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IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1963

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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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-machi, Kitatama-gun, Tokyo-to
Yamagawa	31°12.5'N.	130°37.7'E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_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 nomal frequency range. Used in a qualifying sense, see below.

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

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

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

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

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

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

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

O Measurement refers to the ordinary component.

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a 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 magnetoionic component.

c. Description of Standard Types of E_s

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

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

r An E_s trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thich 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. 0234x)

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

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

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

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

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

Maximum intensity

Instantaneous : The highest value above the base level.

Smoothed : By multiplying the duration, the approximate total power of the phenomenon con 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 circuit (London)

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

Start-times and Durations

Types

S : sudden drop-out and gradual 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

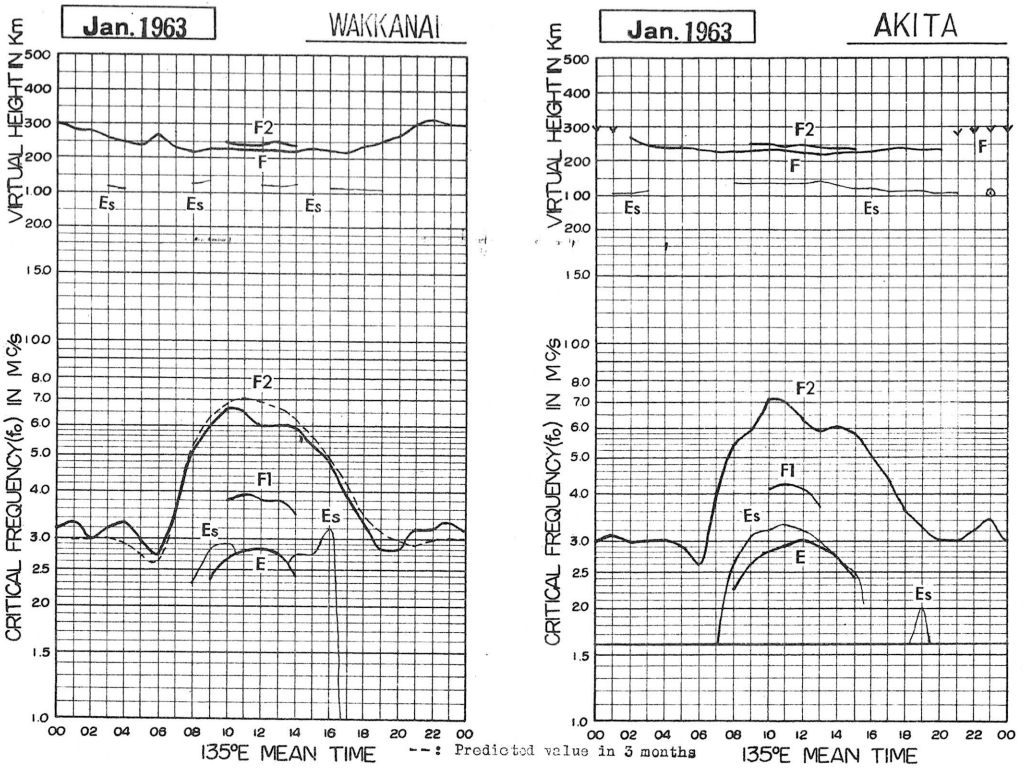
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

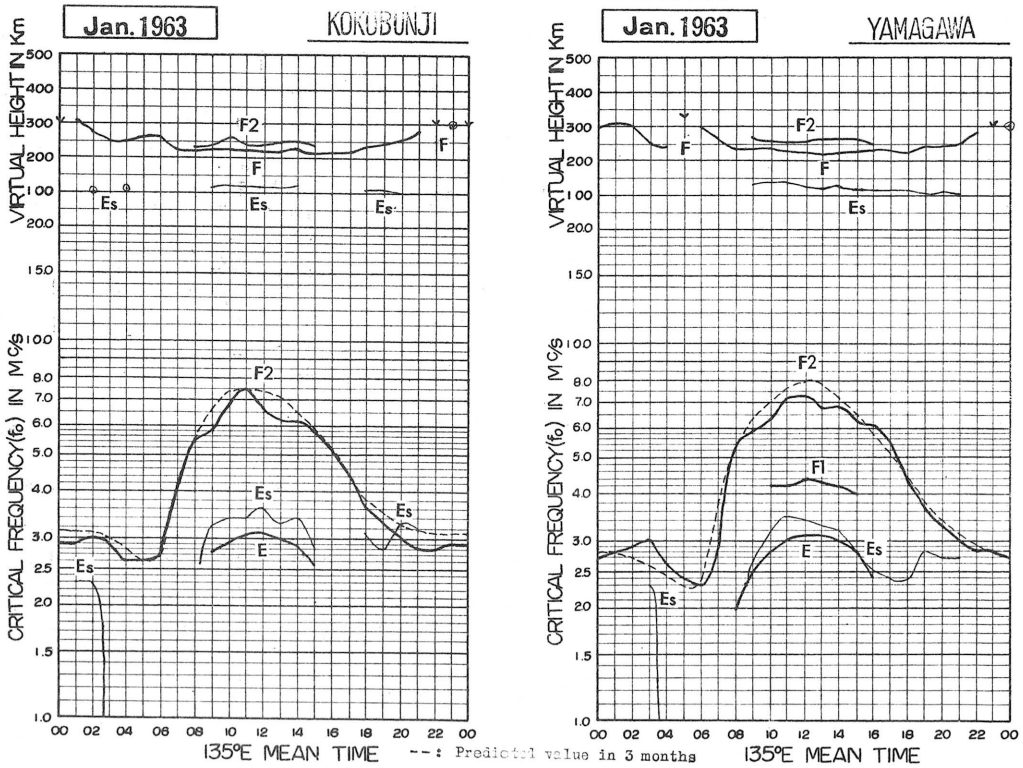
The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

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



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

Jan. 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	U3.3SF	E3.0SF	U3.0F	U3.0F	3.0	U3.3S	2.8	U3.3S	5.8	6.5	8.0	7.3	6.1	5.8	6.5	5.8ZH	5.1	3.8	3.5	E3.1A	E2.8A	U3.3S	2.6	3.3F
2	U3.2FS	U3.4F	3.0F	3.3F	U3.0F	U3.3SF	E2.4SF	U3.2S	5.0	5.8	6.3H	6.7	5.9	5.6	5.8	5.0	3.7	3.6	3.8	3.4	2.8	E3.1F	U3.5F	SF
3	SF	SF	SF	SF	E3.0SF	2.7	2.3	3.3	4.9	5.0	7.5	6.5	6.1	6.5	6.0	4.8	3.6	3.3	3.1	E2.7AS	2.9	3.3	3.0	U3.3F
4	E3.1C	E3.2C	U3.3F	U3.3F	E3.3SF	U3.3F	U2.5SF	3.6	4.8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	6.0	E5.3C	5.3	E4.6C	3.2	3.3	3.5	2.8	U3.3FS	U3.3F	3.3F
6	U3.5F	SF	FS	FS	SF	SF	U3.3SF	3.6	4.5	5.5	7.1	7.2	5.4	5.1	C	C	C	C	C	C	C	C	C	C
7	C	C	E3.4C	U3.7S	E3.6C	U3.4S	U2.6S	3.2	4.1	5.4	5.8	4.9	5.2	6.8	6.1	U6.0S	U4.5S	3.1	2.6	U2.6S	E2.7S	U3.2SF	SF	SF
8	SF	SF	SF	SF	S	U2.3S	E2.6AS	3.0	4.7	6.0	5.6H	5.8	6.1	5.9	5.8	5.3	4.3	3.8	3.6	2.3	E2.5A	2.7	3.2	2.9
9	3.2	U3.4S	3.7	U4.2SF	E4.1SF	E3.7SF	U3.3SF	U4.3S	4.0	5.9	6.4	5.7	6.7	5.8	6.1	4.7H	4.4H	3.5	3.3	2.7	2.5	3.0	U4.2S	E3.3SF
10	U3.8SF	E3.4SF	U2.9SF	U3.3F	U3.6SF	E3.2SF	U2.9F	3.7	4.7H	4.8	6.6	5.5	5.5H	5.8	5.8H	5.1	4.1	3.3	2.5	2.8	E2.3S	2.6	2.6	2.8
11	3.0	3.1F	3.0F	3.0F	2.3	2.4	E2.5AS	3.6	4.9	5.1H	6.4	6.8	5.5	E5.9R	6.1	6.6	4.4H	2.7	3.4	2.8	E2.4S	2.4	U2.6S	U2.8S
12	U3.2S	U3.3S	U3.2S	U3.3S	U3.5SF	3.4	2.7	3.5	U4.3S	5.5	7.0	6.1	6.3	6.3	5.9	E5.7C	4.9	A	A	A	3.6	U3.3SF	U3.4S	U3.8SF
13	SF	SF	SF	SF	U3.5SF	E3.4SF	U2.2S	C	C	C	C	C	6.0	6.9	6.3	6.4	5.1	4.5	E2.8A	E2.8A	U2.9S	E3.1SF	E3.2SF	E3.4SF
14	3.3	4.0	E3.1SF	E3.8SF	U4.9SF	4.4	3.2	3.5	4.7	6.8	7.3	6.5	7.1	6.6	6.0	6.4	4.8	3.5	U3.0S	E2.5S	2.4	2.6	2.8	E3.0SF
15	2.9	2.8	2.6	2.8	2.8	2.7	U2.7S	3.3	6.0	U6.0S	6.1	7.0	8.4	7.0	6.4	5.3H	4.8	3.4	2.6	E2.7S	U2.5S	E2.7SF	E2.8S	U3.3SF
16	U3.0SF	U3.3SF	3.0F	3.0F	3.3F	E2.7SF	E2.3S	3.4	5.1	6.2	U7.3S	U6.4S	6.3	6.2	6.8	5.7	4.0	3.4	3.3	2.7	2.6	2.6	2.8	U2.8S
17	3.0	2.9	2.6F	2.8	3.0	2.8	E2.7S	3.3	4.7	6.8	6.4	5.0	5.4	6.1	6.3	5.8	4.5H	4.3	3.1	2.4	2.7	U2.7S	U2.7S	2.8
18	2.7	3.0	2.9	2.9	3.1	2.4	2.6	3.6	5.4	5.7	6.7	6.3V	6.4	5.6	6.8	5.1	5.0	4.3	2.8	E2.5S	E2.3S	2.6	2.8	2.6
19	2.9	3.0	2.9	2.9F	E3.5SF	E3.8SF	U3.5SF	U4.0S	5.7	6.4	6.2	6.0	5.7	6.3	6.2	5.2	5.0	5.4	3.6	3.1	U3.6S	3.6	U3.6S	3.1
20	3.1	2.7	2.8	E3.0SF	E3.6SF	2.8	2.6	3.5	5.3	6.3	5.8	6.5H	6.8	U6.0R	6.2	5.1	5.8	3.3	2.9	2.9	U3.8S	3.3	E3.7S	E3.9SF
21	U3.3S	3.6	3.6	3.6	3.8	2.9	2.8	3.6	5.2	5.8	5.6	6.4	5.8	6.2	5.6	5.5	5.3	3.8	U4.3S	U3.9S	3.5	3.6	U3.4S	3.2
22	3.2	3.2	3.1	3.2	3.4	3.0	2.8	4.0	5.1	6.5	8.1	6.1	5.3	6.6	5.7	5.3	4.4	3.1	U2.6S	3.1	3.6	U3.0S	U3.0S	U3.0S
23	U3.2S	3.0F	2.9	3.1	3.0	3.4	U3.3S	U3.9S	5.8	6.9	6.1	5.8	6.0	6.0	5.8	5.6	4.8	4.1	3.3	2.8	3.0	U3.4S	E3.6A	U3.7SF
24	E3.9SF	U3.3SF	3.3F	U3.3SF	3.1F	U2.8F	E2.5S	U3.4S	6.0	6.8	7.1	6.4	6.3	5.7	5.4	5.3	5.0	3.9	3.2	2.6	3.2	3.4	E3.3SF	U3.4SF
25	U3.3SF	U3.3SF	3.0F	U3.0SF	U3.2SF	2.8	E2.9S	3.6	5.8	6.7	7.8	6.5	6.0	5.4	5.5	5.8	4.9	3.6	3.9	3.3	3.3	E3.3SF	3.3F	3.4
26	3.1	3.3F	E3.2A	U3.1SF	U3.2SF	U2.3SF	U2.4SF	E3.8A	5.3	5.5	6.1	6.5	6.0	5.8	5.8	5.1	4.9	4.4	3.4	2.3	E2.8A	3.3	3.5	3.9
27	3.3	3.1	3.3F	3.3F	3.5	3.4	3.1	E3.9SA	5.1	6.0	6.6	6.7	5.5	6.5	5.6	4.8	4.5	4.3	3.3	U3.5S	U3.3S	E3.4AS	3.8	5.F
28	SF	SF	SF	3.3F	U3.7FS	3.5	U3.0S	4.1	6.0	6.7	7.4	7.3	6.0	5.9	5.8	5.1	4.7	4.3	3.6	E3.0A	2.4	2.7	3.0	3.3
29	3.3	3.3	3.1	3.1	3.6	2.1	U2.4S	4.3	5.9	6.1	5.8	6.8	7.7	6.3	5.8	5.0	E4.2A	4.3	3.3	2.6	2.7	2.8	3.1	U3.3SF
30	2.9	FS	FS	SF	U3.3SF	E2.6S	E2.8AS	3.7	5.3	5.6	7.2	9.3	7.0	7.1	5.6	5.6	5.3	5.5	3.4	3.0	3.0	3.3	3.5	3.3
31	U3.5S	4.1	4.5	S	A	A	E2.3S	3.9	6.7	8.0	6.3H	8.6	8.3	7.9	7.1	6.5	5.8	6.0	5.0	3.9	4.1	4.4	4.1	3.5
No.	25	23	24	24	27	28	30	29	29	28	28	28	29	30	29	29	29	28	28	28	29	29	28	26
Median	3.2	3.3	3.0	3.2	U3.3	3.0	U2.7	3.6	5.1	6.0	6.6	6.5	6.0	6.0	5.9	5.3	4.8	3.8	3.3	2.8	2.8	3.2	U3.2	U3.3
U.Q.	U3.3	U3.4	3.3	3.3	U3.6	3.4	U2.9	3.9	5.8	6.6	7.2	6.8	6.6	6.5	6.2	5.8	5.0	4.3	3.6	3.1	3.3	3.3	U3.5	U3.4
L.Q.	3.0	3.0	2.9	3.0	3.0	2.7	U2.5	3.4	4.7	5.6	6.2	6.0	5.6	5.8	5.8	5.1	4.4	3.4	3.0	2.6	2.5	2.7	2.8	3.0
Q.R.	0.3	0.4	0.4	0.3	0.6	0.7	0.4	0.5	1.1	1.0	1.0	0.8	1.0	0.7	0.4	0.7	0.6	0.9	0.6	0.5	0.8	0.6	0.7	0.4

foF2

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

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

Jan. 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											U3.7L	U3.8L												
2												3.8	3.7											
3											3.9	3.9	U3.8L	U3.5L										
4										C	C	C	C	C	C	C								
5														3.5										
6												3.9			C	C								
7														U3.8L	U3.5L									
8													U3.8L											
9											3.6	4.1	U3.8LH	3.8	3.4									
10											U3.8L													
11												A	3.8	3.5										
12											L		3.9		L									
13										C	C	C	U4.0LH	3.7										
14											U3.7L	3.9	3.9	3.6	S									
15											3.0	U4.1L	3.9	3.8	3.3									
16											U3.5L		3.8	U3.4L	U3.6L									
17														L	L									
18											3.8	4.0	U3.9L	4.1	3.8									
19										3.4		U3.9L		U3.8L										
20										U3.1L			3.8		U3.4L									
21												U3.9L	U3.9L	U3.8L										
22										U3.5L	U3.9L	3.9	3.8	U3.9L										
23										L	U3.6L	U3.8L	U3.8L											
24											U3.8L	3.9	U3.8L	U3.8L										
25											L	3.8		U3.6L										
26											U3.8L	3.9	3.8			2.9								
27											U4.0L	4.0	U3.9L	U3.8L	U3.5L									
28											4.0	4.1	4.1		U3.5L									
29											L		Z4.0A	L										
30											4.0	4.0	4.0	4.0	3.5									
31												4.1	3.9	4.0										
No.										3	15	19	22	18	9	1								
Median										U3.4	U3.8	3.9	3.8	U3.8	U3.5	2.9								

foF1

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

The Radio Research Laboratories, Japan.

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10

IONOSPHERIC DATA

Jan. 1933 | 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	2.10	I2.45A	2.70	2.70	2.45	S	S	S							
2								S	2.15	B	B	B	B	B	S	S	S							
3								S	S	S	2.60	2.65	2.55	2.70	I2.20A	S	S							
4								S	S	C	C	C	C	C	C	C	C							
5								C	C	C	C	C	C	S	C	S	C							
6								S	S	S	S	S	S	S	C	C	C							
7								S	S	A	S	S	S	S	S	S	S							
8								S	S	2.25	2.50	2.70	2.50	2.50	2.30	S	S							
9								S	2.05	2.35	2.65	2.85	2.80	2.60	I2.40S	S	S							
10								S	S	2.35	2.65	2.80	I2.80S	2.80	2.30	S	S							
11								S	S	S	2.70	2.70	2.70	I2.55S	S	S	S							
12								S	2.15	2.50	I2.65S	S	S	S	S	C								
13								C	C	C	C	C	2.90	2.80	2.50	S								
14								S	S	A	S	S	S	A	S	S								
15								S	S	S	A	A	A	A	S	S	S							
16								S	S	S	S	B	2.70	S	S	S	S							
17								S	S	2.30	S	S	S	S	S	S	S							
18								S	S	S	S	S	S	S	S	S	S							
19								S	S	S	2.80	B	B	S	S	S	S							
20								S	S	A	A	2.80	2.65	2.70	2.40	S	S							
21								S	S	S	2.60	2.70	2.75	2.65	2.35	S	S							
22								S	S	2.30	2.60	2.75	2.80	2.70	S	S	S							
23								S	S	2.30	2.70	2.90	2.85	2.80	2.40	S	S							
24								S	S	2.40	2.65	2.70	2.75	2.75	2.40	S	S							
25								S	A	2.35	I2.50A	2.65	2.75	I2.65S	I2.50S	S	S							
26								S	S	2.30	2.60	2.70	2.75	2.75	2.35	S	S							
27								S	S	2.35	2.60	I2.75A	2.80	2.80	2.50	2.10	S							
28								S	2.10	2.10	2.70	2.85	I2.80A	2.85	2.40	S	S							
29								S	S	2.50	2.70	2.90	2.80	2.80	2.40	S	S							
30								S	S	2.45	2.65	2.85	2.85	I2.75B	B	B	S							
31								S	S	S	2.60	2.75	2.85	2.75	2.40	2.10	S							
No.									4	15	19	18	20	19	15	2								
Median									2.10	2.35	2.65	2.75	2.80	2.75	2.40	2.10								

foE

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

IONOSPHERIC DATA

Jan. 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	J2.5	J3.0	J1.8	E	J3.0	J2.5	J2.5	3.0	J3.1	G	G	G	S	S	S	E	J4.5	J7.3	J6.3	E	J4.0	J2.5
2	E	E	1.4	J3.3	E	E	E	S	G	B	B	B	J3.3	3.2	3.3	S	S	E	E	E	J4.0	2.4	E	E
3	E	E	E	E	E	E	E	S	S	S	2.9	G	G	G	2.6	S	J3.6	E	E	J2.6	E	E	E	E
4	C	C	E	E	E	E	E	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	S	C	S	C	E	E	E	E	E	E	E
6	E	E	E	J1.8	J2.1	E	E	S	S	S	S	S	S	S	C	C	C	C	C	C	C	C	G	C
7	C	C	C	J1.6	C	E	E	S	S	J2.5	S	S	S	S	S	S	S	E	E	E	S	E	J3.1	J2.5
8	E	J3.0	E	E	E	E	2.7	S	2.9	2.9	3.3	3.5	J4.0	3.2	G	S	S	E	J3.1	E	J3.3	E	E	E
9	E	E	1.8	E	1.4	E	E	S	G	G	2.4G	G	G	G	S	S	S	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	S	S	2.9	G	G	S	G	G	S	S	J3.0	E	E	S	E	E	E
11	E	E	E	E	E	J4.1	J2.9	J2.5	S	S	3.3	J4.3	G	S	S	S	J3.0	J5.3	E	E	S	E	E	E
12	E	E	E	E	E	E	E	S	G	3.2	3.7	3.8	3.6	3.8	S	C	J9.0	J10.0	J7.3	J5.0	J2.5	E	E	E
13	E	E	E	E	E	E	E	C	C	C	C	C	G	G	3.8	2.8	J3.5	J5.0	J3.5	J6.3	J3.0	E	J2.4	E
14	J2.3	J3.0	J2.5	E	J2.0	J2.0	E	S	J4.4	J6.3	2.9	2.9	S	J3.3	S	S	J2.8	J5.3	J2.8	E	E	E	E	E
15	E	E	E	1.5	1.8	E	E	S	J5.3	J11.3	2.7	J3.3	3.4	3.0	S	S	S	E	E	S	E	E	S	E
16	E	E	E	E	E	E	S	S	S	S	S	B	G	S	S	S	S	E	E	E	E	E	E	E
17	E	E	E	E	E	E	S	S	S	2.9	2.9	S	S	S	S	S	J2.8	J3.3	E	E	E	E	E	E
18	E	E	E	E	1.5	2.7	E	S	S	S	S	S	3.4	S	J4.0	S	S	E	E	S	S	E	E	E
19	E	E	E	E	1.4	E	E	S	S	S	G	B	B	3.2	3.1	J4.3	S	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	S	S	2.9	3.0	G	G	G	G	S	S	E	E	E	E	E	E	J2.8
21	E	E	E	E	E	E	E	S	S	2.8	2.9	G	3.2	G	G	S	S	E	E	E	E	E	E	E
22	E	J3.0	J2.1	J2.5	1.4	2.0	E	S	S	G	G	G	G	G	S	S	S	E	E	E	E	E	E	E
23	E	E	E	E	1.5	E	E	S	S	G	G	G	G	G	G	S	S	E	E	E	E	E	J4.3	J5.0
24	E	J2.3	J1.5	1.5	E	E	E	S	S	G	G	G	G	G	G	S	S	E	E	J4.3	E	E	J2.5	E
25	E	E	E	1.5	J4.3	E	E	J2.5	J2.3	G	2.9	G	3.2	3.1	3.0	2.4	S	E	E	E	E	J2.5	E	J2.4
26	E	E	J5.3	J3.5	E	E	E	J11.3	J4.3	G	G	G	G	G	2.7	S	J3.0	E	J2.5	J3.1	J3.5	J3.0	J2.5	J2.5
27	E	E	E	1.3	1.4	J3.0	J2.3	J3.5	S	2.8	3.0	J3.0	G	G	2.9	2.3	S	J2.3	E	J3.3	E	J3.3	J2.6	E
28	E	E	E	E	E	E	E	S	G	2.6	G	G	J4.5	3.7	3.8	2.7	J4.3	J3.3	J4.0	J3.3	S	J3.3	J3.1	E
29	E	J2.1	2.1	E	E	E	2.3	S	2.3	2.8	3.2	4.0	4.0	3.9	3.4	3.0	J6.4	E	J2.5	E	E	E	E	E
30	E	E	E	1.4	2.3	S	J3.0	S	S	G	G	G	G	B	B	B	S	J4.0	E	J2.5	J2.5	E	E	E
31	E	E	E	1.5	3.6	J4.0	S	J2.6	S	S	G	G	G	G	G	G	J3.0	J2.5	J4.3	J3.0	E	E	E	E
No.	28	28	29	30	29	29	27	6	11	20	23	21	23	22	17	7	10	29	29	27	24	29	28	29
Median	E	E	E	E	E	E	E	2.6	2.3	2.8	2.9	G	G	G	2.7	2.7	3.2	E	E	E	E	E	E	E
U.Q.	E	E	1.4	1.5	1.6	E	E	3.5	4.3	2.9	3.0	3.2	3.4	3.2	3.4	3.0	4.3	3.2	2.6	3.1	2.5	E	2.4	E
L.Q.	E	E	E	E	E	E	E	2.5	G	G	G	G	G	G	G	2.3	3.0	E	E	E	E	E	E	E
Q.R.								1.0								0.7	1.3							

foEs

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Jan. 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	G	G	2.8				S	S	S		E	A	A		E	E
2			E	E				S		B	B	B	3.0	3.1	G	S	S				E	E		
3								S	S	S	G				2.5	S	G			AS				
4	C	C						S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	S	C	S	C							
6				E	E			S	S	S	S	S	S	S	C	C	C	C	C	C	C	C	C	C
7	C	C	C	E	C			S	S	2.5	S	S	S	S	S	S	S				S		E	E
8		E					A	S	G	G	G	G	G	G		S	S		E		A			
9			E		E			S			2.2				S	S	S							
10								S	S	G			S			S	S	E			S			
11						E	AS	G	S	S	G	4.0		S	S	S	G	E			S			
12								S		G	G	G	G	G	S	C	3.1	A	A	A	E			
13								C	C	C	C	C			3.3	G	E	E	A	A	E		E	
14	E	E	E		E	E		S	4.0	2.6	G	G	S	3.1	S	S	E	E	E					
15				E	E			S	4.0	4.2	2.6	2.9	3.0	3.0	S	S	S			S			S	
16							S	S	S	S	S	B		S	S	S	S							
17							S	S	S	G	G	S	S	S	S	S	2.4	3.0						
18					E	E		S	S	S	S	S	G	S	G	S	S			S	S			
19					E			S	S	S		B	B	G	G	3.1	S							
20								S	S	2.4	2.6					S	S							E
21								S	S	G	G		G			S	S							
22		E	E	E	E	E		S	S						S	S	S							
23					E			S	S							S	S						A	E
24		E	E	E				S	S							S	S			2.3			E	
25				E	E			G	G		G		G	G	G	G	S					E		E
26			A	E				A	2.2						G	S	2.2		E	E	A	E	E	E
27				E	E	E	E	A	S	G	G	3.0			G	G	S	E		E		A	E	
28								S		G			3.2	G	G	G	2.0	E	3.0	A	S	E	E	
29		E	E				E	S	G	G	G	G	4.0	G	G	3.0	A		E					
30				E	E	S	A	S	S					B	B	B	S	E		E	E			
31				E	A	A	S	G	S	S							G	E	E	E				
No.																								
Median																								

foEs

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

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

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

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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	1.85^{s}	1.20^{s}	1.50^{s}	E	E	1.50^{s}	1.80^{s}	1.80^{s}	1.80^{s}	2.00	1.75	2.00	2.00	2.00	2.50^{s}	2.15^{s}	2.00^{s}	2.00^{s}	1.85^{s}	1.90^{s}	1.80^{s}	2.00^{s}	1.80^{s}	1.90^{s}
2	2.00^{s}	1.30^{s}	E	E	E	E	1.80^{s}	1.90^{s}	1.85	2.60	2.90	3.00	3.00	2.50	2.40^{s}	2.00^{s}	1.70^{s}	1.90^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}	1.80^{s}	1.90^{s}
3	1.90^{s}	1.50^{s}	1.50^{s}	E	E	1.20^{s}	1.60^{s}	1.80^{s}	2.30^{s}	2.75^{s}	2.00	2.00	2.00	2.00	2.00	2.10^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.90^{s}	1.90^{s}	2.00^{s}	1.80^{s}
4	C	C	E	E	E	1.30^{s}	1.50^{s}	1.90^{s}	2.30^{s}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	3.00^{s}	C	2.30^{s}	C	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.85^{s}	1.90^{s}	1.85^{s}
6	1.80^{s}	1.20^{s}	E	E	E	E	1.80^{s}	1.50^{s}	2.20^{s}	2.80^{s}	3.00^{s}	3.00^{s}	3.00^{s}	3.00^{s}	C	C	C	C	C	C	C	C	C	C
7	C	C	C	E	C	E	2.00^{s}	1.90^{s}	2.05^{s}	2.00^{s}	2.90^{s}	2.95^{s}	2.90^{s}	3.00^{s}	2.50^{s}	2.30^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.90^{s}	S	1.90^{s}	2.00^{s}	1.85^{s}
8	1.95^{s}	E	E	E	E	1.50^{s}	1.80^{s}	2.00^{s}	2.00^{s}	2.00	2.00	2.00	2.00	2.00	2.00	2.10^{s}	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}	1.90^{s}	1.90^{s}	2.00^{s}	2.10^{s}
9	2.00^{s}	E	E	E	E	1.50^{s}	1.80^{s}	1.70^{s}	1.80	2.00	2.00	2.15	2.10	2.00	2.50^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
10	2.00^{s}	1.20^{s}	E	E	E	E	1.70^{s}	2.00^{s}	2.20^{s}	1.90	2.00	2.00	2.90^{s}	2.00	2.00	2.20^{s}	1.90^{s}	1.80^{s}	2.00^{s}	1.90^{s}	S	2.00^{s}	1.90^{s}	2.00^{s}
11	2.00^{s}	1.20^{s}	E	E	E	E	1.70^{s}	1.70^{s}	2.10^{s}	2.50^{s}	2.00	2.00	2.20	2.90^{s}	2.50^{s}	2.60^{s}	2.00^{s}	2.00^{s}	1.60^{s}	2.00^{s}	S	1.80^{s}	2.00^{s}	2.00^{s}
12	2.00^{s}	1.10^{s}	E	E	E	E	1.80^{s}	1.90^{s}	2.00^{s}	2.00	2.70^{s}	2.70^{s}	2.80^{s}	2.70^{s}	2.50^{s}	C	2.00^{s}	1.80^{s}	1.80^{s}	2.00^{s}	1.80^{s}	2.00^{s}	2.00^{s}	1.90^{s}
13	2.00^{s}	1.70^{s}	1.30^{s}	E	E	E	1.80^{s}	C	C	C	C	C	2.00	2.10	2.00	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
14	2.00^{s}	E	E	E	E	E	1.80^{s}	1.80^{s}	2.00^{s}	2.00	2.60^{s}	2.70^{s}	3.00^{s}	2.50	3.90^{s}	2.20^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}	2.00^{s}
15	2.00^{s}	1.60^{s}	1.35^{s}	E	E	1.95^{s}	1.90^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00	2.00	2.15	2.30	2.50^{s}	2.10^{s}	2.10^{s}	2.00^{s}	2.00^{s}	S	1.85^{s}	2.00^{s}	S	2.00^{s}
16	2.00^{s}	E	E	E	E	1.20^{s}	S	2.00^{s}	2.15^{s}	2.50^{s}	2.70^{s}	3.00	2.15	2.70^{s}	2.70^{s}	2.70^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
17	2.00^{s}	E	E	E	E	1.50^{s}	S	2.00^{s}	2.30^{s}	2.00	2.60^{s}	2.70^{s}	2.90^{s}	3.00^{s}	2.85^{s}	2.70^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
18	2.00^{s}	E	1.80^{s}	E	E	1.80^{s}	2.00^{s}	2.00^{s}	2.15^{s}	2.70^{s}	2.90^{s}	2.90^{s}	2.70^{s}	2.85^{s}	2.30^{s}	2.10^{s}	2.10^{s}	2.00^{s}	2.00^{s}	S	S	2.00^{s}	2.00^{s}	2.00^{s}
19	2.00^{s}	1.80^{s}	1.70^{s}	E	E	1.60^{s}	1.80^{s}	1.70^{s}	2.50^{s}	2.40^{s}	2.50	3.00	3.00	2.70^{s}	2.50^{s}	2.10^{s}	2.10^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
20	2.00^{s}	1.70^{s}	1.70^{s}	E	1.85^{s}	1.80^{s}	2.00^{s}	2.00^{s}	2.10^{s}	2.00	2.00	2.15	2.00	2.00	2.00	2.30^{s}	2.10^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
21	2.00^{s}	E	1.70^{s}	E	E	E	2.00^{s}	2.00^{s}	2.20^{s}	2.30^{s}	2.10	2.00	2.10	2.10	2.15	2.50^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.90^{s}	1.90^{s}
22	2.00^{s}	1.20^{s}	E	E	E	1.50^{s}	2.00^{s}	2.00^{s}	2.10^{s}	2.00	2.00	2.10	2.00	2.10	2.50^{s}	2.50^{s}	2.00^{s}	2.00^{s}	1.80^{s}	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}
23	1.90^{s}	E	1.60^{s}	E	E	E	2.00^{s}	2.00^{s}	2.10^{s}	2.20^{s}	2.00	2.15	2.00	2.00	2.00	2.50^{s}	1.90^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}
24	2.00^{s}	E	E	E	E	E	2.00^{s}	2.00^{s}	2.10^{s}	2.00	2.00	2.00	2.20	2.40	2.00	2.60^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.10^{s}	1.80^{s}	1.90^{s}
25	2.00^{s}	1.40^{s}	1.80^{s}	E	E	1.70^{s}	1.90^{s}	1.90^{s}	2.00^{s}	2.00	2.60^{s}	2.00	2.40	2.70^{s}	2.50^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
26	2.00^{s}	2.00^{s}	E	E	E	1.70^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00	2.00	2.10	2.20	2.00	2.00	2.20^{s}	1.80^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
27	2.00^{s}	1.60^{s}	E	E	E	E	2.00^{s}	2.00^{s}	2.20^{s}	2.00	2.00	2.00	2.20	2.00	2.00	2.00	2.45^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
28	2.00^{s}	1.70^{s}	E	E	E	1.60^{s}	2.00^{s}	2.00^{s}	2.00	2.00	2.15	2.50	2.05	2.50	2.25	2.20^{s}	2.00^{s}	1.80^{s}	2.00^{s}	1.80^{s}	2.00^{s}	2.00^{s}	1.80^{s}	2.00^{s}
29	2.10^{s}	1.60^{s}	E	E	E	1.50^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.10	2.10	2.50	2.00	2.00	2.00	2.00^{s}	2.30^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}	1.90^{s}	2.00^{s}	2.00^{s}
30	2.00^{s}	1.60^{s}	E	E	E	S	1.90^{s}	2.00^{s}	2.30^{s}	2.00	2.10	2.10	2.20	3.00	2.50	2.50	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.10^{s}	2.00^{s}	2.00^{s}
31	2.00^{s}	1.50^{s}	E	E	E	E	S	2.00^{s}	2.30^{s}	2.50^{s}	2.00	2.00	2.00	2.00	2.00	2.00	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}	2.00^{s}
No.	28	28	19	30	29	29	27	29	29	18	20	22	22	20	28	28	28	29	29	27	25	29	28	29
Median	2.00	1.20	E	E	E	1.20	1.90	2.00	2.10	2.00	2.00	2.05	2.10	2.00	2.35	2.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

f-min

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

The Radio Research Laboratories, Japan.

