F—171

IONOSPHERIC DATA IN JAPAN

FOR MARCH 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. 0539*x*)

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

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

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

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

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

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

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

N=normal
U=unstable
W=disturbed

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

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

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

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

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

Circuits and Drop-out intensity

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

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

Start-times and Durations

Types

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

Importances

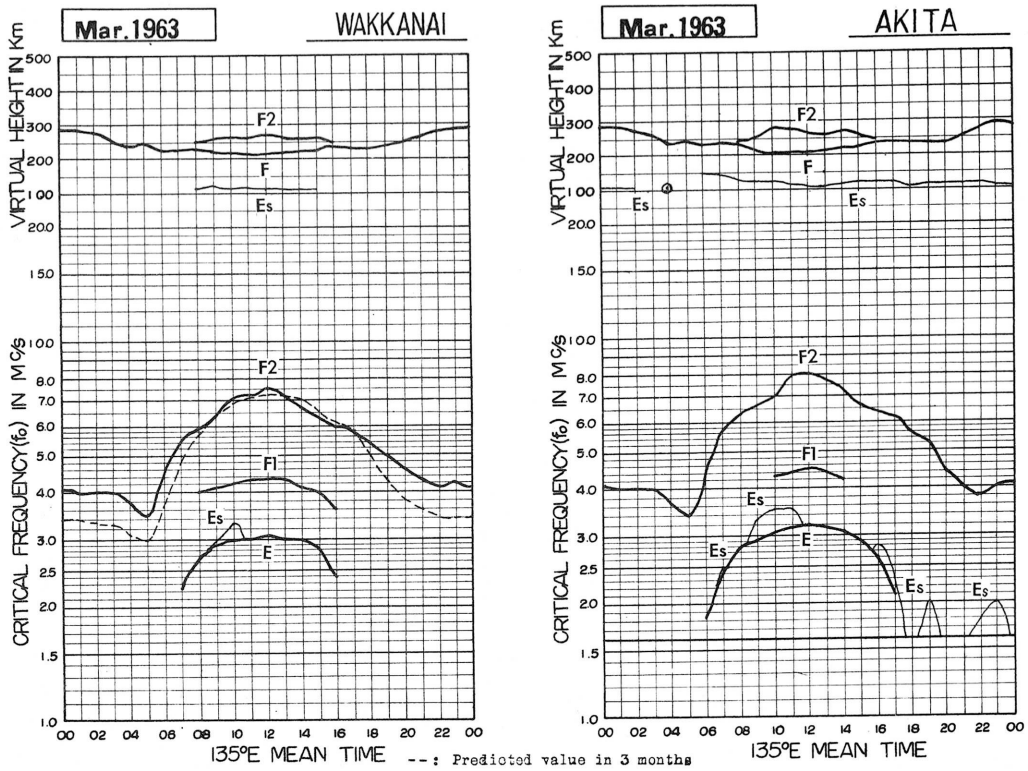
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

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

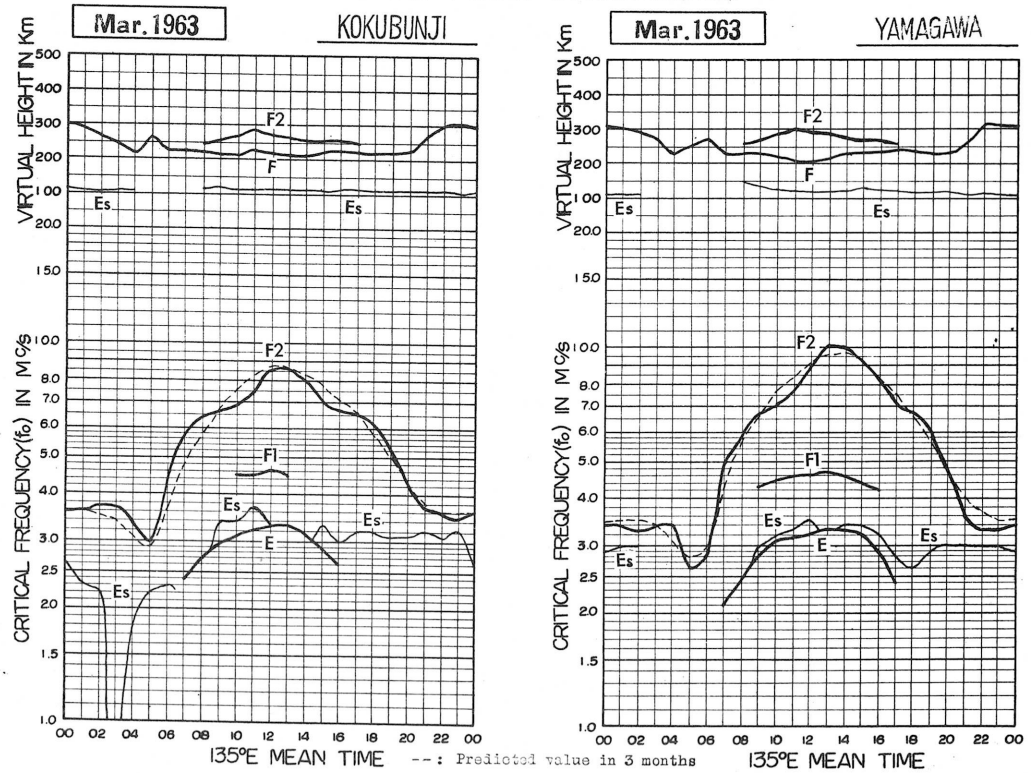
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA

Mar. 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	3.7	3.9	4.0	3.8	3.6	3.4	3.8	5.7	7.1	Z6.7C	7.0	8.9	8.1	6.7	6.7	6.0	6.7	5.7	5.2	5.0	3.7	3.7	4.2	U4.3S
2	4.3	4.4	4.3	4.0	4.1	4.0	3.4	5.8	U6.5S	6.0	7.1	7.3	9.2	8.1	6.6	6.3	6.0	6.0	5.0	3.8	3.9	3.8	3.8	3.8
3	3.8	4.0	4.2	4.0	3.6	3.4	3.7	5.5	6.1	6.9	7.8	7.0	7.4	7.9	6.8H	6.8H	5.5H	5.3	4.2	4.4	4.1	3.8	3.6	3.3
4	U3.7S	3.9	3.8	3.9	3.6	3.5	4.3	6.0	5.8	6.3	7.0	6.3	7.6	6.7	6.7	6.2	6.0	6.0	5.1	4.8	4.5	4.3	3.6	U3.8S
5	U3.7S	4.1	4.1	4.2	Z4.1SF	4.3Z	4.5	5.8	6.7	6.4	6.9	7.2	7.1	6.7	6.1	6.0H	5.8	6.0	5.9	U4.8S	3.6	3.9	U3.8S	U4.2S
6	Z4.2S	4.2	U3.8S	U4.3S	Z4.3SF	Z4.3SF	4.5	5.6	U6.5S	U7.0S	7.2	6.8	8.1	J7.2R	6.5	5.8	6.1	5.8	5.7	4.8	4.6	U4.2S	4.1	U4.1S
7	4.3	4.3	U4.3S	4.0	4.2	3.7	4.6	6.0	6.0	U6.8S	Z7.8S	7.4	8.6	6.3	6.3	7.2	6.2	U6.6S	5.1	4.2	U4.0S	3.4	U3.5S	Z3.1S
8	Z3.7SF	Z3.9SF	U4.0S	Z4.2SF	U4.3S	Z3.7SF	4.2	5.5	5.8	6.2	7.0	9.3	7.7	6.5	U6.6S	6.7	6.7	U6.4S	5.9	U6.3S	U6.3S	6.1	U5.5S	5.3
9	Z5.3SF	5.2	4.3	4.6	4.4	3.7H	4.3	Z6.4S	5.4	4.9	6.3	7.0	7.4	8.2	6.6	6.5	6.3	5.7	4.6	Z3.8S	4.3	U4.4S	3.9	U4.1S
10	U4.3S	4.3	4.3	4.3	4.3	3.4	4.3	5.5	6.6	C	C	C	C	C	C	C	7.0	5.7	5.0	4.8	4.5	5.0	4.3	U4.5S
11	U4.3S	4.3	4.0	3.5	3.7	2.6	3.4	U4.3S	5.0	6.0	6.9	7.2	7.7	7.6	6.6	5.8	5.3H	5.4	5.2	5.6	5.6	5.8	5.8	5.4
12	U5.3FS	Z5.6FS	4.8	5.0	4.5	4.0	4.4	6.0	6.0	6.9	8.7	9.1	6.8	8.0	7.5	6.9	6.8	6.2	5.0	4.3	U4.6S	U4.2SF	Z3.7FS	3.4
13	U3.9S	U3.9FS	3.0F	3.1	3.1	3.0	4.4	5.9	7.4	7.0	7.6	7.9	8.0	7.0	6.9	6.7	5.7	5.6	5.4	5.6	U5.3S	Z5.3SF	U4.8SF	U4.3SF
14	U4.3SF	Z4.3SF	SF	SF	SF	SF	4.7	6.2	U6.6S	7.2	9.2	8.2	8.4	8.3	7.0	6.1	6.2	6.2	5.5	Z4.8A	4.3	3.9	3.9	4.0
15	4.0	3.9	U4.1S	4.0	4.1	4.1	4.9	5.6	6.1	5.8	7.0	8.3	8.3	7.6	6.6	6.4	6.4H	6.1	5.2	4.8	U4.4S	U4.3S	3.3	3.6
16	3.8	4.0	4.1	4.0	4.0	3.3	4.3	5.5	5.7H	6.1	6.6	6.6	6.9	7.4	6.9	5.8	6.1H	6.3	6.0	4.5	4.2	4.2	4.0	3.8
17	3.8	3.7	3.6	3.6	3.5	3.4	4.6	5.6	6.0	5.9H	6.9	8.2	8.1	7.7	7.0	6.2	5.7	5.8	5.0	4.8	4.9	4.9	4.1	3.9
18	3.9	3.8	3.8	3.8	U3.6S	Z4.0SF	5.1	5.4	6.0	6.6	7.5	7.8	8.1	8.0	7.1	6.3	6.0	5.7	5.4	4.8	4.9	U4.5S	4.2	4.2
19	4.1	3.9	3.8	U3.8S	Z3.7SF	3.3	4.5	5.5	6.3	7.0	6.9	7.5	9.5	7.7	6.8	6.3	6.1	6.6	6.3	5.3	4.1	3.6	Z3.9S	SF
20	SF	SF	SF	U3.9S	U3.8S	Z4.3SF	4.8	5.4	6.3	7.1	6.4	6.2	7.8	8.1	7.1	7.3	6.8	6.3	6.0	5.5	5.0	4.3	U4.3S	U4.3S
21	U4.3S	U4.3S	U4.0S	4.0	4.0	U3.3S	4.8	5.7	6.0H	6.6	7.3	6.9	6.9	7.6	6.7	6.7	7.0H	U6.7S	6.7	5.9	5.7	3.8	3.3	3.5
22	3.5	3.5	3.5	3.3	3.3	3.3	5.0	5.7	6.4	5.9	6.4	7.4	7.3	6.7	7.0	6.5	5.8H	5.7	5.5	5.0	4.5	4.4	U4.3S	4.3
23	4.1	3.9	3.7	3.8	3.8	3.3	4.7	5.4	5.3	6.4	7.3	7.1	7.7	6.9	6.6	6.1	6.0	5.8	5.1	5.0	5.0	4.4	4.4	4.3
24	4.1	4.0	3.7	3.7	3.5	2.8	4.3	5.4	6.5	8.7	8.1	8.3	7.0	6.7	6.8	6.1	5.9	5.7	5.4	5.6	5.3	4.8	4.3	4.3
25	SF	SF	SF	SF	SF	3.5F	5.0	5.4	6.0	6.1	8.0	6.8	6.4	6.8	6.4	6.5	5.9	6.3	6.1	5.5	5.0	4.3	4.3	S
26	SF	SF	SF	SF	SF	U3.7S	4.4	5.4	5.3	5.7	6.3	6.3	7.3	7.5	6.5	6.3	5.6H	5.4	5.5	5.4	5.2	5.2	5.0	4.9
27	U4.8SF	SF	SF	SF	SF	SF	5.1	5.3	6.5	6.2	7.3	7.6	7.2	6.5	7.2	6.3	5.7	5.7	5.7	5.2	4.7	U4.3S	4.0	U4.1S
28	4.1	4.0	U3.7S	SF	SF	SF	4.7	5.2	5.9	6.7	6.1	6.9	7.4	6.3	6.1	6.2	6.2	5.3	5.0	4.8	4.6	4.7	4.5	U4.3S
29	4.0	4.0	3.8	3.8	3.8	3.6	4.7	5.1	5.7	6.0	7.4	6.9	6.6	6.0	6.7	6.1	5.9	5.3	5.3	5.1	4.9	4.8	U4.7S	4.4
30	Z4.5S	4.3	U4.3S	U4.2SF	Z3.9FS	3.5FS	5.0	5.0	5.5	5.9	7.6	7.1	6.1	6.2	6.5	7.0	6.5	5.3	5.1	5.0	4.1	4.4	4.5	4.3
31	4.3	3.7	3.7F	U3.5F	Z3.8SF	4.3	5.3	5.1	5.6	6.2	7.1	6.8	5.9	6.8	7.0	6.5	5.7	5.7	5.4	5.5	5.1	U4.3S	4.0	4.3
No.	28	27	26	26	26	28	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	31	31	29
Median	4.1	4.0	4.0	4.0	3.8	3.5	4.5	5.5	6.0	6.4	7.1	7.2	7.5	7.1	6.7	6.3	6.0	5.8	5.4	5.0	4.6	4.3	4.1	4.2
U.Q.	4.3	4.3	4.2	4.2	4.1	4.0	4.8	5.8	6.5	6.9	7.6	7.9	8.1	7.7	7.0	6.7	6.4	6.2	5.7	5.5	5.0	4.8	4.4	4.3
L.Q.	3.8	3.9	3.7	3.8	3.6	3.3	4.3	5.4	5.7	6.0	6.9	6.9	7.0	6.7	6.6	6.1	5.8	5.7	5.1	4.8	4.2	3.9	3.8	3.8
Q.R.	0.5	0.4	0.5	0.4	0.5	0.7	0.5	0.4	0.8	0.9	0.7	1.0	1.1	1.0	0.4	0.6	0.6	0.5	0.6	0.7	0.8	0.9	0.6	0.5

The Radio Research Laboratories, Japan.

foF2

Sweep 1.0 Mc to 18.0 Mc in 40 min/sec in automatic operation.

W 1

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									U3.8L	±4.0C	4.1	4.3	4.2	4.1H	U4.0L									
2										3.9	4.0	4.0	4.2	4.1	3.8		3.0							
3										U4.0L	4.1	4.2	4.1	4.0	4.0	3.2								
4									3.4	U4.0L	U4.0L	3.9	4.1	4.1	4.0	3.7								
5									U3.5L	3.9	4.2	4.2	4.3	U4.3L	U4.0L									
6									3.0	3.9	4.3	4.2	4.4	4.1	U4.0L	3.9								
7									L	U4.0L	4.2	4.2	4.3	4.2	4.0	U4.0L	U3.3L							
8									U3.8L	4.0	U4.2L	4.3	U4.3L	U4.1L	4.0	4.0								
9									U4.0L	4.4	4.2	4.4	4.3	4.3	4.1	U4.0L								
10									U3.8L	C	C	C	C	C	C	C								
11									3.9	4.1	4.2	4.3L	4.5	4.2	4.0	U3.7L								
12									L	U4.1L	U4.3L	U4.5L	U4.3L	4.3	U4.0L	U4.0L								
13									U4.0LH	U4.1L	U4.3L	U4.3L	4.3	4.3	4.1	U3.9L								
14										4.3	4.4	4.4	U4.3L	4.3	4.1	U4.0L								
15									U3.8L	4.0	4.3	4.5	4.3	4.3	4.1	U4.0L								
16										4.1	4.3	4.3H	4.3	4.3	4.2	U4.0L								
17									L		4.3	4.3H	4.3	4.3	4.2	U4.0L								
18									3.7	4.2	4.3	4.4	±4.3A	4.3	4.1	U4.0L								
19										4.1	4.2	4.2	4.4	4.3	4.1	U4.0LH								
20									U3.4L	4.0	4.2	4.1	U4.6L	U4.3LH	4.2	4.1	U3.6L							
21										4.2H	4.3	4.3	4.2	4.3	4.1	U4.0L								
22									U4.0L	4.1	4.2	4.4	4.4	4.2	4.2	4.0								
23										4.2LH	4.3	4.3H	4.3	4.3	4.1	±3.8A								
24									4.0	4.2	4.3	4.3	4.3	4.3	4.1H	3.9L	L							
25									4.0L	4.2L	4.3H	4.4	4.3	4.3	4.2LH	4.0								
26										4.1	4.1	4.3H	4.3	4.3	4.2L	4.0L								
27									4.0	4.2	4.2	4.3	4.3	4.3	4.2LH	4.0	U3.6L							
28									4.1	4.2	4.3	4.3	4.3	4.3	4.1H	4.1H	U3.6L							
29									U4.0L	4.1	4.1	4.3H	4.3	4.3	4.2	4.0	L							
30									4.0	4.1	4.3	4.3	4.3	4.3	4.2	4.0H	U3.7L							
31								L	U4.0L	4.1	4.3	4.3	4.3	4.3	4.2H	4.0	U3.8L							
No.									20	29	30	30	30	30	30	27	7							
Median									U4.0	4.1	4.2	4.3	4.3	4.3	4.1	4.0	U3.6							

foF1

Sweep 2.0 Mc to 18.0 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	A	C	2.95	3.00	3.00	2.95	2.90	2.50	S	S						
2							S	2.05	2.50	‡2.75A	2.90	2.95	3.00	3.00	3.00	2.65	2.15	S						
3							S	S	2.50	‡2.85S	2.95	3.00	3.00	2.95	2.90	2.70	2.15	S						
4							S	S	2.50	2.85	2.95	3.00	3.00	2.95	2.85	2.70	S	S						
5							S	S	2.55	2.85	‡2.90A	3.00	‡3.00A	‡3.00A	2.95	2.70	A	S						
6							S	S	R	2.85	3.00	‡3.00A	3.00	3.00	2.90	2.50	2.30	S						
7							S	2.15	2.60	3.00	3.00	‡3.05A	3.10	3.05	2.90	‡2.75A	2.25	S						
8							S	S	2.40	2.65	3.00	3.00	3.20	‡3.05R	3.00	2.80	S	S						
9							S	2.05	2.50	2.70	2.45	‡2.65A	3.00	‡3.00R	3.00	2.80	2.20	S						
10							S	S	2.55	C	C	C	C	C	C	C	2.25	S						
11							S	S	2.40	2.70	‡2.80A	3.00	3.00	3.00	2.85	2.60	‡2.25S	S						
12						S	S	2.20	A	A	A	3.00	3.05	3.00	3.00	2.70	2.15	S						
13							S	S	2.35	‡2.85A	3.00	3.15	3.05	3.00	3.00	2.60	2.30	S						
14							S	2.15	2.70	2.80	3.00	3.10	‡3.10A	‡3.05A	3.00	A	A	S						
15							S	2.30	2.80	3.00	3.00	3.15	3.05	3.00	3.00	‡2.80R	A	A	S					
16							S	2.25	2.75	‡2.90A	3.00	‡3.30A	3.25	3.20	3.10	A	A	A	S					
17						S	S	2.25	2.90	3.00	3.00	3.00	3.25	3.15	‡3.05A	2.90	A	A	A					
18							S	2.25	2.60	‡2.90A	3.00	A	A	A	‡3.00A	2.85	A	A	S					
19						S	S	2.10	2.85	2.95	3.00	3.00	3.05	3.05	‡3.00A	2.80	2.50	S	S					
20							S	2.10	2.60	2.95	3.00	‡3.05A	2.90	3.00	3.00	2.80	2.35	S	S					
21							S	2.20	2.60	‡2.90A	3.00	3.15	3.05	3.00	2.95	2.80	2.40	S	S					
22							S	2.20	2.80	2.80	3.05	3.10	3.15	3.15	3.00	2.85	2.50	S	S					
23							S	2.30	2.80	2.70	‡3.10A	3.15	3.20	3.10	3.00	2.60	2.35	S	S					
24						S	S	2.30	2.80	2.95	‡3.05A	3.20	3.10	3.10	2.95	‡2.70A	2.50	A						
25						S	S	2.25	2.75	2.90	3.10	3.20	3.25	3.20	3.00	2.80	2.45	S	S					
26						S	S	2.30	2.85	2.90	2.95	3.00	‡3.00R	3.00	‡3.00A	2.85	2.40	S	S					
27						S	S	2.35	2.75	2.95	3.00	3.00	2.90	3.15	3.00	2.85	2.50	S	S					
28							S	2.30	2.85	3.00	‡3.10A	3.15	3.15	2.95	2.95	2.80	2.40	S	S					
29						E	S	2.40	2.90	3.00	3.00	3.15	3.10	3.15	3.05	2.90	2.50	S	S					
30						S	S	2.50	2.85	2.95	3.05	3.20	3.25	3.10	3.00	2.90	2.50	S	S					
31						S	S	‡2.50S	2.90	3.00	3.05	3.00	‡3.00A	‡3.05R	3.00	2.90	2.50	S	S					
No.						1		22	28	28	29	29	29	29	30	28	22							
Median						E		2.25	2.70	2.90	3.00	3.00	3.05	3.00	3.00	2.80	2.40							

foE

Sweep 1.0 Mc to 18.0 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	S	3.0	C	G	G	G	G	G	G	S	S	E	E	E	E	E	E
2	E	E	E	E	E	E	S	G	G	2.9	G	G	G	G	G	G	G	S	E	E	E	E	E	E
3	E	E	E	E	E	E	S	S	G	3.0	G	G	G	G	G	G	G	S	E	E	E	2.5	E	E
4	J3.0	E	E	E	E	E	S	2.2	G	G	G	G	G	G	G	G	S	S	E	E	E	E	E	E
5	E	1.8	J2.2	E	E	E	S	S	G	2.6	J3.8	2.7G	J4.3	4.3	2.5G	G	2.9Y	S	E	E	E	E	E	E
6	E	E	E	E	E	E	S	S	G	G	2.8G	J3.6	G	G	G	G	G	S	E	E	E	E	E	E
7	E	E	E	E	E	E	S	G	G	G	G	3.3	2.9G	G	G	2.8	G	S	E	E	2.5	J4.0	J2.4	J3.0
8	E	E	E	E	J2.3	E	S	2.3	G	3.3	G	G	G	G	2.6G	G	S	S	2.5	E	E	E	E	E
9	E	E	E	E	E	E	S	G	2.9	3.5	J3.6	J4.3	G	G	G	G	G	S	E	J3.3	E	E	2.4	E
10	E	E	E	E	E	E	S	S	3.2	C	C	C	C	C	C	C	G	J3.0	E	E	E	E	E	E
11	E	E	E	E	E	E	S	2.5	3.0	3.5	4.3	G	G	G	G	G	S	S	E	E	2.7	E	E	E
12	E	E	E	E	E	S	S	G	3.0	J3.7	3.4	G	G	G	G	G	G	S	E	E	J3.1	J3.2	E	2.4
13	E	E	E	2.0	E	E	S	S	G	2.9	2.9G	G	G	G	G	G	G	S	E	E	E	E	E	E
14	E	E	E	1.8	1.3	E	S	G	3.5	6.1	4.0	3.0G	J4.0	3.8Y	2.6G	3.3	3.0	S	2.5	J7.0	J3.3	E	E	E
15	E	E	E	E	E	E	S	G	G	G	G	G	G	2.8G	2.7G	2.7G	2.5	J3.1	S	J3.3	J2.4	2.7	E	E
16	E	E	E	E	E	E	S	G	G	3.3	3.6	3.3	G	2.7G	2.8G	J3.6	J3.3	J2.7	S	2.5	E	E	E	E
17	E	J2.3	E	E	E	S	S	G	G	2.8G	J4.3	3.4	G	G	3.0	3.0	2.8	J5.3	J3.5	J2.8	E	E	J2.5	E
18	E	E	E	J2.3	E	E	S	G	2.3G	J3.5	3.4	J3.3	5.0M	3.3	J3.3	G	3.0	2.5	S	2.4	E	E	E	E
19	E	E	E	E	E	S	S	2.6	G	G	G	G	G	2.6	3.0	G	G	S	S	E	E	E	E	E
20	E	J2.3	E	E	E	E	S	G	G	G	3.3	3.3	3.4	G	G	G	2.8	S	S	E	E	2.3	2.3	E
21	E	E	2.2	E	E	E	S	2.7	G	J3.3	G	G	G	G	G	G	G	S	2.3	E	E	E	E	E
22	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	S	3.4	E	E	E	E	E
23	E	E	E	E	E	2.0	S	G	G	G	J3.3	3.0	3.0G	2.6G	2.5G	J4.3	G	S	S	E	E	E	E	E
24	E	E	E	E	E	S	S	G	3.0	3.6	3.4	G	G	G	G	3.2	G	J3.1	J2.3	2.4	E	E	E	E
25	E	E	E	E	E	S	S	2.9	G	3.3	3.8	G	2.5G	G	G	G	G	S	S	E	E	E	E	E
26	E	E	E	E	E	S	S	G	G	3.3	3.4	3.4	G	G	J4.0	2.7G	G	S	S	E	E	E	E	E
27	E	E	E	E	E	S	S	G	G	G	G	G	3.5	2.9G	G	G	G	S	S	E	E	E	E	E
28	E	E	E	E	E	E	2.5	G	2.5G	G	3.8M	2.9G	G	G	G	G	G	S	S	E	E	E	E	E
29	E	E	E	E	E	E	S	G	G	3.8	3.4	G	G	G	G	G	G	S	S	E	E	E	E	J2.5
30	E	2.5	J1.8	E	1.6	S	2.3	G	G	3.3	G	G	G	G	G	G	G	S	S	E	E	E	E	E
31	E	E	E	E	E	S	S	J2.6	G	4.3	3.5	3.4	3.4	3.0G	2.5G	G	G	S	S	E	E	E	E	E
No.	31	31	31	31	31	22	3	25	31	29	30	30	30	30	30	30	27	6	18	31	31	31	31	31
Median	E	E	E	E	E	E	2.3	G	G	3.0	3.3	G	G	G	G	G	G	3.0	E	E	E	E	E	E
Q.R.	E	E	E	E	E	E	2.5	G	G	3.5	3.6	3.3	G	G	G	G	2.5	3.1	2.3	E	E	E	E	E
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	2.7	E	E	E	E	E	E
Q.R.																		0.4						

foEs

Sweep 10 Mc to 180 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 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								S	2.9	C							S	S						
2							S			2.8								S						
3							S	S		2.8								S				E		
4	E						S	G									S	S						
5		E	E				S	S		2.6	3.2	2.6	3.2	3.2	2.5		2.4	S						
6							S	S			2.8	3.3						S						
7							S					3.2	2.8			2.7		S			E	E	E	E
8					E		S	G		G					2.6		S	S	E					
9							S		G	G	G	3.5						S		A			E	
10							S	S	G	C	C	C	C	C	C	C		G						
11							S	G	G	G	3.0						S	S			E			
12						S	S		2.7	3.0	3.1							S			2.7	E		E
13				E			S	S		2.9	2.6							S						
14				E	E		S		G	G	G	3.0	3.7	3.4	2.6	3.0	2.9	S	E	A	3.0			
15							S							2.7	2.7	E2.7R	2.5	3.0	S	2.7	E	E		
16							S			3.2	G	3.3		2.7	2.5	3.0	2.5	2.3	S	E				
17		E				S	S			2.8	2.6	G			3.0	2.7	2.5	5.0	2.5	E			E	
18				E			S		2.3	3.1	G	3.3	4.7	3.2	3.0		2.9	2.4	S	E				
19						S	S	G						2.6	3.0			S	S					
20		E					S				G	3.2	G				G	S	S			E	E	
21			E				S	G		3.0								S	G					
22							S											S	2.9					
23						E	S				3.2	3.0	2.9	2.5	2.5	3.8		S	S						
24						S	S		G	G	3.2					3.0		2.7	E	E				
25						S	S	G		G	G		2.5					S	S					
26						S	S			G	G	G			3.2	2.5		S	S					
27						S	S						G	2.9				S	S					
28							G		2.4		3.4	2.7						S	S					
29							S			G	G							S	S					E
30		E	E		E	S	G			G								S	S					
31						S	S	2.5		G	G	G	3.3	E3.0R	2.5			S	S					
No.																								
Median																								

foEs

Sweep 1.0 Mc to 18.0 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 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	E2.00S	E1.60S	E2.00S	E	E	E1.20S	E2.00S	E2.00S	2.00	E2.00C	2.00	2.00	2.00	2.00	2.00	2.00	E2.40S	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
2	E2.00S	E1.80S	E	E	E	E1.20S	E2.00S	2.00	1.85	2.00	2.00	2.15	2.00	2.10	2.10	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
3	E1.90S	E2.00S	E2.00S	E	E	E1.50S	E1.70S	E2.00S	2.00	2.00	2.00	2.05	2.10	2.10	2.00	2.10	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
4	E2.00S	E2.00S	E	E1.50S	E	E1.50S	E2.00S	E2.00S	1.85	1.90	2.00	2.00	2.00	2.20	2.40	2.00	E2.55S	E2.00S	E2.10S	E2.05S	E2.00S	E2.00S	E2.00S	E2.00S
5	E2.00S	E2.00S	E1.80S	E	E	E1.50S	E1.90S	E2.10S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.95S	E2.00S
6	E1.90S	E1.20S	E1.50S	E	E	E1.70S	E2.00S	E2.00S	1.90	2.00	2.00	2.00	2.00	2.15	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
7	E2.00S	E1.70S	E	E	E	E1.50S	E1.90S	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.00	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E1.80S	E2.00S
8	E1.90S	E1.90S	E1.50S	E	E	E1.70S	E1.90S	E1.90S	2.00	2.00	2.00	2.10	2.00	2.20	2.00	2.10	E2.50S	E2.00S	E2.00S	E2.00S	E2.00S	E2.10S	E2.00S	E2.00S
9	E2.00S	E1.50S	E	E	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.10	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E1.80S	E2.00S	E2.00S	E2.00S	E2.00S
10	E2.00S	E2.00S	E1.80S	E1.50S	E	E1.70S	E2.00S	E2.15S	2.00	C	C	C	C	C	C	C	2.00	E2.00S	E1.85S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
11	E2.00S	E1.70S	E	E	E	E1.70S	E2.00S	E2.00S	2.00	2.00	2.10	2.00	2.45	2.15	2.10	2.00	2.30	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S
12	E2.00S	E1.50S	E1.75S	E	E	E1.90S	E2.00S	1.85	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.20	2.00	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
13	E2.00S	E1.70S	E1.80S	E	E	E1.80S	E1.90S	E2.40S	2.00	2.00	2.00	2.00	2.40	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
14	E2.00S	E1.80S	E1.80S	E	E	E1.80S	E1.80S	2.00	1.90	2.00	2.20	2.15	2.05	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
15	E2.00S	E2.00S	E2.00S	E	E	E1.90S	E1.90S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
16	E2.00S	E2.00S	E1.90S	E1.90S	E	E1.30S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.90	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
17	E2.00S	E1.60S	E1.40S	E	E	E1.80S	E2.00S	2.00	2.00	2.00	2.00	2.10	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
18	E2.00S	E1.70S	E1.20S	E	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
19	E2.00S	E2.00S	E2.00S	E	E1.90S	E1.50S	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S
20	E2.00S	E1.90S	E1.70S	E	E	E1.90S	E1.90S	E2.00S	2.00	2.00	2.10	2.00	2.00	2.00	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
21	E2.00S	E1.80S	E1.70S	E	E	E	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.10	2.00	1.95	E2.00S	E2.00S	E2.00S	E1.95S	E2.00S	E2.00S	E2.00S
22	E2.00S	E2.00S	E1.50S	E1.50S	E	E2.00S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.40	2.00	2.00	E2.10S	E1.90S	E1.95S	E2.00S	E2.00S	E2.00S	E2.00S
23	E2.00S	E2.00S	E2.00S	E	E	E1.70S	E2.00S	2.00	2.00	2.00	2.00	2.15	2.15	2.00	2.00	2.00	2.00	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
24	E2.00S	E1.80S	E1.50S	E	E	E1.50S	E2.00S	1.90	2.00	2.00	2.15	2.50	2.10	2.15	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
25	E2.00S	E	E	E	E	E1.30S	E2.00S	2.00	1.80	2.00	2.00	2.15	2.00	2.00	2.10	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
26	E2.00S	E1.60S	E	E	E	E1.80S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.20	2.40	2.00	2.00	2.00	E2.15S	E2.00S	E2.00S	E2.00S	E1.85S	E2.00S	E1.80S
27	E1.90S	E1.30S	E1.40S	E	E	E1.20S	E2.00S	1.90	2.00	2.00	2.15	2.15	2.00	2.50	2.25	2.15	2.00	E2.00S	E1.85S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
28	E2.00S	E1.60S	E	E	E	E.	E1.85S	1.90	1.90	1.90	2.00	2.00	2.50	2.30	2.05	2.40	2.00	E2.00S	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E2.00S
29	E2.00S	E1.30S	E	E	E	E1.20S	E2.00S	1.80	1.85	2.05	2.00	2.20	2.50	2.00	2.05	2.00	1.90	E2.10S	E2.00S	E2.00S	E2.00S	E1.95S	E2.00S	E2.00S
30	E2.00S	E1.20S	E	E	E	E1.30S	E2.00S	1.85	2.00	2.00	2.00	2.40	2.10	2.15	2.00	2.00	2.00	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S
31	E2.00S	E1.70S	E1.70S	E	E	E1.60S	E2.00S	1.80	1.85	2.00	2.00	2.30	2.40	2.10	2.00	2.00	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
No.	31	31	31	27	30	31	31	27	31	30	30	30	30	30	30	30	27	31	31	31	31	31	31	31
Median	E2.00	E1.70	E1.50	E	E	E1.60	E2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00

