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IONOSPHERIC DATA IN JAPAN

FOR MARCH 1961

Vol. 13 No. 3

Issued in May 1961

Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

F −147

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

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°03.2'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. 0234*x*)

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

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

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

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

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

Smoothed: By multiplying the duration, the approximate total power of the phenomenon 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=good
2=normal
3=rather poor (unstable)
4=poor (disturbed)
5=very poor (very disturbed)

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 weighted averages of the 6-hourly indices of London, WWV and S.F., with half weight given to quality grade 2 (normal). This procedure is taken to avoid the concentration of the whole day indices to grade 2.

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 .....WNA-27 : 7.6550 Mc, WND-20 : 10.4925 Mc, WNC-93 : 13.7525 Mc, WMJ-30A2 : 20.8173 Mc (San Francisco)
H A .....WWVH 15 Mc and 10 Mc (Hawaii)
T O .....JJY 15 Mc and 10 Mc (Tokyo)
M N .....DZM-28 : 14.5850 Mc (Manila)
L N .....GIJ-34 : 14.6702 Mc (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 and 20 Mc for WWV, WWVH and JJY are marked ; 10 Mc ('), 15 Mc (none) and 20 Mc (").

Start-times and Durations

Types

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

Importances

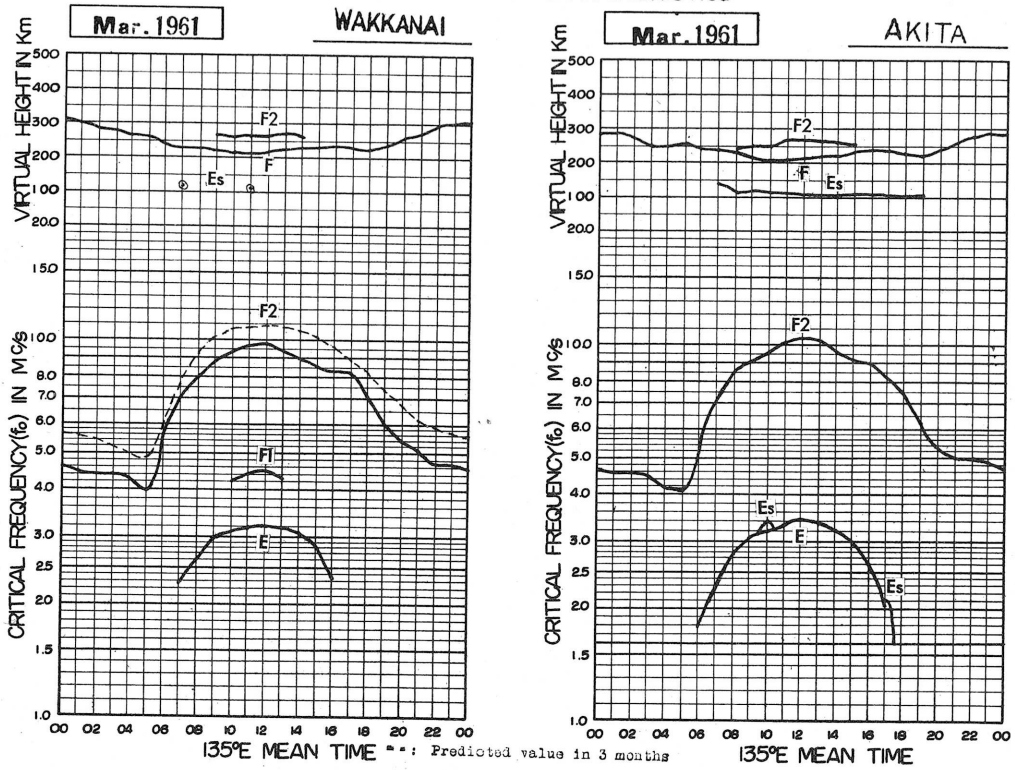
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out ;

1—	1	1+
2—	2	2+
3—	3	3+

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

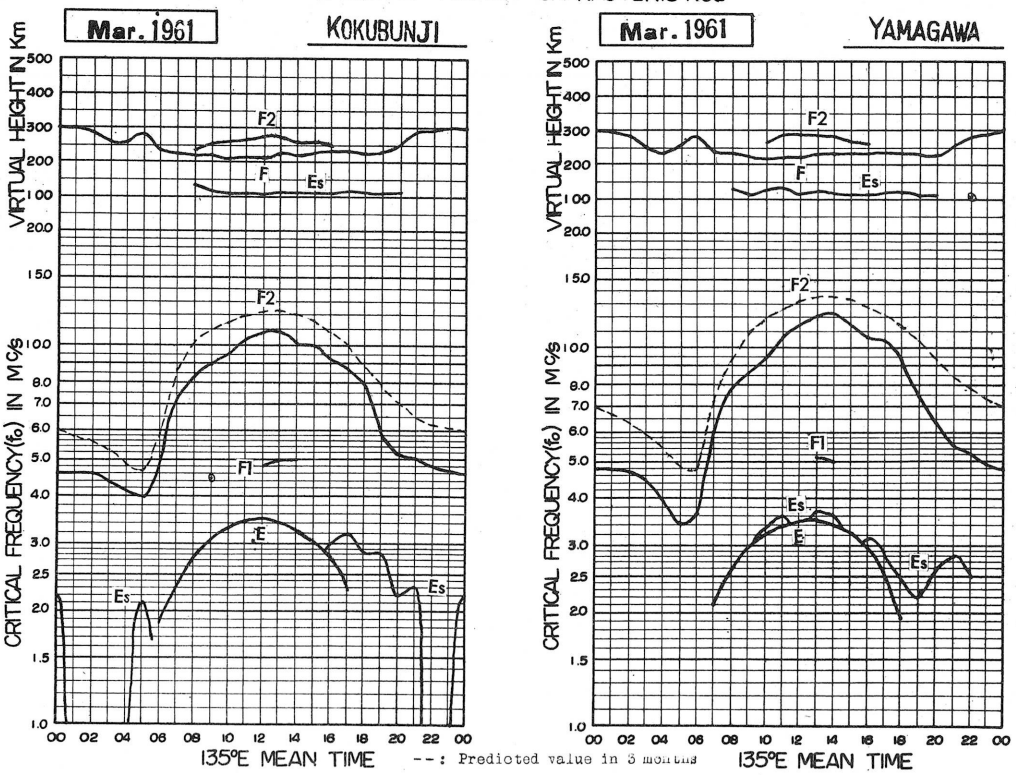
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



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

IONOSPHERIC DATA

Mar. 1961 | 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	5.3	5.3	5.1	5.3	5.1	5.2	5.7	U7.6S	7.7	8.3	10.4	10.2	9.3	9.1	8.7	8.4	9.1	7.3	6.2	5.2	4.5	4.6	4.6	4.6
2	4.8	5.0	4.8	5.0	4.6	3.8	4.4	7.1	8.6	8.5	9.3	9.7	9.0	9.5	8.8	8.6	8.5	7.1	6.3	5.9	4.8	U4.6S	4.6	U4.7S
3	4.8	4.8	4.8	4.6	4.6	4.3	5.9	7.3	8.3	8.4	9.0	10.4	9.7	8.6	9.0	9.2	8.1	7.0	5.6	5.3	4.6	4.6	4.3	4.4
4	4.4	4.4	4.4	4.2	4.3	4.1	4.9	U7.0S	8.5	9.1	9.1	10.1	9.4	9.0	8.3	8.5	8.1	6.7	6.3	4.9	4.2	4.0	3.8	U3.8S
5	3.8	3.9	4.0	4.0	4.1	3.6	4.3	6.6	7.8	8.6	8.4	8.5	8.7	8.4	8.0	8.2	8.8	8.6	5.6	4.3	4.0	3.7	3.9	3.8
6	4.0	4.0	3.8	3.7	3.7	3.8	4.3	6.3	7.8	8.2	I9.6C	9.6	10.3	9.3	9.8	9.9	10.1	8.5	U7.5S	U7.3S	6.1	5.5	5.9	5.3
7	5.1	5.1	5.3	5.0	2.6	2.6	4.0	6.2	8.3	10.0	10.3	9.4H	11.4	8.7	8.1	7.7	7.6	7.6	5.6	4.7	4.3	4.3	4.3	4.3
8	4.1	4.2	4.0	4.0	4.1	3.6	4.8	6.7	7.7	8.9	8.6	9.7	10.8	8.4	9.0	8.2	7.9	7.6	6.2	5.3	4.6	3.8	4.0	4.1
9	4.1	4.1F	4.1F	4.2	4.3	4.2	5.8	6.7	7.3	8.0H	9.7H	10.1	10.4	9.3	9.3	8.7	8.5	8.3	7.0	5.4	4.5	4.3	4.3	4.4
10	4.3	4.3	4.4	4.4	4.3	3.5	5.1	6.8	7.6H	9.0	9.3	9.6	10.1	10.2	10.1	10.2H	9.9	9.4	7.1	5.3	FS	FS	F	F
11	FS	C	C	C	C	2.9	4.1	5.0B	5.4H	5.0	5.0	5.3	5.3	5.4	5.6	6.1	I5.7A	5.3	5.1	4.0	3.9	4.0	4.1	3.9
12	4.1	4.1	4.3	U4.3S	4.0	U4.0Fs	4.5	5.8	6.1	7.1	7.5	8.0	7.7	7.6	8.1	7.8H	7.1	6.4	6.7	6.0	4.9	4.6	4.7	U4.8S
13	4.5	U4.3S	4.3	4.5	4.5	4.3	5.3	6.9H	U7.4SH	8.5	8.2	9.0	8.3H	8.7	8.3	8.3H	7.9	7.6	U7.3S	6.2	5.4	5.4	5.0	U4.5S
14	4.5	U4.3S	4.4	4.3	U4.8S	3.6	4.8	6.0	7.1	8.7	10.1	10.5	9.8	9.8	9.5	9.7	8.2	8.3	6.8	5.2	5.1	5.1	4.7	4.9
15	4.9	U4.3S	4.3	4.1	4.1	3.6	5.0	U7.5S	7.8	8.4H	8.4	8.0	7.4	8.2	7.1	7.3	7.2	7.1	7.3	6.0	4.3	4.0	3.9	4.0
16	4.0	3.9	3.8	3.4	3.3	3.3	4.6	7.0	I8.0C	10.0	9.3	8.2	8.0	9.0	8.9	8.4	7.2	7.3	7.1	6.0	5.4	4.6	4.3	4.1
17	4.0	4.3	4.3	4.0	3.9	3.6	5.3	7.1	8.2	9.3	9.5	8.9	8.4	8.4	8.4	8.1	7.5	7.8	6.8	I7.0C	6.5	6.1	5.2	4.7
18	4.3	4.3	U4.1S	U4.3S	3.8	3.6	5.3	7.1	8.3	U10.6S	9.6	9.4	9.4H	9.3	8.7	7.6H	7.7	7.2	6.0	6.0	6.2	5.6	5.3	5.1
19	4.8	4.7	4.8	4.5	4.6	4.3	5.3	6.5H	6.5H	7.6	8.4	9.5	9.8	9.5	8.3	7.6	7.7	8.1	8.2	6.1	5.3	4.4	4.3	4.3
20	4.3	4.2	4.3	4.0	3.8	3.3	5.8	7.8	8.0H	9.3	9.8H	10.4	11.3	10.2H	8.6H	8.0	8.3	8.3	8.5	6.3	6.0	5.6	5.3	5.0
21	5.0	4.8	4.7	4.3	3.9	3.9	5.9	U7.3S	8.4H	10.0	10.5	9.9	9.7H	9.8H	9.3H	8.9H	8.5	8.3	7.2	6.5	6.2	5.1	4.6	4.5
22	4.4	4.5	4.4	4.4	4.3	4.0	5.8	U7.5SH	7.7	8.1	9.1	9.8H	9.5H	10.2	9.2H	8.8	8.8	8.7	7.6	6.6	5.8	4.7	4.5	4.3
23	4.6	4.6	4.8	4.6	4.1	3.8	U6.7S	7.5	8.3	8.8	9.2	10.0H	C	C	C	9.4	9.0	9.1	8.3	6.6	5.9	5.3	5.0	4.8
24	4.6	4.6	4.8	4.8	4.4	4.0	5.8	7.8	9.0	10.5H	11.1	9.7	10.3H	10.0H	9.4H	9.1	8.3	C	C	C	C	7.3	6.2	6.0
25	6.0	5.8	5.6	5.5	5.4	5.3	6.8	8.6	9.5	10.8	11.1	11.2	11.3	10.4	9.6	9.8	8.7	8.5	8.0	7.3	7.1	6.2	5.8	5.5
26	5.4	5.6	5.4	5.1	4.4	4.4	6.4	8.1	9.2	9.4	9.6	9.6	10.5H	10.6H	10.3	9.3	9.6	9.4	8.9	7.0	6.5	6.1	5.8	5.6
27	5.5	5.3	5.3	5.3	5.3	4.7	6.2	7.7	8.3H	8.5	9.5H	10.9	10.0H	9.6H	9.8	9.5	9.4	9.5	9.1	8.2	8.1	6.6	5.8	5.8
28	5.7	5.8	5.3	4.8	4.9	5.0	6.2	6.0	7.0	8.4H	9.0	9.7H	10.6H	10.3H	10.0H	10.1H	9.0	8.9	9.3	8.1	7.5	6.1	6.0	6.1
29	6.1	6.3F	6.5F	5.9F	6.0F	6.0F	U7.8S	7.8	9.1	9.3	10.4H	9.8H	10.1H	9.8H	9.0H	9.3H	9.4	9.4	8.8	7.9	7.3	6.7	6.8	6.4
30	U6.3S	FS	SF	SF	F	F	6.3	7.0	8.3H	9.6H	9.6	9.8	10.1	10.1	10.0	10.5H	9.5	8.8	8.1	6.8	6.6	6.6	6.4	6.4
31	6.1	6.0	5.8F	I5.7F	5.4F	5.5F	6.7	7.3	8.4	C	C	C	C	C	C	C	C	C	C	C				
No.	30	29	29	29	29	30	31	31	31	30	30	30	29	29	29	30	30	29	29	29	28	29	29	29
Median	4.6	4.5	4.4	4.4	4.3	4.0	5.3	7.1	8.0	8.8	9.4	9.7	9.8	9.3	9.0	8.6	8.4	8.3	7.1	6.0	5.4	5.1	4.7	4.7
U.Q	5.3	5.2	5.2	5.0	4.7	4.3	6.2	7.5	8.4	9.4	9.8	10.1	10.4	10.0	10.0	9.4	9.0	8.8	8.2	6.9	6.4	6.1	5.8	5.4
L.Q	4.2	4.2	4.3	4.2	4.0	3.6	4.8	6.6	7.6	8.4	9.0	9.4	8.8	8.6	8.3	8.1	7.7	7.2	6.2	5.3	4.6	4.4	4.3	4.3
Q.L	1.1	1.0	0.9	0.8	0.7	0.7	1.4	0.9	0.8	1.0	0.8	0.7	1.6	1.4	1.7	1.3	1.3	1.6	2.0	1.6	1.8	1.7	1.5	1.1