W 6

IONOSPHERIC DATA

Jan. 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	U2.90SF	E3.15SF	U3.00F	U3.00F	2.95	U3.35S	3.05	U3.20S	3.45	3.25	3.50	3.60	3.50	3.45	3.50	3.60RH	3.75	3.35	3.45	E3.35A	E3.20A	U3.40S	3.20	3.60F
2	U2.85FS	U3.10F	2.85F	2.80F	U3.35F	U3.05SF	E3.20SF	U3.30S	3.45	3.60	3.25H	3.60	3.40	3.65	3.60	3.75	3.50	3.40	3.35	3.70	2.95	E2.85F	U3.15F	SF
3	SF	SF	SF	SF	E3.00SF	3.15	3.15	3.25	3.35	3.65	3.35	3.65	3.75	3.45	3.75	3.85	3.40	3.10	3.25	E3.20AS	3.05	3.10	3.25	U3.05F
4	E2.85C	E2.95C	U2.80F	U2.90F	E2.90SF	U3.30F	U2.80SF	3.35	3.65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	3.65	E3.70C	3.40	E3.55C	3.20	3.35	3.30	3.05	U2.80FS	U2.90F	3.05F
6	U2.85F	SF	FS	FS	SF	SF	U3.50SF	3.45	3.55	3.50	3.65	3.60	3.75	3.90	C	C	C	C	C	C	C	C	C	C
7	C	C	E3.05C	U3.20S	E3.35C	U3.40S	U3.25S	3.30	3.70	3.70	3.50	3.65	3.45	3.60	3.50	U3.65S	U3.80S	3.25	3.25	U3.25S	E3.20S	U2.70SF	SF	SF
8	SF	SF	SF	SF	S	U3.05S	E3.00AS	3.65	3.50	3.55	3.25H	3.30	3.60	3.40	3.50	3.95	3.50	3.40	3.55	3.15	E3.05A	3.00	2.95	3.05
9	3.15	U3.20S	3.05	U2.90SF	E3.10SF	E3.20SF	U3.20SF	U3.05S	3.75	3.55	3.60	3.50	3.50	3.65	3.60	3.20H	3.30H	3.45	3.20	3.35	3.10	2.95	U2.95S	E3.50SF
10	U3.10SF	E3.10SF	U2.95SF	U2.90F	U2.80SF	E3.15SF	U3.15SF	3.45	3.30H	3.55	3.50	3.65	3.40H	3.50	3.55H	3.75	3.65	3.35	3.15	3.55	E3.00S	3.00	3.10	2.85
11	2.75	2.90F	2.95F	3.35F	3.10	3.25	E3.20AS	3.45	3.65	3.35H	3.60	3.65	3.65	E3.60R	3.55	3.55	3.50H	3.35	3.70	3.55	E3.05S	3.15	U3.10S	U2.85S
12	U2.80S	U2.95S	U2.90S	U3.35S	U3.10SF	3.25	3.40	3.45	U3.55S	3.20	3.45	3.60	3.20	3.45	3.40	E3.60C	3.40	A	A	A	3.35	U3.05SF	U3.30S	U3.05SF
13	SF	SF	SF	SF	U2.90SF	E3.00SF	U3.25S	C	C	C	C	C	3.55	3.20	3.50	3.60	3.55	3.55	E3.10A	E2.95A	U2.75S	E2.90SF	E3.00SF	E2.90SF
14	3.05	3.00	E3.00SF	E3.05SF	U2.90SF	3.20	3.55	3.45	3.45	3.50	3.45	3.40	3.50	3.50	3.05	3.50	3.55	3.45	U3.35S	E3.30S	3.05	3.10	2.90	E2.95SF
15	2.85	3.20	3.00	3.00	3.05	3.10	U3.25S	3.35	3.50	U3.35S	3.70	3.15	3.55	3.55	3.45	3.40H	3.50	3.25	3.40	E3.10S	U3.00S	E3.00SF	E2.95S	U2.75SF
16	U2.85SF	U2.90SF	2.95F	3.00F	3.25F	E3.30SF	E3.30S	3.45	3.45	3.55	U3.45S	U3.20S	3.65	3.45	3.45	3.75	3.65	3.25	3.35	3.20	3.10	3.10	3.05	U3.20S
17	3.10	3.00	3.00F	3.15	3.10	3.70	E3.30S	3.35	3.40	3.65	3.60	3.70	3.45	3.45	3.55	3.45	3.35H	3.45	3.55	3.25	3.00	U3.15S	U3.00S	2.95
18	2.95	2.95	3.05	3.05	3.25	3.45	3.20	3.45	3.50	3.65	3.35	3.35V	3.50	3.30	3.25	3.75	3.30	3.45	3.25	E3.25S	E3.10S	2.90	3.05	3.05
19	2.95	3.00	3.05	3.05F	E3.10SF	E3.20SF	U3.45SF	U3.25S	3.35	3.50	3.65	3.55	3.40	3.50	3.55	3.40	3.30	3.50	3.30	3.25	U3.05S	3.30	U3.15S	2.95
20	3.05	2.95	3.15	E3.00SF	E3.25SF	3.25	3.35	3.45	3.40	3.25	3.45	3.55H	3.30	U3.15R	3.60	3.75	3.60	3.30	2.90	3.30	U3.20S	3.30	E3.20S	E3.20SF
21	U3.35S	3.10	3.15	3.20	3.55	3.45	3.20	3.35	3.65	3.60	3.45	3.65	3.60	3.40	3.55	3.65	3.40	3.35	U3.05S	U3.30S	3.15	3.30	U3.25S	2.95
22	3.15	3.30	3.25	3.15	3.40	3.35	3.15	3.25	3.50	3.55	3.75	3.75	3.85	3.50	3.60	3.75	3.55	3.40	U3.10S	3.05	3.45	U3.05S	U2.75S	U3.05S
23	U2.95S	2.90F	3.05	3.00	2.95	3.30	U3.05S	U3.30S	3.50	3.75	3.70	3.75	3.45	3.35	3.45	3.35	3.65	3.60	3.40	3.30	3.05	U3.10S	E3.00A	U2.75SF
24	E3.15SF	U3.10SF	3.00F	U3.05SF	3.05F	U3.20F	E3.15S	U3.30S	3.50	3.55	3.45	3.70	3.65	3.75	3.50	3.45	3.50	3.40	3.30	3.30	3.05	3.10	E3.15SF	U3.10SF
25	U2.95SF	U2.90SF	2.90F	U3.00SF	U3.15SF	3.55	E3.10S	3.35	3.55	3.20	3.60	3.70	3.65	3.65	3.45	3.45	3.55	3.40	3.35	3.35	3.10	E2.90SF	2.80F	3.25
26	3.25	2.95F	E2.80A	U2.90SF	U3.45SF	U3.05SF	U3.10SF	E3.30A	3.75	3.65	3.60	3.65	3.50	3.60	3.60	3.75	3.50	3.50	3.55	3.05	E3.00A	2.95	3.15	3.25
27	3.35	3.00	3.05F	3.05F	3.25	3.25	3.25	E3.45SA	3.65	3.55	3.55	3.60	3.95	3.65	3.95	3.75	3.40	3.30	3.35	U3.30S	U3.40S	E3.10AS	2.90	SF
28	SF	SF	SF	3.05F	U3.30SF	3.45	U3.15S	3.30	3.40	3.45	3.50	3.65	3.65	3.75	3.70	3.75	3.50	3.40	3.70	E3.40A	3.15	3.05	2.95	3.05
29	3.10	3.05	2.95	3.20	3.40	2.90	U3.15S	3.50	3.40	3.50	3.45	3.40	3.05	3.50	3.85	3.80	E3.45A	3.05	3.35	3.40	3.05	2.95	2.85	U3.50SF
30	3.10	FS	FS	SF	U3.65SF	E3.45S	E3.20AS	3.30	3.55	3.55	3.35	3.45	3.55	3.55	3.75	3.55	3.40	3.45	3.35	3.35	2.75	2.95	2.85	2.95
31	U2.90S	3.15	3.60	S	A	A	E3.15S	3.20	3.45	3.40	3.25H	3.25	3.25	3.30	3.40	3.30	3.30	3.20	3.10	2.75	2.70	2.95	3.05	3.25
No.	25	23	24	24	27	28	30	29	29	28	28	28	29	30	29	29	29	28	28	28	29	29	28	26
Median	2.95	3.00	3.00	3.05	U3.10	3.25	U3.20	3.35	3.50	3.55	3.50	3.60	3.55	3.50	3.55	3.60	3.50	3.40	3.35	3.30	3.05	3.05	U3.00	U3.05

M(3000)F2

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

The Radio Research Laboratories, Japan.

W

IONOSPHERIC DATA

Jan. 1963

M(3000)F1

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

16

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											U3.85L	U3.95L												
2												3.90	3.80											
3											3.85	4.00	U3.95L	U4.00L										
4										C	C	C	C	C	C	C								
5														U4.00L										
6												U3.85L			C	C								
7														U3.70L	U3.90L									
8													U3.95L											
9											L	3.90	I3.90LH	3.95	4.10									
10											L													
11												A	4.00	4.05										
12											L		3.85		L									
13										C	C	C	U3.95LH	3.80										
14											U3.80L	3.85	3.85	3.90	S									
15											4.00	U3.75L	3.70	3.95	3.95									
16											U3.70L		3.95	U3.95L	U3.90L									
17														L	L									
18											3.75	3.85	U3.90L	3.65	3.70									
19										3.85		U3.85L		U3.75L										
20										U4.05L			3.95		U4.05L									
21												U3.85L	U3.95L	U3.95L										
22										U4.00L	I3.85L	4.00	4.20	U3.85L										
23										L	L	U4.05L	U3.95L											
24											U3.95L	4.05	U3.95L	U3.95L										
25											L	3.95		U4.15L										
26											U3.95L	3.85	4.05			4.05								
27											U3.80L	3.95	U4.10L	U3.95L	U4.30L									
28											3.75	3.85	3.95		U4.00L									
29											L		A	L										
30											3.75	3.75	4.00	3.85	4.05									
31												3.70	3.90	3.75										
No.										3	12	19	21	18	9	1								
Median										U4.00	U3.80	3.85	3.95	U3.95	U4.00	4.05								

M(3000)F1

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

The Radio Research Laboratories, Japan.

W 8

IONOSPHERIC DATA

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

h'F2

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

The Radio Research Laboratories, Japan.

W 9

17

IONOSPHERIC DATA

Jan. 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	285	250	300	300	270	240	260	220	240	240	240	225	200H	225	260	250H	215	250	240	I255A	I295A	255	260	270
2	320	265	290	275	235	230	270	260	230	230	225	230	230	230	235	220	205	220	245	225	300	310	265	300
3	315	300	300	250	260	230	270	230	215	215	250	225	220	235	225	215	215	255	260	I280AS	285	260	250	280
4	I320C	I295C	270	265	290	250	275	230	220	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	235	I225C	225	I240C	270	255	280	310	300	310	300
6	305	275	265	250	255	225	220	225	225	225	240	240	225	220	C	C	C	C	C	C	C	C	C	C
7	C	I305C	I275C	235	205	210	260	230	220	220	235	220	225	230	230	235	205	260	280	270	I275S	330	310	290
8	300	300	290	220	200	300	I310AS	230	220	240	220H	240	240	235	230	220	210	250	230	320	I310A	305	290	300
9	260	250	270	260	250	220	240	220	215	235	235	210	220H	210	225	200H	220H	220	270	260	320	315	260	305
10	290	260	260	260	270	235	270	220	200	225	235	210H	225	245	240H	220	215	250	315	230	I320S	310	320	340
11	350	310	285	225	235	270	I280AS	235	220	220	250	I240A	225	210	200H	230	205	325	230	240	I310S	310	310	335
12	300	305	290	230	250	245	240	210	210	245	250	245	245	250	245	I240C	240A	A	A	A	245	270	260	280
13	305	290	275	225	245	225	225	C	C	C	C	C	240	220	240	225	230	225	I285A	I300A	360	300	310	310
14	310	275	310	255	250	260	225	230	I235A	260	250	235	235	230	I210S	250	220	240	275	230	335	310	370	300
15	325	255	310	250	295	270	275	235	I220A	I220A	205	240	250	230	210	215H	220	275	275	I275S	320	300	I315S	330
16	335	260	290	275	245	250	I285S	250	225	240H	210	225	225	210	250	220	225	260	260	290	320	300	300	310
17	275	300	320	270	250	205	I250S	240	240	240	225	225	230	250	245	235	210	I250A	230	285	290	300	350	310
18	350	300	270	260	250	235	300	240	235	220	230	235	230	220	240	215	215	230	270	I290S	I305S	365	335	320
19	320	285	300	270	250	220	225	220	240	240	240	230	230	230	240	235	235	245	250	260	300	255	270	300
20	300	270	270	275	260	205	280	240	225	220	220	230H	210	225	230	220	225	260	260	275	265	270	280	285
21	315	270	270	250	215	210	250	240	220	230	230	230	220	220	225	230	235	225	250	250	265	255	280	300
22	290	250	260	255	230	240	290	250	220	230	250	225	200	210	230	225	220	250	310	285	230	285	330	285
23	290	295	300	270	295	230	260	230	240	235	220	220	200	205H	235	235	220	220	250	260	285	280	I310A	325
24	250	275	275	260	225	250	300	250	225	240	230	230	205	225	230	230	230	240	250	I300A	290	285	340	270
25	275	290	300	250	230	225	305	240	215	235	235	230	230	225	250	240	220	225	250	240	250	315	310	275
26	250	305	I330A	270	220	250	305	I270A	210	230H	230	220	200	245	240	210	220	230	220	290	I325A	310	280	250
27	255	270	270	260	240	255	260	I240A	220	230	245	230	210	210	225	210H	220	240	250	260	250	I300A	300	300
28	285	245	275	250	230	220	275	240	230	220	230	235	220	225	235	220	225	225	I240A	I250A	E310S	300	330	300
29	300	285	300	250	200	320	330	235	220	235	230	260	I255A	250	225	225	I240A	250	235	255	285	315	330	230
30	275	300	280	260	215	I250S	I285AS	250	220	230	240	230	225	220	215	225H	225	225	250	255	350	310	340	340
31	320	265	215	235	I250A	I265A	I310S	250	240	230	230H	240	220	240	240	250	245	235	265	310	350	295	265	250
No.	29	30	30	30	30	30	30	29	29	28	28	28	29	30	29	29	29	28	28	28	29	29	29	29
Median	300	280	280	260	250	240	270	235	220	230	230	230	225	225	230	225	220	240	250	265	300	300	310	300

h'F

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

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

Jan. 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	105	110	110	E	110	110	115	110	105	G	G	G	S	S	S	E	125	110	110	E	120	105
2	E	E	110	110	E	E	E	S	G	B	B	B	105	105	130	S	S	E	E	E	125	120	E	E
3	E	E	E	E	E	E	E	S	S	S	160	G	G	G	135	S	105	E	E	115	E	E	E	E
4	C	C	E	E	E	E	E	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	S	C	S	C	E	E	E	E	E	E	E
6	E	E	E	105	100	E	E	S	S	S	S	S	S	S	C	C	C	C	C	C	C	C	C	C
7	C	C	C	125	C	E	E	S	S	120	S	S	S	S	S	S	S	E	E	E	S	E	115	110
8	E	105	E	E	E	E	150	S	145	135	125	125	120	125	G	S	S	E	110	E	110	E	E	E
9	E	E	110	E	110	E	E	S	G	G	115	G	G	G	S	S	S	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	S	S	180	G	G	S	G	G	S	S	110	E	E	S	E	E	E
11	E	E	E	E	E	110	110	110	S	S	150	135	G	S	S	S	110	110	E	E	S	E	E	E
12	E	E	E	E	E	E	E	S	G	140	150	140	150	140	S	C	115	105	105	105	105	E	E	E
13	E	E	E	E	E	E	E	C	C	C	C	C	G	G	140	145	115	115	110	110	150	E	140	E
14	125	115	115	E	115	115	E	S	125	120	125	150	S	110	S	S	110	105	110	E	E	E	E	E
15	E	E	E	135	105	E	E	S	110	110	110	105	105	105	S	S	S	E	E	S	E	E	S	E
16	E	E	E	E	E	E	S	S	S	S	S	B	G	S	S	S	S	E	E	E	E	E	E	E
17	E	E	E	E	E	E	S	S	S	150	150	S	S	S	S	S	105	100	E	E	E	E	E	E
18	E	E	E	E	110	110	E	S	S	S	S	S	135	S	125	S	S	E	E	S	S	E	E	E
19	E	E	E	E	105	E	E	S	S	S	G	B	B	140	130	115	S	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	S	S	110	110	G	G	G	G	S	S	E	E	E	E	E	E	110
21	E	E	E	E	E	E	E	S	S	160	155	G	125	G	G	S	S	E	E	E	E	E	E	E
22	E	110	105	105	105	105	E	S	S	G	G	G	G	G	S	S	S	E	E	E	E	E	E	E
23	E	E	E	E	115	E	E	S	S	G	G	G	G	G	G	S	S	E	E	E	E	E	110	105
24	E	105	105	105	E	E	E	S	S	G	G	G	G	G	G	S	S	E	E	110	E	E	110	E
25	E	E	E	125	120	E	E	115	110	G	155	G	135	135	125	125	S	E	E	E	E	110	E	110
26	E	E	115	115	E	E	E	105	105	G	G	G	G	G	130	S	115	E	115	110	110	110	110	105
27	E	E	E	120	115	115	115	105	S	140	135	105	G	G	125	120	S	115	E	110	E	110	110	E
28	E	E	E	E	E	E	E	S	G	135	G	G	105	145	140	135	125	115	110	110	S	110	110	E
29	E	105	110	E	E	E	115	S	170	175	150	135	125	125	125	115	110	E	110	E	E	E	E	E
30	E	E	E	115	110	S	110	S	S	G	G	G	G	B	B	B	S	120	E	115	110	E	E	E
31	E	E	E	115	115	115	S	110	S	S	G	G	G	G	G	G	115	105	115	110	E	E	E	E
No.	1	5	8	12	13	6	6	6	7	13	14	7	9	9	10	6	10	10	9	10	7	5	8	6
Median	125	105	110	115	110	110	110	110	115	135	140	135	125	125	130	120	110	110	110	110	110	110	110	110

h'Es

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

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

20

Jan. 1963

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			s	s2	s		s	s	c	e h	e2								s	s3	s3		s	s
2			s	s									e	e	c						s	s		
3											h				e		e			s				
4																								
5																								
6				s	s																			
7				s						e													s	s
8		s2					s		h	c	c	c	c	c					s		s			
9			s		s						e													
10										h								s						
11						s	s	e2			h	h					e	s						
12										h	h	h	h	h			s2	s4	s5	s3	s			
13															h	h	s	s	s	s2	s		s	
14	s	s2	s2		s	s			c	e	c	h		e			s	s2	s					
15				s	s				c2	c2	e	e	e	e										
16																								
17										h	h						e	s2						
18					s	s							h		c									
19					s									c	c	e								
20										e	e													s
21										h	h		c											
22		s	s	s	s	s																	s2	s2
23					s																			
24		s2	s	s																s2			s	
25				s	s			e	e		h		c	c	c	c						s		s
26			s3	s2				e2	e						c		e		s	s	s2	s2	s	s
27				s	s	s	s	e		c	c	e			c	c		s		s		s	s	
28										c			e	h	c	c	c2	s	s2	s2		s	s	
29		s	s				s2		h	h	h	c	c	c	c	c	c3		s					
30				s	s		s											s		s	s			
31				s	s3 s	s4		c									c	s	s	s				
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

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

W 12

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F^{S}	2.9	2.6	2.8^{F}	I3.0^{FS}	3.1^{S}	3.0	4.3^{S}	4.6	7.1	8.2	8.0	6.1	5.8	5.8	6.1	5.5	3.6	4.1^{S}	I3.4^{S}	A	A	A	F
2	F^{S}	F^{S}	F	I3.3^{FS}	I3.0^{F}	2.9^{F}	2.8	3.9^{S}	4.9	I5.9^{R}	7.1	6.4	6.6	I6.3^{RH}	6.3	5.1	5.1^{RH}	J3.9^{RS}	3.9^{S}	3.3	2.9^{S}	I3.0^{FS}	3.1^{S}	F^{S}
3	F^{S}	F^{S}	F^{S}	F^{S}	I2.7^{FS}	2.6^{S}	I2.6^{FS}	4.1^{S}	5.6^{S}	6.1	5.6^{H}	8.6	6.1	5.3	6.3	5.7	4.2	3.2	3.5^{S}	I3.4^{S}	I3.2^{RS}	I3.0^{RS}	3.0	3.0
4	2.9	I2.9^{FS}	3.0^{S}	2.8^{FS}	I2.8^{FS}	I2.8^{FS}	2.5	4.2^{S}	I5.5^{S}	4.9	7.3	6.9	6.2	I5.6^{R}	5.9	5.6	4.6	I3.5^{A}	3.6	3.4^{S}	3.3^{FS}	F^{S}	F^{S}	F^{S}
5	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	2.9^{FS}	2.6	3.9^{S}	5.2^{S}	6.4	8.2^{R}	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	7.0	5.4	4.8^{S}	6.1	4.5	3.3	3.9	3.1^{FS}	F^{S}	F^{S}	F^{S}	F^{S}
7	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	C	F^{S}	3.8^{FS}	4.7^{S}	5.7	5.3	6.3	5.5	5.5	6.8	6.2^{S}	5.4^{S}	2.8^{S}	3.0^{FS}	S	F^{S}	F^{S}	S	F^{S}
8	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	2.1^{S}	3.6^{S}	4.8^{S}	5.6	6.6	5.5^{H}	6.7	5.9	6.0	5.5	4.6^{S}	4.6^{S}	3.6^{S}	3.4^{S}	2.6^{S}	2.5^{S}	2.8^{FS}	2.9^{FS}
9	I3.0^{FS}	3.0^{S}	I3.2^{FS}	I3.5^{FS}	3.5^{FS}	I3.0^{FS}	2.5^{S}	4.0^{S}	4.9	5.2	7.1^{R}	6.6	6.0	6.5	5.8	6.0	4.8^{R}	4.2	3.0	3.0	2.6	I2.8^{F}	3.3^{F}	F
10	F	F	F	F	F	F	F	4.2^{S}	5.2^{RS}	5.6	5.9	6.0	I6.2^{RH}	5.7	6.2	5.9	5.2	3.7	3.1	3.1	I2.8^{AS}	2.4^{FS}	F	F
11	2.8^{F}	2.9^{F}	3.1^{F}	I2.7^{F}	2.4^{S}	2.3	2.5	4.6^{S}	5.3^{RS}	5.0	5.6	7.3	6.1	5.9	5.8^{R}	5.5	5.0	4.1^{S}	2.9	2.9	2.4	I2.2^{S}	F^{S}	F^{S}
12	F	F^{S}	2.8^{F}	2.9^{FS}	3.1^{FS}	3.3^{S}	3.2^{FS}	3.6	4.5^{S}	5.3	7.2^{R}	7.3	6.4	5.4	5.6	6.4	5.9	3.8^{S}	3.7^{S}	3.3	3.1^{RS}	2.8^{FS}	2.9^{FS}	3.4^{S}
13	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	F^{S}	3.7^{S}	4.8^{S}	5.2	6.3	7.4^{R}	7.1	6.1	7.1	6.0	5.6	4.0	3.4	3.4^{F}	2.9	F	F	F^{S}
14	F^{S}	3.4^{FS}	F^{S}	A	A	F^{S}	3.6^{FS}	4.3^{S}	5.5	6.2	6.8	7.9	8.3	7.1	5.6	6.1	5.8	4.9	3.5	3.3^{FS}	I2.8^{RS}	F	F^{S}	F^{S}
15	3.0^{F}	3.1^{S}	2.6^{S}	2.7	2.7	3.1^{S}	2.5^{S}	I4.0^{RS}	6.1	6.8	7.2^{S}	6.1	I7.2^{RS}	7.0	6.8	6.0	I5.0^{C}	4.7	3.6	2.5	2.5	I2.6^{RS}	2.6^{S}	2.9
16	3.0	3.0	3.0^{F}	3.0	I2.9^{S}	2.6^{S}	I2.6^{RS}	4.1^{S}	I5.4^{RS}	6.2	I7.4^{RS}	I8.4^{RH}	I6.4^{S}	6.0	6.7	6.5	4.3	3.9^{S}	4.0	3.9^{S}	3.1^{S}	2.5^{S}	F^{S}	F^{S}
17	3.0	I3.2^{FS}	2.9^{S}	I3.0^{FS}	3.5^{S}	I2.3^{FS}	2.1^{S}	I3.8^{S}	4.5	5.9	J7.5^{R}	6.3	5.7	5.8	7.3^{S}	6.5	5.5	4.6	3.6	I3.0^{FS}	2.4^{S}	2.4^{S}	2.7^{S}	F^{S}
18	F^{S}	F^{S}	F^{S}	2.8^{S}	2.9^{FS}	I2.6^{FS}	I2.7^{FS}	I4.0^{S}	5.1	5.9^{H}	7.1	I6.8^{R}	6.8	6.3	5.3	5.4	5.0	4.7	4.2^{S}	3.0^{S}	I2.6^{FS}	S	F^{S}	F^{S}
19	3.0^{S}	3.3^{S}	I3.0^{FS}	I3.0^{FS}	F	R^{S}	F^{S}	F^{S}	C	C	C	6.6	5.6	5.9	6.1	5.6	5.0	5.1	I5.2^{RS}	S	F	F^{S}	F	F^{S}
20	F^{S}	I3.1^{RS}	3.1^{F}	I3.2^{FS}	3.4^{S}	2.7^{S}	2.4^{S}	I3.8^{RS}	5.5	6.6	I7.8^{RS}	6.3	6.5^{H}	6.3	7.1	6.5	5.1	5.7^{R}	3.1	2.9^{S}	3.1^{S}	3.2^{S}	I3.2^{S}	3.4^{S}
21	I3.2^{FS}	3.3^{FS}	I3.5^{FS}	3.8^{S}	3.2	2.9^{S}	2.6^{S}	4.9^{S}	5.5	5.4	5.8^{H}	C	C	C	6.6	5.4	5.1	4.8^{S}	3.9	3.9^{S}	S	R^{S}	F^{S}	3.1^{FS}
22	F^{S}	F^{S}	S	R^{S}	2.9^{S}	3.0^{S}	I3.2^{FS}	4.0	5.5^{R}	5.8	8.1	7.6	6.3	5.6	6.6	5.0	4.7	4.3^{S}	3.1	I2.9^{S}	3.6^{S}	3.0^{S}	F^{S}	F^{S}
23	F^{S}	F^{S}	3.0^{FS}	3.0^{S}	I3.0^{FS}	3.0^{S}	2.9^{S}	4.0	5.7	7.6^{R}	5.5	6.6	5.3	6.0	6.0^{S}	5.6	5.1	4.4	I3.7^{RS}	2.8^{S}	2.9^{S}	R^{S}	S	F^{S}
24	F^{S}	3.4^{FS}	F	F^{S}	F^{S}	F	F	F^{S}	6.4^{S}	6.8^{S}	6.7^{H}	7.3	5.7	6.0	5.5	5.2	4.5	5.0	3.8^{S}	3.0^{S}	F^{S}	F^{S}	F^{S}	F^{S}
25	F^{S}	F^{S}	F^{S}	F	I3.0^{FS}	3.1^{FS}	I3.2^{F}	I4.2^{RS}	5.6	5.9	7.7	7.0	5.7	5.8	5.6	5.4	5.7	5.0^{RS}	I3.6^{A}	3.3^{S}	I3.2^{FS}	3.4	3.4^{S}	3.3^{S}
26	3.7^{S}	2.5^{S}	3.0^{S}	3.3^{S}	A	F^{S}	F^{S}	R^{S}	5.8	6.5	6.6	6.7^{S}	5.6	5.9	6.0	6.0	5.2	4.6	R^{S}	A	A	3.4^{S}	F^{S}	F^{S}
27	3.1^{S}	F	F	F^{S}	3.1^{S}	I3.1^{F}	I3.3^{FS}	I4.2^{RS}	6.1	5.8^{H}	7.0	6.5	6.3	5.9	5.7	5.1	4.3	4.1	4.3^{S}	3.7^{S}	3.5^{S}	I3.2^{F}	3.4^{F}	F^{S}
28	F^{S}	F^{S}	F^{S}	F	F^{S}	F^{S}	F^{S}	4.3^{S}	5.2	7.8^{R}	7.5	7.8	6.1	5.6	5.6	5.8	4.7	I4.4^{RS}	4.1^{RS}	3.0^{S}	3.5^{S}	I3.1^{FS}	F^{S}	F^{S}
29	F^{S}	I3.4^{FS}	3.3^{F}	I3.0^{FS}	F	2.4	2.5^{F}	4.4	6.1	7.6	7.8	7.3	7.2	6.1	6.1	I5.2^{A}	4.4	4.0^{S}	A	S	I3.0^{F}	I3.1^{F}	I3.2^{F}	3.6^{F}
30	I3.3^{F}	2.8^{S}	2.8^{RS}	I3.1^{FS}	R^{S}	F	F	4.1^{RS}	5.3	6.5	7.1	I8.6^{R}	6.8	7.1	I5.9^{C}	5.3	4.8	5.3	4.4^{S}	3.8	3.0	3.4	I3.4^{F}	3.5^{F}
31	3.5	4.4^{S}	I3.8^{RS}	2.2^{F}	2.4^{S}	2.6	I3.2^{A}	4.0^{S}	6.9	7.3^{S}	8.0^{R}	I8.6^{RS}	8.1	7.2^{S}	6.9	6.3	6.6	6.9	4.6^{S}	4.0^{S}	R^{F}	R^{S}	R^{S}	3.9^{S}
No.	12	16	16	18	18	20	22	27	29	29	29	28	29	29	30	30	30	30	28	26	22	18	12	10
Median	3.0	3.1	3.0	3.0	3.0	2.9	2.6	4.0	5.4	5.9	7.1	7.0	6.3	5.9	6.0	5.8	5.0	4.4	3.6	3.3	3.0	3.0	3.2	3.4
U.Q.	3.2	3.4	3.2	3.2	3.1	3.0	3.2	4.2	5.6	6.7	7.6	7.7	6.8	6.3	6.6	6.1	5.4	4.8	4.0	3.4	3.2	3.2	3.4	3.5
L.Q.	3.0	2.9	2.8	2.8	2.8	2.6	2.5	3.9	4.9	5.6	6.4	6.4	5.8	5.6	5.7	5.4	4.6	3.9	3.4	3.0	2.6	2.5	2.8	3.0
Q.R.	0.2	0.5	0.4	0.4	0.3	0.4	0.7	0.3	0.7	1.1	1.2	1.3	1.0	0.7	0.9	0.7	0.8	0.9	0.6	0.4	0.6	0.7	0.6	0.5