f-min Sweep 1.0 Mc to 18.0 Mc in 40 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	2.95	3.00	3.10	3.15	3.20	3.25	3.40	3.45	3.50	[f]3.45[c]	3.30	3.30	3.45	3.45	3.50	3.35	3.35	3.50	3.25	3.30	3.25	2.90	2.90	[u]2.85[s]
2	2.85	2.95	2.80	3.05	3.10	3.50	3.25	3.60	[u]3.40[s]	3.50	3.25	3.10	3.50	3.40	3.50	3.50	3.50	3.50	3.40	3.20	3.10	3.05	3.05	3.05
3	3.10	3.00	2.90	3.20	3.40	3.20	3.25	3.50	3.40	3.35	3.35	3.25	3.40	3.65	3.40[H]	3.30[H]	3.70[H]	3.50	3.20	3.20	3.15	3.15	3.05	3.05
4	[u]2.85[s]	2.95	2.95	3.10	3.20	3.10	3.15	3.65	3.60	3.50	3.45	3.50	3.50	3.30	3.35	3.25	3.55	3.35	3.25	3.35	3.35	3.00	3.05	[u]2.90[s]
5	[u]2.95[s]	2.95	2.95	2.85	[f]3.05[sF]	3.25[x]	3.40	3.55	3.50	3.40	3.45	3.45	3.40	3.25	3.50	3.50[H]	3.30	3.35	3.40	[u]3.55[s]	3.05	2.85	[u]3.10[s]	[u]2.85[s]
6	[f]2.90[s]	3.05	[u]3.05[s]	[u]2.80[s]	[f]2.85[sF]	[f]3.00[sF]	3.50	3.65	[u]3.60[s]	[u]3.55[s]	3.35	3.30	3.45	[f]3.30[R]	3.55	3.40	3.40	3.50	3.40	3.30	3.15	[u]3.20[s]	3.00	[u]2.95[s]
7	2.80	2.80	[u]3.00[s]	3.00	3.10	3.10	3.50	3.65	3.35	[u]3.50[s]	[f]3.35[s]	3.25	3.35	3.50	3.35	3.20	3.50	[u]3.40[s]	3.45	3.35	[u]3.20[s]	3.25	[u]3.10[s]	[f]2.85[s]
8	[f]2.95[sF]	[f]3.05[sF]	[u]3.25[s]	[f]3.05[sF]	[u]3.15[s]	[f]3.40[sF]	3.35	3.50	3.50	3.25	3.00	3.25	3.30	3.25	[u]3.45[s]	3.30	3.45	[u]3.45[s]	3.05	[u]3.00[s]	[u]2.95[s]	3.00	[u]3.15[s]	2.90
9	[f]2.85[sF]	2.90	2.80	3.25	2.75	2.95[H]	3.00	[f]3.30[s]	3.35	2.70	2.90	3.15	3.25	3.35	3.55	3.40	3.35	3.50	3.35	[f]3.10[s]	3.25	[u]3.20[s]	2.95	[u]2.95[s]
10	[u]2.80[s]	3.10	2.95	3.10	3.25	3.25	3.50	3.30	3.35	C	C	C	C	C	C	C	3.45	3.50	3.40	3.00	3.00	3.30	2.80	[u]2.95[s]
11	[u]3.00[s]	2.75	2.80	2.90	3.05	2.90	3.05	[u]3.30[s]	2.90	3.20	3.40	3.30	3.25	3.40	3.50	3.55	3.40[H]	3.40	3.10	3.05	2.85	2.90	3.10	3.30
12	[u]3.05[Fs]	[f]3.00[Fs]	3.00	3.00	3.00	3.10	3.30	3.50	3.50	3.25	3.20	3.45	3.25	3.25	3.10	3.40	3.45	3.45	3.40	3.00	[u]3.35[s]	[u]3.10[sF]	[f]3.10[Fs]	2.90
13	[u]2.95[s]	[u]2.85[Fs]	3.00[F]	3.05	3.15	3.15	3.65	3.45	3.55	3.30	3.40	3.35	3.30	3.35	3.45	3.50	3.50	3.45	3.30	3.15	[u]3.20[s]	[f]3.15[sF]	[u]3.15[sF]	[u]3.00[sF]
14	[u]2.95[sF]	[f]2.80[sF]	SF	SF	SF	SF	3.55	3.70	[u]3.40[s]	3.20	3.15	3.30	3.25	3.45	3.45	3.35	3.30	3.50	3.45	[f]3.30[A]	3.25	3.10	3.05	3.00
15	2.95	3.05	[u]2.95[s]	3.00	3.10	3.15	3.55	3.60	3.60	3.65	3.30	3.25	3.30	3.35	3.40	3.35	3.45[H]	3.60	3.40	3.20	[u]3.20[s]	[u]3.25[s]	3.25	3.05
16	3.25	3.00	2.95	3.00	3.45	3.35	3.50	3.65	3.50[H]	3.45	3.35	3.45	3.25	3.30	3.50	3.40	3.35[H]	3.50	3.35	3.35	3.10	3.10	3.00	3.05
17	3.10	3.05	2.85	3.05	3.05	3.20	3.35	3.55	3.40	2.95[H]	3.25	3.30	3.15	3.25	3.35	3.45	3.45	3.35	3.30	3.15	3.05	3.25	3.25	2.95
18	2.90	3.00	2.95	3.05	[u]3.05[s]	[f]3.15[sF]	3.65	3.55	3.65	3.20	3.35	3.25	3.20	3.20	3.40	3.30	3.40	3.35	3.25	3.15	3.05	[u]3.05[s]	2.95	3.00
19	2.95	2.85	2.90	[u]3.05[s]	[f]3.25[sF]	3.35	3.45	3.65	3.35	3.45	3.05	3.20	3.20	3.25	3.45	3.40	3.35	3.35	3.30	3.40	3.15	3.05	[f]3.00[s]	SF
20	SF	SF	SF	[u]2.95[s]	[u]3.15[s]	[f]3.35[sF]	3.55	3.70	3.50	3.45	3.45	3.25	3.10	3.45	3.20	3.40	3.40	3.45	3.35	3.25	3.20	2.85	[u]3.00[s]	[u]2.95[s]
21	[u]2.85[s]	[u]2.80[s]	[u]3.00[s]	2.95	3.25	[u]3.35[s]	3.60	3.70	3.35[H]	3.35	3.35	3.35	3.20	3.35	3.30	3.30	3.35[H]	[u]3.30[s]	3.25	3.15	3.35	3.25	3.05	3.15
22	3.00	3.15	3.15	3.15	3.20	3.10	3.50	3.60	3.45	3.60	3.30	3.40	3.40	3.30	3.35	3.40	3.45[H]	3.40	3.35	3.40	3.15	3.05	[u]3.00[s]	2.95
23	2.95	2.90	3.00	3.15	3.35	3.25	3.50	3.55	3.40	3.35	3.35	3.30	3.25	3.40	3.35	3.35	3.35	3.35	3.35	3.10	3.20	2.95	2.85	3.00
24	2.95	2.95	2.85	3.05	3.45	3.10	3.45	3.40	3.25	3.45	3.25	3.40	3.30	3.30	3.40	3.45	3.40	3.40	3.35	3.20	3.20	3.05	2.80	2.95
25	SF	SF	SF	SF	SF	3.05[F]	3.45	3.50	3.50	3.45	3.50	3.40	3.30	3.35	3.35	3.40	3.40	3.45	3.30	3.25	3.25	3.00	2.80	S
26	SF	SF	SF	SF	SF	[u]3.15[s]	3.50	3.70	3.60	3.50	3.50	3.35	3.30	3.35	3.25	3.20	3.40[H]	3.40	3.25	3.25	3.10	3.15	3.05	3.05
27	[u]2.95[sF]	SF	SF	SF	SF	SF	3.50	3.45	3.50	3.15	3.30	3.30	3.25	3.25	3.35	3.50	3.50	3.35	3.45	3.35	3.15	[u]2.90[s]	2.90	[u]3.00[s]
28	2.95	2.95	[u]3.05[s]	SF	SF	SF	3.45	3.45	3.25	3.50	3.35	3.40	3.40	3.15	3.40	3.40	3.45	3.40	3.20	3.15	3.05	3.00	3.00	[u]3.05[s]
29	3.05	2.90	2.90	3.10	3.25	3.35	3.60	3.70	3.40	3.35	3.30	3.50	3.35	3.20	3.30	3.35	3.40	3.45	3.30	3.20	3.05	2.95	[u]3.00[s]	3.00
30	[f]2.95[s]	3.00	[u]3.20[s]	[u]2.95[sF]	[f]3.10[Fs]	3.25[Fs]	3.60	3.60	3.30	3.40	3.35	3.50	3.40	3.25	3.10	3.30	3.55	3.40	3.35	3.15	3.15	2.95	2.95	3.00
31	3.10	3.20	3.20[F]	[u]2.85[F]	[f]3.15[sF]	3.00	3.75	3.70	3.40	3.35	3.40	3.40	3.05	3.25	3.35	3.45	3.40	3.35	3.30	3.20	3.35	[u]3.10[s]	3.05	2.85
No.	28	27	26	26	26	28	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	31	31	29
Median	2.95	2.95	2.95	3.05	3.15	3.20	3.50	3.55	3.40	3.40	3.35	3.30	3.30	3.30	3.40	3.40	3.40	3.40	3.35	3.20	3.15	3.05	3.00	3.00

M(3000)F2 | Sweep 1.0 Mc to 18.0 Mc in 40 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

Mar. 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									∪3.95L	∓3.90L	3.90	3.65	3.80	3.90H	∪3.80L									
2										3.95	3.85	3.90	3.80	3.90	3.95		4.00							
3										∪3.85L	3.90	3.80	3.90	3.90	4.00	4.15								
4									3.95	∪4.00L	∪3.80L	3.95	3.80	3.90	3.90	3.90								
5									∪4.10L	4.00	3.85	4.05	3.75	∪3.75L	∪3.85L									
6									4.25	3.90	4.15	4.25	3.75	3.90	∪3.95L	3.85								
7									L	∪3.80L	3.65	4.00	3.70	3.85	4.00	∪3.75L	∪3.80L							
8									∪3.95L	4.00	∪3.75L	3.75	∪3.80L	∪3.80L	3.80	3.80								
9									∪3.90L	3.55	3.60	3.65	3.65	3.75	3.90	∪3.80L								
10									∪3.95L	C	C	C	C	C	C	C								
11									3.55	3.55	3.75	3.85L	3.55	3.85	3.95	∪4.05L								
12									L	∪3.90L	∪3.90L	∪3.60L	∪3.95L	3.65	∪3.85L	∪3.95L								
13									∪3.75LH	∪3.95L	∪3.95L	∪3.80L	3.80	3.75	3.90	∪3.85L								
14										3.85	3.85	3.85	∪3.80L	3.70	3.85	∪3.95L								
15									∪3.95L	4.05	3.75	3.65	3.95	3.70	3.90	∪3.85L								
16										3.90	3.95	3.90H	3.90	3.75	3.75	∪4.00L								
17									L		3.70	3.70H	3.95	3.95	3.75	∪3.95L								
18									3.95	3.75	3.70	3.70	∓3.75A	3.70	3.85	∪3.95L								
19										3.75	3.85	4.00	3.65	3.75	3.75	∪3.95LH								
20									∪4.00L	3.85	4.00	3.95	∪3.70L	∪3.70LH	3.80	3.75	∪3.90L							
21										3.75H	3.90	3.90	3.80	3.65	3.80	∪3.80L								
22									∪3.85L	3.90	4.05	3.70	3.80	3.85	3.75	3.80								
23										3.85LH	3.80	3.90H	3.95	3.70	3.80	∓3.75A								
24									3.85	3.60	3.75	3.75	3.90	3.75	3.75H	3.85L	L							
25									4.00L	3.85L	3.75H	3.85	3.95	3.85	3.80LH	3.80								
26										3.90	3.95	3.90H	4.05	3.75	3.80L	3.85L								
27									3.75	3.80	3.80	3.85	3.80	3.70	3.65LH	3.85	L							
28									3.65	3.65	3.90	3.90	3.80	3.75	3.90H	3.70H	∪4.00L							
29									∪3.75L	3.90	3.90	3.80H	3.75	3.75	3.60	3.85	L							
30									3.75	3.75	3.55	3.75	3.90	3.70	3.65	3.75H	∪3.85L							
31								L	∪3.90L	3.85	3.70	3.80	3.95	3.85	3.55H	3.75	∪3.80L							
No.									20	29	30	30	30	30	30	27	6							
Median									∪3.90	3.85	3.85	3.85	3.80	3.75	3.80	3.85	∪3.90							

M(3000)F1 | Sweep 1.0 Mc to 18.0 Mc in 40 ~~min~~ Sec in automatic operation.

The Radio Research Laboratories, Japan.

W 8

IONOSPHERIC DATA

Mar. 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									240	1250C	265	265	250	250	250									
2										235	260	260	250	260	245		235							
3										260	265	270	250	240	250	250								
4									220	245	260	245	260	255	260	250								
5									235	240	255	255	265	265	245									
6									245	230	270	275	250	265	250	260								
7									L	250	260	260	260	255	255	265	245							
8									245	260	300	260	250	265	250	260								
9									260	430	350	290	270	260	250	260								
10									260	C	C	C	C	C	C	C								
11									390	305	275	270	270	260	245	245								
12									240	275	260	245	270	270	260	250								
13									245	255	245	260	265	260	260	255								
14										275	275	255	265	255	250	255								
15									230	240	270	270	260	265	250	260L								
16										260	265	260	285	270	255	260L								
17									245		270	270	285	265	265	250								
18									230	285	260	270	280	275	260	255								
19										270	270	275	280	250	255	260								
20									250	250	265	260	310	250	290	260	260							
21										280	245	260	275	270	260	275								
22									245	250	290	270	260	270	265	260								
23										280	265	260	275	260	275	255								
24									260	260	260	250	275	270	265	260	260							
25									250	260	260	265	275	270	275	265								
26										260	260	270	290	270	280	265								
27									255	290	260	270	280	285	270	255	250							
28									285	260	265	270	265	290	265	270	250							
29									270	275	280	260	290	290	280	260	265L							
30									280	275	270	255	270	295	300	270	250							
31								235	260	270	260	275	285	290	270	260	260							
No.								1	22	29	30	30	30	30	30	27	9							
Median								235	250	260	265	260	270	265	260	260	250							

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

The Radio Research Laboratories, Japan.

W 9

IONOSPHERIC DATA

Mar. 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	300	275	275	240	215	250	245	235	230	₮210C	200	195	225	200H	220	245	245	220	240	240	250	305	295	295
2	275	275	290	260	245	215	255	225	225	200	200	220	240	235	205	240	225	225	225	250	260	305	300	290
3	275	290	270	230	220	240	235	230	230	210	245	220	225	220	240	200	220H	230	235	260	265	265	280	300
4	300	300	275	270	245	285	250	225	215	225	205	185	215	240	225	220	240	235	235	240H	250	250	270	300
5	290	280	260	270	260	240	220	220	220	215	225	190	220	225	245	245H	240	235	225	225	250	285	275	290
6	285	270	275	260	255	260	225	220	200	210	190	185	260	225	230	220	245	230	225	235	250	250	260	265
7	245	305	260	250	260	250	230	230	210	200	200	215	245	225	225	225	230	235	220	235	250	265	310	310
8	300	275	250	240	250	220	230	230	220	205	205	195	250	225	250	245	245	230	260	255	260	250	250	280
9	300	275	280	240	290	250H	270	260	235	235	205	200	225	230	230	220	230	220	220	₮250A	250	255	285	285
10	285	260	275	255	240	250	245	230	245	C	C	C	C	C	C	C	245	230	230	275	265	240	300	290
11	300	325	300	260	270	300	275	250	240	240	220	200	195	250	230	225	190H	230	250	270	260	260	250	275
12	270	265	260	255	250	245	220	240	240	275	260	245	270	270	260	250	245	230	230	250	250A	265	310	300
13	285	290	300	295	250	250	215	230	200H	210	225	195	215	225	225	230	240	245	230	250	240	250	250	270
14	300	290	300	250	250	220	210	235	225	225	200	225	215	235	225	225	250	230	225	₮240A	₮240A	260	275	265
15	280	290	285	260	240	245	210	215	225	210	200	210	200	220	225	220	230H	230A	230	265A	260	250	270	280
16	300	300	295	270	225	220	220	230	215H	210	210	190H	200	200	225	225	220H	240	230	235	260	250	265	275
17	270	300	310	260	260	260	220	230	230	220H	230	210H	210	215	210	225	220H	₮250A	250	260	275	235	250	275
18	300	295	290	290	270	250	220	220	210	230	230	210	₮205A	205	225	220	240H	230	235	260	270	260	275	280
19	300	310	305	260	240	220	225	225	235	230	225	200	225	235	225	210H	240H	250	235	225	250	290	300	300
20	300	280	260	235	230	250	215	230	230	240	220	210	200	210H	220	240	235	245	235	230	245	285	285	295
21	300	300	295	270	225	225	220	230	235H	205H	225	205	215	225	225	240	245H	260	235	235	230	240	295	295
22	295	300	280	275	240	265	220	225	230	215	205	210	235	215	220	225	235H	240	245A	230	260	280	280	285
23	285	290	295	250	230	240	225	235	210H	205H	220	205H	200	230	215	₮220A	245H	245	235	250	250	290	290	290
24	285	290	280	270	220	260	235	245	230	240	220	220	200	200	200H	240	240	245	245	245	250	250	280	280
25	295	280	270	250	230	260	220	230	240	225	210H	210	205	195	195H	240	250	250	235	240	250	260	280	275
26	300	300	290	250	245	250	220	230	230	215	215	200H	195	215	225	215	235H	245	240	245	250	255	260	270
27	285	270	275	250	230	235	230	240	245	225	220	210	205	205	205H	240	245	250	230	235	260	280	305	300
28	300	295	260	230	210	250	220	235	230	220	220	210	205	220	220H	200H	230	235	240	260	270	275	260	265
29	270	290	285	260	235	235	225	230	225	220	220	210H	215	205	200	240	240	245	240	245	270	280	285	280
30	275	275	250	235	250	250	225	230	235	225	230	225	210	210	215	210H	240	240	245	260	260	290	285	285
31	265	250	260	260	250	245	230	225	230	240	215	225	210	200	200H	250	240	245	245	245	240	250	260	295
No.	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31
Median	290	290	280	260	240	250	225	230	230	220	220	210	215	220	225	225	240	235	235	245	250	260	280	285

h'F

Sweep 10 Mc to 180 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

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

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

h'Es

Sweep 1.0 Mc to 18.0 Mc in 40 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

W 11

19

IONOSPHERIC DATA

Mar. 1963

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

20

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									e															
2										e														
3										e												6		
4	62							h																
5		6	6							e	e	e	e	e	e		e							
6											e	e												
7												e	e			e					6	6	6	6
8					6			c		c					e				62					
9									c	c	c	e								65			6	
10									e									e						
11								h	c	c	e										6			
12									e	e	e										62	6		6
13				6						e	e													
14				6	6				c	c	c	e	e2	e	e	e2	e		6	63	62			
15														e	e	e	e	e		62	6	6		
16										e	c	e		e	e	e	e	e		6				
17		6								e	ce	c			e	e	e	e3	e3	6			62	
18				6					e	e	c	e	e2	e	e		e	e2		6				
19								c						e	e									
20		6									c	e	c				c					6	6	
21			6					h		e									e					
22																			e2					
23						6					e	e	e	e	e	c2								
24									h	c	e					e		e	6	6				
25								h		c	c		e											
26										c	c	c			e	e								
27													c	e										
28							k		e		e	e												
29										k	c													6
30		6	6		6		k			c														
31								e		c	c	c	e	e	e									
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

Sweep 1.0 Mc to 18.0 Mc in 40 ~~min~~ sec in automatic operation.

W 12

IONOSPHERIC DATA

Mar. 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	3.9	4.0	4.1	4.2	3.9	3.4	3.8	5.4	7.1	7.8	7.6	8.7	8.8	8.0	6.4	6.6	6.5	5.8	5.1	4.8	4.6	3.6	4.0	4.4
2	4.2	4.5	4.4	4.2	4.2	3.6	3.5	5.3	7.2	6.9	6.6	8.3	8.4	8.6	8.2	6.4	6.1	5.5	4.6	4.0	3.9	4.1	4.4	4.4
3	4.3	4.5	4.5	5.0	4.5	3.1	3.6	5.5	7.2	7.4	7.1	7.4	8.9	7.7	6.6	6.6	6.3	5.1	4.2	4.1	4.5	4.4	4.0	4.0
4	4.0	4.0	4.1	4.1	3.9	3.6	4.1	6.6	7.1	6.7	6.8	7.0	7.6	7.3	C	C	C	C	5.0	4.7	4.4	3.6	3.6	3.6
5	3.8	3.6	3.9	3.6	3.5	3.5	4.4	5.6	6.9	6.6	7.3	8.0	6.9	7.3	6.8	6.2	6.0	6.0	6.1	5.5	3.6	3.2	3.5	3.6
6	3.6	3.6	3.6	3.5	3.5	3.4	4.3	5.7	6.1	6.6	7.0	7.7	7.7	6.9	6.8	6.3	6.7	C	C	5.4	4.4	4.2	C	C
7	4.4	4.3	4.3	4.3	4.2	4.0	4.6	6.1	6.7	6.8	6.8	C	R	8.3	6.6	C	C	C	6.1	3.4	3.6	3.4	3.1	3.5
8	R	F	F	F	3.8	2.3	4.3	5.6	6.3	5.8	6.9	8.8	8.4	6.9	6.6	7.1	7.0	6.8	5.2	5.5	C	C	C	4.5
9	F	F	4.0	F	F	F	4.1	7.0	7.3	6.5	9.3	8.9	9.0	9.4	7.6	6.6	6.6	6.5	5.0	3.9	4.0	4.1	3.9	4.0
10	4.2	4.1	4.1	4.5	3.7	3.9	4.5	7.1	7.5	7.0	7.9	8.8	9.1	8.0	7.3	7.3	7.5	6.9	5.2	4.6	4.6	4.7	4.0	4.3
11	4.1	4.3	4.3	4.5	3.9	3.7	4.0	6.1	6.6	8.5	7.4	8.1	8.4	8.9	7.8	6.2	5.8	5.6	5.1	5.7	5.7	5.5	4.9	4.5
12	4.4	4.3	4.2	4.0	3.9	3.9	4.7	5.6	7.1	7.0	7.9	9.4	9.9	8.8	8.0	7.6	7.2	7.3	5.3	4.1	4.1	3.6	3.0	F
13	F	F	F	F	F	F	R	C	C	7.8	6.8	7.4	7.9	7.4	7.2	6.7	6.2	5.7	5.7	5.3	5.0	A	R	R
14	R	R	R	3.8	3.7	3.0	4.4	6.0	7.3	7.5	7.9	C	C	C	C	6.0	5.9	6.2	5.3	4.2	3.9	3.1	3.4	3.9
15	3.9	4.0	4.1	4.1	4.3	4.3	4.7	6.0	6.7	6.5	6.5	8.3	9.3	9.1	7.6	6.6	6.2	6.2	5.5	4.3	4.0	3.7	3.6	3.4
16	3.8	3.9	3.9	4.0	4.2	3.0	4.3	4.9	6.1	5.8	6.1	7.8	C	R	7.6	C	C	C	C	5.1	C	C	R	4.0
17	R	R	R	R	R	C	C	C	C	6.1	6.9	6.9	7.1	7.3	7.4	7.0	6.2	6.6	6.6	5.7	3.7	3.8	3.8	R
18	F	R	3.5	R	R	R	5.0	5.7	6.2	6.4	7.4	7.8	8.7	8.7	8.3	7.0	7.1	6.5	5.7	4.6	R	R	R	4.0
19	4.2	4.2	4.1	3.9	3.6	3.6	4.4	5.5	6.7	6.4	7.7	8.1	9.2	9.7	7.6	6.2	6.3	7.2	6.8	5.6	3.9	3.6	3.6	3.7
20	4.0	3.9	3.7	F	F	F	R	5.7	5.6	5.8	7.0	7.9	7.2	8.7	8.4	7.5	7.3	6.9	6.8	5.7	4.1	4.0	3.9	R
21	R	F	F	3.8	4.0	2.9	4.6	5.6	5.8	6.4	6.9	7.2	7.6	7.8	7.1	6.8	7.0	7.5	7.4	6.7	5.0	4.0	C	C
22	3.6	3.6	3.6	3.6	3.0	2.9	5.0	6.1	6.1	6.3	6.4	6.7	8.1	7.5	6.6	6.9	7.0	6.2	6.3	5.6	5.0	4.7	R	R
23	R	4.3	4.1	4.1	3.6	3.2	4.6	5.4	6.1	6.7	7.2	7.6	7.7	7.8	7.2	6.6	6.5	6.3	5.7	5.2	4.7	4.3	4.5	4.2
24	4.3	4.1	4.1	4.0	3.9	3.0	4.4	5.8	7.2	8.5	9.3	9.2	8.7	7.2	7.0	6.4	5.9	5.8	6.1	5.9	4.9	4.3	4.0	3.8
25	3.8	3.9	3.7	3.7	3.4	3.0	5.0	5.4	6.1	6.1	7.0	8.5	7.2	6.7	6.8	6.6	6.3	7.0	7.1	6.0	4.0	3.8	3.6	3.7
26	3.6	3.4	3.4	3.4	3.6	2.7	4.6	5.6	5.8	5.6	6.3	7.0	7.1	7.6	7.2	6.1	6.0	5.9	6.1	5.5	R	R	R	R
27	R	R	R	R	3.4	3.4	4.9	5.5	5.9	6.3	7.4	8.1	7.6	7.7	7.3	6.6	6.1	5.7	C	C	4.1	3.9	4.0	R
28	R	3.9	3.9	3.9	2.5	2.5	4.5	5.1	5.6	C	C	7.0	8.1	8.0	6.7	6.4	6.1	5.7	5.4	5.0	R	R	3.8	4.1
29	4.2	4.0	3.9	3.8	3.7	3.5	4.6	5.4	5.8	6.0	6.4	7.6	7.5	7.0	6.7	6.7	6.6	5.7	5.6	5.5	4.8	R	R	R
30	4.4	4.2	4.0	3.7	3.4	3.4	5.0	5.2	5.5	6.6	6.7	7.6	7.6	6.9	6.8	6.8	7.1	5.7	5.4	5.2	5.0	R	R	R
31	4.6	4.1	3.7	C	C	C	C	C	C	C	6.5	8.1	7.1	6.6	7.1	7.5	6.6	6.7	6.3	5.4	R	R	R	R
No.	21	23	25	23	25	25	27	28	28	29	30	29	28	29	29	28	28	27	28	30	25	22	20	19
Median	4.1	4.0	4.0	4.0	3.7	3.4	4.5	5.6	6.4	6.6	7.0	7.9	8.0	7.7	7.2	6.6	6.4	6.2	5.6	5.2	4.4	4.0	3.8	4.0
U.Q.	4.3	4.3	4.1	4.2	4.0	3.6	4.7	6.0	7.1	7.0	7.4	8.4	8.8	8.6	7.6	7.0	7.0	6.8	6.2	5.6	4.8	4.3	4.0	4.3
L.Q.	3.8	3.9	3.7	3.7	3.5	3.0	4.3	5.4	6.0	6.2	6.7	7.4	7.6	7.2	6.8	6.4	6.1	5.7	5.2	4.6	4.0	3.6	3.6	3.7
Q.R.	0.5	0.4	0.4	0.5	0.5	0.6	0.4	0.6	1.1	0.8	0.7	1.0	1.2	1.4	0.8	0.6	0.9	1.1	1.0	1.0	0.8	0.7	0.4	0.6

foF2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	L	I 43 L	43 L	L	L	L	L H	C							
2									L	L	I 45 LH	43 L	C	L H	L	L	A							
3									L	L	42 L	I 44 L	I 44 S	40	L	L	L							
4									L	L	I 43 C	45 L	42 H	L	C	C	C							
5									L	L	I 43 L	I 44 LH	I 43 L	L H	C	C	L							
6								L	L	L	I 43 C	I 45 L	I 45 L	L	C	L	L H							
7								L	L	L	L	C	L H	L	L	C	C							
8									L	L	L	46 LH	L H	L	L	L H	C							
9									L	L	47 H	C	L	L	L	L	L							
10									C	L	L H	L	L	L	L	L	L							
11									L	L	I 42 L	I 43 L	43 L	L	R	L								
12									L	L	R	L H	L	43 L	L	L	L							
13										R	42	L	L	R	R	L	L							
14									L	L	L	C	C	C	C	A	A							
15									L	L	L	43 L	A	A	A	A	A							
16									L	L	45	44 LH	I 44 C	45 L	L	C	C							
17									C	41 L	43 L	45 L	45	I 44 L	43 L	L	L							
18									L	L	L	44 L	I 45 L	43 L	L	C	L							
19									L	L	L	I 46 L	I 46 C	44 H	L	L	L							
20									L	L	I 42 L	45 L	45 L	I 44 L	I 42 LH	41 L	L							
21									L	L	43 L	45 L	45 R	I 42 L	I 40 L	L	L							
22									L	L	44 L	I 44 L	45 H	45	I 42 L	I 40 L	L							
23									L	L	45 L	45 LH	45 L	45 L	L	A	A							
24								L	L	L	I 44 L	45 L	45 L	I 44 L	L	L	L							
25									L	42 L	44	46 LH	45 L	45 L	L	L	L	L						
26									L	L	43 L	45	43	I 44 LH	L	L	L	L						
27									L	43 L	44 L	43	45 L	45	42 L	L	L							
28									L	C	C	R	R H	I 43 L	I 42 L	40 L	L							
29									L	L	L	I 44 L	45	46	L	L	L							
30									L	I 42 L	43 L	45 LH	45	45 L	43 L	41 L	L H							
31									C	C	43 L	43	45 LH	44	I 44 L	L H	L	L						
No.										4	21	24	20	18	8	4								
Median										42	43	44	45	44	u 42	40								

foF1

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

The Radio Research Laboratories, Japan.