foF2

Sweep 1.0 Mc to 17.0 Mc in 1 ~~sec~~ min in automatic operation.

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

Mar. 1961 | 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																								
2																								
3																								
4																								
5											4.2	4.2												
6											C													
7											L		L	L										
8										L	I 4.1 L	4.4	4.6	4.3 L	L									
9													L	L	L									
10											L	4.6		4.2	4.3									
11										4.1	4.1	4.2	4.3	4.2	4.1	4.0								
12												4.4	L	L	L									
13										L	L	L		L	L									
14										L	L	LH	L	L										
15											4.5	4.5		4.4										
16									C	L	4.2	4.5	4.4	4.3	L	A								
17												L												
18										L	4.3 L													
19										4.3	4.3	4.5	4.8	4.5										
20										L		I 4.4 L	4.5 L											
21											4.2	4.2												
22																								
23											4.3		C	C	C									
24											L	L												
25																								
26															L									
27																								
28																								
29																								
30														L	L									
31										C	C	C	C	C	C	C								
No.										2	9	10	5	6	2	1								
Median										4.2	4.2	4.4	4.5	4.3	4.2	4.0								

foF1

Sweep 1.0 Mc to 17.0 Mc in 1 min ~~sec~~ in automatic operation.

IONOSPHERIC DATA

Mar. 1961 | 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								2.10	2.55	2.95	3.15	3.30	3.30	3.20	3.15	2.95	2.25	S						
2								S	I 2.40 A	2.80	3.15	3.35	3.35	3.25	3.10	2.95	2.30	S						
3							S	S	2.60	2.95	3.10	3.25	3.30	3.25	3.15	2.80	2.30	S						
4							S	S	2.60	3.00	3.15	3.25	3.30	3.25	3.05	2.85	2.30	S						
5							S	S	2.60	3.00	3.10	3.25	3.20	3.25	3.00	2.85	2.30	S						
6							S	S	2.60	3.00	I 3.10 C	3.20	3.15	3.15	3.00	2.80	2.35	S						
7								S	2.50	2.75	3.05	3.20	3.30	3.15	3.05	2.80	2.35	S						
8							S	S	2.60	3.00	3.20	3.15	I 3.15 A	I 3.15 A	3.05	2.90	2.35	S						
9								S	2.60	3.00	3.05	3.20	I 3.30 A	3.20	3.00	2.85	2.20	S						
10							S	2.05	2.95	2.75	2.85	2.65	2.50	I 2.95 A	3.00	2.75	S	S						
11								S	2.35	2.60	2.90	3.10	3.00	3.05	3.00	2.80	2.20	S						
12								A	2.50	2.70	2.80	3.10	3.15	3.15	3.00	2.80	2.25	S						
13								2.15	2.25	2.95	3.05	3.15	3.15	3.15	3.00	2.70	2.30	A						
14							S	2.15	2.65	2.95	3.10	3.15	3.20	3.15	3.10	2.90	2.30	S						
15							S	S	2.70	3.00	3.05	2.95	3.00	3.00	3.00	2.80	2.30	S						
16							S	2.25	I 2.60 C	2.95	3.05	3.00	3.05	3.20	A	A	A	A						
17							S	2.10	2.30	I 3.00 A	3.20	3.15	3.25	3.20	3.05	2.80	2.50	S						
18							S	2.20	2.40	2.70	3.05	I 3.15 A	3.15	3.15	3.05	3.00	2.40	S						
19							S	2.10	2.60	2.70	3.10	3.25	3.25	3.20	3.15	2.90	2.40	S						
20							1.70	2.30	2.80	3.00	3.10	I 3.20 A	I 3.20 R	3.25	3.10	2.95	2.50	S						
21							S	2.45	2.75	3.00	3.00	3.05	I 3.15 S	3.20	3.05	2.90	2.70	S						
22							S	2.05	I 2.55 S	3.00	3.00	3.05	3.10	3.20	3.10	2.95	S	S						
23							S	S	2.80	3.10	I 3.20 A	3.30	C	C	C	3.00	S	S						
24							2.20	2.50	2.90	3.10	3.10	3.15	3.50	3.50	3.10	2.95	2.60							
25							S	2.40	2.90	2.85	3.20	3.50	3.50	3.35	3.20	3.00	2.60	S						
26							S	2.50	2.90	3.00	3.05	I 3.20 A	I 3.40 R	3.40	3.35	3.10	2.60	S						
27							S	2.50	2.85	3.15	3.05	3.00	3.00	3.50	3.25	3.10	2.70	S	S					
28						S	S	2.50	2.85	3.20	3.40	3.60	3.35	3.60	3.20	3.00	2.65	2.25	S					
29							S	2.50	2.70	I 2.95 C	I 3.15 C	I 3.50 C	3.55	3.40	3.20	3.05	2.75	S						
30							S	2.50	2.90	3.15	C	C	C	3.35	3.20	3.05	S	S						
31							S	2.65	2.90	C	C	C	C	C	C	C	C	C						
No.							2	19	31	30	29	29	29	29	28	29	25	1						
Median							1.95	2.30	2.60	3.00	3.10	3.20	3.20	3.20	3.10	2.90	2.35	2.25						

foE

Sweep 1.0 Mc to 17.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 3

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IONOSPHERIC DATA

Mar. 1961 | foEs | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
2	E	E	E	E	E	E	E	S	2.7	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
3	E	E	E	E	E	E	S	S	G	G	G	3.1[G]	G	G	G	G	G	S	E	E	E	E	E	E
4	E	E	E	E	E	E	S	S	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
5	E	E	E	E	E	E	S	S	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
6	E	E	E	E	E	E	S	S	G	G	C	G	G	G	G	G	G	S	E	E	E	E	E	E
7	E	E	E	E	E	E	E	S	G	G	3.6	G	G	G	G	G	G	S	E	E	E	E	E	E
8	E	E	E	E	E	E	S	S	G	G	G	G	J4.2	J3.3	2.6[G]	G	G	S	2.5	E	E	E	E	E
9	E	E	E	E	E	E	E	S	G	G	G	G	3.4	3.0[G]	2.6[G]	G	G	S	E	E	E	E	E	E
10	E	E	E	E	E	E	S	G	G	3.0	3.5	3.5	3.4	3.0	G	G	S	S	J2.9	E	E	E	E	E
11	J2.6	C	C	C	C	J2.9	J2.3	2.3	G	G	3.5	G	G	4.4	G	G	J6.3	3.3	J3.3	E	E	E	E	E
12	E	E	E	E	E	J2.3	2.4	2.4	G	G	G	G	G	G	G	2.4[G]	G	S	E	E	E	J2.3	E	E
13	E	E	E	E	E	E	S	2.8	2.8	G	2.6[G]	2.6[G]	2.7[G]	G	G	2.3[G]	2.1[G]	2.6	2.6	E	E	E	E	E
14	E	E	E	E	E	E	S	G	G	2.3[G]	G	2.6[G]	G	G	G	G	G	S	E	E	E	E	E	E
15	E	E	E	E	E	E	S	S	G	G	G	G	G	G	G	G	G	S	J4.3	J3.3	J3.3	E	J2.3	E
16	E	E	2.4	2.4	1.6	E	S	2.9	C	G	G	G	G	G	J5.5	J5.3	3.0	J3.3	J2.9	2.5	E	J2.9	E	E
17	E	E	J2.3	E	E	E	S	2.8	3.3	3.2	G	G	G	G	G	G	G	S	E	C	E	E	E	E
18	E	E	E	E	E	E	S	G	G	G	G	3.3	2.5[G]	G	G	G	G	2.4	S	E	E	E	E	E
19	E	E	E	E	E	E	G	2.9	G	3.3	G	3.4	2.5[G]	G	G	G	G	S	S	E	E	J2.9	E	E
20	2.5	E	E	E	E	E	2.2	3.3	3.3	G	G	3.4	G	G	G	G	G	S	E	E	E	E	E	E
21	E	E	E	E	E	E	S	G	G	G	3.3	G	S	G	G	G	2.2[G]	S	E	E	E	E	E	E
22	E	E	E	E	E	E	S	2.7	3.3	G	G	G	G	G	G	G	S	S	E	E	E	E	E	E
23	E	E	E	E	E	E	S	S	G	G	3.5	3.0[G]	C	C	C	2.4[G]	S	S	E	E	E	E	E	E
24	E	E	E	E	E	E	G	3.0	G	3.8	G	G	G	G	G	G	G	C	C	C	C	E	E	E
25	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
26	E	E	E	E	E	E	S	G	3.2	3.5	G	3.3	G	G	G	G	G	S	E	E	E	E	E	E
27	E	E	E	E	E	E	S	G	G	G	3.8	G	G	3.0[G]	2.9[G]	G	G	S	S	E	E	E	E	E
28	E	E	J2.2	E	E	S	S	J6.0	G	G	4.0	G	G	G	2.9[G]	G	G	G	S	E	E	E	3.3	E
29	E	E	E	E	E	E	S	G	G	C	C	C	2.7[G]	G	G	G	G	S	S	E	E	E	E	E
30	E	E	E	E	E	E	S	G	G	G	C	C	C	G	G	G	S	S	E	E	E	E	E	E
31	E	E	E	E	E	E	S	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	31	30	30	30	30	30	9	21	30	30	27	28	27	29	29	30	26	5	24	28	29	30	30	30
Median	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	2.6	E	E	E	E	E	E
U.Q	E	E	E	E	E	E	24	2.8	G	G	3.3	G	G	G	G	G	G	3.3	E	E	E	E	E	E
L.Q	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R	·																							

foEs

Sweep 1.0 Mc to 17.0 Mc in 1 min ~~sec~~ in automatic operation.