foF2

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

The Radio Research Laboratories, Japan.

A 1

21

IONOSPHERIC DATA

Jan. 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										3.7H	I3.8L	4.0L	I3.6L	L	L									
2												L	L											
3										L	L	L	L	L	L									
4											L	L	L	3.6L	L	L								
5										L	L	C	C	C	C	C								
6										C	C	C	4.1L	L	L									
7										L	L	L	L	L	L	L								
8										L	L	A	L	A	L	L								
9										4.1L	L	L	4.1L	3.6L	I3.2L									
10											L	L	L	L		L								
11											L	L	L	L	L	L								
12											L	A	L	L	L	L								
13											L	L	L	L	L	L	2.6L							
14									L	L	A	4.2L	L	L	L	2.8L								
15										A	L	L	4.2L	L	L	L								
16										L	3.3	L	S	3.9L	L	L								
17											L	L	L	3.8L	L	L								
18										L	L	L	L	L	L	L								
19										C	C	L	L	L	L	L								
20										L H	L	L	I4.0L	I3.6L	3.5L	L								
21											L	C	C	C	L H	L								
22											L	L	L	L	L	L								
23									L	L	L	4.1L	I4.0L	I3.6L	L									
24										L	L	L	L	L	L	L								
25										L H	L	L	L	L	L	L								
26										L	4.1	A	L	L	L	L								
27											L	4.2L	I4.1L	L	L	L								
28										L	L	L	L	4.0L	L									
29										L	L	A	A	A	A	A								
30										L	4.2L	I4.2L	I4.2L H	4.0L	I3.8C	3.5H								
31										L	I4.1L	4.2L	L	L	3.8L	3.2								
No.										2	5	6	8	8	4	3	1							
Median										3.9	4.1	4.2	U4.1	3.7	U3.6	3.2	2.6							

foF1

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

The Radio Research Laboratories, Japan.

A 2

22

IONOSPHERIC DATA

Jan. 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								R	A	2.50	I 2.75 A	I 2.80 R	2.80	I 2.70 R	I 2.50 R	2.15	B							
2									B	B	B	B	B	B	B	B	B							
3								A	A	I 2.40 A	I 2.70 R	I 2.80 B	B	B	R	2.35	B							
4									A	B	B	B	B	B	B	B	A							
5									B	B	B	C	C	C	C	C	C							
6								C	C	C	C	C	S	B	B	R								
7									A	A	A	2.90	2.95	2.90	2.75	2.45	B							
8								B	A	A	A	2.85	3.00	A	A	A	B							
9									A	A	A	2.85	3.00	2.90	2.65	2.30	B							
10									2.20	I 2.55 R	2.85	2.95	3.00	3.00	2.75	A	A							
11									S	A	2.80	3.00	3.00	2.85	I 2.65 R	A	B							
12									A	A	A	3.00	3.05	3.00	2.75	2.40	B							
13									2.20	A	A	A	A	2.90	2.65	I 2.35 A	B							
14									A	A	A	A	3.05	2.95	2.70	2.35	B							
15									2.20 H	A	A	S	3.00	I 2.90 A	2.65	2.40	C							
16									A	A	2.75	2.90	I 3.00 S	I 2.90 A	2.75	I 2.40 A	B							
17									R	R	R	2.80	I 2.90 A	2.85	2.75	A	B							
18									B	2.45	2.70	I 2.90 A	R	A	A	2.40	B							
19								B	C	C	C	R	2.95	2.90	A	A	A							
20									A	A	2.80	2.90	2.95	2.80	I 2.70 A	2.55	R							
21									A	2.65	2.80	C	C	C	2.80	2.50	B							
22									A	2.65	I 2.80 A	I 2.90 A	3.00	2.95	2.70	2.45	B							
23									2.30	A	A	A	3.00	3.05	S	2.55	A							
24									S	S	I 2.80 R	I 2.95 A	I 3.00 A	2.95	I 2.70 R	2.45	B							
25									A	A	A	A	3.05	3.00	A	A	R S							
26									2.40 H	2.60	2.80	A	A	A	A	A	B							
27									A	A	2.80	3.00	3.05	3.00	A	A	A							
28									A	A	A	3.05	3.05	3.00	2.75	2.50	A							
29								B	2.25	2.65	2.95	3.00	3.10	3.00	A	A	A							
30									2.25	2.65	2.90	3.00	I 3.05 A	I 3.00 S	I 2.90 C	2.70	R							
31								B	2.25	2.65	2.80	I 3.00 A	3.05	2.90	2.80	A	A							
No.									8	10	15	19	22	22	18	17								
Median									2.25	2.60	2.80	2.90	3.00	2.90	2.70	2.40								

foE

Sweep 1.6.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	2.3	J1.8	E	E	E	E	2.5	J4.5	2.7	J3.4	G	G	G	G	G	G	E	J2.2	J2.1	J2.5	J3.9	J3.3	J2.3
2	E	J2.3	E	E	E	E	E	E	2.6	B	B	B	B	B	B	2.5	G	E	E	E	J2.1	J1.8	J2.4	J2.3
3	E	E	J2.1	E	E	S	J1.8	J2.1	J2.2	2.5	G	B	B	B	G	G	B	S	2.5	2.5	E	J1.9	J1.9	J2.1
4	E	E	E	E	E	E	E	E	2.6	B	3.2	B	B	B	B	B	2.5	J3.9	E	E	E	E	E	J2.0
5	E	2.3	E	E	E	E	E	E	2.7	3.2	B	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	S	B	B	G	E	J2.5	E	E	E	E	E	E
7	S	J7.8Y	E	J2.3	J2.4	E	E	E	3.2	J3.0	J3.0	G	G	G	G	G	G	E	E	E	E	S	S	J3.0S
8	J3.2S	J1.8	J2.0	J2.3	E	E	S	2.5	J2.8	J7.5	J4.1	4.5	3.6	J5.1	3.5	J2.9	2.2	J2.5	J1.8	E	J2.4S	J2.0S	S	J2.1
9	J2.1F	E	E	J2.5	J2.2	E	E	E	2.6	J5.2	J4.5	J3.4	G	G	G	2.7	G	E	E	J2.0	J1.9	J3.0	E	E
10	E	2.3	E	E	E	2.2	2.2	E	G	3.1	G	3.5	3.4	G	3.1	3.7	2.5	J3.9	J2.4	J2.6	J3.0	J2.3	J2.1	J2.4
11	J2.8	J2.8	J2.3	J1.8	2.1	E	E	E	S	3.5S	3.6	3.3	3.3	G	3.0	2.6	J2.5	2.3	E	E	E	S	E	E
12	E	E	E	J2.5	E	E	E	E	2.7	3.0	3.6	4.7	3.5	3.4	G	G	G	J2.0	J2.8S	E	E	E	E	E
13	E	E	E	E	E	E	E	E	2.6	3.6	3.9	J6.0	3.7	3.2	3.6	2.8	G	E	E	J7.6Y	E	J2.5	E	2.3
14	E	J2.0	J6.0	J4.9	J6.1	J3.9	E	E	2.6	J3.8	J5.3	3.0	3.2	G	G	G	G	E	E	E	E	E	E	J5.8
15	J1.9	J2.8	J1.8	J1.8	E	E	E	2.2	2.5	J5.3	J5.3	S	3.4	3.1	G	2.6	C	E	E	E	E	E	J2.5	E
16	E	E	J2.9Y	J2.5	S	E	E	E	2.7	2.7	G	G	S	3.0	G	2.5	G	E	J2.3	J2.3	E	E	E	E
17	E	E	E	E	E	E	E	S	G	3.1	3.1	3.1	3.1	G	G	2.8	G	E	E	J2.5	E	E	E	E
18	E	E	E	E	E	E	E	E	2.5	G	3.2	3.1	3.1	3.2	J7.3Y	2.8	J3.2	J3.8	J1.8	E	E	E	E	J2.0
19	E	J2.5	J2.7	J2.5	J1.8	E	2.2	G	C	C	C	3.2	3.2	3.0	3.0	3.0	J3.0	J2.4	J2.7	S	J3.8	J6.1Y	E	E
20	E	E	E	E	E	E	E	E	2.7	2.5	G	G	G	3.0	2.7	G	G	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	J2.4	G	3.1	C	C	C	G	G	G	E	E	E	E	E	E	E
22	E	E	S	E	J2.0	E	E	E	2.5	G	J3.0	3.5	3.0q	G	G	G	G	2.3	E	J2.4	E	E	E	E
23	E	E	E	E	E	2.3	J1.9	E	G	3.4	3.1	3.4	3.1	3.1	S	G	J3.8	E	E	E	J2.0	E	E	J2.8
24	J2.8	E	E	E	E	E	E	E	S	S	G	J3.3	3.0	G	2.9	G	2.2	E	E	J2.1	J2.5	2.3	E	E
25	E	E	E	E	E	2.2	J2.3	2.2	J4.8	3.1	3.3	3.2	3.6	3.8	J3.4	J4.0	G	J1.9	J3.2	J2.3	J2.9	J3.1	E	E
26	E	E	E	E	J4.1	J2.0	E	E	G	3.2	G	J4.5	J3.6	4.0	3.6	J3.3	2.0	J1.9	J3.5	J4.5	J3.6	J2.4	E	J2.1
27	J2.5	E	E	E	E	E	E	E	2.8	3.1	3.2	3.4	3.4	3.6	3.3	2.7	2.2	E	E	J2.5	E	J2.5	E	E
28	E	J2.2	J2.1	E	E	E	E	E	2.6	3.0	3.7	3.6	3.9	3.2	3.5	J5.1	2.9	E	J3.3	J1.8	J2.0	E	J1.9	J2.3
29	2.3	J1.8	E	E	E	E	E	G	G	3.0	3.6	4.2	J5.3	J5.4	J4.3	J6.6	J4.0	J2.5	J4.5	J3.0	J2.3	J2.8	J2.1	E
30	E	E	E	2.0	J2.5	E	E	E	G	3.2	3.2	3.2	3.4	S	C	G	G	J3.1	J3.5	J3.4	E	E	E	E
31	J1.8	J2.4	J2.0	J1.8	E	J1.8	J3.8	J2.8	G	G	3.0	3.2	G	2.2q	2.5q	2.3q	J3.8	J2.6	J5.3	J3.3	J3.9	J2.5	E	E
No.	29	30	29	30	29	29	29	29	27	26	27	24	24	24	25	29	28	29	30	29	30	28	28	30
Median	E	E	E	E	E	E	E	E	2.6	3.1	3.2	3.3	3.2	3.0	2.7	2.5	G	E	E	2.0	E	E	E	E
U.Q.	1.8	2.3	2.0	2.0	1.9	E	E	G	2.7	3.4	3.6	3.6	3.6	3.3	3.4	2.8	2.5	2.5	2.7	2.5	2.4	2.5	E	2.3
L.Q.	E	E	E	E	E	E	E	E	G	2.7	3.0	3.1	3.0	G	G	G	G	E	E	E	E	E	E	E
Q.R.										0.7	0.6	0.5	0.6											

foEs

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

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Jan. 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		1.7	E					1.8	2.7	2.6	3.0								1.8	1.7	A	A	A	1.8
2		2.0							2.6	B	B	B	B	B	B	2.5					1.7	1.7	1.7	1.7
3			1.7			S	1.7	1.9	2.1	2.5		B	B	B			B	S	E	1.7		1.8	1.7	1.8
4									2.6	B	3.2	B	B	B	B	B	2.5	A						1.7
5		1.8							2.7	3.2	B	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	S	B	B			1.7						
7	S	E		E	E				2.2	2.8	3.0											S	S	1.7S
8	1.7S	1.7	E	1.7			S	1.7	2.5	3.4	3.1	4.0	3.4	4.4	3.4	2.6	2.0	1.7	1.7		2.0S	1.7	S	E
9	1.8			1.8	1.7				2.5	3.1	3.0	2.2				2.0				1.7	1.7	1.7		
10		1.7				E	E			3.0		3.5	3.4		3.0	2.9	2.3	1.8	1.7	1.7	AS	1.7	1.7	1.7
11	1.7	E	1.7	1.7	1.7				S	3.3S	3.6	3.2	3.2		2.9	2.5	2.0	1.7				S		
12				1.7					2.7	u3.0R	3.3	4.7	3.4	3.2				1.8	1.7S					
13									2.6	3.5	3.5	3.5	3.6	3.2	3.5	2.6				1.7		2.0		1.7
14		1.7	2.7	A	A	1.8			2.5	3.5	3.8	3.0	3.2											1.8
15	1.7	2.0	1.7	1.7				1.7	2.4	4.1	3.0	S	3.2	3.0		2.2	C						1.7	
16			1.7	1.7	S				2.2	2.5			S	3.0		2.5			1.7	1.7				
17								S		3.1	3.1	3.1	3.1			2.5				1.7				
18									2.3		3.2	3.1	3.1	3.2	3.2	2.0	1.8	2.0	1.7					E
19		1.8	1.8	1.7	E		1.7		C	C	C	3.2	3.2	u3.0R	3.0	2.6	2.2	1.7	1.8	S	1.7	1.8		
20									2.5	2.5				3.0	u2.7R									
21									2.4		3.1	C	C	C										
22			S		1.7				2.4		2.9	3.0	2.54					1.7		1.7				
23						1.7	1.7			3.3	3.1	3.3	3.1	3.1	S		3.8				2.0			1.8
24	1.8								S	S		3.1	u3.0R		2.9		2.2			1.8	1.7	1.8		
25						1.7	1.8	1.8	4.8	2.8	3.3	3.1	3.6	3.7	u3.4R	2.8		1.7	A	1.9	2.0	2.0		
26					A	1.7				3.1		4.4	3.6	3.6	3.5	3.0	u2.0R	1.7	1.8	A	A	2.2		1.8
27	2.5								2.8	3.0	3.1	3.4	3.4	3.6	3.3	2.7	2.1			1.9		1.7		
28		1.7	1.7						2.6	2.9	3.3	3.5	3.9	3.1	3.5	5.0	2.8		2.9	1.7	1.7		1.7	1.7
29	1.7	1.8								3.0	3.6	4.2	5.0	4.6	4.1	A	4.0	1.8	A	1.8	1.8	1.8	1.8	
30				1.8	u2.5R					3.1	3.2	3.2	3.4	S	C			2.5	2.8	2.3				
31	1.8	1.7	1.8	1.8		1.7	A	1.8			3.0	3.2		2.24	2.44	2.24	3.0	2.3	3.5	2.0	2.2	2.4		
No.																								
Median																								

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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	1.65	1.70	E	1.65	1.70	1.70	1.75	1.65	1.75	1.80	1.80	2.05	1.90	2.00	1.90	1.80	1.75	1.75	1.70	1.70	1.70	1.70	1.70	1.70
2	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.70	2.00	3.20	3.45	3.05	3.55	3.15	3.00	2.10	1.75	1.75	1.70	1.80	1.70	1.70	1.70	1.65
3	1.65	1.70	1.70	1.70	1.65	E 2.00 S	1.70	1.70	1.70	1.70	2.00	3.30	2.95	2.80	1.80	1.75	1.80	E 2.10 S	E	1.70	1.70	1.70	1.70	1.75
4	1.75	E	1.70	E	1.70	1.65	1.75	1.70	1.80	3.00	2.70	3.20	3.00	3.05	2.90	2.50	1.70	1.80	1.75	1.70	1.70	1.70	1.70	1.70
5	E	1.75	1.70	1.75	1.75	1.80	1.70	1.70	2.05	2.70	3.20	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	E 3.05 C	3.00	2.60	2.05	1.70	1.70	1.70	1.70	1.65	E	E	E
7	E	E	E	E	E	E	E	1.65	1.70	2.05	2.05	2.50	2.00	2.50	2.00	1.75	1.80	E	1.70	1.70	1.70	E 2.00 S	1.70	1.70
8	1.70	1.70	E	1.70	1.70	1.70	I 1.70 S	1.70	1.70	1.75	1.75	1.95	1.90	2.00	2.00	1.70	1.70	1.70	1.70	1.70	1.75	1.70	E	E
9	1.80	1.65	1.80	1.75	1.70	1.70	1.80	1.70	1.70	1.75	1.75	1.75	1.95	2.00	1.75	1.90	2.05	1.80	1.70	1.70	1.70	1.70	1.70	1.70
10	1.70	1.70	1.65	1.65	1.65	E	E	1.70	1.75	1.70	1.90	2.25	2.15	1.90	1.80	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70
11	1.70	E	1.70	1.70	1.70	1.70	1.70	1.70	E 3.00 S	2.00	2.20	2.00	2.05	2.00	2.20	1.80	1.80	1.70	1.75	1.70	1.70	I 1.70 S	1.70	1.70
12	1.70	1.65	1.65	1.70	1.65	1.70	1.70	1.75	1.70	1.90	2.00	2.20	2.30 S	2.20	2.20	1.85	1.80	1.70	1.70 S	1.70	1.70	1.70	1.70	1.70
13	E	1.70	1.70	1.70	E	1.70	1.65	1.70	1.70	1.90	1.90	1.75	1.90	1.80	1.80	1.75	1.90	1.70	1.70	1.70	1.70	1.70	1.65	1.70
14	1.70	1.70	1.70	1.70	1.70	1.70	E	1.70	1.75	1.80	1.90	2.00	2.10	2.00	2.10	1.90	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70
15	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.85	E 3.50 S	1.95	2.10	2.10	1.80	I 1.75 L	1.80	1.70	1.70	1.70	1.70	1.70	1.70
16	1.70	1.70	1.70	1.70	I 1.65 S	1.75	1.70	1.65	1.70	1.75	1.80	1.80	I 1.75 S	1.90	1.80	1.80	1.75	1.80	1.70	1.70	1.70	1.70	1.70	1.70
17	1.70	1.70	1.70	1.70	1.70	1.70	1.75 L	1.70 S	1.80	1.80	2.00	2.00	2.10 S	2.00	1.90	1.75	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70
18	1.70	E	E	E	E	1.70	1.65	1.70	1.70	1.85	1.80	2.05	2.00	1.90	2.10	1.85	1.80	1.80	1.70	1.70	1.70	1.70	1.70	E
19	1.70	1.75	1.75	1.70	E	1.70	1.70	1.75	C	C	C	1.80	1.80	1.85	1.90	1.95	1.70	1.70	1.70	I 1.75 S	1.70	1.70	1.70	1.70
20	1.70	1.70	1.70	E	1.65	E	1.75	1.70	1.75	1.85	1.90	1.90	1.85	1.80	1.80	1.90	1.75	1.65	1.80	1.70	1.70	1.70	E	1.75
21	1.70	1.65	1.70	1.70	1.70	1.65	1.70	1.70	1.75	1.90	E 2.20 S	C	C	C	1.90	1.90	1.80	1.80	1.75	1.70	1.75	1.70	1.70	1.70
22	1.70	1.70	I 1.70 S	1.70	1.70	1.75	1.70	1.70	1.80	1.75	1.75	2.00	1.95	1.90	1.70	1.90	1.95	1.70	1.70	1.70	1.70	1.65	1.70	E
23	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.90	E 2.45 S	1.90	1.90	1.90	E 3.20 S	1.80	1.70	1.80	1.70	1.80	1.70	1.70	1.80	1.70
24	1.80	1.70	1.70	1.75	1.80	1.70	1.75	1.70	E 3.50 S	E 2.80 S	2.05	1.90	1.85	2.00	1.95	1.80	1.95	1.70	1.80	1.70	1.65	1.75	1.70	1.70
25	E	E	1.80	1.75	1.70	1.70	1.70	1.65	1.75	1.85	1.90	2.00	2.40 S	2.05	1.90	1.85	1.80	1.70	1.75	1.70	1.75	1.75	1.70	1.75
26	1.75	1.65	1.65	1.70	1.75	1.70	1.70	1.70	1.75	1.80	1.80	2.00	1.85	1.75	2.00	1.75	1.80	1.70	1.70	1.70	1.80	1.70	1.70	1.70
27	1.70	1.80	1.70	1.70	1.70	1.65	1.70	1.70	1.75	1.90	1.80	1.90	1.90	1.95	1.90	1.95	1.75	1.75	1.70	1.75	1.65	1.70	1.75	1.65
28	1.70	1.70	1.70	1.70	1.70	E	E	1.75	1.80	1.95	2.00	2.10	2.10	2.20	2.10	1.90	1.75	1.70	1.80	1.70	1.70	1.80	1.65	1.70
29	1.70	1.75	1.70	1.65	1.70	1.70	1.80	1.75	1.80	1.90	2.00	2.20	2.00	2.00	1.85	1.80	1.70	1.80	1.75	1.70	1.70	1.70	1.75	1.70
30	1.70	E	1.75	1.75	1.75	1.65	1.70	1.70	1.80	1.80	2.20	2.05	2.10	E 3.05 S	I 3.00 C	1.80	1.80	1.80	1.80	1.80	1.70	1.70	1.70	1.70
31	1.80	1.70	1.75	1.75	1.75	1.70	1.70	1.70	1.75	1.80	2.00	1.95	2.05	1.80	1.70	1.75	1.75	1.80	1.80	1.75	1.70	1.70	1.70	1.80
No.	30	30	30	30	30	29	30	30	27	28	27	27	28	28	29	30	30	29	30	30	30	29	30	30
Median	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.85	1.90	2.00	2.00	2.00	1.90	1.80	1.80	1.70	1.70	1.70	1.70	1.70	1.70	1.70

f-min

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

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FS	3.10	2.95	2.95F	I2.90F	3.20S	3.15	3.30S	3.35	3.45	3.35	3.60	3.60	3.30	3.60	3.50	3.55	3.35	3.40SI	3.40S	A	A	A	F
2	F	FS	F	I3.00F	I3.10F	3.30F	3.30	3.45S	3.30	I3.30R	3.40	3.70	3.70	I3.65RH	3.80	3.70	3.20RJ	3.65RS	3.35S	3.40	3.40SI	3.20FS	3.10S	FS
3	FS	FS	FS	FS	I2.95F	3.20SI	3.10F	3.45S	3.60S	3.70	3.25H	3.60	3.80	3.60	3.35	3.80	3.55	3.10	3.20SI	3.30S	I3.20RS	I3.25RS	3.10	3.05
4	2.95	I2.90F	3.10S	2.90F	I3.10F	I3.05F	2.85	3.30SI	I3.60S	3.65	3.60	3.65	3.80	I3.60R	3.45	3.75	3.55	I3.35A	3.25	3.30S	3.35F	FS	FS	FS
5	FS	FS	FS	FS	FS	2.80F	3.15	3.30S	3.45S	3.65	3.60R	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	3.65	3.90	3.60S	3.70	3.60	3.20	3.35	3.30F	FS	FS	FS	FS
7	FS	FS	FS	FS	FS	FS	FS	3.50F	3.70S	3.35	3.70	3.40	3.50	3.30	3.50	3.70S	3.70S	3.20S	3.05F	S	FS	FS	S	FS
8	FS	FS	FS	FS	FS	FS	I3.40S	3.55S	3.15S	3.55	3.70	3.30H	3.55	3.45	3.70	3.70	3.65S	3.35S	3.10S	3.55S	3.15S	2.95S	2.95F	2.90F
9	I3.05F	3.10SI	I3.05F	I3.00F	3.00F	I3.20F	3.30S	3.45S	3.75	3.20	3.40R	3.60	3.60	3.75	3.40	3.80	3.60R	3.00	3.35	3.35	3.20	I3.10F	2.95F	F
10	F	F	F	F	F	F	F	3.40S	3.60R	3.70	3.55	3.70	I3.60H	3.55	3.70	3.80	3.70	3.30	3.45	3.25	I3.40A	3.00F	F	F
11	2.75F	2.80F	2.95F	I2.90F	3.00S	3.05	3.10	3.35S	3.65R	3.70	3.30	3.50	3.60	3.65	3.50R	3.65	3.55	3.45S	3.10	3.50	3.55	I2.80S	FS	FS
12	F	FS	2.90F	3.15F	3.00S	3.10S	3.65F	3.50	3.55S	3.45	3.35R	3.50	3.45	3.55	3.45	3.60	3.60	3.20S	3.30S	3.40	3.40S	3.30F	I3.00F	3.10S
13	FS	FS	FS	FS	FS	FS	FS	3.55S	3.65S	3.25	3.35	3.50R	3.30	3.55	3.40	3.40	3.60	3.35	3.45	3.20F	2.95	F	F	FS
14	FS	3.00F	FS	A	A	FS	3.15F	3.45S	3.30	3.50	3.40	3.30	3.50	3.55	3.60	3.50	3.45	3.30	3.25	3.40F	3.10F	F	FS	FS
15	3.05F	3.10S	3.00S	3.00	2.95	3.30S	2.95S	I3.25F	3.45	3.55	3.60S	3.45	I3.40F	3.60	3.70	3.65	I3.50C	3.35	3.45	3.05	2.95	I3.00R	2.80S	2.70
16	2.85	3.10	2.75F	3.00	I3.10S	3.30SI	I3.20F	3.45S	I3.55F	3.25	I3.40FI	3.60RH	I3.65S	3.50	3.45	3.60	3.65	3.15S	3.10	3.15S	3.20S	2.95S	FS	FS
17	2.85	I3.05F	3.20SI	3.00F	3.20SI	I3.10F	3.25SI	3.30S	3.70	3.30	I3.45R	3.70	3.60	3.45	3.55S	3.45	3.60	3.25	3.40	I3.50F	2.70S	3.35S	2.75S	FS
18	FS	FS	FS	2.95S	3.15SI	I2.90F	I2.80F	3.20S	3.55	3.40H	3.55	I3.55R	3.60	3.70	3.70	3.65	3.45	3.25	3.40S	3.40S	I3.15F	S	FS	FS
19	2.90S	3.05SI	I3.20F	I3.05F	F	RS	FS	FS	C	C	C	3.55	3.55	3.55	3.70	3.65	3.40	3.15	I3.50F	S	F	FS	F	FS
20	FS	I3.20F	2.90F	I3.00F	3.25S	3.10S	2.95SI	I3.25F	3.45	3.45	I3.60F	3.50	3.25H	3.65	3.65	3.55	3.40	3.60R	3.30	3.05S	3.05S	3.45SI	3.05S	3.10S
21	I3.10F	3.00F	I3.15F	3.25S	3.45	3.30S	2.90S	2.70S	3.50	3.60	3.40H	C	C	C	3.40	3.60	3.50	3.60S	3.30	3.35S	S	RS	FS	2.95F
22	FS	FS	S	RS	3.20S	3.15SI	I3.10F	3.30	3.55R	3.55	3.50	3.70	3.85	3.45	3.70	3.75	3.45	3.30S	3.30	I3.20S	3.10S	3.25S	FS	FS
23	FS	FS	3.05F	3.05SI	I3.05F	3.35	2.95S	3.30	3.40	3.80R	3.65	3.85	3.70	3.40	3.55S	3.60	3.40	3.30	I3.40F	3.20S	2.80S	RS	S	FS
24	FS	3.30F	F	FS	FS	F	F	FS	3.50S	3.70S	3.50H	3.85	3.65	3.45	3.55	3.50	3.40	3.40	3.50S	3.20S	FS	FS	FS	FS
25	FS	FS	FS	F	I3.15F	3.25F	I3.35F	I3.30F	3.30	3.45	3.50	3.65	3.70	3.45	3.60	3.60	3.65	3.50RI	3.25A	3.35S	I3.10F	3.20	2.80S	2.80S
26	3.30S	3.25S	2.75S	3.20S	A	FS	FS	RS	3.60	3.60	3.65	3.80S	3.75	3.55	3.70	3.80	3.60	3.35	RS	A	A	3.10S	FS	FS
27	3.35S	F	F	FS	3.20S	I3.15F	I3.10F	I3.35F	3.70	3.55H	3.60	3.70	3.90	3.70	3.70	3.65	3.60	3.25	3.30S	3.30S	3.35SI	I2.90F	3.05F	FS
28	FS	FS	FS	F	FS	FS	FS	3.50S	3.25	3.35R	3.45	3.60	3.70	3.80	3.55	3.65	3.65	I3.40RI	3.20F	3.40S	3.15SI	I3.20F	FS	FS
29	FS	I3.10F	3.05FI	I3.25F	F	3.40	3.00F	3.30	3.50	3.45	3.55	3.50	3.60	3.65	3.60	I3.80A	3.50	3.20S	A	S	I3.20FI	I2.95F	I2.95F	2.95F
30	I3.15F	2.95S	2.95RS	I3.15F	RS	F	F	3.45F	3.50	3.55	3.35	I3.55R	3.55	3.50	I3.70C	3.60	3.55	3.40	3.25S	3.45	2.85	2.65	I2.80F	2.75F
31	2.75	3.00SI	I3.45F	2.85F	2.75S	2.90	I3.10A	3.40S	3.50	3.15S	3.30RI	I3.40F	3.50	3.35S	3.35	3.30	3.35	3.30	3.15S	3.00S	RF	RS	RS	3.40S
No.	12	16	16	18	18	20	22	27	29	29	29	28	29	29	30	30	30	30	28	26	22	18	12	10
Median	3.00	3.10	3.00	3.00	3.10	3.20	3.10	3.35	3.50	3.50	3.50	3.60	3.60	3.55	3.60	3.65	3.55	3.30	3.30	3.30	3.15	3.10	2.95	2.95

