375}^{A}	350	330					
27							R	I_{310}^{A}	I_{300}^{R}	A	A	395^{R}	370	360	340	360	345	300	290					
28							345	350	290	I_{325}^{A}	390	395	395	345	A	A	A	300	265					
29							325	295	300	A	A	C	C	A	A	A	315	290	285					
30						380	315	285	295	290	295	A	A	340	285	355	390	305	295					
31							445	305	340	A	A	A	A	A	A	A	A	A						
No.						20	27	26	25	18	14	13	12	17	19	22	23	22	19					
Median						345	315	300	300	330	350	375	U_{365}	U_{355}	360	370	350	320	295					
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

IONOSPHERIC DATA

Jul. 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	300A	A	A	A	255	255	250	A	A	A	205	I200A	I205A	I215A	I230A	240	I220A	200	A	A	235	A	A	I270A
2	305A	I300A	I275A	250A	280A	250	250	A	A	A	A	A	A	I210A	200	A	A	A	A	300A	I275A	I270A	A	A
3	A	A	A	I310A	I290A	250	I240A	I225A	200	195H	I200A	A	A	A	A	205	215	A	A	255	245	245	A	A
4	A	245	285A	265	295	250	A	A	A	A	205	I200A	200	A	A	A	A	A	A	250	245A	245	245	I300A
5	305	295	285	230	270	I250A	245	I235A	I240A	A	A	A	A	A	170H	A	A	A	A	235	250	310A	I330A	I355A
6	360A	300A	310	285	230	I260A	255	A	A	A	240A	A	A	210	I235A	I240A	I235A	245	I250A	I250A	245	I240A	I280A	275
7	285	295	295	275	270	245	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	I260A
8	295	I290A	290A	I290A	I295A	250	A	A	A	A	A	A	A	A	A	A	A	230	A	A	I270A	A	A	A
9	A	I280A	290	245	250	245	I250A	A	A	A	A	A	A	A	A	A	A	A	A	A	I260A	I270AS	300A	290A
10	I275AS	I285AS	300	270	300	250A	225	I220A	210	I230A	A	A	A	A	A	235	I230A	I235A	245	255	230	235	250	270
11	280	320AS	285	275A	250A	250	260A	I230A	I215A	A	A	A	A	A	A	235	240	A	A	A	I250A	I250A	I295A	275
12	290S	I290A	A	A	300A	250A	I230A	205	A	A	A	A	A	I220A	220	220	C	A	A	A	A	250	A	A
13	A	240	255	290	290	245	220	I230A	245	240	I215AH	A	A	185H	A	A	A	A	C	C	I260A	240	A	A
14	265	A	A	A	295A	I260A	A	A	A	235	230	I200A	I210A	I210A	215	A	A	A	A	A	A	A	A	A
15	A	A	A	A	A	250	I230A	I220A	225	A	A	A	A	A	A	A	A	C	C	270A	A	A	A	A
16	A	A	A	A	A	245	A	A	A	A	A	A	A	A	245	I230A	I240A	245	I250A	250A	I250A	245A	A	A
17	A	A	A	290	295	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I255A	280	I300A	I270A
18	I260A	I290A	270	I290A	320	A	A	A	205	205	I225A	I215A	I220A	A	A	A	A	A	A	A	A	A	285A	205H
19	A	A	I300A	305	300	I275A	I245A	235	230	I225A	225	B	A	R	R	R	245	A	A	A	250	230	I280A	305
20	290	305	295	285	245	I240A	I220A	225	I200A	A	R	A	A	R	A	A	A	A	A	260A	I275A	I285A	285	A
21	A	A	A	A	A	A	C	A	I220A	I210A	210	210	I205R	235R	A	A	A	A	A	A	I255A	280A	270	290
22	290	310	245	260	290F	295	I270A	I250A	225	195	I190R	I230A	260	I205A	I240A	A	A	A	A	A	A	A	A	260
23	I290A	280	260A	300	320	300	I250A	I235A	205	205	I205A	205	A	A	I200RH	245	A	A	A	I305A	I265A	I245A	I235A	A
24	A	290A	275	I320A	295	250	260	A	A	A	A	C	C	C	C	C	C	C	A	265	250	290	265	295
25	310	295	280	295	310	280A	I280C	240	C	C	200H	C	A	245	I245C	245	I240A	I230A	245	275	210	270A	280	I290A
26	I290A	295	295	I290A	240	A	A	A	A	A	A	A	I250A	I210A	I220A	A	A	A	I250A	I260A	240	245	A	A
27	A	295A	I280A	I285A	I245A	I245A	240	I255A	I215A	I205A	I200A	195	220	250	210	245	225	I240A	I240A	250	205	285	I310A	A
28	A	A	A	300A	260	250	245	A	A	A	210	205	A	A	A	A	A	240	235	245	255	280A	290A	A
29	A	A	A	I265A	275	I255A	245	230	A	A	A	C	C	A	A	A	A	A	A	290	250	A	A	290A
30	I260A	250	280	A	A	275	240	230	230	A	A	A	A	210	200	230	225	245	I270A	260	230	A	A	A
31	I305A	285	280A	245	295	250	245	A	A	A	A	A	A	A	A	A	A	A	A	A	I290A	275	290	305
No.	18	21	21	24	27	27	22	15	14	10	14	9	8	12	13	11	10	9	8	17	25	22	17	17
Median	290	290	285	285	290	250	245	U230	220	210	210	U205	U215	U210	220	235	U230	240	U250	260	250	260	285	290
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan

A

IONOSPHERIC DATA

Akita

Lat. 39°43.5' N
Long. 140°08.2' E

Jul. 1963

Types of Es

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	f2	f4	f5	f4	f	h	h	h3	h2	h2	h	h2	h	h	h2	c	13	12	c2	f4	f3	f4	f3	f3
2	f2	f3	f5	f2	f3	h	h3	h2	h2	h2	h2	c2	h	c2	h	c2	12	13	13	f2	f3	f4	f3	f4
3	f4	f2	f3	f3	f3	12	h3	c3	c	c	c	c3	c	c	hc	c	c2	12	c2	f2	f	f	f3	f4
4	f2	f2	f2	f	f2	1	h2	h3	h2	h4	h	c2	c	c2	c2	c2	c4	13	13	f2	f2	f	f2	f5
5	f2	f2	f	f	f	h3	h2	h3	h5	h	h	h3	h	h2	h	h2	h2	h3	12	f	f5	f5	f5	f4
6	f4	f5	f3	f2	f2	f3	h2	h2	h3	h2	h	c2	h	h	h2	c2	c2	c2	h4	f2	f3	f2	f2	f2
7	f2	f2	f2	f2		c2																f2	f3	f4
8	f2	f4	f3	f3	f3	c4	h2	h5	h3	h3	h	h2	c2	c4	c2	13	12	c2	h2	f3	f7	f2	f4	f2
9	f3	f3	f2	f2	f	h2	h5	h3	h3	h2	h	h	h 2	h	h	c3	c2	14	f5	f6	f4	f2	f3	f2
10	f3	f3	f4	f	f	h2	h2	h2	h2	h	h2	h	h2	h2	h2	h	c2	12	h2		f4	f	f	f2
11	f2	f5	f3	f5	f5	c4	c2	c3	c3	c2	c2	c2	12	13	12	1	h	h2	h3	f4	f3	f3	f7	f5
12	f6	f8	f3	f6	f3	h	h3	h2	h2	h3	h4	c2	c2	h	c	h		c2	h6	f3	f3	f2	f4	f3
13	f2	f2	f2	f2	f	h3	h2	h2	h	h	c2	c	c	c	c2	c3	12	12			f3	f4	f3	f4
14	f2	f3	f3	f3	f2	c5	h3	h5	h4	h2	h	c2	c	12	1	h1	h2	h2	h2	f4	f6	f3	f3	f4
15	f4	f3	f3	f3	f4	14	h3	h3	h	h3	h2	h2	h	h2	h3	h2	h2			f3	f5	f3	f2	f3
16	f4	f3	f3	f2	f2	c2	h3	h4	h2	c2	c2	c3	c2	c2	c2	h	h	h3	h2	f2	f2	f2	f4	f3
17	f6	f4	f3	f2	f2	h6	h3	h3	c3	h3	h2	c2	c	h4	h2c	h2	h2	h2	h3	f2	f4	f4	f3	f4
18	f4	f3	f2	f2	f	h6	c3	c2	h	c2	c3	c	1	1	12	ch	h3	h3	h21	f4	f3	f6	f4	f
19	f5	f3	f2	f2	f	h2	h2	h2	h	c2	c	c	c	c		h	h	h	h2	f2	f3	f2	f3	f2
20	f2	f2	f2	f2	f2	h2	h5	h2	h	c2	h	c	c	c3	h2	h2	c2	h13	12	f2	ff3	f5	f2	f3
21	f3	f5	f3	f5	f5	h3		c2	h	h					h	h	h	h3	1	f3	f3	f2	f2	f2
22	f2	f2	f	f	f2	h2	h2	h	h	h		c	c	c	h	h	h2	h3	h2	f4	f2	f4	f3	f2
23	f4	f2	f	f	f	h2	h2	h2	h	h	h		h	h	h	h	h	h2	h2	f2	f3	f2	f2	f3
24	f4	f3	f3	f2	f2	c2	h2	h2	h	h2	h2								h3	f2		f	f2	f2
25	f2	f	f2	f2	f2	h2		h2			h		h	h		h	c2	c3	h2		f	f2	f	f3
26	f3	f2	f2	f	f	h2	h2	c3	c2	c3	c2	c2	h	c	c2	c2	c2	c3	13	f2	f2	f2	f2	f3
27	f2	f2	f2	f2	f2	c2	h2	c2	c2	h3	c2	h	c2	c	c2	h1		h2	h2	f2		f	f	f3
28	f3	f3	f2	f2	f	h	h2	c2	c2	h	c2	c	c	c	c2	c3	c2	12	c	f2	f2	f3	f3	f4
29	f3	f2	f3	f3	f2	13	c2	c	h2	h2	h2			h2	h3	h2	h2	h2	h2	f2	f2	f3	f3	f3
30	f2	f3	f3	f2	f2	12	c2	c2	c	c2	c2	c2	c2	h		h	h	h2	h2	f2	f2	f3	f5	f3
31	f2	f2	f3	f2	f2	h	h2	h3	h2	h	h	c2	c	c2	c2	c2	c3	c4	h2	f3	f3	f2	f2	f2
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

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

A 11

IONOSPHERIC DATA

Jul. 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	A	A	A	U 3.5S	I 4.0F	U 5.0F	5.4	J 5.3R	I 5.3A	I 5.3A	5.1	A	S	I 6.0A	I 6.3A	I 5.9A	U 5.6R	5.6	6.0	J 6.5S	5.9	I 4.2A	F	S
2	A	A	A	A	F	J 3.8R	5.4	J 6.5S	J 6.8R	I 5.7A	I 5.8A	5.5	A	A	A	5.6	7.0R	I 6.3A	I 5.5A	5.8	6.7S	U 5.7S	5.1S	I 4.9A
3	I 4.6A	U 4.6S	3.3A	U 3.4S	3.5S	I 3.9S	5.0	5.8	A	A	A	A	U 6.6R	J 6.5R	5.5	5.4	5.7	J 6.2R	I 7.0S	J 7.0R	6.8	U 4.5S	S	F
4	A	A	A	F	I 3.4F	4.0	5.1	7.0	6.2R	A	A	A	A	A	A	I 6.4R	A	A	I 6.4A	U 7.4S	6.5	S	A	A
5	A	A	A	A	A	4.0	5.1	I 6.2A	I 7.5A	I 6.0R	I 5.2A	I 5.5A	I 5.6A	I 5.8A	6.3	7.1	7.5	I 7.6A	J 7.7S	8.7	A	A	A	F
6	A	F	FS	I 3.4A	I 4.0F	J 4.7S	5.1	A	A	6.8	I 6.4A	6.0	U 6.1R	6.7	7.5	7.1	I 7.7A	J 9.1R	7.3R	U 7.5S	I 6.5S	5.1S	A	A
7	A	S	FS	S	A	U 3.8S	7.4	A	A	A	A	A	A	A	6.4	6.4	6.7	I 6.4A	J 6.5R	I 8.5A	I 8.3R	A	A	A
8	6.1F	FS	S	A	F	I 5.8F	J 4.6R	I 4.8A	I 6.4A	A	A	A	A	A	A	A	A	A	I 5.6A	U 6.0R	I 6.5A	I 6.8A	I 5.4A	A
9	A	U 3.7S	U 3.5S	U 3.5S	U 3.3S	4.1	3.4	5.8	6.2	A	A	5.9	U 6.6S	7.4	6.8	7.2	7.6S	6.8	U 6.7S	I 6.5A	6.8S	I 6.0A	5.7S	5.8S
10	A	A	A	S	U 3.6S	4.8S	5.8	6.1S	A	A	A	I 5.7A	6.3R	J 6.0R	6.1	A	A	J 7.7S	I 8.0R	J 7.9S	J 8.0S	6.5S	6.0	J 5.4S
11	J 5.2S	J 5.3S	J 5.3S	J 5.2S	J 5.2F	J 5.1S	5.3	5.8	U 6.1R	A	A	A	A	A	I 5.4R	5.2	5.6	J 6.3R	I 7.5S	8.9	A	A	A	S
12	FS	S	S	3.4	I 3.4F	J 4.3S	I 5.0A	J 5.2R	I 6.3A	I 5.5A	A	A	A	A	A	A	A	A	A	A	S	A	S	A
13	A	F	S	S	F	J 4.4S	5.3	I 5.4A	I 6.0A	U 7.7S	I 7.4A	J 5.4R	A	A	A	A	A	A	A	U 7.4S	6.6	A	A	U 3.4S
14	I 3.6A	I 3.6F	I 3.4F	3.3F	3.3	4.4S	I 5.9C	6.4	5.0S	U 6.2S	I 5.6A	I 5.7R	6.0	I 5.6S	I 5.4A	I 5.5A	I 5.6A	J 6.5S	5.8	5.8	5.6S	I 5.4S	A	A
15	A	FS	A	A	F	U 3.9S	J 4.9S	I 6.2S	J 6.1S	I 5.7A	U 5.2S	I 5.8A	J 6.6R	I 7.2A	J 6.7S	6.0	I 5.5A	J 6.5R	6.4	J 7.3S	U 6.1S	A	A	A
16	A	A	A	FS	F	3.6	5.0S	I 6.4A	8.2	8.8	6.5	5.6R	U 5.8R	J 6.0R	5.5	5.7	7.5	6.5	6.8	J 6.6S	A	FS	A	A
17	A	A	A	A	FS	I 3.2A	A	A	A	A	A	A	A	J 5.6R	J 5.8R	I 5.8A	6.2R	I 7.0A	7.1	U 6.8S	S	F	F	S
18	I 5.7S	S	F	F	S	F	5.8	5.8	A	A	A	S	A	A	A	A	5.5	I 5.5A	5.8	I 6.2A	6.1	I 5.5F	I 5.5F	J 5.3F
19	A	A	3.5	3.3F	I 3.1A	3.3	A	A	A	A	S	A	A	I 5.7A	6.1	I 5.0A	A	A	A	I 7.5S	7.0	5.6	I 4.6A	4.3S
20	U 4.4F	U 4.0S	J 4.0R	I 3.5A	3.5	3.2	I 4.8A	6.0	J 6.0R	I 5.3R	I 5.3A	A	A	A	6.0	6.6	6.5R	I 6.6B	I 6.5R	6.4	5.3S	5.6	A	A
21	A	A	A	A	A	J 4.0S	I 5.5A	6.0	I 5.6A	I 5.9A	I 5.4A	5.7R	5.6	I 5.8R	I 5.6A	I 5.7A	I 6.2A	I 6.9A	J 7.9S	9.0	I 8.6A	U 7.0S	FS	F
22	F	F	F	F	F	F	U 4.0S	I 4.8A	J 5.1S	I 4.7R	S	A	A	A	I 4.0A	I 4.6A	J 4.7S	I 5.2A	I 5.0A	5.6	J 5.8S	I 5.6S	I 5.2A	I 4.9F
23	I 4.6F	U 4.3F	U 4.1S	3.4F	3.4	3.1	J 5.0S	I 5.2A	J 5.2S	A	J 5.2R	A	A	5.3	5.4	5.1	I 5.0S	4.8	5.3	6.6	7.2S	F	A	A
24	I 3.4F	A	F	A	A	I 3.5A	J 4.2S	4.7	J 5.0R	6.1	S	R	J 4.9R	I 5.2A	I 5.1A	5.4	6.7	6.4	5.7	5.6	I 4.4A	4.4S	I 4.5F	4.0F
25	3.7	I 4.2F	I 4.0F	U 3.1F	3.1F	3.4	5.4	6.3S	J 6.1R	I 5.5A	I 5.4S	5.6	5.8R	6.3R	6.6	U 7.2S	I 7.8A	J 8.3R	7.1S	J 8.1S	5.5S	5.6	I 5.2F	U 4.6S
26	J 4.2S	I 4.4F	I 4.4F	J 4.4F	3.4	3.6H	4.9S	I 5.9A	7.0	U 7.6S	7.3	J 6.2R	I 5.8A	6.1	J 6.5R	6.7	5.3R	I 5.1A	I 5.9A	6.8	7.1	I 4.7S	U 4.1S	J 3.9S
27	I 4.0F	3.8	3.4S	3.4	2.8	3.1R	I 4.2A	6.2	6.6	5.7	I 5.6A	5.5	5.8	6.4	6.7	7.0	5.8	6.5	6.2	6.7	U 5.0S	J 4.0S	I 3.9S	4.1
28	4.1	4.0S	3.9S	3.5	3.4	3.7	5.1R	5.8	6.5	5.8	I 5.6A	I 5.7A	I 6.0A	I 6.9A	I 6.2A	6.9	6.6	6.0	I 6.3S	I 6.0A	J 5.2S	U 4.0S	4.8S	I 4.7A
29	4.7S	F	A	A	A	3.5	4.1	6.1S	6.7	5.4	I 5.1S	5.9	5.6	I 6.5A	I 6.4A	6.7	6.0	I 5.4A	5.1S	I 5.2S	I 5.6F	F	A	A
30	F	U 4.0F	U 4.0S	I 3.8F	3.5S	I 3.7A	5.4	6.4	6.5	A	A	A	6.1	J 7.3S	J 7.9R	5.4	5.8	6.3	7.1	J 7.9S	5.7	J 4.3S	A	A
31	A	4.1F	I 3.8F	U 3.5S	2.7F	I 3.7F	U 4.8R	5.4	5.1	A	A	A	A	A	A	A	A	A	6.3	A	A	U 4.1S	A	A
No.	13	12	13	16	18	29	29	27	24	18	16	15	16	20	24	25	24	25	28	29	25	20	12	12
Median	U 4.4	U 4.0	U 3.9	U 3.4	3.4	3.8	5.1	5.9	6.2	U 5.8	U 5.5	5.7	5.9	6.0	6.2	5.9	6.1	6.4	6.4	6.8	6.5	U 5.4	U 5.2	4.6
U.Q.	5.0	4.4	4.0	3.5	3.5	4.4	5.4	6.2	6.6	6.2	6.1	5.9	6.2	6.6	6.6	6.8	6.8	6.8	7.1	7.7	6.9	5.6	5.4	5.1
L.Q.	3.8	3.9	3.4	3.4	3.3	3.5	4.8	5.4	5.4	5.5	5.2	5.5	5.7	5.8	5.5	5.4	5.6	5.8	5.8	6.1	5.6	4.4	4.6	4.0
Q.R.	1.2	0.5	0.6	0.1	0.2	0.9	0.6	0.8	1.2	0.7	0.9	0.4	0.5	0.8	1.1	1.4	1.2	1.0	1.3	1.6	1.3	1.2	0.8	1.1