A 2

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IONOSPHERIC DATA

Mar. 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								2.10^{R}	2.40	2.85^{H}	3.05	3.15	3.20	3.10	3.00	2.80	I2.30^{C}	B						
2								A	A	2.85	3.00	I3.05^{A}	I3.10^{C}	3.10	3.05	2.85	A	B						
3								R^{S}	2.60	2.95	I3.05^{A}	3.15	I3.20^{RS}	3.15	3.05	2.80	A	B						
4								1.85	I2.55^{R}	2.85	I3.00^{C}	3.05	3.20	3.10	C	C	C	C						
5								2.05	A	A	3.05	3.15	3.20	3.15	I3.00^{C}	I2.80^{C}	2.45	A						
6								A	2.65	2.90	I3.00^{C}	I3.10^{R}	3.15	3.15	I3.00^{C}	2.80	2.35	C						
7								A	A	A	A	C	3.20	3.15	3.05	C	C	C						
8								2.20^{H}	A	A	A	A	3.20^{R}	3.15	3.10	2.85	C	A						
9								2.15	A	A	A	C	3.20	I3.20^{A}	3.10	2.90	A	A						
10								2.40	C	A	A	A	3.20	3.20	3.10	2.95	I2.60^{R}	A						
11								A	A	A	A	A	3.20	3.10	3.05	2.90	2.50	A						
12								R^{S}	A	A	R^{S}	3.15	3.20	3.15	I3.05^{RS}	A	A	2.00						
13								C	C	A	R	R	R	R	R	I2.90^{R}	2.50	C						
14							B	A	A	A	A	C	C	C	C	A	A	A						
15							E	2.40^{H}	A	A	A	A	A	A	A	A	A	A						
16							1.80	2.50^{H}	I2.80^{R}	I3.00^{R}	A	A	C	A	A	C	C	C						
17								C	C	3.10	I3.15^{A}	3.25	I3.35^{R}	A	A	A	A	A						
18								S	S	A	A	A	A	A	A	C	A	A						
19							B	A	2.85	A	A	A	C	3.15	3.05	2.85	2.60	I2.05^{A}						
20							B	2.45	I2.70^{A}	3.00	A	A	R	A	I3.15^{R}	2.95	A	A						
21							B	A	2.70	I2.90^{R}	I3.10^{R}	I3.20^{R}	I3.20^{R}	3.15	I3.05^{R}	2.90	2.65	2.05						
22							1.85	2.55	2.85	I3.05^{A}	I3.10^{A}	I3.20^{R}	3.20	3.15	3.10	A	A	A						
23							1.85	I2.50^{R}	I2.90^{A}	A	A	A	3.30	A	A	A	A	A						
24							1.80	A	A	A	A	A	A	A	A	3.00	A	A						
25							B	A	A	A	A	A	A	3.25	3.10	2.90	2.50	A						
26							2.00	2.50^{H}	2.80	A	A	A	3.25	3.20	3.15	3.00	2.70	2.20						
27							B	A	2.85^{H}	A	A	A	I3.25^{A}	3.30	I3.10^{A}	2.85	2.50	A						
28							I2.00^{B}	I2.55^{RH}	2.80	C	C	R	3.20	I3.15^{R}	I3.10^{R}	2.90	2.65	2.05						
29							I2.05^{A}	I2.60^{A}	2.90	A	A	A	A	A	A	A	I2.60^{A}	I2.20^{A}						
30							2.00	2.55	2.90	A	A	A	A	A	3.20	3.00	2.70	2.20						
31							C	C	C	C	A	A	A	A	3.20	3.00	I2.65^{R}	2.10						
No.							9	15	15	10	9	10	19	19	21	20	15	8						
Median							1.85	2.45	2.80	2.90	3.05	3.15	3.20	3.15	3.10	2.90	2.60	2.10						

foE

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

IONOSPHERIC DATA

Mar. 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	J2.5	2.3	J1.9	J2.0	E	E	E	G	2.6	G	2.8G	2.9G	G	G	G	G	C	B	E	E	E	E	E	E
2	E	E	E	E	E	E	E	2.6	3.1	G	3.2	3.2	C	3.6	3.3	3.1	3.7	J2.8	J2.0	J2.4	E	E	E	E
3	E	2.2	2.2	E	2.4	E	E	2.7	G	G	3.2	G	S	G	G	3.2S	3.2	2.3	J2.0	E	E	E	E	J2.0
4	J2.3	J1.8	E	E	E	E	E	2.3	G	G	C	G	G	G	C	C	C	C	E	E	E	E	2.3	J2.2
5	E	E	E	E	E	2.0	E	G	3.1	3.3	G	G	2.7G	2.5G	C	C	2.0G	2.2	E	E	E	E	E	E
6	E	E	E	E	E	E	E	2.5	G	G	C	3.8	2.6G	G	C	3.0	G	C	C	J2.0	J2.6	J42	C	C
7	E	2.2	E	E	E	E	2.2	2.5	J3.3	J3.1	J3.5	C	G	G	G	C	C	C	E	E	E	E	E	E
8	E	2.3	J1.8	J2.3	J3.5	2.2	J1.9	G	2.9	3.2	J3.8	3.3	G	G	2.7G	G	C	J2.5	C	3.6	C	C	C	J2.1
9	2.2	E	2.1	E	2.3	E	E	G	3.0	3.2	3.5	C	G	J3.8	G	G	2.8	2.1	E	E	E	J49	J2.1	2.0
10	J2.3	2.1	J1.9	J1.8	E	E	E	2.8	C	J3.0	3.2	J3.3	G	3.0G	G	G	G	2.2	E	J1.9	J3.0	J2.9	J1.9	J2.0
11	2.3	2.3	J1.8	E	2.3	E	E	2.8	3.0	3.8	J3.8	3.5	G	G	G	G	G	2.4	E	J2.0	2.4	E	2.2	J1.8
12	E	J2.1	E	E	E	E	E	G	J3.0	3.5	G	G	2.8G	3.3	S	3.3	2.9	G	E	J2.7	J2.2	J3.4	J1.8	E
13	1.9	J1.9	2.2	E	E	E	E	C	C	3.3	G	G	G	G	G	G	G	C	E	2.3	2.5	J5.2	J3.0	J2.0
14	J2.4	2.2	2.0	E	2.1	2.2	2.2	2.5	3.0	3.3	J3.7	C	C	C	C	J4.0	J3.0	2.5	J4.1Y	J6.0Y	J5.1Y	J2.4	J6.1Y	J3.0
15	J2.0	J2.1	E	J2.5	J2.5	J2.5	E	G	3.2	3.7	3.7	J4.0	J5.0	J6.0	J7.2Y	J5.9	J4.0Y	J3.0	C	J2.3	1.8	J3.0	2.3	2.4
16	J1.8	E	2.1	J2.2	J2.4	E	G	G	G	G	3.2	3.7	C	3.6	J3.2	C	C	C	C	E	C	C	2.0	J2.6
17	J2.3	E	J2.0	J1.9	2.2	C	C	C	C	G	3.6	G	G	J4.6	J3.9	J3.8	J3.0	J2.7	J2.6	J2.5	E	E	E	E
18	E	E	E	E	E	J1.8	S	S	S	4.0	J3.9	J3.5	J4.7	3.5	J3.4	C	2.8	2.2	E	E	J3.0	J3.0	2.2	J2.0
19	E	E	E	E	E	E	2.0	2.6	G	3.4	3.8	4.0	C	2.9G	2.8G	2.7G	2.7	2.0	E	J2.0	J1.8	J2.5	J2.5	E
20	E	E	J2.0	E	E	E	1.9	2.6	2.5G	G	J3.6	3.6	G	3.4	G	3.1	3.4	J3.6	J2.5	J2.3	J3.1	J42Y	J2.9Y	2.2
21	2.0	E	E	E	E	E	2.0	2.6	G	G	G	G	G	G	G	G	G	G	E	2.0	E	E	C	C
22	E	E	E	E	E	E	G	G	G	3.1	3.3	G	G	G	G	3.0	3.1	J3.6	J5.3	J8.3	J3.2	J3.0	2.3	J2.3
23	J1.8	1.9	E	E	E	E	G	G	3.0	3.5	3.8	3.6	G	3.5	3.7	J4.6	J6.1	2.5	E	J2.0	J6.0Y	J6.7Y	J6.0Y	J2.1
24	2.0	E	E	E	E	J2.2	G	2.9	3.7	3.9	3.2	J3.5	J4.4	J3.4	3.2	G	3.0	2.6	2.0	J3.0	J2.1	J5.1	J2.6	E
25	E	E	E	E	E	E	2.0	2.8	3.2	3.5	3.4	3.7	J3.3	G	G	G	G	2.2	E	J2.0	E	E	E	E
26	E	E	E	E	E	E	G	G	G	3.4	J3.4	3.7	G	G	G	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	2.2	J2.8	G	3.6	3.6	3.7	3.5	G	3.6	G	G	2.0	C	C	E	E	E	E
28	E	E	E	E	E	E	2.2	G	G	C	C	G	G	G	G	G	G	J3.0	E	E	E	E	E	E
29	E	E	E	E	E	E	2.4	2.7	G	3.5	3.8	3.7	3.6	J5.1	J3.8	J3.6	J3.0	2.1	J2.6	J2.1	E	J2.0	E	2.2
30	J2.5	J3.0	J2.6	J2.9	J2.5	J2.3	G	G	G	3.8	3.7	3.5	3.6	3.5	G	G	G	G	E	E	E	E	E	2.2
31	E	E	E	C	C	C	C	C	C	C	3.8	3.9	J3.8	3.3	G	G	G	G	J2.4	E	J1.8	E	E	E
No.	31	31	31	30	30	29	28	27	26	29	28	28	26	30	26	26	26	25	26	30	29	29	28	29
Median	E	E	E	E	E	E	G	2.5	G	3.3	3.5	3.5	G	G	G	G	2.8	2.2	E	2.0	E	E	1.8	2.0
U.Q.	2.2	2.1	2.0	E	2.2	E	2.0	2.7	3.0	3.5	3.8	3.7	3.5	3.5	3.3	3.2	3.0	2.6	2.0	2.3	2.6	3.2	2.3	2.2
L.Q.	E	E	E	E	E	E	E	G	G	G	3.2	G	G	G	G	G	G	2.0	E	E	E	E	E	E
Q.R.											0.6							0.6						

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 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	1.9	1.8	1.8	2.0					$^{U}2.6^{R}$		2.5^{g}	2.4^{g}					C	B						
2								2.6	2.7		2.6	$^{U}3.2^{R}$	C	2.7	3.3	3.1	3.3	2.5	2.0	2.0				
3		1.7	1.7		1.9			2.3			3.2		S			3.1	3.2	2.0	1.7					E
4	E	1.8						2.2			C				C	C	C	C					1.7	1.7
5						1.7			3.0	3.0			2.6^{g}	2.3^{g}	C	C	2.0^{g}	2.0						
6								2.4			C	$^{U}3.8^{R}$	2.6^{g}		C	3.0		C	C	1.8	1.8	3.5	C	C
7		1.7					E	2.5	3.2	3.0	3.3	C				C	C	C						
8		1.7	1.7	1.8	1.8	1.7	1.7		2.7	$^{U}3.2^{R}$	$^{U}3.8^{R}$	$^{U}3.3^{R}$			2.5^{g}		C	2.3	C	3.1	C	C	C	1.7
9	1.7		1.7		1.7				2.8	3.0	3.3	C		3.5			2.7	2.1				2.5	1.7	1.7
10	1.7	1.8	1.7	1.7				2.6	C	$^{U}3.0^{R}$	3.2	3.3		2.9^{g}				2.1		1.8	2.0	2.5	$^{U}1.9^{R}$	1.8
11	1.7	1.7	1.7		1.7			2.8	2.8	3.7	3.3	3.4						2.4		1.9	1.7		1.7	1.8
12		1.7							2.6	3.2			2.8^{g}	2.8	S	3.0	2.7			2.5	1.7	A	1.8	
13	1.7	1.7	E					C	C	3.3								C		1.7	2.5	A	$^{E}3.0^{R}$	1.7
14	1.7	1.7	1.7		1.7	1.7	1.7	2.5	3.0	3.1	3.4	C	C	C	C	4.0	$^{U}3.0^{R}$	2.5	$^{U}4.1^{R}$	A	A	2.0	1.8	1.8
15	1.7	1.7		1.7	1.7	2.0			3.0	3.4	3.6	4.0	5.0	5.3	5.2	5.5	$^{E}4.0^{R}$	$^{E}3.0^{R}$	C	1.7	1.7	2.0	1.7	1.7
16	1.8		1.7	1.8	1.8					$^{E}3.2^{R}$	3.5		C	3.5	$^{E}3.2^{R}$	C	C	C	C		C	C	1.7	2.0
17	2.0		1.8	1.7	1.7	C	C	C	C		3.5			3.7	3.5	3.5	2.7	2.5	2.1	$^{E}2.5^{R}$				
18						1.7	S	S	S	$^{U}4.0^{R}$	$^{U}3.9^{RS}$	3.4	4.3	3.5	3.4	C	2.8	2.1			2.7	3.0	1.7	1.7
19							2.0	2.6		3.3	3.6	3.8	C	2.9^{g}	2.8^{g}	2.6^{g}	2.7	$^{U}2.0^{R}$		1.8	1.7	2.5	1.8	
20			1.8				1.9	2.6	2.4^{g}		3.6	3.5		3.4		3.1	3.3	3.6	1.8	1.8	2.1	A	1.8	1.7
21	1.8						2.0	2.6												1.7			C	C
22										3.1	$^{U}3.3^{R}$					3.0	2.8	2.4	4.9	2.3	3.0	2.0	1.8	1.8
23	1.8	1.8							2.9	3.4	3.6	3.5		3.5	3.5	4.5	5.8	2.5		1.8	2.2	1.8	2.1	1.8
24	1.8					1.7		2.9	3.3	3.7	$^{E}3.2^{R}$	3.5	3.5	$^{U}3.4^{R}$	3.2		3.0	2.5	1.8	2.8	2.0	A	1.7	
25							2.0	2.7	3.0	3.4	3.4	3.5	$^{U}3.3^{R}$					2.1		1.8				
26										3.3	3.4	3.5												
27							2.2	2.3		3.4	3.4	3.5	3.4		3.3			2.0	C	C				
28							2.2			C	C							G						
29							2.2	2.7		3.5	3.4	3.4	3.5	4.2	3.6	3.0	2.6	$^{U}2.1^{R}$	1.8	1.7		1.8		1.7
30	1.8	1.8	1.7	2.0	1.8	1.8				3.4	3.4	3.5	3.5	3.4										1.7
31				C	C	C	C	C	C	C	3.5	3.6	3.6	$^{U}3.3^{R}$					1.8		1.8			
No.																								
Median																								

foEs

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

The Radio Research Laboratories, Japan.

A 5

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.80	1.80	1.75	1.90	1.85	1.75	1.75	1.85	1.95	1.75	1.85	1.80	1.85	1.80	1.85	1.75	I 1.75 C	1.75	1.80	1.70	1.70	1.70	1.70	1.70
2	1.75	1.75	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.80	1.75	1.80	I 1.80 C	1.75	1.75	1.80	1.70	1.70	1.75	1.70	1.70	1.75	1.70	1.70
3	1.70	1.70	1.70	1.65	1.85	1.70	1.65	1.75	1.70	1.70	1.70	1.75	1.75 S	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.70	1.70	E
4	E	1.70	1.65	1.70	1.65	1.70	E	1.65	E	1.70	L 1.85 C	1.85	1.80	1.85	C	C	C	C	1.65	1.70	1.70	1.70	1.70	1.70
5	1.65	1.70	1.65	1.75	1.70	1.70	E	1.70	1.80	1.75	1.75	1.70	1.70	1.75	I 1.75 C	I 1.70 C	1.75	1.65	1.65	E	1.70	E	E	E
6	E	E	E	1.70	1.70	1.65	1.65	1.75	1.65	1.70	I 1.75 C	2.15	1.85	1.80	I 1.80 C	1.85	1.70	C	C	1.75	1.70	1.70	I 1.65 C	I 1.70 C
7	1.70	1.70	1.65	1.70	1.70	1.70	E	1.80	1.70	1.70	1.70	I 1.70 C	1.75	1.70	1.80	C	C	C	1.70	1.70	1.65	E	1.70	1.70
8	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.70	1.80	1.75	1.80	1.85	1.90	1.80	1.80	I 1.75 C	1.70	1.75	E 2.20 C	C	C	C	1.70
9	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	C	1.80	1.75	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.70	1.70
10	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	I 1.70 C	1.70	1.70	1.80	2.10	1.80	1.80	1.75	1.80	1.70	1.75	1.70	1.70	1.75	1.70	1.75
11	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	2.00	1.75	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
12	1.70	1.70	1.65	1.65	1.70	1.65	1.75	1.70	1.70	1.70	1.80	1.90	1.80	1.80	1.70 S	E 2.00 S	1.70	1.70	1.75	1.80	1.70	1.80	1.70	1.70
13	1.70	1.70	E	1.65	1.70	1.70	1.65	C	C	1.80	2.00	2.00	2.00	2.00	1.80	1.80	1.80	I 1.90 C	1.70	1.70	1.70	1.70	1.70	1.70
14	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.70	1.70	1.75	1.75	I 1.90 C	I 1.95 C	C	C	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
15	1.70	1.70	E	E	E	1.70	1.70	1.70	1.70	1.75	1.70	1.85	1.75	1.70	1.85	1.75	1.70	1.70	I 1.70 C	1.70	1.70	1.70	1.70	1.70
16	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.85	1.85	2.05	2.00	I 1.95 C	1.85	1.75	C	C	C	C	1.80	I 1.75 C	I 1.70 C	1.70	1.70
17	1.70	1.70	1.70	1.70	1.70	C	C	C	C	1.75	1.95	1.80	2.10	1.90	1.75	1.70	1.70	1.70	1.70	1.70	E	1.70	1.75	1.70
18	1.70	1.80	1.70	1.70	1.70	1.70	E 2.00 S	E 2.70 S	E 3.00 S	1.75	1.70	1.70	1.95	2.15	1.80	I 1.75 C	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70
19	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.80	1.80	I 1.85 C	1.80	1.80	1.75	1.75	1.75	1.75	1.70	1.70	1.70	1.70	1.70
20	1.75	1.70	1.70	1.70	1.75	1.75	1.75	1.75	1.70	2.05	2.05	1.80	1.90	2.05	1.90	1.75	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70
21	1.80	1.75	1.75	1.75	1.70	1.75	1.70	1.70	1.70	1.75	1.80	1.90	1.80	1.95	1.80	1.75	1.80	1.80	1.70	1.70	1.70	1.80	I 1.75 C	I 1.80 C
22	1.80	1.70	1.70	1.70	1.70	1.75	1.70	1.75	1.70	1.70	1.80	2.15	1.80	2.10	2.00	1.75	1.75	1.70	1.80	1.70	1.75	1.75	1.80	1.70
23	1.70	1.75	1.80	1.80	1.70	1.75	1.70	1.75	1.75	1.90	1.80	2.10	2.00	2.05	1.90	1.80	1.75	1.70	1.75	1.70	1.70	1.70	1.70	1.75
24	1.70	1.70	1.80	1.70	1.75	1.70	1.70	1.70	1.75	1.75	2.10	2.10	2.10	2.15	1.80	2.00	1.75	1.80	1.75	1.70	1.70	1.65	1.70	1.70
25	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	2.10	2.00	2.00	1.90	1.80	1.75	1.70	1.70	1.75	1.70	1.75	1.75	1.70	1.70
26	1.70	1.75	1.70	1.70	1.75	1.70	1.75	1.70	1.70	1.75	1.80	1.75	1.80	1.75	1.80	1.70	1.75	1.70	1.70	1.75	1.70	1.75	1.70	1.70
27	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.85	1.80	2.00	1.80	1.85	1.75	1.80	1.70	1.75	C	C	1.80	1.70	1.70	1.80
28	1.75	1.70	1.70	1.70	1.80	1.70	1.70	1.80	1.90	C	C	E 2.45 C	E 2.10 C	E 2.20 C	E 2.20 C	E 2.10 C	1.75	1.70	1.75	1.80	1.75	1.75	1.75	1.75
29	1.80	1.70	1.80	1.75	1.80	1.80	1.70	1.80	1.80	2.05	1.75	1.75	1.75	1.80	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
30	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.70	1.70	1.75	1.80	1.80	1.75	1.80	1.80	1.75	1.70	1.75	1.70	1.75	1.75	1.70	1.70
31	1.75	1.70	1.70	C	C	C	C	C	C	C	1.85	1.80	1.75	2.00	1.75	1.70	1.75	1.75	1.70	1.75	1.70	1.75	1.75	1.80
No.	31	31	31	30	30	29	28	27	27	29	30	29	30	29	28	26	28	27	28	29	30	30	30	31
Median	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.80	1.80	1.80	1.80	1.80	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70

f-min

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

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

Mar. 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	3.00	3.25R	3.15	3.40	3.15	3.20	3.30	I3.45RS	J3.55R	3.60	3.30	3.35R	I3.30R	3.50	3.30	3.55	I2.50C	3.50	3.35	3.16RS	3.30S	3.00	2.95	2.90S
2	2.90S	2.90RS	2.95	3.10	I3.20RS	3.10	3.30	3.45	3.60RS	3.50	3.10	3.40	I3.40C	3.45	3.60	3.50	3.60	3.35	3.40	3.15	3.00	3.00	I2.90R	3.05
3	3.00	3.10	3.00	I3.25RS	3.45	2.95	3.30	3.40	3.65RS	3.50	3.50	3.25	3.40S	3.60	3.55	3.50	3.60	3.65	3.15S	3.00	3.05	I3.00RS	3.00	I2.95RS
4	3.00	3.00	2.95	3.05	3.05	3.05	3.00	3.50	I3.75RS	3.45H	I3.35C	3.30	3.35	3.60	C	C	C	C	3.40	3.30	3.30	3.25	I3.00RS	2.90
5	3.00	3.10	3.00	I2.95RS	2.90	3.15	3.40	3.70	3.65	3.50	3.60	3.50	3.35	3.40	I3.45C	I3.40C	3.45	3.50	3.45	3.50	3.40S	2.85	2.85	2.85S
6	2.85	3.00	3.00	3.05	3.00	3.05	I3.50RS	3.70	3.65	3.50	I3.50C	3.30	3.40	3.55	I3.45C	3.40	3.35	C	C	3.40	3.30RS	3.05S	C	C
7	2.90	2.90RS	2.90	3.05S	3.20R	I3.16RS	3.55	3.45S	3.50S	3.60	3.10	C	R	3.50R	3.30	C	C	C	3.50	3.50	3.15	3.00	2.80	2.90
8	RF	F	F	F	3.50	I3.25F	I3.45F	3.65	3.60	3.40V	3.20	3.20R	I3.45R	3.40	3.35	3.25	I3.50C	3.70	I3.15C	3.10	C	C	C	2.75
9	F	F	3.30F	F	F	F	3.05R	U3.35RS	I3.56RS	3.00	3.10R	I3.05C	I3.10R	3.20R	3.30	3.55	3.55	3.55	3.30	3.10	3.15S	3.10S	3.10	2.90
10	3.10S	3.10	3.00	3.10	3.45	3.10	3.20	3.70S	I3.60C	3.40	3.25	3.40	3.30R	3.40	3.35	3.30	3.40	3.55	3.20	3.05	3.20	I3.20R	2.70	2.85
11	2.95	2.60S	2.85	2.90	2.80	3.30	3.25	3.60	3.20	3.45	3.25	3.15	3.26R	3.40	3.55RS	3.40	3.50	3.45	3.15	3.05	3.15	3.15	3.10S	3.00
12	I2.95FS	I2.90FS	I2.90F	I3.05F	I3.20F	3.45F	3.50	3.60	I3.50RS	3.60	3.10	I3.20R	I3.25R	3.30R	3.30S	I3.35RS	3.40	3.60	3.50	3.25RS	3.20	I3.25A	2.95	F
13	F	F	F	F	F	F	RS	C	C	3.60R	3.20RH	3.10	I3.40R	I3.65R	3.40R	3.55	3.45	I3.40C	3.40	U3.25R	3.25	A	R	R
14	R	R	R	I3.00R	3.00	3.35	3.35	3.50R	3.55	3.55	3.55	C	C	C	C	3.45R	3.45	3.55	3.50	I3.20A	I3.25A	3.30	I3.20RS	2.90
15	3.10	I3.00RS	3.00S	3.10	3.15S	I3.10RS	3.30S	3.70	3.65	3.55	3.25	3.25R	3.25R	3.35	I3.40R	3.50	3.40R	3.50	I3.45C	3.30	3.15	3.05	I3.00F	2.90
16	2.90R	2.90	3.00	3.15	3.45	3.20	3.50	J3.55R	3.60	I3.40R	3.05R	3.20	C	R	3.35	C	C	C	C	3.25	C	C	RS	I3.00RS
17	RS	RS	RS	RS	RS	C	C	C	C	3.65	3.30	3.40R	3.30	3.30	3.40	3.40	3.40	3.45	3.45	3.55	3.00FS	I3.00RS	I3.05RS	RS
18	FS	RS	3.00S	RS	RS	RS	3.50	I3.55RS	3.60R	3.30	3.50	3.25	3.25	3.25	3.40	I3.40C	3.40	3.40S	3.30	3.38RS	RS	RS	RS	2.85S
19	I2.85RS	2.90RS	2.85S	3.00	I3.20FS	3.35	3.50	3.50	3.60	3.20	3.30	3.10	I3.10C	I3.30R	3.60	3.45	3.35	3.40S	3.65	3.30	3.25	I2.90RS	2.80	2.90
20	3.00	3.15	3.15F	F	F	F	RS	3.75	3.60	3.50	3.25	3.20	3.20	I3.20R	3.40	3.35	3.45	3.45	3.45	3.40S	3.05	I2.90A	2.80	RS
21	RS	FS	F	3.00F	3.35	3.20	3.50	3.60	3.55	3.25	3.40	3.35	3.30	3.30	3.25	3.30	3.30	3.35	I3.30RS	3.45	3.45S	I3.20RS	C	C
22	2.95S	I3.00RS	I3.00FS	3.10S	3.35	3.00	3.50	3.65	3.55	3.55	3.45	3.20	3.30	3.40	3.25	3.50	3.45	3.45	3.50S	I3.35RS	I3.20RS	2.90S	RS	RS
23	RS	3.05	3.05	3.25	3.30	3.15	3.50	3.50	3.55	3.50	3.40	3.30	3.30	3.30	3.45	3.35	3.45	3.45	3.40	3.10	3.10S	3.10S	2.75RS	I3.05RS
24	3.05RS	2.90	3.00	2.85	I3.30RS	3.45	3.50	3.35	3.30	3.25	3.25RS	3.35	3.35R	3.40	3.45	3.55	3.40	3.30	3.45	3.40	I3.30RS	I3.15A	I2.90RS	I3.05FS
25	I2.95F	2.85F	3.00	3.15	3.40	3.15	3.60	3.45	3.60	3.60	3.30	3.40	3.40	3.35	3.40	3.40	3.35	3.40S	3.40	3.55	3.10	2.95S	I2.90RS	2.90S
26	3.00	2.80	2.95	3.05	3.50	3.10	I3.55RS	3.60	3.70	3.20	3.45	3.35	3.45	3.25R	3.40	3.40	3.40	3.40	3.40	3.30	RS	RS	RS	RS
27	RS	RS	RS	RS	3.45S	3.05S	3.45	3.45	3.45	3.35	3.25	3.30	3.25S	3.30	U3.30R	3.45	3.40	3.45	C	C	3.05S	2.80S	I2.75RS	RS
28	RS	2.90	3.10S	3.35S	3.50	2.95	3.40	3.55R	3.50	C	C	I3.25R	3.35	I3.40R	3.30	3.50	3.35	3.45	3.40R	3.10S	RS	RS	I3.15RS	3.05RS
29	3.00RS	I2.95RS	2.90	3.05	3.15	3.30	U3.55R	I3.50R	3.50	3.55	3.30	3.40	3.40	3.20	3.30	3.40	3.55	3.45	I3.35RS	3.30	I3.20RS	RS	RS	RS
30	3.00	I3.10RS	3.20	3.25	3.10	3.25	3.50	I3.50RS	3.50	3.45	3.40	3.35	3.40	3.30	3.35	3.45	3.45	3.50	3.20RS	I3.20RS	3.28RS	RS	RS	RS
31	I2.80RS	3.15R	3.15	C	C	C	C	C	C	C	3.15	3.40	3.45	3.15	3.20	3.25S	3.35	3.40	3.45RS	3.35R	RS	RS	RS	RS
No.	21	23	25	23	25	25	27	28	28	29	30	29	28	29	29	28	28	27	28	30	25	22	20	19
Median	3.00	3.00	3.00	3.05	3.20	3.15	3.50	3.50	3.60	3.50	3.30	3.30	3.30	3.35	3.40	3.40	3.40	3.45	3.40	3.30	3.20	3.00	2.90	2.90

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

The Radio Research Laboratories, Japan.

A 7

27

IONOSPHERIC DATA

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

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

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

The Radio Research Laboratories, Japan.

A 8

IONOSPHERIC DATA

Mar. 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									250	250	280	260	255	250	250	250	C							
2									240	245	265^{H}	260	I265^{C}	250	250	245	245							
3									245	250	260	255	270^{S}	250	255	260	245							
4									240	235	I250^{C}	290	270	250	C	C	C							
5									245	250	245	255	255	265	I260^{C}	I250^{C}	250							
6								230	235	240	I260^{C}	290	260	255	I260^{C}	260	245							
7								255	245	245	250	I265^{C}	280	255	280	C	C							
8									245	245^{L}	295	290	250	250	280	285^{S}	C							
9									240	250	295	I270^{C}	295	260	255	245	240							
10									I240^{C}	250	280	270	265	260	280	270^{L}	250							
11									260	250	270	290^{L}	285	270	245	245								
12									250	245	295	280	255	260	270	255	250							
13									C	245	250	260^{L}	285	270	255	260	255							
14									250	250	295	I280^{C}	I255^{C}	C	C	255	245							
15									245	250	295	280	265	255	245	285^{A}	A							
16									245	255	310	295	I290^{C}	290	270	C	C							
17									C	245	285	290	285	285	270	275	250							
18									245	270	270	285	270	260	260	I260^{C}	255							
19									250	260	285	280	I280^{C}	260	245	250	250							
20									235	245	295	285	285	285	260	270	255							
21									250	285	270	280	295	285	270	255	270							
22									245	255	275	300^{L}	285	280	290	270	255							
23									250	265	280	270	270	285	285	275	I250^{A}							
24								285	270	270	260	255	260	265	290	250	255							
25									255	245	290	255	260	295	290	270	270	255						
26									245	250	290	290	285	295	275	255	255	250						
27									255	290	290	260	290	290	290	260	250							
28									255	C	C	295	290	265	290	285	265							
29									255	280	300	290	270	295	285	275	250							
30									270^{L}	270	290	290	275	290	290	275	260							
31									C	C	295	280	260	300	300	285	265	250						
No.								3	28	29	30	31	31	30	29	28	24	3						
Median								255	245	250	280	280	270	265	270	260	250	250						

h'F2

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 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	300	270	255	230	240	245	245	225	200^{R}	225	220	210	195	205	220	200^{H}	I245^{C}	230	235	230	225	250	280	260
2	290	280	290	260	240	245	245	220	235	220	200^{H}	200	I240^{C}	225	230	230	I240^{A}	240	205	245	250	270	270	255
3	265	245	270	240	210	250	245	235	245	240	200	240	I215^{S}	200	235	230	240	210	220	250	255	245	255	290
4	285	280	285	250	250	275	245	230	240	200	I200^{C}	210	205	220	C	C	C	C	210	230	235	240	270	295
5	275	280	285	290	290	255	220	210	240	200	200	205^{H}	195	195^{H}	I240^{C}	I240^{C}	245	245	220	210	205	285	290	290
6	295	290	280	280	270	260	215	220	205	200	I190^{C}	I200^{A}	240^{R}	240	I240^{C}	235	215^{H}	C	C	220	220	I260^{A}	C	C
7	280	285	270	255	240	245	235	240	I240^{A}	215	205	I200^{C}	195^{H}	215	225	C	C	C	220	205	245	255	305	295
8	285	245	245	245	240	270	240	230	220	220	I220^{A}	195^{H}	195^{H}	245	240	205	I220^{C}	230	I240^{C}	I265^{A}	C	C	C	300
9	300	275	245	270	305	240	260	245	240	215	195^{H}	I230^{C}	220	240	240	220	220	240	210	240	255	I260^{A}	255	295
10	280	260	275	245	220	255	245	240	I240^{C}	220	195^{H}	205	220	210	215	200	250	240	220	245	245	255	I270^{A}	295
11	295	320	295	270	290	245	245	250	240	I235^{A}	210	200	200	205	I220^{R}	225	245	240	240	270	250	240	245	250
12	295	295	285	245	245	215	235	230	230	220	200	200^{H}	210	205	I210^{S}	240	245	240	220	240	255	I245^{A}	290	E280^{E}
13	E300^{E}	E295^{E}	E300^{E}	285	240	255	235	C	C	215	195	I210^{R}	230	I230^{R}	I230^{R}	245	245	I240^{C}	240	240	245	I245^{A}	I250^{A}	260
14	285	290	E300^{E}	270	245	225	220	240	220	235	200	C	C	C	C	A	A	240	A	A	A	A	E280^{E}	250^{A}
15	255	285	250	260	240	I235^{A}	240	235	225	235	205	205	A	A	A	A	A	I240^{A}	I225^{C}	220	240	275^{A}	285	E290^{E}
16	A	295	275	250	215	240	230	230	230	210	220	200^{H}	I205^{C}	200	A	C	C	C	C	240	I240^{C}	I250^{C}	255	290^{A}
17	I280^{A}	280	265	275	260	C	C	C	C	200	200	195	200	200	200	I220^{A}	240	245	235	210	245	255	255	265
18	275	265	275	E295^{E}	245	280	230	240	225	A	A	205	I200^{A}	200	235	I235^{C}	245	245	235	225	I265^{A}	I255^{A}	250	285
19	270	E295^{E}	285	260	235	230	215	240	245	220	210	210	I220^{C}	210	240	205	225	250	235	235	240	I280^{A}	305	300
20	290	270	270	240	235	245	220	220	215	210	205	225	210	195	200	230	I235^{A}	245	240	220	245	A	E310^{E}	295
21	295	290	290	265	235	200	220	240	225	230	225	200	215	220	235	205	240	245	240	220	220	235	I275^{C}	I295^{C}
22	295	295	290	255	240	215	220	235	240	210	205	220	190^{H}	220	225	200	230	235	I250^{A}	240	255^{A}	290^{A}	285	290
23	280	260	255	245	240	265	240	240	240	240	225	200^{H}	200	210	225	A	A	240	240	230	250	245	I295^{A}	290
24	275	290	270	285	225	230	225	245	245	I240^{A}	205	220	215	215	200	240	245	245	240	240	235	I255^{A}	260	280
25	295	285	275	265	225	260	235	240	240	220	210	200^{H}	210	200	200	200	245	250	240	205	225	255	290	295
26	295	310	290	280	225	260	210	235	235	205	205	205	200	190^{H}	220	200	245	245	240	215	235	245	250	255
27	285	285	290	255	210	255	235	240	240	220	200	205	200	195	220	245	245	240	C	C	240	295	300	295
28	295	295	255	225	210	E300^{E}	230	240	240	C	C	215	195^{H}	235	205	205	210	245	240	240	245	275	275	270
29	270	290	290	260	245	240	220	240	240	225	200	200	200	I210^{A}	I215^{A}	230	240	240	240	240	245	255	290	255
30	285	255	245	260	240	260	220	240	235	240	210	200^{H}	220	205	220	225	205^{H}	240	245	240	240	255	305	300
31	270	245	260	C	C	C	C	C	C	C	200	195	220^{H}	215	205	205^{H}	245	245	240	220	235	260	290	290
No.	29	29	29	29	30	28	29	28	28	28	29	30	29	29	27	25	25	27	27	29	29	28	27	30
Median	285	285	275	260	240	245	235	240	240	220	205	205	205	210	220	225	240	240	240	235	245	255	275	290