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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										3.60 H	I 3.70 L	3.80 L	I 4.15 L	L	L									
2												L	L											
3										L	L	L	L	L	L									
4											L	L	L	4.05 L	L	L								
5										L	L	C	C	C	C	C								
6										C	C	C	3.70 L	L	L									
7										L	L	L	L	L	L	L								
8										L	L	A	L	A	L	L								
9										3.50 L	L	L	3.75 L	4.05 L	I 4.15 L									
10											L	L	L	L		L								
11											L	L	L	L	L	L								
12											L	A	L	L	L	L								
13											L	L	L	L	L	L	4.10 L							
14									L	L	A	3.55 L	L	L	L	4.20 L								
15										A	L	L	3.85 L	L	L	L								
16										L	4.60	L	S	4.00 L	L	L								
17											L	L	L	3.85 L	L	L								
18										L	L	L	L	L	L	L								
19										C	C	L	L	L	L	L								
20										L H	L	L	I 3.95 L	I 4.10 L	3.90 L	L								
21											L	C	C	C	L H	L								
22											L	L	L	L	L	L								
23									L	L	L	3.85 L	I 4.10 L	I 4.15 L	L									
24										L	L	L	L	L	L	L								
25										L H	L	L	L	L	L	L								
26										L	3.80	A	L	L	L	L								
27											L	3.90 L	I 3.90 L	L	L	L								
28										L	L	L	L	4.00 L	L									
29										L	L	A	A	A	A	A								
30										L	3.70 L	I 3.75 L	I 3.80 LH	3.80 L	I 4.00 C	4.15 H								
31										L	I 3.70 L	3.60 L	L	L	3.85 L	4.05								
No.										2	5	6	8	8	4	3	1							
Median										3.55	3.70	3.80	L 3.90	4.00	L 3.95	4.15	4.10							

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

The Radio Research Laboratories, Japan.

A 8

28

IONOSPHERIC DATA

Jan. 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										280	265	240	245	245	245									
2												240	260											
3										245	230	245	250	245	275									
4											245	240	235	245	250	245								
5										245	240	C	C	C	C	C								
6										C	C	C	245	230	220									
7										250	235	280	255	250	255	230								
8										255	240	240	260	260	240	235								
9										300	260	240	255	240	285									
10											245	255	300L	250		240								
11											290	255	245	250	240	230								
12											280	255	260	245	245	240								
13											265	245	255	250	270	245	240							
14									255	245	260	285	250	245	240	250								
15										250	245	260	255	240	240	240								
16										250	255	245	I 240S	245	255	235								
17											255	240	255	270	250	250								
18										240H	255	245	250	245	240	240								
19										C	C	255	250	250	245	245								
20										260	240	245	245	245	255	240								
21											245	C	C	C	255	245								
22											255	245	235	245	250	230								
23									250	225	245	245	230	255	250									
24										230	255	240	240	255	245	235								
25										245	250	250	250	250	250	245								
26										245	250	240	225	245	245	240								
27											250	240	225	245	245	220								
28										270	245	245	245	245	245									
29										255	245	245	245	245	250	A								
30										255	290	245	250	250	I 240L	240								
31										250	255	255	250	255	245	255								
No.									2	19	28	28	29	28	28	22								
Median									250	250	250	245	250	245	245	240	240							

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

The Radio Research Laboratories, Japan.

A 9

IONOSPHERIC DATA

Jan. 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	275	260	E295 E	E295 E	295	260	260	230	225	220 H	240	245	220	205	240	245	230	250	240	240	A	A	A	E255 E
2	255	320 A	E295 E	270	245	240	240	225	225	220	245	220	I235 B	245	245	230	240	220	225	220	225	E290 E	245	E290 E
3	E300 E	E300 E	E305 E	270	280	I270 S	E290 E	205	215	205	220	245	210	205	230	225	210	E300 S	250	245	220	245	270	290
4	E305 E	315	280	270	E305 E	280	E305 E	240	220	220	210	250	225	205	245	235	220	I240 A	255	240	225	250	230	E280 E
5	E295 E	E320 E	E295 E	E320 E	E305 E	E300 E	275	230	220	245	240	C	C		C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	245	220	215	245	220	240	240	220	240	E280 E	E300 E	E320 E
7	E300 E	E295 E	295	240	240	245	240	205	210	230	230	200	230	220	235	230	210	205	270	S	265	E300 S	E330 E	E305 S
8	E305 E	E290 E	285	235	215	E310 E	S	230	225	I240 A	240	I235 A	240	I240 A	240 A	230	210	240	240	220	I240 AS	E280 E	E280 E	280
9	290	270	270	260	245	235	230	200	210	230	240	230	220	200	200	240	220	250	230	235	240	E310 E	255	255
10	315	E300 E	255	240	240	245	235	220	220	220	205	255	240	235	240	240	235	210	220	255	I230 AS	E335 E	E305 E	E310 E
11	E345 E	E330 E	295	210	E305 E	E295 E	260	230	215	230	I220 A	250	230	200	220	205	225	220	250	230	240	S	E290 E	255
12	E330 E	E305 E	300	275	250	255	205	220	230	245	260	I250 A	240	225	240	240	215	240	235	230	235	230	E300 E	260
13	255	E300 E	E305 E	250	240	245	235	220	215	245	245	255	210	240	I235 A	240	210	215	240	245	245	A	E330 E	260
14	E290 E	E280 E	A	A	A	230 A	245	245	245	I250 A	I240 A	210	245	230	210	200	240	230	220	230	E290 E	E310 E	E300 E	260
15	E290 E	I260 A	E280 E	E300 E	E300 E	245	E290 E	245	245	I245 A	230	235 S	240	220	230	230	I210 C	235	215	255	E295 E	270	E330 E	E325 E
16	320	290	300	290	I270 S	250	270	240	240	205	190	210	I210 S	210	210 H	210	205 H	245	270	240	245	E270 E	E280 S	255
17	305	270	E300 E	325	250	E245 E	E245 E	I245 S	210	245	245	245	230	210	240	235	220	240	220	220	E300 E	E245 E	E320 E	E295 E
18	E310 E	E285 E	270	260	255	E280 E	E300 E	230	240	200	250	245	235	240	220	205	210	235	220	220	E245 E	E295 E	E310 E	E295 E
19	E330 E	285	260	250	255	220	240	250	C	C	C	245	225	245	235	210	240	240	210	I245 S	E300 E	245	220	210
20	E295 E	245	E300 E	E295 E	250	230	E295 E	245	245	195 H	235	230	220	240	220	240	230	205	245	270	E270 E	245	E290 E	245
21	E320 E	E290 E	255	245	230	235	E260 E	245	240	230	235	C	C	C	200 H	240	235	210	230	230	250	275	E290 E	E290 E
22	250	E245 E	S	245	245	240	E290 E	240	220	240	200	230	220	205	220	220	245	210	240	245	245	245	E270 E	E320 E
23	245	E300 E	E290 E	255	275	245	E285 E	245	245	240	210	215	200	205	245	240	I230 A	220	220	240	I270 A	245	245	E335 E
24	E285 E	225	255	235	235	E230 E	E290 E	245	230	240	210	235	235	200	210	210	230	240	220	250	E295 E	E300 E	270	E295 E
25	260	265	250	250	255	245	E300 E	240	I245 A	215 H	225	210	210	I235 A	I230 A	235	230	215	I245 A	240	A	255	E310 E	E300 E
26	240	255	E295 E	235	I235 A	E280 E	E320 E	240	245	230	220	I210 A	215	A	A	A	240	230	235	A	A	A	270	250
27	A	E295 E	E280 E	260	245	245	265	240	240	220 H	235	215	205	225	225	225	210	240	240	240	225	E295 E	270	E280 E
28	260	270	250	255	225	240	240	230	240	240	240	230	I220 A	210	230	I235 A	230	230	250 A	230	240	240	E295 E	E295 E
29	290	300	270	240	220	230	E290 E	240	240	245	245	A	A	A	A	A	A	225	I245 A	235	E250 E	E320 E	255	290
30	235	E295 E	E295 E	240	I230 A	E295 E	E250 E	230	235	245	235	230	200 H	210	I230 C	210 H	230	240	240 A	240	E280 E	E345 E	E320 E	310
31	E330 E	250	210	E340 E	E310 E	E305 E	I230 A	230	250	240	225	245	245	240	220	210	250	245	I240 A	A	A	290 A	245	210
No.	29	30	16	24	24	23	15	30	29	29	29	27	28	27	28	28	29	29	30	27	17	26	29	30
Median	E295	E290	270	250	245	245	240	235	230	230	235	230	225	220	230	230	230	235	240	240	240	E280	E290	E290

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	115	115	E	E	E	E	150	110	155	105	G	G	G	G	G	G	E	110	105	105	100	100	110
2	E	100	E	E	E	E	E	E	155	B	B	B	B	B	B	130	G	E	E	E	120	110	110	115
3	E	E	105	E	E	S	105	105	105	105	G	B	B	B	G	G	B	S	120	120	E	105	105	105
4	E	E	E	E	E	E	E	E	155	B	155	B	B	B	B	B	130	120	E	E	E	E	E	110
5	E	105	E	E	E	E	E	E	135	125	B	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	S	B	B	G	E	110	E	E	E	E	E	E
7	S	105	E	120	115	E	E	E	140	130	120	G	G	G	G	G	G	E	E	E	E	S	S	115
8	110	110	105	105	E	E	S	145	140	130	130	130	135	130	125	105	120	120	125	E	120	105	S	105
9	110	E	E	110	110	E	E	E	130	110	105	105	G	G	G	105	G	E	E	155	105	110	E	E
10	E	120	E	E	E	105	105	E	G	190	G	175	175	G	145	130	120	120	120	115	105	105	105	105
11	105	105	105	105	105	E	E	E	S	155	145	145	130	G	145	145	110	105	E	E	E	S	E	E
12	E	E	E	110	E	E	E	E	155	155	145	140	145	145	G	G	G	105	105	E	E	E	E	E
13	E	E	E	E	E	E	E	E	165	140	160	120	145	150	145	125	G	E	E	145	E	140	E	120
14	E	120	110	115	110	105	E	E	155	130	115	120	140	G	G	G	G	E	E	E	E	E	E	120
15	115	110	105	105	E	E	E	130	180	110	110	S	145	150	G	105	C	E	E	E	E	E	110	E
16	E	E	105	105	S	E	E	E	140	135	G	G	S	155	G	140	G	E	105	100	E	E	E	E
17	E	E	E	E	E	E	E	S	G	155	175	145	145	G	G	120	G	E	E	135	E	E	E	E
18	E	E	E	E	E	E	E	E	135	G	165	165	150	145	115	110	120	105	105	E	E	E	E	105
19	E	105	105	105	100	E	105	G	C	C	C	155	155	150	140	130	100	100	100	S	100	110	E	E
20	E	E	E	E	E	E	E	E	125	105	G	G	G	145	140	G	G	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	135	G	160	C	C	C	G	G	G	E	E	E	E	E	E	E
22	E	E	S	E	100	E	E	E	120	G	120	125	110	G	G	G	G	105	E	105	E	E	E	E
23	E	E	E	E	E	115	105	E	G	140	140	140	140	135	S	G	120	E	E	E	105	E	E	105
24	100	E	E	E	E	E	E	E	S	S	G	100	105	G	170	G	145	E	E	105	105	105	E	E
25	E	E	E	E	E	105	105	100	105	135	105	105	145	130	100	115	G	105	105	105	105	100	E	E
26	E	E	E	E	105	105	E	E	G	140	G	100	100	135	130	120	120	130	110	110	105	105	E	105
27	105	E	E	E	E	E	E	E	145	140	140	140	140	130	130	130	120	E	E	105	E	100	E	E
28	E	105	105	E	E	E	E	E	140	130	130	140	135	155	145	135	135	E	110	110	105	E	105	105
29	105	105	E	E	E	E	E	G	G	160	145	140	135	125	120	120	115	110	105	105	105	105	110	E
30	E	E	E	120	110	E	E	E	G	150	150	145	120	S	C	G	G	115	110	110	E	E	E	E
31	105	140	105	110	E	125	110	110	G	G	165	140	G	105	105	105	120	115	110	110	105	105	E	E
No.	8	13	10	11	8	6	6	6	20	22	21	20	19	15	14	17	13	14	14	16	13	14	7	13
Median	105	105	105	110	110	105	105	120	140	140	140	140	140	145	135	120	120	110	110	110	105	105	105	105

h'Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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		f	f					h	c	h	l								f2	f	f3	f2	f2	f
2		f2							h							h					f	f	f	f
3			f				f	f2	l2	l									f	f		f	f	f
4									h3		h						h l	f2						f
5		f							h	h														
6																		f						
7		f		f	f				h	h	c													f
8	f2	f	f	f				h	h2	h2	h2	h3	h2	h2	c2	l2	c	f	f		f	f		f
9	f			f	f				h	l h	l	l h				l				f	f	f		
10		f				f	f			h2		h	h		h	h2	c2	f	f	f	f2	f2	f	f
11	f2	f	f	f	f					h2 l	h	h	h		h	h	l	f						
12				f					h	h	h	h2	h2	h				f	f					
13									h	h2	h	c2	h2	h	h2	c2				f		f2		f
14		f2	f4	f4	f2	f			h	h2	c2	c	h											f2
15	f	f2	f	f				f	h2	l2	l		h	h		l							f2	
16			f	f					h	h				h		h			f	f				
17										h2	h	h	h			c				f				
18									h		h	h	h	h	c2	l	c	f2	f					f
19		f2	f2	f	f		f					h	h	h	h	h	l2	f2	f		f	f2		
20									c2	l				h	h l									
21									h		h													
22					f2				c2		c	h	l					f		f				
23						f	f			h3	h	h2	h	h			c3				f			f2
24	f											l	l		h		h			f2	f2	f		
25						f	f2	f2	l2	h	l3	l2	h	h2	l2	c2		f	f2	f2	f2	f2		
26					f2	f				h3		l	l	h l	h2	c3	c	f	f	f3	f5	f3		f
27	f2								h2 l	h l2	h2 l	h	h	h2	h2	h2	c2			f2		f2		
28		f	f						h	h2	h	h	h	h	h2	h3	h3	f2	f2	f			f2	f
29	f	f2								h	h	h2	h2	h2	c3	c2	c3	f2	f2	f2	f	f	f	
30				f	f2					h2	h	h	c2					f3	f2	f2				
31	f	f	f	f		f	f3	c			h	h		l	l2	l	c4 l2	f2	f2	f2	f2	f4		
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

A 12

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IONOSPHERIC DATA

Jan. 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	u Z.5S	Z.8	3.0	Z.9	Z.8	Z.7	u Z.7S	u 4.8R	5.5	5.8	T 7.8S	8.6	6.3	5.9	6.5	5.7	5.4	3.7	u 3.6R	3.8R	Z.4	Z.7	A	A
2	I Z.8A	Z.8	T Z.9R	3.1	3.0	S	u Z.7S	T 4.2S	T 4.6S	5.8	6.5	6.8	5.6	6.1R	6.4	5.2	5.0	3.9	T Z.9R	3.0	3.3	T Z.4R	T Z.8R	I 3.1A
3	u Z.8R	Z.9	Z.8	Z.7	Z.4	S	S	4.5	T 5.5R	5.3	5.9	6.2	T 8.4R	5.6R	5.4	7.0	4.9	3.5	3.3	3.7	u 3.5SI	Z.9A	T Z.6R	Z.9
4	T Z.9R	Z.9	Z.9	T Z.8R	T Z.6F	Z.3	T Z.4R	4.3	6.0	5.7R	7.0	T 7.3R	6.1	5.9R	5.9	5.7	4.8	T 3.8S	3.3S	u 4.1S	I 3.4A	T Z.4S	F	3.2F
5	I Z.7F	u Z.7R	I Z.7AE	Z.6F	Z.6	Z.6S	T Z.6R	4.5	4.9	5.8H	7.4R	8.0R	8.8R	6.7	6.2R	5.5R	5.0S	4.4S	3.3S	3.5S	3.6ES	3.3S	3.4ESu	3.0S
6	u 3.0S	3.2S	3.2ES	3.2ES	u 3.4ES	u Z.7S	3.2S	4.0S	5.8S	5.7	6.2R	6.8	7.3R	6.6	5.8R	5.7	5.4	4.2S	3.8S	3.9S	Z.5	S	S	Z.5
7	Z.6S	Z.6S	Z.9ES	u 3.1ES	Z.4ES	u Z.4Su	Z.8S	4.9S	5.7S	4.9	6.4	5.5	7.4R	6.1	6.6	7.6S	5.6	3.8	Z.6	3.1	T Z.6R	Z.7	Z.7	T Z.9R
8	u 3.3S	F	Z.8	3.0F	Z.4	Z.1	Z.6R	T 4.0S	5.2	5.4	6.5	6.4	5.6	6.3	6.6	6.5	5.5	4.4	T 4.4R	3.4	T Z.8R	Z.9	T Z.6S	Z.8
9	Z.9	3.0	3.0	Z.9	Z.9	Z.8	I Z.4S	4.1	4.9	4.7	6.8	7.0	6.6	5.9	5.3	6.3	4.9	4.3	3.6	3.3	Z.6	u Z.6S	Z.7	Z.8
10	Z.8R	Z.9	3.0	T 3.5R	Z.6	Z.6	Z.9	T 4.4S	5.5	T 4.6R	T 6.4R	5.8	5.9	6.6	5.6	5.8	4.7	4.4	3.5	Z.8R	T 3.4R	T Z.5Su	Z.3SI	Z.5S
11	Z.5	Z.7	Z.9	T 3.1R	Z.4	u Z.2S	Z.3	4.4S	6.4R	5.2	u 4.9R	7.5	7.3	6.1H	6.0	5.5	5.8	T 4.3S	Z.6	T Z.8R	Z.7	R	S	T Z.6S
12	Z.6	Z.7S	Z.8	Z.8	3.3	T Z.6R	Z.4	3.8	4.4	5.0	6.4	8.6	6.8	6.4	6.0HS	6.2	5.7	4.0	4.0	4.4	3.6	I Z.3A	T Z.5R	Z.9
13	Z.8	3.0	u Z.5F	I Z.9F	3.2	T Z.8R	3.0	4.5	4.6	5.0	6.4	6.9	I 8.2A	6.6	6.9	6.2S	5.7	4.0	3.3	3.0	Z.7	u Z.5S	Z.6	Z.8
14	T Z.7R	Z.8	I 3.0A	A	A	Z.9	3.2	4.1	4.8	6.3	7.5S	7.7S	9.2S	7.8S	6.2	5.4	5.8	5.3	4.1S	3.3Su	3.0RT	Z.8SI	Z.8S	3.0
15	u Z.8Su	Z.9S	Z.6	Z.5S	3.0	3.1SI	3.1Su	4.2S	5.3S	7.1S	8.0ST	8.0S	7.5S	7.5S	6.8	7.3S	5.1	4.6Su	4.2SI	Z.6AI	Z.5SI	Z.6SI	Z.6SI	Z.7S
16	Z.9	3.2	3.0	Z.9	Z.5	Z.7SI	Z.6S	4.5	4.8	5.7	7.2Su	8.9S	7.3	7.1	6.8	7.1	5.6	3.7	3.6	4.5Su	3.8S	Z.8Su	Z.7S	Z.7S
17	Z.9	3.1	u Z.9S	Z.8	3.2	u Z.7SI	Z.6S	3.8	6.0S	4.6	7.4	8.6	5.8	6.3	7.1	6.4	6.7S	4.1	5.0	3.3	Z.9	Z.6	Z.5S	Z.5S
18	Z.6ES	u Z.8S	3.1	3.0	Z.3Su	Z.6SI	Z.6S	T 4.3S	5.4	5.9	6.9	8.2	T 6.5R	7.7	5.6	5.8	4.9	4.8	4.4S	3.1	Z.6	I Z.6AE	T Z.8R	Z.7
19	Z.7	Z.9	3.3	Z.6	Z.8	Z.7 I	Z.7S	4.0S	5.1	5.9	7.5 I	6.4S	C	C	C	C	4.8	I 5.6S	6.0	3.0R	Z.8	u 3.2S	3.6ES	3.3
20	I 3.0S	3.2	3.0	3.0	3.1	Z.9Su	Z.8S	4.3S	5.1	7.1	T 8.0SI	7.5R	5.8	6.4R	6.3	u 7.5S	5.2	5.4	3.5	3.0R	Z.8 T	3.0R	T 3.0R	3.0
21	T Z.8R	3.0R	3.1	3.1	3.0	Z.4	T Z.5R	4.1	5.5	7.0Z	5.7	6.5	5.9	5.9	6.6	6.1	5.5	5.4R	3.6	3.6S	Z.8	3.0	3.1	3.1
22	T Z.9R	I Z.8SE	T Z.8F	Z.8	T Z.4R	Z.5	u Z.6RT	4.0S	6.4	5.6	7.3	9.1	6.4	5.4	6.1	5.3	4.8	4.9	3.4	Z.9S	3.0	Z.9RU	Z.6S	Z.9R
23	3.2F	3.1	3.1	I Z.9S	Z.8	Z.9	T Z.8RT	3.5Su	u 6.8SI	6.4C	6.7	5.8	5.9	5.7	6.3	T 5.8R	5.0	4.5	3.7	3.0	T Z.9RU	Z.7R	3.2	3.1
24	3.2	3.3F	3.4	Z.2	Z.5	Z.7	T Z.4S	3.9	6.3	7.1S	6.7	7.0	6.6R	5.6	6.1S	5.1	5.1	4.4	4.0	Z.8	3.0	3.3S	3.3	3.1F
25	3.4F	3.3	3.1	3.0	Z.7S	3.0	u Z.9SU	5.0S	6.2 I	6.0C	6.8	T 7.4R	6.3	5.9	6.1	5.5	5.8	T 5.5Su	3.8SI	Z.8AI	Z.9AI	3.2AU	Z.5SI	Z.6S
26	3.6	Z.8	Z.7	Z.9	Z.8	T Z.6SI	3.0SI	4.6C	I 6.1C	6.8R	7.4	6.7	u 5.6C	6.3	6.3	5.6	5.4	4.9	3.5	3.5	S	S	3.1	u 3.2R
27	u 3.2R	Z.7	Z.8R	Z.8	Z.8	T Z.7RI	Z.7S	4.3	6.3	T 6.5R	6.8	7.7R	6.0	5.5	5.6	5.3	4.4	I 3.8AI	3.8A	4.1	3.3	u 3.0R	3.2	3.3
28	3.5	3.4F	I 3.2F	3.0	I Z.4F	I Z.5F	T Z.7RT	3.8S	4.5	6.9	9.5RT	9.0R	6.1	5.7	5.4	5.4	4.8	4.3	3.5S	3.5	3.0	I Z.8F	T Z.7R	T Z.9R
29	3.1	3.2	3.2	3.0	Z.6	S	C	C	5.8	7.4S	9.8S	9.0	6.9	6.2	6.3	5.7R	AS	AS	A	4.5	3.6	3.5	I 3.4S	3.8S
30	3.9	3.3	3.3	3.1	Z.1	I Z.6Su	Z.7R	4.0S	5.3	6.2	7.6	T 9.9S	6.6	6.3	5.9	T 5.2R	4.4	T 4.8ST	4.8S	4.3	I 3.0AI	3.0A	3.1	3.3
31	T 3.4S	3.9	2.5	2.2	Z.6	I Z.5R	Z.8	3.9	5.8	S	D 10.1ST	8.0R	7.4R	7.0	6.5	T 6.4Su	6.4S	6.4	T 5.6R	A	I 3.7AI	4.8F	5.1	3.7
No.	31	30	31	30	30	28	29	30	31	30	31	31	30	30	30	30	30	30	30	30	30	28	27	30
Median	Z.9	Z.9	3.0	Z.9	Z.6	Z.6	u Z.7	4.2	5.5	5.8	6.9	7.5	6.6	6.2	6.2	5.8	5.2	4.4	3.6	3.3	3.0	Z.8	Z.8	Z.9
U.Q.	3.2	3.2	3.1	3.0	3.0	Z.8	Z.8	4.5	6.0	6.5	7.5	8.6	7.3	6.6	6.5	6.4	5.6	4.9	4.1	3.8	3.4	3.0	3.2	3.1
L.Q.	Z.7	Z.8	Z.8	Z.8	Z.4	Z.5	Z.6	4.0	4.9	5.3	6.4	6.7	5.9	5.9	5.9	5.5	4.9	4.0	3.4	3.0	Z.7	Z.6	Z.6	Z.7
Q.R.	0.5	0.4	0.3	0.2	0.6	0.3	0.2	0.5	1.1	1.2	1.1	1.9	1.4	0.7	0.6	0.9	0.7	0.9	0.7	0.8	0.7	0.4	0.6	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