The Radio Research Laboratories, Japan

foF2

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

K 1

IONOSPHERIC DATA

Jul. 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								A	A	A	A	A	S	A	A	A	A	A						
2							A	L	A	A	A	A	A	A	A	A	A	A	A					
3							S	A	A	A	A	A	A	A	A	A	A	L						
4							A	A	L	A	A	A	A	A	A	A	A	A	A					
5							A	A	A	A	A	A	A	A	L	A	A	A	L					
6							A	A	A	A	A	L	A	A	A	A	A	L						
7							A	A	A	A	A	A	A	A	A	A	A	A	A					
8								A	A	A	A	A	A	A	A	A	A	A	A					
9								A	A	A	A	A	S	A	S	A	S	A	A					
10								S	A	A	A	A	A	A	A	A	A	A	A					
11									A	A	A	A	A	A	S	S	S	L	L					
12							A	S	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	A	A	A					
14							C	A	A	A	A	A	S	S	A	A	A	A	A					
15							A	A	A	A	AS	A	A	A	A	A	A	L						
16							S	A	A	A	S	S	U4.7L	L	A	U4.5S	A	L	A					
17						A	A	A	A	A	A	A	A	A	A	A	A	A	L					
18							A	A	A	A	A	S	A	A	A	A	S	A	A					
19						2.6	A	A	A	A	S	A	A	A	A	A	A	A	A					
20							A	4.0	L	A	A	A	A	A	S	A	B	B						
21							A	A	A	A	A	4.6S	A	S	A	A	A	A	A					
22						2.6	3.2S	A	S	S	S	A	A	A	A	S	S	A	A					
23							3.6S	A	A	A	A	A	A	A	U4.5S	U4.4S	S	A	A					
24						A	A	3.6	S	4.5L	S	S	S	A	A	S	L	L	L					
25						A	3.4L	L	S	A	S	A	AS	S	S	A	A	3.8L						
26							L	A	A	A	A	A	A	A	4.6S	L	S	A	A					
27							A	4.1S	L	A	A	S	S	S	U4.6S	4.5L	4.3L	4.1L						
28							L	4.0	L	A	A	A	A	A	A	A	A	4.0S	S					
29							L	L	L	S	S	S	A	A	A	4.5S	S	A						
30							L	A	4.5L	A	A	A	S	4.7S	S	U4.4S	4.4	A	A					
31							U3.5L	A	A	A	A	A	A	A	A	A	A	A	A					
No.						2	4	4	1	1		1	1	1	3	5	2	3						
Median						2.6	3.4	4.0	4.5	4.5		4.6	U4.7	4.7	U4.6	U4.5	4.4	4.0						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

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

K 2

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	I2.50A	2.70	A	A	A	A	A	A	A	A	2.80R	A	S					
2						S	I2.30A	R	A	A	S	S	A	A	A	A	S	S	S					
3						B	R	R	S	A	A	A	A	A	A	A	A	S	A					
4						A	A	A	A	A	A	A	A	A	A	S	S	A	A					
5						S	A	A	B	A	A	A	A	A	S	A	S	A	S					
6						B	A	A	A	S	A	S	A	A	S	A	A	A	A					
7						S	A	A	A	A	A	A	A	A	A	A	A	A	S					
8						S	A	2.80	S	A	A	A	A	S	S	S	A	A	A					
9						A	I2.05A	I2.35S	S	R	S	S	S	A	S	A	S	A	A					
10						B	S	R	S	A	A	A	A	A	A	A	A	A	B					
11						S	A	A	A	A	A	A	A	A	A	S	A	A	S					
12						S	A	R	A	A	A	A	A	A	A	A	A	A	S					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	S					
14						S	C	A	A	A	A	A	A	S	A	S	A	A	S					
15						A	A	A	A	A	A	A	A	A	A	A	A	S	S					
16						S	A	A	A	A	A	A	S	I3.40R	I3.40S	I3.20S	I2.80B	S	S					
17						S	A	2.70	A	A	A	A	A	A	A	A	S	A	S					
18						S	A	A	S	A	A	A	A	A	A	A	B	A	S					
19						B	A	A	A	A	A	A	A	A	A	S	I2.90B	I2.40A	A					
20						A	A	A	A	A	A	B	B	A	A	A	B	B	A					
21						S	A	A	I2.70R	A	A	A	A	S	I3.45S	I3.05A	I2.70B	A	S					
22						B	A	A	A	A	S	A	A	A	A	A	I2.90B	S	S					
23						B	I2.20S	I2.60B	I2.85A	A	A	A	A	B	A	A	I2.90A	I2.50B	A					
24						S	A	A	A	A	A	I3.50S	I3.60S	I3.55A	U3.55S	I3.20A	2.85	S	S					
25						S	A	A	R	A	A	S	I3.60S	I3.45S	S	A	A	I2.40A	B					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	S					
27						S	A	A	A	A	A	A	U3.55S	A	S	S	B	B	B					
28						S	B	A	A	A	A	A	A	A	A	A	A	U2.60A	S					
29						S	A	A	A	A	U3.55S	I3.55S	3.60S	A	A	S	S	A	S					
30						B	A	A	A	A	A	A	S	S	S	S	I3.10S	2.65	S					
31						S	B	2.70	2.85	A	A	A	A	A	A	A	A	A	S					
No.							4	6	3		1	2	4	3	3	3	8	5						
Median							U2.25	2.70	U2.85		U3.55	U3.50	U3.60	U3.45	U3.45	U3.20	U2.90	U2.50						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

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

K 3

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4'N
Long. 139° 29.3'E

Jul. 1963

foEs

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	8.5M	5.9M	5.8	J 4.4	2.6M	2.5	3.5	J 4.8	J12.0	J 7.8	J 6.2	5.6M	4.5S	6.5	8.8M	8.5M	5.9M	6.0M	3.4	J 4.4	3.5M	J 5.7S	J 3.0	4.0S
2	J 6.0	5.8M	J 6.0	6.0M	3.4M	S	3.5	3.9	6.0M	7.4	J 6.2	5.4	6.6	J17.5	J13,8	5.9M	5.6	12.4	5.4	5.6	J 4.7	3.0	2.8	6.7
3	J 7.3	6.7	J 5.0	J 2.2	2.8	J 2.8	2.9	8.7	J 9.0	9.0M	12.4M	16.0M	J 9.1	J 5.2	J.5.9	J 5.3	J 5.3	3.2	J 4.7	3.6	J 3.1	J 2.9	J 5.2	J 3.1
4	J 7.2	8.0M	6.0M	3.8M	J 4.8	3.0	4.0	5.9M	5.5	8.5M	12.1M	14.8M	J10.2	9.3M	7.9M	5.5	9.6M	J 7.9	7.7M	5.8M	3.8S	4.3S	5.3M	6.0M
5	J 6.8	5.8M	J 6.4	J 5.0S	6.0M	2.7	J 3.8S	12.4M	J14.0Y	J 5.1	7.8M	5.4	7.3	8.6M	S	6.5M	9.3M	J 7.4	3.4	2.9M	11.9M	5.0M	3.9M	3.3
6	4.4S	3.5M	5.2S	J 5.8	6.0M	4.4M	J 5.8	6.7	6.9M	J 6.6	11.9M	4.6S	6.2	5.6M	5.7S	5.0M	J 8.3	3.4	3.5	J 2.9	3.1	2.5	J 5.5	9.4M
7	J 7.3	3.3M	J 5.9	J 3.8	5.6M	5.8M	5.8M	8.5M	J 8.1	J 7.4	6.5M	6.3M	J 7.0	J13.0	J 6.4	8.3	J10.2Y	9.3M	9.0M	9.0M	J 6.3	J10.4	J 7.4	9.2M
8	5.1M	6.0M	J 5.3S	7.8S	J 5.7	J 5.3	3.4	5.4	6.2M	J 7.4	J16.2	J16.3	J 9.9	12.1M	J12.6	J10.7	6.6	J 7.8Y	J 7.7	5.3	J10,7	J11.8	J 5.8	J 6.5
9	J 5.7	J 2.5	J 2.6	J 2.5	J 2.5	3.9	J 4.5	J 5.2	5.6	J 8.6	J 7.5	5.5	S	J 4.6	S	4.9	S	J 8.3	5.7	J10.7	J 5.9	J 7.5	2.7	J 3.8
10	J 6.4	J 5.5	J 5.6	J 2.4	J 2.6	J 2.8	J 3.8	2.9	J11.9	J11.0	J11.6	5.4M	5.6	5.5	5.5	6.2M	12.1M	8.0M	4.9M	J 3.6	2.8	4.0S	3.0M	S
11	2.5	S	S	2.3	J 2,5	3.4	3.5M	5.9M	J 5.8	7.6M	7.6M	8.6M	9.5M	J11.9	4.2	4.0S	3.4	2.6	J 2.9	3.8S	8.4M	6.4S	5.2M	4.4M
12	4.1M	4,4M	3.8M	J 3.4	3.4M	3.5	J 6.2S	3.6	8.3	12.9M	11.8M	9.9M	15.1M	10.2M	10.3M	6.5M	8.5M	8.7Y	D20.0D	J11.1S	J 7.0S	8.3S	4.6S	7.6S
13	6.4S	J 4.9	3.3M	J 4.6S	3.5	J 3.9	J 4.2	8.9M	J11.8	8.1M	12.4M	6.5M	5.1M	6.8M	7.4M	J10.4	J 9.3	J11.8	J 9.8S	8.8M	5.9S	6.0M	5.6S	3.1M
14	5.7S	2.5	S	2.3	J 2.6	S	C	7.0M	7.3	6.1S	J 9.4Y	5.3	3.9S	D 3.1S	7.3M	11.0M	12.4Y	6.9	4.9M	5.9M	J 6.3	6.1M	J 6.9	J 6.8
15	D 7.0S	5.9M	7.0M	J 7.3S	J 5.3S	2.4S	3.8S	J 4.3S	5.9M	J 7.4	5.3S	11.2M	J 9.3	7.4M	7.0M	6.4M	7.7	3.7	J 4.0	9.0Y	3.4S	6.0M	J 5.9	J 8.2
16	9.0M	J10.3	6.2M	3.5	3.4M	2.9	3.8S	19.0M	9.0M	5.6M	4.1S	3.7	S	3.1G	5.3	S	5.9M	3.5	6.0M	3.0	14.0M	5.8M	8.4M	9.0M
17	J10.0	6.6M	6.2M	J 9.4	J 5.4	5.9M	5.6M	9.1M	8.5M	14.6M	10.3M	11.8	J 9.4	J 6.4Y	5.4S	6.9M	J 4.3	J11.3	3.1	3.4S	J 5.4	J 3.5	3.5	5.9M
18	6.7	5.7M	4.5M	J 6.0	9.0M	2.6	7.0M	J 7.4	5.0M	6.5M	5.6M	D 4.1S	J 8.0	7.4M	5.2M	5.4M	3.4S	J 5.8	J 6.5	J 6.2	J 9.4	5.9	5.9M	J 6.8
19	J 6.2	J 6.4	3.4	J 5.7	J 4.9	J 2.9	11.8M	J12.5	15.1M	7.6M	4.1S	7.6M	7.7M	6.6M	5.6M	5.0	7.4M	J 9.5	12.5M	J 9.4	4.8M	J 5.3	J 5.7	3.7M
20	J 3.4	3.2M	3.2	4.9M	3.2	3.3M	8.7M	3.4	6.0M	5.8	5.6	7.8M	15.8M	10.2M	3.7S	J 7.7	B	B	4.6	S	2.5	6.0M	5.8M	4.9M
21	5.8M	5.8M	5.6M	5.9M	J 5.0S	3.7M	9.3M	5.6	7.3	8.9M	8.9M	4.2	4.7	S	6.9M	18.2M	10.8	18.8M	J13.1	12.1	J13.2	11.3Y	J 4.9	5.5M
22	J 4.2S	7.0M	J 4.3	J 4.2	2.1	B	2.7	5.3M	3.6	3.9	4.1Y	5.2M	5.1M	6.2M	4.8	4.0M	3.7	6.1M	11.7M	5.3	3.7M	J 6.4	J 7.4	J 3.7
23	3.3	2.6	4.1M	2.5	3.1	B	3.1	J 6.3	J 6.2	J 7.7	8.8M	4.9S	5.3M	4.3	4.2	3.7	4.0S	J 4.1	3.7	4.9	J 7.4	J 8.2	J11.1	J 7.0
24	J 3.4	J 8.5	8.8M	J 5.8	J 7.0	7.0M	3.8	3.4	3.5	3.5	3.5	S	J 4.2S	J 5.6	5.8M	3.8S	3.8	J 4.3	J 3.6	J 4.9	6.3M	J 3.4	2.5	J 2.8
25	4.0M	2.4Y	2.6	2.8M	2.5	3.2	J 3.0	J 4.3	3.6	9.2M	4.2S	5.0M	4.8	S	S	7.3M	8.9M	J 2.7Y	B	5.7M	J 2.8	2.6	S	2.3
26	5.5M	J 5.4	2.3	J 2.8	2.5	B	3.4Y	6.4M	4.9M	5.9	J 5.0	J 7.0	6.3	4.8Y	4.4	3.5	4.0	6.2M	8.6M	3.8M	3.6	2.5	S	J 6.7
27	J 5.5	J 5.2	J 4.2	4.1M	2.5	3.7M	4.3	J 3.6	4.3S	5.6	6.0	3.5	G	3.8	G	3.1G	3.4	5.7	J 3.3	2.5	S	J 2.8Y	S	J 3.8
28	3.0M	2.3	2.4	2.5	2.3	2.5	B	3.4	4.1	5.9M	J 8.8	13.1M	J12.4	J 7.9	J 8.4	5.7M	5.5M	5.6	J 4.5	J 6.8	J 8.3	3.3	J 3.3	J 5.3S
29	6.4M	4.0M	5.8M	J 8.6	J 8.9	2.5	3.2	5.9M	J 3.4S	3.5	S	4.3	J 5.5	9.5M	8.6M	S	S	J 9.2	J 3.6	7.4M	J 6.9	J 4.1	5.7M	J 7.7
30	4.0M	3.3	J 4.8	3.9M	4.5M	5.7M	J 3.7	4.1	8.5M	J 9.4	J12.5	5.7M	4.2S	S	S	4.1	3.5	5.6	J 6.8	S	3.6M	J 8.4	5.6M	5.4M
31	J 6.2	6.3M	5.4M	4.0M	2.3	S	2.6	3.9	4.7M	12.6	J11.6	11.8M	12.0M	18.9M	D20.0D	J 6.8Y	18.0Y	12.3M	J 7.2S	9.0M	15.2M	J 4.8	6.1M	7.4M
No.	31	30	29	31	31	25	29	31	31	31	30	29	29	27	27	29	28	30	30	29	30	31	28	30
Median	5.8	5.6M	5.2	4.1	3.4	3.3	3.8	5.6	6.2	7.4	7.7	5.8M	6.6	6.8	5.9	5.9	6.2	6.6	4.9	5.6	5.9	5.7	5.6	5.7
U.Q.	6.8	6.3	6.0	5.8	5.4	4.2	5.7	7.4	8.5	8.9	11.6	10.6	9.4	10.2	8.4	7.5	9.3	9.2	7.7	8.9	8.3	6.4	5.9	7.0
L.Q.	4.1	3.3	3.6	2.8	2.5	2.8	3.4	3.9	4.9	5.9	5.6	5.1	5.0	5.5	5.2	4.5	4.0	4.3	3.6	3.7	3.6	3.4	3.7	3.8
Q.R.	2.7	3.0	2.4	3.0	2.9	1.4	2.3	3.5	3.6	3.0	6.0	5.5	4.4	4.7	3.2	3.0	5.3	4.9	4.1	5.2	4.7	3.0	2.2	3.2

The Radio Research Laboratories, Japan

foEs

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

K 4

IONOSPHERIC DATA

Jul. 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	A	A	A	2.6	1.8	2.2	3.5	4.0	A	A	4.5	A	S	A	A	A	4.8	5.3	U3.1S	3.5	3.1	A	E	U4.0S
2	A	A	A	A	1.5	S	3.4S	3.5	4.5	A	A	4.3	A	A	A	5.4	5.3	A	A	3.2	3.6	E3.0S	E2.8S	A
3	A	3.1	1.5	1.8	E	S	E2.9S	4.8	A	A	A	A	5.5	4.8	4.7	4.6	4.0	U3.2S	4.5	2.6	2.7	2.1	2.7	2.5
4	A	A	A	2.8	2.0	2.8	4.0	4.5	4.2	A	A	A	A	A	A	5.3	A	A	A	5.4	3.8	3.1	A	A
5	A	A	A	A	A	S	3.6	A	A	4.6	A	A	A	A	S	4.8	4.4	A	2.8	2.7	A	A	A	2.5
6	A	2.9	E	A	2.6	4.4	4.1	A	A	6.0	A	4.3	5.1	4.8	5.1	4.5	A	U3.4S	3.5	E	2.5	E	A	A
7	A	2.5	E	2.1	A	2.8	5.0	A	A	A	A	A	A	A	5.3	5.3	4.7	A	5.6	A	5.4	A	A	A
8	3.1	4.4	U4.4S	A	2.0	3.6	E3.4S	A	A	A	A	A	A	A	A	A	A	A	A	5.0	A	A	A	A
9	A	1.8	2.3	1.6	1.8	2.2	2.8	4.5	4.2	A	A	4.6	S	4.2	S	4.1	S	5.1	A	A	5.2	A	E2.7S	E3.8S
10	A	A	A	1.5	1.5	2.7	2.7	E2.9S	A	A	A	A	5.1	4.8	4.5	A	A	5.6	4.3	S	2.1	2.6	2.0	S
11	2.0	S	S	1.8	E	2.6	3.5	4.9	4.3	A	A	A	A	A	E4.2S	E4.0S	E3.4S	2.6	2.2	3.6S	A	A	A	U3.2S
12	3.1	3.2	U3.4S	1.9	2.1	2.6	A	E3.6S	A	A	A	A	A	A	A	A	A	A	A	A	4.0S	A	U4.0S	A
13	A	3.5	2.5	2.6	2.1	3.0	4.2	A	A	5.0	A	5.5	A	A	A	A	A	A	A	5.8	4.9	A	A	2.1
14	A	2.0	S	E	E	S	C	4.1	4.9	5.5	A	4.6	E3.9S	S	A	A	A	5.2	4.3	3.2	2.5	U5.0S	A	A
15	A	2.1	A	A	2.0	E2.4S	U3.7S	4.3	4.8	A	4.6S	A	5.0	A	5.4	5.5	A	3.5	3.2	U3.0A	U3.4S	A	A	A
16	A	A	A	2.1	1.5	2.5	E3.8S	A	6.0	4.8	E4.1S	E3.7S	S	E3.1S	4.5	S	4.5	3.5	3.9	2.6	A	U4.5S	A	A
17	A	A	A	A	2.9	A	A	A	A	A	A	A	A	4.6	4.8	A	4.3	A	2.8	S	U3.5S	2.5	3.3	4.5
18	U4.5S	3.0	3.2	2.8	2.3	2.3	4.9	4.9	A	A	A	S	A	A	A	A	E3.4S	A	4.5	A	4.4	3.9	4.2	2.5
19	A	A	2.2	1.6	A	2.1	A	A	A	A	S	A	A	A	5.1	A	A	A	A	4.8	3.9	3.5	A	3.0
20	2.7	2.5	3.1	A	2.4	2.5	A	3.4	4.0	4.4	A	A	A	A	E3.7S	4.5	B	B	2.5	S	2.5	U4.5A	A	A
21	A	A	A	A	A	3.0	A	4.6	A	A	A	E4.2S	4.6	S	A	A	A	A	4.0	5.5	A	5.0	4.5	3.1
22	2.1	2.2	2.6	1.7	E	B	2.6	A	E3.6S	E3.9S	S	A	A	A	A	S	3.3	A	A	3.9	2.6	4.0	A	3.0
23	2.1	E	2.6	1.6	2.2	B	2.6	A	5.3	A	4.5	A	A	E4.3S	U4.2S	3.6	S	4.0	3.7	3.4	3.6	3.1	A	A
24	2.8	A	2.0	A	A	A	3.0	3.4	3.5	3.5	S	S	E4.2S	A	A	E3.8S	E3.8S	3.5	2.5	2.2	A	2.9	2.2	2.1
25	2.8	2.0	E	2.0	1.7	2.6	2.7	3.2	E3.6S	A	S	5.0	E4.8S	S	S	4.5	A	2.7	B	2.6	2.1	2.1	S	U2.3S
26	U3.4S	3.3	E	E	2.0	B	2.5	A	4.5	5.2	4.7	5.3	A	4.6	U4.3S	E3.5S	E4.0S	A	A	3.1	2.8	2.1	S	2.3
27	E	2.0	E	1.9	1.8	S	A	3.1S	3.6	5.1	A	E3.5S		E3.8S		E3.1S	3.4	3.5	3.0	2.2	S	E	S	2.2
28	2.0	E	E	1.7	E	2.0	B	3.0	3.8	5.1	A	A	A	A	A	5.5	4.6	2.9	S	A	4.5	3.2S	2.8	A
29	U4.3A	2.6	A	A	A	2.0	2 8	4.3	3.4	E3.5S	S	E4.3S	5.1	A	A	S	S	A	2.6	3.5	3.0	3.4	A	A
30	2.5	2.1	2.7	1.9	1.9	A	2.6	4.1	3.8	A	A	A	E4.2S	S	S	U3.9S	3.5	3.5	4.6	S	3.4	2.1	A	A
31	A	2.1	2.6	2.9	1.8	S	2.6	3.9	4.4	A	A	A	A	A	A	A	A	A	5.0	A	A	3.0	A	A
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs

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

The Radio Research Laboratories, Japan

K 5

IONOSPHERIC DATA

Jul. 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	E1.90S	E1.90S	E1.70S	1.10	E	E1.95S	2.00	2.10	2.20	E2.80S	E3.00S	3.00	E3.10S	E3.10S	E3.30S	E2.90S	2.20	2.20	E2.15S	E1.90S	E1.90S	E1.90S	E1.80S	E1.80S
2	E1.90S	E1.80S	E1.80S	E1.50S	1.00	E2.20S	2.20	2.20	2.30	2.30	E3.30S	E4.10S	3.15	3.30	3.15	2.60	E2.70S	E2.40S	E1.90S	E1.80S	E1.70S	E1.80S	E1.70S	E1.95S
3	E1.75S	E1.50S	1.40	1.50	1.50	1.60	1.80	1.90	E2.60S	E2.80S	2.80	3.30	3.10	2.80	2.80	2.20	2.20	2.60	2.00	E1.80S	E1.90S	E1.90S	E1.90S	E1.50S
4	E1.50S	E1.50S	E1.50S	1.40	1.10	E1.90S	2.20	E2.30S	E2.80S	E3.00S	E3.30S	E3.50S	E3.00S	E2.90S	E3.50S	E4.50S	E3.50S	E3.10S	E2.00S	E1.90S	E1.90S	E2.00S	E1.90S	E1.90S
5	E1.80S	E1.50S	E1.80S	1.20	E1.50S	E1.90S	2.00	2.20	2.80	E2.80S	E3.00S	2.85	E3.20S	E3.10S	E4.20S	2.80	E3.20S	2.10	E2.10S	E1.90S	E1.90S	E1.90S	E1.80S	E1.80S
6	E1.80S	E1.70S	E1.50S	E	E	1.60	E1.90S	E2.20S	2.20	E3.30S	E3.00S	E3.90S	E3.00S	E3.30S	E3.60S	E2.80S	2.20	2.10	E2.10S	E1.80S	E1.90S	E1.90S	E1.90S	E1.90S
7	E1.80S	E1.90S	E1.80S	1.50	E1.80S	E1.90S	E1.90S	E2.00S	E2.00S	2.70	E2.90S	2.80	E3.10S	2.90	2.20	E2.80S	2.30	1.90	E2.30S	E2.00S	E1.90S	E1.90S	E1.90S	E1.90S
8	E1.80S	E1.50S	E1.90S	1.30	1.20	E1.90S	2.00	2.10	2.10	2.90	2.55	3.15	3.20	E4.25S	E4.25S	E4.05S	2.40	1.90	1.90	1.65	E1.70S	E1.60S	E1.55S	E1.60S
9	E1.65S	1.10	1.30	1.50	1.45	1.50	1.90	1.90	E3.05S	2.50	E3.80S	E3.40S	E4.40S	3.10	E3.80S	2.40	E5.80S	1.85	1.20	E1.70S	1.50	E1.70S	E1.70S	E1.80S
10	E1.80S	E1.75S	E1.40S	1.45	1.20	1.70	E1.90S	2.00	E2.45S	E3.20S	E3.00S	3.00	3.20	3.10	3.10	2.70	2.20	2.30	2.20	E1.90S	E1.80S	E1.90S	E1.90S	E1.80S
11	E1.80S	E1.60S	E1.50S	1.20	E1.60S	E1.90S	E2.10S	2.20	2.30	2.60	2.90	3.05	3.20	2.60	2.60	2.70	2.70	2.20	E2.10S	E2.00S	E1.90S	E2.00S	E1.90S	E1.90S
12	E1.80S	E1.50S	E1.50S	E1.50S	E1.70S	E1.70S	1.90	2.10	2.20	2.70	2.80	3.20	3.00	3.00	2.80	2.20	2.20	2.10	E2.00S	E2.10S	E1.80S	E1.80S	E1.90S	E1.80S
13	E1.90S	E1.50S	E1.80S	E1.80S	E1.80S	1.90	2.00	2.10	2.10	2.80	E3.10S	3.10	E3.10S	2.80	2.60	2.20	2.80	1.80	E1.90S	E1.90S	E1.80S	E2.00S	E1.95S	E1.80S
14	E2.00S	E1.70S	E1.80S	1.00	1.40	E2.10S	C	E2.00S	E2.30S	E3.25S	E3.00S	2.80	E3.20S	E2.90S	2.90	3.10	2.50	2.10	E2.00S	E1.90S	E1.90S	E1.90S	E1.70S	E1.90S
15	E2.00S	E1.50S	E1.80S	1.20	E1.70S	E1.60S	E1.90S	E2.30S	2.20	2.80	E3.15S	E3.10S	3.00	3.00	E3.05S	2.70	2.20	E2.75S	E2.30S	E2.05S	E2.00S	E1.80S	E1.50S	E1.90S
16	E1.80S	E1.50S	E1.70S	E1.50S	1.10	E1.80S	E2.20S	2.00	E2.20S	2.80	E3.20S	2.70	E3.90S	2.80	E3.55S	E3.90S	2.85	E2.60S	E1.80S	E2.00S	E1.90S	E1.90S	E1.90S	E1.90S
17	E1.90S	E1.60S	E1.80S	E1.50S	E1.50S	E1.90S	E2.00S	2.30	2.30	2.90	2.80	2.80	2.60	2.60	E3.30S	E3.20S	E3.10S	2.10	E2.00S	E1.90S	E1.90S	E1.80S	E1.90S	E1.90S
18	E1.80S	E1.90S	E1.60S	E1.80S	1.00	E1.90S	2.10	E2.00S	E2.80S	2.60	2.60	E3.00S	2.70	3.00	2.60	2.50	2.70	1.90	E2.00S	E1.90S	E1.90S	E1.95S	E1.80S	E1.95S
19	E1.90S	E1.50S	E1.70S	1.00	1.20	1.65	E1.80S	E2.00S	2.60	2.20	E3.10S	2.90	2.90	3.40	2.90	2.75	2.90	2.20	E2.00S	E1.95S	E1.80S	E1.90S	E1.90S	E1.80S
20	E1.80S	E1.90S	E1.90S	E2.00S	E1.90S	E1.90S	E2.10S	E1.80S	2.20	2.80	3.05	3.60	3.80	2.90	2.60	2.70	4.50	B	1.70	E2.00S	E2.00S	E1.70S	E2.40S	E1.90S
21	E1.90S	E1.60S	E1.90S	E1.50S	1.50	E2.10S	2.10	2.20	2.20	2.85	3.10	2.70	2.95	E4.50S	E3.50S	3.00	2.70	2.00	1.90	E1.80S	E1.80S	E1.60S	E1.80S	E1.80S
22	E1.80S	E1.80S	E1.50S	1.20	1.40	2.10	2.30	2.20	3.00	2.85	2.60	3.00	E3.30S	2.70	2.80	2.70	2.95	E2.60S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S
23	E1.80S	E1.60S	E1.50S	E	1.10	2.10	E2.20S	2.10	E2.70S	2.80	2.80	2.90	3.05	3.50	2.80	2.20	2.25	2.65	E2.10S	E1.70S	E1.80S	E1.50S	E2.10S	E1.90S
24	E2.05S	E1.50S	1.20	E1.50S	1.00	E2.20S	E2.10S	2.20	2.30	2.70	2.80	2.90	2.95	3.05	2.80	E2.80S	2.70	E2.40S	E2.05S	E2.00S	E1.80S	E1.90S	E2.05S	E1.80S
25	E1.80S	E1.50S	E1.80S	1.40	1.00	E2.00S	E2.00S	2.20	2.10	2.80	E3.10S	E3.90S	3.10	E4.60S	E4.60S	2.80	2.30	2.20	2.20	E1.70S	E1.90S	E1.90S	E1.95S	E1.80S
26	E2.00S	E1.70S	E1.50S	E1.50S	1.10	2.00	2.10	2.20	3.00	2.80	3.00	3.10	3.05	3.20	2.80	2.80	2.60	1.90	E2.20S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S
27	E1.80S	E1.90S	E1.50S	E1.60S	E	E1.90S	E1.90S	2.10	2.70	2.90	2.90	2.80	2.90	3.00	2.90	2.20	2.95	2.20	2.10	E2.00S	E1.90S	E1.80S	E1.50S	E1.85S
28	E1.80S	E1.80S	E1.90S	E	1.10	E1.60S	2.60	2.20	2.60	2.70	2.80	2.70	2.90	2.85	2.60	2.60	2.80	1.90	E2.10S	E2.00S	E1.90S	E1.90S	E1.80S	E2.00S
29	E2.20S	E1.70S	E1.60S	1.00	E1.50S	E1.60S	E1.90S	2.10	2.30	2.70	2.80	2.90	E3.30S	3.20	E2.80S	E4.00S	E3.30S	1.70	E2.10S	E1.90S	E1.90S	E1.90S	E1.50S	E1.50S
30	E1.80S	E1.50S	E1.50S	E	1.00	1.50	E2.00S	2.10	2.20	2.70	2.80	E3.05S	2.80	E4.30S	E3.30S	E3.55S	E2.80S	2.10	E2.10S	E2.00S	E1.80S	E1.90S	E1.70S	E1.60S
31	E1.90S	E1.50S	1.45	E	E	E1.90S	2.20	2.10	2.10	2.10	3.05	3.25	3.30	3.00	2.60	2.60	2.70	2.10	E1.90S	E1.70S	E1.90S	E1.80S	E2.00S	E1.80S
No.	31	31	31	20	22	31	30	28	24	27	17	23	22	24	19	21	25	25	31	31	31	31	31	31
Median	E1.80	E1.60	E1.60	1.20	1.10	E1.90	E2.00	2.10	2.20	E2.80	2.80	2.90	3.00	3.00	2.80	2.70	E2.70	2.10	E2.00	E1.90	E1.90	E1.90	E1.90	E1.85
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

IONOSPHERIC DATA

Jul. 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	A	A	A	U3.05S	I3.20F	U3.40F	3.15	J3.20R	A	A	2.90	A	S	I2.90A	I3.05A	I3.05A	U3.05R	3.05	3.15	J3.10S	3.35	A	F	S
2	A	A	A	A	F	J2.90R	3.15	J3.10S	J3.40R	I3.20A	I2.80A	2.95	A	A	A	3.55	3.00R	I3.00A	I3.05A	2.95	2.95S	U2.90S	2.85S	I2.75A
3	I2.75A	U2.80S	2.80A	U2.70S	2.75S	I2.80S	2.95	2.80	A	A	A	A	U3.05R	J3.10R	3.00	2.95	2.95	J3.05R	I3.05S	J3.40R	3.35	U3.20S	S	F
4	A	A	A	F	I2.90F	2.75	3.10	3.25	3.25R	A	A	A	A	A	A	I2.95R	A	A	I3.05A	U3.40S	3.25	S	A	A
5	A	A	A	A	A	2.95	2.90	I2.85A	I3.10A	I3.25R	I3.00A	I2.75A	I2.80A	I2.85A	2.75	2.80	2.95	A	J3.00S	3.45	A	A	A	F
6	A	F	FS	I2.75A	I3.00F	J3.40S	3.10	A	A	3.35	I3.15A	2.95	U3.00R	2.85	2.95	2.95	I2.90A	J3.10R	3.15R	U3.30S	I3.20S	2.90S	A	A
7	A	S	FS	S	A	U3.10S	3.10	A	A	A	A	A	A	A	3.00	3.05	3.00	I2.95A	J2.95R	A	R	A	A	A
8	2.95F	FS	S	A	F	I3.30F	J2.85R	I2.85A	I3.05A	A	A	A	A	A	A	A	A	A	I2.90A	U3.15R	I2.90A	I3.05A	I2.85A	A
9	A	U2.75S	U2.85S	U2.85S	U3.10S	3.05	3.45	2.85	3.10	A	A	2.85	U2.90S	2.95	2.80	2.80	3.00S	2.95	U3.00S	I2.90A	2.95S	I2.80A	2.70S	3.00S
10	A	A	A	S	U2.80S	2.85S	3.25	3.15S	A	A	A	I3.20A	3.15R	J3.15R	2.90	A	A	J2.95S	I3.05R	J3.15S	J3.25S	3.05S	3.15	J2.85S
11	J2.85S	J2.90S	J2.85S	J2.90S	J3.05F	J3.10S	3.20	3.45	U3.25R	A	A	A	A	A	I2.80R	2.70	2.85	J2.90R	S	3.25	A	A	A	S
12	FS	S	S	2.90	I2.95F	J3.25S	I2.70A	J2.85R	A	A	A	A	A	A	A	A	A	A	A	A	S	A	S	A
13	A	F	S	S	F	J3.00S	3.35	A	A	U3.30S	I3.30A	J3.25R	A	A	A	A	A	A	A	U3.25S	3.20	A	A	U2.70S
14	I2.90A	I2.85F	I2.80F	2.75F	2.75	3.15S	I3.30C	3.45	3.20S	U3.20S	I3.20A	I3.20R	3.20	I3.00S	I3.00A	I3.10A	I3.00A	J3.40S	3.30	3.10	3.00S	S	A	A
15	A	FS	A	A	F	U3.10S	J2.85S	I3.30S	J3.30S	I3.00A	U2.70S	I2.80A	J2.95R	I3.10A	J3.10S	3.00	I3.00A	J2.60R	3.15	J3.40S	U3.60S	A	A	A
16	A	A	A	FS	F	3.05	2.95S	I2.80A	3.15	3.35	3.20	2.95R	U3.00R	J3.05R	2.75	2.80	3.05	3.25	3.10	J3.30S	A	FS	A	A
17	A	A	A	A	FS	I3.20A	A	A	A	A	A	A	A	R	S	A	3.05R	I3.20A	3.10	U3.25S	S	F	F	S
18	I2.80S	S	F	F	S	F	2.95	2.90	A	A	A	S	A	A	A	A	2.95	I3.15A	3.20	I3.10A	2.95	I2.95F	I2.90F	J2.70F
19	A	A	2.85	2.90F	I2.70A	2.65	A	A	A	A	S	A	A	I3.05A	3.15	A	A	A	A	I3.30S	3.30	3.40	I3.10A	2.80S
20	U2.75F	U3.00S	J2.85R	I3.00A	3.00	2.95	I3.00A	3.30	J3.55R	I3.25R	I3.05A	A	A	A	2.85	3.05	3.05R	B	R	3.30	3.05S	2.90	A	A
21	A	A	A	A	A	J2.95S	I3.30A	3.35	I2.90A	I2.85A	I3.05A	3.15R	2.95	I3.00R	I2.95A	I2.90A	I2.95A	I3.00A	J3.05S	3.00	A	U2.85S	FS	F
22	F	F	F	F	F	F	U2.50S	I2.75A	J2.75S	I2.85R	S	A	A	A	A	R	S	I2.80A	I2.90A	3.05	J3.25S	S	A	F
23	FS	U2.80F	U2.90S	2.75F	2.80	2.75	J3.00S	A	S	A	J3.05R	A	A	2.85	3.00	2.95	I2.90S	2.80	2.80	3.00	3.20S	F	A	A
24	I2.80F	A	F	A	A	I2.65A	J2.90S	2.85	J2.95R	3.25	S	R	S	I2.80A	I2.75A	2.75	2.95	3.15	3.15	3.30	I2.95A	2.75S	F	2.80F
25	2.70	F	F	U2.65F	2.85F	2.65	3.10	3.50S	J3.15R	I3.20A	I2.95S	I3.00R	2.95R	2.95R	2.95	U2.90S	A	J3.10R	2.90S	J2.60S	3.10S	3.00	I3.10F	U3.05S
26	J2.80S	FS	F	J2.95F	2.90	2.75H	2.95S	I2.75A	2.85	U3.20S	3.30	J3.05R	A	2.95	J2.95R	3.20	2.85R	A	A	3.10	3.40	I3.20S	U2.95S	J2.60S
27	I2.95F	2.90	2.90S	2.80	2.90	3.20R	I3.15A	3.05	3.35	3.35	I3.15A	2.95	2.95	2.95	3.00	3.15	3.00	3.20	3.10	3.30	U3.20S	J2.80S	I2.80S	2.90
28	2.90	3.00S	2.85S	2.90	2.95	3.00	3.20R	3.10	3.35	3.30	I2.90A	I2.85A	I3.00A	I3.05A	I3.10A	2.90	3.25	3.15	I3.20S	I3.15A	I3.05S	U2.95S	2.95S	I3.05A
29	3.10S	F	A	A	A	2.90	2.80	3.15S	3.45	3.55	I2.70S	3.15	2.75	I3.05A	I3.10A	3.15	3.35	I3.15A	3.35S	I3.10S	I3.00F	F	A	A
30	F	U3.00F	U3.00S	I2.80F	2.80S	I2.85A	3.15	3.15	3.10	A	A	A	2.80	J3.15S	J3.20R	2.75	2.90	2.95	3.10	J3.20S	2.90	J3.25S	A	A
31	A	2.70F	I3.00F	U3.30S	3.30F	I3.30F	U3.15R	2.95	2.95	A	A	A	A	A	A	A	A	A	3.05	A	A	U2.90S	A	A
No.	12	10	11	16	18	29	29	25	20	16	16	15	14	19	22	22	22	22	25	28	23	17	10	11
Median	U2.80	U2.90	2.85	U2.90	2.90	3.00	3.10	3.10	3.15	U3.25	U3.05	2.95	2.95	3.00	3.00	2.95	3.00	3.05	3.05	3.20	3.20	U2.95	U2.90	2.80
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

K 7

IONOSPHERIC DATA

Jul. 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								A	A	A	A	A	S	A	A	A	A	A						
2							A	L	A	A	A	A	A	A	A	A	A	A	A					
3							S	A	A	A	A	A	A	A	A	A	A	L						
4							A	A	L	A	A	A	A	A	A	A	A	A	A					
5							A	A	A	A	A	A	A	A	L	A	A	A	L					
6							A	A	A	A	A	L	A	A	A	A	A	L						
7							A	A	A	A	A	A	A	A	A	A	A	A	A					
8								A	A	A	A	A	A	A	A	A	A	A	A					
9								A	A	A	A	A	S	A	S	A	S	A	A					
10								S	A	A	A	A	A	A	A	A	A	A	A					
11									A	A	A	A	A	A	S	S	S	L	L					
12							A	S	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	A	A	A					
14							C	A	A	A	A	A	S	S	A	A	A	A	A					
15							A	A	A	A	AS	A	A	A	A	A	A	L						
16							S	A	A	A	S	S	U3.30L	L	A	U3.20S	A	L	A					
17						A	A	A	A	A	A	A	A	A	A	A	A	A	L					
18							A	A	A	A	A	S	A	A	A	A	S	A	A					
19						3.40	A	A	A	A	S	A	A	A	A	A	A	A	A					
20							A	3.50	L	A	A	A	A	A	S	A	B	B						
21							A	A	A	A	A	S	A	S	A	A	A	A	A					
22						3.40	3.75S	A	S	S	S	A	A	A	A	S	S	A	A					
23							3.55S	A	A	A	A	A	A	A	S	U3.40S	S	A	A					
24						A	A	3.20	S	3.55L	S	S	S	A	A	S	L	L	L					
25						A	3.50L	L	S	A	S	A	AS	S	S	A	A	3.45L						
26							L	A	A	A	A	A	A	A	3.25S	L	S	A	A					
27							A	3.30S	L	A	A	S	S	S	U3.35S	3.60L	3.50L	3.55L						
28							L	3.50	L	A	A	A	A	A	A	A	A	3.35S	S					
29							L	L	L	S	S	S	A	A	A	3.35S	S	A						
30							L	A	3.55L	A	A	A	S	3.60S	S	U3.20S	3.40	A	A					
31							U3.45L	A	A	A	A	A	A	A	A	A	A	A	A					
No.						2	4	4	1	1			1	1	2	5	2	3						
Median						3.40	3.50	3.40	3.55	3.55			U3.30	3.60	U3.30	U3.35	3.45	3.45						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