h'F

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 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	105	E	E	E	G	140	G	105	105	G	G	G	G	C	B	E	E	E	E	E	E
2	E	E	E	E	E	E	E	145	120	G	105	105	C	105	150	145	120	115	115	110	E	E	E	E
3	E	110	100	E	105	E	E	120	G	G	110	G	S	G	G	145	125	135	105	E	E	E	E	105
4	100	105	E	E	E	E	E	155	G	G	C	G	G	G	C	C	C	C	E	E	E	E	110	105
5	E	E	E	E	E	100	E	G	145	135	G	G	105	105	C	C	105	120	E	E	E	E	E	E
6	E	E	E	E	E	E	E	155	G	G	C	175	105	G	C	150	G	C	C	120	110	110	C	C
7	E	110	E	E	E	E	175	135	120	120	110	C	G	G	G	C	C	C	E	E	E	E	E	E
8	E	105	105	105	105	105	110	G	120	105	105	115	G	G	105	G	C	110	C	110	C	C	C	110
9	110	E	110	E	110	E	E	G	135	125	120	C	G	110	G	G	125	120	E	E	E	110	110	105
10	105	105	105	100	E	E	E	165	C	110	120	110	G	105	G	G	G	105	E	105	110	105	105	105
11	105	105	105	E	110	E	E	145	145	130	115	120	G	G	G	G	G	145	E	130	125	E	115	110
12	E	115	E	E	E	E	E	G	120	120	G	G	105	105	S	120	120	G	E	120	130	110	110	E
13	110	105	105	E	E	E	E	C	C	115	G	G	G	G	G	G	G	C	E	105	105	105	105	105
14	105	105	100	E	105	120	110	135	135	125	115	C	C	C	C	105	105	145	115	110	105	105	105	105
15	105	105	E	105	100	105	E	G	125	130	105	105	105	105	105	105	105	105	C	115	115	120	120	110
16	100	E	105	105	105	E	G	G	G	G	105	105	C	100	110	C	C	C	C	E	C	C	100	105
17	105	E	105	105	105	C	C	C	C	G	135	G	G	100	100	100	100	100	100	100	E	E	E	E
18	E	E	E	E	E	105	S	S	S	115	110	105	105	105	110	C	120	115	E	E	110	110	115	115
19	E	E	E	E	E	E	150	155	G	120	115	110	C	105	105	105	140	140	E	110	115	110	110	E
20	E	E	110	E	E	E	155	170	105	G	120	125	G	125	G	145	130	120	100	110	105	105	105	135
21	105	E	E	E	E	E	155	175	G	G	G	G	G	G	G	G	G	G	E	100	E	E	C	C
22	E	E	E	E	E	E	G	G	G	140	130	G	G	G	G	120	125	120	110	110	110	105	105	105
23	105	105	E	E	E	E	G	G	125	135	120	120	G	130	140	120	120	130	E	110	110	120	105	105
24	110	E	E	E	E	110	G	145	135	125	125	110	120	105	130	G	140	120	120	110	105	110	110	E
25	E	E	E	E	E	E	150	135	135	130	130	110	105	G	G	G	G	145	E	100	E	E	E	E
26	E	E	E	E	E	E	G	G	G	135	120	110	G	G	G	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	150	100	G	130	125	130	120	G	110	G	G	140	C	C	E	E	E	E
28	E	E	E	E	E	E	155	G	G	C	C	G	G	G	G	G	G	105	E	E	E	E	E	E
29	E	E	E	E	E	E	155	160	G	130	105	120	110	105	105	105	105	105	105	100	E	105	E	105
30	105	105	105	100	105	105	G	G	G	125	120	130	115	135	G	G	G	G	E	E	E	E	E	115
31	E	E	E	C	C	C	C	C	C	C	120	110	110	105	G	G	G	G	100	E	100	E	E	E
No.	14	13	12	7	9	7	10	15	14	20	24	19	11	16	11	12	15	20	9	18	14	14	15	16
Median	105	105	105	105	105	105	150	145	130	125	120	110	105	105	110	120	120	120	105	110	110	110	110	105

h'Es

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f2	f	f	f					h		l	l												
2								h2	C		l	l		l2	h	h	C2	C3	f3	f2				
3		f	f		f			C			C2					h	h2	h	f					f
4	f	f						h															f2	f2
5						f2			h2	h2			l2	l2			l	C						
6								h				h	l			h				f	f	f4		
7		f					h	h	C2	C	C													
8		f	f2	f2	f2	f2	f2		C	l5	l2	C			l			l2		f2				f
9	f		f		f				h2	h	h			C			C2	C2				f2	f2	f
10	f2	f2	f2	f2				h		C	C2	l		l				l		f	f2	f2	f	f
11	f	f	f2		f2			h3	h2	h2	C	C						h3		f2	f		f2	f3
12		f2							C	h2			l	l		C	C2			f2	f	f2	f2	
13	f	f2	f2							C										f	f3	f2	f2	f2
14	f2	f	f		f	f	C	h2	h2	h	C2					C2	l2	h	f6	f3	f2	f2	f2	f2
15	f2	f2		f2	f2	f3			h	h2	C2	l3	l3	l2	l2	l3	l3	l3		f	f	f2	f	f2
16	f2		f	f	f						l	l		l	C2								f	f2
17	f2		f	f2	f						h			l2	l2	l2	l2	l3	f3	f4				
18						f2				C2	C2	l	C2	C2	C2		C2	C3			f3	f3	f2	f2
19							h	h2		h2	C2	C2		l2	l2	l2h	h2	h		f	f	f2	f2	
20			f2				h	h	l2		C2	h2		h		h	h2	C2	f	f	f3	f5	f2	f
21	f						h	h												f				
22										h	h					C	h2	Cl2	f2	f2	f2	f2	f	f2
23	f	f							h	h	h	C		h	h	C2	C2	h2		f	f3	f2	f2	f2
24	f					f		h2	h2	h2	h	C	C	l2	h		h2	C2	f	f3	f2	f3	f2	
25							h	h2	h2	h2	h	C2	l2					hl		f				
26										h	h	C												
27							h	l		h2	h	h	h		C			h						
28							h											l						
29							h	h		h	C	h	C	C3	C3	l3	l2	l	f2	f2		f		f
30	f2	f2	f2	f2	f2	f2				h	h	h	C	h										f
31											h	C2	C2	C2					f2		f			
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	3.6	3.8^{S}	4.1^{S}	3.8	3.4	3.0	3.6^{S}	^{U}5.8^{S}	6.4	^{J}7.9^{S}	8.6	^{U}10.0^{R}	^{J}9.1^{S}	^{U}9.5^{S}	7.1	6.9	6.2^{R}	^{J}6.5^{S}	4.4	4.5	4.4	3.0	^{I}3.4^{A}	3.7^{S}
2	3.7	4.0	3.7^{S}	3.9	3.7	3.2	3.6^{S}	5.7	^{J}6.8^{R}	7.0	7.3	9.0^{R}	^{I}8.6^{R}	^{J}9.2^{R}	8.5	7.3^{S}	5.9	^{I}5.5	5.0	3.6^{S}	3.5	^{I}3.6^{S}	3.9	^{U}3.8^{S}
3	3.5	4.2	4.0^{S}	4.8	3.7	2.7	3.5	5.5	^{U}6.9^{R}	^{U}7.3^{S}	^{U}6.8^{R}	^{I}7.7^{S}	^{I}8.3^{R}	^{J}7.9^{R}	7.8	6.4	6.2	5.5	4.1	3.5	4.0^{S}	^{J}4.0^{S}	3.5	3.5
4	3.7	3.6	3.7^{S}	C	C	C	C	C	C	^{I}7.6^{S}	6.6	6.4	^{J}8.0^{R}	7.4^{S}	6.5	6.7	6.8	6.3	^{J}5.5^{S}	^{J}4.3^{S}	4.1^{S}	^{U}3.7^{S}	3.4	3.4
5	3.4^{S}	^{I}3.4^{S}	^{U}3.4^{S}	3.3	3.2^{S}	3.4	^{J}4.0^{S}	^{J}5.2^{R}	^{J}6.5^{S}	7.2^{S}	8.0^{S}	7.1	7.2	^{U}7.6^{S}	7.3^{S}	^{U}7.1^{S}	6.7^{S}	^{U}6.5^{S}	5.9^{S}	5.2	^{U}4.0^{S}	3.1	3.2^{S}	^{I}3.2^{S}
6	^{U}3.5^{S}	3.4^{S}	3.5	3.5	3.4	^{U}3.3^{S}	4.1^{S}	6.1^{S}	^{U}6.2^{S}	6.2	6.7^{S}	^{U}7.4^{S}	^{J}8.3^{S}	7.1	7.0^{S}	6.9	6.8	^{U}7.4^{S}	5.9	5.5^{S}	^{I}4.3^{S}	3.7^{S}	^{U}3.6^{S}	^{I}3.8^{S}
7	3.8^{S}	4.0^{S}	^{U}3.9^{S}	^{U}4.2^{S}	3.6^{E}$_{S}$	3.6^{S}	3.8^{S}	6.3^{S}	^{U}7.6^{S}	^{U}7.3^{S}	6.7^{S}	^{U}7.3^{S}	^{U}9.6^{S}	^{U}10.5^{S}	^{J}8.2^{S}	6.5^{S}	6.7	^{U}7.4^{S}	6.1	3.5	3.2	3.1^{S}	3.0	^{I}3.0^{S}
8	3.3^{E}$_{S}$	3.6^{S}	3.7^{S}	3.5^{S}	3.2^{S}	2.5	^{U}3.8^{S}	5.6^{S}	6.3	6.4	6.9	8.5	9.5^{S}	8.3^{R}	6.8	7.2	^{J}8.0^{S}	^{U}7.3^{S}	5.0	4.5	5.1	4.8	^{J}4.1^{S}	3.8
9	^{U}3.8^{S}	^{J}4.0^{S}	4.0^{S}	3.8	3.4	3.6	^{U}4.0^{S}	7.1^{S}	7.1^{S}	7.4	^{U}8.8^{S}	10.6	9.2^{S}	^{U}10.1^{S}	9.0^{S}	^{U}7.6^{S}	6.4	6.5^{S}	^{U}6.4^{S}	3.6^{S}	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	^{U}8.0^{S}	^{U}7.1^{S}	^{U}7.6^{S}	^{U}7.9^{S}	6.7	^{I}4.6^{S}	4.2^{S}	3.8	3.6^{S}	3.7
11	3.7	3.4	3.7^{S}	^{U}3.8^{S}	3.5	3.8^{S}	^{U}4.2^{S}	6.5^{S}	7.1^{S}	8.1	7.0	8.7	9.2	9.1	8.5	7.0	6.2^{S}	5.9	5.3^{S}	5.5^{S}	6.3^{S}	5.8	^{U}4.0^{S}	^{U}3.9^{S}
12	^{I}3.6^{S}	^{I}3.6^{E}$_{S}$	^{U}3.7^{E}$_{S}$	3.6^{E}$_{S}$	3.5^{S}	3.3^{S}	4.2^{S}	6.0	7.1^{S}	7.4^{S}	7.2	^{J}9.8^{S}	11.9	11.2	9.4^{S}	^{J}8.5^{S}	^{U}7.7^{S}	^{U}8.7^{S}	6.2	3.6^{S}	^{I}3.6^{S}	3.7^{S}	3.3^{S}	3.1
13	3.1	3.1	3.2	3.6	C	C	C	C	C	^{I}7.5^{C}	6.5	7.3^{S}	^{U}9.9^{S}	9.9^{S}	8.0^{S}	6.8	7.3^{S}	6.3^{S}	6.3^{S}	^{I}5.2^{S}	^{U}5.1^{S}	3.9^{S}	3.4^{S}	3.0
14	^{I}3.3^{S}	3.3	3.1	3.6	4.0^{S}	^{I}2.7^{S}	^{U}4.6^{S}	6.1^{S}	^{U}7.6^{S}	^{U}8.3^{S}	7.6^{S}	^{U}10.3^{S}	11.5^{S}	11.5	9.2^{S}	7.3^{S}	^{U}6.5^{S}	6.7^{S}	A	A	A	3.2^{S}	^{I}3.4^{S}	^{I}3.6^{A}
15	3.6^{S}	4.2^{S}	3.7^{S}	4.3^{S}	3.9^{S}	3.6^{S}	4.8^{S}	6.0	6.6	7.3	7.6	7.5	^{I}9.6^{R}	^{U}10.1^{R}	8.8	6.9	^{J}6.5^{R}	6.2^{S}	6.9	4.4^{S}	3.4^{S}	^{I}3.4^{A}	3.5	3.4
16	3.4^{S}	3.5	^{U}3.6^{S}	^{J}4.2^{S}	3.4	2.9^{R}	^{J}4.0^{S}	5.5^{R}	5.9	6.6^{S}	6.2	7.3^{S}	8.5	9.5^{S}	8.7	^{U}7.3^{S}	6.5	6.5^{S}	^{U}6.4^{S}	5.6^{S}	^{U}3.7^{S}	^{U}3.7^{S}	3.6^{S}	3.7^{S}
17	3.8^{S}	3.6^{A}$_{S}$	3.4^{S}	3.9	3.3^{A}$_{S}$	3.4^{S}	4.9^{S}	5.7^{S}	6.1	5.7	5.7	7.1	7.3^{R}	^{J}7.4^{R}	^{J}7.8^{R}	^{I}8.0^{S}	7.3^{S}	6.9	6.4	6.3	3.4	3.4	3.4	3.4^{S}
18	3.4^{S}	3.4	3.3	3.2	3.0	^{J}2.8^{R}	4.7	^{J}5.5^{R}	6.8	6.3	7.1	^{I}7.8^{R}	^{I}9.2^{R}	9.4	8.4	^{J}8.0^{S}	7.2	7.1	^{J}6.1^{S}	4.9^{S}	^{J}4.0^{S}	^{J}4.4^{S}	^{I}3.8^{S}	3.4
19	3.4^{F}	^{J}4.0^{S}	^{I}3.9^{F}	3.7	^{U}3.6^{S}	3.4	^{U}4.5^{S}	5.6	6.5	6.8	^{J}7.4^{S}	9.5^{R}	9.4^{S}	^{J}10.2^{R}	8.5	6.5	6.2^{S}	7.0	^{U}7.3^{S}	5.9	3.8	3.1	3.2	^{U}3.4^{S}
20	3.5	^{U}3.4^{S}	3.4	3.4^{S}	2.8	2.8	^{J}4.8^{S}	^{U}5.9^{S}	5.8	6.0^{R}	6.9	8.6	8.8	^{J}7.8^{R}	^{J}9.0^{R}	^{J}8.0^{S}	^{U}7.2^{S}	7.3^{S}	^{J}7.6^{S}	5.2^{S}	3.4	3.4^{S}	3.5	3.6^{S}
21	3.6	3.6	3.6	3.7	^{J}3.8^{S}	2.6^{S}	^{J}4.2^{S}	5.4	6.6^{R}	6.1	7.1	7.3	7.2^{S}	8.7	^{J}7.9^{R}	^{J}7.5^{S}	7.2	^{U}7.3^{S}	^{J}8.0^{S}	^{I}7.1^{S}	^{I}5.0^{S}	3.4	3.3	3.2
22	3.4	3.4	^{U}3.4^{S}	^{J}3.9^{S}	2.9^{R}	^{J}2.3^{S}	4.5	5.9^{S}	6.4	5.8	6.5	7.2	6.5^{R}	8.5	7.1^{S}	^{U}7.3^{S}	7.2^{S}	7.2^{S}	6.4	5.7	4.4^{S}	^{J}4.2^{S}	^{J}4.1^{S}	F
23	F S	F S	3.9^{S}	4.1	2.8	2.8^{R}	^{U}4.5^{S}	5.8	7.1	6.6	6.8	^{J}7.0^{R}	^{J}8.6^{R}	^{J}8.2^{R}	^{J}7.9^{R}	7.5^{S}	6.6	6.3^{S}	6.0^{S}	^{J}5.1^{S}	4.6^{S}	^{J}4.2^{S}	^{J}3.6^{S}	^{U}4.2^{S}
24	^{J}4.3^{S}	4.1	^{U}4.0^{S}	3.8^{S}	3.9	2.9	4.3^{S}	5.6	6.8	^{J}8.2^{R}	^{J}9.9^{S}	^{J}10.2^{R}	^{J}10.1^{S}	8.9	7.2^{S}	7.1	6.1	6.5	6.6	^{J}6.1^{S}	4.6^{S}	3.4	3.3	3.4
25	3.4	3.4	3.4	3.6	2.8	^{J}2.6^{S}	4.4	5.4	^{J}6.2^{R}	7.3^{S}	7.0	^{J}8.4^{S}	^{J}8.4^{S}	7.3	6.7	7.1	7.1	7.5^{S}	^{U}8.5^{S}	6.8^{S}	^{U}3.5^{S}	3.2	3.1^{S}	3.4^{S}
26	3.4	3.1	3.0	3.5	3.1	2.5^{S}	4.4	5.8	6.1	5.8^{S}	5.7	7.1	7.3	^{U}7.9^{S}	^{U}8.5^{S}	6.8	^{U}6.3^{S}	6.6^{S}	^{U}6.9^{S}	5.5^{S}	^{U}4.4^{S}	3.8^{S}	^{U}3.7^{S}	^{U}3.8^{S}
27	3.8^{S}	3.6^{S}	3.6^{S}	3.6^{S}	2.9	2.9^{S}	4.6^{S}	6.1^{S}	5.8	6.3^{S}	^{U}7.4^{S}	8.4	9.0	^{J}8.6^{S}	8.4^{S}	7.7^{S}	^{U}7.6^{S}	6.2	6.2	^{U}5.1^{S}	^{U}4.0^{S}	3.5	3.7^{S}	^{U}3.7^{S}
28	3.6	^{U}4.0^{S}	^{U}4.2^{S}	3.5	2.0	2.5	^{U}4.5^{S}	6.0	6.1	6.3	6.3^{S}	6.9^{R}	7.8^{R}	9.3^{S}	8.7^{S}	6.2	5.8	^{U}6.2^{S}	6.1	5.6^{S}	4.4^{S}	^{U}3.9^{S}	4.1^{S}	4.2^{S}
29	^{U}4.1^{S}	4.0^{S}	3.8^{S}	3.9^{S}	3.7	3.2	4.8^{S}	6.0	6.3^{S}	6.2	6.6	7.1^{R}	8.5^{S}	^{J}7.8^{R}	^{U}7.5^{R}	^{J}7.1^{S}	7.1	6.1	5.9	5.6	4.6	^{U}4.4^{S}	^{U}4.1^{S}	^{U}4.3^{S}
30	^{J}4.2^{R}	4.2	4.0	^{J}4.0^{S}	3.1	3.1	4.6	5.8	^{J}6.3^{R}	5.9	6.4	7.1	^{J}8.2^{R}	^{J}8.2^{R}	7.4	6.6	6.3	6.6	^{J}6.4^{S}	6.6	5.3	^{I}4.1^{S}	3.8	^{I}3.5^{H}
31	^{J}3.8^{E}$_{S}$	^{I}4.0^{F}	^{J}3.7^{S}	3.4	3.3	3.1	^{J}5.0^{R}	5.9	6.2	6.2	6.4^{S}	7.3^{S}	8.6	8.1^{S}	7.6^{S}	^{U}7.4^{S}	^{U}7.9^{S}	^{U}8.0^{S}	7.1^{S}	5.8	^{U}4.4^{S}	3.9	3.7^{S}	3.5^{S}
No.	29	29	30	29	28	28	28	28	28	30	30	30	30	30	31	31	31	31	30	30	29	30	30	29
Median	3.6	3.6	3.7	3.7	3.4	3.0	4.4	5.8	6.4	6.7	6.9	7.4	8.6	8.6	8.0	7.1	6.7	6.6	6.2	5.2	4.2	3.7	3.6	3.5
U.Q.	3.8	4.0	3.9	3.9	3.6	3.3	4.6	6.0	6.8	7.4	7.4	8.7	9.4	9.5	8.5	7.5	7.2	7.3	6.7	5.7	4.6	4.0	3.8	3.8
L.Q.	3.4	3.4	3.4	3.5	3.1	2.7	4.0	5.6	6.2	6.2	6.5	7.1	8.2	7.9	7.3	6.8	6.3	6.3	5.9	4.5	3.6	3.4	3.4	3.4
Q.R.	0.4	0.6	0.5	0.4	0.5	0.6	0.6	0.4	0.6	1.2	0.9	1.6	1.2	1.6	1.2	0.7	0.9	1.0	0.8	1.2	1.0	0.6	0.4	0.4

foF2

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

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

Mar. 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										L	S	"4.5L	L	L	L	L								
2									L	L	L	L	L	L	L	L								
3									L	L	"4.4L	L	I4.6L	"4.4L	L	L	L							
4							C	C	C	LH	L	"4.2L	L	L	L	L	L							
5									L	S	4.3	S	S	S	S	S	S							
6									L	L	S	S	L	L	S	L	S							
7									L	L	L	L	L	S	L	L	S							
8									L	L	"4.4L	4.5	L	L	L		L							
9										L	S	L	L	L	L	S								
10							C	C	C	C	C	C	C	C	S	L								
11									L	L	A	A	A	L	L	S								
12									L	L	S	S	L	S	S	A	S							
13							C	C	C	C	L	L	L	L	S	L	S	L						
14										A	S	A	A	L	A	S	S							
15									L	L	4.7L	A	A	"4.6L	L	L	L							
16										L	L	S	S	S	L	S	S							
17									S	L	L	4.6L	"4.6L	L	L	L								
18									L	L	L	L	L	L	L	L	L							
19									L	L	4.8	L	L	"4.5L	L	L								
20											"4.7L	4.6L	4.7L	L	L	L								
21										L	L	"4.5L	L	"4.5L	L	L	L							
22										L	L	4.5L	L	"4.5L	L	L	L							
23									L	L	L	L	A	L	A	A	A							
24									L	A	4.5L	"4.6L	4.5L	L	L	L	L							
25									L	L	S	L	S	S	L	S	S	L						
26									S		L	S	L	S	S	L	S	L						
27									S	L	L	4.6L	L	S	S	L	L							
28									L	L	S	L	S	L	S	S	L							
29									L	L	L	4.5	"4.6L	L	L	L	L	A						
30								L	L		L	L	4.5L	S	"4.4L	L	L	L						
31									L	L	S	L	S	4.4L	L	S	S							
No.											7	10	6	6	1									
Median											4.5	4.5	"4.6	"4.5	"4.4									

foF1

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	S	I2.60R	S	S	B	S	A	I3.10A	S	B	S						
2							S	I2.20SI	2.60R	I2.80R	I3.10R	R	R	3.35	I3.20A	2.95	2.65R	A						
3							S	1.90	I2.55RI	2.90S	3.20R	3.25RI	3.30RI	3.20SI	3.10R	I2.85R	A	S						
4							C	C	C	I2.90BI	3.10R	B	S	R	3.10	I2.85B	R	S						
5							S	S	I2.70SI	3.00SI	3.15SI	3.20SI	3.30S	3.35S	3.15	I2.90S	S	S						
6							S	S	R	S	S	R	S	3.30	I3.10S	3.05R	R	S						
7							S	2.40R	2.60R	2.80R	A	A	3.45R	3.25R	3.20S	R	A	S						
8							S	S	2.50R	R	A	A	R	I3.40RI	I3.20A	A	A	S						
9							S	S	R	R	S	I3.05AI	I3.50A	3.45R	3.25S	R	S	S						
10							C	C	C	C	C	C	C	C	I3.20RI	2.80SI	I2.40A	S						
11							S	R	I2.60S	R	S	A	A	A	A	R	I2.50A	S						
12							S	S	S	A	S	A	A	3.25R	I3.00A	R	S	A						
13							C	C	C	C	R	S	A	3.30R	3.20	I2.90A	R	S						
14							S	R	I2.50SI	2.60S	R	A	A	A	A	3.30R	R	S						
15							S	S	I2.75R	A	A	A	A	R	A	I3.00R	B	S						
16							S	I2.30R	R	R	S	I3.20S	S	S	S	A	A	S						
17							S	2.35	A	S	R	S	A	I3.30SI	3.20AU	3.10R	A	A						
18							S	U2.30RI	2.80R	2.90	I3.00S	A	A	S	A	2.80	B	S						
19							S	S	U2.70R	2.95	A	A	R	A	S	I2.90S	2.60	A						
20							S	S	R	U3.05R	A	A	A	I3.10RI	3.00SI	2.90SI	2.60AU	1.95S						
21							S	U2.35SI	2.70RI	2.95B	S	A	A	R	S	A	S	A						
22							S	2.30	2.80	I3.00RI	3.15SI	3.25SI	3.35AI	3.30RI	3.15R	A	A	S						
23							S	2.40	I2.75S	3.05	I3.20A	A	A	A	U3.10A	3.00	2.65	A						
24							S	I2.45RI	2.55R	2.90	A	A	3.35	I3.30SI	3.15SI	2.95S	R	A						
25							S	I2.50RU	2.70R	R	A	A	S	S	3.15R	S	S	S						
26							S	2.40	I2.65SI	2.80R	S	A	I3.30S	I3.35R	3.15R	S	R	S						
27							S	S	R	3.00	R	S	3.30R	3.30R	3.15SI	2.95SI	I2.60R	S						
28							S	I2.50SI	2.70R	2.75R	A	A	S	S	I3.15S	2.90	2.55R	S						
29							S	S	2.70RU	3.10SI	3.20A	R	R	A	U3.30R	S	A	S						
30							S	U2.55RI	2.85RI	3.05SI	3.10A	S	S	S	B	A	A	S						
31							S	2.45	U2.75RI	2.95AI	3.10A	R	S	A	3.25R	A	R	S						
No.								15	21	19	10	5	8	15	23	17	8	1						
Median								U2.40	U2.70	U2.95	U3.10	U3.20	U3.30	3.30	U3.15	U2.90	U2.60	U1.95						

foE

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

The Radio Research Laboratories, Japan.

K 3

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	2.4	2.2	1.8	S	S	S	3.0	S	S	B	S	3.6^{S}	3.5	S	B	S	3.2^{M}	S	2.4^{M}	3.2^{M}	$J4.9$	2.5
2	S	S	S	2.4^{M}	E	S	S	S	G	3.3	2.5^{G}	G	G	3.7^{S}	3.5^{M}	3.6	3.0	2.5	S	S	S	S	2.4	S
3	S	S	S	E	E	S	S	2.4	G	S	G	3.7^{S}	G	S	G	G	3.0	S	S	S	S	S	2.5^{M}	S
4	S	2.2	E	C	C	C	C	C	C	B	G	B	S	G	G	B	G	S	S	S	S	S	S	S
5	S	$J3.3^{S}$	S	S	2.1	2.9^{M}	2.2	S	S	S	S	S	S	G	G	S	3.3	3.7^{Y}	$J3.0$	2.3	S	S	S	S
6	S	S	S	S	S	S	S	S	G	S	S	G	G	G	4.1	G	3.3	$J3.3$	$J3.5$	$J3.1$	$J5.9$	$J4.1$	2.3	2.3
7	S	2.2	S	S	S	S	S	G	3.5	3.8	3.6	3.8	G	G	G	3.1	2.5	S	S	2.3	S	S	S	S
8	S	S	S	E	S	S	S	S	G	2.5^{G}	3.9	3.8	3.2^{G}	3.1^{G}	3.3	3.7	3.2	S	S	2.9^{M}	3.2^{M}	3.6^{M}	3.8^{M}	2.1
9	S	2.3	2.2	E	E	S	S	S	2.5^{G}	3.1	G	3.7	4.7	G	G	3.3	S	2.3	2.2	3.2	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	3.2	2.5	S	2.3	$J3.6$	3.3	2.9	3.2	3.2
11	2.2	S	$J2.5$	2.3	2.2	2.1	2.3	3.1	3.0	4.3	4.3	$J6.0$	$J5.4$	3.7	3.7	4.1	$J2.4^{S}$	2.3	2.3	2.2	2.4	2.4	S	S
12	$J2.8$	S	E	S	S	S	S	S	S	3.0	3.1	3.8	3.2	3.4	3.4	$J4.3$	3.1	3.3	3.3	$J4.7$	$J4.4$	3.1	3.0	S
13	S	S	S	S	C	C	C	C	C	C	G	S	3.0	G	G	4.0	$J3.3$	S	S	3.3	$J4.3$	3.3	3.6	S
14	3.6	2.3	2.2	S	S	S	S	3.1	$J4.5$	$J4.9$	$J4.9$	$J7.4$	$J5.6$	$J4.4$	4.5	3.3	G	3.1	$J13.2^{Y}$	$J14.3$	$J8.5$	$J6.4$	$J8.4$	$J8.2$
15	$J2.5$	3.6	$J2.6$	$J2.3$	$J5.2$	2.3	S	S	G	3.3^{S}	4.8^{M}	4.8^{M}	5.6	3.1^{G}	4.1^{M}	2.4^{G}	B	S	3.7	3.2^{M}	$J3.4$	$J3.7^{S}$	3.2^{M}	4.9^{M}
16	3.1^{M}	E	3.1^{M}	E	$J2.9$	S	2.3	G	G	4.0	S	G	S	S	S	2.9	3.1	S	S	2.3	S	S	S	S
17	3.3	$J3.7$	3.3	2.3	4.2	2.2	3.1	2.8	3.1	S	2.9^{G}	S	3.4	G	3.1^{G}	G	3.1	3.2^{M}	3.2	2.2	S	S	S	S
18	S	S	S	E	E	2.2^{M}	S	G	2.5^{G}	3.4	3.4	$J4.1^{S}$	4.1	S	3.4	3.3	2.9	2.2^{S}	S	S	S	S	3.3^{M}	2.2^{M}
19	2.3^{M}	S	E	2.3	S	S	S	S	G	3.4	3.4	4.1^{S}	3.1^{G}	3.4^{S}	S	S	3.0	2.4	2.2^{M}	S	2.1	4.1^{M}	3.2^{M}	S
20	S	S	E	2.0^{M}	1.9	S	2.5	S	G	3.2^{S}	3.4	4.0^{S}	3.6^{S}	4.1	3.3^{S}	S	3.2	3.2	3.4	3.0^{M}	2.5^{M}	2.3	2.3	2.3^{M}
21	$J3.2$	S	E	E	2.3^{M}	S	S	G	G	3.2	3.4	$J3.5$	3.4	G	S	3.3	S	3.2^{S}	2.3^{M}	S	2.4^{M}	2.4^{M}	1.9	S
22	S	S	S	S	E	S	S	G	G	3.4^{S}	3.8^{S}	S	$J3.7$	G	G	4.6	3.3	4.3	4.0^{M}	4.0^{M}	5.8^{M}	$J4.0^{S}$	3.3^{M}	$J4.8$
23	S	S	2.3	E	2.2^{M}	E	S	G	3.1	2.4^{G}	4.2	4.8^{M}	5.3^{M}	5.3^{M}	5.9^{M}	5.8^{M}	5.6^{M}	3.6	$J3.8^{S}$	2.2^{M}	2.2	S	$J2.5$	$J4.3$
24	S	S	E	E	E	S	2.2	G	2.4^{G}	5.7^{M}	$J4.4$	3.3	G	G	S	S	G	2.4	S	3.1^{M}	S	2.9^{M}	2.1^{S}	3.7^{M}
25	2.3^{M}	2.3^{M}	$J3.3$	2.7^{M}	2.3^{Y}	2.2^{Y}	S	G	3.2	3.1	2.9	3.1	2.9	S	G	3.3	S	S	3.7	S	2.2	S	S	S
26	S	S	S	S	S	S	S	G	3.0	4.1	S	3.1	3.2	G	G	S	2.9	2.4	S	S	S	S	S	S
27	S	S	S	E	S	S	3.1	S	3.5	3.4	G	3.0	G	G	G	S	G	S	S	S	S	S	S	S
28	S	S	S	2.9	E	S	2.8	S	3.1	3.2	3.3	4.1	S	S	S	G	G	S	S	S	S	S	S	S
29	S	S	S	S	E	S	S	S	3.5	G	3.3	G	3.8	3.6	3.1^{G}	3.0^{G}	3.2^{Y}	4.4	4.9^{M}	5.1	3.1^{M}	S	S	S
30	S	3.3^{M}	3.2^{M}	2.4^{M}	2.4	2.3^{M}	G	2.5^{G}	G	$J3.8$	4.1	3.7^{S}	S	S	3.4	3.4	2.5	2.3^{Y}	S	S	2.1	S	S	S
31	2.4^{M}	S	S	E	E	S	S	G	3.2	3.6	3.4	G	3.9	3.7	G	3.9	3.6	$J3.7$	2.3	S	S	S	2.1	S
No.	10	10	16	20	20	8	9	15	26	23	25	24	24	24	26	23	26	19	18	18	17	14	18	11
Median	2.6	2.3	2.2	E	1.8	2.2	2.3	G	G	3.4	3.4	3.7	3.3	G	G	3.3	3.0	3.2	3.2	3.1	3.1	3.2	3.1	3.2
U.Q	3.2	3.3	2.8	2.3	2.3	2.3	3.0	2.5	3.1	3.8	4.0	4.1	4.0	3.6	3.4	3.9	3.2	3.6	3.7	3.6	4.4	4.0	3.3	4.8
L.Q	2.3	2.2	E	E	E	2.2	2.2	G	G	3.1	2.7	3.0	G	G	G	2.9	2.5	2.4	2.3	2.3	2.3	2.9	2.3	2.3
Q.R	0.9	1.1				0.1	0.8			0.7	1.3	1.1				1.0	0.7	1.2	1.4	1.3	2.1	1.1	1.0	2.5