Jan. 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	4.1L	A	L	L	L									
2												L	B	S										
3										L	L	L	L	L										
4									L	A	L	L			L	L								
5											L	S	S	S										
6										S	S	S		L										
7											L	S	L	L	L	L								
8											A		L	L	L									
9									L	L	L	L	L	L	L	L								
10										L	L	L	L	L										
11									L	L		L	L		L									
12											U4.4L	L	L		L	L								
13										L	4.3L	A	A	L										
14										S	L	L	S	S	S	L								
15										L	L	S	L	L	S	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	S	L								
18										L	LH	L	L	U4.0L	L	L								
19										L	L	S	C	C	C	C								
20										L	L	L	L	L	L	L								
21										L		L	L	L	L	L								
22										L	4.1L	L	L	L	L	L	L							
23									L	C	L	L	L	L	L		L							
24									L	L	L	L	S	L	S									
25										C	L	A	L	L	L	L								
26								C	C	L	L	L	S	L		L	L							
27										L	L	L	L											
28										L	L	U4.4L	L	L		L								
29							C	C		L	S	S	S	A										
30										L	L	A	A	L	L									
31								A	L	L	L	L	L	L	A									
No.											4	1		1										
Median											4.2	U4.4		U4.0										

foF1

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

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

Jan. 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	A	A	A	3.00	I 2.80 S	I 2.60 R	S	S							
2								A	S	S	S	B	B	S	B	S	S							
3								A	S	B	B	B	S	B	S	S	B							
4								S	R	A	S	B	B	S	S	B	B							
5								B	R	A	A	S	S	S	S	S	S							
6								S	S	S	S	S	S	S	S	S	S							
7								S	S	R	A	S	S	B	B	R	B							
8								S	R	A	A	R	B	2.90	2.70	A	B							
9								S	S	R	B	B	A	B	B	S	S							
10								B	B	R	B	I 3.15 B	3.25	I 3.00 S	B	S	B							
11								S	R	A	R	S	B	S	S	S	S							
12								S	S	I 2.75 B	I 2.95 S	3.20 R	B	S	B	R	S							
13								S	S	S	I 3.00 B	A	A	3.00	I 2.90 S	R	B							
14								S	B	S	I 2.95 S	3.40 R	I 3.15 S	2.90 R	S	S	S							
15								S	S	A	S	S	A	3.20 R	I 2.80 S	2.40 R	S							
16								S	S	A	A	I 2.80 S	I 2.80 R	S	R	S	S							
17								S	S	S	S	S	S	S	S	S	S							
18								S	S	S	I 2.95 B	3.10	I 3.10 B	I 3.05 A	I 2.90 S	B	S							
19								S	B	S	S	S	C	C	C	C	S							
20								S	S	S	B	I 3.00 B	I 3.05 S	I 3.15 S	R	S	S	S						
21								S	2.40	I 2.70 S	I 2.95 S	B	A	A	S	A	S	S						
22								S	A	A	A	R	S	A	S	I 2.50 S	I 3.15 S	S						
23								S	S	I 2.55 S	2.90	U 3.00 R	3.05	I 3.00 R	S	R	R	S						
24								S	2.60	S	S	A	I 3.05 S	S	S	A	S	S						
25								S	S	C	I 2.80 A	I 2.90 A	I 2.90 B	I 2.90 S	I 2.65 A	A	A	S						
26								C	C	S	S	B	S	B	S	S	S	S						
27							S	S	S	2.75	2.90 R	I 3.05 R	3.15	I 3.10 R	I 2.90 R	S	A	S						
28							S	S	R	R	U 3.00 A	3.10	3.10	S	B	R	B	S						
29							C	C	S	S	S	S	S	I 3.05 R	I 2.85 S	I 2.55 R	A	S						
30							S	2.25 R	I 2.50 S	2.85	3.05	I 3.05 S	I 3.10 A	I 3.10 S	I 3.00 S	I 2.80 S	I 2.50 R	I 2.10 S						
31							S	A	A	R	S	I 3.05 B	B	A	B	I 2.60 S	S	S						
No.								1	3	5	10	12	12	13	9	5	2	1						
Median								2.25	2.50	U 2.75	U 2.95	U 3.05	U 3.10	U 3.00	U 2.85	U 2.55	U 2.30	U 2.10						

foE

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

IONOSPHERIC DATA

Jan. 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	S	E	2.0	2.0	S	S	S	4.2	T4.7	T5.1	G	S	G	S	3.2M	2.8M	S	S	S	T3.7	4.0M	3.3M
2	3.3M	3.0M	2.2Y	3.0M	E	S	S	2.3	S	S	S	3.8	B	S	3.4	S	S	S	S	S	S	S	S	5.0M
3	S	2.4	E	2.2	2.2	2.2	S	2.2	S	B	B	B	S	B	S	S	B	S	2.3	2.4	4.0M	T3.4	2.3	S
4	S	S	S	S	S	S	S	S	2.4	4.5M	S	B	B	S	S	G	B	4.3	T6.3	2.3	T5.3	S	2.4M	S
5	S	3.8M	3.4M	E	E	S	S	B	G	T4.7	3.2	S	S	S	S	S	S	S	S	S	S	S	S	2.3
6	S	S	S	S	S	S	S	2.3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	2.3	2.3	S	E	S	S	S	T4.2	G	T3.6	S	S	B	B	G	B	S	S	S	S	S	S	3.1M
8	3.1S	2.2	2.5M	E	E	S	S	S	2.8	3.1	T7.0	3.3	3.8	4.0S	3.7	3.7	2.4	S	S	4.0M	2.5	S	S	S
9	S	S	S	E	E	S	S	S	S	G	B	B	4.1M	B	B	S	S	S	T4.1	S	S	S	S	S
10	S	S	E	E	S	S	S	B	B	G	3.4	B	4.1	S	3.5S	2.8	B	S	S	S	S	S	S	S
11	S	S	S	S	2.2	2.1S	2.2	G	G	3.1	G	S	B	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S	E	E	S	S	S	S	3.3	4.2	3.7	B	S	B	G	S	S	S	S	S	2.3	S	S
13	S	S	S	E	E	S	S	S	S	S	3.5	6.9M	11.5M	4.5	4.2	G	B	S	S	S	S	S	T4.4	S
14	S	E	3.2M	T5.7	T4.9	2.9M	S	S	B	3.6	4.3	4.0	S	G	S	S	S	S	S	S	S	S	S	S
15	S	S	2.3	2.3	1.9	S	S	S	S	T2.7	S	S	T3.6	G	S	G	S	S	S	3.9	S	2.2	2.2	S
16	S	S	2.3	1.8	1.9	S	S	S	S	3.6	2.3	S	G	S	G	S	S	S	2.6	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	3.3	S	3.5	S	S	S	S	S	3.2	T3.1	2.3	S	S	S
18	S	S	S	S	E	S	S	S	S	S	B	3.4	B	3.1	S	B	S	S	S	S	S	S	S	2.1
19	2.2	2.5	3.3M	2.0	1.8	S	S	S	G	3.0	3.7	S	C	C	C	C	S	S	S	S	S	S	T3.1	S
20	S	S	S	S	S	S	S	S	S	S	B	B	S	S	G	S	S	S	S	S	S	S	S	S
21	S	S	S	E	E	S	S	S	G	S	S	3.2	3.4	3.4S	S	3.0	S	2.8Y	2.3M	S	S	S	S	S
22	S	S	S	E	E	2.4M	S	S	3.6M	T3.3	3.4	3.09	S	3.3	S	S	S	2.9M	2.3	S	S	S	S	S
23	S	S	S	S	E	S	S	S	S	C	3.4	3.2	3.3	G	S	G	3.0	S	S	S	S	2.2	S	S
24	S	2.3M	S	E	E	S	S	S	G	S	S	2.4	S	S	S	3.2	S	S	1.8	S	S	S	S	S
25	S	S	S	S	S	S	S	S	S	C	3.4	5.5M	B	S	3.4	2.8	T2.4Y	S	3.0M	3.3	T3.9	3.2M	S	S
26	S	S	S	E	E	C	S	C	C	S	S	B	S	B	S	S	S	S	S	2.4	S	S	S	S
27	S	S	S	E	2.1M	S	S	S	S	3.3	3.4	G	G	3.4	3.3	3.4	T3.2	T4.4	T3.7	2.3	S	S	S	S
28	S	E	E	E	E	S	S	S	G	3.1	3.3	3.4	3.7	3.3	3.2	G	4.5M	3.2	2.3S	2.5	3.2M	S	S	S
29	S	S	E	E	E	S	C	C	S	3.5	3.9	3.9	4.0	5.0	4.9	4.6	5.3	5.0	5.1	T2.5	T3.2	3.2	S	S
30	S	S	S	S	S	S	S	3.6	3.8	3.3	T3.9	4.4	5.0M	S	S	S	2.8	S	T6.1	3.3Y	3.3M	3.4M	S	S
31	S	2.2	2.5	S	2.1M	S	S	T9.4	3.4	G	3.2	3.4	B	3.3	5.9	3.5S	S	2.5S	T4.0	6.4M	T4.8	4.0M	S	S
No.	3	10	13	20	24	5	1	6	12	19	20	17	14	12	12	15	8	8	14	12	9	9	6	5
Median	3.1	2.3	2.3	E	E	2.2	2.2	2.3	G	3.3	3.4	3.4	3.6	3.3	3.4	2.8	3.1	3.0	3.1	2.8	3.3	3.2	2.8	3.1
U Q	3.3	2.5	2.8	1.9	2.0	2.6		3.6	3.5	3.6	3.9	4.2	4.1	3.7	4.0	3.4	3.8	4.4	4.1	3.6	4.4	3.6	4.0	4.2
L Q	2.2	2.2	E	E	E	2.0		2.2	G	3.0	3.3	3.2	3.3	G	G	G	2.6	2.8	2.3	2.4	2.8	2.2	2.3	2.2
Q. R.	1.1	0.3				0.6		1.4		0.6	0.6	1.0	0.8				1.2	1.6	1.8	1.2	1.6	1.4	1.7	2.0

foEs

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

The Radio Research Laboratories, Japan.

K 4

IONOSPHERIC DATA

Jan. 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	S		E	1.9	S	S	S	3.4	^{u}3.6^{s}	4.2		S		S	2.6	2.5	S	S	S	E	A	A
2	A	E	2.1	2.2		S	S	^{E}2.3^{s}	S	S	S	3.8	B	S	3.3	S	S	S	S	S	S	S	S	A
3	S	1.8		1.8	2.1	S	S	2.1	S	B	B	B	S	B	S	S	B	S	^{E}2.3^{s}	2.4	3.0	A	^{u}2.3^{s}	S
4	S	S	S	S	S	S	S	S	^{E}2.4^{R}	3.7	S	B	B	S	S		B	2.7	2.7	2.1	A	S	E	S
5	S	2.2	2.6			S	S	B		4.1	^{E}3.2^{s}	S	S	S	S	S	S	S	S	S	S	S	S	2.0
6	S	S	S	S	S	S	S	2.1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	2.3	E	S		S	S	S	3.9		3.6	S	S	B	B		B	S	S	S	S	S	S	2.3
8	2.5	E	1.8			S	S	S	2.8	2.9	4.6	^{u}3.3^{R}	3.5	3.6	3.2	3.5	^{E}2.4^{R}	S	S	2.3	^{E}2.5^{s}	S	S	S
9	S	S	S			S	S	S	S		B	B	3.7	B	B	S	S	S	3.0	S	S	S	S	S
10	S	S			S	S	S	B	B		3.4	B	3.6	S	3.5^{s}	2.8	B	S	S	S	S	S	S	S
11	S	S	S	S	2.1	1.8	2.0			3.1^{s}		S	B	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S			S	S	S	S	3.2	3.8^{s}	3.6	B	S	B		S	S	S	S	S	A	S	S
13	S	S	S			S	S	S	S	S	3.5	4.6	A	3.8	4.1		B	S	S	S	S	S	2.1	S
14	S		A	A	A	2.3	S	S	B	^{E}3.6^{s}	3.2	3.2	S		S	S	S	S	S	S	S	S	S	S
15	S	S	E	1.7	E	S	S	S	S	2.7	S	S	3.6		S		S	S	S	A	S	S	S	S
16	S	S	E	E	E	S	S	S	S	3.1	^{E}2.3^{s}	S		S		S	S	S	2.1	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	3.2	S	3.4	S	S	S	S	S	E	2.1	2.1	S	S	S
18	S	S	S	S		S	S	S	S	S	B	3.4	B	3.1	S	B	S	S	S	S	S	S	S	E
19	2.1	E	2.1	1.8	E	S	S	S		3.0	3.6	S	C	C	C	C	S	S	S	S	S	S	E	S
20	S	S	S	S	S	S	S	S	S	S	B	B	S	S		S	S	S	S	S	S	S	S	S
21	S	S	S			S	S	S		S	S	3.2	3.4	3.4^{s}	S	2.8	S	2.1	2.0	S	S	S	S	S
22	S	S	S			2.1	S	S	2.8	3.0	3.4	^{E}3.0^{s}	S	3.2	S	S	S	2.2	E	S	S	S	S	S
23	S	S	S	S		S	S	S	S	C	3.1	3.2	3.3		S		2.8	S	S	S	S	2.1	S	S
24	S	2.0	S			S	S	S		S	S	^{E}2.4^{s}	S	S	S	2.8	S	S	^{E}1.8^{s}	S	S	S	S	S
25	S	S	S	S	S	S	S	S	S	C	3.3	4.5	B	S	3.3	2.8	^{E}2.4^{R}	S	2.1	A	A	A	S	S
26	S	S	S			C	S	C	C	S	S	B	S	B	S	S	S	S	S	^{E}2.4^{s}	S	S	S	S
27	S	S	S		E	S	S	S	S	3.2^{s}	3.4			^{E}3.4^{s}	3.2	3.4	3.1	A	A	1.9	S	S	S	S
28	S					S	S	S		3.1	3.3	3.4	3.7	3.3	3.2		3.4	2.6	^{E}2.3^{s}	2.5	2.7	S	S	S
29	S	S				S	C	C	S	3.4	3.8	^{E}3.9^{s}	^{E}4.0^{s}	4.2	4.5	^{E}4.5^{A}	AS	AS	A	2.2	2.6	E	S	S
30	S	S	S	S	S	S	S	2.5	3.3	3.3	3.8	4.4	4.6	S	S	S	2.8	S	3.1	2.2	A	A	S	S
31	S	E	E	S	2.1	S	S	3.3	2.9		3.2	3.4	B	^{E}3.3^{s}	5.1	3.5	S	2.2	3.2	A	A	2.6	S	S
No.																								
Median																								

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.80 S E1.70 S E1.90 S 1.40	E1.50 S E1.45 S E2.10 S E2.05	E2.70 S 2.10 E2.55	2.60	2.10	E3.20 S 2.20	E3.00 S	E1.90 S E2.00 S E1.95 S E1.90 S	E1.80 S E1.80 S E2.00 S E1.80 S			
2	E1.70 S E1.90 S E1.80 S E1.70 S	1.70 S E1.90 S E1.80 S	E3.00 S E3.00 S E3.40 S	3.20	4.50	E4.70 S 2.85	E2.80 S	E2.60 S E2.20 S 2.00 S E1.90 S	E1.80 S E2.20 S E2.50 S E2.00 S			
3	E2.20 S E1.70 S 1.60 1.45	1.60	E1.70 S S E1.70 S	E2.90 S 2.95	3.20	3.20	E3.50 S	3.20	E3.40 S E2.80 S	2.60	E2.05 S E2.10 S E2.10 S	E1.90 S E1.70 S E1.70 S E1.90 S			
4	E1.80 S E1.60 S E1.60 S E1.60 S	E1.50 S E2.05 S E1.70 S E2.10 S	2.10	2.15	E3.50 S	3.50	3.70	E3.50 S E3.40 S	3.10	2.70	E2.10 S E2.10 S E2.00 S	E1.50 S E1.90 S E1.70 S E2.00 S			
5	E2.10 S E1.90 S E1.70 S 1.50	1.70	E1.70 S E1.90 S	2.20	2.20	2.70	2.00	E3.90 S	E3.40 S E5.05 S E4.10 S E3.70 S	E3.75 S E2.05 S E2.15 S E2.05 S	E2.00 S E2.00 S E2.00 S E1.90 S			
6	E1.65 S E2.00 S E2.00 S E1.65 S	E1.85 S E1.45 S E2.05 S E1.90 S	E2.60 S E3.20 S E3.30 S E3.55 S	E4.60 S E3.25 S E4.10 S E3.55 S	E2.90 S E3.05 S E2.15 S E2.05 S	E1.95 S S S E2.00 S						
7	E1.75 S E1.70 S E1.80 S E1.45 S	1.40	E1.75 S E1.75 S E2.10 S	E2.60 S 2.85 2.95	E3.90 S	E3.90 S	3.20	3.05	2.00	2.20	E2.75 S E1.90 S E1.90 S	E2.10 S E2.10 S E1.90 S E2.20 S			
8	E1.90 S E1.70 S 1.40 1.10	1.10	E1.80 S E1.90 S E2.00 S	E2.20 S E2.60 S 2.30	2.80	3.05	2.85	2.10	2.20	1.80	E1.60 S E1.90 S E1.90 S	E2.10 S E1.70 S E2.60 S E1.60 S			
9	E1.60 S E1.95 S E2.00 S 1.50	1.50	E2.20 S S E2.10 S	E2.70 S 2.10	3.10	3.50	2.50	3.50	3.20	E3.10 S	E2.80 S E2.40 S E2.00 S E1.90 S	E1.90 S E2.00 S E2.00 S E1.95 S			
10	E1.90 S E1.95 S 1.60 1.60	E1.90 S E1.80 S E1.90 S 2.00	2.60	2.00	3.00	3.20	2.80	E3.60 S	2.80	E2.60 S	2.10	E2.00 S E2.00 S E1.95 S	E1.60 S E2.60 S E2.00 S S			
11	E1.80 S E1.70 S E1.90 S E1.80 S	1.50	E1.50 S E1.80 S E1.70 S	2.05	E2.20 S 2.30	E3.60 S	4.05	E3.50 S	E3.20 S E2.80 S	E2.80 S E2.00 S E2.10 S E2.10 S	E2.00 S E2.10 S S E2.20 S			
12	E1.60 S E1.90 S E1.80 S 1.60	1.50	E2.00 S E2.10 S E2.20 S	E2.60 S 2.75 E3.00 S	2.80	3.10	E3.80 S	3.00	2.25	E2.70 S E2.10 S E1.80 S E1.90 S	E1.95 S E1.60 S E2.60 S E2.00 S			
13	E2.10 S E1.80 S E1.80 S 1.50	1.20	E1.80 S E2.00 S E2.05 S	E2.60 S E2.80 S 2.95	2.05	2.20	2.80	E3.50 S	2.60	2.60	E1.90 S E2.00 S E1.80 S	E1.60 S E1.90 S E1.70 S E2.00 S			
14	E2.10 S 1.30 1.50 1.60	1.50	E1.60 S E2.00 S E2.10 S	2.60	E2.70 S 2.15	2.80	E4.50 S	2.70	E3.00 S	E2.70 S	E2.80 S E2.70 S E1.90 S E1.70 S	E2.10 S E1.90 S S E1.90 S			
15	E2.20 S E2.10 S E1.80 S 1.10	E1.80 S E2.10 S E1.90 S E2.30 S	E2.75 S 2.10 E2.95 S	E4.50 S	2.20	2.65	E2.80 S	2.10	E2.65 S E2.80 S E2.70 S E1.80 S	S E1.95 S E2.10 S S					
16	E2.05 S E2.25 S E1.60 S E1.60 S	E1.60 S E1.95 S S E2.15 S	E2.70 S 2.00 2.15 E3.60 S	2.65	E3.00 S	2.15	E2.70 S	E2.50 S E2.70 S E2.00 S E2.65 S	E2.70 S E2.15 S E2.20 S E2.10 S			
17	E2.05 S E2.00 S E1.80 S E1.90 S	E1.75 S E2.10 S S E2.10 S	E2.80 S E3.10 S E2.90 S E3.70 S	E3.00 S E3.50 S E2.90 S E2.70 S	E2.80 S E2.20 S 2.20 S E2.05 S	E2.00 S E1.90 S E1.75 S E1.90 S						
18	E1.90 S E2.05 S E1.75 S E2.05 S	1.30	E2.05 S S E2.10 S	E2.70 E2.80 S 2.90 2.20	3.70	2.90	E3.10 S	2.75	E2.60 S E2.10 S E1.90 S E1.90 S	E1.80 S E1.80 S E2.10 S E1.70 S					
19	E1.60 S E1.80 S 1.60 1.60	1.50	E1.80 S S E2.20 S	2.50	E2.70 S E2.80 S S	C	C	C	C	E2.65 S S E2.00 S E2.05 S	E2.10 S E2.20 S E2.10 S E1.90 S					
20	S E1.85 S E2.00 S E1.90 S	E1.80 S E2.05 S E2.00 S E2.10 S	E2.70 S E2.90 S 3.10 3.50	E3.50 S	E3.10 S	2.20	E3.00 S	2.30	E2.70 S E2.20 S E1.90 S E1.90 S	E2.10 S E1.80 S E1.90 S E2.10 S					
21	E2.10 S E1.70 S E1.50 S 1.50	1.50	E1.70 S E2.00 S E2.00 S	1.80	E2.90 S E3.10 S	2.90	2.85	2.50	E3.20 S 2.30	E2.80 S E1.80 S E1.70 S E1.95 S	E1.90 S E1.70 S E1.80 S E2.00 S					
22	E2.00 S E2.00 S E1.80 S 1.10	1.30	E1.55 S E1.95 S E1.80 S	E2.10 S 2.20 2.75	2.80	E3.70 S	2.30	E3.10 S E2.75 S	E1.90 S E1.80 S E1.70 S E2.30 S	E1.90 S E1.90 S E1.90 S E1.80 S					
23	E1.80 S E1.90 S E1.90 S E1.70 S	1.70	E1.50 S E1.95 S E2.10 S	E2.70 C 2.70	2.80	2.25	2.30	E3.20 S	2.10	E1.80 S E2.10 S E1.90 S E1.90 S	E1.60 S E1.90 S E1.90 S E1.90 S					
24	E1.80 S E1.70 S E1.70 S 1.40	1.50	E1.80 S E1.80 S E1.90 S	2.00	E2.85 S E3.00 S	2.10	E4.00 S	E3.50 S E4.10 S	2.10	E2.80 S E2.40 S 1.55 E2.00 S	E2.10 S E2.15 S E2.15 S E1.70 S					
25	E2.10 S E2.10 S E1.85 S E1.80 S	E1.55 S E1.80 S E2.10 S E2.10 S	E2.60 C 2.10 2.50	3.10	E3.30 S	2.30	2.30	1.80	E2.00 S E1.60 S E1.90 S	E1.90 S E1.80 S E1.95 S S					
26	E1.90 S E1.90 S E1.80 S 1.60	1.50	E2.10 C S C	C	E2.80 S E3.80 S	3.10	E4.50 S	3.20	E3.50 S E2.80 S	E3.00 S E1.80 S E2.30 S E2.00 S	S S E1.80 S E2.10 S					
27	E2.10 S E2.20 S E1.50 S 1.60	1.40	E2.00 S S E2.00 S	E2.80 S 2.20 2.20 E2.85 S	2.40	2.85	2.15	E2.70 S	2.00	E2.25 S E1.80 S E1.80 S E1.80 S	E2.10 S E2.10 S E2.00 S					
28	E1.90 S 1.50 1.50 1.50	1.10	E1.90 S E1.80 S E2.10 S	1.80	2.30	2.60	E2.70 S	2.75	E3.00 S	2.95	2.30	2.55	E1.90 S E1.90 S E1.90 S	E2.00 S E1.80 S E1.90 S E2.10 S					
29	E1.80 S E1.80 S 1.70 1.60	1.80	E2.00 S C C	E2.70 S E1.85 S E3.00 S E3.40 S	E3.40 S	2.75	E3.00 S	2.10	2.00	E2.30 S E1.90 S E2.00 S	E1.95 S E2.10 S S E2.20 S					
30	E2.20 S E1.95 S E1.90 S E1.75 S	E1.60 S E2.00 S E1.75 S 1.80	E2.70 S E2.35 S 2.30 E3.55 S	2.90	E3.80 S	E3.00 S E2.80 S	2.20	E2.30 S	E1.80 S E1.90 S	E2.00 S E1.80 S E1.90 S E1.90 S					
31	E2.00 S E1.70 S 1.60 E1.90 S	1.10	E1.70 S E1.90 S E1.60 S	2.10	2.15	E2.90 S 3.05	3.40	2.60	2.85	E3.10 S	E2.70 S E2.10 S E1.95 S 1.90 S	E2.10 S E1.90 S E1.80 S E1.90 S					
No.	30	31	31	19	23	30	22	29	30	29	19	20	19	30	30	30	31	30	31	31	29	29	27	28
Median	E1.90	E1.90	E1.80	1.50	1.50	E1.80	E1.90	E2.10	E2.60	E2.70	2.60	2.80	2.85	E3.20	E3.00	E2.70	E2.60	E2.10	E1.95	1.90	E1.95	E1.90	E1.95	E2.00

f-min

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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	U 3.50 S	2.80	2.90	3.15	3.15	3.20	U 3.20 S	U 3.55 R	3.45	3.40	J 3.30 S	3.70	3.50	3.40	3.50	3.35	3.55	3.50	U 3.30 R	3.70 R	3.35	3.00	A	A
2	I 3.05 A	2.80	I 3.10 R	3.25	3.35	S	U 3.30 S	J 3.40 S	J 3.70 S	3.45	3.40	3.80	3.40	3.50 R	3.20	3.60	3.60	3.50	J 3.10 R	3.30	3.60	J 3.25 R	J 3.20 R	A
3	U 2.85 R	2.75	2.85	2.95	3.70	S	S	3.55	J 3.60 R	3.75	3.60	3.50	J 3.60 R	3.65 R	3.15	3.55	3.55	3.30	3.25	3.25	U 3.30 S	A	A	3.05
4	J 3.05 R	2.85	3.05	J 2.95 R	J 3.00 F	2.85	J 3.05 R	3.50	3.55	3.55 R	3.40	J 3.55 R	3.25	3.60 R	3.20	3.65	3.50	J 3.15 S	3.30 S	U 3.60 S	A	J 3.05 S	F	3.20 F
5	F	U 2.90 R	AF	2.85 F	3.00	3.00 S	J 3.20 R	3.50	3.40	3.00 H	3.20 R	3.25 R	3.40 R	3.35	3.35 R	3.45 R	3.35 S	3.45 S	3.05 S	3.15 S	3.15 E	3.10 S	2.80 E S	U 2.85 S
6	U 2.75 S	3.00 S	3.00 E	2.85 E S	U 3.20 E S	U 3.05 S	3.15 S	3.55 S	3.45 S	3.55	3.35 R	3.35	3.55 R	3.35	3.55 R	3.40	3.65	3.40 S	3.15 S	3.55 S	3.50	S	S	2.95
7	2.90 S	2.80 S	2.80 E S	U 3.50 E S	3.40 E S	U 3.15 S	U 3.10 S	3.40 S	3.40 S	3.85	3.30	3.55	3.50 R	3.30	3.35	3.25 S	3.55	3.40	2.90	3.25	J 3.25 R	3.15	3.15	J 2.95 R
8	U 2.95 S	F	2.85	3.20 F	3.15	2.85	2.90 R	J 3.25 S	3.65	3.50	3.25	3.45	3.40	3.50	3.35	3.55	3.55	3.35	J 3.25 R	3.20	J 2.95 R	3.10	S	2.85
9	2.85	3.05	3.15	3.30	3.15	3.55	S	3.65	3.50	3.80	3.20	3.40	3.55	3.55	3.60	3.50	3.75	3.25	3.35	3.20	3.40	U 3.10 S	3.10	3.05
10	2.75 R	2.85	3.00	J 3.70 R	3.05	3.10	3.10	J 3.40 S	3.65	J 3.70 R	J 3.20 R	3.45	3.35	3.50	3.40	3.45	3.60	3.65	3.40	3.20 R	J 3.40 R	S	U 3.00 S	S
11	2.75	2.90	3.10	J 3.55 R	3.60	U 2.55 S	3.45	3.45 S	3.60 R	3.70	U 3.65 R	3.35	3.55	3.10 H	3.50	3.65	3.45	J 3.45 S	3.45	J 3.10 R	3.35	R	S	J 2.95 S
12	3.05	2.90 S	2.95	3.20	3.60	J 3.25 R	3.90	3.40	3.65	3.50	3.05	3.60	3.40	3.45	3.10 H	3.40	3.70	3.30	3.10	3.35	3.45	A	J 2.80 R	3.10
13	3.10	2.65	U 3.00 F	F	3.05	J 3.20 R	3.10	3.55	3.65	3.40	3.15	3.30	I 3.35 A	3.40	3.45	3.40 S	3.55	3.35	3.30	3.20	3.50	U 3.20 S	2.65	2.85
14	J 3.00 R	2.80	A	A	A	3.10	3.15	3.45	3.65	3.20	3.30 S	3.35 S	3.30 S	3.55 S	3.40	3.35	3.35	3.25	3.40 S	3.30 S	U 3.00 R	J 3.05 S	I 2.90 S	2.75
15	U 3.15 S	U 3.00 S	2.95	3.25 S	3.20	3.25 S	I 3.10 S	U 3.25 S	3.40 S	3.55 S	3.30 S	J 3.60 S	3.45 S	3.20 S	3.15	3.40 S	3.35	3.10 S	U 3.50 S	A	S	S	S	I 2.80 S
16	2.60	2.85	2.90	3.05	3.30	2.95 S	I 3.00 S	3.25	3.35	3.05	3.35 S	U 3.70 S	3.45	3.30	3.20	3.50	3.50	3.25	2.95	3.25 S	U 3.15 S	2.95 S	U 2.95 S	3.15 S
17	2.85	2.75	U 3.00 S	2.85	3.15	U 3.25 S	I 3.25 S	3.45	3.35 S	3.50	3.20	3.45	3.60	3.25	3.35	3.35	3.45 S	3.45	3.20	3.10	3.10	2.95	2.80 S	2.80 S
18	2.85 S	U 2.95 S	2.95	3.30	3.15 S	U 2.95 S	I 3.00 S	J 3.40 S	3.60	3.55	3.20	3.40	J 3.35 R	3.65	3.60	3.60	3.55	3.25	3.45 S	3.75	3.30	I 3.30 R	J 2.75 R	3.15
19	2.75	3.05	3.30	3.45	3.20	3.25	I 3.30 S	3.30 S	3.50	3.25	3.35	I 3.40 S	C	C	C	C	3.35	I 3.20 S	3.35	3.25 R	3.20	U 3.05 S	3.05 E S	3.15
20	I 2.90 S	2.85	2.80	3.15	3.30	3.05 S	U 3.20 S	3.25 S	3.25	3.50	J 3.25 S	I 3.50 R	3.30	3.30 R	3.50	U 3.50 S	3.65	3.50	3.55	3.00 R	2.90	J 3.05 R	J 3.00 R	3.05
21	J 3.05 R	2.90 R	2.95	3.40	3.35	3.85	J 3.00 R	3.40	3.60	3.55 Z	3.20	3.40	3.55	3.55	3.20	3.45	3.45	3.70 R	3.65	3.60 S	3.15	3.05	2.95	3.05
22	J 3.40 R I	3.20 S J	3.00 F	3.25	J 3.35 R	3.20	U 3.05 R	J 3.30 S	3.40	3.40	3.30	3.70	3.45	3.65	3.45	3.60	3.55	3.60	3.35	3.45 S	3.00	3.30 R	U 3.05 S	2.90 R
23	2.85 F	2.95	3.20	I 3.10 S	2.90	3.05	J 2.85 R	J 3.40 S	U 3.35 S I	3.60 C	3.55	3.45	3.60	3.35	3.35	J 3.45 R	3.45	3.35	3.55	3.45	J 3.10 R	U 2.95 R	3.20	2.90
24	3.10	3.00	3.50	3.40	3.05	3.00	J 2.95 S	3.25	3.50	3.35 S	3.60	3.55	3.45 R	3.60	3.45 S	3.45	3.55	3.35	3.30	3.05	3.05	3.05 S	2.65	2.75 F
25	2.90 F	3.10	3.25	3.25	3.05 S	3.25	U 2.90 S U	3.20 S	3.60	I 3.40 C	3.25	J 3.50 R	3.45	3.45	3.30	3.45	3.30	J 3.45 S	U 3.45 S I	3.30 A I	3.20 A I	3.10 A U	2.80 S I	3.05 S
26	3.15	3.25	2.95	3.40	3.05	J 3.05 S I	3.25 S I	3.50 C I	3.40 C	3.70 R	3.55	3.85	U 3.55 C	3.35	3.50	3.40	3.50	3.60	3.45	3.70	S	S	3.05	U 3.00 R
27	U 3.15 R	3.05	3.20 R	3.20	3.20	J 3.20 R	I 3.15 S	3.30	3.45	J 3.70 R	3.55	3.65 R	3.65	3.45	3.45	3.60	3.85	A	I 3.20 A	3.55	3.35	U 3.05 R	2.95	2.95
28	3.05	2.85 R	F	3.20	F	RF	J 3.00 R	J 3.25 S	3.55	3.15	3.70 R	J 3.55 R	3.60	3.65	3.70	3.55	3.65	3.50	3.35 S	3.65	3.55	F	J 3.20 R	J 3.05 R
29	3.05	3.00	3.00	3.35	3.60	S	C	C	3.20	3.25 S	3.50 S	3.55	3.50	3.50	3.30	3.65 R	AS	AS	A	3.20	3.20	3.10	I 2.80 S	3.10 S
30	3.20	3.00	3.05	3.30	3.05	I 3.20 S	U 2.65 R	3.45 S	3.00	3.25	3.35	J 3.60 S	3.50	3.30	3.55	J 3.50 R	3.65	J 3.35 S	J 3.40 S	3.50	I 3.15 A	I 2.70 M	2.75	2.75
31	J 2.80 S	3.30	3.60	3.15	2.90	I 3.15 R	3.45	3.60	3.10	S	S	J 3.40 R	3.55 R	3.30	3.20	J 3.25 S	U 3.30 S	3.15	J 3.40 R	A	A	F	3.35	3.50
No.	30	30	28	29	29	27	28	30	31	30	30	31	30	30	30	30	30	29	30	29	27	22	24	28
Median	3.00	2.90	3.00	3.25	3.15	3.15	U 3.10	3.40	3.50	3.50	3.30	3.50	3.50	3.45	3.40	3.45	3.55	3.35	3.35	3.30	3.20	3.05	2.95	3.00

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

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

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

M(3000)F1 | Sweep 10 Mc to 20.0 Mc in 20 min. sec in automatic operation.