Jul. 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								300A	A	A	380A	A	S	A	A	A	320A	E350A						
2							310	285	250	A	A	330	A	A	A	345	295	A	A					
3							355	350	A	A	A	A	300A	300	375	350	345	300						
4							E310A	255	275	A	A	A	A	A	A	350	A	A	A					
5							310	A	A	270	A	A	A	A	360	355	315	A	300					
6							E295A	A	A	E300A	A	355	345	355	345	315	A	285						
7							260	A	A	A	A	A	A	A	350	E350A	300	A	E350A					
8								A	A	A	A	A	A	A	A	A	A	A	A					
9								340	295	A	A	355	345	310	330	355	315	310	260					
10								270	A	A	A	A	310	310	355	A	A	E360A	250A					
11									285	A	A	A	A	A	355	410	360	320	260					
12							A	355	A	A	A	A	A	A	A	A	A	A	A					
13							250	A	A	275	A	E305A	A	A	A	A	A	A	A					
14							C	240	E350A	E310A	A	350	305	S	A	A	A	260	270					
15							E310A	255	E250A	A	E390A	A	330	A	300	E350A	A	345						
16							E350S	A	E300A	250	270	355	355	345	E390S	385	300	255	260					
17						A	A	A	A	A	A	A	A	355	350	A	320	A	275					
18							E340A	E350A	A	A	A	S	A	A	A	A	335	A	E290A					
19						430	A	A	A	A	S	A	A	A	305	A	A	A	A					
20							A	270	245	345	A	A	A	A	350	310	310	B						
21							A	260	A	A	A	330	360	330	A	A	A	A	295					
22						355	475	A	355	430	S	A	A	A	A	455	400	A	A					
23							300	A	E350A	A	350	A	A	395	355	360	S	360	350					
24						A	E340A	400	400	285	S	R	S	A	A	E410S	305	275	260					
25						420A	300	240	280	A	S	E400A	375	345	345	345	A	275						
26							310	A	310	300	280	340A	A	350	385	295	380	A	A					
27							A	285	270	E300A	A	375	355	350	330	290	345	280						
28							300	305	260	310	A	A	A	A	A	350	280A	310	S					
29							380	300	255	255	S	345	E410A	A	A	300	S	A						
30							310	295	295	A	A	A	390	310	275	400	355	300	E295A					
31							300	345	350A	A	A	A	A	A	A	A	A	A	300A					
No.						3	16	18	15	9	4	10	11	12	16	19	17	13	11					
Median						420	E310	290	285	285	315	350	345	345	350	350	320	300	270					
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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	A	A	A	310A	260	250	255	A	A	A	A	A	S	A	A	A	A	A	E255S	250A	245	I300A	305	E350A
2	A	A	I260A	I280A	250	255	I250A	245	A	A	A	A	A	A	A	A	A	A	A	275	275	290	300	I275A
3	I260A	310	265	270	270	I255S	S	A	A	A	A	A	A	A	A	A	A	E245A	E280A	240	225	235	295	E340A
4	A	A	A	300	295	300	I245A	I245A	E280A	A	A	A	A	A	A	A	A	A	A	E240A	245	300A	A	A
5	A	A	A	A	A	250	A	A	A	A	A	A	A	A	E355S	A	A	A	E255A	230	A	A	A	350
6	I345A	E350A	255	I305A	260	250	A	A	A	A	A	E345A	A	A	A	A	A	235	250A	235	245	250	A	A
7	A	295	295	300	I265A	280A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E250A	A	A	A
8	E280A	E310A	E350A	A	255	225	E270S	A	A	A	A	A	A	A	A	A	A	A	A	295	I280A	A	A	I310A
9	I250A	265	300	270	235	225	240	I230A	215	A	A	A	S	A	S	A	S	A	A	A	300	I350A	320	290
10	A	A	A	300	290	255	230	230	A	A	A	A	A	A	A	A	A	A	A	250	225	245	225	275
11	295	275	255	255	225	255	260	250	A	A	A	A	A	A	S	S	S	235	230	235	A	A	A	E350S
12	E300A	E340A	E320A	300	255	245	I240A	I220S	A	A	A	A	A	A	A	A	A	A	A	A	E250A	A	E300S	A
13	I290A	E300A	255	300A	250	260A	A	A	A	A	A	A	A	A	A	A	A	A	A	E270A	E250A	A	A	350A
14	I300A	300A	255	290	285	245	C	A	A	A	A	A	S	S	A	A	A	A	A	E240A	260	E310A	A	A
15	A	250A	A	A	300A	255	A	A	E250A	A	AS	A	A	A	A	A	A	245	250A	E250A	210S	A	A	A
16	A	A	A	300	255	250A	S	A	A	A	S	I240S	250S	E290S	A	E300S	A	245	I245A	215	A	E300S	A	A
17	A	A	A	A	E310A	A	A	A	A	A	A	A	A	A	A	A	A	A	E250A	235	E290A	295	E350A	E350A
18	E340A	E300A	300A	310A	E340A	E350A	A	A	A	A	A	S	A	A	A	A	S	A	A	A	E300A	E300A	E300A	295
19	I290A	I270A	E310A	300A	I290A	255	A	A	A	A	S	A	A	A	A	A	A	A	A	E250A	240A	250A	A	E340A
20	300A	300A	E340A	A	300A	E300A	A	220	245	A	A	A	A	A	S	A	B	B	245	210	250	E300A	A	A
21	A	A	A	A	A	E290A	A	A	A	A	A	S	A	S	A	A	A	A	A	E260A	A	E300A	300A	305
22	285	295	305	295	300	260	225	I220A	I245S	I200S	S	A	A	A	A	I255S	255	A	A	E290A	225	310	A	320A
23	300	300	300	300	E300A	290	245	A	A	A	A	A	A	A	S	235	I250S	A	A	270A	250A	250A	A	A
24	E350A	I280A	270	A	A	A	A	E325A	245	225	I210S	200	S	A	A	S	E280S	245	245	230	I270A	330A	255	300
25	E350A	300	245	300	310	I305A	245	235	I235S	A	S	A	I250S	I250S	S	A	A	240	215	235	235	270	250	250
26	E350A	E310A	255	255	255	250H	245	I240A	A	A	A	A	A	A	E300A	E250A	S	A	A	255	230	200	300	310
27	280	255	250	295	250	250	I240A	245	245	A	A	S	I250S	I235S	E255S	225	230	230	250A	225	205	295	300	305
28	300	290	280	280	255	250	230	210	235	A	A	A	A	A	A	A	A	225	S	A	E300A	E310S	300	A
29	E340A	E350A	I280A	I255A	I280A	250	230	290	210	S	S	S	A	A	A	250	E245S	I235A	225	E250A	250	E300A	A	A
30	255	285	E290A	250	305	I300A	230	I250A	225	A	A	A	S	E255S	I230S	255	220	A	A	245	245	260A	A	A
31	A	285	E300A	260	280	245	250A	I240A	A	A	A	A	A	A	A	A	A	A	A	A	A	E350A	A	A
No.	14	16	17	24	25	26	16	14	9	2	1	2	3	4	4	6	5	9	9	17	20	16	13	13
Median	290	290	265	300	265	250	240	U240	235	U210	U210	U220	U250	E250	E280	E250	E245	235	245	235	245	280	300	305
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F

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

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan

K 11

IONOSPHERIC DATA

Jul. 1963

Types of Es

135° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4'N
Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f3	f2	f3	f2	f2	1	1	c	12	12	12	1	1	12	12	12	c2	12	1	f2	f2	f2	f	f3
2	f3	f4	f3	f2	f2		12	c	12	13	12	1	12	12	12	12	1	13	12	f2	f2	f3	f2	f3
3	f3	f2	f2	f	f	1	c	c2	13	12	12	12	1	1	1	1	c1	1	1	f2	f	f	f2	f3
4	f3	f4	f3	f3	f2	1	1	1	1	12	12	12	1	1	1	1	1	12	12	f2	f2	f2	f3	f3
5	f3	f3	f3	f3	f3	1	1	12	12	1	12	1	12	12		1	1	13	1	f2	f	f	f2	f2
6	f5	f3	f2	f2	f2	12	12	12	12	1	12	1	1	1	1	1	12	1	1	f	f2	f	f2	f3
7	f2	f2	f2	f2	f2	12	12	13	13	1	12	12	12	h12	12	12	12	13	13	f3	f2	f3	f2	f3
8	f3	f2	f3	f3	f3	12	1	c	c2	12	12	12	12	12	12	13	12	12	15	f2	f2	f3	f	f3
9	f2	f	f3	f2	f2	1	1	12	1	12	12	1		1		1		12	12	f2	f2	f2	f2	f2
10	f3	f3	f3	f2	f2	1	1	c	12	12	12	1	1	1	1	12	13	12	12	f2	f	f2	f	
11	f			f	f	1	1	12	1	1	12	1	12	12	1	1	1	1	1	f2	f3	f3	f3	f3
12	f2	f3	f2	f	f2	12	13	c	13	12	12	12	12	12	12	1	12	13	13	f3	f2	f3	f2	f2
13	f2	f3	f2	f	f	1	12	13	12	12	12	12	1	12	12	12	12	12	12	f3	f3	f2	f	f2
14	f2	f2		f	f2			1	1	12	1	12	1	1	h1	c2	12	12	13	f	f2	f2	f3	f3
15	f3	f3	f3	f3	f3	1	12	1	12	1	1	12	1	12	12	12	121	1	1	f2	f2	f2	f4	f2
16	f3	f3	f3	f2	f2	1	12	13	12	1	1	1		1	1		1	1	12	f	f3	f3	f3	f3
17	f3	f3	f3	f3	f3	12	13	c2	12	12	12	12	12	1	1	12	1	12	1	f	f3	f2	f3	f2
18	f3	f2	f2	ff2	f3	h	12	12	12	12	12	1	1	12	1	1	h1	h1	12	f3	f3	f3	f3	f2
19	f3	f3	f3	f3	f2	1	13	13	12	12	1	12	12	12	12	h1	h2	12	13	f3	f3	f2	ff3	f3
20	f2	f3	f3	f	f2	12	12	12	12	1	1	1	12	12	1	1			h		f2	f3	f2	f2
21	f3	f6	f4	f4	f4	1	13	12	c2	12	12	1	1		h2	12	12	13	1	f2	f2	f2	f3	f2
22	f	f2	f3	f2	f		1	1	1	1	1	1	1	1	1	1	h	h2	12	f3	f	f3	f3	f2
23	f	f	f2	f2	ff		1	12	1	12	1	1	1	1	1	h1	h1	1	12	f3	f2	f2	f3	f3
24	f3	f3	f2	f3	f4	13	12	1	1	1	1		h	1	h	c	c	1	1	f	f3	f2	f	f2
25	f3	f	f	f2	f2	1	1	1	c	12	1	h	h			1	12	1		f2	f	f		f
26	f3	f3	f	f	f		1	12	1	1	1	12	12	1	1	1	1	13	13	f3	f2	f		f
27	f2	f2	f	f2	f2	1	12	12	1	1	12	1		1		1	h	1	1	f		f		f2
28	f2	f	f	f2	f	1		1	1	1	1	12	1	12	12	12	12	1h	12	f2	f3	f3	f	f3
29	f3	f3	f3	f4	f4	1	1	12	1	1		h	c	12	12			12	1	f3	f2	f3	f3	f2
30	f2	f2	f2	f2	f2	12	12	12	1	12	12	1	c			h	c	c2	12		f2	f2	f3	f4
31	f2	f2	f3	f3	f2		h	h	c	13	12	12	12	12	12	1	12	12	12	f2	f2	f3	f2	f2
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

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

K 12

IONOSPHERIC DATA

Jul. 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	A	A	A	U330S	I325F	U295F	295	J300R	A	A	A	A	S	A	A	A	A	A	305	J295S	255	A	F	S
2	A	A	A	A	F	J330R	330	J300S	J255R	A	A	335	A	A	A	A	300R	I300A	I315A	310	310S	U325S	345S	I355A
3	I355A	U350S	340A	U355S	350S	I340S	S	355	A	A	A	A	U305R	J300R	A	A	350	J330R	I310S	J255R	250	U295S	S	F
4	A	A	A	F	I360F	355	320	285	295R	A	A	A	A	A	A	R	A	A	A	U255S	255	S	A	A
5	A	A	A	A	A	305	340	I370A	I320A	R	A	A	A	A	370	380	350	A	J320S	255	A	A	A	F
6	A	F	FS	I365A	I315F	J255S	300	A	A	A	A	355	A	355	350	345	I370A	J300R	300R	U295S	I290S	335S	A	A
7	A	S	FS	S	A	U300S	300	A	A	A	A	A	A	A	350	A	325	A	A	A	R	A	A	A
8	340F	FS	S	A	F	I250F	J350R	A	A	A	A	A	A	A	A	A	A	A	I330A	U295R	I340A	A	A	A
9	A	U350S	U335S	U330S	U275S	260	245	350	290	A	A	355	U355S	335	355	350	335S	325	U320S	I330A	310S	I350A	370S	300S
10	A	A	A	S	U330S	345S	285	275S	A	A	A	A	320R	J310R	370	A	A	J330S	I315R	J300S	J280S	300S	295	J350S
11	J345S	J350S	J345S	J320S	J310F	J300S	300	255	U295R	A	A	A	A	A	R	S	360	J345R	S	260	A	A	A	S
12	FS	S	S	355	I330F	J265S	A	J355R	A	A	A	A	A	A	A	A	A	A	A	A	S	A	S	A
13	A	F	S	S	F	J300S	255	A	A	U275S	A	A	A	A	A	A	A	A	A	U300S	280	A	A	U380S
14	I350A	I350F	I350F	355F	350	300S	I265C	255	A	A	A	R	310	S	A	A	I340A	J290S	285	290	310S	S	A	A
15	A	FS	A	A	F	U300S	J350S	I280S	J255S	A	A	A	J350R	I315A	J300S	A	A	S	300	J270S	U215S	A	A	A
16	A	A	A	FS	F	300	S	I355A	300	265	295	G	G	G	S	390	310	290	300	J275S	A	FS	A	A
17	A	A	A	A	FS	I290A	A	A	A	A	A	A	A	R	S	A	340R	I295A	300	U290S	S	F	F	S
18	I355S	S	F	F	S	F	A	A	A	A	A	S	A	A	A	A	S	I320A	300	I310A	350	I345F	I350F	J395F
19	A	A	355	350F	A	G	A	A	A	A	S	A	A	A	310	A	A	A	A	I300S	265	255	A	355S
20	U355F	U315S	J350R	I335A	310	305	A	280	J250R	R	A	A	A	A	350	315	310R	B	R	255	305S	A	A	A
21	A	A	A	A	A	J310S	I270A	275	A	A	A	G	G	R	A	A	A	A	J310S	310	A	U330S	FS	F
22	F	F	F	F	F	F	G	A	J355S	R	S	A	A	A	A	R	S	A	A	310	J260S	S	A	F
23	FS	U355F	U350S	360F	355	355	J300S	A	S	A	A	A	A	G	G	G	S	S	375	315	295S	F	A	A
24	I350F	A	F	A	A	A	J350S	G	S	290	S	R	S	A	A	S	320	300	300	260	I320A	355S	F	350F
25	390	F	F	U380F	390F	420	305	250S	J295R	A	S	R	S	350R	350	U350S	A	J300R	340S	J265S	300S	310	I310F	U310S
26	J355S	FS	F	J300F	305	375H	340S	I395A	350	U310S	290	A	A	350	J350R	300	G	A	A	305	260	I280S	U345S	J390S
27	I335F	340	310S	345	305	280R	I300A	300	280	A	A	S	360	350	340	300	350	300	300	280	U280S	J350S	I390S	355
28	350	345S	350S	340	310	305	300R	305	265	A	A	A	A	A	A	350	290	310	I285S	I290A	J310S	U355S	350S	A
29	A	F	A	A	A	305	G	300S	255	S	S	S	A	I325A	I320A	300	275	I300A	250S	I300S	I300F	F	A	A
30	F	U320F	U315S	I330F	355S	I335A	325	300	300	A	A	A	390	J310S	J295R	G	355	330	310	J290S	310	J285S	A	A
31	A	340F	I330F	A	305F	I300F	U300R	345	355	A	A	A	A	A	A	A	A	A	300	A	A	U355S	A	A
No.	11	10	11	15	17	27	22	21	16	4	2	3	7	10	13	10	16	16	22	28	23	15	8	10
Median	U350	U350	345	345	325	300	300	300	295	U280	290	355	350	330	350	350	340	300	300	290	295	U330	U350	355
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

K 13

IONOSPHERIC DATA

Jul. 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	A	A	A	U 50S	I 60F	U 55F	55	J 50R	A	A	A	A	S	A	A	A	A	A	45	J 65S	60	A	F	S
2	A	A	A	A	F	J110R	35	J 50S	J 45R	A	A	70	A	A	A	A	105R	I100A	I100A	95	90S	U100S	85S	I 95A
3	I 90A	U 75S	70A	U 95S	100S	I 95S	S	95	A	A	A	A	U 50R	J 50R	A	A	50	J 30R	I 60S	J 50R	50	U 55S	S	F
4	A	A	A	F	I 50F	90	35	60	50R	A	A	A	A	A	A	R	A	A	A	U 60S	80	S	A	A
5	A	A	A	A	A	90	60	I 65A	I 60A	R	A	A	A	A	80	65	55	A	J 75S	45	A	A	A	F
6	A	F	FS	I 80A	I 70F	J 55S	50	A	A	A	A	45	A	90	50	50	I 50A	J 55R	55R	U 55S	I 60S	70S	A	A
7	A	S	FS	S	A	U 65S	55	A	A	A	A	A	A	A	45	A	70	A	A	A	R	A	A	A
8	65F	FS	S	A	F	I 50F	J 95R	A	A	A	A	A	A	A	A	A	A	A	I105A	U 60R	I100A	A	A	A
9	A	U 90S	U 70S	U 85S	U 85S	95	80	95	95	A	A	95	U 95S	115	95	90	105S	105	U110S	I105A	110S	I100A	80S	85S
10	A	A	A	S	U 85S	100S	110	100S	A	A	A	A	35R	J 40R	45	A	A	J 65S	I 60R	J 55S	J 65S	65S	55	J 55S
11	J 55S	J 55S	J 60S	J 75S	J 45F	J 55S	55	50	U 60R	A	A	A	A	A	R	S	45	J 60R	S	50	A	A	A	S
12	FS	S	S	70	I 80F	J 60S	A	J 60R	A	A	A	A	A	A	A	A	A	A	A	A	S	A	S	A
13	A	F	S	S	F	J 95S	60	A	A	U 40S	A	A	A	A	A	A	A	A	A	U 50S	65	A	A	U 65S
14	I 55A	I 70F	I 85F	95F	95	50S	I 60C	45	A	A	A	R	40	S	A	A	I 40A	J 20S	35	70	85S	S	A	A
15	A	FS	A	A	F	U 50S	J 65S	I 60S	J 50S	A	A	A	J 50R	I 55A	J 50S	A	A	S	55	J 40S	U 70S	A	A	A
16	A	A	A	FS	F	95	S	I 75A	50	50	55	G	G	G	S	60	75	60	65	J 70S	A	FS	A	A
17	A	A	A	A	FS	I 75A	A	A	A	A	A	A	A	R	S	A	25R	I 50A	55	U 60S	S	F	F	S
18	I 70S	S	F	F	S	F	A	A	A	A	A	S	A	A	A	A	S	I 60A	50	I 70A	50	I 55F	I 55F	J 50F
19	A	A	90	90F	A	G	A	A	A	A	S	A	A	A	40	A	A	A	A	I 35S	80	45	A	85S
20	U 90F	U 55S	J 55R	I 45A	85	95	A	65	J 45R	R	A	A	A	A	55	80	70R	B	R	55	90S	A	A	A
21	A	A	A	A	A	J 90S	I 45A	70	A	A	A	G	G	R	A	A	A	A	J 85S	90	A	U 95S	FS	F
22	F	F	F	F	F	F	G	A	J 90S	R	S	A	A	A	A	R	S	A	A	60	J 80S	S	A	F
23	FS	U 90F	U 55S	85F	90	90	J 60S	A	S	A	A	A	A	G	G	G	S	S	50	80	55S	F	A	A
24	I 70F	A	F	A	A	A	J 50S	G	S	40	S	R	S	A	A	S	75	50	50	45	I 60A	85S	F	95F
25	55	F	F	U 70F	55F	45	55	50S	J 55R	A	S	R	S	55R	50	U 80S	A	J 55R	65S	J 80S	60S	75	I 60F	U 55S
26	J 90S	FS	F	J 65F	90	75H	55S	I 80A	75	U 40S	40	A	A	45	J 50R	45	G	A	A	55	60	I 75S	U 55S	J 65S
27	I 65F	60	85S	60	90	70R	I 60A	50	30	A	A	S	40	50	40	55	45	50	95	60	U 80S	J 55S	I 55S	90
28	50	55S	55S	60	85	90	50R	55	60	A	A	A	A	A	A	55	40	55	I 60S	I 75A	J 85S	U 65S	55S	A
29	A	F	A	A	A	95	G	50S	45	S	S	S	A	I 60A	I 50A	50	55	I 50A	60S	I 60S	I 70F	F	A	A
30	F	U 75F	U 80S	I 90F	90S	I 50A	40	50	55	A	A	A	55	J 50S	J 30R	G	50	70	70	J 55S	100	J 60S	A	A
31	A	65F	I 70F	A	90F	I 50F	U 50R	50	40	A	A	A	A	A	A	A	A	A	95	A	A	U 50S	A	A
No.	11	10	11	15	17	27	22	21	16	4	2	3	7	10	13	10	16	16	22	28	23	15	8	10
Median	U 65	U 70	70	75	85	75	55	60	50	U 40	50	70	50	50	50	60	50	55	60	60	65	U 65	U 55	75
U.Q.																								
L.Q.																								
Q.R.																								