IONOSPHERIC DATA

Mar. 1961 | foEs | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N, Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																		S						
2								S	2.6									S						
3							S	S				2.9G						S						
4							S	S										S						
5							S	S										S						
6							S	S			C							S						
7								S			G							S						
8							S	S					3.7	3.3	G			S	E					
9								S					3.3	G	G			S						
10							S			G	G	G	G	3.0			S	S	E					
11	E	C	C	C	C	E	E	G			G			G		G	A	G	E					
12						E	E	2.2										S				E		
13							S	G	G		2.5G	2.5G	2.7G			G	G	2.4	E					
14							S			G		2.6G						S						
15							S	S										S	4.0	E	E		E	
16			E	E	E		S	G	C						4.2	4.0	2.3	3.0	2.7	E		E		
17			E				S	G	G	3.1								S						
18							S					3.3	24G					S						
19								G		G		2.9	24G					G	S					
20	E						G	G	G			E 3.4A						S	S			2.9		
21							S				G		S				G	S						
22							S	G	G								S	S						
23							S	S			3.5	3.0G	C	C	C	2.2G	S	S						
24								G		G								C	C	C	C			
25							S											S						
26							S		G	G		3.3						S						
27							S				G			3.0G	2.7G			S	S					
28			E			S	S	G			4.0				2.9G				S				2.7	
29							S			C	C	C	2.5G					S	S					
30							S				C	C	C			S	S							
31							S			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	2		3	1	1	2	3	10	6	6	8	8	7	5	5	4	4	4	6	2	1	3	2	
Median	E		E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	

foEs

Sweep 1.0 Mc to 17.0 Mc in 1 ~~sec~~ min in automatic operation.

IONOSPHERIC DATA

Mar. 1961 | f-min | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E2.00S	E2.00S	E1.50S	E2.00S	E1.30S	E	E2.00S	2.00	2.00	2.00	2.10	2.00	2.15	2.00	2.10	2.00	2.00	E1.95S	E1.85S	E1.70S	E1.90S	E2.00S	E2.00S	E2.00S
2	E2.00S	E1.80S	E	E	E	E1.40S	E1.85S	E2.00S	1.90	2.00	2.00	2.15	2.20	2.15	2.30	2.15	2.00	E2.00S	E1.50S	E2.00S	E2.00S	E1.90S	E1.90S	E2.00S
3	E2.00S	E	E1.90S	E	E	E	E1.90S	E2.15S	2.00	2.00	2.00	2.10	2.15	2.00	2.00	2.00	2.00	E1.90S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
4	E2.00S	E2.00S	E	E	E	E1.70S	E1.70S	E2.10S	2.00	2.00	2.30	2.30	2.10	2.20	2.00	2.00	2.00	E1.90S	E1.80S	E2.00S	E1.90S	E1.90S	E2.00S	E2.00S
5	E2.00S	E	E2.00S	E1.90S	E	E1.40S	E1.70S	E2.10S	2.00	2.00	2.00	2.00	2.00	2.00	2.10	2.00	2.00	E2.00S	E1.90S	E1.90S	E1.90S	E1.90S	E1.95S	E2.00S
6	E1.90S	E1.85S	E2.00S	E	E	E1.20S	E1.80S	E2.20S	2.00	2.00	I2.00C	2.00	2.00	2.00	2.00	2.00	1.85	E1.90S	E1.90S	E1.90S	E1.80S	E1.90S	E1.95S	E1.85S
7	E1.95S	E2.00S	E	E	E	E1.30S	E1.80S	E2.30S	2.00	2.00	2.00	2.20	2.30	2.10	2.00	2.00	1.90	E2.00S	E1.80S	E2.00S	E1.90S	E2.00S	E1.90S	E2.00S
8	E2.00S	E1.90S	E	E	E	E1.20S	E1.80S	E2.10S	2.00	1.90	1.90	2.10	1.85	1.85	2.00	2.00	1.85	E2.00S	E1.85S	E2.20S	E1.95S	E2.00S	E1.90S	E1.90S
9	E2.00S	E1.80S	E	E	E	E1.50S	E1.90S	E2.15S	1.90	2.00	2.00	2.00	2.00	2.00	1.80	2.00	1.75	E1.95S	E1.70S	E1.90S	E1.90S	E2.00S	E2.00S	E1.90S
10	E2.00S	E2.00S	E1.80S	E1.70S	E2.00S	E1.20S	E1.70S	1.85	1.90	1.90	2.00	2.00	2.00	2.00	2.00	1.90	E2.40S	E1.85S	E1.70S	E2.00S	E2.00S	E2.00S	E1.80S	E1.90S
11	E1.90S	C	C	C	C	E	E1.60S	E2.00S	1.85	1.85	2.00	1.90	2.00	2.05	2.00	1.80	1.90	E1.90S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
12	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S	E1.20S	E1.80S	1.80	1.90	2.00	2.00	2.00	2.00	2.00	2.00	1.90	1.90	E2.00S	E1.90S	E1.90S	E1.90S	E1.80S	E1.90S	E2.00S
13	E2.10S	E2.00S	E2.00S	E2.00S	E	E1.80S	E1.90S	1.90	2.00	2.00	1.95	2.10	2.00	2.00	2.10	1.80	1.60	E1.90S	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E2.00S
14	E2.00S	E2.10S	E2.00S	E2.00S	E2.00S	E1.90S	E1.80S	2.00	2.00	1.80	2.15	2.05	2.00	2.10	2.00	2.00	1.90	E2.10S	E2.00S	E2.00S	E2.10S	E2.00S	E2.00S	E2.05S
15	E2.00S	E2.00S	E1.90S	E2.00S	E1.60S	E1.60S	E1.90S	E2.30S	2.00	1.90	2.10	2.00	2.00	2.10	2.00	2.00	2.00	E2.00S	E1.85S	E2.00S	E1.90S	E2.00S	E1.70S	E2.00S
16	E2.00S	E2.00S	E2.00S	E2.00S	E1.20S	E1.50S	E2.00S	E2.00S	I1.75E	2.00	2.00	2.00	2.10	2.00	2.00	1.95	1.95	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E1.80S	E2.00S
17	E2.00S	E2.00S	E2.00S	E2.00S	E1.80S	E1.80S	E1.90S	1.90	2.00	1.90	2.00	2.00	2.00	2.00	2.00	2.00	1.90	2.00	E2.00S	C	E1.90S	E1.90S	E2.00S	E1.90S
18	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E	E2.00S	2.00	1.90	2.00	2.10	2.15	2.00	2.10	2.00	2.00	1.90	E2.05S	E1.80S	E2.00S	E1.90S	E2.00S	E2.00S	E1.90S
19	E1.80S	E1.50S	E	E	E	E	E1.70S	1.90	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.80	E2.00S	E1.80S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S
20	E1.80S	E1.15S	E	E	E	E1.70S	E1.50S	1.90	2.00	2.00	2.00	2.30	2.00	2.20	2.10	2.00	1.95	E2.00S	E1.80S	E2.00S	E1.90S	E1.90S	E2.00S	E2.00S
21	E2.00S	E	E1.20S	E	E	E	E2.00S	2.00	1.80	2.30	2.30	2.10	E3.40S	2.30	2.30	2.10	1.80	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	E1.90S
22	E1.95S	E	E	E	E	E1.40S	E2.00S	1.90	E2.20S	2.00	2.10	2.00	2.30	2.40	2.30	2.00	E2.95S	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.10S	E2.00S
23	E2.00S	E2.00S	E	E	E	E1.20S	E2.18S	E2.70S	2.00	2.30	2.50	2.20	C	C	C	1.85	E2.85S	E2.10S	E2.10S	E2.50S	E2.00S	E2.00S	E1.90S	E1.90S
24	E1.90S	E	E	E	E	E1.30S	1.80	1.90	2.00	2.40	2.30	2.20	2.30	2.30	2.10	2.00	2.15	C	C	C	C	E2.00S	E2.00S	E1.85S
25	E2.00S	E1.50S	E	E	E	E1.60S	E2.00S	2.00	2.00	2.10	2.60	2.40	2.30	2.30	2.35	2.30	2.30	E2.30S	E2.10S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
26	E2.00S	E1.60S	E	E	E	E1.20S	E2.10S	1.90	2.00	2.20	2.10	2.30	2.20	2.20	2.10	2.05	2.00	E2.10S	E2.10S	E2.00S	E1.90S	E1.80S	E1.90S	E1.80S
27	E1.85S	E2.15S	E1.50S	E	E	E1.30S	E2.00S	1.85	2.00	2.10	2.20	2.30	2.15	2.40	2.00	2.10	2.00	E2.10S	E2.00S	E2.10S	E1.90S	E1.90S	E2.20S	E2.00S
28	E2.00S	E	E	E	E	E1.30S	E2.00S	1.85	2.00	2.00	2.20	2.40	2.20	2.20	2.10	2.10	2.00	1.90	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
29	E1.90S	E1.60S	E	E	E1.20S	E1.85S	E2.30S	2.00	2.10	E3.60C	E4.50C	E4.20C	2.00	2.00	2.30	2.00	2.00	E2.25S	E2.00S	E1.80S	E1.90S	E1.90S	E2.00S	E1.50S
30	E1.80S	E	E	E1.20S	E	E1.90S	E1.90S	2.00	2.00	2.30	E4.40C	E4.50C	2.20	2.20	2.30	2.20	E3.00S	E2.00S	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
31	E2.00S	E1.90S	E	E	E	E1.30S	E2.15S	1.90	2.00	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	31	30	16	19	21	31	31	19	30	29	28	28	28	29	29	30	26	29	29	28	29	30	30	30
Median	E2.00	E1.90	E	E	E	E1.30	E1.90	1.90	2.00	2.00	2.00	2.10	2.00	2.10	2.00	2.00	1.95	E2.00	E1.90	E2.00	E1.95	E2.00	E2.00	E2.00