The Radio Research Laboratories, Japan.

K 8

IONOSPHERIC DATA

Jan. 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										250	260	245	240	255	250									
2												225	245	250										
3										225	230	250	240	225										
4									245	250A	280	250			295	240								
5											265	255	230	255										
6										230	240	260		245										
7											260	240	250	275	255	240								
8											260		260	250	255									
9									230	225	280	240	250	240	240	240								
10										225	280	250	260	250										
11									225	230		260	250		240									
12											310	245	255		255H	250								
13										240	300	255	A	245										
14										275	260	255	270	250	245	235								
15										230	260	250	260	275	260	230								
16										245	260	265	245	255	255	230								
17											280	245	240	275	250	240								
18										245	260	260	245	240	240	245								
19										275	255	S	C	C	C	C								
20										245	260	230	240	255	250	245								
21										240		250	250	250	260	245								
22										240	260	230	250	230	245	225	225							
23									230	C	240	240	240	260	250		250							
24									240	240	230	245	230	250	255									
25										C	250	250	240	240	260	250								
26								C	C	240	245	220	240	245		250	245							
27										225	250	240	240											
28										290	235	245	235	240		240								
29							C	C		270	245	240	245	245										
30										260	275	245	245	275	230									
31								250A	280	275	225	245	240	260	260A									
No.								1	6	23	28	29	27	26	20	15	3							
Median								250	235	240	260	245	245	250	250	240	245							

h'F2 | Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 9

41

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E300S	300	305	285	255	305	E300S	220	230	245	245	I210A	205	205	F250S	225	225	240	250	210	255	260	A	A
2	A	350A	300A	250	205	S	255	245	210	240	240	240	I230B	I240S	250A	225	220	210	260	245	225	E340S	S	A
3	E350S	355	310	300	250A	S	S	225	230	200	205	205	245	205	E250S	245	210	250	E300S	250	E260A	A	E350S	300
4	300	310	260	255	300	E355S	295	225	210	A	245	225	E250B	225	210	205	210	260AE	260A	240	A	E310S	310	250
5	E290FE	390AE	400A	350	320	310	E255S	225	210	245H	245	I240S	225	I250S	230	230	245	215	265	255	250	255	305	325
6	315	305	305	260	210	295	255	225	220	210	220	215	250	215	230	260	225	220	260	220	250	S	S	335
7	320	315	320	215	255	320	275	220	225	210	230	I220S	E270S	225	225	230	210	E230SE	360S	255	255	E295SE	295S	E310S
8	E355A	300	300	245	225	E320SE	350S	215	230	225	I225A	245	245	E255A	245	235	210	210	240	250AE	300S	255	S	310
9	305	295	280	245	250	245	I255S	210	210	175	225	225	245	210	225	210	205	E250S	260A	245	E260S	E310S	290	290
10	340	E350S	290	215	E290SE	E290S	255	210	210	160	225	200	E250AE	E260S	250	230	205	210	245	255	210	S	E360S	S
11	E355S	310	300	205	E250AE	400AE	E280A	225	230	205	210	E250SE	E270B	225H	220	210	230	200	245	E300S	E250SE	E255S	S	E355S
12	305	E350S	305	260	205	255	200	205	225	240	250A	E250A	215	E250S	245	230	205	205	250	225	230	A	S	245
13	E300S	350	300	270	245	245	255	205	210	200	250	A	A	245	245	E245S	220	210	E250S	260	210	E300SE	E410AE	350S
14	E250S	305	A	A	A	260A	260	220	210	255	210	225	I230S	245	255	205	235	245	210	255	275	305	I310S	310
15	295	305	275	270	255	255	295	230	240	245	210	I225S	255	255	210	230	215	255	225	I255A	I300SI	290SI	335SI	365S
16	340	310	275	275	230	310	I330S	225	210	220	215	260	210	215	205	205	220	255	270	255	260	280	315	305
17	310	350	290	310	255	255	I260S	225	240	225	250	250	230	225	200	215	215	210	220	260	280	315	355	355
18	340	315	260	230	215	325	I295S	225	215	230	195H	245	210	205	230	215	210	230	205	205	240	340	340	260
19	E360A	300	260	240	250	255	I240S	250	240	255	250	I235S	C	C	C	C	225	I220S	220	225	255	280	260	240
20	I290S	290	320	260	230	275	255	225	225	235	215	220	210	210	205	E255S	210	225	210	245	265	300	255	E260S
21	305	305	275	230	230	205	E345S	245	225	245	205	205	245	200	250	205	230	205	200	225	E290S	285	295	E300S
22	255	310	250	230	250	E310A	E310S	250	225	205	210	E245S	E245S	200	210	210	190	225	210	E250S	300	245	E310S	300
23	300	300	260	255	260	260	E350S	250	235	I210C	215	205	210	200	210	230	225	205	210	210	255	E310A	255	300
24	260	255	220	245	295	295	300	210	225	225	205	210	I220S	245	I230S	215	230	230	210	260	280	260	300	265
25	305	260	255	250	260	245	305	235	215	I210C	235	I210A	200	230	210	215	230	210	230	A	A	A	E360S	S
26	255	250	300	245	260	300	I275SI	240CI	225C	220	E250S	205	I200S	200	240	210	225	205	245	245	S	S	295	300
27	250	305	265	260	255	300	I290S	230	240	225	210	200	205	210	245	235	230	A	I265A	210	225	E290SE	E300S	300
28	255	295	250	240	210	E300S	290	225	220	245	225	215	210	200	210	215	230	210	260S	230	E260A	295	295	300
29	295	300	255	245	200	E240S	C	C	245	230	260	I235S	S	A	225	E250A	AS	AS	A	245	270	260	I310S	290
30	255	275	250	210	260	250	305	230	225	245AE	250A	A	A	245	205	205	230	245	E250A	225	A	I355A	350	320
31	315	250	205	E320S	360	310	245	I220A	245	245	210	245	225	245	I240A	E250S	250	245	240A	A	A	300A	245	205
No.	26	28	29	29	29	23	23	30	31	30	29	26	22	26	28	26	30	27	25	27	21	18	20	24
Median	E300	305	275	250	250	260	260	225	225	225	225	220	220	220	230	215	220	220	240	245	255	280	E300	300

h'F

Sweep 10 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 10

IONOSPHERIC DATA

Jan. 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	S	E	110	110	S	S	S	105	110	100	G	S	G	S	100	100	S	S	S	105	100	100
2	105	105	100	100	E	S	S	100	S	S	S	110	B	S	120	S	S	S	S	S	S	S	S	105
3	S	105	E	100	100	105	S	100	S	B	B	B	S	B	S	S	B	S	105	105	100	100	100	S
4	S	S	S	S	S	S	S	S	110	105	S	B	B	S	S	G	B	100	110	105	105	S	110	S
5	S	105	100	E	E	S	S	B	G	115	115	S	S	S	S	S	S	S	S	S	S	S	S	105
6	S	S	S	S	S	S	S	105	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
7	S	110	115	S	E	S	S	S	115	G	110	S	S	B	B	G	B	S	S	S	S	S	S	105
8	105	100	100	E	E	S	S	S	145	120	115	125	125	115	115	110	110	S	S	105	110	S	S	S
9	S	S	S	E	E	S	S	S	S	G	B	B	100	B	B	S	S	S	105	S	S	S	S	S
10	S	S	E	E	S	S	S	B	B	G	160	B	155	S	145	110	B	S	S	S	S	S	S	S
11	S	S	S	S	105	120	105	G	G	115	G	S	B	S	S	S	S	S	S	S	S	S	S	S
12	S	S	S	E	E	S	S	S	S	145	130	140	B	S	B	G	S	S	S	S	S	100	S	S
13	S	S	S	E	E	S	S	S	S	S	170	110	105	130	125	G	B	S	S	S	S	S	105	S
14	S	E	115	110	105	105	S	S	B	115	115	115	S	G	S	S	S	S	S	S	S	S	S	S
15	S	S	120	105	105	S	S	S	S	115	S	S	105	G	S	G	S	S	S	105	S	105	105	S
16	S	S	105	115	105	S	S	S	S	110	115	S	G	S	G	S	S	S	105	S	S	S	S	S
17	S	S	S	S	S	S	S	S	S	S	145	S	125	S	S	S	S	S	110	110	110	S	S	S
18	S	S	S	S	E	S	S	S	S	S	B	155	B	115	S	B	S	S	S	S	S	S	S	100
19	100	100	100	100	100	S	S	S	G	110	105	S	C	C	C	C	S	S	S	S	S	S	110	S
20	S	S	S	S	S	S	S	S	S	S	B	B	S	S	G	S	S	S	S	S	S	S	S	S
21	S	S	S	E	E	S	S	S	G	S	S	115	115	110	S	105	S	105	100	S	S	S	S	S
22	S	S	S	E	E	125	S	S	110	110	110	110	S	100	S	S	S	100	100	S	S	S	S	S
23	S	S	S	S	E	S	S	S	S	C	145	140	130	G	S	G	155	S	S	S	S	100	S	S
24	S	100	S	E	E	S	S	S	G	S	S	110	S	S	S	100	S	S	115	S	S	S	S	S
25	S	S	S	S	S	S	S	S	S	C	115	100	B	S	105	110	110	S	100	100	100	100	S	S
26	S	S	S	E	E	C	S	C	C	S	S	B	S	B	S	S	S	S	S	100	S	S	S	S
27	S	S	S	E	110	S	S	S	S	130	120	G	G	120	120	110	110	105	105	100	S	S	S	S
28	S	E	E	E	E	S	S	S	G	160	125	130	115	125	130	G	115	110	105	105	100	S	S	S
29	S	S	E	E	E	S	C	C	S	145	130	125	125	125	110	110	110	110	105	105	105	105	S	S
30	S	S	S	S	S	S	S	160	155	130	125	115	100	S	S	S	160	S	105	105	100	105	S	S
31	S	105	100	S	145	S	S	105	105	G	150	115	B	100	110	150	S	115	100	100	100	100	S	S
No.	3	8	9	6	9	5	1	5	6	15	19	16	11	9	9	8	8	8	14	12	9	9	6	5
Median	105	105	100	100	105	110	105	105	110	115	120	115	115	115	120	110	110	105	105	105	100	100	105	105

h'Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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	f				l2	l	l2					l	f				f	f2	f
2	f	f	f	f				l				l			h									f2
3		f		f	f	f		l2											f	f	f2	f2	f	
4									l	l2								f2	f	f	f2		f	
5		f2	f2							l	l													f
6								l																
7		f	f						l		l													f
8	f	f	f2						h	l	l	h	h	C	C	l	l2			f	f			
9													l						f					
10											h		h		h	l								
11					f	f	f			l														
12										h	h	h										f		
13											h	l2	l3	h	h								f	
14			f2	f3	f2	f2				l	l	C												
15			f	f2	f					l			l2							f3		f	f	
16			f	f	f					l2	l								f					
17											h		l						f	f2	f			
18												hl		l										f
19	f	f2	f2	f2	f					l	l												f	
20																								
21												l	l	l		l		l	f					
22						f			l	l	l	l		l				l2	f					
23											h	h	h				h							
24		f										l				l			f			f		
25											cl	l			l	l	l		f2	f	f	f2		
26																				f				
27					f					C	C			C	C	l2	l2	l3	f2	f				
28										h	h	h	C	C	h		l	l	f	f2	f2			
29										h	h	l	l	C	l2	C2	l2	l2	f3	f	f	f		
30								C	hh	h	C	l	l				h		f2	f	f	f		
31		f	f		f			l2	l		h	l		l	l2	h		l	f2	f2	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.

K 12

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	u315s	360	340	300	z90	310	u305s	uz55R	z55	z80	J300s	250	250	z60	250	270	250	255	u280R	250R	255	300	A	A
2	I340A	355	J305R	250	z50	S	u300s	Jz55s	Jz25s	255	250	225	255	255R	300	250	250	255	J300R	280	250	S	S	A
3	u350R	395	355	310	z55	S	S	255	J250R	250	250	260	J250R	230R	300	255	240	280	300	270	u275s	A	A	305
4	J330R	350	305	J310R	J340F	360	J330R	250	250	255R	300	J250R	280	240R	300	250	250	J300s	380s	u250s	A	J340s	F	280F
5	F	u390R	AF	360F	340	340	sJz90R	250	255	315H	280R	275R	250R	255	250R	245R	255s	255s	305s	310s	295E	300s	355Es	u375s
6	u375s	325s	345E	340Es	uz90E	u335s	300s	255s	250s	240	255R	270	250R	255	240R	270	245	255s	300s	255s	260	S	S	355
7	365s	360s	375Es	u245Es	z85E	u325s	u305s	255s	250s	215	280	250	255R	295	260	250s	240	250	370	280	S	305	320	A
8	u355s	F	340	z90F	z90	340	350R	J250s	250	250	290	250	270	260	275	250	250	260	J290R	300	A	290	S	350
9	340	305	300	270	z90	250	S	250	250	225	300	250	250	250	250	250	225	280	265	285	260	u315s	300	305
10	355R	355	315	J230R	340	305	z90	J250s	225	J230R	J300R	255	280	250	280	250	230	245	260	295R	J250R	S	S	S
11	395	330	310	Jz40R	255	A	A	250s	240R	250	u225R	280	250	300H	250	245	250	J245s	250	J305R	250	R	S	J360s
12	345	355s	350	300	z40	Jz90R	S	250	250	255	320	250	260	255	305Hs	260	210	250	305	255	250	A	J360R	300
13	300	385	u360F	F	305	J300R	280	245	240	255	305	280	I265A	255	255	260s	250	265	280	300	340	u300s	410	360
14	J310R	355	A	A	A	300	300	250	240	300	275s	270s	290s	255s	255	260	255	275	260s	285s	u310R	J315s	I335s	355
15	u305s	u325s	310	295s	290	275	I310su	295s	255s	350s	260s	J250s	260s	280s	280	255s	260	300s	uz70s	A	S	S	S	I400s
16	410	350	345	320	260	345s	I340s	265	255	305	275s	u265s	250	270	265	255	245	280	325	295s	u295s	300s	u325s	305s
17	355	390	u335s	345	295	uz75s	I280s	255	260s	295	295	255	245	275	275	255	235s	250	290	295	305	345	380s	370s
18	360Fs	u335s	315	275	295s	u345s	I330s	Jz55s	225	255	295	295	Jz50R	250	245	250	245	280	250s	220	255	RF	J390R	300
19	390	310	300	255	295	290	I265s	255s	255	290	260	I250s	C	C	C	C	255	I260s	250	260R	280	u305s	305Es	280
20	I340s	320	360	295	255	310	su290s	280s	275	255	J295s	I250R	270	260R	250	u255s	230	255	250	295R	340	J310R	J300R	305
21	J340R	350R	310	255	255	210	J345R	260	245	250Z	305	255	255	250	295	255	250	220R	240	250s	305	305	310	315
22	Jz95R	SF	J310F	290	Jz65R	310	u320RJz85s		250	265	295	250	255	245	250	250	250	250	260	255s	310	255Ru325s		310R
23	320F	315	z95	I300s	320	300	J355RJz60s		u250s	Iz50C	250	250	250	290	z60	Jz55R	250	250	250	250	J300Ru320R		z90	310
24	310	320F	250	255	310	305	J340s	z95	250	250s	235	250	z30R	250	255s	245	245	260	245	305	305	295s	405	380F
25	335R	300	280	280	315s	z65	u345su	255s	z30	Iz70C	280	Jz60R	255	250	300	250	290	Jz50su	z50sI	z70AI	z95AI	310Au	400sI	350s
26	300	z60	320	z60	300	C	I300sI	z60C	Iz50C	z50R	250	220	uz50C	255	250	260	255	240	255	245	S	S	315	u325R
27	uz95R	310	300R	300	300	J305R	I320s	265	250	Jz40R	255	250R	250	250	255	250	240	A	I300A	250	250	u300R	325	325
28	305	330F	F	290	F	RF	J315RJz55s		250	305	250R	JZ50R	250	250	245	255	250	250	295s	245	A	F	J330R	J320R
29	310	330	305	255	z20	S	C	C	300	275s	285s	250	250	245	255	250R	AS	AS	A	280	295	305	I360s	325s
30	300	315	300	255	300	Iz65su	380R	250s	310	300	300Js	250	250	290	250	Jz55R	250	Jz60sJz60s		250	I320AI	390A	400	390
31	J360s	290	240	S	365	I325R	250	250	305	S	S	J255R	250R	280	295	J300su	z85s	300	Jz55R	A	A	F	z90	z40
No.	30	29	28	28	29	25	26	30	31	30	30	31	30	30	30	30	30	29	30	29	24	20	22	27
Median	340	330	310	290	290	305	u310	255	250	255	280	250	250	255	255	255	250	255	270	270	295	305	330	325

hpF2

Sweep 10 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 13

45

IONOSPHERIC DATA

Jan. 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	u 80 s	90	80	65	70	50	u 50 s	u 45 R	60	65	J 45 s	50	55	45	45	70	40	50	u 65 R	45 R	50	55	A	A
2	I 45 A	50	J 55 R	50	50	S	u 45 s	J 55 s	J 55 s	55	60	40	55	45 R	45	55	50	55	J 50 R	60	50	S	S	A
3	u 60 R	55	95	90	45	S	S	45	J 40 R	30	45	50	J 45 R	60 R	75	45	60	65	55	85	u 65 s	A	A	75
4	J 60 R	90	85	J 100 R	J 60 F	85	J 60 R	60	50	45 R	25	J 50 R	65	55 R	60	40	65	J 75 s	65 s	u 50 s	A	J 60 s	F	70 F
5	F	u 40 R	AF	80 F	60	60 s	J 60 R	60	75	85 H	100 R	100 R	115 R	95	115 R	125 R	90 s	65 s	95 s	60 s	85 F	85 s	95 F	u 65 s
6	u 75 s	75 s	60 F	100 F	u 115 F	u 65 s	75 s	50 s	95 s	60	75 R	60	50 R	95	60 R	70	50	75 s	75 s	55 s	50	S	S	55
7	65 s	80 s	75 F	u 80 F	45 F	u 55 s	u 70 s	100 s	100 s	40	35	50	45 R	50	70	55 s	35	70	50	65	S	55	70	A
8	u 50 s	F	60	60 F	60	55	50 R	J 55 s	50	50	50	55	55	45	55	45	50	85	J 70 R	95	A	60	S	55
9	65	90	50	65	60	50	S	45	55	35	60	60	50	45	50	55	35	80	45	70	55	u 40 s	55	85
10	85 R	50	85	J 30 R	55	85	65	J 50 s	35	J 50 R	J 50 R	50	50	55	65	55	65	50	50	55 R	J 65 R	S	S	S
11	50	65	85	J 55 R	40	A	A	55 s	40 R	30	u 70 R	50	50	60 H	45	45	55	J 55 s	50	J 55 R	75	R	S	J 45 s
12	50	45 s	55	55	50	J 55 R	S	60	40	45	75	50	45	55	90 H s	60	50	70	55	85	50	A	J 60 R	55
13	95	80	u 45 F	F	85	J 50 R	60	50	55	65	60	40	I 65 A	50	50	45 s	45	75	70	45	50	u 55 s	40	85
14	J 70 R	85	A	A	A	60	95	50	65	70	100 s	55 s	70 s	65 s	75	85	95	80	90 s	60 s	u 95 R	J 85 s	I 75 s	95
15	u 95 s	u 80 s	95	65 s	65	85 s	I 85 s	u 100 s	95 s	90 s	95 s	J 75 s	65 s	70 s	80	95 s	95	85 s	u 100 s	A	S	S	S	I 75 s
16	95	95	90	75	90	90 s	I 90 s	90	105	95	80 s	u 75 s	95	100	85	90	95	75	80	95 s	u 85 s	80 s	u 80 s	65 s
17	95	60	u 70 s	85	80	u 80 s	I 95 s	75	100 s	40	55	65	60	75	95	90	90 s	75	90	85	95	70	75 s	80 s
18	90 F	u 70 s	90	100	65 s	u 65 s	I 75 s	J 75 s	80	45	60	35	J 60 R	45	20	45	50	65	55 s	30	50	R F	J 60 R	50
19	60	85	55	50	60	55	I 55 s	55 s	50	50	90	I 75 s	C	C	C	C	95	I 90 s	100	95 R	70	u 95 s	95 F s	85
20	I 70 s	80	80	65	75	95 s	u 70 s	95 s	80	45	J 55 s	I 50 R	75	55 R	55	u 45 s	65	45	45	50 R	55	J 85 R	J 90 R	90
21	J 55 R	50 R	85	45	45	40	J 55 R	50	50	45 Z	55	50	50	55	50	50	60	40 R	55	45 s	90	50	85	80
22	J 50 R	S F	J 85 F	60	J 80 R	85	u 75 R	J 55 s	50	50	50	30	50	20	55	50	50	45	55	50 s	85	60 R	u 70 s	85 R
23	75 F	80	55	I 55 s	80	50	J 55 R	J 50 s	u 50 s	I 45 C	45	60	35	60	65	J 50 R	50	60	50	45	J 50 R	u 75 R	55	90
24	85	80 F	50	45	85	90	J 55 s	55	55	90 s	65	55	90 R	50	50 s	80	55	75	105	95	95	70 s	90	95 F
25	70 F	95	75	75	85 s	85	u 85 s	u 95 s	80	I 60 C	70	J 45 R	55	60	45	55	55	J 50 s	u 50 s	I 40 A	I 45 A	I 65 A	u 50 s	I 50 s
26	50	60	75	65	50	C	I 60 s	I 50 Q	I 50 C	30 R	45	40	u 45 C	50	55	65	50	60	50	50	S	S	50	u 70 R
27	u 55 R	50	55 R	55	55	J 45 R	I 40 s	85	50	J 30 R	45	40 R	35	50	45	50	40	A	I 50 A	50	55	u 60 R	65	75
28	85	75 F	F	55	F	RF	J 80 F	J 55 s	50	80	45 R	J 50 R	45	45	45	45	45	45	35 s	50	A	F	J 65 R	J 75 R
29	85	65	90	55	45	S	C	C	50	80 s	65 s	80	80	65	75	100 R	AS	AS	A	95	65	95	I 80 s	75 s
30	100	85	100	95	80	I 85 s	u 70 R	80 s	70	55	45	J 50 s	50	40	45	J 50 R	45	J 55 s	J 50 s	60	I 60 A	I 60 A	50	60
31	J 60 s	55	60	S	40	I 55 R	50	45	90	S	S	J 50 R	45 R	35	60	J 50 s	u 55 s	55	J 50 R	A	A	F	50	60
No.	30	29	28	28	29	25	26	30	31	30	30	31	30	30	30	30	30	29	30	29	24	20	22	27
Median	70	75	75	65	60	60	u 60	55	55	50	60	50	50	55	55	55	50	65	55	55	60	60	70	75

ypF2

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

The Radio Research Laboratories, Japan.