foEs

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

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	2.0	2.2	1.7	S	S	S	2.9	S	S	B	S	3.5	3.3	S	B	S	2.8	S	2.0	2.2	A	2.4
2	S	S	S	1.8		S	S	S		3.2	E2.5R			3.7S	3.3	3.5	2.9	2.3	S	S	S	S	E2.4S	S
3	S	S	S			S	S	2.4		S		3.7		S			3.0	S	S	S	S	S	E	S
4	S	2.0		C	C	C	C	C	C	B		B	S			B		S	S	S	S	S	S	S
5	S	2.2	S	S	1.8	2.2	2.1	S	S	S	S	S	S			S	E3.3S	3.3	2.6	E2.3S	S	S	S	S
6	S	S	S	S	S	S	S	S		S	S				E4.1S		2.9	2.7	2.1	3.1	AS	2.1	E2.3S	2.2
7	S	2.1	S	S	S	S	S		2.9	3.1	3.4	E3.8S				2.9	E2.5S	S	S	2.1	S	S	S	S
8	S	S	S	E	S	S	S	S		E2.5R	3.8	3.6	E3.2S	E3.1R	E3.3S	3.6S	3.0	S	S	2.7	2.2	2.7	3.2	1.8
9	S	E	1.7			S	S	S	E2.5S	G		E3.7S	4.3			3.0	S	E2.3S	E	2.2	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C		E3.2S	E2.5S	S	E2.3S	S	3.2	2.2	2.2	2.2
11	2.0	S	2.1	1.9	1.7	1.9	2.1	2.5	2.9	3.7	4.1	4.5	4.5	3.5	3.4	3.6	E2.4S	E2.3S	2.1	2.2	2.1	2.2	S	S
12	S	S		S	S	S	S	S	S	E3.0S	E3.1S	E3.8S	E3.2S	G	E3.4S	4.1	2.8	2.9	E3.3S	2.6	AS	2.6	2.8	S
13	S	S	S	S	C	C	C	C	C	C		S	E3.0S			3.3	E3.3S	S	S	S	2.1	2.6	2.2	S
14	S	2.2	E	S	S	S	S	2.7	4.0	4.4	3.9	6.3	5.2	4.0	4.4	3.2		3.1	4.7	A	A	1.9	AS	A
15	2.2	E	1.7	1.6	1.8	2.1	S	S		E3.3S	4.3	4.4	5.1	E3.1S	3.3	E2.4R	B	S	3.2	3.0	2.8	A	1.9	U2.9A
16	2.7		2.2		1.9	S	S			3.8	S		S	S	S	E2.9S	2.8	S	S	E	S	S	S	S
17	2.1	2.8	2.2	E	1.8	2.2	2.1	2.8	E3.1S	S	E2.9S	S	E3.4S		E3.1S		3.1	2.7	3.2	2.0	S	S	S	S
18	S	S	S			E	S		E2.5R	U3.4S	E3.4S	U4.1S	E4.1S	S	3.4	3.3	2.8	E2.2S	S	S	S	S	2.1	1.9
19	E	S		1.7	S	S	S	S		3.4	U3.4S	U3.8S	E3.1R	3.3	S	S	2.9	2.2	E	S	2.0	2.7	2.1	S
20	S	S		E	1.8	S	S	S		U3.2S	3.4	U3.9S	3.6	U4.0S	E3.3S	S	E3.2S	3.0	2.8	2.1	2.1	E	2.0	E
21	2.7	S			E	S	S			3.2	E3.4S	E3.5S	E3.4S		S	3.1	S	2.7	2.1	S	2.1	E	1.9	S
22	S	S	S	S		S	S			3.4S	3.5	S	U3.7S			3.9	2.8	3.5	2.4	2.7	2.7	2.7	1.9	1.9
23	S	S	E		1.7		S		3.1S	E2.4S	4.2	4.2	5.1	4.2	5.1	4.5	4.5	2.7	3.2	E	2.1	S	E	2.8
24	S	S				S	S		E2.4R	4.5	3.7	U3.3S			S	S		2.3	S	2.3	S	2.0	2.1	2.1
25	2.1	E	2.8	2.0	E	1.9	S		3.2S	E3.1S	E2.9S	E3.1S	E2.9S	S		S	S	S	2.8	S	2.0	S	S	S
26	S	S	S	S	S	S	S		E3.0S	E4.1S	S	E3.1S	E3.2S			S	2.8	E2.4S	S	S	S	S	S	S
27	S	S	S		S	S	2.3	S	E3.5S	3.4		E3.0S				S		S	S	S	S	S	S	S
28	S	S	S	E		S	G	S	3.0	E3.2S	E3.3S	3.7	S	S	S			S	S	S	S	S	S	S
29	S	S	S	S		S	S	S	2.9		E3.3S		3.8	E3.6S	E3.1R	E3.0S	2.8	3.9	4.0	3.0	2.1	S	S	S
30	S	E	1.8	1.8	1.6	E		2.3G		3.2	4.0	E3.7S	S	S	3.4S	3.4	E2.5R	2.2	S	S	1.8	S	S	S
31	1.8	S	S			S	S		3.2	3.5	E3.4S		E3.9S	3.6		3.8	E3.6S	3.3	E2.3S	S	S	S	2.0	S
No.																								
Median																								

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	E2.00S	E2.05S	E1.70S	E1.65S	E1.60S	E1.70S	E2.00S	E2.75S	2.10	E3.00S	E4.30S	3.60	E4.10S	2.90	2.60	E3.10S	2.80	E2.10S	E2.00S	E1.80S	E1.70S	E1.80S	E1.90S	E1.90S
2	E1.60S	E1.90S	E1.60S	1.40	1.40	E1.50S	E1.80S	E2.50S	2.10	2.20	2.10	2.80	2.90	2.30	2.10	2.20	2.10	1.60	E2.00S	E1.80S	E1.70S	E1.80S	E1.90S	E2.10S
3	E1.70S	E1.80S	E1.70S	1.20	1.40	E1.95S	E1.80S	1.50	2.00	E3.00S	2.10	2.20	2.80	E3.20S	2.75	2.20	1.90	E2.30S	E1.80S	E1.80S	E2.00S	E1.90S	E1.70S	E1.80S
4	E1.80S	E1.80S	1.45	C	C	C	C	C	C	3.00	2.80	3.50	E3.80S	2.75	2.80	3.00	2.15	E2.20S	E1.70S	E1.80S	E1.95S	E1.90S	E1.80S	E1.80S
5	E1.80S	E1.80S	E1.60S	E1.50S	E1.60S	E1.60S	E1.60S	E2.60S	E2.80S	E4.00S	E3.45S	E4.25S	E4.00S	2.20	2.80	E4.40S	E2.70S	E2.20S	E1.75S	E2.10S	E2.10S	E2.15S	E2.40S	S
6	E2.50S	E2.05S	E1.70S	E1.80S	E1.70S	E2.10S	E2.10S	E2.60S	E2.10S	E3.50S	E4.50S	2.75	2.70	2.70	2.80	2.75	2.20	E2.15S	E1.90S	E1.80S	E1.80S	E1.70S	E1.95S	E2.00S
7	E1.80S	E1.80S	E1.65S	E1.70S	E1.55S	E1.90S	E1.90S	2.05	2.00	2.10	2.70	2.70	2.65	2.60	2.65	2.25	E2.10S	E2.75S	E1.90S	E1.95S	E1.90S	E2.10S	E2.10S	S
8	E2.20S	E1.90S	E1.65S	1.10	E1.65S	E2.15S	E2.10S	E2.70S	2.20	2.20	2.80	2.80	2.80	2.80	2.70	2.60	2.15	E2.20S	E1.80S	E2.00S	E2.00S	E1.50S	E1.50S	E1.60S
9	E1.60S	1.60	1.50	1.50	1.20	E1.90S	E1.90S	E2.40S	2.10	2.15	2.15	2.85	2.75	2.75	2.60	2.20	E2.90S	E2.10S	E2.00S	E2.05S	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.80	2.20	2.00	E2.70S	E1.85S	E2.10S	E1.90S	E2.05S	E1.90S	E1.90S
11	E1.90S	E2.00S	E1.60S	1.10	1.00	E1.60S	1.80	2.15	E2.70S	2.05	E2.90S	E2.75S	2.20	2.20	2.20	2.25	2.05	E2.15S	E1.90S	E2.00S	E1.70S	E1.95S	E2.05S	E1.95S
12	E1.80S	E1.70S	1.30	E1.75S	E1.65S	E1.75S	E2.00S	E2.60S	E2.85S	2.00	E2.80S	2.75	2.70	2.25	E2.90S	2.20	E2.70S	2.05	E2.00S	E2.00S	E1.95S	E1.95S	E2.00S	E2.15S
13	E2.00S	E1.80S	E1.65S	E1.65S	C	C	C	C	C	C	2.60	E4.50S	1.65	2.75	2.50	2.05	2.05	E2.30S	E2.80S	E1.85S	E1.80S	E2.00S	E1.90S	E2.40S
14	E2.10S	E2.05S	E1.60S	E1.70S	E1.60S	E2.10S	E2.30S	2.00	E2.70S	E2.80S	2.25	2.30	2.70	2.75	2.70	2.10	2.05	E2.60S	E2.20S	E1.75S	E2.00S	E1.70S	E1.70S	E1.80S
15	E1.70S	E1.70S	E1.60S	1.10	1.10	E1.95S	E2.05S	E2.70S	2.20	2.65	2.40	2.80	2.80	2.80	2.80	2.15	2.80	E2.60S	E2.15S	E2.10S	E2.00S	E2.00S	E1.50S	E1.70S
16	E1.90S	1.60	E1.70S	1.50	1.50	E1.80S	E2.10S	E2.10S	2.15	2.15	E3.55S	2.80	E4.60S	E4.50S	E3.60S	2.15	2.05	E2.75S	E2.10S	E2.10S	E2.90S	E2.85S	E2.10S	E2.00S
17	E1.90S	E1.60S	E1.60S	E1.65S	1.15	E1.70S	E1.80S	2.05	2.65	E3.30S	E2.60S	E3.70S	2.90	2.80	2.10	2.60	2.10	1.90	E1.80S	E1.90S	E1.70S	E1.80S	E1.60S	E2.10S
18	E1.80S	E1.80S	E1.80S	1.10	1.20	E1.60S	E1.95S	E2.10S	2.10	2.55	E3.05S	2.80	2.90	E3.50S	2.85	2.10	2.65	E2.00S	E2.00S	E2.00S	E1.90S	E1.80S	E1.60S	E1.70S
19	E1.80S	E1.70S	1.40	1.40	E1.80S	E1.80S	E2.10S	E2.60S	2.10	2.05	2.95	2.95	2.90	E3.00S	E3.80S	E3.50S	2.20	E1.75S	E1.70S	E1.80S	E1.80S	E1.80S	E1.60S	E2.70S
20	E1.70S	E1.70S	1.50	E1.70S	E1.60S	E1.70S	E1.95S	E2.50S	2.20	2.20	3.00	3.10	3.10	2.90	E2.90S	E3.30S	2.20	E1.60S	E1.80S	E1.60S	E1.80S	E1.80S	E1.70S	E1.95S
21	E1.60S	E1.60S	1.50	1.60	1.50	E1.70S	E2.10S	E2.10S	2.05	2.95	E3.00S	2.80	2.60	2.20	E3.50S	2.10	E3.50S	E2.10S	E1.95S	E1.80S	E1.85S	E1.90S	E1.70S	E1.80S
22	E2.00S	E1.60S	E1.90S	E1.80S	1.20	E1.90S	E2.00S	E2.10S	2.15	2.60	E2.75S	E3.90S	2.80	2.70	2.80	2.20	1.80	E1.95S	E1.90S	E1.80S	E1.90S	E1.70S	E1.60S	E1.80S
23	E1.60S	E1.90S	1.40	1.00	1.15	1.60	E2.10S	E2.10S	E2.80S	2.10	2.70	2.80	E3.20S	2.80	2.70	2.30	2.30	E1.70S	E1.70S	E1.90S	E1.70S	E1.80S	E1.80S	E1.75S
24	E1.90S	E1.80S	1.60	1.50	1.65	E1.70S	E1.80S	E2.20S	2.00	2.20	2.20	2.25	2.80	2.80	E3.30S	E3.00S	2.20	E1.90S	E2.10S	E1.95S	E1.90S	E1.90S	E1.90S	E1.50S
25	E1.70S	E1.70S	E1.90S	1.05	1.20	E1.50S	E2.10S	E2.05S	2.05	2.10	2.60	2.20	2.75	E4.50S	2.85	E2.95S	E3.25S	E2.65S	E2.10S	E2.15S	E1.55S	E1.90S	E2.05S	E1.90S
26	E1.75S	E1.80S	E1.70S	E1.75S	E1.70S	E1.90S	E2.10S	1.75	E2.80S	2.15	E3.60S	2.75	E3.05S	2.80	2.65	E3.65S	1.95	E2.25S	E2.15S	E1.65S	E2.10S	E2.00S	E2.10S	E1.70S
27	E2.10S	E1.95S	E1.90S	1.10	E1.60S	E2.10S	E2.10S	E2.80S	2.00	2.10	2.10	2.85	2.75	2.55	2.75	E3.55S	2.10	E2.10S	E2.20S	E2.15S	E2.15S	E1.90S	E2.00S	E2.15S
28	E1.90S	E2.00S	E1.70S	1.05	1.10	E1.70S	E2.15S	E2.70S	2.00	2.05	2.80	2.80	E3.60S	E4.05S	E4.05S	2.55	2.10	E2.90S	E2.15S	E2.15S	E2.05S	E2.00S	E2.05S	E1.95S
29	E1.85S	E2.00S	E1.55S	E1.75S	1.05	E1.85S	E2.65S	E2.80S	1.90	2.70	2.80	2.70	2.80	2.20	2.70	2.70	2.00	E2.00S	E1.80S	E1.95S	E1.95S	E2.10S	E2.60S	E2.30S
30	E2.30S	E1.90S	E1.50S	1.40	1.10	E1.70S	E1.80S	E1.50S	2.10	2.60	2.70	E3.20S	E4.30S	E4.50S	3.10	2.70	2.20	E1.80S	E1.80S	E2.10S	E1.60S	E1.90S	E1.80S	E1.80S
31	E1.70S	E1.70S	E1.80S	1.50	1.50	E1.70S	E2.20S	1.80	2.10	2.60	2.75	2.75	E3.35S	2.70	2.60	2.05	2.05	1.65	E1.90S	E2.05S	E1.90S	E2.00S	E1.90S	E2.05S
No.	30	30	30	17	17	28	28	28	22	23	20	25	21	23	24	23	26	31	31	31	30	30	30	28
Median	E1.80	E1.80	E1.60	1.20	1.20	E1.70	E2.00	E2.20	2.10	2.20	2.65	2.80	2.80	2.75	2.70	2.20	2.10	E2.10	E1.90	E1.95	E1.90	E1.90	E1.90	E1.90

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

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

Mar. 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	2.85	2.90^{S}	3.00^{S}	3.15	3.20	3.05	2.80^{S}	U3.45^{S}	3.25	J3.45^{S}	3.25	U3.40^{R}	J3.30^{S}	U3.50^{S}	3.25	3.35	3.25^{R}	J3.50^{S}	3.40	3.15	3.40	3.30	T2.85^{A}	2.90^{S}
2	2.85	3.00	3.10^{S}	3.10	3.50	2.90	3.45^{S}	3.50	J3.35^{R}	3.35	3.25	3.35^{R}	I3.35^{R}	J3.25^{R}	3.50	3.40^{S}	3.55	3.55	3.40	3.15^{S}	3.00	I2.95^{S}	3.05^{S}	U3.15^{S}
3	3.05	3.10	3.25^{S}	3.55	3.75	2.95	3.30	3.45	U3.50^{R}	3.40^{S}	U3.25^{R}	I3.35^{S}	I3.30^{R}	J3.40^{R}	3.30	3.40	3.40	3.60	3.45	2.95^{S}	3.00^{S}	J3.35^{S}	3.10	2.90
4	2.90	3.00	3.00^{S}	C	C	C	C	C	C	S	3.45	3.25	J3.40^{R}	3.35^{S}	3.25	3.25	3.40	3.35	J3.40^{S}	J3.25^{S}	3.20^{S}	U3.15^{S}	2.95	2.95
5	3.10^{S}	I3.00^{S}	U2.95^{S}	3.05	3.15^{S}	3.20	J3.50^{S}	J3.60^{R}	J3.45^{S}	3.35^{S}	3.30^{S}	3.25	3.05^{S}	U3.20^{S}	3.25^{S}	U3.25^{S}	3.30^{S}	U3.25^{S}	3.35^{S}	3.30^{S}	U3.25^{S}	2.85	2.75^{S}	I2.70^{S}
6	U2.95^{S}	2.80^{S}	2.90	2.90	3.00	U3.05^{S}	3.15^{S}	3.50^{S}	U3.25^{S}	3.35	3.35^{S}	U3.25^{S}	J3.50^{S}	3.40	3.35^{S}	3.30	3.30	U3.45^{S}	3.40	3.40^{S}	I3.20^{S}	2.90^{S}	U3.05^{S}	I2.80^{S}
7	2.85^{S}	2.80^{S}	U2.80^{S}	U3.10^{S}	3.00^{S}	3.10	3.05^{S}	3.25^{S}	U3.30^{S}	U3.45^{S}	3.25^{S}	U3.00^{S}	U3.25^{S}	U3.30^{S}	J3.35^{S}	3.50^{S}	3.20	U3.45^{S}	3.50	3.25	2.90	2.75^{S}	2.75	I2.80^{S}
8	2.90^{S}	2.90^{S}	2.95^{S}	2.90^{S}	3.25^{S}	3.30	U3.40^{S}	3.40^{S}	3.35	3.30	3.15	3.15	3.35^{S}	3.50^{R}	3.05	3.20	J3.35^{S}	U3.55^{S}	3.40	3.10	2.90	3.10	J2.90^{S}	2.70
9	U2.85^{S}	J3.15^{S}	3.35^{S}	2.90	2.70	3.05	U3.25^{S}	3.35^{S}	3.35^{S}	3.10	U3.00^{S}	3.20	3.25^{S}	U2.85^{S}	3.35^{S}	U3.30^{S}	3.30	3.20^{S}	J3.30^{S}	2.85^{S}	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	U3.20^{S}	U3.10^{S}	U3.35^{S}	U3.30^{S}	3.45	I3.10^{S}	3.10^{S}	2.85	2.90^{S}	2.90
11	2.75	2.65	2.80^{S}	U2.85^{S}	2.65	2.85^{S}	U3.15^{S}	3.25^{S}	3.30^{S}	3.30	3.00	3.15	3.35	3.20	3.30	3.40	3.40^{S}	3.40	3.05^{S}	3.10^{S}	3.10^{S}	3.10	U3.00^{S}	U2.85^{S}
12	I2.85^{S}	I2.60^{E}	U2.65^{S}	2.80^{E}	3.20^{S}	3.20^{S}	3.15^{S}	3.40	3.30^{S}	3.35^{S}	3.05^{S}	J3.30^{S}	3.10	3.25	3.20^{S}	J3.25^{S}	U3.25^{S}	U3.40^{S}	3.40	2.45^{S}	I2.90^{A}	2.85^{S}	2.80^{S}	2.95
13	2.75	2.90	2.80	2.80	C	C	C	C	C	I3.40^{C}	3.25	2.90^{S}	U3.15^{S}	3.35^{S}	3.30^{S}	3.25	3.20^{S}	3.25^{S}	3.35^{S}	I3.25^{S}	U3.25^{S}	3.10^{S}	2.95^{S}	2.75
14	I2.75^{S}	2.80	2.70	2.85	3.30^{S}	I3.05^{S}	U3.15^{S}	3.35^{S}	U3.30^{S}	3.30^{S}	2.95^{S}	U3.20^{S}	3.20^{S}	3.25	3.25^{S}	3.25^{S}	U3.30^{S}	3.20^{S}	A	A	A	3.05^{A}	I2.90^{A}	I3.05^{A}
15	3.00^{S}	3.10^{S}	2.85^{S}	2.95^{S}	2.75^{S}	2.85^{S}	3.15^{S}	3.45	3.25	3.40	3.40	3.10	R	J3.35^{R}	3.40	3.50	J3.40^{R}	3.35^{S}	3.50	3.65^{S}	3.35^{S}	I3.00^{A}	2.80	2.95
16	2.95^{S}	2.90	U3.05^{S}	J3.30^{S}	3.55	2.75^{R}	J3.50^{S}	3.55^{R}	3.40	3.25^{S}	3.20	3.05^{S}	3.10	3.25^{S}	3.35	U3.15^{S}	3.35	3.25^{S}	U3.25^{S}	3.40^{S}	U3.20^{S}	U2.80^{S}	2.80^{S}	2.70^{S}
17	2.85^{S}	2.80^{S}	U2.75^{S}	2.95	2.75^{S}	3.20^{S}	3.25^{S}	3.30^{S}	3.45	3.45	3.35	3.15	3.40^{R}	J3.15^{R}	J3.15^{R}	S	3.30^{S}	3.25	3.30	3.35	3.55	2.90	2.95	2.95^{S}
18	2.95^{S}	2.90	2.95	3.05	3.30	J2.85^{R}	3.40	J3.45^{R}	3.40	3.25	3.10	I3.05^{R}	I3.20^{R}	3.30	3.20	J3.25^{S}	3.30	3.40	J3.35^{S}	3.25^{S}	J2.95^{S}	J3.00^{S}	I3.25^{S}	3.15
19	2.90^{F}	J3.00^{S}	F	2.95	U3.30^{S}	3.35	U3.75^{S}	3.40	3.25	3.25	J2.85^{S}	3.15^{R}	3.20^{S}	J3.25^{R}	3.65	3.45	3.25^{S}	3.25	U3.40^{S}	3.35	3.40	2.90	2.80	U2.90^{S}
20	2.95	U3.10^{S}	3.20	3.25^{S}	3.25	3.35	J3.60^{S}	U3.50^{S}	3.45	3.35^{R}	3.05	3.25	3.40	J3.20^{R}	J3.25^{R}	J3.30^{S}	U3.30^{S}	3.30^{S}	J3.55^{S}	3.65^{S}	2.95	2.95^{S}	2.80	2.90^{S}
21	2.95	2.95	3.05	3.20	J3.40^{S}	3.05^{S}	J3.65^{S}	3.50	3.30^{R}	3.30	3.25	3.25	3.20^{S}	3.30	J3.30^{R}	J3.20^{S}	3.20	U3.45^{S}	J3.40^{S}	I3.50^{S}	S	3.25	2.75	2.80
22	2.80	2.90	U2.95^{S}	J3.30^{S}	3.45^{R}	J3.10^{S}	3.55	3.55^{S}	3.40	3.45	3.20	3.20	3.25^{R}	3.30	3.15^{S}	U3.15^{S}	3.30^{S}	3.30^{S}	3.45	3.30	3.05^{S}	J2.85^{S}	I2.85^{S}	F
23	F	S	F	S	3.30^{S}	3.40	3.45	2.85^{R}	U3.50^{S}	3.40	3.40	3.30	3.10	J3.15^{R}	J3.25^{R}	J3.15^{R}	J3.30^{R}	3.25^{S}	3.35	3.35	3.40^{S}	J3.20^{S}	3.60^{S}	J3.10^{S}
24	J2.90^{S}	2.90	U3.00^{S}	2.90^{S}	3.30	3.40	3.45^{S}	3.40	3.10	J3.15^{R}	J3.25^{S}	J3.35^{R}	J3.35^{S}	3.25	3.20^{S}	3.35	3.30	3.35	3.20	J3.45^{S}	3.45^{S}	3.15	2.95	2.80
25	2.95	2.95	2.95	3.10	3.25	J3.05^{S}	3.45	3.65	J3.40^{R}	3.40^{S}	3.15	J3.20^{S}	J3.35^{S}	3.20	3.15	3.10	3.25	3.25^{S}	U3.40^{S}	3.45^{S}	U3.20^{S}	2.80	2.60^{S}	2.70^{S}
26	2.75	2.60	2.95	3.00	3.30	3.30^{S}	3.25	3.35	3.35	3.45^{S}	3.05	3.10	3.10	U3.05^{S}	U3.20^{S}	3.20	U3.20^{S}	3.25^{S}	U3.20^{S}	3.60	U3.20^{S}	2.85^{S}	U2.90^{S}	U2.75^{S}
27	2.75^{S}	2.85^{S}	2.65^{S}	3.05^{S}	3.35	2.95^{S}	3.35^{S}	3.25^{S}	3.30	3.15^{S}	U3.25^{S}	3.25	3.20	J3.15^{S}	3.10^{S}	3.25^{S}	U3.30^{S}	3.25	3.30	U3.40^{S}	U3.25^{S}	2.85	2.70	U2.60^{S}
28	2.80	U3.00^{S}	U3.15^{S}	3.30	3.35	2.90	U3.30^{S}	3.30	3.35	3.15	3.25^{S}	3.05^{R}	3.10^{R}	3.45^{S}	3.35^{S}	3.25	3.35	U3.25^{S}	3.30	3.25^{S}	3.10^{S}	2.80^{S}	2.75^{S}	2.70^{S}
29	U2.85^{S}	2.90^{S}	2.90^{S}	2.95^{S}	3.05	2.95	3.15^{S}	3.35	3.35^{S}	3.30	3.35	3.00^{R}	3.30	J3.20^{R}	J3.20^{R}	J3.10^{S}	3.35	3.45	3.35	3.20	3.05	U3.00^{S}	2.95^{S}	U3.00^{S}
30	J3.05^{R}	3.05	3.25	J3.25^{S}	3.15	2.95	3.45	3.45	J3.25^{R}	3.30	3.40	3.10	J3.30^{R}	J3.30^{R}	3.30	3.20	3.20	3.35	J3.20^{S}	3.20	3.35	S	2.85	F
31	J3.05^{S}	I3.10^{F}	J3.10^{S}	2.95	3.05	3.05	J3.50^{R}	3.55	3.55	3.25	3.15^{S}	3.00^{S}	3.25	3.10^{S}	3.05^{S}	U3.10^{S}	U3.25^{S}	U3.25^{S}	3.30^{S}	3.30	U3.05^{S}	2.80	2.80^{S}	2.65^{S}
No.	29	29	29	29	28	28	28	28	28	29	30	30	29	30	31	30	31	31	30	30	28	29	30	28
Median	2.90	2.90	2.95	3.05	3.25	3.05	3.40	3.40	3.35	3.30	3.25	3.20	3.25	3.25	3.25	3.25	3.30	3.35	3.40	3.25	3.20	2.95	2.85	2.80

M(3000)F2 | Sweep 40 Mc to 240 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

Mar. 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										L	S	"3.75L	L	L	L	L								
2									L	L	L	L	L	L	L	L								
3									L	L	"3.85L	L	I3.60L	"3.65L	L	L	L							
4							C	C	C	LH	L	"4.05L	L	L	L	L	L							
5									L	S	3.95	S	S	S	S	S	S							
6									L	L	S	S	L	L	S	L	S							
7									L	L	L	L	L	S	L	L	S							
8									L	L	"3.85L	3.75	L	L	L		L							
9										L	S	L	L	L	L	S								
10							C	C	C	C	C	C	C	C	S	L								
11									L	L	A	A	A	L	L	S								
12									L	L	S	S	L	S	S	A	S							
13							C	C	C	C	L	L	L	L	S	L	S	L						
14										A	S	A	A	L	A	S	S							
15									L	L	3.80L	A	A	"3.50L	L	L	L							
16										L	L	S	S	S	L	S	S							
17									S	L	L	3.60L	"3.70L	L	L	L								
18									L	L	L	L	L	L	L	L	L							
19									L	L	3.55	L	L	"3.75L	L	L								
20											"3.60L	3.65L	3.60L	L	L	L								
21										L	L	L	L	L	L	L	L							
22										L	L	3.60L	L	"3.75L	L	L	L							
23									L	L	L	L	A	L	A	A	A							
24									L	A	3.75L	"3.65L	3.75L	L	L	L	L							
25									L	L	S	L	S	S	L	S	S	L						
26									S		L	S	L	S	S	L	S	L						
27									S	L	L	3.70L	L	S	S	L	L							
28									L	L	S	L	S	L	S	S	L							
29									L	L	L	3.80	"3.45L	L	L	L	L	A						
30								L	L		L	L	L	S	"3.60L	L	L	L						
31									L	L	S	L	S	3.60L	L	S	S							
No.											7	9	5	5	1									
Median											3.80	3.70	"3.60	"3.65	"3.60									

M(3000)F1 | Sweep 1.0 Mc to 20.0 Mc in 2.0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