ypF2

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

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

Jul. 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	S	S	A	A	$J_{3.6}^{S}$	S	A	4.9	5.1	5.0	A	A	5.7	6.7	7.4^{S}	6.9	6.4	$I_{6.4}^{S}$	$I_{6.9}^{S}$	$I_{6.5}^{S}$	$I_{5.7}^{S}$	S	C	C
2	C	C	C	$I_{3.4}^{S}$	3.3	3.2	$I_{4.0}^{S}$	6.1^{S}	5.3	$I_{5.8}^{S}$	$I_{5.7}^{R}$	$I_{5.4}^{A}$	5.6	6.0	6.3	$I_{7.0}^{A}$	A	S	S	S	S	5.5	S	S
3	S	S	$I_{3.6}^{S}$	$I_{3.6}^{S}$	3.4	$I_{3.4}^{S}$	$I_{4.4}^{S}$	5.5	$I_{6.3}^{S}$	$J_{5.7}^{S}$	$I_{5.4}^{A}$	$I_{6.5}^{A}$	6.8	A	S	A	6.5^{S}	S	S	$I_{6.0}^{S}$	6.0	$I_{5.6}^{S}$	$I_{5.0}^{S}$	$I_{4.8}^{S}$
4	S	S	S	S	3.6	$I_{3.7}^{S}$	4.9^{H}	5.5	$I_{6.2}^{S}$	$I_{6.0}^{S}$	5.0	5.4	$I_{5.9}^{A}$	$I_{6.3}^{R}$	6.8	8.0	$I_{7.7}^{S}$	$I_{6.9}^{S}$	A	S	S	S	A	S
5	S	S	3.4^{S}	3.2	$I_{3.1}^{A}$	$I_{3.2}^{S}$	$J_{4.3}^{S}$	5.8	$I_{7.3}^{A}$	$I_{6.0}^{S}$	5.4^{R}	5.7	$I_{7.0}^{S}$	6.8	$I_{7.4}^{S}$	$I_{8.4}^{C}$	8.6	$I_{8.8}^{S}$	$I_{8.7}^{S}$	$I_{7.3}^{S}$	S	S	S	S
6	S	A	S	$I_{3.7}^{S}$	3.2^{S}	2.7	$J_{4.4}^{S}$	4.9	A	A	A	A	A	$I_{7.9}^{S}$	$J_{8.3}^{S}$	$I_{7.8}^{S}$	$I_{8.0}^{S}$	$J_{8.6}^{S}$	$J_{8.5}^{S}$	6.4^{S}	S	S	S	S
7	S	S	S	A	S	S	5.4	6.5^{S}	$I_{5.6}^{S}$	5.3	$I_{5.3}^{A}$	$I_{5.6}^{A}$	5.9	$I_{6.0}^{A}$	6.8	7.8	7.7^{S}	$J_{8.7}^{S}$	$I_{8.9}^{S}$	S	S	6.0	S	S
8	A	S	S	S	S	S	4.4	5.5	$I_{6.0}^{S}$	$I_{6.0}^{S}$	$I_{5.1}^{C}$	$I_{5.3}^{A}$	$I_{5.2}^{R}$	5.5	$I_{6.3}^{A}$	A	A	A	S	S	$I_{6.4}^{S}$	S	S	S
9	S	A	S	S	3.2	S	A	A	A	A	A	A	A	S	$J_{8.0}^{S}$	$J_{8.1}^{S}$	$I_{8.8}^{A}$	$I_{9.1}^{S}$	A	A	S	S	S	A
10	A	A	A	S	S	$J_{5.3}^{S}$	5.0^{S}	5.5	$I_{5.0}^{A}$	$I_{5.6}^{A}$	$I_{5.8}^{A}$	$I_{5.7}^{A}$	$I_{6.1}^{A}$	$I_{6.1}^{A}$	A	A	A	S	S	S	S	S	$I_{5.5}^{S}$	$I_{5.5}^{S}$
11	$I_{5.6}^{S}$	$I_{5.4}^{S}$	5.6^{S}	S	S	S	5.2	$I_{5.8}^{S}$	$I_{6.1}^{S}$	5.9	$I_{5.3}^{S}$	5.5	$I_{5.6}^{A}$	5.3	5.4	5.7	$I_{6.6}^{S}$	$I_{7.7}^{S}$	$I_{8.4}^{S}$	$I_{7.0}^{S}$	S	S	S	S
12	S	S	S	$I_{2.9}^{S}$	$J_{2.8}^{S}$	3.1^{S}	4.1	$J_{5.1}^{S}$	6.6	5.9	5.5	$I_{5.2}^{A}$	5.4	6.2	6.5	$J_{6.3}^{S}$	7.0	$I_{8.1}^{S}$	$I_{9.0}^{S}$	$I_{8.5}^{S}$	$I_{6.4}^{S}$	$U_{6.1}^{S}$	$I_{4.8}^{S}$	$J_{4.2}^{S}$
13	4.5^{S}	S	S	S	S	S	S	A	$I_{6.2}^{A}$	$J_{7.9}^{S}$	$I_{6.3}^{A}$	A	A	A	6.8	$I_{8.0}^{S}$	8.7	9.5^{S}	$I_{9.4}^{S}$	$I_{9.3}^{S}$	S	S	S	S
14	3.3^{S}	$I_{3.2}^{S}$	$I_{3.1}^{A}$	S	S	F	$I_{4.4}^{S}$	$J_{5.1}^{S}$	5.4^{S}	$J_{5.4}^{S}$	5.6	5.5	5.5	5.7	5.1	6.0	$I_{7.4}^{S}$	$I_{7.2}^{S}$	5.7	5.7	S	S	S	$I_{3.3}^{S}$
15	A	S	S	A	S	A	$J_{4.2}^{S}$	5.7	5.6	$I_{5.1}^{S}$	5.2^{S}	5.8	6.6^{S}	$I_{6.9}^{S}$	5.5	$I_{5.8}^{A}$	S	S	S	S	S	S	S	S
16	A	S	S	$I_{3.3}^{S}$	$I_{3.3}^{S}$	S	A	$J_{5.2}^{S}$	$I_{6.4}^{S}$	$I_{7.3}^{S}$	6.0	$I_{6.9}^{S}$	7.7	5.8	5.7	7.3	7.3	$I_{7.2}^{S}$	5.7	5.4^{S}	$I_{5.5}^{S}$	S	S	S
17	S	S	S	S	S	S	S	S	5.0	5.1	4.8	$I_{5.0}^{R}$	5.3	5.8	6.3^{S}	5.9	6.2	$I_{6.4}^{S}$	$I_{5.9}^{A}$	6.0^{S}	S	S	A	S
18	5.7	S	S	$I_{5.0}^{S}$	$I_{4.5}^{S}$	$I_{4.2}^{S}$	4.8	5.0	4.8	4.9	$I_{5.2}^{S}$	$J_{5.7}^{R}$	$I_{5.8}^{R}$	5.4	5.6	$J_{5.2}^{S}$	5.6	5.7	$J_{5.8}^{S}$	$J_{5.9}^{S}$	5.9^{S}	$I_{5.1}^{S}$	S	S
19	S	S	S	S	A	A	$J_{5.6}^{S}$	5.3^{S}	5.2	$I_{4.9}^{S}$	5.3	$I_{6.2}^{A}$	7.2	6.9	$I_{6.3}^{S}$	6.1	6.3	7.1^{S}	$I_{7.5}^{S}$	$J_{8.5}^{S}$	S	S	S	S
20	S	A	A	A	S	S	S	$J_{5.3}^{S}$	5.6	$I_{5.0}^{A}$	$I_{5.1}^{A}$	5.2	C	S	5.9	$I_{6.3}^{C}$	$I_{6.9}^{C}$	$I_{6.9}^{C}$	C	C	S	S	S	C
21	S	S	S	$I_{3.6}^{S}$	S	A	4.8^{S}	$I_{5.4}^{S}$	$I_{5.6}^{S}$	5.7	$I_{5.3}^{C}$	5.1	5.9	6.0	5.8	$I_{5.8}^{A}$	5.9^{S}	7.6^{S}	8.9	$I_{7.0}^{S}$	S	A	S	S
22	S	S	$I_{5.2}^{S}$	$I_{5.4}^{S}$	S	S	$I_{4.3}^{S}$	$I_{4.5}^{S}$	$I_{4.7}^{S}$	S	A	C	C	C	C	C	C	5.1	5.0	$I_{5.4}^{S}$	$I_{4.8}^{S}$	S	S	S
23	S	S	S	$I_{3.1}^{S}$	S	S	$I_{3.7}^{S}$	$J_{5.1}^{S}$	S	$J_{5.0}^{S}$	C	A	S	5.4	5.5	$I_{5.1}^{A}$	4.9	4.8	5.5	S	S	S	S	S
24	S	A	A	A	A	A	$I_{3.0}^{A}$	3.6	$J_{5.6}^{S}$	5.0^{S}	C	C	C	$I_{5.2}^{S}$	$I_{5.1}^{S}$	5.8	7.2^{S}	$J_{6.5}^{S}$	S	S	S	S	S	S
25	S	S	S	S	S	$I_{2.8}^{S}$	4.4^{S}	5.3	$J_{4.8}^{S}$	5.3	A	A	5.8	5.9	6.8	7.1^{S}	$J_{6.9}^{S}$	8.4	8.9	S	S	S	S	S
26	S	S	S	S	$J_{3.9}^{S}$	$I_{3.8}^{S}$	$J_{3.6}^{S}$	5.1^{S}	6.0	$J_{6.1}^{S}$	$I_{6.0}^{S}$	$I_{5.3}^{C}$	$I_{5.4}^{C}$	5.9	$I_{6.1}^{S}$	$I_{7.2}^{S}$	S	S	$I_{6.7}^{S}$	$I_{7.9}^{S}$	$J_{8.4}^{S}$	S	S	S
27	S	S	S	S	S	2.4^{S}	$I_{3.5}^{S}$	$J_{5.3}^{S}$	6.8^{S}	5.0	$I_{5.1}^{C}$	5.6	5.4	5.4	$I_{6.6}^{S}$	$J_{7.8}^{S}$	8.4	$I_{7.8}^{S}$	$I_{6.8}^{S}$	S	S	S	S	S
28	S	S	S	C	C	C	C	C	S	$I_{5.6}^{S}$	$I_{5.9}^{S}$	5.0	6.0	6.0^{S}	6.0	$I_{7.4}^{S}$	$I_{7.8}^{S}$	$I_{7.1}^{S}$	6.8^{S}	$I_{6.5}^{S}$	$I_{5.9}^{S}$	$I_{4.8}^{A}$	$I_{4.0}^{A}$	$I_{4.0}^{S}$
29	$I_{3.8}^{S}$	$I_{3.7}^{A}$	$I_{3.7}^{A}$	A	A	A	$I_{4.2}^{A}$	$I_{5.7}^{A}$	5.8	4.8	$I_{4.7}^{S}$	$I_{5.1}^{S}$	5.8	6.6^{S}	$J_{7.6}^{S}$	$I_{7.4}^{S}$	$I_{6.2}^{S}$	6.0^{S}	S	S	C	C	C	C
30	C	C	C	A	S	C	S	$J_{5.4}^{S}$	$I_{5.8}^{S}$	5.5^{S}	5.3	5.4	$I_{6.3}^{S}$	$I_{6.9}^{S}$	$I_{6.6}^{S}$	6.2^{S}	6.0	$I_{6.2}^{S}$	S	S	S	S	S	A
31	S	A	A	A	A	$I_{2.7}^{A}$	$I_{4.0}^{S}$	5.6	$I_{5.8}^{S}$	$I_{5.0}^{A}$	A	A	A	A	5.6	5.7	6.2	$I_{6.4}^{S}$	$I_{6.4}^{S}$	$I_{6.1}^{S}$	S	S	S	S
No.	5	3	6	10	11	12	23	27	27	28	23	22	23	25	28	27	25	25	20	17	9	6	4	5
Median	4.5	$U_{3.7}$	$U_{3.6}$	$U_{3.5}$	3.3	$U_{3.2}$	4.4	5.3	5.6	5.4	$U_{5.3}$	$U_{5.4}$	5.8	6.0	6.3	6.9	6.9	$U_{7.1}$	$U_{6.8}$	$U_{6.5}$	$U_{5.9}$	$U_{5.6}$	$U_{4.9}$	$U_{4.2}$
U.Q.	5.6	4.6	5.2	3.7	3.6	3.8	4.8	5.6	6.2	5.9	5.7	5.7	6.3	6.6	6.8	7.8	7.8	8.2	8.8	7.6	6.4	6.0	5.2	5.2
L.Q.	3.6	3.4	3.4	3.2	3.2	2.8	4.0	5.1	5.2	5.0	5.1	5.2	5.5	5.6	5.6	5.8	6.2	6.4	5.8	6.0	5.6	5.1	4.4	3.6
Q.R.	2.0	1.2	1.8	0.5	0.4	1.0	0.8	0.5	1.0	0.9	0.6	0.5	0.8	1.0	1.2	2.0	1.6	1.8	3.0	1.6	0.8	0.9	0.8	1.6

foF2

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

The Radio Research Laboratories, Japan

Y 1

IONOSPHERIC DATA

Jul. 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								A	A	A	A	A	A	A	B	A	A	4.1	3.4					
2								3.8	4.2	$I_{4.4}^{A}$	4.5	A	A	4.5	A	A	A	$I_{4.0}^{R}$	3.9	L				
3								3.9	4.0^{H}	4.4	A	A	A	A	A	A	A	A	A					
4								$I_{3.9}^{A}$	4.0	$I_{4.4}^{A}$	A	4.6	A	R	A	A	A	A	A					
5							L	A	A	A	$I_{4.3}^{R}$	$I_{4.5}^{R}$	$I_{4.5}^{R}$	$I_{4.5}^{A}$	A	C	A	A	A					
6								A	A	A	A	A	A	B	A	A	A	A	A					
7							L	L	4.0	A	A	A	A	A	R	A	A	RH	3.6	L				
8								4.1	4.0	$I_{4.2}^{A}$	$I_{4.4}^{C}$	$I_{4.5}^{A}$	R	R	A	A	A	A	A					
9							A	A	A	A	A	A	A	A	A	A	A	A	A					
10									A	A	A	A	A	A	A	A	A	A	A					
11							L	3.8	$I_{4.0}^{A}$	4.2	A	A	A	A	A	A	A	A	$I_{3.5}^{R}$					
12								A	A	A	4.4	$I_{4.6}^{A}$	A	A	R	R	S	S	$I_{3.5}^{S}$	L				
13								A	A	A	A	A	A	A	R	A	A	4.0	3.6					
14								3.9	$I_{4.1}^{A}$	$I_{4.4}^{S}$	4.5	A	A	A	R	$I_{4.3}^{R}$	$I_{4.2}^{R}$	4.1^{H}	S					
15								L	4.2	4.3	A	R	A	R	A	A	A	A	A					
16								R	A	R	$I_{4.5}^{A}$	$I_{4.6}^{R}$	4.5	R	R	A	A	$I_{3.9}^{A}$	A					
17							S	S	S	R	R	R	B	R	A	A	R	A	A					
18							3.1	3.6^{S}	A	A	A	A	R	A	R	B	R	R	A	L				
19							L	A	L	S	A	A	B	A	C	A	4.4	$I_{3.9}^{R}$	A					
20							A	$I_{3.8}^{L}$	A	A	A	A	C	A	A	C	C	C	C					
21							A	A	A	4.3	$I_{4.3}^{C}$	A	A	C	A	A	A	A	3.6					
22							2.8	$I_{3.4}^{S}$	S	R	A	C	C	C	C	C	C	C	C					
23								S	S	A	A	A	A	A	A	A	C	3.8^{S}	S					
24									R	A	C	C	C	A	A	A	A	C	L					
25							S	L	4.2	$I_{4.2}^{C}$	A	A	C	C	A	C	A	C	A					
26							L	3.6	$I_{4.0}^{C}$	4.2	4.3	C	C	4.5	C	C	A	A	S					
27							3.0S	3.7	4.0	$I_{4.3}^{C}$	4.5	C	C	C	C	C	4.2	4.0	L					
28							C	C	3.9	4.2	$I_{4.4}^{A}$	$I_{4.4}^{C}$	$I_{4.5}^{C}$	C	A	C	4.2	4.0	A					
29							A	A	A	A	4.5	4.5	C	C	S	4.3	$I_{4.4}^{C}$	$I_{4.1}^{S}$	3.6					
30								L	4.1	$I_{4.4}^{A}$	4.5	4.5	A	A	A	A	A	A	A					
31								A	A	A	A	A	A	A	A	A	4.2	A	A					
No.							3	11	13	13	12	8	3	3		2	6	10	8					
Median							3.0	3.8	4.0	U4.3	4.4	U4.5	U4.5	4.5		U4.3	4.2	4.0	3.6					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