K 14

IONOSPHERIC DATA

Jan. 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	$J_{2.7}^{S}$	2.8	2.9	3.0	3.6	2.4	$J_{2.7}^{S}$	3.8^{S}	5.5	5.7	$J_{7.9}^{S}$	$J_{7.8}^{S}$	9.3	$J_{7.6}^{S}$	$J_{6.5}^{S}$	6.7	5.7^{H}	$J_{6.0}^{S}$	$J_{4.2}^{S}$	$J_{4.1}^{S}$	3.4	2.2	2.6^{S}	2.1
2	2.3	2.4^{S}	2.7	2.8	$I_{3.2}^{S}$	2.4	2.2	$J_{3.1}^{S}$	$J_{5.3}^{S}$	5.7	5.9	7.0^{S}	6.1^{S}	6.7^{S}	5.3	6.0^{S}_{H}	5.7^{H}	4.9	3.3^{S}	3.4	3.2	2.4	$J_{2.4}^{S}$	2.5
3	2.7	2.8	$I_{2.7}^{S}$	2.7^{S}	2.6	$J_{2.6}^{S}$	$J_{2.7}^{S}$	3.2^{S}	5.6	$J_{6.3}^{S}$	6.3^{S}	6.7	6.5	7.9	$I_{6.7}^{S}$	6.1	6.5	5.5	$J_{3.7}^{S}$	$J_{3.7}^{S}$	3.3	S	S	$I_{2.7}^{S}$
4	2.7	$J_{2.6}^{S}$	2.5	2.7	2.9	$J_{2.5}^{S}$	2.4^{S}	3.2^{S}	5.6^{H}	5.8	6.1^{S}	6.4	$I_{7.6}^{S}$	6.5	$J_{6.1}^{S}$	5.4^{H}	5.4	5.1^{S}	$I_{3.6}^{S}$	S	S	$I_{3.2}^{S}$	3.0	2.8^{S}
5	2.7	$I_{2.9}^{S}$	2.6^{S}	$J_{2.5}^{S}$	2.5^{S}	2.3	$I_{2.4}^{S}$	2.9	5.4	$J_{6.0}^{S}$	6.4	$J_{7.8}^{S}$	$I_{9.2}^{S}$	$J_{7.6}^{S}$	6.9	6.3	5.3	5.0	3.8^{S}	3.4	3.7	3.3	$I_{2.8}^{S}$	2.4
6	$I_{2.8}^{S}$	2.8	$I_{2.6}^{S}$	$I_{2.7}^{S}$	2.9	$I_{2.5}^{S}$	2.5^{S}	3.2^{S}	5.6	6.1	6.1^{H}	6.3^{S}	6.6	8.1	6.3	5.9	6.1	5.5	4.3	$I_{4.0}^{S}$	3.1^{S}	$I_{2.4}^{S}$	$I_{2.6}^{S}$	2.4
7	$I_{2.4}^{S}$	$J_{2.6}^{S}$	2.7	2.8	2.6^{S}	2.4	$J_{2.1}^{S}$	2.8	5.2^{S}	$J_{5.5}^{S}$	5.6	6.7	6.7	6.8	$I_{9.2}^{S}$	9.0	$J_{7.9}^{S}$	5.4^{S}	4.1	2.9	3.3	3.4	$I_{3.3}^{S}$	2.8
8	$I_{2.9}^{S}$	3.3^{S}	$I_{3.1}^{S}$	$I_{3.2}^{S}$	2.6	2.2	2.1	$I_{2.7}^{S}$	4.9	6.0	5.9	7.0	$I_{6.7}^{S}$	5.8	7.3	$J_{8.1}^{S}$	$I_{7.5}^{S}$	$J_{6.2}^{S}$	$I_{4.6}^{S}$	$I_{4.6}^{S}$	$J_{4.3}^{S}$	$I_{3.8}^{S}$	3.2	$I_{2.8}^{S}$
9	2.4	2.8	3.0	3.2	2.7	2.5	2.3	3.0	4.7^{S}	4.8	4.8	6.6	6.2	6.8^{S}	S	6.2^{SH}	6.2	4.8	4.2	3.2	3.3	3.5^{S}	2.9	$I_{2.6}^{S}$
10	$I_{2.6}^{S}$	2.8	2.9	3.1	2.9	2.6	2.2	2.9	4.5	5.8^{H}	5.1^{H}	6.6	6.9^{S}	5.9	$J_{7.8}^{S}$	$J_{6.1}^{S}$	5.7	5.0^{S}	5.0	3.5^{S}	$I_{3.3}^{S}$	S	S	S
11	$I_{2.6}^{S}$	2.5	2.6	3.4	2.1^{H}	$I_{1.8}^{S}$	$I_{2.3}^{S}$	2.8	5.8	$U_{6.4}^{SH}$	5.5^{H}	5.7	8.1	9.4^{S}	$J_{8.7}^{S}$	6.5	6.3	$I_{6.2}^{S}$	$J_{4.4}^{S}$	3.5^{S}	$I_{3.6}^{SH}$	3.4^{S}	3.0^{S}	2.5
12	$I_{2.7}^{S}$	2.6^{S}	2.5	3.0	4.4	C	C	C	C	C	C	$J_{7.2}^{S}$	7.2	7.9	7.2	5.9	$J_{7.6}^{S}$	$J_{6.2}^{S}$	4.3	3.8	3.2	3.1	$J_{2.5}^{S}$	2.5^{S}
13	3.0	$I_{2.6}^{A}$	$J_{2.8}^{S}$	$I_{2.9}^{S}$	3.3	3.4^{S}	$I_{2.5}^{S}$	2.9^{S}	4.4	5.3	6.0	6.0	6.3	9.4^{S}	7.3	6.7	5.9^{H}	5.7^{H}	4.1	3.3	3.3^{S}	2.9^{H}	2.5	2.9^{S}
14	$I_{3.5}^{S}$	2.5	2.6	$I_{2.8}^{S}$	2.4	$I_{2.5}^{A}$	2.9^{S}	$I_{3.4}^{S}$	4.9	5.8	6.1	9.3^{S}	$J_{9.6}^{S}$	$J_{8.5}^{S}$	7.3	5.6	6.2^{S}_{H}	7.1^{S}	6.6	$I_{4.4}^{S}$	3.8	$I_{3.9}^{S}$	2.7	2.4
15	2.4	$I_{2.3}^{S}$	2.5	2.7	$I_{2.8}^{S}$	2.3	$J_{2.0}^{S}$	$I_{2.9}^{S}$	$J_{5.5}^{S}$	6.6^{S}	5.9	7.0^{S}	8.2	$J_{8.0}^{S}$	$J_{8.5}^{S}$	9.4^{S}	$I_{7.5}^{S}$	6.3^{S}	$I_{5.9}^{S}$	$J_{3.7}^{S}$	3.0	2.2	3.3^{S}	2.4^{S}
16	2.6^{S}	2.7	2.8	2.8	2.8	$I_{2.4}^{S}$	$I_{2.4}^{S}$	$J_{2.6}^{S}$	5.9^{S}	$I_{6.0}^{SH}$	$J_{5.5}^{SH}$	8.3	8.7	5.9	6.9	6.7	6.5	5.6	$J_{4.9}^{S}$	$I_{5.4}^{S}$	$J_{5.5}^{S}$	3.1^{S}	2.8	$I_{2.5}^{S}$
17	2.7	2.9	3.0	3.2	3.4^{S}	$I_{2.7}^{S}$	2.2	$J_{2.6}^{S}$	$J_{5.5}^{S}$	5.9^{H}	6.0	$I_{7.8}^{S}$	$J_{6.6}^{S}$	6.5	8.6	6.8	8.8^{H}	6.0^{S}	$J_{3.8}^{S}$	$J_{5.5}^{S}$	$I_{3.7}^{S}$	$I_{3.0}^{S}$	2.8	$I_{2.6}^{S}$
18	2.8	2.8	3.1	$I_{3.8}^{S}$	2.1	2.3	C	C	S	6.0^{S}	7.4	7.4	9.8	6.7	5.6	5.6	$J_{6.3}^{S}$	5.3^{H}	5.7	$I_{4.5}^{S}$	$I_{3.0}^{S}$	$I_{2.5}^{S}$	$I_{2.6}^{S}$	2.8
19	2.9	$I_{2.5}^{A}$	3.0^{S}	$I_{3.0}^{S}$	2.7	$I_{2.4}^{C}$	$I_{2.3}^{S}$	$I_{3.0}^{S}$	$J_{5.2}^{SH}$	5.4^{S}	$J_{6.6}^{S}$	7.2	7.6	6.8	$J_{6.1}^{S}$	6.2^{S}	6.9	5.1	$I_{5.6}^{S}$	$I_{4.3}^{S}$	3.1	3.1^{S}	$I_{3.0}^{S}$	$J_{3.4}^{S}$
20	$I_{2.8}^{S}$	$J_{2.6}^{S}$	2.9^{S}	$I_{3.4}^{S}$	2.5	2.8	$I_{2.6}^{S}$	$I_{3.1}^{S}$	$J_{5.2}^{SH}$	5.9^{H}	$J_{6.7}^{S}$	$J_{10.0}^{S}$	8.0	6.1^{S}	6.0	$J_{6.5}^{S}$	7.5^{S}	5.7	$J_{4.2}^{S}$	3.6^{S}	2.8	$J_{2.5}^{S}$	2.7^{S}	$J_{2.5}^{S}$
21	$J_{2.7}^{S}$	2.8	2.9	$J_{3.6}^{S}$	3.1	$J_{2.0}^{S}$	$J_{2.2}^{S}$	$J_{2.6}^{S}$	5.6	5.6	6.6^{S}	5.8^{H}	$J_{7.3}^{S}$	5.8	6.8	6.5	$I_{6.5}^{S}$	$J_{6.0}^{S}$	4.7	$J_{3.8}^{S}$	2.9	S	S	S
22	S	2.6	2.5	2.6	2.4	$J_{2.0}^{S}$	$J_{2.1}^{S}$	$I_{2.8}^{S}$	$J_{5.2}^{S}$	6.8	6.9	9.4^{S}	10.4	8.7	5.8	$J_{6.4}^{S}$	5.9	5.2^{S}	$J_{5.3}^{S}$	3.5	3.1	2.6^{S}	2.9	$J_{2.6}^{S}$
23	$J_{2.5}^{S}$	3.1	$J_{3.0}^{S}$	2.9	$J_{2.7}^{S}$	$I_{2.3}^{S}$	$I_{2.2}^{S}$	$I_{3.3}^{S}$	5.6	$I_{7.0}^{S}$	7.1	$J_{7.6}^{S}$	6.7	6.0	6.6	$J_{6.4}^{S}$	5.9	5.2^{H}	5.4^{S}	$J_{4.5}^{S}$	3.0^{S}	2.7^{S}	2.4	2.9
24	3.1	3.1	$J_{4.0}^{S}$	$I_{2.6}^{S}$	2.2	$J_{2.3}^{S}$	2.3	2.7	$I_{5.4}^{S}$	6.5	7.8	$I_{7.0}^{S}$	6.1	6.0	5.7	5.9	5.7	5.1^{S}	$J_{4.8}^{S}$	3.1	3.1^{S}	$I_{2.6}^{S}$	2.9	2.9
25	$I_{3.1}^{S}$	3.5^{S}	$I_{3.0}^{S}$	2.3	2.6^{S}	$I_{2.5}^{S}$	$J_{2.6}^{S}$	$I_{3.1}^{S}$	5.5	5.9^{H}	6.9	9.2^{S}	8.9	7.0	$J_{7.2}^{S}$	6.5	6.1	$J_{6.3}^{S}$	5.0^{S}	$I_{3.7}^{S}$	$I_{3.2}^{S}$	3.2^{S}	3.2	3.4^{S}
26	3.0	3.2	3.2	3.2	2.5	2.6	$J_{2.5}^{S}$	$I_{3.5}^{S}$	5.5	$I_{7.6}^{S}$	$I_{9.1}^{S}$	8.5^{S}	6.5	6.5^{S}	$J_{6.4}^{S}$	6.1^{H}	5.8^{H}	$J_{6.1}^{S}$	4.0	$I_{3.4}^{A}$	$I_{3.0}^{S}$	2.8	3.3	$I_{3.2}^{S}$
27	$I_{3.2}^{S}$	3.2	3.2	3.1^{S}	2.3	2.3	2.4	$J_{2.7}^{S}$	$I_{5.4}^{S}$	5.9	6.7	7.2	6.9	$J_{6.3}^{S}$	5.3	5.2	5.1	4.3	3.4	3.7^{S}	$I_{3.5}^{S}$	2.9	$J_{2.7}^{S}$	2.9
28	2.8	3.1	3.2	3.1^{S}	$J_{1.8}^{S}$	$I_{1.8}^{S}$	$I_{2.4}^{S}$	$I_{3.1}^{S}$	4.2	5.9	8.8^{S}	8.9^{S}	8.4^{S}	6.8	6.0^{S}	5.4^{S}	5.1	4.8	$I_{4.0}^{S}$	S	S	S	S	S
29	S	$I_{2.9}^{S}$	3.2^{S}	$I_{3.4}^{S}$	2.9^{S}	$I_{2.3}^{S}$	$I_{1.9}^{S}$	2.4^{S}	4.9	6.7	$J_{10.2}^{S}$	$J_{12.4}^{S}$	$J_{10.3}^{S}$	9.6^{S}	8.1	$J_{7.8}^{S}$	5.2^{S}	4.4	3.7	4.8	4.9	4.4	$I_{3.7}^{S}$	$I_{3.5}^{S}$
30	$I_{3.4}^{S}$	$I_{3.5}^{S}$	$I_{3.6}^{S}$	3.2	2.6	$I_{2.1}^{S}$	$J_{2.1}^{S}$	2.8	5.1	6.4	9.3^{S}	11.0	$J_{7.7}^{S}$	6.6	$J_{8.1}^{S}$	5.7	5.1	4.4^{H}	4.8	5.8	$J_{5.0}^{S}$	3.0^{S}	3.4	4.0
31	$I_{4.8}^{S}$	$J_{3.4}^{S}$	2.7	$J_{1.9}^{S}$	$I_{2.2}^{S}$	$I_{2.4}^{A}$	$I_{2.7}^{S}$	3.3^{S}	5.0	$I_{7.0}^{A}$	S	6.1^{S}	6.8	7.0	7.4^{S}	7.0	6.3	$I_{6.8}^{S}$	S	A	A	S	S	6.0
No.	29	31	31	31	31	30	29	29	29	30	29	31	31	31	30	31	31	31	30	28	28	26	26	28
Median	2.7	2.8	2.9	3.0	2.6	2.4	2.3	2.9	5.4	6.0	6.4	7.2	7.3	6.8	6.8	6.3	6.1	5.5	4.3	3.7	3.3	3.0	2.8	2.8
U.Q.	3.0	3.1	3.1	3.2	2.9	2.5	2.5	3.2	5.6	6.4	7.2	8.5	8.7	7.9	7.4	6.7	6.5	6.1	5.0	4.4	3.6	3.3	3.2	2.9
L.Q.	2.6	2.6	2.6	2.7	2.4	2.3	2.2	2.8	5.0	5.8	5.9	6.6	6.6	6.3	6.1	5.9	5.7	5.0	4.0	3.4	3.1	2.6	2.6	2.5
Q.R.	0.4	0.5	0.5	0.5	0.5	0.2	0.3	0.4	0.6	0.6	1.3	1.9	2.1	1.6	1.3	0.8	0.8	1.1	1.0	1.0	0.5	0.7	0.6	0.4

The Radio Research Laboratories, Japan.

foF2

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

IONOSPHERIC DATA

Jan. 1963 | f_0F1 | 135° E Mean Time (G.M.T. + 9h.) | **Yamagawa** | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											4.1	L	4.4	4.4^{H}	L									
2											L	4.2^{H}	4.3	4.3^{H}	L									
3											L	$I_{4.2}{}^{L}$	L	4.4	L	L	L							
4												L	$I_{4.3}{}^{L}$	4.2	4.1									
5											A	L	4.5	L^{H}	L^{H}	L								
6												L	L	L^{H}	L	L	L							
7											L	L	4.4	$I_{4.4}{}^{L}$	4.2	4.0	L							
8										L	L	A	4.4	$I_{4.3}{}^{L}$	4.2^{L}	$I_{4.0}{}^{S}$	L							
9												$I_{4.1}{}^{LH}$	4.2	$I_{4.3}{}^{L}$	4.0									
10												3.9	$I_{4.2}{}^{L}$	4.2^{L}	A	L								
11												4.3	4.3^{L}	$I_{4.4}{}^{L}$	$I_{4.2}{}^{L}$	L	L							
12								C	C	C	C	L	4.3	$I_{4.3}{}^{A}$	$I_{4.2}{}^{A}$	$I_{4.0}{}^{L}$	L							
13											4.2^{L}	4.2^{L}	4.5	$I_{4.3}{}^{A}$	4.2	L								
14											L	$I_{4.3}{}^{L}$	$I_{4.4}{}^{L}$	$I_{4.3}{}^{L}$	$I_{4.2}{}^{L}$	3.8								
15											L	4.1	$I_{4.4}{}^{L}$	$I_{4.4}{}^{L}$	$I_{4.1}{}^{L}$	3.8^{H}								
16												4.2	$I_{4.4}{}^{LH}$	L	L	L	L							
17											L^{H}	4.2^{H}	L	L	4.1	4.1								
18								C			4.2	4.3	4.3	4.3	$I_{4.1}{}^{L}$	$I_{3.8}{}^{L}$	2.8							
19											L	L	4.3	$I_{4.3}{}^{L}$	L	L	L							
20											L	L	L	$I_{4.3}{}^{L}$	4.3^{H}	L								
21											L	L	L	L	4.2^{H}	L	L							
22										L	L	4.2	4.4	$I_{4.4}{}^{LH}$	4.1	L	2.9							
23										L	4.1	$I_{4.2}{}^{L}$	L	L^{H}	L	L								
24										L	L	4.3	4.3	$I_{4.2}{}^{L}$	L	L	L							
25											L	L^{H}	4.3	4.3	4.1	3.9^{H}	L							
26										L	$I_{4.2}{}^{L}$	4.4	$I_{4.3}{}^{L}$	L	4.2									
27										L	L	4.3	4.4	4.3	L	L	L							
28										L	4.2	4.4	4.4	4.0	L	L	L							
29										L	4.2	4.3	4.4	4.3^{H}	4.3^{H}	$I_{4.0}{}^{SH}$								
30										L	4.2	4.3	L	4.5^{L}	4.3	3.8								
31										A	L	4.1	4.5	4.7^{H}	4.3	A	A	A						
No.											8	20	24	24	19	10	2							
Median											4.2	4.2	4.4	$^{U}4.3$	4.2	4.0	2.8							

f_0F1 Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	2.00	2.40	2.80	$I_{2.90}^{A}$	$I_{3.05}^{A}$	3.00	2.90	2.70	2.25	S						
2								S	S	2.50	2.80	3.00	3.10	3.05	2.90	2.40	A	S						
3								S	S	2.50	2.80	3.00	3.10	3.10	2.90	2.65	A	S						
4								S	S	$I_{2.40}^{A}$	$I_{2.85}^{A}$	3.00	3.10	3.10	3.00	2.70	2.30	A						
5								S	2.10	2.50	2.75	$I_{2.90}^{S}$	3.10	$I_{3.05}^{A}$	2.85	2.70	2.40	S						
6								S	1.90	2.50^{H}	2.80	2.80	3.10	3.00	3.00	2.80	2.35	S						
7								S	1.90	2.70^{H}	2.90	A	A	$I_{3.15}^{A}$	$I_{3.05}^{A}$	2.80	2.40	A						
8								S	2.10	2.60	2.85	2.90	3.00	3.05	2.95	$I_{2.70}^{S}$	2.35	S						
9								S	2.10	2.50	2.90	3.00	3.10	3.20	3.10	2.80	2.35	S						
10								S	S	2.50	2.90	$I_{3.05}^{A}$	3.25	$I_{3.20}^{R}$	3.10	2.90	A	S						
11								S	1.90	2.60	$I_{2.90}^{A}$	3.10	3.20	3.20	3.00	2.75	2.40	S						
12								C	C	C	C	3.00	3.10	A	A	2.80	$I_{2.50}^{A}$	S						
13								S	S	2.40	2.65	2.90	3.20^{H}	3.10	3.00	2.80	2.50^{H}	S						
14								S	2.20	2.60^{H}	2.80	3.00	$I_{3.00}^{A}$	$I_{3.05}^{A}$	$I_{2.95}^{A}$	$I_{2.65}^{A}$	2.35^{H}	A						
15								S	1.80	2.60	2.85	$I_{3.10}^{A}$	$I_{3.10}^{A}$	3.05	3.00	2.80	2.35	S						
16								S	1.90	$I_{2.40}^{A}$	2.80	3.00	3.00	3.00	2.85	2.75	2.40	S						
17								S	S	2.40	2.65	3.05	3.10	3.05	2.95	2.75	2.20	S						
18								C	2.00^{H}	2.50	$I_{2.70}^{A}$	3.00	$I_{3.05}^{A}$	$I_{3.05}^{A}$	2.90	2.70	2.25	S						
19								S	S	2.45	2.80^{H}	3.00	3.00	3.10	2.95	2.80	2.45	S						
20								S	2.00	2.50	$I_{2.70}^{A}$	3.00	3.10	3.10	2.95	2.75^{H}	2.50	S						
21								S	S	2.50	2.90	3.20	3.05	3.15	2.95	$I_{2.65}^{A}$	2.45	2.00						
22								S	1.90	2.45	2.75	2.95	3.05	3.10	$I_{3.00}^{A}$	2.90	2.50	A						
23								S	2.00	2.60	2.80	3.05	3.15	3.10	2.95^{H}	$I_{2.75}^{A}$	2.50	1.90						
24								S	$I_{2.05}^{A}$	2.70	2.90	3.00	3.10	2.85	3.05	2.90	2.60	S						
25								S	1.90	2.50	2.90	3.00	3.10	3.10	2.95	2.85	$I_{2.40}^{A}$	2.00						
26								S	A	$I_{2.55}^{A}$	3.00	3.10	3.10	3.10	3.00	$I_{2.85}^{A}$	2.70	A						
27								S	S	2.60	3.00	3.10	3.20	3.15	3.05	2.90	A	A						
28								S	2.00	2.55	2.85	3.10	3.10	3.20	3.10	2.90	2.50	S						
29								S	2.10	2.70	2.90	3.10	3.10	3.25	3.20	2.60	2.40	S						
30								S	2.10	2.60	3.10	$I_{3.10}^{S}$	3.30	3.25	3.20	2.95	2.60	S						
31								S	2.10	$I_{2.55}^{A}$	$I_{2.80}^{A}$	3.10	3.20	3.20	$I_{3.15}^{R}$	2.90	2.50	S						
No.									20	30	30	30	30	30	30	31	27	3						
Median									2.00	2.50	2.80	3.00	3.10	3.10	3.00	2.80	2.40	2.00						

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

Jan. 1963 | foEs | 135° E Mean Time (G.M.T. + 9h.)

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	S	S	S	S	G	$J_{2.3}^{G}$	2.7^{G}	$J_{3.7}$	$J_{5.4}$	3.2	G	G	G	S	2.4	2.9	S	S	S	3.0
2	S	S	S	$J_{2.1}$	2.5^{M}	S	S	S	G	2.9	3.2	3.2	3.5	2.4^{G}	3.3	2.7	3.0	$J_{3.0}$	$J_{2.4}$	$J_{2.3}$	S	S	S	S
3	S	S	$J_{2.7}$	2.9	S	S	S	S	G	2.9	3.1	3.2	G	G	G	2.2^{G}	2.5	$J_{2.2}^{S}$	S	S	2.7	2.9	3.2	S
4	S	S	S	S	S	S	S	S	S	4.6	$J_{3.6}$	3.7	3.7	4.4	3.2	3.0	2.9	$J_{2.3}$	S	S	S	3.0^{M}	3.0^{M}	S
5	S	S	S	S	S	2.2	2.1	S	G	2.8	4.9	S	3.1^{G}	3.3	3.1	$J_{4.2}$	2.1^{G}	S	S	S	2.9	S	S	S
6	S	S	2.7^{M}	$J_{2.2}$	S	$J_{2.3}$	S	S	G	G	3.2	3.5	3.2	G	3.2	G	3.1	3.8	$J_{2.5}$	2.3^{M}	2.3	S	S	S
7	S	S	S	S	S	S	S	S	2.1	G	$J_{4.0}$	6.0	$J_{4.7}$	3.7	3.6	2.9	G	2.9	S	S	S	S	S	S
8	S	2.4	3.0^{M}	S	S	S	S	S	G	2.8	3.2	$J_{6.4}$	3.5	G	3.2	S	G	S	S	2.2	S	S	3.0	2.8
9	S	S	S	S	E	S	S	S	G	G	G	G	G	2.6^{G}	G	2.7^{G}	$J_{2.5}$	3.0	2.9	$J_{2.4}$	S	S	S	S
10	S	S	S	S	S	S	S	S	G	G	G	3.6	3.8	3.8	4.2	3.7	$J_{3.7}$	$J_{2.6}$	2.5	$J_{2.4}$	S	$J_{2.5}$	2.9	S
11	S	S	S	S	E	S	S	S	G	G	3.5	3.5	G	3.0^{G}	G	2.3^{G}	G	S	S	S	S	S	S	S
12	S	S	S	S	S	C	C	C	C	C	C	4.3	3.4	4.4	4.2	2.3^{G}	$J_{3.3}$	G	S	2.8	S	S	S	S
13	S	2.8	S	S	S	S	S	S	G	G	G	3.6	3.8	4.6	3.7	3.2	2.9	G	S	S	S	S	S	S
14	S	S	2.1	2.3	S	2.9^{M}	S	S	G	G	3.2	3.4	3.9^{M}	4.0	3.3	3.9	G	3.1	S	S	2.6	S	S	S
15	S	S	S	S	S	S	S	S	G	G	3.3	3.3	3.3	2.3^{G}	2.4^{G}	G	G	2.4	2.2	S	S	S	S	S
16	S	S	S	S	S	S	S	S	G	$J_{2.5}$	2.9	3.4	3.5	3.4	3.3	2.9	3.0	$J_{2.2}$	$J_{2.2}$	$J_{2.6}$	2.2	S	S	S
17	S	S	S	S	2.1	S	S	2.3	G	G	3.3	3.2	G	G	G	$J_{2.3}^{G}$	2.5	1.9	S	S	S	2.3	S	S
18	2.8	$J_{3.3}$	S	S	S	S	G	C	G	G	3.5	3.5	3.3	3.3	2.8^{G}	2.6^{G}	2.2^{G}	S	S	S	S	S	S	S
19	S	$J_{3.4}$	2.3	S	S	C	S	S	S	G	$J_{2.7}^{G}$	3.3	G	2.5^{G}	2.6^{G}	G	G	G	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	G	2.7	3.0	G	$J_{2.3}^{G}$	G	G	3.1	G	2.1	S	S	S	S	S	S
21	S	S	S	S	S	S	S	S	G	G	3.2	G	3.8	G	3.3	3.0	2.3^{G}	2.1	2.9	S	2.4	2.7	2.3	S
22	S	S	S	S	S	S	S	S	2.3	3.0	3.8	$J_{5.0}$	4.0	3.9	3.7	G	G	3.5^{M}	S	S	S	S	S	S
23	S	S	S	S	S	S	S	S	G	2.9	3.8	3.3	3.2	3.6	3.4	2.9	2.2^{G}	2.2	$J_{2.3}$	S	S	S	S	S
24	S	S	S	S	E	S	S	S	2.4	2.9	3.5	3.7	3.6	3.7	2.9^{G}	2.8^{G}	2.5^{G}	2.1	S	S	2.7	S	2.2^{M}	S
25	S	S	S	2.6	E	S	S	S	G	3.0	2.8^{G}	3.2	3.4	3.4	3.2	2.6^{G}	3.0	G	$J_{1.9}$	3.0	2.8^{M}	2.6^{M}	S	S
26	S	S	S	S	S	S	S	$J_{2.4}$	2.4	3.2	G	G	3.3	3.2	G	3.0	3.1	2.1	$J_{2.4}$	5.7^{M}	3.1^{M}	S	S	S
27	2.2	S	S	S	E	S	2.5^{M}	S	G	3.1	3.4	3.9	3.5	3.3	3.5	3.4	3.3	$J_{2.7}$	$J_{1.7}^{S}$	S	S	S	S	S
28	S	S	S	E	E	S	S	S	2.5	$J_{3.0}$	3.3	3.7	3.9	3.8	3.6	3.3	2.8	2.5	2.2	3.0	2.3	3.9^{M}	2.7^{M}	S
29	2.2	S	2.2	2.7^{M}	S	S	S	S	2.4	3.1	3.7	4.0	3.3	3.5	G	3.2	2.9	3.0	$J_{3.0}$	2.7^{M}	S	2.4	S	S
30	S	2.8^{M}	$J_{2.5}$	3.7^{M}	$J_{2.5}$	2.3^{M}	S	S	G	G	G	S	3.9	4.0	G	2.1^{G}	2.8	2.6	$J_{3.3}$	3.0^{M}	$J_{3.3}$	S	S	S
31	S	S	S	2.2	2.3	3.2^{M}	S	S	3.0	$J_{8.3}$	3.2	4.9^{M}	G	3.0^{G}	3.8	$J_{5.9}$	5.8	$J_{5.2}$	$J_{6.3}$	5.8^{M}	5.8	3.0	2.9^{M}	3.0
No.	3	5	7	9	10	5	2	2	28	30	30	29	31	31	31	30	31	26	16	14	12	9	8	3
Median	2.2	2.8	2.5	2.3	E	2.3	2.3	2.4	G	2.6	3.2	3.5	3.4	3.3	3.2	2.8	2.5	2.4	2.4	2.8	2.7	2.7	2.9	3.0
U.Q.	2.5	3.4	2.7	2.8	2.3	3.0			G	3.0	3.5	3.8	3.8	3.8	3.5	3.2	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0
L.Q.	2.2	2.6	2.2	2.2	E	2.2			G	G	G	3.2	G	G	G	G	G	2.1	2.2	2.4	2.4	2.4	2.5	2.9
Q.R.	0.3	0.8	0.5	0.6		0.8						0.6						0.9	0.7	0.6	0.6	0.6	0.5	0.1

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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	S	S	S	S	S	S	S	S		2.0^G	2.6^G	3.4	3.6	2.9				S	E	E	S	S	S	E
2	S	S	S	E	1.8	S	S	S		G	G	G	G	2.3^G	G	G	2.9	2.5	2.3	E	S	S	S	S
3	S	S	2.1	E	S	S	S	S		G	G	G				2.1^G	G	S	S	S	E	A	A	S
4	S	S	S	S	S	S	S	S	S	4.6	3.4	3.6	3.7	3.7	G	3.0	2.9	2.0	S	S	S	A	2.4	S
5	S	S	S	S	S	2.0	A	S		G	4.1	S	2.6^G	3.3	G	2.2	2.0^G	S	S	S	E	S	S	S
6	S	S	E	1.9	S	1.9	S	S			G	3.4	3.0		3.2		2.2	2.3	2.2	E	E	S	S	S
7	S	S	S	S	S	S	S	S	G		3.5	4.1	3.7	3.4	3.2	2.4		2.2	S	S	S	S	S	S
8	S	2.3	A	S	S	S	S	S		G	G	4.8	3.5		$E_{3.2}{}^R$	S		S	S	2.0	S	S	2.4	A
9	S	S	S	S		S	S	S						2.5^G		2.6^G	2.0	2.3	2.1	2.0	S	S	S	S
10	S	S	S	S	S	S	S	S				3.6	3.8	3.7	4.1	3.6	2.8	2.5	E	2.1	S	A	A	S
11	S	S	S	S		S	S	S			3.5	G		2.9^G		2.3^G		S	S	S	S	S	S	S
12	S	S	S	S	S	C	C	C	C	C	C	4.3	G	4.3	4.2	2.3^G	3.3		S	2.1	S	S	S	S
13	S	A	S	S	S	S	S	S				3.6	3.8	4.4	3.5	3.1	2.7		S	S	S	S	S	S
14	S	S	E	2.0	S	A	S	S			3.0	3.4	3.6	3.4	3.2	3.0		2.2	S	S	E	S	S	S
15	S	S	S	S	S	S	S	S			G	3.2	3.3	2.3^G	2.2^G			G	2.1	S	S	S	S	S
16	S	S	S	S	S	S	S	S		2.4	G	3.4	3.4	G	G	2.4	2.0	2.1	2.1	2.1	2.0	S	S	S
17	S	S	S	S	E	S	S	G			3.0	2.4				2.2^G	G	1.9	S	S	S	A	S	S
18	1.9	E	S	S	S	S	C	C			3.5	3.5	3.2	3.3	2.7^G	2.5^G	2.1^G	S	S	S	S	S	S	S
19	S	A	E	S	S	C	S	S	S		G	$E_{3.3}{}^R$		2.4^G	2.4^G				S	S	S	S	S	S
20	S	S	S	S	S	S	S	S		G	3.0		2.3^G			G		G	S	S	S	S	S	S
21	S	S	S	S	S	S	S	S			G		3.5		3.2	2.9	2.2^G	1.9	1.9	S	1.9	1.9	A	S
22	S	S	S	S	S	S	S	S	2.3	2.9	3.5	3.4	3.9	3.3	3.2			2.3	S	S	S	S	S	S
23	S	S	S	S	S	S	S	S		G	G	G	G	3.6	3.4	G	2.2^G	G	1.9	S	S	S	S	S
24	S	S	S	S		S	S	S	2.3	2.3	3.3	3.7	3.5	3.3	2.9^G	2.7^G	2.4^G	$E_{2.1}{}^R$	S	S	E	S	E	S
25	S	S	S	E		S	S	S		G	G	G	3.3	G	G	2.5^G	2.9		E	A	2.2	2.1	S	S
26	S	S	S	S	S	S	S	A	2.4	2.8			G	G		G	2.4	2.1	2.0	A	A	S	S	S
27	E	S	S	S		S	E	S		3.0	G	3.5	3.4	$E_{3.3}{}^R$	G	3.3	3.1	2.4	S	S	S	S	S	S
28	S	S	S			S	S	S	G	G	G	3.5	3.8	3.7	3.5	3.3	G	G	E	A	A	1.9	A	S
29	E	S	E	E	S	S	S	S	G	3.0	3.5	4.0	G	G		$E_{3.2}{}^R$	2.8	2.9	2.7	2.3	S	2.2	S	S
30	S	2.6	2.4	2.4	2.1	A	S	S				S	3.7	3.9		2.0^G	G	2.5	2.9	2.2	2.5	S	S	S
31	S	S	S	E	A	A	S	S	G	A	3.1	2.4		2.6^G	$E_{3.8}{}^R$	5.9	5.1	5.1	A	A	A	2.4	2.5	2.4
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