f-min

Sweep 1.0 Mc to 17.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | M(3000)F2 | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N, Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.90	3.00	2.80	3.00	2.95	2.95	3.15	U3.40S	3.40	3.20	3.20	3.20	3.25	3.30	3.35	3.15	3.40	3.35	3.20	3.10	2.95	2.85	2.65	2.65
2	2.65	2.80	2.90	3.05	3.20	2.95	3.05	3.30	3.35	3.30	3.25	3.30	3.35	3.30	3.20	3.30	3.35	3.40	3.15	3.05	2.90	U2.90S	2.95	U2.80S
3	2.90	3.00	3.00	2.85	2.95	2.90	3.20	3.40	3.30	3.35	3.15	3.25	3.30	3.25	3.20	3.30	3.30	3.45	3.20	3.10	2.95	3.00	2.85	2.85
4	2.90	2.90	2.75	2.85	3.00	3.05	3.15	U3.45S	3.30	3.35	3.35	3.25	3.30	3.30	3.30	3.35	3.40	3.45	3.25	3.05	2.90	2.95	2.90	U2.70S
5	2.80	2.80	2.85	3.00	3.00	2.95	3.30	3.55	3.40	3.40	3.45	3.40	3.30	3.25	3.35	3.20	3.30	3.50	3.40	3.35	2.95	2.95	2.80	2.70
6	3.00	2.95	3.00	2.90	2.90	2.95	3.50	3.25	3.45	3.00	I3.20C	3.05	3.10	3.05	3.15	3.20	3.20	3.20	3.15	U3.15S	3.05	2.75	2.75	2.90
7	2.75	2.60	2.95	3.30	3.00	2.90	2.95	3.25	3.15	3.20	3.30	2.90H	3.35	3.45	3.30	3.30	3.30	3.40	3.30	3.10	3.00	2.90	2.95	2.85
8	2.90	2.80	2.90	2.85	3.00	3.00	3.25	3.50	3.30	3.30	3.25	3.30	3.35	3.25	3.35	3.30	3.35	3.40	3.25	3.05	3.30	2.90	2.95	2.90
9	2.95	2.95F	2.90F	2.90	2.90	2.85	3.30	3.50	3.50	3.25H	3.20H	3.20	3.20	3.25	3.30	3.30	3.35	3.45	3.30	3.30	3.00	2.85	2.80	2.75
10	2.80	2.65	2.70	2.90	2.85	3.15	3.45	3.40	3.20H	3.20	3.25	3.15	3.10	3.05	3.15	3.25H	3.15	3.30	3.25	2.40	FS	FS	F	F
11	FS	C	C	C	C	3.05	3.10	3.00	3.05H	3.25	2.90	3.10	3.05	3.05	3.20	3.40	I3.40A	3.60	3.35	3.05	2.95	2.95	2.85	2.90
12	2.75	2.80	2.80	U2.85S	2.85	U2.90FS	3.15	3.50	3.25	3.25	3.35	3.30	3.25	3.25	3.35	3.35H	3.50	3.40	3.25	3.15	3.00	2.95	3.00	U2.90S
13	3.10	U2.80S	3.00	2.90	3.05	3.00	3.45	3.30H	U3.40SH	3.50	3.10	3.25	3.15H	3.30	3.25	3.30H	3.40	3.35	U3.30S	3.25	2.95	3.00	3.10	U2.90S
14	2.85	U2.75S	2.75	2.80	U3.15S	3.35	3.50	3.35	3.15	3.00	3.15	3.15	3.15	3.20	3.15	3.35	3.30	3.40	3.40	2.85	2.85	2.90	2.70	2.85
15	2.95	U3.00S	3.00	2.80	2.95	2.85	3.10	U3.25S	3.10	3.15H	3.10	3.30	3.25	3.20	3.15	3.30	3.35	3.30	3.25	3.35	3.05	2.75	2.80	2.75
16	2.95	3.05	3.10	2.95	2.80	2.80	3.15	3.15	I3.05C	3.20	3.20	3.20	3.35	3.20	3.25	3.35	3.35	3.30	3.20	3.05	3.20	2.95	3.00	2.80
17	2.80	2.75	2.80	2.90	3.10	3.15	3.40	3.40	3.30	3.35	3.20	3.40	3.20	3.20	3.25	3.30	3.25	3.35	3.05	3.15	3.10	3.15	3.00	3.05
18	2.95	2.70	U2.80S	U2.85S	3.05	3.10	3.40	3.40	3.20	U3.30S	3.25	3.10	3.20H	3.25	3.35	3.30H	3.25	3.40	3.20	2.95	3.00	3.05	3.10	2.95
19	2.75	2.60	2.70	2.65	2.65	2.75	3.00	3.20H	3.15H	3.20	3.00	3.05	3.15	3.25	3.30	3.25	3.20	3.10	3.15	3.25	3.05	2.95	2.80	2.75
20	2.65	2.70	3.00	3.15	3.05	2.90	3.30	3.30	3.15H	3.15	3.20H	3.05	3.20	3.15H	3.25H	3.10	3.15	3.25	3.30	3.15	2.95	2.85	2.85	2.70
21	2.80	2.75	2.85	2.85	2.80	2.95	3.40	U3.30S	3.25H	3.20	3.25	3.25	3.20H	3.20H	3.15H	3.20H	3.25	3.35	3.20	3.10	3.05	3.15	2.85	2.65
22	2.75	2.65	2.75	2.85	2.95	2.75	3.20	U3.35SH	3.40	3.25	3.15	3.15H	3.15H	3.15H	3.15H	3.15	3.20	3.30	3.30	3.20	3.10	2.95	2.80	2.75
23	2.65	2.80	2.90	3.05	3.00	3.05	U3.30S	3.35	3.30	3.10	3.15	3.25H	C	C	C	3.20	3.15	3.30	3.35	3.10	2.95	2.90	2.80	2.80
24	2.60	2.65	2.85	3.00	3.20	3.00	3.30	3.35	3.25	3.15H	3.15	3.05	3.15H	3.10	3.20H	3.15	3.20	C	C	C	C	3.05	2.90	2.90
25	2.85	2.85	2.90	2.80	2.90	2.85	3.25	3.30	3.15	3.15	3.20	3.10	3.10	3.10	3.05	3.15	3.25	3.25	3.15	3.05	3.10	2.95	2.95	2.85
26	2.80	2.80	2.85	3.05	2.95	3.00	3.40	3.35	3.35	3.20	3.20	3.00	3.05H	2.95H	3.10	3.00	3.10	3.15	3.20	3.10	2.90	2.90	2.95	2.80
27	2.75	2.85	2.85	2.90	3.15	3.10	3.45	3.40	3.35H	3.20	3.00H	3.00	3.00H	3.00H	3.05	3.05	3.10	3.15	3.10	3.00	3.10	3.10	2.85	2.75
28	2.70	2.75	2.75	2.45	2.45	2.85	3.20	3.40	3.30	3.20H	3.10	2.95H	3.10H	2.95H	2.95H	3.15H	3.00	3.05	3.10	3.05	3.10	2.75	2.70	2.80
29	2.70F	2.70F	2.75F	2.80F	2.85F	2.90F	U3.15S	3.10	3.15	3.00	3.15H	3.00H	3.05H	3.10H	3.05H	3.00H	3.20	3.20	3.15	3.00	3.00	2.80	2.80	2.80
30	U2.70S	FS	SF	SF	F	F	3.20	3.30	3.25H	3.15H	3.15	3.05	2.95	2.95H	3.00	3.05H	3.15	3.15	3.10	2.80	2.80	2.75	2.70	2.80
31	2.80	2.85	2.85F	I2.95F	2.90F	3.00F	3.20	3.25	3.20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	30	29	29	29	29	30	31	31	31	30	30	30	29	29	29	30	30	29	29	29	28	29	29	29
Median	2.80	2.80	2.85	2.90	2.95	2.95	3.25	3.35	3.25	3.20	3.20	3.15	3.20	3.20	3.20	3.25	3.25	3.35	3.20	3.10	3.00	2.95	2.85	2.80

M(3000)F2 Sweep 1.0 Mc to 17.0 Mc in 1 min (sec struck) in automatic operation.

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

Mar. 1961 | M(3000)F1 | 135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5											3.85	4.05												
6											C													
7											L		L	L										
8										L	I 4.05 L	3.85	3.75	3.95 L	L									
9													L	L	L									
10											L	3.75		3.90	3.80									
11										3.40	3.75	3.60	3.70	3.65	3.70	3.65								
12												3.75	L	L	L									
13										L	L	L		L	L									
14										L	L	LH	L	L										
15											3.80	3.80		3.85										
16									C	L	3.90	3.85	3.85	3.95	L	A								
17												L												
18										L	4.00 L													
19										3.70	3.90	3.85	3.65	3.75										
20										L		I 4.05 L	3.80											
21											4.05	4.05												
22																								
23											3.95		C	C	C									
24											L	L												
25																								
26															L									
27																								
28																								
29																								
30														L	L									
31										C	C	C	C	C	C	C								
No.										2	9	10	5	6	2	1								
Median										3.55	3.90	3.85	3.75	3.90	3.75	3.65								

M(3000)F1

Sweep 1.0 Mc to 17.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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																								
2																								
3																								
4																								
5											235	250												
6											C													
7											L		260	250										
8										265	255	260	260	250	260									
9													265	260	260									
10											250	285		270	265									
11										350	415	345	360	320	300	270								
12												275	270	270	260									
13										255	260L	250		275	260L									
14										265L	265	260	260	265										
15											260	270		280										
16									C	265	260	260	270	285	270	255								
17												250												
18										255	250													
19										280	270	285	280	265										
20										265		280	260											
21											255	270												
22																								
23											260		C	C	C									
24											260	250												
25																								
26															270									
27																								
28																								
29																								
30														285	290									
31										C	C	C	C	C	C	C								
No.										8	13	14	9	12	9	2								
Median										265	260	265	265	270	265	260								

h'F2

Sweep 1.0 Mc to 17.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 9

IONOSPHERIC DATA

Mar. 1961 | 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	290	270	260	280	260	250	250	215	225	210^{H}	200^{H}	250	230	230^{H}	235^{H}	235	245	220	235	230	250	295	325	335
2	315	300	260	250	225	250	260	240	235	220^{H}	230^{H}	215^{H}	230^{H}	230	250	250	240	225	230	235	260	285	300	300
3	300	260	275	260	260	270	245	230	225	225	215^{H}	225^{H}	240	225^{H}	235	240	230	220	230	250	260	275	300	290
4	300	290	300	285	270	260	250	230	235	205^{H}	240	220^{H}	210^{H}	200^{H}	220^{H}	240	235	220	220	230	265	285	300	350
5	335	310	300	285	240	265	250	235	230	220^{H}	210	210	230^{H}	235^{H}	240^{H}	240^{H}	245^{H}	225	210	235	265	300	300	310
6	300	285	280	290	305	260	240	240	215^{H}	230^{H}	I 230^{C}	210^{H}	230^{H}	220^{H}	230^{H}	250^{H}	250	230	240	240	240	270	300	290
7	300	345	280	235	225	350	275	230	250	235	250	225	230	240	210^{H}	230^{H}	230	225	215	250	270	300	290	300
8	305	300	290	290	255	250	240	230	215^{H}	225	220	210	250	225	240	240	240^{H}	230	215	250	250	290	310	300
9	300	300	270	285	260	285	235	220	230	220^{H}	210^{H}	210^{H}	235	235	225	230^{H}	240	230	220	235	260	275	305	310
10	335	350	320	300	280	245	225	235	205^{H}	235^{H}	235	225	200^{H}	230	240	240^{H}	250	225	225	380	320	330	325	270
11	320	C	C	C	C	310	280	260	280^{H}	230	235	245	240	250	235	240	I 260^{A}	235	245	260	280	300	300	310
12	310	325	310	290	300	270	260	240	220^{H}	200^{H}	215^{H}	230	235	220	215	235^{H}	235	225	230	240	240	265	275	265
13	270	290	300	310	250	260	225	230	230^{H}	230	215	210	215^{H}	235	235	240^{H}	245	230	230	230	265	260	260	285
14	295	320	310	315	255	235	230	250	230	230	210	200^{H}	225	230	235^{H}	235^{H}	240	230	210	285	300	300	315	300
15	285	265	275	310	300	300	250	260	245	240^{H}	235	235	205	210	240	240^{H}	245	240	250^{A}	235	260	325	340	310
16	305	280	280	290	275	300	250	240	I 240^{C}	230	215	200	210	220	I 230^{A}	I 240^{A}	245	240	250	250	240	275	270	310
17	320	325	300	285	260	260	235	245	230^{H}	230^{H}	220^{H}	215	225^{H}	220^{H}	235^{H}	235^{H}	245	235	250	I 250^{C}	260	250	250	260
18	290	305	300	280	260	245	240	240	235^{H}	210	210	215	220^{H}	210^{H}	240^{H}	240^{H}	240	230	225	280	265	260	260	265
19	305	310	300	300	295	320	260	250^{H}	240^{H}	215	210	230	215	215	230^{H}	235^{H}	250	250	235	220	250	260	320	340
20	335	320	250	250	270	260	240	250	230^{H}	220	210^{H}	220	210	225^{H}	225^{H}	230	240	240	235	230	265	300^{A}	300	335
21	310	285	265	260	275	275	240	235	235^{H}	250	215	205	220^{H}	225^{H}	230^{H}	235^{H}	240	230	235	250	250	250	270	320
22	325	315	310	275	250	290	240	225^{H}	220	205^{H}	210^{H}	200^{H}	190^{H}	230^{H}	240^{H}	235	235	235	230	235	250	280	300	330
23	325	320	290	250	240	250	230	230	235	215^{H}	240	240^{H}	C	C	C	210^{H}	250	245	220	250	250	260	300	300
24	335	320	285	250	235	240	225	235	240	240^{H}	240	220	215^{H}	230^{H}	235^{H}	240	250	C	C	C	C	260	280	270
25	285	285	275	275	250	280	235	240	230^{H}	230^{H}	225^{H}	210^{H}	230^{H}	235^{H}	235	240	240	250	235	250	250	260	275	310
26	310	290	265	250	240	260	230	225	235	220^{H}	220^{H}	215^{H}	215^{H}	240^{H}	240	240	225^{H}	240	230	225	260	265	285	300
27	300	310	300	265	235	230	230	235	235	215	210^{H}	210^{H}	230^{H}	230^{H}	230^{H}	240	250	250	235	250	250	240	300	300
28	315	300	300	350	330	295	240	240	230^{H}	210^{H}	260	235^{H}	235^{H}	250^{H}	225^{H}	235^{H}	250	260	245	245	240	260	330	300
29	300	300	280	260	260	260	250	240	245^{H}	225	E 260^{C}	E 230^{C}	220^{H}	225^{H}	220^{H}	250^{H}	255	245	240	235	250	265	280	280
30	290	285	285	270	260	280	240	230	235^{H}	220^{H}	E 250^{C}	E 250^{C}	210	230	235	240^{H}	240	245	235	260	265	295	305	290
31	290	285	270	260	235	250	220	230	250^{H}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	31	30	30	30	30	31	31	31	31	30	28	28	29	29	29	30	30	29	29	29	29	30	30	30
Median	305	300	285	280	260	260	240	235	235	220	220	215	225	230	235	240	240	230	230	245	260	275	300	300