K 8

40

IONOSPHERIC DATA

Mar. 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										255	255	250	260	245	255	255								
2									240	260	260	260	275	260	250	240								
3									240	250	275	255	285	250	265	250	235							
4							C	C	C	245	255	260	260	260	255	260	250							
5									250	260	260	265	270	275	270	260	260							
6									215	230	260	275	250	260	255	265	255							
7									245	245	260	330	275	265	260	250	260							
8									250	250	265	295	255	245	275		255							
9										275	270	270	250	275	255	260								
10							C	C	C	C	C	C	C	C	270	275								
11									250	260	255	280	260	265	260	260								
12									260	260	265	290	270	255	260	260	255							
13							C	C	C	C	240	330	280	255	255	270	255	230						
14										270	260	310	260	250	260	255	260							
15									255	260	250	285	275	255	245	245	250							
16										260	285	315	280	265	260	275	260							
17									235	255	260	295	270	285	285	275								
18									250	260	285	285	275	255	275	260	255							
19									260	260	340	270	270	260	245	250								
20											320	300	255	300	260	260								
21										255	275	285	275	285	270	285	275							
22										255	275	285	280	275	285	285	255							
23									255	260	280	295	270	275	260[A]	270[A]	250[A]							
24									260	280[A]	270	275	255	250	285	260	260							
25									255	265	295	275	265	275	285	275	260	255						
26									250		295	295	275	310	265	275	260	255						
27									260	280	275	280	275	280	275	275	255							
28									260	280	280	320	295	260	245	260	255							
29									265	275	255	305	275	285	280	280	255	250[A]						
30								255	250		255	300	280	275	270	275	255	250						
31									250	270	300	315	275	275	290	280	270							
No.								1	21	26	30	30	30	30	31	30	23	5						
Median								255	250	260	270	285	275	265	260	260	255	250						

h'F2

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

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

Mar. 1963 | h'F | 135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

42

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	295	275	255	230	230	265	255	230	225	195	I 210 S	200	E 250 S	215	200	205	225	225	230	240	225	255 A	I 300 A	E 305 A
2	300	280	260	260	205	305	235	225	205	220	205	250 A	225	225	225	235	225	220	210	250	260	295	E 300 S	260
3	270	250	255	225	200	310	245	225	225	205	210	E 250 A	255	220	210	210	225 A	210	210	255	275	230	260	300
4	305	295	260	C	C	C	C	C	C	175 H	210	200	225	205	E 250 S	225	210	220	215	230	225	245	295	305
5	285	305	295	285	260	260	210	205	225	I 210 S	235	I 230 S	210	I 255 S	I 245 S	I 250 S	I 240 S	230	225	230	215	330	300	I 320 S
6	310	305	275	275	245	260	225	220	215	215	I 210 S	225	250	220	I 210 S	220	230	225	215	230 A	A S	275	305	270
7	265	290	270	255	225	245	230	230	230	210	210	230	215	210	210	225	225	225	205	215	255	310	325	I 330 S
8	330	275	250	230	205	295	225	215	210	205	225	225	190	205	205	E 260 A	225	225	210	260 A	280	250 A	E 345 A	310
9	310	255	240	300	300	295	245	245	225	220	I 210 S	260	245	E 265 S	215	225	230	225	215	E 305 A	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	210	225	255	230	215	I 240 S	285	300	280	325
11	310	325	275	275	305	280	250	235	220	225	A	A	A	210	230	235	235	230	245	265	245	230	260	270
12	I 290 S	275	270	280	220	230	230	230	220	210	I 200 S	I 230 S	245	I 210 S	I 215 S	I 215 A	225	230	I 215 A	E 450 A	A S	255	E 380 A	300
13	325	310	310	275	C	C	C	C	C	I 200 C	210	300	225	245	225	220	I 240 S	225	230	I 225 S	230	260	275	E 350 S
14	S	325	310	275	215	270	230	230	225	I 225 A	210	I 240 A	I 210 A	E 245 A	A	230	235	240	275	A	A	255	I 290 S A	I 270 A
15	260	250	270	260	275	260	220	220	215	220	225	I 255 A	I 250 A	E 275 S	220	225	205	240	220 A	220 A	E 290 A	A	305	E 340 A
16	305 A	300	285	245	205	265	225	220	225	230	210	I 200 S	I 245 S	S	225	I 210 S	230	240	225	220	E 255 S E	305 S	310	305
17	280	E 335 A	320	245	280	245	210	205	I 205 S	205	205	230	E 265 S	205	205	225	E 250 A	245	230	220	205	300	255	E 280 S
18	295	295	275	255	225	310	225	230	245	E 250 S	235	E 255 S	E 325 S	200	210	225	235	240	210	225	305	255	250 A	255
19	310	275	260	280	245	245	205	225	230	225	200	225	245	205	E 255 S	210	240	230	225	210	210	E 355 A	320 A	E 355 S
20	295	255	250	250	210	250	205	225	225	E 255 S	215	230	225	E 260 S	E 250 S	E 270 S	E 255 S	245	225	205	E 295 A	305	310	310
21	E 330 A	290	275	250	210	E 290 S	210	225	235	215	E 250 S	I 230 S	E 250 S	I 225 S	235	205	E 250 S	E 250 A	235	210	210	250 A	300	310
22	310	300	300	250	210	305	210	215	215	205	245	E 255 S	225	210	220	E 280 A	225	E 240 A	210	240 A	270	E 310 A	305	300
23	260	250	240	210	205	305	230	235	225	205	E 250 A	E 255 A	A	E 260 A	A	A	A	240	245	230	250 A	255	300	E 350 A
24	255	275	255	275	215	245	215	230	225	A	210	205	215	225	225	210	230	245	235	225	210	255	270	315
25	305	295	E 340 A	255	210	E 295 S	205	225	230	225	I 230 S	210	I 220 S	I 235 S	210	I 235 S	235	245	230	210	220	310	315	320
26	305	310	300	265	210	235	210	225	I 230 S	255	210	I 200 S	200	I 210 S	S	230	230	245	230	215	225	285	290	270
27	280	280	305	240	225	280	225	225	225	215	210	205	200	205	I 235 S	250	230	240	225	225	230	305	330	315
28	300	300	230	215	195	300	225	235	235	230	215	220	I 235 S	E 275 S	E 255 S	I 220 S	205	255	230	225	245	285	300	285
29	280	275	270	255	230	265	220	230	220	215	205	205	245	225	215	205	225	I 245 A	E 255 A	250 A	245	275	E 305 S	E 300 S
30	295	295	245	240	245	295	225	245	245	260	E 245 A	E 295 S	E 345 S	I 205 S	230	205	205	220	245	235	210	255	305	315
31	300	250	255	250	250	255	230	230	245	210	210	E 300 S	I 215 S	230	210	S	S	240	235	220	225	285	305	320
No.	28	29	29	29	28	26	28	28	28	27	26	23	23	23	24	26	26	29	30	28	24	26	27	26
Median	300	290	270	255	220	265	225	225	225	215	210	230	225	215	215	225	230	230	225	225	230	270	300	305

h'F

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 10

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

Mar. 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			f_z	f	f				l					k	l				f		f	f_z	f_z	f_z
2				f						c	l			$k.l$	l	k	k	l					f	
3								c				k					l_z						f	
4		f																						
5		f_z			f_z	f_z	l_z										l	i	f	f				
6															c		c	l	f	f_3	f_3	f_z	f	f
7		f							c	c	l	l				c	l			f				
8										l	i	l	l	l	l	l_z	l			f_z	f	f_z	f_3	f
9		f_z	f						l	c		l	l			c		l	f	f				
10																l	l		f	f_3	f_z	f_z	f_z	f_z
11	f		f_z	f_z	f	f	k	k	l	c	l	l	l	l	l	c	l	k	f	f	f	f_z		
12	f_z									l	l	l	l	c	l	c	l	l_z	f_3	f_3	f_3	f_z	f	
13													l			l	c			f	f_z	f_z	f_z	
14	$f.f$	f	f					k	l	l_z	c	l_z	l_z	l_z	l_z	c		k	f_z	f_z	f_3	f_3	f_z	f_3
15	f_z	f	f_z	f_3	f_z	f				l	l	l	l	l	l	l			f_z	f_z	f_3	f_z	f	f_3
16	f_z		f		f		k			c						$l.l$	$l.l$			f				
17	$f_z.f_z$	f_z	$f_z.f_z$	f_z	$f_z.f_z$	f_z	$l.l$	k	l		l		l		l		l	l_z	f_3	f				
18						f			i	k	l	l	l_z		l	c	l	l					f_z	f
19	f			f_z						k	l	l	l	l			k	l	f		f	f_3	f_z	
20				f	f		k			k	l	l	l	l	k		l	c_3	f_3	f		f	f_z	f_z
21	f_z				f					k	l	l	l			l		l	f			f		
22										k	c		l			l	l	l_z	f	f_z	f_z	f	f_z	f
23			f		f				$k.l$	l	l	l	l	l	c_z	c_z	c_z	l_z	f_z	f		f	f	f_3
24							l		l	l_3	l	l						l	f		f		f	f_z
25	f_z	f_z	f_3	f_z	f	f			k	c	l	l	l			l								
26									k	c		l	l				k	k						
27							k		k	k		l												
28				f			k		c	k	l	l												
29									k		l		$k.l$	l	l	l	l	l_3	f_3	f_z	f_z			
30		f	f	f_z	f_z	f_z		l		k	l	l			k	l	l	i			f			
31	f_z								c	l	l		l	l		$k.l$	k	k	f					
No.																								
Median																								

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

Types of Es

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	345	330^{S}	325^{S}	275	280	305	335^{S}	$''$255^{S}	260	^{J}290^{S}	295	$''$280^{R}	^{J}295^{S}	$''$260^{S}	295	280	290^{R}	^{J}250^{S}	255	300	260	280	^{I}345^{A}	340^{S}
2	350	315	305^{S}	305	250	320	255^{S}	255	^{J}275^{R}	285	290	290^{R}	^{I}290^{R}	^{J}305^{R}	260	250^{S}	250	250	250	295^{S}	310	^{I}320^{S}	330	$''$300^{S}
3	305	305	300^{S}	250	220	330	295	250	$''$250^{R}	$''$255^{S}	$''$295^{R}	^{I}270^{S}	^{I}300^{R}	^{J}255^{R}	295	255	250	250	255	330	320^{S}	^{J}275^{S}	305	340
4	350	330	305^{S}	C	C	C	C	C	C	S	255	300	^{J}285^{R}	295^{S}	295	290	255	255	^{J}255^{S}	^{J}290^{S}	280^{S}	$''$285^{S}	320	345
5	310^{S}	^{I}330^{S}	$''$330^{S}	330	305^{S}	300	^{J}255^{S}	^{J}245^{R}	^{J}255^{S}	270^{S}	275^{S}	280	305	$''$285^{S}	280^{S}	$''$280^{S}	260^{S}	$''$255^{S}	260^{S}	260	$''$270^{S}	350	360^{S}	^{I}360^{S}
6	$''$320^{S}	360^{S}	335	320	300	$''$300^{S}	275^{S}	325^{S}	$''$245^{S}	250	270^{S}	$''$280^{S}	^{J}255^{S}	265	260^{S}	265	265	$''$255^{S}	245	255^{S}	^{I}280^{S}	320^{S}	$''$310^{S}	^{I}340^{S}
7	325^{S}	350^{S}	$''$345^{S}	$''$295^{S}	300^{S}	295^{S}	285^{S}	260^{S}	$''$255^{S}	$''$260^{S}	260^{S}	$''$335^{S}	$''$290^{S}	$''$280^{S}	^{J}270^{S}	255^{S}	270	$''$250^{S}	225	255	330	355^{S}	350	^{I}360^{S}
8	345^{S}	325^{S}	305^{S}	270^{S}	250^{S}	S	$''$245^{S}	235^{S}	255	285	295	310	285^{S}	255^{R}	305	300	^{J}290^{S}	$''$250^{S}	255	305	340	300	^{J}345^{S}	375
9	$''$360^{S}	^{J}300^{S}	290^{S}	350	395	320	$''$290^{S}	280^{S}	265^{S}	295	$''$310^{S}	295	275^{S}	$''$295^{S}	260^{S}	$''$260^{S}	255	275^{S}	$''$255^{S}	325^{S}	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	$''$280^{S}	$''$280^{S}	$''$275^{S}	$''$255^{S}	250	^{I}280^{S}	300^{S}	335	320^{S}	375
11	350	375	350^{S}	$''$340^{S}	370	335^{S}	$''$285^{S}	265^{S}	265^{S}	270	315	310	275	275	265	260	260^{S}	260	295^{S}	305^{S}	295^{S}	285	$''$315^{S}	$''$325^{S}
12	^{I}340^{S}	^{I}390^{F}	$''$390^{S}	350^{S}	260^{S}	265^{S}	295^{S}	240	265^{S}	275^{S}	310	^{J}305^{S}	295	275	280^{S}	^{J}280^{S}	$''$275^{S}	$''$265^{S}	235	455^{A}	^{I}330^{S}	280^{S}	A	320
13	360	335	355	345	C	C	C	C	C	^{I}260^{C}	260	340^{S}	$''$300^{S}	270^{S}	265^{S}	280	260^{S}	255^{S}	255^{S}	^{I}275^{S}	$''$270^{S}	295^{S}	305^{S}	360
14	^{I}370^{S}	355	370	330	260^{S}	^{I}305^{S}	$''$290^{S}	245^{S}	$''$260^{S}	$''$280^{S}	310^{S}	$''$315^{S}	280^{S}	270	270^{S}	260^{S}	$''$260^{S}	255^{S}	A	A	A	300^{S}	A S	^{I}300^{A}
15	310^{S}	295^{S}	320^{S}	320^{S}	340^{S}	315^{S}	285^{S}	235	260	290	275	305	R	^{J}285^{R}	260	255	^{J}260^{R}	270^{S}	250	245^{S}	A	A	350	A
16	315^{S}	345	$''$305^{S}	^{J}290^{S}	250	330^{R}	$''$255^{S}	255^{R}	265	270^{S}	295	320^{S}	310	280^{S}	275	$''$290^{S}	270	260^{S}	$''$270^{S}	265^{S}	$''$275^{S}	$''$330^{S}	355^{S}	370^{S}
17	335^{S}	345^{S}	$''$365^{S}	305	355^{A}	285^{S}	265^{S}	260^{S}	250	255	270	305	280^{R}	^{J}300^{R}	^{J}300^{R}	S	280^{S}	260	260	255	230	330	310	320^{S}
18	315^{S}	330	325	310	260	^{J}355^{R}	250	^{J}255^{R}	255	300	305	^{I}310^{R}	^{I}310^{R}	295	300	^{J}295^{S}	295	255	^{J}255^{S}	285^{S}	^{J}345^{S}	^{J}310^{S}	^{I}295^{S}	300
19	350^{F}	^{J}310^{S}	F	340	$''$280^{S}	255	$''$225^{S}	250	295	280	^{J}355^{S}	300^{R}	300^{S}	^{J}300^{R}	255	255	285^{S}	295	$''$275^{S}	260	250	A	355	S
20	330	$''$305^{S}	300	295^{S}	285	280	^{J}245^{S}	$''$250^{S}	255	290^{R}	330	305	280	^{J}305^{R}	^{J}290^{R}	^{J}295^{S}	$''$295^{S}	290^{S}	^{J}255^{S}	240^{S}	325	350^{S}	355	350^{S}
21	350	340	315	300	^{J}250^{S}	310^{S}	^{J}250^{S}	250	265^{R}	280	295	300	300^{S}	300	^{J}295^{R}	^{J}300^{S}	300	$''$260^{S}	^{J}280^{S}	^{I}250^{S}	S	285	355	365
22	355	350	$''$330^{S}	^{J}265^{S}	250^{R}	^{J}315^{S}	250	250^{S}	255	260	295	305	290^{R}	295	300^{S}	$''$300^{S}	265^{S}	275^{S}	250	255	300^{S}	^{J}375^{S}	^{J}355^{S}	F
23	FS	FS	295^{S}	255	240	350^{R}	$''$255^{S}	265	270	290	305	^{J}300^{R}	^{J}300^{R}	^{J}305^{R}	^{J}300^{R}	295^{S}	265	260^{S}	255^{S}	^{J}290^{S}	305^{S}	^{J}305^{S}	^{J}330^{S}	$''$380^{S}
24	^{J}325^{S}	335	$''$310^{S}	330^{S}	290	255	250^{S}	270	300	^{J}305^{R}	^{J}295^{S}	^{J}300^{R}	^{J}280^{S}	290	300^{S}	290	285	275	290	^{J}255^{S}	260^{S}	300	320	355
25	345	345	340	290	250	^{J}305^{S}	250	250	^{J}275^{R}	270^{S}	295	^{J}295^{S}	^{J}280^{S}	290	295	295	270	265^{S}	$''$265^{S}	235^{S}	$''$260^{S}	355	355^{S}	370^{S}
26	360	355	325	305	245	245^{S}	255	255	260	255^{S}	300	305	295	$''$315^{S}	$''$275^{S}	280	$''$275^{S}	275^{S}	$''$275^{S}	225	$''$275^{S}	235^{S}	$''$330^{S}	$''$345^{S}
27	350^{S}	340^{S}	355^{S}	295^{S}	255	315^{S}	235^{S}	265^{S}	265	285^{S}	$''$280^{S}	285	300	^{J}295^{S}	290^{S}	290^{S}	$''$260^{S}	275	270	$''$255^{S}	$''$275^{S}	355	380^{S}	$''$375^{S}
28	340	$''$325^{S}	$''$280^{S}	265	235	335	$''$255^{S}	265	260	290	285^{S}	325^{R}	310^{R}	290^{S}	265^{S}	275	265	$''$275^{S}	255	285^{S}	285^{S}	$''$350^{S}	365^{S}	355^{S}
29	$''$340^{S}	345^{S}	325^{S}	320^{S}	295	320	270^{S}	255	265^{S}	295	255	325^{R}	300	^{J}305^{R}	$''$300^{R}	^{J}300^{S}	270	255	270	300	305	$''$345^{S}	$''$350^{S}	$''$325^{S}
30	^{J}330^{R}	330	295	^{J}290^{S}	295	320	255	255	^{J}270^{R}	295	255	315	^{J}300^{R}	^{J}300^{R}	295	295	295	280	^{J}290^{S}	285	275	S	355	F
31	^{J}350^{S}	^{I}310^{F}	^{J}300^{S}	305	300	300	^{J}250^{R}	250	250	275	310^{S}	325^{S}	290	295^{S}	305^{S}	$''$300^{S}	$''$280^{S}	$''$275^{S}	255^{S}	270	$''$280^{S}	345	345^{S}	385^{S}
No.	29	29	29	29	28	27	28	28	28	29	30	30	29	30	31	30	31	31	30	30	27	27	28	26
Median	345	335	325	305	280	310	255	255	260	280	295	305	295	290	290	280	270	260	255	270	280	320	345	350

foF2

Sweep 10 Mc to 20 Mc in 20 min-sec in automatic operation.

The Radio Research Laboratories, Japan.

K 13

45

IONOSPHERIC DATA

Mar. 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	90	90^{S}	105^{S}	100	90	100	80^{S}	95^{S}	85	20^{S}	55	30^{R}	50^{S}	45^{S}	50	40	65^{R}	50^{S}	50	70	65	65	70^{A}	60^{S}
2	55	80	75^{S}	60	50	95	50^{S}	40	70^{R}	35	40	55^{R}	50^{R}	60^{R}	40	55^{S}	45	40	60	55^{S}	70	70^{S}	60	75^{S}
3	90	75	50^{S}	55	35	70	45	50	45^{R}	60^{S}	35^{R}	60^{S}	40^{R}	50^{R}	55	50	55	55	50	65	75^{S}	45^{S}	60	60
4	65	70	90^{S}	C	C	C	C	C	C	S	50	55	30^{R}	35^{S}	60	30	50	60	60^{S}	60^{S}	65^{S}	60^{S}	75	55
5	55^{S}	65^{S}	60^{S}	50	50^{S}	55	45^{S}	50^{R}	50^{S}	65^{S}	85^{S}	75	95	85^{S}	85^{S}	70^{S}	105^{S}	75^{S}	90^{S}	65	100^{S}	75	95^{S}	85^{S}
6	85^{S}	75^{S}	70	90	100	95^{S}	90^{S}	80^{S}	110^{S}	110	60^{S}	70^{S}	70^{S}	65	75^{S}	70	75	65^{S}	105	95^{S}	100^{A}	105^{S}	95^{S}	105^{S}
7	100^{S}	100^{S}	105^{S}	100^{S}	100^{E}	95^{S}	95^{S}	90^{S}	80^{S}	60^{S}	100^{S}	75^{S}	95^{S}	110^{S}	100^{S}	80^{S}	75	100^{S}	110	100	95	80^{S}	105^{S}	100^{S}
8	60^{E}	85^{S}	100^{S}	95^{S}	100^{S}	S	80^{S}	115^{S}	95	45	70	65	55^{S}	50^{R}	80	50	40^{S}	40^{S}	65	70	65	65	40^{S}	65
9	60^{S}	55^{S}	45^{S}	50	65	75	55^{S}	40^{S}	40^{S}	80	115^{S}	75	125^{S}	110^{S}	90^{S}	90^{S}	95	130^{S}	110^{S}	100^{S}	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	90^{S}	110^{S}	90^{S}	110^{S}	100	100^{S}	75^{S}	85	100^{S}	100
11	100	110	95^{S}	90^{S}	105	80^{S}	85^{S}	95^{S}	85^{S}	80	115	90	100	110	95	90	70^{S}	75	110^{S}	95^{S}	105^{S}	115	90^{S}	85^{S}
12	100^{S}	100^{S}	105^{S}	80^{S}	105^{S}	105^{S}	105^{S}	105	90^{S}	70^{S}	75	70^{S}	105	105	100^{S}	95^{S}	85^{S}	105^{S}	100	115^{S}	80^{A}	90^{S}	A	80
13	75	70	95	105	C	C	C	C	C	80^{C}	110	105^{S}	100^{S}	85^{S}	95^{S}	75	95^{S}	90^{S}	85^{S}	65^{S}	80^{S}	90^{S}	95^{S}	105
14	90^{S}	100	55	115	110^{S}	115^{S}	100^{S}	105^{S}	80^{S}	75^{S}	95^{S}	60^{S}	100^{S}	100	100^{S}	100^{S}	90^{S}	100^{S}	A	A	A	105^{A}	AS	105^{A}
15	100^{S}	105^{S}	95^{S}	95^{S}	105^{S}	105^{S}	105^{S}	115	90	60	55	60	R	45^{R}	55	65	50^{R}	70^{S}	50	45^{S}	A	A	60	A
16	65^{S}	55^{S}	75^{S}	60^{S}	55	85^{R}	45^{S}	45^{R}	55	95^{S}	60	80^{S}	85	80^{S}	75^{S}	85^{S}	75	110^{S}	105^{S}	100^{S}	105^{S}	100^{S}	90^{S}	90^{S}
17	100^{S}	85^{A}	80^{S}	95	95^{A}	90^{S}	110^{S}	105^{S}	75	55	65	75	30^{R}	60^{R}	55^{R}	S	50^{S}	70	50	55	70	70	85	70^{S}
18	80^{S}	70	75	75	85	70^{R}	60^{S}	50^{R}	45	50	65	80^{R}	55^{R}	50	60	60^{S}	60	50^{S}	65^{S}	70^{S}	55^{S}	90^{S}	50^{S}	55
19	50^{F}	85^{S}	F	60	50^{S}	50	40^{S}	75	55	75	90^{S}	65^{R}	55^{S}	50^{R}	45	45	65^{S}	50	30^{S}	65	60	A	60	S
20	65	90^{S}	70	50^{S}	65	65^{S}	50^{S}	45^{S}	50	40^{R}	75	55	40^{S}	50^{R}	55^{R}	55^{S}	50^{S}	55^{S}	45^{S}	55^{S}	70	55^{S}	60	50^{S}
21	50	60	70	50^{S}	60^{S}	80^{S}	50^{S}	55	60^{R}	65	55	55	55^{S}	50^{S}	60^{R}	50^{S}	55	45^{S}	50^{S}	50^{S}	S	60	90	80
22	90	55	65^{S}	50^{S}	50^{R}	80^{S}	50	45^{S}	50	50	50	50	50^{R}	50	55^{S}	55^{S}	70^{S}	60^{S}	50	75	95^{S}	70^{S}	90^{S}	F
23	F	S	F	S	50^{S}	50	60	75^{R}	50^{S}	50	50	85	55^{R}	55^{R}	60^{R}	55^{R}	50^{S}	50	55^{S}	70^{S}	65^{S}	50^{S}	55^{S}	70^{S}
24	85^{S}	65	85^{S}	70^{S}	60	50	60^{S}	55	65	60^{R}	55^{S}	50^{R}	50^{S}	55	55^{S}	40	60	45	60	50^{S}	50^{S}	55	75	50
25	55	55	55	60	60	60^{S}	55	45	40^{R}	55^{S}	55	90^{S}	80^{S}	60	60	90	80	95^{S}	80^{S}	105^{S}	100^{S}	120	100^{S}	85^{S}
26	75	90	90	95	110	110^{S}	100	95	95	65^{S}	100	90	85	90^{S}	110^{S}	75	80^{S}	80^{S}	105^{S}	110	95^{S}	80^{S}	90^{S}	105^{S}
27	100^{S}	105^{S}	95^{S}	100^{S}	85	105^{S}	95^{S}	105^{S}	95	75^{S}	85^{S}	80	115	90^{S}	90^{S}	65^{S}	90^{S}	75	85	90^{S}	110^{S}	90	105^{S}	100^{S}
28	105	95^{S}	105^{S}	105	110	105	115^{S}	100	90	75	50^{S}	80^{R}	65^{R}	65^{S}	80^{S}	70	80	100^{S}	100	105^{S}	110^{S}	115^{S}	105^{S}	105^{S}
29	110^{S}	105^{S}	110^{S}	130^{S}	105	105	105^{S}	100	85^{S}	25	60	70^{R}	50	65^{R}	55^{R}	65^{S}	50	50	45	80	90	60^{S}	55^{S}	70^{S}
30	65^{R}	65	60	60^{S}	55	75	50	50	45^{R}	55	60	50	50^{R}	45^{R}	40	50	55	40	45^{S}	60	55	S	80	F
31	45^{S}	55^{F}	55^{S}	85	80	55	50^{R}	45	50	75	60^{S}	75^{S}	65	105^{S}	90^{S}	80^{S}	100^{S}	80^{S}	100^{S}	105	100^{S}	110	110^{S}	110^{S}
No.	29	29	29	29	28	27	28	28	28	29	30	30	29	30	31	30	31	31	30	30	27	27	28	26
Median	80	80	75	80	80	80	60	65	70	60	60	70	55	60	60	65	70	70	70	70	80	80	90	80

ypF2

Sweep 10 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

K 14

IONOSPHERIC DATA

Mar. 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	$I_{3.5}^{S}$	$I_{3.3}^{S}$	3.2	3.4	$I_{3.3}^{S}$	2.1	2.3	3.5	5.8^{H}	$J_{6.4}^{SH}$	8.3	9.1	$J_{10.0}^{S}$	11.3	10.8	9.2	$J_{8.5}^{S}$	$I_{7.4}^{S}$	5.7	4.9	S	S	S^{H}	$I_{3.0}^{S}$
2	$I_{3.4}^{S}$	$I_{3.4}^{S}$	$J_{3.3}^{S}$	$I_{3.4}^{S}$	$J_{3.9}^{S}$	2.9	2.8	4.7^{S}	5.8^{H}	6.5	$J_{7.9}^{S}$	9.0	$I_{9.5}^{S}$	10.7	$J_{11.3}^{S}$	$I_{9.8}^{S}$	6.9	5.6	$J_{5.4}^{S}$	$I_{4.6}^{S}$	3.6	$J_{3.6}^{S}$	$J_{3.4}^{S}$	$I_{3.5}^{S}$
3	$I_{3.6}^{S}$	$I_{3.5}^{A}$	3.6^{S}	$I_{3.8}^{S}$	3.4	2.3	2.4	$I_{4.5}^{S}$	5.6	6.5	$J_{7.9}^{S}$	$J_{7.9}^{S}$	8.1	8.4	8.8	$I_{7.5}^{S}$	6.5	$J_{6.4}^{S}$	5.0	$J_{4.7}^{S}$	$I_{3.5}^{S}$	$J_{4.0}^{S}$	$I_{3.7}^{S}$	$J_{3.2}^{S}$
4	$I_{3.2}^{S}$	3.2	$J_{3.2}^{S}$	3.3	$I_{3.4}^{S}$	$J_{3.5}^{S}$	3.4^{S}	5.3	$J_{6.1}^{SH}$	6.1^{SH}	8.0	$J_{8.0}^{S}$	$J_{7.6}^{C}$	7.6^{S}	6.8	$I_{7.3}^{S}$	$I_{7.0}^{S}$	6.8	6.4	5.1^{S}	4.7	3.7	$I_{3.3}^{S}$	3.2
5	3.2	$I_{3.2}^{S}$	$J_{3.1}^{S}$	3.2	$I_{3.5}^{S}$	$I_{3.4}^{S}$	2.9	4.5	5.9^{H}	6.6	7.0	$J_{7.8}^{S}$	6.8	7.7	7.0	7.9	$I_{7.5}^{S}$	6.8	5.8	5.0	$I_{3.9}^{S}$	3.0	2.9	3.1
6	3.4	$J_{3.7}^{S}$	3.3	$I_{3.4}^{S}$	3.5^{S}	2.9	2.8	4.9	6.1^{H}	6.3	7.0	6.5	7.4	7.1^{S}	7.1	7.6^{S}	$J_{7.2}^{S}$	6.8	6.0	5.7^{S}	S	A	3.2	$I_{3.3}^{S}$
7	3.5	$I_{3.3}^{S}$	$I_{3.2}^{S}$	3.4^{S}	3.4	3.2	3.1^{S}	5.6	7.0^{S}	$I_{7.7}^{S}$	$J_{7.9}^{S}$	$J_{7.8}^{S}$	$J_{10.4}^{S}$	11.4	$J_{11.7}^{S}$	$I_{10.0}^{S}$	7.6^{S}	7.0^{S}	$I_{6.3}^{S}$	$I_{5.2}^{S}$	3.4	$I_{3.0}^{S}$	$I_{3.0}^{S}$	$I_{3.3}^{S}$
8	$I_{3.5}^{S}$	$I_{3.7}^{S}$	$J_{3.8}^{S}$	$J_{3.6}^{S}$	$J_{3.3}^{S}$	2.4	2.3	4.5	5.8^{H}	7.0	7.1^{S}	7.3	$J_{9.9}^{S}$	$J_{10.1}^{S}$	$J_{8.5}^{S}$	9.2	$J_{10.6}^{S}$	$I_{9.2}^{S}$	$J_{6.3}^{S}$	$J_{5.1}^{S}$	4.9	$I_{4.2}^{S}$	3.5	$J_{3.4}^{S}$
9	$J_{3.5}^{S}$	$I_{4.0}^{S}$	$J_{3.6}^{S}$	$J_{3.3}^{S}$	3.7^{S}	$J_{2.6}^{S}$	2.7	$J_{5.3}^{S}$	$I_{6.2}^{S}$	$J_{8.7}^{S}$	8.8	9.2	11.5	11.5	11.6	11.6	$J_{7.6}^{S}$	6.5	$J_{6.3}^{S}$	5.5^{S}	$J_{3.6}^{S}$	$I_{3.6}^{S}$	3.9	$J_{3.5}^{S}$
10	$I_{3.4}^{S}$	$J_{3.5}^{S}$	3.6	3.0	2.5	2.5	2.8	6.1^{S}	$J_{6.1}^{S}$	6.8	8.7	$J_{9.5}^{S}$	11.0	11.9	11.6	10.3	9.2	9.0	8.8^{S}	5.9	$J_{3.3}^{S}$	3.2	$I_{3.3}^{S}$	A
11	S	3.3	3.3	3.4^{S}	3.2^{S}	$J_{3.5}^{S}$	$I_{3.4}^{S}$	6.0	$I_{7.1}^{S}$	$I_{7.7}^{S}$	$I_{7.9}^{S}$	8.4	9.2	8.6	9.0	7.6^{S}	6.6^{S}	$J_{6.2}^{S}$	$J_{6.2}^{S}$	$I_{6.2}^{S}$	$I_{6.6}^{S}$	S	A	3.0
12	$I_{3.0}^{S}$	3.1	3.3	3.2	$I_{3.2}^{S}$	2.2	$J_{2.0}^{S}$	5.2^{S}	6.0^{S}	7.3	8.2	9.0	11.9	12.9	$I_{12.8}^{S}$	$I_{11.8}^{S}$	11.6^{S}	11.8	$J_{10.5}^{S}$	6.1	S	S	A	3.0
13	$I_{3.0}^{S}$	$I_{3.2}^{S}$	3.4^{S}	3.3	$I_{3.7}^{S}$	$I_{2.6}^{S}$	2.4	5.6	$I_{6.3}^{S}$	6.8	7.0	7.4	$J_{9.6}^{S}$	$J_{13.0}^{S}$	12.4	$I_{12.0}^{S}$	10.6	$J_{9.9}^{S}$	$J_{8.4}^{S}$	$I_{6.4}^{S}$	$I_{5.3}^{S}$	$I_{3.7}^{A}$	3.0	3.0
14	3.0	3.2	3.2	$J_{3.3}^{S}$	$I_{3.2}^{S}$	$J_{1.9}^{S}$	2.4	$J_{5.0}^{S}$	6.0	$I_{7.6}^{S}$	8.6	$J_{10.2}^{S}$	12.1^{S}	13.5	13.3^{S}	$I_{12.8}^{S}$	9.0^{S}	6.7	6.8	$I_{5.0}^{S}$	$I_{4.0}^{S}$	A	A	A
15	A	S	A	$I_{3.6}^{S}$	$J_{3.7}^{S}$	2.9^{S}	3.2^{S}	5.1	5.8	$J_{7.7}^{S}$	8.9	8.5^{S}	$I_{9.8}^{S}$	11.8	$J_{11.3}^{S}$	9.3^{S}	7.3	6.4^{S}	7.1	6.0^{S}	4.1^{S}	3.3	3.4^{S}	$I_{3.5}^{S}$
16	$I_{3.6}^{A}$	$I_{3.6}^{S}$	3.7^{S}	$J_{4.0}^{S}$	$J_{3.7}^{S}$	2.6	2.5	4.6	5.4	5.8	7.0^{S}	$J_{8.0}^{S}$	8.3	9.5	9.4^{S}	8.7	8.6	6.9	$I_{6.8}^{S}$	5.8	$I_{4.4}^{S}$	3.1	$J_{3.3}^{S}$	S
17	S	$I_{3.4}^{S}$	3.4	$I_{3.6}^{S}$	$I_{3.5}^{S}$	3.3	3.5^{S}	$J_{5.0}^{S}$	5.4^{H}	$I_{6.4}^{S}$	6.2	6.5	8.3	9.3	$J_{10.0}^{S}$	$I_{9.9}^{S}$	9.3	$I_{9.5}^{S}$	9.6	$I_{8.1}^{S}$	$I_{6.7}^{S}$	3.7^{H}	$I_{3.6}^{S}$	$I_{3.4}^{S}$
18	$I_{3.3}^{S}$	3.2	3.3	3.1	3.3	2.4	2.6^{S}	$J_{5.1}^{S}$	5.8	6.6	6.9	7.1	8.6	10.2	$J_{10.0}^{S}$	9.2^{S}	$I_{9.2}^{S}$	8.7	$I_{7.0}^{S}$	5.6	S	S	$J_{4.4}^{S}$	S
19	S	S	3.2	$I_{3.4}^{S}$	$I_{3.2}^{S}$	$J_{2.8}^{S}$	2.6	4.7	5.6	7.0	8.2	9.2	10.5	11.2	$I_{9.6}^{S}$	8.0	6.4	6.7	$I_{8.1}^{S}$	6.5^{S}	$J_{5.5}^{S}$	3.2	3.2^{S}	$I_{3.3}^{S}$
20	$I_{3.6}^{S}$	$I_{3.8}^{S}$	3.4^{S}	$I_{3.7}^{S}$	$I_{3.6}^{S}$	$I_{2.8}^{S}$	2.4	4.7	5.1	$J_{6.5}^{S}$	6.5	7.6	$J_{9.3}^{S}$	10.3	$J_{9.9}^{S}$	$I_{9.0}^{S}$	8.6^{S}	$J_{7.8}^{S}$	$I_{6.4}^{S}$	S	S	S	S	S
21	S	$I_{3.4}^{S}$	$J_{3.7}^{S}$	S	S	2.4	2.5^{S}	4.6	5.6^{H}	6.9	6.4	6.4	7.9	8.7	8.5^{S}	8.6	$I_{8.2}^{S}$	$I_{8.2}^{S}$	$I_{9.8}^{S}$	$I_{9.1}^{S}$	6.6	$I_{4.3}^{S}$	3.3	$I_{3.0}^{S}$
22	$I_{3.2}^{S}$	$I_{3.2}^{S}$	$I_{3.4}^{S}$	$J_{3.4}^{S}$	4.0^{S}	2.2	2.5	$J_{5.2}^{S}$	$I_{6.4}^{S}$	6.8	6.5	6.9	8.0	8.4	$I_{9.2}^{S}$	8.7	7.3	7.1^{S}	$I_{6.6}^{S}$	$I_{6.8}^{S}$	S	S	S	S
23	S	$I_{4.6}^{S}$	3.8	3.2	2.6	$J_{2.3}^{S}$	S	5.5	6.6	7.2^{S}	$I_{7.8}^{S}$	8.3	9.1^{S}	$J_{9.3}^{S}$	11.1	$J_{9.7}^{S}$	8.8	7.6	7.1	$J_{6.2}^{S}$	$I_{6.0}^{S}$	$I_{5.2}^{S}$	$I_{4.3}^{S}$	S
24	S	S	$I_{3.6}^{S}$	$J_{3.6}^{S}$	$I_{3.6}^{S}$	$J_{2.9}^{S}$	2.9	5.0	6.8^{S}	$I_{7.7}^{S}$	8.6	$I_{9.7}^{S}$	10.6	11.1	$J_{10.4}^{S}$	9.0	7.1	7.2	$J_{8.2}^{S}$	$J_{6.7}^{S}$	$I_{6.5}^{S}$	$I_{3.2}^{S}$	$I_{3.1}^{S}$	3.1
25	2.9	$I_{3.1}^{S}$	$J_{3.3}^{S}$	3.7^{S}	3.1	$I_{2.7}^{S}$	3.4	5.0	5.6	6.3	6.5	7.2	8.6	9.5^{S}	8.0	8.6	8.2	$J_{7.8}^{S}$	$J_{8.3}^{S}$	$I_{7.6}^{S}$	$I_{4.6}^{S}$	$I_{3.1}^{S}$	3.2^{S}	3.2
26	3.2	3.1	$I_{3.1}^{S}$	3.2^{S}	$I_{3.1}^{S}$	2.3	2.8	$J_{4.8}^{S}$	5.7^{H}	5.6	5.9	6.7	7.5	8.5	8.6	8.6	7.2	6.9	$I_{7.2}^{S}$	7.1^{S}	$I_{5.4}^{S}$	$I_{3.6}^{S}$	3.4^{S}	3.3
27	$I_{3.3}^{S}$	$I_{3.2}^{S}$	$J_{3.2}^{S}$	$J_{3.2}^{S}$	$J_{3.6}^{S}$	2.4	$J_{2.9}^{S}$	4.9	5.3	6.7	6.5	6.9	8.6	8.8	$J_{10.2}^{S}$	9.3	8.8	7.2^{H}	6.8	5.5	$I_{4.0}^{S}$	$I_{3.6}^{S}$	$I_{3.5}^{S}$	$I_{3.7}^{S}$
28	$I_{3.4}^{S}$	$J_{4.1}^{S}$	$J_{3.8}^{S}$	3.2	3.0	2.7	3.2	5.4	5.5	5.8	6.2	6.7	9.3^{S}	11.5	10.8	7.7	5.8	5.8	6.8	6.9^{S}	$I_{4.6}^{S}$	3.2	$I_{3.3}^{S}$	3.3
29	$J_{3.6}^{S}$	$I_{3.4}^{S}$	3.2	3.3^{S}	$I_{3.0}^{S}$	2.5^{S}	$J_{3.2}^{S}$	$J_{5.1}^{S}$	6.6	6.3^{S}	7.1	7.2	$J_{7.9}^{S}$	9.2^{S}	$J_{10.6}^{S}$	$J_{9.7}^{S}$	8.8	$J_{8.3}^{SH}$	$I_{6.5}^{S}$	6.6^{S}	6.2^{S}	$I_{4.9}^{S}$	$I_{4.0}^{S}$	$I_{3.8}^{S}$
30	$I_{3.7}^{S}$	$J_{3.6}^{S}$	$J_{3.6}^{S}$	3.6	2.8	2.7	3.1	$J_{5.6}^{S}$	$J_{6.4}^{S}$	6.8^{S}	6.7	7.2	9.1	10.5	$J_{9.9}^{S}$	8.2	6.8	7.1	$I_{8.4}^{S}$	8.8	$I_{6.0}^{S}$	3.2	$I_{3.2}^{S}$	3.1^{S}
31	$I_{3.4}^{S}$	$J_{3.4}^{S}$	3.0	$I_{3.2}^{S}$	3.0	$I_{3.0}^{S}$	3.2	5.0	5.9	6.6	6.2	6.4	8.4	$J_{9.7}^{S}$	9.6	$J_{9.9}^{S}$	9.2	9.0	$J_{8.1}^{S}$	6.5	5.5	3.8^{S}	$I_{3.9}^{S}$	$I_{3.7}^{S}$
No.	24	28	30	30	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	30	25	23	25	24
Median	$U_{3.4}$	$U_{3.4}$	3.3	3.4	3.4	2.6	2.8	5.0	5.9	6.7	7.1	7.8	9.1	10.1	10.0	9.2	8.2	7.1	6.8	6.0	$U_{4.7}$	3.6	3.3	3.3
U.Q.	3.5	3.6	3.6	3.6	3.6	2.9	3.2	5.3	6.3	7.2	8.2	9.0	10.0	11.4	11.3	9.9	9.0	8.3	8.2	6.7	6.0	3.8	3.6	3.4
L.Q.	3.2	3.2	3.2	3.2	3.1	2.4	2.5	4.7	5.6	6.4	6.5	6.9	8.1	8.7	8.8	8.2	7.1	6.7	6.3	5.2	4.0	3.2	3.2	3.1
Q.R.	0.3	0.4	0.4	0.4	0.5	0.5	0.7	0.6	0.7	0.8	1.7	2.1	1.9	2.7	2.5	1.7	1.9	1.6	1.9	1.5	2.0	0.6	0.4	0.3