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

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	$E_{2.00}^{S}$	$E_{1.75}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.85	1.70	1.70	1.80	1.80	1.90	1.85	1.80	1.70	$E_{1.80}^{S}$	$E_{1.85}^{S}$	$E_{1.90}^{S}$	$E_{2.20}^{S}$	$E_{1.80}^{S}$	$E_{2.20}^{S}$	$E_{2.00}^{S}$
2	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	E	$E_{2.10}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	1.90	1.95	1.80	1.70	1.60	1.70	1.95	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{1.80}^{S}$
3	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.90	1.90	1.70	2.00	2.20	2.05	1.85	1.75	1.65	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	S
4	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	1.80	1.80	2.00	2.00	2.00	1.90	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{2.20}^{S}$	$E_{2.00}^{S}$
5	$E_{1.70}^{S}$	S	$E_{1.60}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	1.65	1.70	$E_{3.50}^{S}$	1.90	1.95	2.30	1.70	1.80	1.90	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	S	$E_{1.80}^{S}$
6	S	$E_{1.80}^{S}$	$E_{2.00}^{S}$	1.20	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.80	1.65	1.90	1.80	2.00	2.00	2.00	1.90	1.85	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	S	$E_{1.90}^{S}$
7	S	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	1.80	1.70	1.80	2.05	2.00	2.00	1.90	1.80	1.90	1.90	$E_{1.85}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$	S	$E_{2.00}^{S}$
8	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.90	2.00	2.10	2.30	2.10	2.35	2.40	$E_{4.70}^{S}$	1.90	2.00	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.05}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$
9	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	1.40	$E_{2.10}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	1.80	1.70	2.00	2.10	2.25	2.00	2.00	1.95	1.80	1.90	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S
10	S	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.10}^{S}$	$E_{1.95}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	1.90	1.40	2.10	2.00	2.10	2.30	2.00	1.90	1.80	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	S
11	S	$E_{1.60}^{S}$	$E_{2.00}^{S}$	$E_{1.50}^{S}$	1.15	S	S	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.90	2.00	2.20	2.00	2.15	2.10	2.00	$E_{1.70}^{S}$	2.20	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.10}^{S}$
12	S	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{1.60}^{S}$	C	C	C	C	C	C	2.10	2.00	2.00	2.00	1.90	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$
13	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.65	1.70	2.00	2.00	2.10	2.00	2.00	1.90	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$
14	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	2.00	1.60	1.95	1.90	2.00	1.85	1.70	1.85	1.30	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.40}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$
15	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	$E_{1.80}^{S}$	$E_{1.80}^{S}$	S	$E_{1.60}^{S}$	1.80	1.65	1.90	1.95	1.90	1.90	1.90	1.95	2.00	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$
16	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	S	S	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.70	1.70	1.90	2.00	2.00	1.80	1.65	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$	S
17	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.00	S	$E_{1.80}^{S}$	$E_{1.90}^{S}$	1.85	1.80	1.90	1.90	1.90	2.30	1.90	1.60	1.90	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{2.20}^{S}$	S
18	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	C	C	$E_{1.60}^{S}$	1.95	1.90	2.00	2.00	2.00	2.20	1.80	1.70	1.90	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	S	$E_{2.20}^{S}$	$E_{1.80}^{S}$
19	$E_{2.40}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.50}^{S}$	$E_{1.90}^{S}$	C	$E_{1.80}^{S}$	$E_{1.90}^{S}$	2.00	1.80	1.90	1.80	2.00	1.90	2.00	1.90	1.90	2.00	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$
20	S	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.60}^{S}$	$E_{2.10}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	1.90	1.80	2.00	1.60	2.00	1.80	2.00	1.80	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$
21	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$	$E_{1.85}^{S}$	$E_{1.90}^{S}$	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	1.90	1.75	1.85	1.90	2.00	2.10	2.00	1.90	1.80	1.80	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.85}^{S}$	$E_{2.10}^{S}$	$E_{2.00}^{S}$
22	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.30	$E_{1.80}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	S	$E_{1.70}^{S}$	1.65	1.80	1.85	2.00	1.80	1.95	2.00	1.70	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.65}^{S}$	$E_{1.95}^{S}$
23	$E_{1.70}^{S}$	$E_{1.95}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.85}^{S}$	S	S	S	$E_{1.70}^{S}$	1.70	1.90	1.90	1.90	1.90	2.00	1.90	1.90	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
24	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{1.90}^{S}$	E	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.60}^{S}$	1.70	1.85	1.95	2.20	1.90	1.90	1.85	1.80	$E_{1.70}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.05}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
25	S	$E_{1.90}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	1.30	$E_{1.90}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.70	1.85	1.90	1.90	2.00	1.90	1.85	1.90	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{2.00}^{S}$	$E_{2.20}^{S}$	$E_{1.90}^{S}$
26	$E_{2.00}^{S}$	$E_{1.95}^{S}$	$E_{2.00}^{S}$	$E_{1.50}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.85}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.90	1.90	1.90	2.20	2.00	1.95	2.00	1.90	$E_{1.50}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.95}^{S}$	$E_{2.10}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$
27	$E_{2.00}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	1.20	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	1.80	1.70	2.00	2.00	1.90	1.95	1.90	1.80	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{1.90}^{S}$	$E_{1.75}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.10}^{S}$
28	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.40	E	S	S	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.80	1.70	1.95	1.95	1.90	1.95	1.90	1.80	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.00}^{S}$	$E_{1.70}^{S}$
29	$E_{1.90}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	S	S	$E_{1.85}^{S}$	1.70	1.70	1.80	2.10	2.00	2.35	1.90	1.95	1.80	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{2.00}^{S}$	$E_{2.00}^{S}$	$E_{1.80}^{S}$	$E_{2.25}^{S}$	$E_{2.30}^{S}$
30	$E_{2.20}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{2.10}^{S}$	$E_{1.80}^{S}$	1.90	1.85	2.00	$E_{3.60}^{S}$	1.90	1.90	1.90	1.90	$E_{1.70}^{S}$	1.80	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.85}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$
31	$E_{1.90}^{S}$	$E_{1.85}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	S	$E_{1.90}^{S}$	1.80	1.80	1.90	2.30	2.35	1.85	2.20	1.70	1.90	1.90	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.90}^{S}$
No.	24	30	31	31	30	23	22	26	30	30	30	29	31	31	31	30	31	31	31	31	31	29	28	26
Median	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.80}$	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.80}$	1.80	1.80	1.95	2.00	2.00	1.95	1.90	1.80	$E_{1.80}$	$E_{1.80}$	$E_{1.90}$	$E_{1.90}$	$E_{1.90}$	$E_{1.95}$	$E_{1.90}$

f-min

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jan. 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	J3.05S	2.80	2.80	2.95	3.40	2.95	J3.35S	3.20S	3.75	3.30	J3.50S	J3.30S	3.40	J3.40S	J3.25S	3.50	3.30H	J3.45S	J3.55S	J3.40S	3.45	3.20	3.25S	3.20
2	2.85	2.90S	3.15	3.20	I3.70S	2.60	3.00	J3.20S	J3.50S	3.60	3.75	3.45S	3.35S	3.35S	3.75	3.40HS	3.70H	3.45	3.55S	3.25	3.10	3.30	J3.60S	3.00
3	3.15	3.20	I3.05S	2.85S	3.15	J3.10S	J3.05S	3.15S	3.55	J3.80S	3.50S	3.10	3.05	3.30	I3.40S	3.15	3.60	3.45	J3.30S	J3.30S	3.55	S	S	I3.25S
4	3.10	J3.25S	3.20	2.95	3.10	J3.00S	3.10S	3.10S	3.55H	3.65	3.60S	3.40	I3.50S	3.60	J3.60S	3.70H	3.75	3.50S	I3.10S	S	S	I3.60S	3.00	3.15S
5	3.05	I3.00S	2.75S	J3.00S	3.20S	2.75	I2.75S	3.20	3.55	J3.55S	3.55	J3.35S	I3.40S	J3.40S	3.50	3.50	3.60	3.40	3.40S	3.10	3.10	3.35	I3.20S	2.85
6	I2.80S	3.05	I3.05S	I3.05S	3.10	I3.05S	3.20S	3.30S	3.65	3.25	3.55H	3.60S	3.25	3.35	3.45	3.30	3.45	3.50	3.50	I3.30S	3.25S	I3.25S	I2.85S	2.90
7	I2.75S	J3.10S	2.80	2.95	3.35S	3.15	J3.00S	3.40	3.60S	J3.65S	3.55	3.30	3.45	3.25	I3.40S	3.35	J3.35S	3.35S	3.50	2.80	3.10	3.25	I3.35S	2.90
8	I3.10S	3.05S	I3.00S	I3.15S	3.65	2.90	3.00	I3.20S	3.25	3.55	3.30	3.55	I3.50S	3.00	3.40	J3.35S	I3.50S	J3.60S	I3.20S	I3.20S	J3.25S	I3.35S	3.20	I3.00S
9	2.85	2.95	3.05	3.45	3.70	3.25	2.90	3.20	3.55S	3.55	3.50	3.35	3.40	3.25S	S	3.20SH	3.55	3.55	3.35	3.45	3.35	3.35S	3.10	I3.00S
10	I2.95S	3.05	2.95	3.20	3.10	3.60	3.20	3.25	3.55	3.60H	3.70H	3.50	3.35S	3.50	J3.60S	J3.45S	3.40	3.50S	3.55	3.15S	I3.25S	S	S	S
11	I3.00S	2.70	2.75	3.40	3.20H	I3.20S	I2.95S	3.05	3.55	U3.60HS	3.65H	3.65	3.25	3.40S	J3.35S	3.30	3.50	I3.60S	J3.35S	3.05S	I3.20HS	3.25S	3.35S	2.75
12	I2.80S	2.85S	2.80	3.15	3.75	C	C	C	C	C	C	J3.05S	3.35	3.45	3.45	3.20	J3.40S	J3.50S	3.50	3.00	3.40	3.25	J2.90S	3.05S
13	3.05	I2.80A	J2.85S	I3.00S	3.20	3.55S	I3.05S	3.05S	3.65	3.70	3.35	3.50	2.95	3.50S	3.20	3.35	3.40H	3.60H	3.25	3.05	3.10S	3.30H	2.60	2.85S
14	I3.15S	2.80	2.90	I3.30S	3.15	I2.95A	2.90S	I3.35S	3.55	3.50	3.10	3.25S	J3.35S	J3.40S	3.55	3.60	3.20HS	3.40S	3.60	I3.60S	3.20	I3.30S	3.15	3.15
15	3.10	I3.05S	3.00	3.10	I3.25S	3.30	J2.80S	I3.00S	J3.35S	3.55S	3.40	3.65S	3.35	J3.50S	J3.30S	3.40S	I3.15S	2.95S	I3.30S	J3.35S	3.15	2.80	3.10S	3.35S
16	2.90S	2.95	3.05	3.05	3.30	I2.90S	I2.95S	J3.20S	3.70S	I3.60HS	J3.45HS	3.35	3.55	3.40	3.40	3.30	3.65	3.55	J2.90S	I3.15S	J3.40S	3.10S	3.45	I2.90S
17	2.80	2.85	3.00	2.95	3.60S	I3.00S	3.15	J3.45S	J3.25S	3.40H	3.35	I3.40S	J3.95S	3.25	3.25	3.15	3.40H	3.50S	J3.55S	J3.45S	I3.45S	I3.15S	2.85	I3.00S
18	3.05	2.80	3.05	I3.50S	3.50	2.80	C	C	S	3.15S	3.40	3.10	3.55	3.50	3.60	3.45	J3.35S	3.45H	3.45	I3.45S	I3.50S	I3.05S	I2.70S	2.75
19	2.95	I2.80A	2.90S	I3.40S	3.45	I3.10C	I3.25S	I3.50S	J3.50HS	3.25S	J3.25S	3.35	3.45	3.70	J3.30S	3.40S	3.60	3.50	I3.50S	I3.70S	3.25	3.05S	I3.00S	J3.40S
20	I2.90S	J2.90S	2.85S	I3.40S	3.30	2.90	I3.30S	I3.20S	J3.50H	3.40H	J3.20S	J3.50S	3.45	3.45S	3.50	J3.20S	3.35S	3.55	J3.35S	3.20S	3.35	J2.95S	3.10S	J3.20S
21	J3.35S	2.85	3.00	J3.35S	3.85	J2.80S	J3.20S	J3.20S	3.55	3.70	3.45S	3.05H	J3.55S	3.35	3.65	3.40	I3.40S	J3.55S	3.55	J3.60S	3.40	S	S	S
22	S	3.25	3.20	3.40	3.35	J3.25S	J3.10S	I3.25S	J3.35S	3.40	3.25	3.40S	3.55	3.70	3.40	J3.20S	3.60	3.60S	J3.55S	3.45	3.60	3.10S	3.20	J3.10S
23	J2.80S	3.05	J3.20S	3.10	J3.70S	I3.00S	I3.00S	I3.05S	3.40	I3.50S	3.40	J3.70S	3.50	3.45	3.25	J3.35S	3.45	3.20H	3.50S	J3.50S	3.35S	3.15S	3.00	2.95
24	3.10	2.95	J3.60S	I3.45S	2.90	J2.80S	3.15	2.95	I3.45S	3.45	3.45	I3.60S	3.50	3.60	3.60	3.40	3.60	3.35S	J3.35S	3.40	3.25S	I2.95S	3.00	2.90
25	I3.10S	3.25S	I3.40S	3.05	3.10S	I3.05S	J3.30S	I3.05S	3.35	3.25H	3.10	3.35S	3.50	3.55	J3.45S	3.40	3.55	J3.50S	3.50S	I3.40S	I3.10S	3.05S	3.15	3.25S
26	3.05	2.95	3.15	3.60	2.95	3.05	J3.10S	I3.15S	3.45	I3.50S	I3.55S	3.55S	3.55	3.30S	J3.45S	3.45H	3.45H	J3.60S	3.70	I3.30A	I3.30S	2.85	2.95	I3.10S
27	I3.10S	3.15	3.30	3.20S	3.25	3.05	3.05	J3.05S	I3.55S	3.55	3.60	3.50	3.65	J3.70S	3.40	3.50	3.60	3.60	3.45	3.25S	I3.45S	3.45	J3.45S	2.95
28	3.05	3.30	3.45	3.75S	J3.35S	I3.05S	I2.90S	I3.10S	3.55	2.95	3.40S	3.40S	3.45S	3.70	3.50S	3.70S	3.65	3.55	I3.30S	S	S	S	S	S
29	S	I3.25S	2.95S	I3.35S	3.70S	I3.20S	I2.95S	3.15S	3.35	3.15	J3.35S	J3.60S	J3.30S	3.25S	3.20	J3.50S	3.50S	3.65	3.10	3.35	3.25	2.95	I3.10S	I3.15S
30	I3.20S	I3.15S	I3.25S	3.45	3.45	I3.25S	J3.35S	2.95	3.55	3.10	3.20S	3.65	J3.35S	3.10	J3.35S	3.55	3.70	3.35H	3.25	3.35	J3.50S	2.75S	2.65	2.95
31	I3.25S	J3.30S	3.35	J3.15S	I2.75S	I2.70A	I3.00S	3.65S	3.40	I3.15A	S	3.55S	3.25	3.15	3.25S	3.25	3.25	I3.20S	S	A	A	S	S	3.50
No.	29	31	31	31	31	30	29	29	29	30	29	31	31	31	30	31	31	31	30	28	28	26	26	28
Median	3.05	3.00	3.05	3.20	3.30	3.05	3.05	3.20	3.55	3.50	3.45	3.40	3.45	3.40	3.40	3.40	3.50	3.50	3.45	3.30	3.30	3.20	3.10	3.00

M(3000)F2

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

The Radio Research Laboratories, Japan.

Y

IONOSPHERIC DATA

Jan. 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											3.65	L	3.55	3.70^{H}	L									
2											L	3.85^{H}	3.65	3.60^{H}	L									
3											L	$I_{3.95}^{L}$	L	3.65	L	L	L							
4												L	$I_{3.75}^{L}$	3.80	3.80									
5											A	L	3.55	L^{H}	L^{H}	L								
6												L	L	L^{H}	L	L	L							
7											L	L	3.65	$I_{3.60}^{L}$	3.60	3.75	L							
8										L	L	A	3.65	$I_{3.60}^{L}$	3.60^{L}	$I_{3.65}^{S}$	L							
9												$I_{3.80}^{L}$	3.85	L	3.60									
10												4.10	$I_{3.80}^{L}$	3.80^{L}	A	L								
11												3.95	3.70^{L}	$I_{3.65}^{L}$	$I_{3.70}^{L}$	L	L							
12								C	C	C	C	L	3.70	$I_{3.70}^{A}$	$I_{3.55}^{A}$	$I_{3.65}^{L}$	L							
13											3.55^{L}	3.80^{L}	3.35	$I_{3.55}^{A}$	3.80	L								
14											L	$I_{3.55}^{L}$	$I_{3.55}^{L}$	$I_{3.65}^{L}$	$I_{3.80}^{L}$	3.90								
15											L	3.85	$I_{3.55}^{L}$	$I_{3.60}^{L}$	$I_{3.80}^{L}$	3.95^{H}								
16												3.75	$I_{3.65}^{L}$	L	L	L	L							
17											L^{H}	3.60^{H}	L	L	3.75	3.90								
18								C			3.55	3.70	3.55	3.75	$I_{3.80}^{L}$	$I_{3.90}^{L}$	4.30							
19											L	L	3.65	$I_{3.75}^{L}$	L	L	L							
20											L	L	L	$I_{3.60}^{L}$	3.70^{H}	L								
21											L	L	L	L	3.60^{H}	L	L							
22										L	L	3.95	A	$I_{3.80}^{L}$	4.00	L	4.25							
23										L	3.90	$I_{3.85}^{L}$	L	L^{H}	L	L								
24										L	L	3.75	3.85	$I_{3.80}^{L}$	L	L	L							
25											L	L^{H}	3.75	3.75	3.75	3.70^{H}	L							
26										L	$I_{3.75}^{L}$	3.85	$I_{3.95}^{L}$	L	3.80									
27										L	L	3.80	3.70	3.90	L	L	L							
28										L	3.65	3.80	3.75	4.10	L	L	L							
29										L	3.70	A	3.80	4.00^{H}	3.80^{H}	$I_{3.10}^{S}$								
30										L	3.60	3.70	L	3.65^{L}	3.70	4.25								
31										A	L	4.00	3.80	3.60^{H}	4.00	A	A	A						
No.											8	19	23	23	19	10	2							
Median											3.65	3.80	3.70	3.70	3.75	3.80	4.30							

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

IONOSPHERIC DATA

Jan. 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											255	290	260	255	265									
2											240	275	265	275	245									
3											240	240	325	275	250	255	245							
4												265	250	260	255									
5											250	260	255	255	255	250								
6												240	260	270	260	285	250							
7											255	270	260	295	255	240	235							
8										255	265	255	255	L	260	255	250							
9												255	260	295	245									
10												250	260	260	250	270								
11												330	290	260	250	260	245							
12								C	C	C	C	300	255	270	260	275	265							
13											290	255	355	255	275	255								
14											295	285	255	255	240	240								
15											255	240	285	245	270	240								
16												280	250	275	260	255	245							
17											295	270	240	280	280	275								
18								C			290	280	255	250	255	275	250							
19											295	265	255	245	280	280	245							
20											300	250	255	260	285	275								
21											255	250H	250	290	255	275	250							
22										260	275	270	245	245	260	250	250							
23										240	255	240	260	265	300	265								
24										275	255	255	260	260	260	290	250							
25											285	280	255	255	275	260	245							
26										270	250	245	255	285	270									
27										250	255	255	245	250	265	255	250							
28										300L	265	250	255	245	260	250	240							
29										280	260	245	255	255	265	250								
30										305	290	245	260	300	260	250								
31										A	240	260	285	295	280	300	300	290						
No.										9	24	31	31	30	31	26	16	1						
Median										270	260	255	255	260	260	260	250	290						

h'F2

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Jan. 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	310	310	340	305	250	E_{300}^{S}	290	250	220	240	245	235	250	200^{H}	235	245	205^{H}	240	205	250	240	E_{290}^{S}	E_{290}^{S}	E_{320}^{S}
2	E_{360}^{S}	E_{390}^{S}	340	280	210	E_{450}^{S}	E_{340}^{S}	250	240	240	235	200^{H}	255	195^{H}	230	205^{H}	240^{H}	235	210	255	240	E_{275}^{S}	S	305
3	300	305	325	E_{340}^{S}	280	E_{340}^{S}	300	260	230	240	225	205	190	205	225	240	220	235	245	250	225	A	A	I_{295}^{S}
4	E_{275}^{S}	275	E_{290}^{S}	290	275	E_{340}^{S}	305	270	195^{H}	250	235	240	250	230	205	205^{H}	235	240	240	250	245	A	E_{350}^{A}	280
5	305	I_{330}^{S}	365	350	290	400	A	260	235	235	I_{230}^{A}	220	215	205^{H}	205^{H}	220	235	230	240	255	270	240	I_{270}^{S}	350
6	I_{320}^{S}	290	345	305	275	E_{350}^{A}	E_{310}^{S}	260	230	240	235^{H}	230	225	200^{H}	220	235	235	230	225	245	255	I_{235}^{S}	I_{335}^{S}	E_{350}^{S}
7	S	325	340	300	E_{270}^{S}	250	S	255	235	235	240	I_{220}^{A}	245	210	245	230	230	220	210	305	285	250	I_{250}^{S}	310
8	290	305	I_{310}^{A}	265	235	E_{350}^{S}	E_{340}^{S}	270	235	245	225	I_{230}^{A}	240	210	240	I_{230}^{S}	230	225	230	240	240	230	255	A
9	350	305	285	250	215	280	E_{350}^{S}	255	230	235	230	200^{H}	220	255	230	200^{H}	245	225	245	245	240	245	270	S
10	S	300	300	285	290	235	315	255	235	220^{H}	190^{H}	210	255	250	I_{245}^{A}	250	240	235	220	250	225	A	A	S
11	S	355	E_{360}^{S}	245	200^{H}	S	S	275	245	225^{H}	240^{H}	210	210	260	225	225	215	225	205	270	285^{H}	250	230	E_{400}^{S}
12	I_{345}^{S}	E_{350}^{S}	E_{390}^{S}	290	210	C	C	C	C	C	C	A	230	A	I_{230}^{A}	215	I_{240}^{A}	230	210	270	235	250	E_{360}^{S}	320
13	280	A	330	305	255	220	I_{355}^{S}	265	235	255	255	240	E_{260}^{A}	A	230	240	220^{H}	235^{H}	225	250	250	240^{H}	E_{375}^{S}	350
14	255	E_{340}^{S}	330	255	E_{275}^{S}	A	300	245	230	240	225	240	255	245	225	220	205^{H}	250	225	220	250	255	290	280
15	E_{300}^{S}	355	340	300	I_{270}^{S}	E_{250}^{S}	S	S	245	245	240	225	225	225	205	205^{H}	260	235	240	215	250	E_{375}^{S}	275	E_{250}^{S}
16	310	320	280	290	250	S	S	290	240	210^{H}	240^{H}	210	205^{H}	230	230	230	210	230	280	230	240	250	250	S
17	340	345	305	285	210	S	305	275	250	200^{H}	200^{H}	240^{H}	240	225	200	220	240^{H}	220	220	240	230	A	E_{390}^{S}	S
18	305	345	290	230	250	E_{350}^{S}	C	C	225	240	255	240	205	240	220	200	195	220^{H}	235	230	220	S	300	320
19	E_{360}^{S}	A	305	230	230	C	270	260	200^{H}	240	255	250	210	240	220	200	245	230	235	205	250	300	280	240
20	S	350	330	240	225	E_{350}^{S}	290	280	210^{H}	195^{H}	250	270	240	240	205^{H}	220	245	220	240	245	245	310	285	E_{275}^{S}
21	300	320	305	240	200	E_{360}^{S}	315	290	240	225	240	210	240	205	200^{H}	245	240	240	210	230	255	320	I_{305}^{A}	280
22	285	265	265	255	260	S	340	I_{275}^{S}	245	230	255	225	I_{230}^{A}	200^{H}	205	200	200	240	215	230	230	E_{290}^{S}	255	305
23	E_{375}^{S}	300	280	250	240	I_{285}^{S}	I_{295}^{S}	I_{265}^{S}	240	235	220	205	200	200^{H}	275	240	240	220^{H}	230	210	240	260	320	305
24	290	300	230	225	195	375	E_{330}^{S}	300	240	235	245	250	225	225	205	220	240	235	220	245	250	310	305	320
25	I_{270}^{S}	255	230	E_{300}^{S}	250	310	275	310	240	205^{H}	240	205^{H}	195	210	205	195^{H}	240	250	215	I_{245}^{A}	300	270	290	250
26	300	305	300	240	330	305	325	I_{285}^{A}	230	230	235	210	205	200	190	240^{H}	220^{H}	240	205	A	I_{250}^{A}	330	295	255
27	290	275	265	240	225	E_{320}^{S}	E_{300}^{S}	290	240	240	240	230	205	220	200	245	I_{230}^{A}	225	225	255	230	250	255	E_{300}^{S}
28	310	270	245	210	190	S	S	290	240	240	230	210	E_{230}^{A}	205	215	225	205	230	225	I_{270}^{A}	I_{250}^{A}	250	I_{250}^{A}	320
29	300	275	280	245	200	S	S	295	245	245	235	A	205	205^{H}	205^{H}	225^{H}	240	235	E_{280}^{A}	250	250	255	305	320
30	275	300	260	255	250	S	300^{S}	290	245	230	245	235	200	255	230	225	230	$E_{225}^{A}H$	255	255	230	310	350	295
31	250	240	255	S	A	A	S	230	245	I_{250}^{A}	225	240	240	220^{H}	250	A	A	A	A	A	I_{300}^{A}	350	295	225
No.	24	26	29	28	28	20	16	28	30	30	30	29	29	29	31	30	30	30	29	29	31	22	23	23
Median	300	305	300	255	245	E_{330}	300	270	240	240	240	225	225	220	220	225	235	230	225	245	245	250	285	E_{300}

h'F

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

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

Y 11

IONOSPHERIC DATA

Jan. 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										1	12	12h	12	12					f	f				f
2				f2	f					h2	h2	h1	h12	12	h	h1	13	12	f2	f				
3			f2	f						h2	h2	h				1	h1	1			f	f	f2	
4										13	12	c	h2	h	h	h21	h31	1				f2	f	
5						f2	f			h	h2		1	12	h	1	1				f			
6			f	f2		f3					h	h	1		h		12	12	f	f	f			
7									h		h2	12	1	12	12	1		1						
8		f	f							h	h	c2	c1		h					f			f2	f
9														1		1	1	1	f	f				
10												h1	h	h1	h1	h12	13	12	f	f		f	f	
11											h12	h		1		1								
12												h2	h1	12	12	1	12			f2				
13		f										h2	h	h2	h1	h2	h2							
14			f	f		f2					h	h	1	1	1	12		1			f			
15											h	12	12	1	1			h	f					
16										1	h2	h	h	h1	h1	1	1	1	f2	f2	f			
17					f			1			h	1				1	c	c				f		
18	f	f2									h1	h1	1	1	1	12	1							
19		f2	f								1	h		1	1									
20										h2	12		1			h		h2						
21											h		h		h	1	12	1	f		f	f	f	
22									c2	c2	c2	h2	h2	h	12			12						
23										h2	h	h	h	h	h	1	1	h2	f					
24									12	1	h1	h2	h	c	1	12	12	1			f		f	
25				f						1	1	h	h	h	h	1	12		f	f2	f2	f		
26								1	12	h21			h	h		1	12	14	f2	f3	f2			
27	f						f2			h21	h2	h	h	h	h2	h2	13	13	f					
28									h	h	h2	h	h	h	h	h	h2	c	f	f2	f	f2	f2	
29	f		f	f					h	h2	h	h	h	h		c	h	h21	f5	f		f		
30		f	f3	f3	f	f							h1	h21		1	h1	h1	f2	f2	f2			
31				f	f	f2			h	13	12	1		1	h	c412	c31	c3	f4f	f3	f2	f2	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.

Y 12

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

Note No observations during the following periods:

17th 2150 - 18th 0810

Radiometer unstable during the following periods:

18th 2150 - 31st 0810

Outstanding Occurrences

Jan. 1963	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
14	0510.7	2	F/3	450	-	0511.5	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 1963	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	5 4 4	- - - (3)	4 5 4 3	5 5 (4) 4	N N N N			
2	4-	4 3 4	- - - 4	3 4 4 3	4 4 (4) 4	N N N N			
3	4o	5 4 4	- - - 5	3 4 4 4	4 4 (4 4)	N N N N			
4	4-	4 4 4	- - - 5	3 3 4 3	4 4 - 2	N N N N			
5	4o	4 3 4	- - - 4	3 4 5 4	3 4 - 3	N N N N			
6	4o	5 3 4	- - - 5	3 4 4 4	3 3 - 2	N N N N			
7	4-	4 3 3	- - - 3	4 4 5 3	3 3 - 3	N N N N			
8	5-	5 4 4	- - - 4	4 5 5 5	4 4 - 4	N N N N			
9	5-	5 5 5	- - - 4	4 4 5 4	4 4 - 4	N N N N			
10	4o	4 4 4	- - - 4	4 4 5 3	4 4 - 4	N N N N			
11	4+	4 4 (4)	- - - 4	5 5 4 4	4 4 - 3	N N N N			
12	4o	4 4 4	- - - 5	4 5 4 3	4 4 - 4	N N N N	15.2	---	102γ
13*	4o	4 4 3	- - - 4	3 4 4 5	4 4 (4) 5	U U U U	---	---	
14*	3+	3 3 3	- - - 3	3 4 4 3	5 5 - 4	U U U U	---	---	
15*	4-	3 4 -	- - - 3	4 4 4 3	5 5 - 4	U U U U	---	23.0	
16	3+	4 3 -	- - - 5	3 3 3 3	4 4 - 3	U U U U			
17	3+	3 3 -	- - - 3	4 4 3 3	4 3 - 3	U U U U			
18	3+	4 3 -	- - - 4	3 3 4 (3)	4 3 - 4	U U U U			
19	4-	4 4 -	- - - 4	3 4 4 3	4 4 (4) 4	U U U U			
20	4-	4 3 -	- - - 3	4 4 4 3	4 4 - 3	U N N N			
21	4+	5 5 -	- - - 4	4 5 4 4	3 4 - 3	N N N N			
(22)	4o	5 3 -	- - - 4	5 5 4 3	4 5 - 3	N N N N			
(23)	4o	5 5 -	- - - 4	4 3 4 3	3 4 - 3	N N N N			
(24)	4-	4 4 -	- - - 5	2 3 4 3	4 4 - 3	N N N N			
25	3o	4 3 -	- - - 2	2 3 4 4	3 3 - 5	N N N N			
26	4-	5 4 -	- - - 3	4 4 4 (2)	3 4 - 3	N N N N			
27	3+	4 5 -	- - - 3	2 3 4 (3)	3 3 (4 4)	N N N N			
28	3+	4 3 -	- - - 5	1 3 4 (3)	(3) 3 - 4	N U U U			
29	4-	4 3 -	- - - 5	2 3 5 (4)	4 4 (4) 4	U U N N	21.8	---	131γ
30	3+	4 2 -	- - - 3	3 4 4 3	5 5 (4) 4	N N N N	---	---	
31*	3-	3 3 -	- - - (2)	2 4 3 (2)	5 5 - 4	U U U U	---	24.0	

* = day of Special World Interval

( ) = Regular World Day

( ) = inaccurate

C = artificial accident

- = impossible to evaluate

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jan. 1963	S W F									S E A			Correspondence		
	Drop-out Intensities (db)						Start-time	Duration	Type	Imp.	Start-time	Duration	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN	SH										
14		8					05:10	24	G	1-						

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