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

IONOSPHERIC DATA

Jul. 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							A	2.50	2.95	3.30	R	B	B	B	B	R	3.10	2.80	2.30					
2							S	A	2.85	3.10	3.30	3.40^{R}	R	R	B	R	3.05	2.75	2.15	S				
3							S	$I_{2.50}{}^{A}$	$I_{2.80}{}^{A}$	3.05	3.10	$I_{3.05}{}^{R}$	$I_{3.20}{}^{R}$	3.15	A	A	A	A	A					
4							1.90	2.50	2.90	3.20	3.30	3.20	A	R	A	A	$I_{3.20}{}^{A}$	2.90	A					
5							A	A	3.00	3.30	R	R	R	R	R	C	3.05	2.75	2.25					
6							A	2.50	$I_{2.90}{}^{A}$	3.10	$I_{3.30}{}^{R}$	B	R	B	A	A	A	A	A					
7							S	A	A	3.20	$I_{3.30}{}^{R}$	R	R	R	R	3.30	3.10	2.70	2.25	S				
8							S	2.40	2.85	R	C	3.30	B	B	R	3.05	3.00	A	A					
9							2.10	2.50	3.00	3.20	3.40	R	B	B	B	A	$I_{2.80}{}^{A}$	2.40	S					
10							S	2.40	2.95	3.20	3.30	3.45	$I_{3.55}{}^{R}$	3.45	3.40	3.30	2.90	A	A					
11							1.85	2.50	2.70	3.00	3.20	A	A	A	A	A	A	A	2.25					
12							S	2.40	2.80	2.95	3.20	3.20	R	R	R	R	$I_{3.10}{}^{A}$	$I_{2.70}{}^{A}$	2.30	S				
13							S	2.30	2.80	3.10	$I_{3.15}{}^{S}$	A	A	A	R	$I_{3.30}{}^{R}$	2.90	A	A					
14							S	2.40	$I_{2.80}{}^{A}$	3.00	3.10	A	A	A	A	R	$I_{2.95}{}^{A}$	2.80	A	S				
15							S	2.40	2.80	3.10	3.30^{R}	R	R	R	R	R	A	A	A					
16							S	2.40	2.70	A	A	A	R	B	R	R	2.80	2.55	2.20					
17							S	2.25	2.80	3.30	R	R	B	R	A	A	R	2.75	2.20					
18							A	A	A	A	A	A	R	A	R	B	R	2.80	B	S				
19							A	2.25	2.80	3.20^{C}	3.10	A	B	A	A	A	A	A	A					
20							S	2.20	2.55	3.00	3.10	$I_{3.20}{}^{C}$	C	C	C	C	C	C	C					
21							S	2.30	2.80	2.90	$I_{3.15}{}^{C}$	C	C	C	C	C	$I_{3.05}{}^{C}$	2.70	2.10					
22							S	A	A	A	A	C	C	C	C	C	C	A	C					
23							S	2.40	2.80	3.10	3.25	C	C	C	$I_{3.20}{}^{C}$	3.00	$I_{2.80}{}^{A}$	2.60	2.10					
24							S	S	A	A	C	C	C	C	C	C	3.00	$I_{2.65}{}^{C}$	C					
25							S	2.20	2.75	3.00	C	C	C	C	C	C	$I_{2.95}{}^{C}$	2.50	C					
26							S	2.30	A	A	C	C	C	3.25	C	A	A	A	A					
27							S	2.30	$I_{2.65}{}^{A}$	3.00	3.20	C	C	C	C	C	C	2.70	2.20					
28							C	C	2.80	3.00	3.10	C	C	C	C	C	$I_{3.10}{}^{C}$	$I_{2.80}{}^{A}$	$I_{2.15}{}^{S}$					
29							A	A	A	A	A	C	A	C	C	C	3.10^{S}	2.75	2.30					
30							S	A	2.80	3.20	3.25	3.40	C	C	C	$I_{3.40}{}^{S}$	3.15	2.85	2.25					
31							A	2.30	2.80	$I_{3.05}{}^{A}$	C	C	C	C	C	C	3.20	2.85	2.25					
No.							3	22	25	24	19	8	2	3	2	6	20	20	15					
Median							1.90	2.40	2.80	3.10	3.20	3.25	U3.40	3.25	U3.30	3.30	3.05	2.75	2.25					
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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	3.2M	3.1	J5.3	J5.2	3.0	3.6M	5.8	3.8	5.0	J5.2	6.0	8.9	J5.2	4.6	B	4.8	4.3	3.5	3.1	3.6	3.6	2.9	C	C
2	C	C	C	2.8	2.4	J2.4	2.9	2.9	3.2	12.1M	9.7M	5.9	J8.5	G	J5.4	12.7	J8.4	3.8	3.0	S	S	2.4	2.8	2.8
3	3.0	3.9	3.0	3.0	E	S	S	3.0	3.2	3.2	11.8	J10.1	J5.4	7.2	J6.1	J8.4	J5.5	J5.4	J4.5	J2.9	2.5	3.2M	2.4	S
4	3.3M	2.8	4.4	3.8M	2.8	S	2.6	J5.5	3.9	8.2	6.3	8.8M	8.2	J5.3	6.2	6.2	J5.5	J5.5	11.8M	8.2M	3.3M	J3.7	5.4M	3.8
5	3.1	4.4M	J5.4	2.4	4.4	2.4	3.2	J5.3	J8.2	10.8	G	4.0	4.4	6.2M	4.8	C	J6.2	7.2	J3.6	S	S	S	S	2.9
6	S	5.6M	2.8	S	S	2.3	3.2	3.5	J12.7	J11.8	14.8	J7.6	10.7	B	J5.4	6.3	J5.5	5.9	J4.3	3.2	3.3	2.5	2.8	2.9
7	3.4M	3.1M	3.8M	5.7	J3.4	2.8	2.9M	2.8	J3.7	J5.1	J8.6	9.5M	J8.4	J8.5	4.2	J8.6	J5.2	G	3.6	2.8	5.7M	3.0	4.9M	3.1M
8	5.7M	3.1	J5.1	2.3	2.5	S	2.9	4.4	J5.2	J5.0	C	13.4M	3.9	4.2	8.5	10.6M	10.4M	J11.2	6.0	J5.4	3.1	2.8	3.8M	2.8
9	3.0	5.7M	3.0	3.3M	2.4	3.5M	J5.2	J8.2	9.2M	9.0M	7.4M	J8.5	17.8M	6.1M	J5.4	J8.3	J10.0	6.3M	9.3M	8.9M	2.9	3.0M	3.7	J5.2
10	5.9M	5.8M	3.8M	3.0M	4.9	3.8M	5.2	J4.4	J5.6	7.7	7.2	9.0M	J9.9	J8.4	10.1M	J6.3	J8.4	J6.1	J5.8	4.9	3.6M	S	S	S
11	S	S	S	S	S	S	G	G	6.0M	J5.1	5.2	6.0	6.2	6.3M	J5.2	J5.4	4.4	J5.3	3.6	J3.2	J3.6	5.9M	3.2M	3.1M
12	2.7	2.9	S	S	S	S	3.3	J3.8	J5.2	J11.1	4.0	6.0	J5.6	J5.4	G	3.9	3.1	3.0	2.4	3.1	3.1	2.4	2.1	S
13	S	3.0	2.7	S	3.1	S	2.3	J5.8	9.0M	9.0M	9.1M	J8.6	9.0M	10.8	4.1	5.8	9.3M	3.6	3.1	S	2.7	2.9	2.4	3.1
14	3.0	2.5	4.1M	2.3	J2.4	2.8	2.7	3.3	4.5	4.0	4.4	J5.3	J5.1	J5.2	J4.3	3.1G	3.0	3.6	J2.8	3.2	3.1	2.7	2.8	2.7
15	4.9M	3.2M	3.7M	5.2	3.5M	J5.1	2.3	3.0	4.1	J5.4	J5.3	3.9	5.8	G	4.5	J9.6	J5.4	J6.1	J6.3	5.7	3.1M	5.8M	2.7	3.1
16	5.9	3.9M	2.9	E	E	2.8	4.2	3.9	6.7	3.8M	J5.2	3.3	3.1G	B	3.0G	J8.7	J5.6	D9.0S	J5.2	4.8M	3.0	S	3.0	2.9
17	3.0	3.0	3.0	S	S	2.7	2.9	3.1	3.1	3.9	3.3G	3.1G	B	4.0	4.5	J5.3	2.9G	4.9	10.3M	3.2	5.7M	3.2M	6.0	J5.2
18	3.6M	3.2	J3.2	3.1	3.1	2.8	3.0	2.4	4.4	J5.2	J5.2	J5.4	3.3G	J5.0	3.3G	B	3.6	3.7	J5.4	5.8M	5.8	J5.1	3.0M	3.1
19	3.0	5.7M	3.9M	5.8M	5.8	5.8	3.2	J3.5	4.2	4.3	J4.9	13.2	B	6.0	3.6	4.6	3.8	3.1	J5.2	3.6	3.4M	3.2	3.0	2.7
20	3.1	5.8M	5.0M	6.6M	3.1	3.1	J3.5	3.8	J6.1	5.8	J6.5	J5.1	C	5.7	8.0	C	C	C	C	C	J5.0	5.7M	3.1	C
21	3.4	3.1	3.1M	3.0	3.5M	5.7M	3.3	J5.3	J12.0	J5.3	C	5.9M	J5.3	C	6.0	12.4	J12.0	10.7M	5.9M	J5.1	3.1	5.7M	2.8	2.9
22	3.0M	J2.9	3.0	2.3	J3.3	3.6M	2.8	2.8	3.3	3.8	J5.4	C	C	C	C	C	C	3.1	3.1	4.0	J5.3	3.0	3.1	2.8
23	3.1	3.1	S	J2.5	2.9	S	3.0	3.5	3.8	4.0	4.3	J5.4	J5.7	4.9	J5.3	5.8	J8.6	3.2	3.2	4.4M	3.1	3.0	3.0	3.0
24	2.7	J5.1	5.1M	5.8M	5.7M	8.4	4.1M	3.2	3.3	J5.0	C	C	C	5.0	4.9	5.1	4.0	3.3	2.7	3.0	2.8	S	S	S
25	3.1M	2.6	2.3	3.0M	S	S	S	3.1	3.1	3.4	J5.4	13.8	4.9	C	J5.0	C	J8.4	4.4	4.9M	4.2M	3.8M	4.4M	3.1	2.9
26	2.8	3.1	S	S	S	S	S	2.7	3.1	3.0	C	C	C	3.9	3.9	3.6	4.9	4.3	J3.7	3.5M	D3.4S	2.9	S	S
27	S	2.8	S	S	2.2	2.3	1.9	G	3.0	3.5	G	G	C	C	C	G	G	3.2	2.6	S	2.6	2.7	S	S
28	S	S	2.4	C	C	C	C	C	3.2	3.1	J5.2	4.2	G	4.4	4.5	3.9	4.0	3.8	J4.0	J4.8	3.0	5.8M	4.8	3.6M
29	3.1	J5.1	J5.3	4.1	6.0	5.7	J5.3	8.8	J4.4	4.9	3.5	4.2	4.5	4.4	4.2	C	C	3.0	3.0	2.5	C	C	C	C
30	C	C	C	3.5M	3.1	C	2.0	J3.2	3.3	5.4	J5.2	3.9	4.7	J6.2	4.9	J5.3	6.1	6.5	5.0	5.6M	3.1	3.1M	4.7M	5.9M
31	4.8M	5.7M	9.0M	4.4M	3.7M	3.2	3.7M	J4.3	4.1	J7.3	8.4	11.4M	4.9	5.7	4.5	J5.3	3.7	J4.4	J4.9	4.3	4.9M	S	3.2	2.9M
No.	24	27	24	23	24	20	27	30	31	31	27	28	24	25	28	25	28	30	30	26	28	25	24	22
Median	3.1	3.1	3.8	3.1	3.1	3.2	3.0	3.5	4.2	5.1	5.3	6.0	5.4	5.3	4.8	5.8	5.4	4.4	4.2	4.1	3.2	3.0	3.0	3.0
U.Q.	3.5	5.1	5.0	5.2	3.6	4.4	3.7	4.4	6.0	7.7	7.4	9.0	8.3	6.2	5.4	8.5	8.4	6.1	5.4	5.1	3.7	4.8	3.8	3.1
L.Q.	3.0	3.0	3.0	2.5	2.4	2.8	2.7	3.0	3.3	3.9	4.4	4.2	4.6	4.4	4.2	4.7	3.9	3.3	3.1	3.2	3.0	2.8	2.8	2.9
Q.R.	0.5	2.1	2.0	2.7	1.2	1.6	1.0	1.4	2.7	3.8	3.0	4.8	3.7	1.8	1.2	3.8	4.5	2.8	2.3	1.9	0.7	2.0	1.0	0.2