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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											$I_{4.4}^{LH}$	4.4	$I_{4.5}^{L}$	4.5	4.4	$I_{4.4}^{LH}$	L							
2										L	L^{H}	4.5	4.8	4.5	4.5	4.3	4.0	$I_{3.1}^{L}$						
3										L	L^{H}	4.5^{H}	4.5^{H}	4.7^{H}	4.5	4.3	L							
4											4.2	4.5	4.5	A	4.6	$I_{4.4}^{L}$	L							
5										$I_{4.0}^{H}$	L	4.5	L	4.6	4.5	$I_{4.4}^{L}$	$I_{4.1}^{L}$	L						
6										L	L	4.5	$I_{4.7}^{L}$	4.6	4.8	4.4	L	L						
7									L	L	4.6^{H}	4.4	L^{H}	4.7	4.6	4.4	L	L						
8										L	L^{H}	L^{H}	4.6^{H}	4.6	4.5	$I_{4.5}^{LH}$	L	3.5						
9										L^{H}	L	$I_{4.8}^{L}$	4.7	$I_{4.7}^{L}$	4.6	4.4	L							
10										L	L	4.7^{H}	$I_{4.7}^{L}$	$I_{4.8}^{L}$	4.4	4.4	4.2							
11										L	A	A	A	$I_{4.7}^{L}$	4.5	L								
12										L	4.4	4.7	L	$I_{4.7}^{L}$	4.6	4.3	L							
13										L	L	4.9^{H}	4.9	4.3	4.8^{H}	4.5	4.1							
14										L	L	L^{H}	4.6^{R}	4.6	4.7^{H}	4.5	$I_{4.1}^{L}$	$I_{3.3}^{L}$						
15									3.1	L	A	4.8	4.8	4.7	$I_{4.6}^{A}$	$I_{4.5}^{A}$	L	L						
16										L	4.6	4.7	4.5	4.6	4.7^{H}	$I_{4.5}^{L}$	4.2	L						
17										L^{H}	L	4.7^{H}	4.7	4.7	4.5	$I_{4.4}^{LH}$	$I_{4.2}^{L}$	L						
18										L	4.6	4.7	4.7	4.7	$I_{4.6}^{L}$	4.5	L	L						
19										L	L	4.6	4.5	4.7	5.2	L	L	L						
20										L^{H}	L	4.6	4.7	4.6	4.6	$I_{4.5}^{L}$	L	L						
21										L^{H}	4.4	4.7	4.6	4.7	L	$I_{4.4}^{L}$	4.2	L						
22										L	L	4.6	4.8	4.7	4.5	4.4	L	L						
23									L	4.3	4.4	4.7	4.6	4.7	4.5	4.4	4.1							
24									L	L	4.5^{H}	4.5	4.6	4.7	4.5	4.4	L	L						
25										L	4.6	4.7	4.5^{H}	4.7	4.9^{L}	4.3	L	A						
26										L	4.5	4.5^{H}	4.5	4.7	$I_{4.6}^{L}$	4.5	4.2	L						
27										L	4.5	4.5	4.5	4.6	4.5	4.4	L							
28										L	4.5	4.6	4.5	4.4	4.5^{H}	4.4	L	L						
29									L	4.3	4.4	4.5	4.7	4.7^{H}	4.6^{H}	4.2^{H}	4.2^{H}							
30										4.3	4.6^{H}	4.6^{H}	4.6	4.5	4.5	4.4	L^{H}	4.0						
31										4.2	4.4	4.5	4.5^{H}	4.3	$I_{4.5}^{A}$	4.4	4.1^{H}	L						
No.									1	5	16	28	27	30	30	29	12	4						
Median									3.1	4.3	4.5	4.6	4.6	4.7	4.6	4.4	4.2	$U_{3.4}$						

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 $\frac{min}{sec}$ in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	$I_{2.10}^{A}$	2.80	2.90	3.10	3.20	3.15	3.10	3.00	$I_{2.70}^{A}$	2.20	S					
2								S	2.30	2.60	2.70	3.00	3.00	3.40	3.30	3.20	2.80	2.20	S					
3								S	2.30	A	3.00	$I_{3.25}^{R}$	3.30	3.25	$I_{3.20}^{A}$	3.05	2.75	S	S					
4								S	2.25	2.80	3.10	3.20^{R}	3.25	3.40^{R}	$I_{3.30}^{R}$	3.20	$I_{2.80}^{A}$	2.30^{R}	S					
5								S	2.45	2.70	3.10	$I_{3.15}^{R}$	3.25	$I_{3.20}^{R}$	$I_{3.20}^{A}$	3.20	2.90	A	S					
6								S	2.30	2.80^{H}	3.10^{R}	$I_{3.30}^{R}$	$I_{3.30}^{R}$	3.30	3.30	3.20	2.90	2.40	S					
7								S	2.40	2.70	2.90	2.90	A	R	A	A	A	A	S					
8								S	2.45^{H}	2.90^{H}	3.10	$I_{3.30}^{R}$	$I_{3.35}^{R}$	$I_{3.40}^{A}$	A	A	A	A	S					
9								1.90	2.40^{H}	2.80^{H}	3.10^{H}	3.25	3.30^{R}	3.45^{H}	$I_{3.35}^{A}$	3.20	A	A	S					
10								S	2.30	2.80^{H}	3.00	2.90	A	A	A	A	2.90	A	S					
11								S	2.40	2.70	2.90	2.95	2.85	A	A	A	2.90	2.40	S					
12								S	2.35	2.80^{H}	2.95	3.10	A	A	A	3.15	2.80	2.50^{H}	S					
13								S	2.30	$I_{2.80}^{A}$	3.10	$I_{3.15}^{R}$	3.20	3.30	3.30	3.15	A	A	S					
14								2.00^{H}	2.40	2.85	3.00	3.10	$I_{3.15}^{R}$	$I_{3.30}^{R}$	3.30	3.05	3.00	2.70	A					
15								S	2.50^{H}	2.80	A	A	A	R	A	A	A	2.30	S					
16								S	2.40	2.90	3.15	3.30	A	R	3.25^{R}	3.20	2.90	2.40	S					
17								S	2.40	2.95	3.10	3.20	R	R	R	3.20	2.95	2.50	S					
18								2.15	2.50	2.80	3.10	3.15^{R}	3.20	3.20	3.20	3.10	2.90	2.40	S					
19								S	2.50^{H}	2.90^{H}	2.95	R	R	R	R	3.15	2.85	2.40	S					
20								2.10	2.50	2.80	$I_{3.10}^{R}$	$I_{3.25}^{R}$	$I_{3.35}^{R}$	$I_{3.40}^{R}$	3.30	$I_{3.20}^{R}$	2.90	2.40	S					
21								2.15	2.55^{H}	2.85	2.95	2.95	R	A	A	3.15	$I_{2.90}^{A}$	A	S					
22								1.90	2.45	2.75	$I_{3.10}^{R}$	3.20	$I_{3.35}^{A}$	3.30	3.25	3.10	2.85	2.40	S					
23								2.15	2.50	2.80	$I_{3.00}^{R}$	3.10	$I_{3.40}^{R}$	3.40	3.40	3.20	2.95	2.40	S					
24								2.00	$I_{2.50}^{A}$	2.85	3.05	3.25	3.15	$I_{3.25}^{R}$	3.25	3.10	2.85	2.40	S					
25								2.10	2.65	3.00	3.10	3.20	3.10	$I_{3.15}^{R}$	3.25	3.40^{R}	2.95	2.50	S					
26								2.10	2.50	2.90	3.15	3.15^{H}	$I_{3.20}^{R}{}_{H}$	$I_{3.20}^{R}{}_{H}$	$I_{3.30}^{R}$	$I_{3.20}^{R}$	3.00	2.50	S					
27								S	2.45	2.95	$I_{3.10}^{R}$	3.10^{H}	3.15	$I_{3.30}^{R}$	$I_{3.30}^{R}$	3.20	2.90	2.50	S					
28								2.20	2.70^{H}	2.95	3.05	3.15	3.10	3.30	3.20	3.10	2.95	2.45	S					
29								1.95	2.50	2.95	3.10	3.20	A	A	A	3.15	2.85	2.60	S					
30								2.20^{H}	2.80	$I_{3.00}^{A}$	3.20	3.30	3.30	3.30^{H}	3.30	3.05	2.80	2.30	S					
31								2.00	2.70	3.05	3.15	3.20	A	A	3.45	3.20	3.00	2.60	1.90					
No.								14	31	30	30	29	21	20	21	26	26	23	1					
Median								2.10	2.45	2.80	3.10	3.15	3.20	3.30	3.30	3.20	2.90	2.40	1.90					

foE

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

The Radio Research Laboratories, Japan.

Y 3

IONOSPHERIC DATA

Mar. 1963 | foEs | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.4	3.0	3.0	2.5	S	2.4	S	S	2.4	2.6^{G}	3.2	3.3	3.4	G	3.4	3.2	2.9	2.8	2.8	3.1	S	2.2	S	S
2	S	S	S	2.4	S	S	S	S	G	G	2.9	G	3.5	G	G	G	3.1	2.6	S	2.7	S	2.4	2.8	2.6
3	2.3^{M}	3.6^{M}	2.4	2.2	2.3	S	S	S	2.7	2.7	3.1	3.6	G	2.5^{G}	3.9	3.4	3.1	3.2	2.7	S	S	S	S	S
4	S	S	S	S	S	S	S	S	G	2.4^{G}	G	2.7^{G}	2.8^{G}	4.5	2.5^{G}	3.9	3.8	2.7	3.0	S	$J_{2.6}$	$J_{3.2}$	S	S
5	S	2.4^{M}	S	S	S	S	S	G	2.2^{G}	2.9	G	2.6^{G}	2.7^{G}	3.1^{G}	3.9	3.5	3.1	2.6	$J_{3.8}$	3.4^{M}	3.0	2.3	S	S
6	S	2.8	S	S	E	S	S	S	G	G	G	3.6	2.6^{G}	G	G	3.5	3.7	3.3	3.2	2.8	3.8	5.8^{M}	2.9	3.0
7	2.2	S	S	S	E	S	S	S	G	2.8	3.3	3.7	3.8	3.2^{G}	3.4	3.8	3.9	2.8	S	2.1	S	S	S	S
8	S	S	S	S	E	S	S	S	G	G	2.9^{G}	3.0^{G}	G	3.4	3.4	3.3	$J_{3.6}$	2.8	S	S	S	3.1	2.5	S
9	2.1	S	3.3^{M}	2.3	2.6	S	S	G	G	2.9	G	3.5	3.8	4.1	5.1	G	3.1	2.8	1.9	2.4	S	S	3.8^{M}	3.0^{M}
10	3.0^{M}	S	S	S	S	S	S	2.3	2.7	3.1	3.3	3.3	3.3	3.6	3.8	3.5	G	2.7	S	S	2.3	S	S	5.7^{M}
11	3.0	3.0	S	S	3.0	2.2	2.3	S	G	3.0	4.3	4.5	4.6	$J_{5.4}$	3.9	3.3	3.2	G	2.1	3.8^{M}	5.9^{M}	4.0^{M}	5.8^{M}	2.7
12	S	S	S	S	2.4	S	S	S	G	3.0	3.1	3.3	3.7	3.8	3.4	3.2	3.9	3.5	2.9	$J_{3.6}$	S	3.0	4.2^{M}	3.0^{M}
13	2.9	3.0	2.9	3.0	S	2.7^{M}	2.3	2.9	2.6	2.9	G	G	G	G	3.0^{G}	G	3.1	$J_{3.2}$	$J_{4.0}$	$J_{5.3}$	3.0	5.8	S	3.0
14	3.0	S	2.6	S	S	S	S	G	G	3.1	3.3	2.9^{G}	2.8^{G}	2.7^{G}	G	3.2	3.2	G	2.4	3.5	2.8	4.3^{M}	3.8^{M}	5.8^{M}
15	5.8^{M}	6.7	5.8^{M}	S	S	S	S	S	G	3.6	6.7	3.6	$J_{5.4}$	3.1^{G}	$J_{4.7}$	$J_{5.3}$	$J_{3.2}$	2.7	2.1	2.8	3.0	S	S	S
16	6.3^{M}	3.0	S	S	S	E	S	G	2.9	3.1	3.3	G	3.8	3.0^{G}	2.9^{G}	2.9^{G}	2.2^{G}	2.7	G	S	S	S	S	S
17	S	S	S	2.8	E	2.7^{M}	S	G	G	G	G	2.7^{G}	3.0^{G}	3.2^{G}	3.2^{G}	2.8^{G}	2.5^{G}	2.2^{G}	3.0	3.0	S	S	S	S
18	S	S	S	S	E	S	S	G	G	3.0	3.2	G	3.4	3.5	3.5	3.4	3.3	2.8	2.0	S	S	2.2	3.1^{M}	3.0
19	2.9	S	3.0	S	S	S	S	2.3	2.8	G	G	3.3	G	2.7^{G}	G	G	3.1	2.6	S	S	S	S	S	2.7^{M}
20	2.2	S	S	S	S	S	S	G	2.2^{G}	2.7^{G}	G	G	3.8	4.3	4.0	3.7	3.6	3.2	$J_{2.4}$	S	S	2.7	S	3.2
21	3.0	2.8^{M}	2.6^{M}	S	2.9^{M}	S	S	G	2.7	3.0	3.2	3.3	4.1	3.4	3.8	3.4	$J_{3.2}$	$J_{2.8}$	2.4	S	S	3.0^{M}	2.7^{M}	S
22	S	S	S	S	S	S	S	G	2.8	3.1	G	3.5	3.7	3.8	3.7	3.4	3.8	3.3	$J_{2.7}$	$J_{2.2}$	S	S	S	3.4^{M}
23	2.3	S	2.9	E	S	S	S	G	2.8	3.2	3.6	3.4	G	4.5	$J_{5.2}$	5.0	4.1	3.7	2.7	2.4	S	S	S	2.8^{M}
24	2.9	2.8	S	S	S	S	S	2.3	2.8	3.3	3.7	4.1	3.8	3.8	3.8	3.8	3.9	2.8	2.6	S	S	S	S	2.9
25	S	S	3.0	S	S	S	S	G	2.8	3.3	3.8	3.9	3.6	3.1^{G}	2.9^{G}	3.9	3.8	5.0^{M}	$J_{6.4}$	3.7	3.1	3.0	2.9^{M}	S
26	S	S	S	S	S	S	S	G	2.9	3.5	3.9	3.5	G	G	3.8	4.0	G	G	2.0	S	S	S	S	S
27	S	S	S	2.8	S	S	S	G	2.8	3.2	G	G	3.3	3.0^{G}	2.5^{G}	3.0^{G}	3.0	G	S	S	S	S	S	S
28	S	S	S	S	E	S	S	G	G	3.3	3.5	3.4	3.5	G	G	G	1.9^{G}	$J_{2.3^{G}}$	2.4	E	S	S	S	2.1
29	S	S	S	S	S	S	S	2.5	2.9	3.4	3.3	3.3	3.6	3.9	3.4	3.0^{G}	3.3	G	S	S	S	S	S	S
30	S	S	S	S	E	S	S	G	G	$J_{4.7}$	3.7	2.8^{G}	3.7	3.5	3.5	3.4	3.1	2.7	2.5	2.2	S	S	S	S
31	S	S	S	S	$J_{2.4}$	S	S	2.5	G	3.2	3.3	3.6	3.5	3.4	5.2	G	G	2.9	3.3	$J_{3.0}$	3.6	S	S	S
No.	15	10	10	8	13	5	2	21	31	31	31	31	31	31	31	31	31	31	24	18	10	14	10	15
Median	2.9	3.0	3.0	2.4	E	2.4	2.3	G	G	3.0	3.2	3.3	3.5	G	3.4	3.4	3.2	2.8	2.6	2.9	3.0	3.0	3.0	3.0
U.Q.	3.0	3.0	3.0	2.8	2.5	2.7		2.3	2.8	3.2	3.5	3.6	3.8	3.8	3.9	3.7	3.7	3.2	3.0	3.5	3.6	4.0	3.8	3.2
L.Q.	2.3	2.8	2.6	2.2	E	E		G	G	G	G	G	G	G	G	G	3.0	2.6	2.2	2.4	2.8	2.4	2.8	2.7
Q.R.	0.7	0.2	0.4	0.6													0.7	0.6	0.8	1.1	0.8	1.6	1.0	0.5

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.3	2.5	E	1.9	S	E	S	S	G	2.5^G	3.2	G	3.4		G	G	$E_{2.9}^R$	2.7	2.3	2.4	S	1.9	S	S
2	S	S	S	E	S	S	S	S			G		G				3.0	2.5	S	E	S	E	2.0	2.0
3	E	A	E	E	1.8	S	S	S	G	$E_{2.7}^R$	$E_{3.1}^R$	G		2.4^G	3.9	3.4	G	2.9	2.1	S	S	S	S	S
4	S	S	S	S	S	S	S	S		2.3^G		2.7^G	2.8^G	4.5	2.5^G	3.8	3.3	2.7	$E_{3.0}^S$	S	2.2	2.5	S	S
5	S	A	S	S	S	S	S		2.0^G	G		2.6^G	2.7^G	$E_{3.1}^R$	3.5	3.4	3.0	2.4	3.5	2.8	2.4	2.0	S	S
6	S	2.0	S	S		S	S	S				3.6	2.4^G			3.5	3.6	3.3	2.8	1.9	A	A	E	1.9
7	E	S	S	S		S	S	S		G	$E_{3.3}^R$	3.5	3.4	$E_{3.2}^R$	$E_{3.4}^R$	3.6	3.3	2.6	S	1.9	S	S	S	S
8	S	S	S	S		S	S	S			2.9	$E_{3.0}^R$		$E_{3.4}^R$	$E_{3.4}^R$	3.2	3.0	2.6	S	S	S	2.2	2.2	S
9	E	S	1.8	E	1.7	S	S			G		3.5	3.7	3.6	3.8		2.9	2.6	1.9	E	S	S	2.0	2.1
10	1.8	S	S	S	S	S	S	2.3	G	G	G	$E_{3.3}^R$	$E_{3.3}^R$	3.6	3.6	3.3		2.6	S	S	E	S	S	A
11	A	2.1	S	S	1.9	2.0	E	S		3.0	4.3	4.4	4.6	4.3	3.5	3.3	A		2.1	3.3	4.3	A	A	E
12	S	S	S	S	E	S	S	S		3.0	$E_{3.1}^R$	$E_{3.3}^R$	3.7	3.6	$E_{3.4}^R$	2.9	3.7	3.4	$E_{2.9}^S$	3.5	S	A	A	2.2
13	E	2.0	E	2.0	S	A	E	2.8	G	$E_{2.9}^R$					2.7^G		2.9	3.0	3.7	A	2.5	A	S	2.4
14	2.2	S	1.9	S	S	S	S			G	$E_{3.3}^R$	2.3^G	$E_{2.8}^R$	2.5^G		$E_{3.2}^R$	3.2		2.2	A	2.4	A	A	A
15	A	1.9	A	S	S	S	S	S		3.4	5.0	3.6	4.0	$E_{3.1}^R$	4.7	4.6	3.1	2.7	G	2.6	2.5	S	S	S
16	A	E	S	S	S		S		G	3.1	$E_{3.3}^R$		$E_{3.8}^R$	$E_{3.0}^R$	2.9^G	2.8^G	$E_{2.2}^R$	G		S	S	S	S	S
17	S	S	S	1.6		1.7	S					2.7^G	$E_{3.0}^R$	$E_{3.2}^R$	$E_{3.2}^R$	2.7^G	2.3^G	2.0^G	2.5	2.6	S	S	S	S
18	S	S	S	S		S	S			G	G		$E_{3.4}^R$	$E_{3.5}^R$	3.5	3.4	3.2	2.6	1.9	S	S	E	2.0	2.1
19	E	S	E	S	S	S	S	G	G			G		$E_{2.7}^R$			3.1	2.6	S	S	S	S	S	2.1
20	E	S	S	S	S	S	S		2.2^G	2.7^G			3.7	4.1	3.8	$E_{3.7}^R$	3.4	3.2	2.4	S	S	2.0	S	2.0
21	2.2	2.2	E	S	2.0	S	S		G	G	$E_{3.2}^R$	$E_{3.3}^R$	4.0	$E_{3.4}^R$	3.5	3.4	3.1	2.6	G	S	S	2.6	2.2	S
22	S	S	S	S	S	S	S		G	G		3.5	3.7	3.6	3.6	3.4	3.8	3.1	2.3	A	S	S	S	2.2
23	1.9	S	E		S	S	S		G	3.2	3.6	$E_{3.4}^R$		4.1	4.4	4.1	3.6	3.2	2.3	1.9	S	S	S	E
24	2.3	A	S	S	S	S	S	G	2.7	3.2	G	4.0	3.8	3.7	$E_{3.8}^R$	3.6	3.7	2.6	2.5	S	S	S	S	E
25	S	S	E	S	S	S	S		2.8	3.3	3.7	3.7	3.6	$E_{3.1}^R$	2.9^G	3.9	3.8	3.9	6.4	2.9	A	A	2.1	S
26	S	S	S	S	S	S	S		2.9	3.4	3.8	$E_{3.5}^R$			$E_{3.8}^R$	4.0			2.0	S	S	S	S	S
27	S	S	S	2.1	S	S	S		G	3.2			$E_{3.3}^R$	3.0^G	2.5^G	2.3^G	2.3		S	S	S	S	S	S
28	S	S	S	S		S	S			G	3.5	$E_{3.4}^R$	$E_{3.5}^R$				$E_{1.9}^R$	2.2^G	G		S	S	S	E
29	S	S	S	S	S	S	S	G	G	3.3	3.3	$E_{3.3}^R$	3.6	3.7	$E_{3.4}^R$	2.9^G	G		S	S	S	S	S	S
30	S	S	S	S		S	S			3.6	3.5	2.7^G	$E_{3.7}^R$	$E_{3.5}^R$	3.5	3.4	3.1	G	2.2	2.0	S	S	S	S
31	S	S	S	S	E	S	S	G		G	G	3.5	G	$E_{3.4}^R$	5.2			G	3.0	$E_{3.0}^S$	2.9	S	S	S
No.																								
Median																								