h'F

Sweep 1.0 Mc to 17.0 Mc in 1 ~~sec~~ min in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | *k'Es* | 135° E Mean Time (G.M.T. + 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' E

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

k'Es

Sweep 1.0 Mc to 17.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Mar. 1961 | **Types of Es** | 135° E Mean Time (G.M.T. + 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2									ℓ															
3												ℓ												
4																								
5																								
6																								
7											h													
8													ℓ	ℓ	ℓ				ƒ					
9													ℓ	ℓ	ℓ									
10										C	C	C	C	ℓ					ƒ					
11	ƒ					ƒ2	ƒ2	ℓ			h			C			C2	C	ƒ					
12						ƒ	ƒ	ℓ								ℓ						ƒ		
13								C	C		ℓ	ℓ	ℓ			ℓ	ℓ	ℓ	ƒ					
14										ℓ		ℓ												
15																			ƒ2	ƒ	ƒ		ƒ	
16			ƒ	ƒ	ƒ			C							ℓ2	ℓ2	ℓ	ℓ2	ƒ	ƒ		ƒ		
17			ƒ					C	C	ℓ														
18												ℓ	ℓ											
19								C		C		ℓ	ℓ					C				ƒ		
20	ƒ						C	C	C			ℓ												
21											C						ℓ							
22								C	C															
23											ℓ	ℓ				ℓ								
24								h		C														
25																								
26									C	C		ℓ												
27											C			ℓ	ℓ									
28			ƒ					C			h				ℓ								ƒ2	
29													ℓ											
30																								
31																								
No.																								
Median																								

Types of Es Sweep 1.0 Mc to 17.0 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 12

IONOSPHERIC DATA

Mar. 1961 | 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	4.8	4.9	4.7	4.5	4.1	4.3	4.9	6.9	8.5	8.8	9.5	10.1	9.6	9.6	9.1	8.9	8.9	8.0	6.4	5.1	4.8	4.5^{S}	4.4	4.4
2	4.4	4.6	5.0	4.8	3.6	3.0	3.6	6.9	8.6	9.4	8.6	9.1	9.3	8.8	9.3	9.5	8.7	7.4	5.9	5.1	4.9	4.3	4.3	4.4
3	4.4	4.3	4.2	4.2	4.1	4.1	4.7	6.6	8.5	8.8	[9.0^{C}	9.7^{R}	10.3	9.6	8.7	9.2	9.0	7.6	6.1	4.9	4.8	4.6^{S}	4.6	4.5
4	4.3	4.4	4.4	4.3	4.2	4.4	4.8	7.0	9.5	10.0	9.2	9.8	9.8^{R}	10.0	9.2	C	C	C	C	C	C	C	C	C
5	C	3.9	4.1	4.2	3.9	3.6	4.8	6.9	8.8	8.9	9.2	8.6	8.3	8.8	8.8	8.6	9.1	8.0	6.8	4.0	3.5	3.6	3.9	3.9
6	3.9	4.1	4.2	3.8	3.8	4.0	4.6	6.3	8.8	7.4	9.7	9.3	10.5	9.3	10.0	9.6	10.1^{S}	8.8	8.1	7.6	6.0	4.7	5.1	5.5
7	5.0	4.8	5.2	6.1	3.0	2.9	3.8	6.9	8.6	10.3	10.7	11.0	9.5	11.0	8.5	8.0	7.7	7.0	6.1	4.8	4.6	4.6^{S}	4.9	4.8
8	4.7	4.5	4.5	4.5	4.4	4.1	5.0	6.9	8.1	9.3	9.5	9.4	10.3	10.5	9.3	8.9	8.5	7.5	6.6	5.4	4.8	4.3	4.0	4.3F
9	4.3	4.2	4.3	4.1	4.2	4.2	5.3	6.8	7.2	8.2	9.1	10.5	11.1	11.0	10.3	9.8^{R}	8.5	7.7	6.5	5.2	4.5	4.4	4.4	[4.4F
10	[4.4^{E}	4.4	4.3F	4.5	4.1	4.1	4.7	6.5	7.9	8.6	9.0	9.4	10.5	11.0	10.9	10.6	9.9	9.5	7.3	5.6	R F	F	F	F
11	F	F	4.4F	F	F	F	F	F	7.8	7.0	6.1	6.9	6.5	6.2	6.6	6.7	6.2	6.2	5.5	4.0^{R}	3.8^{R}	A	A	A
12	R^{S}	R^{S}	F	4.4F	4.2	[4.3F	4.9^{S}	6.9	6.6	8.1	8.1	7.9	8.9	8.8	8.7	8.5	8.0	6.9	6.6	6.0	5.1	4.8	5.0	5.1
13	4.6^{S}	4.3F	4.5F	4.7F	4.6F	4.4F	5.4F	7.0	8.6	8.6	9.0	8.3	8.6	8.6	9.0	9.1	8.6	[8.0^{C}	7.4	5.3	4.9	5.1	5.1	4.4
14	4.5	[4.5^{E}	4.5	4.4	4.8	3.6	4.9	6.6	8.0	9.8^{R}	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	10.4	8.7^{H}	9.1	8.9	7.9	8.1	8.0	8.5	6.5	4.4	[4.4^{A}	4.5	[4.4F
16	4.3	4.4	3.8	3.8	3.3	3.3	4.5	6.9	8.8	11.4	10.9	10.0	8.1	8.6	9.6	9.0	7.9	7.8	6.9	5.9	5.5	4.4	4.5	4.3
17	4.4	4.5	4.6	4.3	4.1	4.2	5.5	7.4	8.5	8.6	9.4	9.5	9.5	8.9	8.5	8.3	8.5	8.3	6.9	6.9	6.6	6.3	5.3	4.9
18	4.3	4.2	4.3	4.5	4.0	4.1	5.3	7.6	8.6	10.1	9.6	9.7	10.0	10.0	9.0	8.0	7.9	7.7	7.1	5.3	5.6	5.6	5.4	5.3
19	4.9	4.8^{R}	4.6	4.6	4.3	4.3	5.1	7.4	8.0	8.9	9.8	11.4	11.1	10.1	9.2	8.5	8.3	9.0	8.5	6.8	4.4	4.9	4.8	4.8
20	4.7F	4.4	4.9	4.1	3.5	3.4	5.2	8.1	9.6	10.6^{R}	11.5	11.4	12.2	11.6	10.7	8.2	9.0	9.4	9.6^{R}	7.8	5.4	5.2	5.4^{R}	5.0
21	5.0	4.9	5.0	4.8	4.4	4.1	6.0	7.9	8.5	10.9	10.0	10.3	11.1	11.1	10.6	9.8^{R}	9.0	8.3	8.1	6.5	6.0	5.0	4.5	4.5
22	4.5	4.6	4.6	4.5	4.5	4.1	5.8	8.1	7.5	8.8	9.1	9.9	10.4	10.7	10.6	9.8	9.2	9.6	7.9	6.6	5.4	5.0	4.4	4.9^{R}
23	4.8^{R}	4.8	4.9	5.1	4.0	3.4	5.8	7.9	8.4	8.9	9.0	10.3	10.7	10.2	9.8	9.5	10.4	10.2	9.2	5.4	[5.2^{C}	5.3	5.0	5.0
24	4.9	4.8	4.9	5.0	4.4	3.9	5.4	7.5	9.5	10.6	10.6	10.5	10.5	10.3	9.8	9.1	9.1	8.6	8.1	7.4	7.3^{R}	7.0	6.1	6.1
25	6.1	5.6	5.6	5.3	5.4	5.1	7.0	9.1	10.0^{R}	10.3	10.8	11.6	11.6	11.8	11.0	10.0	9.6	9.0	9.0	7.5	6.9	6.4	6.1	5.6
26	5.5	5.7	5.7	5.2	4.4	4.1	6.4	8.3	8.5	9.4	9.6	11.2	11.2	11.5	10.9	10.8^{R}	10.3	10.4	9.6	7.3	6.1	6.2	5.9	5.6
27	5.5	5.5	5.5	5.5	5.0	4.6	6.3	7.3	8.6	8.5	9.0	11.1	11.8	10.9	10.6	9.9	9.6	10.6	U10.5^{R}	8.4	7.4	6.5	6.0	6.0
28	5.8	5.7	5.6	5.0	5.1	5.3	7.9	8.1	[7.6^{C}	8.2	9.9	10.7	11.7	[11.7^{C}	11.5	11.0	[9.8^{C}	9.9^{R}	10.6	8.3	6.0	5.2	5.5	5.9
29	5.5	5.5	5.5	5.4	5.1	5.4	7.5	8.1	8.6	9.7	10.7	11.5	10.5	[10.2^{C}	[9.8^{C}	C	C	C	C	C	6.8	6.6	6.8	6.5
30	6.4	6.3	6.1	6.1	5.7F	5.6F	7.0F	8.1	8.6	10.4	11.0	10.8	11.0	11.1	11.2	11.2	10.2	9.7^{R}	8.6	7.0	6.9	6.9	6.9	6.9
31	6.5	6.5F	6.4V	6.1	5.1	4.6	6.1	7.2	8.6	U10.2^{R}	11.4	11.9	11.4	11.6	10.9	10.4	9.6	9.1	8.9	7.4	6.9	6.9	6.7	6.5
No.	27	28	29	29	29	29	29	29	30	30	29	30	30	30	30	28	28	28	28	28	28	27	27	27
Median	4.7	4.6	4.6	4.5	4.2	4.1	5.3	7.2	8.6	9.1	9.5	10.2	10.4	10.2	9.7	9.2	9.0	8.3	7.6	6.2	5.4	5.0	5.0	4.9
U.Q	5.5	5.2	5.4	5.2	4.7	4.4	6.0	8.0	8.6	10.2	10.6	11.0	11.1	11.1	10.6	9.8	9.6	9.4	8.8	8.4	6.4	6.3	5.9	5.6
L.Q	4.4	4.4	4.4	4.3	4.0	3.8	4.8	6.9	8.0	8.6	9.0	9.4	9.5	9.1	9.0	8.5	8.4	7.7	6.6	5.2	4.8	4.5	4.5	4.4
Q.R	1.2	0.8	1.0	0.9	0.7	0.6	1.2	1.1	0.6	1.6	1.6	1.6	1.6	2.0	1.6	1.3	1.2	1.7	2.2	3.2	1.6	1.8	1.4	1.2