The Radio Research Laboratories, Japan

foEs

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

IONOSPHERIC DATA

Jul. 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	A	A	A	A	2.0	1.9	A	3.8	4.8	4.7	A	A	5.0	4.6	B	4.4	4.3	$E_{3.5}^{R}$	3.0	A	A	E	C	C
2	C	C	C	2.0	1.7	1.9	2.4	$E_{2.9}^{R}$	$E_{3.2}^{S}$	5.2	4.3	A	5.4		5.0	A	A	$E_{3.8}^{R}$	3.0	S	S	2.2	A	E
3	A	A	2.2	E		S	S	G	3.2	$E_{3.2}^{R}$	A	A	5.0	A	A	A	5.1	5.1	4.4	2.5	E	A	E	S
4	A	2.0	A	A	2.0	S	2.4	5.1	3.7	4.6	4.5	4.1	A	4.2	5.1	6.1	4.5	5.5	A	5.4	A	2.2	A	A
5	A	A	2.0	1.9	A	2.0	2.2	4.9	A	4.5		$E_{4.0}^{R}$	$E_{4.4}^{R}$	4.9	4.7	C	5.7	A	3.6	S	S	S	S	2.4
6	S	A	1.9	S	S	2.2	2.7	3.5	A	A	A	A	A	B	4.6	5.0	4.8	5.4	3.5	2.4	3.3	E	A	A
7	A	A	A	A	A	E	G	2.8	3.7	4.8	A	A	4.6	A	$E_{4.2}^{R}$	4.8	4.8		3.5	2.4	A	$E_{3.0}^{S}$	A	2.1
8	A	A	A	2.1	1.5	S	2.7	3.3	3.7	4.7	C	A	$E_{3.9}^{R}$	4.0	A	5.1	A	A	A	4.6	2.2	2.2	A	E
9	A	A	A	A	E	A	A	A	A	A	A	A	A	$E_{6.1}^{S}$	$E_{5.4}^{R}$	7.2	A	A	A	4.6	2.1	A	A	A
10	A	A	A	2.0	2.0	2.5	3.5	4.1	A	A	A	A	A	A	A	A	A	A	$E_{4.8}^{S}$	4.5	A	S	S	S
11	S	S	S	S	S	S			5.4	3.7	A	4.6	A	4.9	4.7	4.7	4.3	4.8	$E_{3.6}^{R}$	A	A	A	A	A
12	1.9	2.1	S	S	S	S	3.2	$E_{3.8}^{R}$	4.5	5.5	3.8	A	4.9	4.9		3.8	$E_{3.1}^{R}$	$E_{3.0}^{R}$	2.2	2.1	A	E	2.0	S
13	S	2.1	E	S	2.0	S	2.3	A	A	5.3	A	A	A	A	$E_{4.1}^{R}$	5.0	5.4	3.1	2.6	S	E	2.2	2.2	A
14	2.2	2.1	A	E	2.2	E	2.1	2.9	$E_{4.5}^{S}$	3.8	3.9	4.6	4.9	4.8	$E_{4.3}^{R}$	$E_{3.1}^{R}$	$E_{3.0}^{R}$	3.6	2.7	$E_{3.2}^{S}$	$E_{3.1}^{S}$	2.6	E	2.5
15	A	A	A	A	A	A	2.2	2.7	3.7	3.7	4.7	$E_{3.9}^{R}$	5.5		4.5	A	A	A	A	A	A	A	A	2.1
16	A	A	2.5			E	A	3.4	5.3	$E_{3.8}^{R}$	5.2	$E_{3.3}^{R}$	$E_{3.1}^{R}$	B	$E_{3.0}^{R}$	4.7	5.1	4.6	4.6	2.3	E	S	2.2	A
17	E	A	2.7	S	S	2.0	2.7	2.9	$E_{3.1}^{R}$	$E_{3.9}^{R}$	$E_{3.3}^{R}$	$E_{3.1}^{R}$	B	$E_{4.0}^{R}$	4.5	4.8	$E_{2.9}^{R}$	4.0	A	2.3	A	A	A	A
18	3.0	2.7	A	A	2.9	2.1	2.5	G	4.4	4.7	A	5.0	$E_{3.3}^{R}$	5.0	$E_{3.3}^{R}$	B	$E_{3.6}^{R}$	$E_{3.7}^{R}$	4.8	2.0	5.2	A	A	A
19	A	A	A	2.3	A	A	1.9	3.5	4.0	A	4.6	A	B	5.3	$E_{3.6}^{C}$	4.6	$E_{3.8}^{R}$	3.0	5.1	2.6	2.9	A	A	E
20	A	A	A	A	A	2.1	A	3.5	5.1	A	A	4.5	C	A	4.6	C	C	C	C	C	A	A	A	C
21	A	A	A	A	A	A	$E_{3.3}^{S}$	4.2	A	3.8	C	4.8	4.7	C	5.0	A	4.3	5.1	3.4	2.5	2.2	A	E	2.6
22	A	A	2.2	2.3	2.5	A	2.2	2.7	$E_{3.3}^{C}$	A	A	C	C	C	C	C	C	$E_{3.1}^{C}$	$E_{3.1}^{C}$	2.7	A	A	A	A
23	A	A	S	A	A	S	A	$E_{3.5}^{S}$	$E_{3.8}^{S}$	4.0	A	A	A	4.8	5.1	A	3.5	3.2	$E_{3.2}^{S}$	A	A	2.6	A	A
24	A	A	A	A	A	A	A	2.7	$E_{3.3}^{R}$	4.1	C	C	C	A	A	5.1	$E_{4.0}^{C}$	$E_{3.3}^{C}$	2.5	2.3	2.5	S	S	S
25	1.9	2.1	2.0	2.0	S	S	S	2.8	3.0	$E_{3.4}^{C}$	A	A	4.8	C	$E_{5.0}^{R}$	C	5.2	3.7	4.5	4.2	$E_{3.8}^{S}$	A	A	A
26	A	2.6	S	S	S	S	S	G	$E_{3.1}^{C}$	$E_{3.0}^{C}$	C	C	C	$E_{3.9}^{C}$	$E_{3.9}^{C}$	$E_{3.6}^{C}$	4.2	4.2	$E_{3.7}^{S}$	2.8	$D_{3.4}^{S}$	2.5	S	S
27	S	2.0	S	S	E	1.8	$E_{1.9}^{R}$		2.9	$E_{3.5}^{C}$			C	C	C			3.1	2.5	S	E	E	S	S
28	S	S	E	C	C	C	C	C	3.2	$E_{3.1}^{R}$	5.2	$E_{4.2}^{C}$		$E_{4.4}^{C}$	$E_{4.5}^{S}$	$E_{3.9}^{C}$	4.0	3.3	4.0	4.7	3.0	A	A	A
29	2.6	A	A	A	A	A	A	A	4.1	4.2	$E_{3.5}^{C}$	4.2	$E_{4.5}^{C}$	$E_{4.4}^{C}$	$E_{4.2}^{S}$	C	C	3.0	2.7	2.3	C	C	C	C
30	C	C	C	A	A	C	G	2.7	3.2	4.4	4.0	3.9	$E_{4.7}^{C}$	A	4.7	5.3	5.2	A	4.2	A	2.8	2.6	A	A
31	A	A	A	A	A	A	2.6	3.8	4.0	A	A	A	A	A	4.5	5.1	3.7	4.1	4.5	4.3	A	S	A	A
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Jul. 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	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.85}^{S}$	1.10	E	$E_{1.70}^{S}$	$E_{1.80}^{S}$	2.10	2.00	2.20	2.25	3.65	3.70	4.30	4.80	2.20	2.30	2.20	1.95	$E_{1.70}^{S}$	$E_{1.85}^{S}$	$E_{2.00}^{S}$	C	C
2	C	C	C	E	E	1.40	1.90	1.90	1.90	2.15	2.50	2.70	2.50	2.65	3.60	2.60	2.20	2.15	1.70	2.00	$E_{1.60}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$
3	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	1.70	$E_{2.00}^{S}$	2.20	$E_{1.60}^{S}$	2.20	2.20	2.40	2.60	2.30	2.80	2.30	2.30	2.05	1.65	1.75	$E_{1.50}^{S}$	$E_{2.10}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{2.60}^{S}$
4	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.30	$E_{1.70}^{S}$	$E_{1.50}^{S}$	$E_{1.65}^{S}$	1.80	2.20	2.50	2.50	2.75	2.60	2.60	2.85	2.00	2.15	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.75}^{S}$	$E_{1.90}^{S}$	$E_{1.75}^{S}$
5	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.30	1.30	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	2.05	1.95	2.20	2.30	2.65	2.65	2.30	$I_{2.30}^{C}$	1.90	2.50	1.70	2.10	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.60}^{S}$	$E_{2.00}^{S}$
6	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.80	2.00	2.40	2.40	3.50	2.70	4.90	2.50	2.25	2.20	1.80	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{1.95}^{S}$
7	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.60}^{S}$	2.10	1.75	1.90	2.10	2.20	2.30	2.50	2.50	2.60	2.50	2.25	2.05	1.80	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$
8	$E_{1.85}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	E	1.40	$E_{1.40}^{S}$	2.10	$E_{1.70}^{S}$	1.90	2.40	$I_{2.20}^{C}$	2.20	3.50	3.70	2.30	2.35	2.20	2.20	2.00	2.00	$E_{2.00}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$
9	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.80	2.05	2.40	2.10	3.60	3.45	3.80	2.80	2.00	1.80	1.80	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$
10	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	1.95	2.00	2.20	2.20	2.50	2.30	2.30	2.05	2.00	1.80	1.90	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{2.20}^{S}$
11	$E_{2.20}^{S}$	S	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	2.00	1.80	2.00	2.10	2.20	2.50	2.40	2.25	2.10	2.25	2.10	2.00	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{2.40}^{S}$	$E_{1.90}^{S}$	$E_{1.85}^{S}$
12	$E_{1.80}^{S}$	$E_{1.75}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.80	1.90	2.20	2.40	2.40	2.50	2.50	2.65	2.20	2.05	2.05	1.90	1.90	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.75}^{S}$	$E_{1.80}^{S}$
13	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.85}^{S}$	S	$E_{1.80}^{S}$	$E_{1.70}^{S}$	2.20	2.20	2.40	2.60	2.50	2.50	2.80	2.50	2.20	2.10	2.00	2.20	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
14	$E_{1.75}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	2.00	1.95	2.20	2.25	2.60	2.30	2.30	2.30	2.20	2.10	1.90	1.80	1.90	$E_{2.00}^{S}$	E	$E_{2.10}^{S}$	$E_{1.90}^{S}$
15	$E_{1.90}^{S}$	$E_{1.75}^{S}$	$E_{2.00}^{S}$	$E_{2.10}^{S}$	$E_{1.65}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	1.70	2.00	2.20	2.20	2.35	2.60	2.35	2.35	2.50	2.20	2.20	2.15	2.25	2.00	1.90	$E_{1.80}^{S}$	2.00
16	2.00	$E_{2.00}^{S}$	1.90	2.20	1.90	2.05	2.00	2.00	2.15	2.25	2.25	2.60	2.50	4.10	2.50	2.30	2.30	1.90	1.85	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$
17	$E_{2.00}^{S}$	$E_{2.15}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	$E_{2.40}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.70	2.20	2.10	2.30	2.90	4.60	2.60	2.45	2.20	2.60	2.20	2.00	1.90	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$
18	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	E	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.80	2.10	2.30	2.45	2.35	2.40	2.80	3.00	4.70	2.25	2.20	2.20	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$
19	$E_{1.80}^{S}$	$E_{1.70}^{S}$	E	1.40	$E_{1.80}^{S}$	2.00	$E_{1.80}^{S}$	1.80	2.20	2.20	2.30	2.40	4.80	2.60	2.30	2.35	2.20	2.10	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.95}^{S}$
20	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	1.80	2.00	2.30	2.30	$E_{3.45}^{C}$	$I_{2.40}^{C}$	2.60	$E_{4.10}^{C}$	$I_{2.60}^{C}$	$I_{2.30}^{C}$	C	C	C	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	C
21	$E_{1.90}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	2.00	2.00	2.30	$I_{2.55}^{C}$	2.30	$E_{3.70}^{C}$	$E_{4.60}^{C}$	$E_{3.60}^{C}$	2.40	2.30	2.30	2.05	$E_{1.60}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
22	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	1.30	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	2.20	2.30	2.30	C	C	C	C	C	C	2.20	$E_{2.20}^{C}$	$E_{2.20}^{C}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{2.00}^{S}$	$E_{1.75}^{S}$
23	$E_{2.10}^{S}$	$E_{2.10}^{S}$	S	$E_{2.00}^{S}$	1.00	$E_{2.05}^{S}$	$E_{1.90}^{S}$	2.10	2.30	2.30	2.80	2.43	$E_{3.50}^{C}$	$E_{3.50}^{C}$	$E_{3.40}^{C}$	2.30	2.20	2.00	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$
24	$E_{1.90}^{S}$	$E_{2.20}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	$E_{2.60}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{2.10}^{S}$	2.20	2.30	$I_{2.45}^{C}$	$I_{2.35}^{C}$	C	$E_{4.10}^{C}$	$E_{3.60}^{C}$	$E_{3.60}^{C}$	2.30	$E_{2.70}^{C}$	$E_{2.25}^{C}$	$E_{2.00}^{S}$	$E_{1.65}^{S}$	S	$E_{1.90}^{S}$	$E_{1.80}^{S}$
25	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	S	2.30	2.10	2.30	2.50	2.25	$E_{3.80}^{C}$	$E_{4.20}^{C}$	$E_{5.20}^{C}$	$E_{3.70}^{C}$	$E_{4.50}^{C}$	$E_{3.00}^{C}$	2.15	$E_{2.30}^{C}$	$E_{1.90}^{C}$	$E_{1.95}^{S}$	$E_{1.75}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$
26	$E_{1.95}^{S}$	$E_{2.00}^{S}$	S	$E_{1.90}^{S}$	1.30	$E_{1.70}^{S}$	2.00	1.90	2.10	2.45	2.50	C	C	2.30	2.60	2.30	2.20	2.30	1.90	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	S
27	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	2.00	2.00	2.30	2.40	2.60	$E_{4.70}^{C}$	$E_{4.60}^{C}$	$E_{4.60}^{C}$	2.10	2.20	1.80	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	S	$E_{1.90}^{S}$
28	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	C	C	C	C	C	2.05	2.50	2.50	2.80	2.70	2.70	2.30	$E_{3.40}^{C}$	2.10	1.95	$E_{2.15}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{2.00}^{S}$
29	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	E	$E_{1.85}^{S}$	1.85	1.80	1.80	2.20	2.60	2.35	2.70	2.60	2.60	2.60	2.20	1.80	$E_{2.00}^{S}$	$E_{1.70}^{S}$	C	C	C	C
30	C	C	C	$E_{1.90}^{S}$	$E_{2.20}^{S}$	C	$E_{1.70}^{S}$	$E_{1.45}^{S}$	1.90	2.00	2.25	2.20	2.40	2.60	2.55	2.50	2.25	$E_{2.30}^{S}$	$E_{1.50}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$
31	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.85}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.80	2.20	2.45	2.75	2.35	2.90	$E_{4.20}^{C}$	$E_{3.60}^{C}$	2.40	2.30	1.95	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$
No.	29	28	27	30	30	27	30	29	31	31	31	27	24	25	23	26	29	28	25	30	30	29	27	27
Median	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.80}$	$E_{1.70}$	$E_{1.70}$	$E_{1.80}$	1.80	2.00	2.20	2.40	2.40	2.50	2.60	2.50	2.30	2.20	2.10	$E_{1.90}$	$E_{1.85}$	$E_{1.80}$	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jul. 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	S	S	A	A	$J_{3.10}^{S}$	S	A	3.45	2.90	3.00	A	A	2.70	2.80	2.85^{S}	3.05	2.95	$I_{2.90}^{S}$	$I_{3.05}^{S}$	$I_{3.20}^{S}$	$I_{3.00}^{S}$	S	C	C
2	C	C	C	$I_{3.00}^{S}$	2.95	2.95	$I_{3.15}^{S}$	3.45^{S}	3.20	$I_{3.10}^{S}$	$I_{3.05}^{R}$	$I_{2.75}^{A}$	A	2.85	2.85	$I_{2.90}^{A}$	A	S	S	S	S	3.10	S	S
3	S	S	$I_{3.15}^{S}$	$I_{2.90}^{S}$	2.95	$I_{3.20}^{S}$	$I_{3.15}^{S}$	3.10	$I_{3.40}^{S}$	$J_{3.15}^{S}$	$I_{2.70}^{A}$	$I_{3.05}^{A}$	3.10	A	S	A	2.95^{S}	S	S	$I_{3.40}^{S}$	3.15	$I_{3.15}^{S}$	$I_{2.95}^{S}$	$I_{2.85}^{S}$
4	S	S	S	S	2.95	$I_{3.10}^{S}$	3.40^{H}	3.20	$I_{3.25}^{S}$	$I_{3.40}^{S}$	2.80	2.65	$I_{2.90}^{A}$	$I_{2.85}^{R}$	2.80	2.95	$I_{2.95}^{S}$	$I_{2.95}^{S}$	A	S	S	S	A	S
5	S	S	2.70^{S}	2.80	$I_{2.75}^{A}$	$I_{3.00}^{S}$	$J_{3.00}^{S}$	3.00	$I_{3.30}^{A}$	$I_{3.30}^{S}$	2.75^{R}	2.95	$I_{2.95}^{S}$	2.80	$I_{2.65}^{S}$	$I_{2.80}^{C}$	2.85	$I_{2.75}^{S}$	$I_{3.05}^{S}$	$I_{3.45}^{S}$	S	S	S	S
6	S	A	S	$I_{2.85}^{S}$	3.30^{S}	3.05	$J_{3.10}^{S}$	3.05	A	A	A	A	A	$I_{2.85}^{S}$	$J_{2.80}^{S}$	$I_{2.80}^{S}$	$I_{2.75}^{S}$	$J_{3.00}^{S}$	$J_{3.15}^{S}$	3.30^{S}	S	S	S	S
7	S	S	S	A	S	S	3.20	3.55^{S}	$I_{3.45}^{S}$	3.10	$I_{3.00}^{A}$	$I_{3.00}^{A}$	2.70	$I_{2.85}^{A}$	2.80	2.80	2.80^{S}	$J_{2.70}^{S}$	$I_{3.10}^{S}$	S	S	3.15	S	S
8	A	S	S	S	S	S	3.15	2.95	$I_{3.20}^{S}$	$I_{3.35}^{S}$	$I_{3.25}^{C}$	$I_{3.10}^{A}$	$I_{2.75}^{R}$	2.80	$I_{2.85}^{A}$	A	A	A	S	S	$I_{3.00}^{S}$	S	S	S
9	S	A	S	S	3.15	S	A	A	A	A	A	A	A	S	$J_{2.85}^{S}$	$J_{2.60}^{S}$	$I_{2.90}^{A}$	$I_{3.15}^{S}$	A	A	S	S	S	A
10	A	A	A	S	S	$J_{3.30}^{S}$	3.50^{S}	3.45	$I_{3.35}^{A}$	$I_{3.20}^{A}$	$I_{3.10}^{A}$	$I_{3.10}^{A}$	$I_{3.00}^{A}$	$I_{2.90}^{A}$	A	A	A	S	S	S	S	S	$I_{3.35}^{S}$	$I_{3.10}^{S}$
11	$I_{2.85}^{S}$	$I_{3.10}^{S}$	3.05^{S}	S	S	S	3.30	$I_{3.30}^{S}$	$I_{3.30}^{S}$	3.25	$I_{3.05}^{S}$	2.95	$I_{3.05}^{A}$	2.80	2.70	2.70	$I_{2.80}^{S}$	$I_{2.90}^{S}$	$I_{3.10}^{S}$	$I_{3.40}^{S}$	S	S	S	S
12	S	S	S	$I_{3.00}^{S}$	$J_{3.30}^{S}$	3.25^{S}	3.45	$J_{3.25}^{S}$	3.40	3.05	3.45	$I_{2.80}^{A}$	2.80	2.90	3.00	$J_{3.05}^{S}$	2.70	$I_{2.85}^{S}$	$I_{3.05}^{S}$	$I_{3.30}^{S}$	$I_{3.50}^{S}$	$U_{3.15}^{S}$	$I_{3.20}^{S}$	$J_{2.85}^{S}$
13	2.85^{S}	S	S	S	S	S	S	A	$I_{3.15}^{A}$	$J_{3.35}^{S}$	$I_{3.45}^{A}$	A	A	A	2.70	$I_{2.70}^{S}$	2.85	3.00^{S}	$I_{3.05}^{S}$	$I_{3.30}^{S}$	S	S	S	S
14	2.65^{S}	$I_{3.15}^{S}$	$I_{3.00}^{A}$	S	S	F	$I_{3.45}^{S}$	$J_{3.20}^{S}$	3.25^{S}	$J_{3.15}^{S}$	3.45	3.10	3.10	3.10	2.50	2.85	$I_{3.10}^{S}$	$I_{3.20}^{S}$	3.10	3.15	S	S	S	$I_{3.10}^{S}$
15	A	S	S	A	S	A	$J_{3.10}^{S}$	3.35	3.40	$I_{3.25}^{S}$	2.50^{S}	3.05	3.05^{S}	$I_{3.30}^{S}$	2.80	$I_{2.60}^{A}$	S	S	S	S	S	S	S	S
16	A	S	S	$I_{3.00}^{S}$	$I_{2.95}^{S}$	S	A	$J_{2.90}^{S}$	$I_{3.35}^{S}$	$I_{3.15}^{S}$	2.80	$I_{2.95}^{S}$	3.15	2.75	2.75	2.90	3.00	$I_{3.30}^{S}$	3.30	3.35	$I_{3.25}^{S}$	S	S	S
17	S	S	S	S	S	S	S	S	3.10	3.35	2.65	$I_{2.55}^{R}$	2.65	2.95	3.00^{S}	2.90	2.95	$I_{3.10}^{S}$	$I_{3.10}^{A}$	3.20^{S}	S	S	A	S
18	3.00	S	S	$I_{2.95}^{S}$	$I_{2.85}^{S}$	$I_{2.95}^{S}$	3.30	3.20	2.95	2.85	$I_{3.00}^{S}$	$J_{2.90}^{R}$	$I_{2.90}^{R}$	2.90	3.20	$J_{2.75}^{S}$	3.00	3.00	$J_{3.15}^{S}$	$J_{3.20}^{S}$	3.20^{S}	$I_{3.15}^{S}$	S	S
19	S	S	S	S	A	A	$J_{3.20}^{S}$	3.70^{S}	3.50	$I_{3.20}^{S}$	2.70	$I_{3.00}^{A}$	3.05	3.25	$I_{3.05}^{S}$	3.00	2.90	2.95^{S}	$I_{3.10}^{S}$	$J_{3.30}^{S}$	S	S	S	S
20	S	A	A	A	S	S	S	$J_{3.25}^{S}$	3.60	$I_{3.25}^{A}$	$I_{2.80}^{A}$	2.95	C	A	2.85	$I_{3.00}^{C}$	$I_{3.10}^{C}$	$I_{3.15}^{C}$	C	C	S	S	S	C
21	S	S	S	$I_{3.25}^{S}$	S	A	3.20^{S}	$I_{3.55}^{S}$	$I_{3.45}^{S}$	3.35	$I_{2.75}^{C}$	2.70	3.05	3.10	2.95	$I_{2.85}^{A}$	2.80^{S}	2.90^{S}	3.15	$I_{3.55}^{S}$	S	A	S	S
22	S	S	$I_{3.05}^{S}$	$I_{3.20}^{S}$	S	S	$I_{2.80}^{S}$	$I_{2.85}^{S}$	$I_{2.90}^{S}$	S	A	C	C	C	C	C	C	2.95	3.00	$I_{3.15}^{S}$	$I_{3.30}^{S}$	S	S	S
23	S	S	S	$I_{2.80}^{S}$	S	S	$I_{3.45}^{S}$	$J_{3.15}^{S}$	S	$J_{3.25}^{S}$	C	A	S	2.85	3.10	$I_{2.85}^{A}$	2.80	2.70	3.00	S	S	S	S	S
24	S	A	A	A	A	A	$I_{3.00}^{A}$	3.20	$J_{3.10}^{S}$	3.60^{S}	C	C	C	$I_{2.80}^{S}$	$I_{2.55}^{S}$	2.85	2.95^{S}	$J_{3.25}^{S}$	S	S	S	S	S	S
25	S	S	S	S	S	$I_{3.00}^{S}$	3.40^{S}	3.60	$J_{3.25}^{S}$	3.55	A	A	3.00	2.90	2.95	2.80^{S}	$J_{2.80}^{S}$	2.75	3.25	S	S	S	S	S
26	S	S	S	S	$J_{3.15}^{S}$	$I_{3.20}^{S}$	$J_{3.30}^{S}$	3.15^{S}	3.35	$J_{3.75}^{S}$	$I_{3.20}^{S}$	$I_{3.00}^{C}$	$I_{2.90}^{C}$	2.90	$I_{2.85}^{S}$	$I_{2.95}^{S}$	S	S	$I_{3.05}^{S}$	$I_{3.15}^{S}$	$J_{3.45}^{S}$	S	S	S
27	S	S	S	S	S	3.25^{S}	$I_{3.05}^{S}$	$J_{3.25}^{S}$	3.55^{S}	3.60	$I_{2.90}^{C}$	3.05	2.80	2.75	$I_{2.85}^{S}$	$J_{2.95}^{S}$	3.10	$I_{3.15}^{S}$	$I_{3.10}^{S}$	S	S	S	S	S
28	S	S	S	C	C	C	C	C	S	$I_{3.30}^{S}$	$I_{3.15}^{S}$	2.50	3.00	3.00^{S}	2.65	$I_{3.00}^{S}$	$I_{3.10}^{S}$	$I_{3.10}^{S}$	3.15^{S}	$I_{3.30}^{S}$	$I_{3.40}^{S}$	$I_{3.25}^{A}$	$I_{3.05}^{A}$	$I_{2.95}^{S}$
29	$I_{3.05}^{S}$	$I_{3.00}^{A}$	$I_{3.20}^{A}$	A	A	A	$I_{3.20}^{A}$	$I_{3.40}^{A}$	3.60	3.55	$I_{3.35}^{S}$	$I_{2.85}^{S}$	2.95	3.05^{S}	$J_{3.05}^{S}$	$I_{3.15}^{S}$	$I_{3.25}^{S}$	3.15^{S}	S	S	C	C	C	C
30	C	C	C	A	S	C	S	$J_{3.40}^{S}$	$I_{3.40}^{S}$	3.30^{S}	3.10	3.00	$I_{3.10}^{S}$	$I_{3.15}^{S}$	$I_{3.20}^{S}$	3.05^{S}	2.90	$I_{2.95}^{S}$	S	S	S	S	S	A
31	S	A	A	A	A	$I_{3.10}^{A}$	$I_{3.25}^{S}$	3.15	$I_{3.30}^{S}$	$I_{3.00}^{A}$	A	A	A	A	3.00	2.90	3.05	$I_{3.15}^{S}$	$I_{3.20}^{S}$	$I_{3.25}^{S}$	S	S	S	S
No.	5	3	6	10	11	12	23	27	27	28	23	22	22	25	28	27	25	25	20	17	9	6	4	5
Median	2.85	$U_{3.10}$	$U_{3.05}$	$U_{3.00}$	2.95	$U_{3.10}$	3.20	3.25	3.30	3.25	$U_{3.00}$	$U_{2.95}$	3.00	2.90	2.85	2.90	2.95	$U_{3.00}$	$U_{3.10}$	$U_{3.30}$	$U_{3.25}$	$U_{3.15}$	$U_{3.10}$	$U_{2.95}$
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

Y 7

IONOSPHERIC DATA

Jul. 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								A	A	A	A	A	A	A	B	A	A	A	3.55					
2								3.75	3.35	$I_{3.65}^{A}$	3.95	A	A	3.85	A	A	A	A	3.35	L				
3								3.50	3.95H	3.65	A	A	A	A	A	A	A	A	A					
4								$I_{3.45}^{A}$	3.70	$I_{3.70}^{A}$	A	3.90	A	R	A	A	A	A	A					
5							L	A	A	A	R	R	R	$I_{3.65}^{A}$	A	C	A	A	A					
6								A	A	A	A	A	A	B	A	A	A	A	A					
7							L	L	4.05	A	A	A	A	A	R	A	A	RH	A	L				
8								3.35	3.75	$I_{3.70}^{A}$	C	A	R	R	A	A	A	A	A					
9							A	A	A	A	A	A	A	A	A	A	A	A	A					
10									A	A	A	A	A	A	A	A	A	A	A					
11							L	3.45	$I_{3.65}^{A}$	3.85	A	A	A	A	A	A	A	A	A					
12								A	A	A	3.85	$I_{3.45}^{A}$	A	A	R	R	S	S	$I_{3.65H}^{S}$	L				
13								A	A	A	A	A	A	A	R	A	A	3.70	3.60					
14								3.70	$I_{3.80}^{A}$	S	3.55	A	A	A	R	$I_{3.75}^{R}$	$I_{3.55}^{R}$	AH	S					
15								L	3.75	3.95	A	R	A	R	A	A	A	A	A					
16								R	A	R	$I_{3.70}^{A}$	$I_{3.90}^{R}$	3.90	R	R	A	A	A	A					
17							S	S	S	R	R	R	B	R	A	A	R	A	A					
18							3.55	3.60S	A	A	A	A	R	A	R	B	R	R	A	L				
19							L	A	L	S	A	A	B	A	C	A	3.35	$I_{3.60}^{R}$	A					
20							A	$I_{3.65}^{L}$	A	A	A	A	C	A	A	C	C	C	C					
21							A	A	A	3.50	$I_{3.85}^{C}$	A	A	C	A	A	A	A	A					
22							3.50	$I_{3.60}^{S}$	S	R	A	C	C	C	C	C	C	C	C					
23								S	S	A	A	A	A	A	A	A	C	3.40S	S					
24									R	A	C	C	C	A	A	A	A	C	L					
25							S	L	3.65	$I_{3.85}^{C}$	A	A	C	C	A	C	A	C	A					
26							L	3.70	$I_{3.75}^{C}$	C	C	C	C	A	C	C	A	A	S					
27							3.20S	3.50	3.70	$I_{3.80}^{C}$	3.90	C	C	C	C	C	3.75	3.50	L					
28							C	C	3.85	4.00	$I_{3.90}^{A}$	C	C	C	A	C	A	3.55	A					
29							A	A	A	A	3.75	3.70	C	C	S	C	C	$I_{3.55}^{S}$	3.55					
30								L	3.95	$I_{3.70}^{A}$	3.95	4.25	A	A	A	A	A	A	A					
31								A	A	A	A	A	A	A	A	A	3.60	A	A					
No.							3	11	13	11	9	5	1	2		1	4	6	5					
Median							3.50	3.60	3.75	U3.70	3.85	3.90	3.90	U3.75		U3.75	3.60	3.55	3.55					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

Y 8

IONOSPHERIC DATA

Jul. 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								280	E_{405}^{A}	E_{370}^{A}	A	A	440	380	350	330	340	340	280					
2								260	325	325	325	I_{415}^{A}	I_{420}^{A}	400	375	I_{350}^{A}	I_{325}^{A}	340	305	260				
3								325	270	310	I_{450}^{A}	I_{370}^{A}	325	A	A	A	345	305	290					
4								E_{340}^{A}	260	285	425	445	I_{375}^{A}	370	365	335	320	325	A					
5							320	350	I_{285}^{A}	300	405	390	340	365	380	I_{350}^{C}	340	I_{340}^{A}	285					
6								300	A	A	A	A	A	340	330	360	375	310	275					
7							280	240	260	335	I_{370}^{A}	A	405	A	380	340	360	345	295	260				
8								350	250	300	I_{330}^{C}	I_{355}^{A}	I_{450}^{R}	410	I_{370}^{A}	I_{355}^{A}	I_{370}^{A}	I_{345}^{A}	I_{290}^{A}					
9							A	A	A	A	A	A	A	370	340	405	I_{330}^{A}	A	A					
10									A	A	A	I_{360}^{A}	I_{360}^{A}	I_{380}^{A}	A	A	A	I_{340}^{A}	300					
11							265	295	295	295	I_{370}^{A}	390	I_{365}^{A}	415	440	420	360	330	290					
12								305	265	E_{370}^{A}	290	I_{420}^{A}	425	360	350	330	365	330	290	245				
13								A	A	270	I_{270}^{A}	A	A	A	390	350	330	290	290					
14								305	340	360	290	355	355	350	500	375	310	290	310					
15								260	275	350	E_{500}^{A}	355	340	290	425	A	I_{375}^{A}	I_{325}^{A}	I_{285}^{A}					
16								360	295	275	375	375	300	395	420	345	320	285	280					
17							S	S	340	315	475	560	460	370	340	365	355	290	I_{280}^{A}					
18							290	310	E_{390}^{A}	420	I_{375}^{A}	I_{440}^{A}	I_{410}^{R}	E_{400}^{A}	345	425	355	350	320	290				
19							275	225	455	I_{350}^{S}	435	I_{375}^{A}	330	295	335	355	370	310	305					
20							A	275	270	I_{335}^{A}	I_{430}^{A}	390	C	A	390	I_{350}^{C}	I_{315}^{C}	I_{310}^{C}	C					
21							290	255	I_{295}^{A}	290	I_{425}^{C}	490	355	330	365	I_{420}^{A}	380	330	275					
22							I_{380}^{S}	I_{405}^{S}	I_{365}^{S}	S	A	C	C	C	C	C	C	350	350					
23								350	255	305	C	A	A	400	355	A	430	450	350					
24									330	265	C	C	C	A	I_{490}^{A}	405	330	305	260					
25							275	255	305	305	A	A	360	390	I_{355}^{A}	360	350	350	260					
26							300^{L}	325	290	260	290	I_{365}^{C}	I_{435}^{C}	390	375	320	310	295	325					
27							S	310	260	275	I_{390}^{C}	360	405	440	355	315	295	280	275					
28							C	C	250	305	305	515	365	355	425	315	305	305	305					
29							A	A	260	300	470	475	375	345	310	295	305	310	300					
30								250	255	325	350	390	360	I_{315}^{A}	305	335	395	I_{330}^{A}	290					
31								285	305	I_{370}^{A}	A	A	A	A	375	390	340	320	285					
No.							9	23	25	25	21	21	23	23	28	26	29	30	28	4				
Median							290	300	285	305	375	390	365	370	370	350	340	325	290	260				
U Q																								
L Q																								
Q R																								