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

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Mar. 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	E1.80S	E1.90S	E1.70SE	1.60S	E1.80S	E1.80S	E1.60S	E1.70S	E1.60S	1.75	1.90	1.70	1.90	1.95	2.10	1.90	1.80	E1.70S	E1.70S	E1.60S	E1.90S	E1.60SE	1.60S	E1.80S
2	E2.00S	E1.90S	E1.80SE	1.80S	E2.00S	E1.90S	E1.80S	E1.80S	2.00	1.90	1.90	1.90	1.95	2.00	2.00	1.90	2.00	E1.65S	E1.80S	E2.10S	E1.80S	E1.80SE	1.80S	E1.90S
3	E1.90S	E1.70S	E1.70SE	1.90S	E	E1.90S	E1.80S	E1.80S	1.75	1.80	2.05	2.10	2.00	2.00	1.80	1.80	E1.60S	1.80	E1.60S	E2.10S	E2.00S	E1.80SE	2.10S	E1.90S
4	E1.90S	E2.00S	E1.70SE	1.80S	E1.80S	E1.80S	E1.80S	E1.90S	1.80	1.80	1.80	2.10	2.20	2.20	2.00	1.50	1.70	E1.60S	E1.90S	E1.90S	E1.60S	E1.80SE	1.90S	E2.00S
5	E1.90S	E1.65S	E1.70SE	2.00S	E2.05S	E1.90S	E2.00S	E1.60S	E1.60S	1.70	1.90	2.00	2.10	2.00	2.10	2.25	1.90	1.70	E1.60S	E1.70S	E1.80S	E1.80SE	2.00S	E1.80S
6	E1.70S	E1.90S	E1.65SE	2.00S	E	E1.80S	E1.80S	E1.90S	1.80	1.75	1.90	1.90	2.10	2.20	2.10	2.00	1.70	1.80	E1.70S	E1.75S	E1.80S	E1.80SE	1.70S	E1.70S
7	E1.80S	E1.80S	E1.80SE	1.90S	1.05	E1.70S	E1.80S	E1.90S	1.70	1.70	1.70	1.80	1.80	2.00	2.30	2.00	2.05	1.75	E2.70S	E1.70S	E2.00S	S	S	E1.95S
8	E2.00S	E1.90S	E1.70SE	1.50S	E	E1.80S	E1.80S	1.90	1.75	1.95	2.20	1.95	2.00	2.00	2.00	1.90	1.80	1.80	E1.80S	E1.60S	E1.90S	E2.00SE	2.00S	E1.90S
9	E1.80S	S	E1.70SE	1.50S	1.35	E1.70S	E1.60S	E1.70S	1.70	1.70	1.90	1.90	1.80	1.90	2.00	2.30	1.70	E1.60S	E1.60S	E1.70S	E1.80S	E1.90SE	1.85S	E1.60S
10	E1.70S	E1.90S	E1.80SE	1.70S	E1.75S	E1.90S	E1.80S	E1.70S	1.75	1.70	1.90	2.00	2.00	2.20	2.20	2.00	1.85	1.70	1.90	E1.80S	1.30	E1.80S	S	E1.90S
11	E1.70S	E1.80S	E1.90SE	1.90S	E	E1.70S	E1.60S	E1.80S	1.95	1.90	2.00	2.00	2.00	1.95	2.00	2.00	1.95	1.80	E1.70S	E1.70S	E1.80S	E1.75SE	1.90S	E1.70S
12	E1.90S	E1.90S	E1.80S	E1.85S	E1.90S	E1.80S	E2.00S	1.80	E1.65S	1.85	1.90	2.05	2.20	2.25	2.20	1.90	1.90	1.85	E1.80S	1.30	E1.90S	E1.75SE	2.00S	E1.90S
13	E1.90S	E1.90S	E1.80S	E1.80S	E2.00S	E1.90S	E1.80S	E1.80S	1.25	1.90	1.95	2.35	2.00	2.40	2.20	1.95	E1.65S	E1.75S	E1.80S	E1.90S	E2.00S	E2.00SE	2.10S	E2.00S
14	E1.90S	E2.00S	E1.70S	E1.60S	E1.90S	E1.70S	E1.50S	1.20	E1.80S	1.90	2.20	2.20	2.00	2.05	2.30	2.20	1.80	E1.65S	E1.70S	E1.80S	E1.80S	E1.90SE	1.70S	E1.90S
15	E1.85S	E1.70S	E1.70S	E1.80S	E1.90S	E1.90S	E1.90S	2.20	1.70	1.90	2.20	2.00	2.20	2.25	2.20	2.00	1.70	2.00	1.80	E1.70S	E1.80S	E2.00SE	1.80S	E2.10S
16	E1.80S	E1.65S	E1.80S	E1.70S	E1.70S	1.40	E1.80S	1.80	E1.60S	1.80	2.10	2.30	2.20	2.40	2.40	2.10	1.80	2.00	2.10	E1.70S	E2.00S	E2.00SE	1.90S	E1.90S
17	E2.00S	E1.90S	E1.90S	E	2.00	E1.60S	E1.90S	E1.70S	1.80	2.00	2.05	2.10	2.30	2.25	2.20	2.00	1.80	1.80	E1.70S	E1.80S	E2.00S	E1.75SE	2.00S	E1.80S
18	E2.00S	E2.00S	E1.80S	E1.80S	E	E1.80S	E1.90S	E1.70S	E1.60S	1.80	2.00	2.20	2.20	2.35	2.30	2.20	2.10	1.90	E1.60S	E1.90S	E1.90S	E1.90S	E1.90S	E2.00S
19	E1.80S	E2.10S	E1.80SE	1.90S	E1.70S	E1.90S	E1.90S	E1.80S	E1.65S	1.90	2.00	2.25	2.30	2.35	2.05	1.95	1.95	1.90	E1.80S	E1.70S	E1.90S	E2.00S	E1.90S	E1.90S
20	E1.90S	E1.70S	E1.80S	E1.90S	E2.00S	E1.90S	E1.90S	E1.70S	1.80	1.80	2.00	2.00	2.10	2.10	2.30	2.45	2.10	1.85	E1.70S	E1.70S	E2.00S	E1.90S	S	E1.80S
21	E1.60S	E2.00S	E1.90S	E1.90S	E1.50S	E1.50S	E1.70S	E1.75S	1.90	1.80	2.00	2.20	2.30	2.35	2.00	1.80	1.90	1.70	2.00	E2.10S	E1.50S	E1.90S	E1.80S	E1.90S
22	E1.90S	E2.00S	S	E1.80S	E1.50S	E1.80S	E1.90S	E1.70S	1.80	1.85	2.00	2.00	2.00	2.20	2.30	2.20	2.00	1.80	E1.65S	E1.60S	E1.60S	E1.90S	E2.00S	E1.90S
23	E1.80S	E1.90S	E1.60S	E	E1.80S	E1.60S	E1.90S	E1.70S	1.80	1.90	2.05	2.20	2.20	2.20	2.25	2.10	1.90	1.80	E1.70S	E1.70S	E2.00S	E1.90S	S	E2.10S
24	E2.00S	E1.90S	E1.90S	E1.70S	E1.90S	E1.70S	E1.90S	E1.80S	E1.70S	1.90	1.95	2.30	2.20	2.30	2.20	2.20	2.00	1.95	E1.60S	E1.90S	E1.90S	S	S	E1.90S
25	E1.90S	S	E1.70S	E1.60S	E1.75S	S	E2.40S	E1.70S	E1.60S	1.80	2.30	2.30	2.30	2.25	2.25	2.20	1.80	1.95	E1.75S	E1.70S	E1.95S	E1.90S	E2.00SE	1.85S
26	E1.80S	E1.80S	E2.00S	E1.80S	E1.70S	E1.60S	E1.80S	E1.70S	1.80	1.90	1.90	2.00	2.20	2.30	2.25	2.00	2.00	1.80	E1.60S	E1.80S	E1.90S	E1.90S	E1.80SE	2.00S
27	E1.90S	E1.80S	E1.70S	E1.90S	E1.50S	E1.60S	E1.70S	E1.80S	1.70	1.70	2.00	1.95	2.25	2.25	2.00	1.85	1.80	1.90	1.90	E1.90S	E2.50S	E1.60S	E2.00SE	2.00S
28	E1.80S	E2.00S	E1.70S	E1.80S	E	E1.90S	E1.80S	E1.70S	E1.70S	1.95	2.05	2.35	2.30	2.40	2.25	2.00	2.00	E1.70S	1.90	1.90	E1.90S	E1.90S	E2.00SE	1.70S
29	E1.80S	E1.75S	E1.70S	E1.80S	E1.60S	E1.80S	E1.80S	E1.80S	1.40	2.05	1.95	2.20	2.20	2.00	2.30	2.20	2.00	1.90	E1.80S	E1.80S	E1.90S	E1.70S	E1.90SE	1.90S
30	E1.90S	E1.80S	E1.90S	E1.80S	1.30	E1.80S	E1.60S	E1.80S	1.70	1.80	1.90	2.20	2.00	2.20	2.30	2.20	1.80	1.80	E1.80S	E1.80S	E1.90S	E1.90S	S	E1.90S
31	E1.80S	E1.90S	E1.70S	E1.90S	E1.60S	E1.80S	E1.80S	E1.70S	1.75	1.80	1.90	2.40	2.00	2.20	2.30	2.00	1.90	1.90	E1.80S	E1.80S	E1.90S	E1.90S	E2.30SE	1.80S
No.	31	29	30	31	31	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	29	25	31
Median	E1.90	E1.90	E1.75	E1.80	E1.70	E1.80	E1.80	E1.80	1.70	1.80	2.00	2.10	2.10	2.20	2.20	2.00	1.90	1.80	E1.80	E1.80	E1.90	E1.90	E1.90	E1.90

f-min

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	$I_{3.15}^{S}$	$I_{3.00}^{S}$	2.95	3.20	$I_{3.50}^{S}$	3.35	3.05	3.55	3.45^{H}	$J_{3.30}^{S}$	3.30	3.10	$J_{3.10}^{S}$	3.20	3.30	3.25	$J_{3.20}^{S}$	$I_{3.40}^{S}$	3.60	3.15	S	S	S^{H}	$I_{3.00}^{S}$
2	$I_{2.90}^{S}$	$I_{3.05}^{S}$	$J_{3.45}^{S}$	$I_{3.30}^{S}$	$J_{3.20}^{S}$	3.10	3.20	3.50^{S}	3.45^{H}	3.20	$J_{3.20}^{S}$	3.25	$I_{3.15}^{S}$	3.20	$J_{3.35}^{S}$	$I_{3.40}^{S}$	3.45	3.60	$J_{3.30}^{S}$	$I_{3.30}^{S}$	3.00	$J_{3.05}^{S}$	$J_{2.95}^{S}$	$I_{3.05}^{S}$
3	$I_{2.90}^{S}$	$I_{3.00}^{A}$	3.10^{S}	$I_{3.25}^{S}$	3.80	2.80	2.95	$I_{3.50}^{S}$	3.50	3.40	$J_{3.30}^{S}$	$J_{3.40}^{S}$	3.20	3.20	3.35	$I_{3.35}^{S}$	3.55	$J_{3.40}^{S}$	3.40	$J_{3.45}^{S}$	$I_{3.00}^{S}$	$J_{3.35}^{S}$	$I_{3.15}^{S}$	$J_{2.95}^{S}$
4	$I_{2.80}^{S}$	2.95	$J_{3.15}^{S}$	2.90	$I_{2.80}^{S}$	$J_{3.15}^{S}$	3.10^{S}	3.60	$J_{3.75}^{S}{}^{H}$	3.40^{H}	3.50	$J_{3.40}^{S}$	$J_{3.40}^{C}$	3.30^{S}	3.10	$I_{3.30}^{S}$	$I_{3.40}^{S}$	3.25	3.55	3.35^{S}	3.30	3.25	$I_{3.20}^{S}$	3.15
5	3.00	$I_{3.10}^{S}$	$J_{3.05}^{S}$	2.95	$I_{3.15}^{S}$	$I_{3.25}^{S}$	3.20	3.55	3.55^{H}	3.40	3.20	$J_{3.35}^{S}$	3.15	3.30	3.25	3.30	$I_{3.45}^{S}$	3.55	3.55	3.30	$I_{3.60}^{S}$	3.05	2.75	3.00
6	2.90	$J_{2.75}^{S}$	3.05	$I_{3.15}^{S}$	3.45^{S}	3.00	3.20	3.50	3.75_{H}^{S}	3.40	3.40	3.40	3.35	3.40^{S}	3.25	3.30^{S}	$J_{3.35}^{S}$	3.55	3.55	3.35^{S}	S	A	2.85	$I_{2.85}^{S}$
7	2.95	$I_{3.05}^{S}$	$I_{3.15}^{S}$	3.10^{S}	3.30	3.15	2.90^{S}	3.40	3.45^{S}	$I_{3.30}^{S}$	$J_{3.40}^{S}$	$J_{2.85}^{S}$	$J_{3.05}^{S}$	3.10	$J_{3.25}^{S}$	$I_{3.30}^{S}$	3.35	3.55^{S}	$I_{3.45}^{S}$	$I_{3.35}^{S}$	2.95^{S}	$I_{2.90}^{S}$	$I_{2.90}^{S}$	$I_{2.80}^{S}$
8	$I_{2.85}^{S}$	$I_{3.05}^{S}$	$J_{3.30}^{S}$	$J_{3.40}^{S}$	$J_{3.45}^{S}$	3.15	3.15	3.60	3.40^{H}	3.40	3.25^{S}	2.85	$J_{3.05}^{S}$	$J_{3.20}^{S}$	$J_{3.05}^{S}$	3.05	$J_{3.40}^{S}$	$I_{3.55}^{S}$	$J_{3.45}^{S}$	$J_{3.20}^{S}$	2.90	$I_{2.95}^{S}$	3.00	$J_{2.75}^{S}$
9	$J_{2.70}^{S}$	$I_{3.40}^{S}$	$J_{3.35}^{S}$	$J_{2.85}^{S}$	3.40^{S}	$J_{3.10}^{S}$	3.15	$J_{3.25}^{S}$	$I_{3.20}^{S}$	$J_{3.20}^{S}$	2.90	3.15	3.15	3.05	3.45	3.30	$J_{3.30}^{S}$	3.55	$J_{3.40}^{S}$	3.35^{S}	$J_{3.30}^{S}$	$I_{3.10}^{S}$	3.10	$J_{3.15}^{S}$
10	$I_{3.05}^{S}$	$J_{3.15}^{S}$	3.35	3.15	3.20	2.95	3.15	3.50^{S}	$J_{3.50}^{S}$	3.20	3.15	$J_{3.15}^{S}$	3.10	3.15	3.05	3.30	3.15	3.35	3.50^{S}	3.55	$J_{3.60}^{S}$	2.95	$I_{3.20}^{S}$	A
11	S	2.90	2.90	2.95^{S}	2.85^{S}	$J_{3.10}^{S}$	$I_{3.15}^{S}$	3.35	$I_{3.40}^{S}$	$I_{3.35}^{S}$	$I_{3.10}^{S}$	3.05	3.10	3.15	3.25	3.30^{S}	3.35^{S}	$J_{3.45}^{S}$	$J_{3.45}^{S}$	$I_{3.15}^{S}$	$I_{3.40}^{S}$	^{C}S	A	2.70
12	$I_{2.90}^{S}$	3.05	2.90	2.90	$I_{3.40}^{S}$	3.50	$J_{3.10}^{S}$	3.50^{S}	3.35^{S}	3.30	3.30	2.95	3.20	3.20	$I_{3.00}^{S}$	$I_{3.15}^{S}$	3.20^{S}	3.30	$J_{3.60}^{S}$	3.40	S	S	A	2.85
13	$I_{2.95}^{S}$	$I_{2.70}^{S}$	2.80^{S}	3.05	$I_{3.40}^{S}$	$I_{3.30}^{S}$	3.10	3.55	$I_{3.60}^{S}{}_{H}$	3.45	3.45	3.00	$J_{2.90}^{S}$	$J_{3.20}^{S}$	3.05	$I_{3.15}^{S}$	3.20	$J_{3.35}^{S}$	$J_{3.50}^{S}$	$I_{3.35}^{S}$	$I_{3.35}^{S}$	$I_{3.40}^{A}$	3.00	2.95
14	2.80	2.70	2.70	$J_{3.20}^{S}$	$I_{3.55}^{S}$	$J_{3.25}^{S}$	3.05	$J_{3.60}^{S}$	3.35	$I_{3.25}^{S}$	3.05	$J_{3.05}^{S}$	3.15^{S}	3.20	3.15^{S}	$I_{3.20}^{S}$	3.35^{S}	3.45	3.45	$I_{3.50}^{S}$	$I_{3.10}^{S}$	A	A	A
15	A	S	A	$I_{3.30}^{S}$	$J_{3.45}^{S}$	2.90^{S}	2.80^{S}	3.65	3.45	$J_{3.40}^{S}$	3.35	3.20^{S}	$I_{3.05}^{S}$	3.30	$J_{3.30}^{S}$	3.25^{S}	3.30	3.30^{S}	3.35	3.55^{S}	3.15^{S}	2.95	2.80^{S}	$I_{2.90}^{S}$
16	$I_{3.00}^{A}$	$I_{3.10}^{S}$	3.10^{S}	$J_{3.15}^{S}$	$J_{3.70}^{S}$	3.15	3.05	3.70	3.55	3.30	3.25^{S}	$J_{3.25}^{S}$	3.10	3.05	3.20^{S}	3.15	3.30	3.35	$I_{3.45}^{S}$	3.50	$I_{3.45}^{S}$	3.25	$J_{3.05}^{S}$	S
17	S	$I_{2.95}^{S}$	2.95	$I_{3.10}^{S}$	$I_{3.10}^{S}$	2.95	3.25^{S}	$J_{3.70}^{S}$	3.55^{H}	$I_{3.40}^{S}$	3.25	3.05	3.00	3.10	$J_{3.10}^{S}$	$I_{3.20}^{S}$	3.15	$I_{3.30}^{S}$	3.45	$I_{3.45}^{S}$	$I_{3.60}^{S}$	3.55^{H}	$I_{3.35}^{S}$	$I_{3.20}^{S}$
18	$I_{3.05}^{S}$	3.05	3.05	3.15	3.35	2.90	3.10^{S}	$J_{3.60}^{S}$	3.45	3.40	3.20	3.05	3.00	3.20	$J_{3.10}^{S}$	3.20^{S}	$I_{3.30}^{S}$	3.40	$I_{3.30}^{S}$	3.30	S	S	$J_{3.30}^{S}$	S
19	S	S	2.75	$I_{3.05}^{S}$	$I_{3.50}^{S}$	$J_{3.20}^{S}$	3.25	3.45	3.35	3.20	2.95	3.05	3.15	3.20	$I_{3.30}^{S}$	3.40	3.30	3.15	$I_{3.25}^{S}$	3.35^{S}	$J_{3.60}^{S}$	2.95	2.85^{S}	$I_{3.00}^{S}$
20	$I_{2.85}^{S}$	$I_{2.95}^{S}$	3.05^{S}	$I_{3.20}^{S}$	$I_{3.60}^{S}$	$I_{3.30}^{S}$	3.00	3.65	3.45	$J_{3.35}^{S}$	3.25	3.15	$J_{3.10}^{S}$	3.30	$J_{3.25}^{S}$	$I_{3.25}^{S}$	3.25^{S}	$J_{3.35}^{S}$	$I_{3.45}^{S}$	S	S	S	S	S
21	S	$I_{3.00}^{S}$	$J_{3.30}^{S}$	S	S	3.40	3.15^{S}	3.50	3.45^{H}	3.45	3.45	3.05	3.15	3.15	3.05^{S}	3.25	$I_{3.20}^{S}$	$I_{3.10}^{S}$	$I_{3.30}^{S}$	$I_{3.45}^{S}$	3.60	$I_{3.05}^{S}$	2.85	$I_{2.90}^{S}$
22	$I_{2.80}^{S}$	$I_{2.95}^{S}$	$I_{2.95}^{S}$	$J_{3.40}^{S}$	3.65^{S}	2.90	3.00	$J_{3.50}^{S}$	$I_{3.50}^{S}$	3.55	3.35	3.20	3.10	3.00	$I_{3.25}^{S}$	3.30	3.40	3.35^{S}	$I_{3.40}^{S}$	$I_{3.40}^{S}$	S	S	S	S
23	S	$I_{3.35}^{S}$	3.30	3.30	3.25	$J_{2.90}^{S}$	S	3.50	3.50	3.45^{S}	$I_{3.30}^{S}$	3.05	3.20^{S}	$J_{3.10}^{S}$	3.25	$J_{3.25}^{S}$	3.30	3.25	3.50	$J_{3.25}^{S}$	$I_{3.25}^{S}$	$I_{3.20}^{S}$	$I_{3.05}^{S}$	S
24	S	S	$I_{2.90}^{S}$	$J_{3.05}^{S}$	$I_{3.40}^{S}$	$J_{3.10}^{S}$	3.20	3.25	3.25^{S}	$I_{3.20}^{S}$	3.10	$I_{3.10}^{S}$	3.15	3.20	$J_{3.10}^{S}$	3.35	3.20	3.20	$J_{3.45}^{S}$	$J_{3.75}^{S}$	$I_{3.40}^{S}$	$I_{3.15}^{S}$	$I_{2.95}^{S}$	2.80
25	2.75	$I_{2.90}^{S}$	$J_{3.10}^{S}$	3.05^{S}	3.55	$I_{3.15}^{S}$	3.00	3.60	3.50	3.50	3.25	3.05	3.15	3.25^{S}	3.00	3.25	3.15	$J_{3.25}^{S}$	$J_{3.50}^{S}$	$I_{3.60}^{S}$	$I_{3.35}^{S}$	$I_{3.05}^{S}$	2.95^{S}	2.80
26	2.95	2.95	$I_{2.95}^{S}$	3.15^{S}	$I_{3.50}^{S}$	3.35	3.20	$J_{3.60}^{S}$	3.55^{H}	3.50	3.20	3.20	3.05	3.05	3.15	3.25	3.30	3.55	$I_{3.40}^{S}$	3.55^{S}	$I_{3.55}^{S}$	$I_{3.20}^{S}$	2.80^{S}	3.10
27	$I_{3.00}^{S}$	$I_{2.95}^{S}$	$J_{3.15}^{S}$	$J_{3.35}^{S}$	$J_{3.60}^{S}$	3.15	$J_{3.15}^{S}$	3.55	3.30	3.45	3.35	3.05	3.15	3.05	$J_{3.15}^{S}$	3.35	3.30	3.35^{H}	3.40	3.40	$I_{3.35}^{S}$	$I_{3.00}^{S}$	$I_{3.15}^{S}$	$I_{2.95}^{S}$
28	$I_{3.05}^{S}$	$J_{3.00}^{S}$	$J_{3.40}^{S}$	3.05	3.15	3.00	3.15	3.50	3.45	3.30	3.30	2.85	3.05^{S}	3.30	3.35	3.40	3.20	3.30	3.35	3.50^{S}	$I_{3.40}^{S}$	2.95	$I_{2.90}^{S}$	2.80
29	$J_{3.05}^{S}$	$I_{3.20}^{S}$	2.95	3.20^{S}	$I_{3.45}^{S}$	3.10^{S}	$J_{3.25}^{S}$	$J_{3.55}^{S}$	3.35	3.35^{S}	3.40	3.20	$J_{2.95}^{S}$	3.10^{S}	$J_{3.10}^{S}$	$J_{3.20}^{S}$	3.15	$J_{3.20}^{S}{}_{H}$	$I_{3.45}^{S}$	3.40^{S}	3.55^{S}	$I_{3.35}^{S}$	$I_{3.05}^{S}$	$I_{2.95}^{S}$
30	$I_{2.90}^{S}$	$J_{2.95}^{S}$	$J_{3.05}^{S}$	3.50	3.30	3.00	3.25	$J_{3.40}^{S}$	$J_{3.60}^{S}$	3.55^{S}	3.25	3.00	3.10	3.25	$J_{3.20}^{S}$	3.15	3.00	3.10	$I_{3.35}^{S}$	3.40	$I_{3.55}^{S}$	3.05^{S}	$I_{2.80}^{S}$	2.75^{S}
31	$I_{3.20}^{S}$	$J_{3.30}^{S}$	2.95	$I_{3.15}^{S}$	3.25	$I_{3.10}^{S}$	3.35	3.50	3.40	3.45	3.25	3.05	3.10	$J_{3.10}^{S}$	2.95	$J_{3.15}^{S}$	3.15	3.25	$J_{3.35}^{S}$	3.55	3.55	3.15^{S}	$I_{2.80}^{S}$	$I_{2.95}^{S}$
No.	24	28	30	30	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	30	25	23	25	24
Median	$^{U}2.90$	$^{U}3.00$	3.05	3.15	3.40	3.10	3.15	3.50	3.45	3.40	3.25	3.05	3.10	3.20	3.20	3.25	3.30	3.35	3.45	3.40	$^{U}3.40$	3.05	2.95	2.95

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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											$I_{3.55}^{H}$	3.90	$I_{3.80}^{L}$	3.85	3.70	$I_{3.70}^{H}$	L							
2										L	L^{H}	3.60	3.40	3.55	3.45	3.60	3.75	$I_{4.10}^{L}$						
3										L	L^{H}	3.60^{H}	3.75^{H}	3.55^{H}	3.60	3.70	L							
4											3.80	R	C	A	3.70	$I_{3.60}^{L}$	L							
5										$I_{3.90}^{H}$	L	3.65	L	3.50	3.55	$I_{3.65}^{L}$	$I_{3.70}^{L}$	L						
6										L	L	3.80	$I_{3.70}^{L}$	3.80	3.55	3.65	L	L						
7									L	L	3.50^{H}	3.90	L^{H}	3.65	3.55	3.65	L	L						
8										L	L^{H}	L^{H}	3.80^{H}	3.70	3.70	$I_{3.50}^{H}$	L	3.70						
9										L^{H}	L	$I_{3.55}^{L}$	3.55	$I_{3.50}^{L}$	3.50	3.65	L							
10										L	L	3.65^{H}	$I_{3.65}^{L}$	$I_{3.60}^{L}$	3.80	3.60	3.60							
11										L	A	A	A	$I_{3.65}^{L}$	3.70	L								
12										L	3.65	3.60	L	$I_{3.50}^{L}$	3.60	3.70	L							
13										L	L	3.50^{H}	3.50	3.95	3.55^{H}	3.60	3.70							
14										L	L	L^{H}	3.90^{R}	3.75	3.50^{H}	3.65	$I_{3.70}^{L}$	$I_{3.85}^{L}$						
15									4.15	L	A	3.70	3.70	3.60	$I_{3.60}^{A}$	$I_{3.65}^{A}$	L	L						
16										L	3.70	3.65	4.05	3.75	3.65^{H}	$I_{3.60}^{L}$	3.60	L						
17										L^{H}	L	3.70^{H}	3.65	R	R	$I_{3.60}^{L}$	$I_{3.50}^{L}$	L						
18										L	3.60	3.65	3.60	3.70	$I_{3.75}^{L}$	3.55	L	L						
19										L	L	3.70	3.80	3.45	R	L	L	L						
20										L^{H}	L	3.50	3.60	3.60	3.50	$I_{3.55}^{L}$	L	L						
21										L^{H}	3.90	3.85	3.50	3.45	L	$I_{3.65}^{L}$	3.60	L						
22										L	L	3.70	3.55	3.70	3.65	3.65	L	L						
23									L	3.65	3.75	3.75	3.85	3.60	A	A	3.65							
24									L	L	3.65^{H}	3.90	3.90	3.50	3.60	3.65	L	L						
25										L	3.70	3.70	3.90^{H}	3.60	3.45^{L}	A	L	A						
26										L	3.80	3.80^{H}	4.00	3.45	$I_{3.50}^{L}$	3.55	3.60	L						
27										L	3.70	3.90	4.00	3.70	3.45	3.65	L							
28										L	3.70	3.70	3.85	4.00	3.75^{H}	3.85	L	L						
29									L	3.70	3.75	4.00	3.80	3.80^{H}	3.70^{H}	3.70^{H}	3.65^{H}							
30										3.70	3.50^{H}	3.85^{H}	3.65	3.80	3.75	3.70	L^{H}	3.50						
31										3.75	3.75	3.80	3.85^{H}	3.65	$I_{3.65}^{A}$	3.70	4.00^{H}	L						
No.									1	5	16	27	26	29	27	27	12	4						
Median									4.15	3.70	3.70	3.70	3.80	3.65	3.60	3.65	3.65	$U_{3.80}$						

M(3000)F1

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

IONOSPHERIC DATA

Mar. 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											275	290	290	280	260	275	255							
2										290	290	280	290	280	270	250	250	240						
3										275	285	260	290	290	275	255	250							
4											265	275	260	285	300	275	260							
5										255	270	275	290	290	290	280	255	245						
6										255	270	265	295	280	300	280	265	240						
7									245	255	260	300	305	295	275	255	255	250						
8										260	290	335	285	270	300	305	255	245						
9										275	280	295	290	295	270	255	255							
10										255	285	280	290	290	280	260	275							
11										250	265	275	285	285	275	265								
12										270	275	320	295	275	270	255	270							
13										250	255	325	345	290	275	260	275							
14										285	290	305	285	285	280	255	245	250						
15									240	280	270	280	295	275	255	270	260	250						
16										$I_{280}L$	300	285	290	290	285	285	260	255						
17										255	$I_{300}L$	325	305	295	280	285	270	270						
18										270	290	315	305	290	280	285	270	250						
19										290	300	290	290	280	260	255	280	280						
20										280	300	305	305	275	280	290	275	255						
21										270	280	320	305	295	285	285	285	290						
22										255	290	295	320	300	285	280	255	260						
23									260	290	285	320	300	305	280	270	260							
24									290	280	290	295	285	280	275	270	285	290						
25										260	300	320	285	285	315	290	280	270						
26										265	300	310	310	310	290	290	285	275						
27										270	285	325	300	295	295	280	270							
28										270	295	350	310	280	255	255	275	275						
29									270	285	280	290	330	305	290	275	280							
30										260	300	325	305	280	280	280	320	305						
31										260	290	300	305	295	290	280	275	270						
No.									5	29	31	31	31	31	31	31	30	20						
Median									260	270	285	300	295	290	280	275	270	260						

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

h'Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 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	f		f2			1	1	c1	h1	h		h	h	1	h1	12	f3		f		
2				f							h		h				h	h		f		f	f2	f
3	f	f4	f	f	f				h	1	h1	h1		1	12	h12	c1	c2	12					
4										1		1	1	h1	1	h1	h1	h21	h		f3	f2		
5		f							1	h		1	1	1	1	h1	h1	c1	13	f3	f	f		
6		f										h1	1			h	h	c2	c2	f	f2	f2	f	f
7	f									h	h	h	1	1	1	1	12	13		f				
8											1	1		1	1	1	12	12				f	f	
9	f2		f	f	f					h		h	h	h	1		1	1	h	f			f2	f2
10	f2							h3	h2	h	h	h	1	12	1	1		12			f			f2
11	f3	f2			f2	f	f			h	h	h	c	1	1	1	h2		c3	f3	f2	f	f	f2
12					f					h	h	h	1	1	1	1	h1	h	h212	f3		f2	f	f2
13	f2	f	f	f		f	f	h3	h	1					1		12	12	h21	f2f	f	f		f2
14	f		f							h	h	1	1	1		h	h		12	f2	f	f3	f2	f2
15	f2	f2	f3							c1	12	12	1	1	1	12	1	h1	1	ff	f			
16	f2	f							h	h	h		1	1	1	1	12	c						
17				f2		f2						1	1	1	1	12	1	1	12	f2				
18										h	h		h	h	h	h	h	c2	c			f	f	f2
19	f		f					h	h			h		1			h	h2						f2
20	f								1	1			h	h	h	h	h	c	1			f		f2
21	f	f2	f		f2				h	h	h	h	h1	1	1	h1	12h	13	1			f2	f	
22									h	h		h	1	h	h	h	h	c2	c3	f2				f2
23	f		f						h	h	h	h		h	h	h	h2	c2	1	f				f2
24	f	f2						h	h1	h1	h1	h	h	h	h	h	h	c	c2					f2
25			f						h	h	h	c	c	1	1	h1	h1	c	c4	f2	f2	f2	f2	
26									h	h2	h	h			h	h			h					
27				f2					h	h			h	1	1	1	1							
28										h	h	h	h				1	1	1h					f
29								h	h2	h	h	h	1	12	1	12	h1							
30										13	h12	1	h1	h	h	h	h	c	h21	f2				
31					f			h2		h	h	h	1	1	h2			h	h5	f2	f2			

No.																								
Median																								

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

The Radio Research Laboratories, Japan.

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO — Time in U.T.

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

Note No observations during the following periods:

1st	0200-		0830	16th	0500-		0840
1st	2100-		2400	16th	2100-		2400
2nd	2100-		2400	17th	2100-	18th	0100
3rd	2100-		2400	19th	0100-		0850
4th	2100-	5th	0100	19th	2040-	20th	0100
5th	2100-		2400	25th	2040-	26th	0100
6th	2100-		2400	27th	2040-		2400
7th	2100-		2300	28th	0200-		0850
10th	2100-		2300	28th	2040-		2400
12th	2100-		2300	29th	2030-	30th	0900
15th	2100-		2400	30th	2030-		2400

Outstanding Occurrences

Mar. 1963	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
5	0433.9	1.2	ECD/4	380	100	0434.1	
6	0256.8	1	ECD/4	220	40	0257.5	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Mar. 1963	Whole Day Index	L. N. 06-12	L. N. 12-18	L. N. 18-24	W W V 00-06	W W V 06-12	W W V 12-18	W W V 18-24	S. F. 00-06	S. F. 06-12	S. F. 12-18	S. F. 18-24	W W V H 00-06	W W V H 06-12	W W V H 12-18	W W V H 18-24	Warning 00-06	Warning 06-12	Warning 12-18	Warning 18-24	Principal magnetic storms Start	End	ΔH
1	4+	4	4	4	-	-	-	4	5	5	5	(4)	5	5	-	5	N	N	N	N			
2	5-	5	5	5	-	-	-	5	4	4	4	4	5	4	-	4	N	N	N	N			
3	4o	4	4	3	-	-	-	5	3	4	5	4	5	4	-	4	N	N	N	N			
4	4o	4	3	5	-	-	-	5	4	4	4	4	4	4	-	4	N	N	N	N			
5	4o	4	3	3	-	-	-	5	5	5	4	4	4	4	-	4	N	N	N	N			
6	5-	5	5	5	-	-	-	4	4	5	(5)	4	4	4	-	C	N	N	N	N			
7	5-	(5	5	5)	-	-	-	5	5	(5	4)	4	C	3	-	3	N	N	N	N	17.2	---	108γ
8	3+	4	3	2	-	-	-	3	4	(4	4)	3	3	5	-	3	N	N	U	U	---	---	
9	4-	3	4	4	-	-	-	4	3	4	4	4	3	4	-	4	U	U	U	U	---	---	
10	3-	3	2	3	-	-	-	2	3	(2)	3	4	4	5	-	4	U	U	U	U	---	---	
11	3+	3	2	3	-	-	-	3	4	4	4	3	4	5	-	3	U	U	U	U	---	---	
12	3+	3	3	3	-	-	-	2	3	4	4	(4)	3	4	-	4	U	U	U	U	---	21.0	
13	4-	(4	3)	4	-	-	-	2	4	4	4	4	4	5	-	5	U	U	U	U			
14	4o	(4	4	4)	-	-	-	(3)	5	5	4	(4)	4	(4)	-	5	U	U	U	U			
15	4-	C	(3)	4	-	-	-	4	4	4	4	3	4	4	-	3	U	N	N	N			
16	4+	(4	4)	5	-	-	-	5	3	4	5	4	3	4	-	4	N	N	N	N			
17	4o	C	C	5	-	-	-	5	3	4	4	4	4	4	-	4	N	N	N	N			
18	4+	5	3	4	-	-	-	4	4	5	5	5	4	4	-	4	N	N	N	N			
(19)	5-	5	4	4	-	-	-	4	5	5	5	4	4	4	-	4	N	N	N	N			
(20)	4+	4	4	4	-	-	-	4	4	5	(5)	5	4	5	-	3	N	N	N	N			
(21)	4+	4	2	5	-	-	-	5	4	(4	5)	5	3	5	-	4	N	N	N	N			
22	4+	4	4	(4)	-	-	-	5	4	5	4	5	4	5	-	4	N	N	N	N			
23	4o	5	3	4	-	-	-	4	5	4	4	4	4	5	-	5	N	N	N	N			
24	4+	5	4	4	-	-	-	4	4	4	4	5	5	4	-	4	N	N	N	N			
25	4o	3	3	5	-	-	-	4	5	5	4	4	4	4	-	3	N	N	N	N			
26	3+	3	2	2	-	-	-	4	4	4	(4	4)	4	(4)	-	4	N	N	N	N			
27	4-	3	(2)	4	-	-	-	4	4	5	4	(4)	4	3	-	3	N	N	N	N			
28	4+	5	(3)	5	-	-	-	4	5	4	4	4	3	4	-	3	N	N	N	N			
29	5-	5	4	4	-	-	-	4	5	5	5	4	4	4	-	4	N	N	N	N			
30	4o	4	3	5	-	-	-	4	5	4	4	4	4	5	-	4	N	N	N	N			
31	4+	4	(3)	4	-	-	-	4	5	5	5	5	4	5	-	4	N	N	N	N			

* = day of Special World Interval

[ ] = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during March, 1963.

IONOSPHERIC DATA IN JAPAN FOR MARCH 1963
第 15 号　第 3 巻

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