foF2

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

The Radio Research Laboratories, Japan

A 1

21

IONOSPHERIC DATA

Mar. 1961 | 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									3.2	L	L	L	L	L	L	L								
2											L	L	L	L	4.5 L	L								
3										L	C	L	L	L	L	L								
4										L	L	L	L	L	L									
5										L	L	L	L	L	L	L								
6										3.8 L	L H	L	L	L	L	L								
7										L	L	L	L	L	L	L								
8									L	L	L	L H	L	L	L	L	L							
9											L	L	L	L	L	L	L							
10										L	L	L	L	4.5 L	L	L								
11									4.0 L	4.2	4.2 L	4.5	4.5 L	4.6 L	4.3	3.9								
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	3.6								
14									L	L	C	C	C	C	C	C								
15									C	C	C	L	L	4.5 L	L	L								
16									L	L	L	L H	L	L	L	L								
17									L	L	L	L	L	L	L	L								
18									L	L	4.3	4.5 L	L	4.4	L H	L								
19									L	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L									
21										A	L	L	L	L	L	L	L							
22										4.0		L	L	L	L	L								
23										L	L	4.7	L	L	L	L	3.5							
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L	L								
26									L	L	L	L	L	L	L	L								
27										L	L	L	L	L	L	L								
28										L	L	L	L	C	L	L	C							
29									L	L	L	L	L	C	C	C	C							
30										L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L	L							
No.									2	3	2	3	1	4	2	2	1							
Median									3.6	4.0	4.2	4.5	4.5	4.5	4.4	3.8	3.5							

foF1

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

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

Mar. 1961 | foE | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								2.00	2.65	3.00	3.25	3.40	3.50	3.45	3.25	3.00	2.50	B						
2								2.00	2.65^{H}	3.05	I 3.25^{R}	I 3.45^{R}	3.50	3.45	3.30	3.00	I 2.50^{A}	B						
3								2.05	2.65	3.00	I 3.15^{C}	3.30	3.45	3.45	3.25	3.00	2.55	B						
4								2.05	2.75^{H}	3.00	3.15	3.30	I 3.45^{R}	3.40	3.20	C	C	C						
5								2.15	2.65	3.00	3.15	3.25	3.45	I 3.35^{R}	3.20	2.95	2.50	B						
6								2.10^{H}	2.70^{H}	3.05	3.20	3.35	3.45	3.35	3.15	2.95	2.50	B						
7								2.10^{H}	2.75^{H}	3.05^{H}	3.10	3.25	3.30	3.35	3.20	3.00	2.55	1.85						
8								2.00	2.60	3.05	3.15	3.30	3.45	3.35	3.20	2.95	2.50	1.80						
9								2.00	2.70	3.05	3.15	R	A	A	3.20	3.00	2.50	B						
10								2.00	2.60	3.05	R	R	R	A	A	A	A	A						
11								1.95	2.55	2.95	3.10	3.25	3.35	3.20	3.05	2.95	2.55	A						
12								2.05	I 2.50^{A}	2.95	3.10	3.30	3.25	3.25	3.15	2.95	2.50	B						
13								2.15	I 2.70^{R}	A	A	A	I 3.30^{R}	3.25	I 3.10^{A}	3.00	2.50	C						
14								2.20	2.80	3.05	C	C	C	C	C	C	C	C						
15								C	C	C	C	A	A	A	A	2.95	2.60	1.95						
16								2.25	2.75	I 3.00^{R}	3.15	I 3.20^{R}	3.25	3.20	3.20	3.00	2.55	2.00						
17								2.25	2.85	R	A	3.30	3.45	3.45	3.25	3.10	2.60	2.00						
18							E	2.30	I 2.80^{A}	A	A	3.45	3.50	3.40^{R}	3.30	I 3.00^{A}	2.55	A						
19								2.35	R	A	A	3.45	3.50	3.40	I 3.30^{A}	3.05	2.75	A						
20							1.75	2.45	2.85	3.10	3.25	3.45	3.50	3.40	3.30	3.05	2.70	2.05						
21							B	2.40	2.90	A	A	A	I 3.40^{R}	3.30	3.15	3.05	2.65	2.00						
22							B	2.25	2.80	3.10	3.20	I 3.30^{R}	3.40	I 3.30^{R}	3.25	3.10	2.70	2.05						
23							B	2.40	2.80	3.05	3.15	I 3.30^{R}	I 3.45^{R}	3.45	I 3.30^{R}	3.10	2.65	B						
24								2.35	2.90	3.05	I 3.25^{R}	I 3.40^{A}	I 3.45^{A}	I 3.50^{R}	3.45	3.20	I 2.80^{A}	A						
25							B	2.55	2.95	I 3.20^{R}	3.40	3.60	3.55	3.55	3.50	3.15	I 2.80^{R}	A						
26							1.90	2.60	3.00^{H}	3.10	3.45	I 3.55^{R}	I 3.55^{R}	I 3.50^{A}	3.35	3.10	2.75	2.20						
27							B	2.55	3.05	3.20	R	A	I 3.55^{A}	I 3.55^{A}	I 3.50^{R}	3.25	2.90	2.20						
28							1.80	2.60	I 3.00^{C}	3.25	3.35	R	R	C	I 3.50$^{R}_{S}$	3.10	I 2.70^{C}	2.30						
29							1.95	2.55	3.00	R	A	A	A	I 3.55^{C}	I 3.50^{C}	C	C	C						
30							1.70	2.60	I 3.00^{S}	I 3.30^{R}	A	A	A	A	R	A	A	2.05						
31								2.50	I 3.00^{R}	I 3.15^{R}	I 3.40^{A}	3.55	I 3.55^{A}	I 3.50^{A}	3.40	3.10	2.70	2.20						
No.							6	30	29	24	20	21	24	25	27	26	26	13						
Median							1.80	2.25	2.80	3.05	3.20	3.30	3.45	3.40	3.25	3.00	2.60	2.05						

foE

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

The Radio Research Laboratories, Japan

A 3

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IONOSPHERIC DATA

Mar. 1961 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	G	G	G	G	G	G	G	2.4[q]	G	G	G	E	E	E	E	E	E
2	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	2.5	2.1	E	E	E	E	E	E
3	E	E	E	E	E	E	2.2	G	G	G	C	G	G	G	G	G	G	G	E	E	E	E	E	E
4	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	C	C	C	C	C	C	C	C	C
5	C	E	E	E	E	E	E	G	G	G	G	G	2.5[q]	2.5[q]	G	G	G	G	E	E	E	E	E	E
6	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
7	E	E	E	E	E	E	E	G	G	G	3.5	G	G	G	G	G	G	J 2.3[Y]	E	E	E	E	E	E
8	E	E	E	E	E	E	E	G	G	G	G	3.5	G	G	G	G	G	G	E	E	E	E	E	E
9	E	E	E	E	E	E	E	G	G	G	3.7	3.8	3.6	3.5	3.4	2.5[q]	G	G	E	E	E	E	E	E
10	E	E	E	E	E	2.0	2.2	G	G	3.5	3.4	3.7	3.7	3.8	3.1	2.6[q]	J 3.5	J 2.3	E	E	E	E	E	E
11	2.2	J 2.3	2.5	J 1.9	J 2.4	J 1.8	E	2.5	G	3.5	3.5	3.9	4.4	4.0	4.0	G	3.5	J 3.7	J 5.0	J 8.3[Y]	J 13.7[Y]	J 8.3	J 6.1	J 5.0
12	J 2.8	J 2.0	E	E	E	E	2.2	J 2.1	3.1	G	3.5	3.9	4.4	3.9	G	G	G	G	E	E	E	E	2.2	2.2
13	2.3	E	J 1.8	E	E	J 1.8	E	G	G	J 3.2	3.4	3.4	G	G	3.5	G	3.1	C	2.2	J 1.8	E	E	E	E
14	E	E	E	E	E	E	E	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	J 4.9	3.5	3.5	3.2	G	G	G	2.2	E	E	J 6.2[Y]	J 6.9[Y]	E
16	J 2.4	J 2.0	J 3.3	J 2.3	J 2.4	2.0	E	G	G	G	2.7[q]	G	G	G	G	G	G	G	E	E	E	E	J 2.7	J 1.8
17	2.2	J 2.1	J 2.3	2.2	J 1.9	2.0	2.5	G	G	3.7	3.8	3.2[q]	3.5	2.3[q]	G	G	G	G	2.0	2.3	E	E	E	E
18	E	2.1	2.3	E	E	E	2.1	2.7	3.5	3.3	J 3.5	G	2.9[q]	G	2.5[q]	J 3.5	J 3.0	J 2.6	J 2.5	J 1.8	E	E	E	E
19	E	E	E	E	E	E	E	G	3.2	3.4	J 3.8	G	3.6	G	3.8	2.8[q]	G	3.7	J 4.4	J 2.0	E	E	E	E
20	2.0	2.3	E	E	E	E	G	3.0	3.4	3.7	3.5	G	G	G	3.0[q]	2.4[q]	G	G	E	J 1.8	2.0	2.3	E	J 2.3
21	J 2.0	E	J 1.8	J 2.4	J 3.9[Y]	E	J 2.3	2.8	G	J 4.5	4.2	3.3	G	G	G	G	2.6[q]	2.5	1.9	E	E	E	E	E
22	E	E	E	E	E	E	G	G	G	G	G	4.0	3.1[q]	3.2[q]	3.5	G	3.6	2.9	J 3.5	J 3.8	J 2.4	E	E	E
23	E	E	E	E	E	E	G	2.1[q]	G	G	G	G	G	3.2[q]	2.6[q]	G	G	B	J 2.9	E	C	E	E	E
24	E	E	E	E	E	E	2.1	3.0	3.2	3.5	3.5	4.2	3.7	G	G	3.5	2.9	J 2.9	J 1.9	E	E	E	E	E
25	E	E	E	E	E	E	G	G	3.1	3.4	G	G	G	G	G	2.6[q]	2.2[q]	J 2.8	J 2.3	J 1.9	J 1.9	E	E	E
26	E	E	E	E	E	E	G	2.9	G	3.5	G	3.0[q]	3.1[q]	3.6	2.6[q]	2.4[q]	2.0[q]	2.5	E	E	E	E	2.1	E
27	E	E	E	E	E	E	G	3.1	3.3	4.2	J 6.4	4.1	3.7	J 7.0	2.8[q]	G	G	2.5	E	E	E	E	E	E
28	E	E	E	E	E	E	G	3.0	C	4.0	3.7	3.6	3.7	C	3.0[q]	2.8[q]	C	1.8[q]	2.2	2.2	J 1.9	E	2.2	E
29	2.2	E	E	J 2.3[Y]	E	2.3	2.5	G	J 2.8[q]	3.7	J 4.0	J 5.3	J 5.3	C	C	C	C	C	C	C	2.1	E	E	E
30	E	E	E	E	E	E	G	G	S	G	3.5	3.6	3.9	3.6	3.6	3.5	3.0	J 2.3	J 2.3	J 2.9	J 1.8	2.1	E	E
31	E	E	E	E	E	2.1	G	G	3.5	G	3.4	3.1[q]	3.6	J 4.3	2.7[q]	J 2.9[q]	2.1[q]	J 2.7	J 2.4	J 1.8	E	E	E	E
No.	29	30	30	30	30	30	30	30	28	30	28	30	30	28	29	28	27	26	28	28	28	29	29	29
Median	E	E	E	E	E	E	G	G	G	G	3.4	G	G	G	G	G	G	2.2	E	E	E	E	E	E
U.Q	2.0	E	E	E	E	E	2.1	2.5	3.1	3.5	3.6	3.8	3.7	3.6	3.2	2.6	2.9	2.6	2.3	1.8	E	E	E	E
L.Q	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R																								