h'F2

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

The Radio Research Laboratories, Japan

Y 9

IONOSPHERIC DATA

Jul. 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	A	A	I 285A	I 280A	290	235	A	A	A	A	A	A	A	A	B	A	A	A	250	I_{250}^{A}	I 280 A	340	C	C
2	C	C	C	305	300	290	250	255	250	I_{250}^{A}	250	A	A	205	A	A	A	A	230	245	235	245	I270A	255
3	I_{320}^{A}	I_{310}^{A}	305	310	305	290	255	240	200^{H}	250	A	A	A	A	A	A	A	A	A	275	240	I_{280}^{A}	255	300
4	I_{300}^{A}	305	A	A	320	280	240^{H}	A	255	I_{245}^{A}	I_{235}^{A}	210	I_{225}^{A}	255	A	A	A	A	A	305	I_{220}^{A}	220	A	A
5	A	I_{340}^{A}	325	300	I_{320}^{A}	300	245	A	A	A	I_{215}^{R}	E_{275}^{R}	A	I_{265}^{A}	A	C	A	A	A	235	240	275	350	350
6	310	I_{330}^{A}	275	270	250	305	255	A	A	A	A	A	A	B	A	A	A	A	A	255	250	230	A	A
7	A	A	A	A	A	270	250	240	230	A	A	A	A	A	A	A	A	205^{H}	A	I_{250}^{A}	I_{250}^{A}	E_{290}^{S}	I_{325}^{A}	290
8	A	A	A	310	280	305	275	260	250	I_{235}^{A}	I_{225}^{C}	I_{235}^{A}	I_{230}^{R}	200	A	A	A	A	A	290	240	230	I_{280}^{A}	325
9	I_{325}^{A}	A	A	A	300	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	290	A	A	A
10	A	A	A	290	270	255	245	250	A	A	A	A	A	A	A	A	A	A	A	255	I_{235}^{S}	260	240	290
11	305	I_{295}^{S}	280	280	240	255	240	230	I_{225}^{A}	220	A	A	A	A	A	A	I_{240}^{A}	I_{290}^{A}	I_{250}^{A}	230^{A}	A	A	A	A
12	340	325	295	295	300	250	255	I_{245}^{A}	A	A	205	A	A	A	I_{255}^{R}	270	210	260	200^{H}	245	205^{A}	220	255	305
13	300	270	275	290	325	I_{270}^{S}	210	A	A	A	A	A	A	A	A	A	A	225	210	240	210	230	255	A
14	360	300	I_{315}^{A}	300	315	310^{F}	235	230	I_{235}^{A}	220	250	A	A	I_{205}^{A}	I_{210}^{A}	I_{245}^{R}	220	$I_{245}^{A}{}_{H}$	225	270	255	235	295	345
15	A	A	A	A	I_{305}^{A}	I_{315}^{A}	240	225	235	220	I_{240}^{A}	250	I_{210}^{A}	R	A	A	A	A	A	245^{A}	A	A	I_{325}^{A}	370
16	I_{315}^{A}	I_{290}^{A}	290	305	260	295	I_{270}^{A}	270	A	A	I_{250}^{A}	225	240	225	230	A	A	I_{230}^{A}	I_{240}^{A}	250	245	265	260	I_{270}^{A}
17	290	I_{325}^{A}	335	330	330	300	270	230	250	A	R	R	B	A	A	A	250	A	A	275	A	A	A	A
18	305	350	I_{320}^{A}	I_{300}^{A}	340	280	255	230	A	A	A	A	R	A	R	I_{215}^{B}	I_{240}^{A}	I_{300}^{A}	I_{270}^{A}	250	E_{310}^{A}	I_{300}^{A}	A	A
19	A	I_{310}^{A}	I_{295}^{A}	310	I_{305}^{A}	I_{280}^{A}	245	I_{220}^{A}	265	I_{280}^{A}	A	A	B	I_{250}^{A}	I_{240}^{C}	I_{240}^{A}	I_{240}^{A}	240	I_{250}^{A}	255	225	I_{255}^{A}	I_{250}^{A}	305
20	I_{325}^{A}	A	A	I_{295}^{A}	I_{320}^{A}	285	I_{255}^{A}	255	A	A	A	A	C	A	A	C	C	C	C	C	A	A	A	C
21	A	I_{320}^{A}	I_{305}^{A}	I_{260}^{A}	A	A	I_{250}^{A}	I_{245}^{A}	I_{255}^{A}	270	I_{235}^{C}	A	A	C	A	A	A	A	A	250	270	I_{290}^{A}	305	290
22	I_{280}^{A}	A	300	250	300	I_{285}^{A}	250	240	S	A	A	C	C	C	C	C	C	255	I_{245}^{C}	275	I_{270}^{A}	A	A	A
23	A	A	I_{300}^{S}	I_{345}^{A}	I_{300}^{A}	255	I_{240}^{A}	A	A	A	A	A	A	A	A	A	240	250	I_{265}^{A}	I_{280}^{A}	230^{A}	215	A	A
24	A	A	A	A	A	A	I_{300}^{A}	250	I_{230}^{A}	A	C	C	C	A	A	A	A	C	240	245	310	I_{310}^{S}	300	250
25	335	315	350	300	310	I_{330}^{S}	245	210	220	I_{220}^{C}	A	A	C	C	A	C	A	I_{210}^{A}	I_{245}^{A}	255	290	I_{270}^{A}	I_{305}^{A}	I_{320}^{A}
26	I_{325}^{A}	290	I_{280}^{S}	275	280	275	230	235	I_{220}^{C}	I_{210}^{C}	I_{205}^{C}	I_{245}^{C}	C	A	C	C	A	A	A	260	250	235	I_{275}^{S}	I_{320}^{S}
27	290	290	275	250	255	280	260	230	215	I_{220}^{C}	220	205	I_{210}^{C}	C	C	C	225	240	240	240	240	270	I_{300}^{S}	310
28	295	300	260	C	C	C	C	C	230	205	I_{225}^{A}	C	I_{230}^{C}	I_{225}^{C}	A	A	A	250	I_{245}^{A}	255	245	I_{280}^{A}	I_{315}^{A}	I_{315}^{A}
29	310	I_{305}^{A}	I_{290}^{A}	I_{310}^{A}	I_{260}^{A}	I_{300}^{A}	I_{305}^{A}	I_{285}^{A}	I_{245}^{A}	I_{225}^{A}	255	250	A	A	A	C	I_{220}^{C}	215	225	235	C	C	C	C
30	C	C	C	A	A	C	230	225	215	I_{230}^{A}	215	200	A	A	A	A	A	A	A	A	200	255	I_{300}^{A}	I_{330}^{A}
31	I_{330}^{A}	A	A	A	A	I_{305}^{A}	260	I_{240}^{A}	I_{240}^{A}	A	A	A	A	A	C	A	250	A	A	250	I_{270}^{A}	300	A	A
No.	19	18	20	23	25	26	28	23	19	15	14	8	6	8	4	4	10	14	16	28	25	23	19	18
Median	310	U 310	295	300	300	285	250	240	235	$U_{2.25}$	U230	230	U230	U225	U235	U240	240	240	U240	250	245	260	U295	310
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

IONOSPHERIC DATA

Jul. 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	115	115	110	110	110	110	110	150	140	140	130	125	130	140	B	135	130	140	125	120	115	125	C	C
2	C	C	C	110	110	110	110	140	140	125	120	120	120	G	125	125	120	130	115	S	S	125	125	125
3	105	110	105	110	E	S	S	115	155	130	110	110	110	110	110	105	105	105	105	105	105	105	105	S
4	110	120	110	110	115	S	130	125	130	120	115	115	110	110	110	140	140	130	130	125	125	105	110	120
5	120	120	110	110	110	110	110	135	130	125	G	170	150	140	145	C	130	125	125	S	S	S	S	135
6	S	110	110	S	S	140	145	140	120	120	120	120	110	B	115	110	110	105	105	105	105	105	105	110
7	120	120	110	110	110	110	115	175	140	135	120	120	140	125	140	125	130	G	145	140	125	110	115	120
8	130	110	110	110	130	S	140	135	140	130	C	120	140	125	110	110	110	105	105	105	105	105	105	110
9	120	110	105	110	105	100	125	125	125	120	120	110	105	110	130	130	110	115	110	105	105	100	135	125
10	125	120	125	130	125	125	125	130	125	120	120	120	120	120	120	125	115	110	110	105	105	S	S	S
11	S	S	S	S	S	S	G	G	110	115	110	110	110	110	110	105	110	105	130	125	120	120	120	120
12	125	115	S	S	S	S	145	140	125	115	125	110	120	120	G	140	110	110	110	105	105	105	105	S
13	S	105	105	S	100	S	145	125	120	115	110	105	105	105	145	125	110	140	110	S	105	105	105	105
14	120	120	110	120	110	110	120	110	110	110	110	110	110	110	110	110	110	140	105	105	105	120	110	110
15	110	110	105	105	110	105	140	125	125	120	125	125	120	G	145	130	130	105	105	105	105	125	105	130
16	115	105	110	E	E	120	115	115	110	110	105	110	110	B	110	125	120	120	120	120	125	S	105	115
17	110	105	105	S	S	115	120	125	160	155	105	115	B	140	105	105	110	130	120	120	110	110	110	105
18	105	105	105	110	110	110	110	110	105	105	110	105	105	105	110	B	155	150	125	120	105	100	125	125
19	125	120	120	110	110	110	110	110	145	140	110	110	B	110	110	140	140	145	125	125	105	125	125	140
20	120	115	110	110	110	110	110	110	110	110	110	115	C	125	130	C	C	C	C	C	110	120	120	C
21	110	105	105	105	105	105	120	120	110	110	C	125	120	C	140	125	125	120	120	110	105	105	115	100
22	105	105	105	100	125	105	120	110	110	110	110	C	C	C	C	C	C	140	120	120	105	105	105	120
23	120	110	S	100	100	S	130	125	125	125	125	120	115	120	110	110	110	140	125	120	115	120	125	125
24	125	120	120	120	115	110	110	145	110	115	C	C	C	140	140	130	130	135	130	120	120	S	S	S
25	120	120	110	110	S	S	S	130	130	140	115	110	140	C	130	C	115	115	105	105	105	105	105	105
26	105	110	S	S	S	S	S	150	145	120	C	C	C	115	120	110	110	105	105	105	105	100	S	S
27	S	105	S	S	115	110	140	G	115	115	G	G	C	C	C	G	G	140	125	S	105	115	S	S
28	S	S	110	C	C	C	C	C	125	135	115	125	G	140	145	140	140	105	125	120	105	115	100	120
29	120	110	110	115	110	110	110	105	110	110	115	155	140	135	140	C	C	145	120	110	C	C	C	C
30	C	C	C	100	100	C	130	105	120	110	110	120	140	130	130	120	120	110	110	100	100	105	105	100
31	100	100	100	100	100	100	100	125	115	110	110	110	140	130	140	130	130	115	105	105	105	S	110	105
No.	24	27	24	22	22	20	26	28	31	31	25	27	23	23	27	24	27	29	30	26	28	25	24	24
Median	120	110	110	110	110	110	120	125	125	120	115	115	120	120	125	125	120	120	120	110	105	105	110	120
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

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

The Radio Research Laboratories, Japan

Y 11

IONOSPHERIC DATA

Jul. 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	f	f2	f	f2	f2	f2	ℓ3	h	h	h	h	c2	h	h		h	h	h	c2	f2	f	f		
2				f	f	f2	ℓ	c2ℓ	h	h2	c	c	c2		h	c2	c2	c	c2			f	f	f
3	f	f	f	f				ℓh	hℓ	h	c2	c2	c2	c3	ℓ2	ℓ3	ℓ3	ℓ4	ℓ3	f2	f	f2	f	
4	f2	f2	f3	f2	f2		h2	h4	h	c2	c2	c	ℓ2	ℓ	ℓ2	hℓ	hℓ	h2ℓ	h3ℓ2	f4	ff	f	f2	f
5	f2	f3	f	f	f3	f2	ℓ2h2	h2ℓ2	h	h2		h	h	h	h		h3	c4	c3					f
6		f2	f2			f	c2ℓ	c2ℓ	c2ℓ	c2	c3	c	c2		ℓ	ℓ2	ℓ2	ℓ2	ℓ4	f2	f2	f	f	f
7	f2	f	f2	f2	f3	f2	ℓ	hℓ2	hℓ	h	c2	c3	h	c2	h	h2	h2		h	h3	f5	f2	f4	f2
8	f5	f2	f2	f2	f		h3	h2ℓ	h2	hℓ		c2	h	h	c2	c2	c2	ℓ3	ℓ4	f2	f2	f	f2	f2
9	f2	f2	f3	f2	f	f2	h3ℓ	h2	h5	h2	h4	c2	ℓ2	ℓ2	h	hℓ3	c4ℓ	c2ℓ	c3	f2	f2	f	ff	ff
10	f2	f	f2	f2	f2	f3	c2	c2	c2	c2	c2	c3	c4	c2	c2	c2	c3	ℓ2	ℓ2	f3	f			
11									c4	c	c	ℓ	ℓ2	ℓ	ℓ	ℓ	ℓ	ℓ	c	f3	f3	f3	f2	f
12	f	f2					h2	h	h2	c	c	c	c	c		h	ℓ	ℓ	ℓ	ℓ2	f2	f	f	
13		f2	f		f2		h	h2	h2	c2	c2	ℓ2	ℓ2	ℓ2	h	h	c2	hℓ2	ℓ2		f	f	f2	f4
14	ff	f	f2	f	f	f	ℓ	ℓ3h	ℓ2	c	c	ℓ	ℓ3	ℓ	ℓ	ℓ	ℓ	hℓ	ℓ2	ℓ2	f2	ff2	f2	f
15	f3	f2	f	f2	f4	f3	h	h	h	h	h	h	c		h	h2	hℓ	ℓ	ℓ	f2f2	f2	ff	f	f
16	f	f2	ff			f2	c2	c2	c2	ℓ	ℓ2	ℓ	ℓ		ℓ	h	c2	c2	c3	f2	f		f	f
17	f	f	f			f	h	h	h	h	ℓ	ℓ		hℓ	ℓ	ℓ	ℓ	hℓ	c2	f2	f	f	f2	f
18	f2	f3	f	f3f	f3	f	ℓ2	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ		h	h	c2	c2	f3	f2	f	f3
19	f2	f3	f2	f2	f3	f2	ℓ	c2	hc	h	c	ℓ3		ℓ4	ℓ	hℓ	hℓ	hℓ	c2ℓ	f2f	f3	f2	f2	f
20	f	f2	f3	f	f	f3	c2	c2	c2	c2	c2	c		h	h						f2	f	f	
21	f2	f	f3	f2	f2	f3	cℓ	c	c2	c		h	c		h	h4	h3	c2	c2	f	f2	f2	f	f2
22	f	f2	f2	f	f4	f2	ℓ	ℓ	ℓ2	ℓ2	ℓ2							hℓ	ℓ	ff	f	f	f3	f
23	f2	f		f2	f		c	c2	c	c	c	c	c	c	c2	c	ℓ	h	c2	f	f3f	f	f	f
24	f	f	f2	f	f	f	ℓ3	hℓ	ℓ	ℓ				h	h	h	h	h	h	f	f2			
25	f	f	f	f2				c	h	h	c	c2	h		h		h	c2	c2	f2	f2	f2	f3	f
26	f	f						h	hℓ	ℓ				c	ℓ	ℓ	ℓ	ℓ	ℓ2	f3	f	f		
27		f2			f	f3	h		ℓ	c								hℓ	cℓ		f	f		
28			f						h	h	c	c		h	h	h	hℓ	ℓh	c3	f2	f3	ff2	ff	ff
29	f	f2	f2	f4	f3	f	ℓ3	ℓ4	ℓ2	ℓ	ℓ	h	hℓ	h	h			h	c	f				
30				f2	f2		h	ℓ2	h	h	c	h	h	h2	h	h	h2ℓ	c	c3	f2	f	f	f	f2
31	f2	f	f	f2	f	f	ℓ	c2ℓ	c2ℓ	c2ℓ	c	c	h	h	h	h	h	c	c2	f2	f3		f	f
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R																								

The Radio Research Laboratories, Japan

Types of Es

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

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.

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

Note No observations during the following periods:

2nd 0400- 1000
3rd 1920- 4th 0100
4th 1920- 2340
6th 1920- 7th 0200
8th 1930- 9th 0630
13th 1930- 14th 1000
14th 1930- 15th 0030
24th 0030- 0300
25th 1930- 26th 0000
26th 0500- 1000
28th 1940- 29th 0300

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jul. 1963	S W F								Correspondence		
	Drop-out Intensities (db)						Start-time	Duration	Type	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN	SH							
4		-	14		28		07.35	25	S	2+	x		x

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jul. 1963	Whole Day Index	L. N. 06 12 / 12 18	L. N. 18 / 24	W W V 00 06 / 06 12	W W V 12 / 18	W W V 18 / 24	S. F. 00 06 / 06 12	S. F. 12 / 18	S. F. 18 / 24	W W V H 00 06 / 06 12	W W V H 12 / 18	W W V H 18 / 24	Warning 00 06 / 06 12	Warning 12 / 18	Warning 18 / 24	Principal magnetic storms Start	End	H
1	4o	4 4	4	(3) -	4	(4)	3 4	5	4	3 3	4	4	N N	N	N			
2	5-	4 5	5	(4) -	5	5	4 5	5	5	4 5	5	5	N N	N	N			
3	5-	5 5	(4)	4 -	5	4	5 5	5	5	4 4	4	4	N N	N	N			
4	4o	4 4	2	4 -	3	4	5 5	(5	5)	4 4	4	4	N N	N	N			
5	3+	4 4	3	2 -	2	3	4 4	4	4	4 4	4	4	U U	U	U			
6	3o	3 3	3	(4) -	1	4	3 3	3	3	5 4	4	5	U U	U	U			
7	4-	3 4	3	4 -	4	3	3 4	(4)	4	4 3	4	4	U N	N	N			
8	3+	3 4	3	2 -	5	5	3 3	3	4	3 3	4	5	N N	N	N			
9	4-	C C	C	3 -	4	4	4 4	4	(3)	5 5	5	5	N N	N	N			
10	4-	4 4	4	3 -	4	4	3 4	4	4	5 3	4	4	N N	N	N			
11	4o	4 4	5	4 -	4	4	4 3	4	4	4 4	4	4	N N	N	N			
12	5-	5 4	4	5 -	5	4	4 5	5	4	4 3	4	4	N N	N	N			
13	5o	5 5	5	5 -	5	5	5 5	5	4	4 5	(5)	4	N N	N	N			
14	5-	5 5	5	5 (4)	5	5	4 4	4	5	5 4	4	4	N N	N	N			
15	5o	4 5	5	5 -	5	5	5 5	5	5	4 4	4	5	N N	N	N			
(16)	4+	4 5	5	5 -	4	3	5 4	4	4	5 5	5	(4)	N U	U	U			
(17)	2+	2 2	2	2 -	1	2	5 3	3	3	5 5	4	4	U U	U	U			
(18)	3+	4 3	2	3 -	3	2	4 3	4	4	4 4	4	4	U U	N	N			
19	4o	4 4	4	2 -	4	4	5 5	4	3	4 4	4	4	N N	N	N			
20	5-	5 5	5	2 -	5	5	5 5	5	4	4 3	4	5	N N	N	N			
21	3o	(2 2	2)	5 -	1	1	4 4	4	4	5 5	3	2	N U	U	U			
22	2+	3 2	(2)	1 -	1	1	4 4	3	3	2 3	3	2	U U	U	U			
23	3-	4 3	2	1 -	1	1	3 4	4	3	4 4	4	4	U U	U	U			
24	2o	(2) 2	2	1 -	1	1	3 3	3	3	4 4	4	4	U U	U	U			
25	3-	4 4	3	1 -	2	1	3 4	3	2	4 3	3	3	U U	U	U			
26	3-	3 3	3	2 -	2	2	2 3	3	4	4 5	5	5	U U	U	U			
27	3-	4 3	4	1 -	1	1	4 4	3	3	5 5	4	4	U U	U	U			
28	3+	4 4	4	1 -	3	4	3 3	3	3	4 3	4	5	N N	N	N			
29	4+	4 5	5	4 -	5	5	3 4	4	4	4 4	4	4	N N	N	N			
30	3-	3 3	2	4 -	1	1	4 3	3	3	5 5	4	3	N U	U	U			
31	3o	3 4	4	1 -	1	4	3 4	4	3	3 3	4	5	U U	U	U			

* = day of Special World Interval

( ) = inaccurate

( ) = Regular World Day

C = artificial accident

\- = impossible to evaluate

--- = continuing magnetic storm

Outstanding Occurences

No Outstanding Occurence was observed during July, 1963.

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