foEs

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 1961 | f_bE_s | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1															2.0q									
2																	u2.5B	2.1						
3							E				C													
4																C	C	C	C	C	C	C	C	C
5	C												2.0q	2.5q										
6																								
7											3.5							E						
8												3.5												
9											3.6	3.7	3.5	3.5	3.0	2.4q								
10						E	E			3.5	3.3	3.5	3.7	3.5	u3.1B	2.2q	3.4	1.8						
11	E	E	E	E	2.0	E		2.4		3.5	3.5	3.8	4.4	3.8	3.6		3.1	3.7	3.0	E	E	A	A	A
12	2.5	E					E	G	3.0		3.5	3.9	4.3	3.9									E	E
13	E		E			E				3.2	3.4	u3.4B			3.4		2.1	C	E	E				
14											C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	3.6	u3.5B	3.5	u3.2B				E			2.0	3.5	
16	E	E	E	E	E	E					2.7q												2.0	E
17	E	E	E	E	E	E	1.8			3.6	3.5	3.1q	2.8	2.3q					E	E				
18		E	E				1.9	2.7	3.0	3.3	3.5		2.7q		2.1q	3.2	2.8	2.1	1.8	E				
19									3.0	3.4	3.5		3.0		3.4	2.0q		3.0	4.3	E				
20	E	E						3.0	3.4	3.4	3.1				3.0q	2.1q				E	E	E		2.0
21	E		E	E	E		1.9	2.6		u4.5B	4.0	u3.3B					1.9q	2.3	1.7					
22												4.0	3.0q	u3.2Rq	3.5		3.3	2.9	3.4	3.8	2.1			
23								2.1q						3.2q	2.6q			B	2.2		C			
24							2.0	2.7	3.2	3.5	u3.5B	4.0	3.7			2.7	2.9	2.5	1.9					
25									3.1	u3.4B						2.6q	2.1q	2.4	1.9	E	E			
26								2.9		3.5		E3.0Rq	E3.1Rq	3.6	2.6q	2.0q	2.0q	2.4					E	
27								3.0	3.3	4.0	4.0	4.0	3.7	4.4	E2.8Rq			2.5						
28								2.9	C	3.6	3.7	3.6	3.7	C	E3.0Rsq	2.8q	C	1.8q	2.0	E	E		E	
29	E			E		E	G		2.8q	3.7	3.9	4.6	3.9	C	C	C	C	C	C	C	E			
30									S		u3.5B	u3.6B	3.6	3.6	3.6	3.5	2.9	1.9	1.8	2.5	E	E		
31						E			3.1		u3.4B	3.0q	u3.6B	4.0	2.7q	2.6q	1.8q	2.0	1.7	E				
No.	8	6	6	5	4	7	8	10	9	14	18	17	17	13	16	11	12	15	14	11	7	4	6	4
Median	E	E	E	E	E	E	G	2.7	3.1	3.5	3.5	3.6	3.6	3.5	3.0	2.6	2.6	2.3	1.8	E	E	E	E	E

f_bE_s

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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	E	E	E	E	E	E	E	1.75	1.70	1.75	1.70	1.95	1.90	1.70	1.70	1.95	1.70	1.95	E	E	E	E	E	E
2	E	E	E	E	E	E	E	1.75	1.70	1.80	1.90	1.95	1.90	1.95	1.85	1.75	1.65	1.70	E	E	E	E	E	E
3	E	E	E	E	E	E	E	1.70	1.70	1.90	I 1.80 C	1.75	2.00	2.00	1.70	1.80	1.80	2.00	E	E	E	E	E	E
4	E	E	E	E	E	E	E	1.75	1.80	1.90	2.00	2.00	1.80	1.80	1.80	C	C	C	C	C	C	C	C	C
5	C	E	E	E	E	E	E	1.75	1.80	1.70	1.80	2.00	1.70	1.70	2.00	1.75	1.70	1.80	E	E	E	E	E	E
6	E	E	E	E	E	E	E	1.65	1.80	1.75	1.75	1.90	2.00	1.80	1.75	1.80	1.65	1.75	E	E	E	E	E	E
7	E	E	E	E	E	E	E	1.65	1.75	1.75	1.80	2.00	1.80	1.70	1.80	1.75	1.70	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	1.70	1.75	1.65	1.65	1.85	2.00	1.90	1.90	1.80	1.80	1.65	E	E	E	E	E	E
9	E	E	E	E	E	E	E	1.70	1.70	1.70	1.90	1.90	1.85	1.75	1.90	1.70	1.70	1.70	E	E	E	E	E	E
10	E	E	E	E	E	E	E	1.65	1.70	1.70	1.75	1.80	1.70	1.65	1.75	1.75	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	1.65	1.70	1.75	1.85	1.75	1.85	2.00	1.85	1.70	1.70	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	1.65	1.70	2.00	1.90	1.95	2.00	1.95	2.00	1.70	1.75	E	E	E	E	E	E
13	E	E	E	E	E	E	E	1.65	1.75	1.70	1.75	1.90	1.75	1.75	1.70	1.75	E	C	E	E	E	E	E	E
14	E	E	E	E	E	E	E	1.70	1.75	1.75	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	1.90	2.00	1.80	1.70	1.70	1.70	1.65	E	E	E	E	E	E
16	E	E	E	E	E	E	E	1.65	1.75	1.70	1.80	1.70	1.70	1.75	1.75	1.70	1.70	1.65	E	E	E	E	E	E
17	E	E	E	E	E	E	1.65	1.70	1.75	1.70	1.75	1.80	1.70	1.85	1.75	1.75	1.65	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	1.70	1.75	1.75	1.80	1.80	1.95	1.70	1.80	1.70	1.65	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	1.65	1.70	1.70	2.00	1.95	1.80	1.70	1.75	1.70	1.70	1.65	E	E	E	E	E	E
20	E	E	E	E	E	E	E	1.70	1.70	1.80	1.80	1.70	1.90	1.80	2.00	1.75	1.65	1.65	E	E	E	E	E	E
21	E	E	E	E	E	E	1.70	1.70	1.80	1.70	1.80	1.75	2.00	1.95	1.65	1.90	1.70	1.65	E	E	E	E	E	E
22	E	E	E	E	E	E	1.70	1.70	1.70	1.75	1.95	2.00	2.05	1.85	1.75	1.90	1.70	1.70	E	E	E	E	E	E
23	E	E	E	E	E	E	1.70	1.70	1.70	1.75	2.00	2.60	2.00	2.05	1.95	1.90	1.70	2.20	E	E	E	E	E	E
24	E	E	E	E	E	E	E	1.70	1.80	1.75	1.90	2.50	2.05	2.05	1.75	1.70	1.70	E	E	E	E	E	E	E
25	E	E	E	E	E	E	2.00	1.80	1.70	2.00	2.00	2.00	2.00	2.00	2.00	1.80	1.80	1.65	E	E	E	E	E	E
26	E	E	E	E	E	E	1.65	1.70	1.65	1.70	2.00	2.00	1.95	2.00	2.00	1.70	1.65	1.70	E	E	E	E	E	E
27	E	E	E	E	E	E	1.75	1.65	1.70	1.75	1.80	2.00	1.95	2.00	2.10	1.70	1.75	1.70	E	E	E	E	E	E
28	E	E	E	E	E	E	1.65	1.70	I 1.75 C	1.70	1.90	1.90	2.00	I 2.00 C	1.70	1.70	I 1.70 C	E	E	E	E	E	E	E
29	E	E	E	E	E	E	1.65	1.70	1.75	1.75	1.75	1.80	1.85	I 2.10 C	I 1.80 C	C	C	C	C	C	E	E	E	E
30	E	E	E	E	E	E	E	1.65	E 3.40 S	1.80	1.90	2.00	2.00	2.00	1.80	1.70	1.65	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	1.65	1.75	1.75	1.75	1.80	2.00	2.00	1.80	1.70	1.65	E	E	E	E	E	E	E
No.	29	30	30	30	30	30	30	30	29	30	29	30	30	30	30	28	28	27	28	28	29	29	29	29
Median	E	E	E	E	E	E	E	1.70	1.75	1.75	1.80	1.90	1.95	1.90	1.80	1.75	1.70	1.65	E	E	E	E	E	E

f-min

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

IONOSPHERIC DATA

Mar. 1961 | 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	290	290	300	295	295	285	305	350	340	330	320	320	330	325	320	320	325	340	325	300	295	290S	270	275
2	270	290	300	335	300	305	300	330	350	330	340	320	320	310	315	330	335	345	315	285	300	280	285	280
3	290	285	290	285	290	300	320	350	340	340	[325C	320R	320	330	320	330	330	330	340	295	290	285S	300	290
4	285	280	280	285	285	300	295	340	340	340	330	320	320R	330	335	C	C	C	C	C	C	C	C	C
5	C	260	280	300	310	320	320	350	350	340	345	340	320	320	330	330	330	345	340	330	290	290	280	280
6	290	295	300	280	270	300	330	340	340	310	320	310	310	320	310	320	315S	320	310	310	315	290	265	290
7	280	255	290	360	295	250	290	330	330	310	320	340	310	335	340	340	340	330	330	295	300	285S	290	295
8	300	290	290	290	295	290	320	345	320	330	325	320	320	325	330	335	340	340	325	315	310	290	270	270F
9	280	295	290	300	295	295	315	360	350	325	310	305	325	320	320	325R	345	350	330	310	295	300	295	[270F
10	[275E	270	275F	275	285	300	315	345	335	325	330	300	305	320	320	315	320	335	340	250	R F	F	F	F
11	F	F	290F	F	F	F	F	F	310	320	310	285	325	320	335	325	355	355	330	330R	310R	A	A	A
12	RS	RS	F	300F	290	[300F	305S	350	350	345	320	320	320	325	335	340	350	355	330	315	310	290	280	300
13	305S	290F	285F	285F	305F	295F	315F	350	350	330	335	320	330	315	325	330	345	[340C	340	305	280	295	315	300
14	290	[280E	285	280	325	310	325	355	330	330	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	325	320H	320	335	335	345	340	340	340	300	[275A	280	[280F
16	285	300	280	300	290	275	300	330	300	320	330	330	330	325	320	340	340	335	335	320	320	290	295	270
17	275	275	305	305	295	305	345	350	345	340	325	320	325	325	330	330	330	340	325	310	305	305	305	290
18	285	285	280	305	305	285	325	340	335	325	325	310	310	320	325	340	330	340	350	290	300	295	285	285
19	280	275R	270	270	280	260	310	330	340	330	295	320	320	315	330	320	320	320	330	340	280	270	270	270
20	265F	255	300	320	260	270	315	330	310	320R	320	305	315	310	325	310	320	330	325R	340	280	280	280R	270
21	275	270	265	285	295	295	340	340	325	330	310	305	310	315	310	320R	325	325	340	320	300	295	280	270
22	275	265	260	290	290	285	330	365	335	330	315	305	300	310	315	310	320	330	340	320	280	280	280	265R
23	265R	270	280	310	310	270	315	345	345	325	295	300	315	315	305	310	320	315	345	295	[275C	280	285	285
24	260	265	275	300	300	310	325	335	325	310	310	300	300	300	315	310	325	330	320	300	300R	300	290	290
25	295	285	285	270	280	280	350	330	325R	310	305	305	300	310	310	305	315	320	320	310	290	290	300	275
26	265	280	300	310	300	290	335	355	315	325	305	305	300	300	290	300R	305	310	335	310	295	290	290	280
27	280	270	285	290	300	310	345	355	325	305	290	290	310	300	300	300	305	300	U320R	320	300	290	280	275
28	265	265	285	245	260	270	320	330	[340C	295	310	300	295	[300C	300	300	[305C	310R	310	340	290	270	260	270
29	275	270	275	295	280	280	330	350	300	320	295	310	295	[300C	[305C	C	C	C	C	C	280	280	280	280
30	280	290	280	290	290F	290F	310F	330	315	310	310	290	300	290	290	300	300	315R	325	295	275	270	270	280
31	275	280F	285V	300	295	300	330	335	310	U305R	300	310	295	305	300	305	320	320	325	300	290	275	280	280
No.	27	28	29	29	29	29	29	29	30	30	29	30	30	30	30	28	28	28	28	28	28	27	27	27
Median	280	280	285	295	295	295	320	345	335	325	325	310	315	320	320	320	325	330	330	310	295	290	280	280

M(3000)F2 | Sweep 1.60 Mc to 20.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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									4.40	L	L	L	L	L	L	L								
2											L	L	L	L	3.80L	L								
3										L	C	L	L	L	L	L								
4										L	L	L	L	L	L									
5										L	L	L	L	L	L	L								
6										4.00L	L H	L	L	L	L	L								
7										L	L	L	L	L	L	L								
8									L	L	L	L H	L	L	L	L	L							
9											L	L	L	L	L	L	L							
10										L	L	L	L	3.75L	L	L								
11									3.50L	3.60	3.80L	3.55	3.60A	3.65L	3.70	3.90								
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	4.10								
14									L	L	C	C	C	C	C	C								
15									C	C	C	L	L	3.95L	L	L								
16									L	L	L	L H	L	L	L	L								
17									L	L	L	L	L	L	L	L								
18									L	L	4.30	4.05L	L	4.05	L H	L								
19									L	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L									
21										A	L	L	L	L	L	L	L							
22										4.40		L	L	L	L	L								
23										L	L	3.90	L	L	L	L	4.00							
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L	L								
26									L	L	L	L	L	L	L	L								
27										L	L	L	L	L	L	L								
28										L	L	L	L	C	L	L	C							
29									L	L	L	L	L	C	C	C	C							
30										L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L	L							
No.									2	3	2	3	1	4	2	2	1							
Median									3.95	4.00	4.05	3.90	U 3.60	3.85	3.75	4.00	4.00							

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

The Radio Research Laboratories, Japan.

A 8

IONOSPHERIC DATA

Mar. 1961 | 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									235	260	255	255	255	255	260	250								
2											250	255	260	255	285	255								
3										245	250C	255	255	265	255	255								
4										250	260	255	260	255	255									
5										250	250	245	280	270	260	260								
6										245	255	260	285	260	260	255								
7										255	255	250	250	260	250	250								
8									245	245	250	275	270	260	255	250	245							
9											250L	270	270	260	255	250	245							
10										250	250	280	290	270	270	250								
11									300	290	300	350	300	305	295	270								
12										250	250L	265	285	260	260	250								
13										250L	255	250	255	255	260	250								
14									245	255	C	C	C	C	C	C								
15									C	C	C	260	245H	275	255	250								
16									255L	260	250	250	245	255	280	250								
17									245	245	255	255	250	260	260	255								
18									250	255	250	275	250	260	255	255								
19									255	255	305	260	260	270	255	260								
20									260	260	265	275	255	265	255									
21										255	250	290	290	260	260	255	250							
22										245		280L	280L	290	285	260								
23										245	250	300	280	275	265	255	260							
24										260	250	255	265	265	255	260								
25										260	255	290	280	285	270	260								
26									245	250	250	270L	285	280	260L	285								
27										245	245	275L	275	275	290L	260								
28										245	290	300	300	290C	290	260	C							
29									245L	250	250L	270	285	280C	265C	C	C							
30										250L	265	280L	290	290	290	260								
31										275	275L	265	275	290	270	255	255							
No.									11	28	28	30	30	30	30	27	5							
Median									245	250	250	270	270	265	260	255	250							

h'F2

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

IONOSPHERIC DATA

Mar. 1961 | 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	255	245	245	255	280	245	245	200	205	245	245	225	230	220	235	245	235	210	240	250	275	305	305
2	330	295	255	220	240	270	265	245	245	245	240	220	215	245	210	245	245	225	230	235	240	265	300	295
3	285	270	275	265	285	270	245	225	240	200	I 200C	235	230	205	235	240	245	220	210	230	250	260	255	265
4	290	290	275	260	290	250	250	240	245	240	210	220	210	220	205	C	C	C	C	C	C	C	C	C
5	C	340	295	260	245	260	245	240	245	215	200	200	205	225	240	240	230H	220	205	205	265	295	290	290
6	290	290	265	285	300	280	235	235H	240	200	205H	230	245	240	210	245	245	245	240	245	240	255	305	290
7	280	325	290	235	210	330	280	245	245	245	220	240	240	205	240	235	215H	235	225	240	255	280	270	270
8	260	280	280	270	255	275	245	235	210	205	210	215	245	220	240	240	240	230	215	220	215	240	300	290
9	285	275	280	260	260	260	245	215	205H	245	235	235	210	245	225	240	230	220	220	220	240	245	255	290
10	300	305	310	295	245	245	215	230	245	240	205	205	200	235	220	230	245	240	215	325	310	345F	290F	245
11	285	275	245	340	335	295	270	245	255	250	225	240	I 245A	245	230	210	250	240	240A	235	250	A	A	A
12	A	315	290	255	255	260	255	245	230	215	220	245	I 240A	235A	220	210	245	230	240	220	225	260	255	245
13	245	270	295	280	245	245	240	240	245	210	200	200	230	210	225	205	245	I 240C	220	210	255	260	245	245
14	290	295	295	290	240	205	245	240	205	205	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	225	220	205	220	215	240	245	240	205	210	280A	I 300A	295
16	290	265	260	245	270	300	255	245	210	220	205	200H	200	220	225	245	240	245	235	210	235	255	285A	295
17	300	300	260	245	275	250	245	245	220	210	205	205	210	240	210	245	245	245	245	245	245	245	240	245
18	265	290	275	245	250	255	245	245	235	220	200	195	200	200	205H	245	245	245	230	235	260	250	255	260
19	275	290	300	305	295	325	260	240	230	245	205	205	200	210	220	245	250	245	240	210	235	290	295	310
20	305	290	245	245	270	255	240	245	245	230	215	200	200	210	235	240	250	245	240	210	240	285	290	295
21	295	290	260	255	255	265	245	245	205H	I 225A	245	205	205	215	240	220	240	245	230	220	245	245	255	310
22	305	315	305	280	250	260	245	240	215	195	250	250	245	245	245	245	245	245	230	245A	260A	255	295	295
23	305	300	290	245	210	250	240	245	245	210	220	220	250	245	240	200	205	245	230	200	I 270C	270	280	290
24	315	315	295	245	240	245	235	245	240	210	210	240	205	240	245	240	245H	245	245	245	250	255	255	275
25	255	270	270	280	275	270	245	245	210H	220	200	200	200	205	245	240	245	245	245	230	245	245	255	285
26	305	290	250	240	240	250	240	245	220	220	200	205	240	245	245	240	245	250	230	205	245	260	245	290
27	290	300	295	255	230	240	235	235	225	230	205	205	210	I 225A	240	245	245H	255	245	215	240	245	275	290
28	295	295	265	350	345	295	245	245	I 245C	215	205	200	215	I 240C	210S	245	I 245C	250	245	205	225	290	310	295
29	290	290	295	245	255	255	245	240	215	205	215	I 210A	220	I 220C	I 210C	C	C	C	C	C	250	280	270	265
30	285	260	260	255	245	255	245	240	245	210	225	200	205	215	205	250	245	245	240	240A	255	290	295	275
31	270	275	255	245	235	255	240	245	245	220	205	240	235	245	240	230	245	245	245	240	245	255	265	275
No.	28	30	30	30	30	30	30	30	30	30	29	30	30	30	30	28	28	28	28	28	29	28	28	28
Median	290	290	275	255	250	260	245	245	240	220	210	210	215	225	225	240	245	245	230	225	245	260	280	290

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | R'Es | 135° E Mean Time (G.M.T. + 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

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

R'Es

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

IONOSPHERIC DATA

Mar. 1961

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															l									
2																	l	h						
3							f																	
4													l	l										
5																								
6											h							l						
7												h												
8											h	C	l	l	l2	l2								
9						f	f			h	h	c2	c	l2	l2	l	l3	l						
10																								
11	f	f2	f2	f4	f3	f2		C		h	h	h	h2	h2	h		h2	h3l2	f3	f	f	f3	f3	f4
12	f5	f2					f	l	l2		h	h	h	h									f	f
13	f		f			f				l	l2	l2			l		l2h		f	f				
14																								
15												l2	l2	l2	l2				f			f2	f2	
16	f	f	f2	f2	f2	f					l												f2	f2
17	f2	f2	f	f2	f	f	h			c2	l	l2	l	l					f	f				
18		f	f				h2	h2l	l2	l	l		l		l	l2	h l	l	f	f				
19									c	l2	l		l		l2	l		c3l	f4	f				
20	f	f						h2	h2	h	l				l2	l				f	f	f	f		f2
21	f2		f2	f2	f2		l	h		l2	l2	l					l	h2	f					
22												h	l	cl	h		h	h2	f4	f3	f2			
23								l						l	l				f2					
24							h	h	h	h	c	h l	l			l2	l	l	f					
25									h	h						l	l	l2	f2	f	f			
26								h		h2		l	l	l	l	l	l	h					f	
27								h	h	c	c	l2	l	l2	l			h2						
28								h2		h	h	c	c		l	l2		l	f2	f	f		f	
29	f2			f2		f	l		l2	h2	l2	l2	l								f2			
30											l	l	l	l	c	l	l	l h	f	f2	f2	f		
31						f			c		l	l	l	l2	l	l2	l	l	f2	f2				
No.																								
Median																								

Types of Es

Sweep 160 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

A12

IONOSPHERIC DATA

Mar. 1961 | 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	4.6 ^{S}	^{u} 4.6 ^{S}	^{I} 4.6 ^{S}	3.7	3.6	^{J} 3.5 ^{S}	4.2	6.7	8.5	8.7	9.6	10.4	10.3	10.3	10.0	10.0	8.7	8.5	6.7	5.1	4.9	^{u} 4.3 ^{S}	4.5	4.5
2	4.3	^{u} 4.4 ^{S}	^{I} 5.2 ^{S}	^{I} 4.4 ^{S}	^{J} 2.9 ^{S}	^{J} 2.9 ^{S}	3.5	6.9	9.0	8.8	8.4	9.1	9.9	9.7	9.9	10.1	9.3	8.1	6.0	5.4	5.2	4.3	4.1	4.3
3	4.4	4.2	4.2	4.1	4.1	4.1	4.6 ^{S}	6.7	8.4	9.4	8.9	9.7	10.9	10.0 ^{S}	9.6	9.4 ^{S}	9.9 ^{S}	^{I} 8.9 ^{C}	6.7	4.6	^{u} 4.4 ^{S}	4.4 ^{S}	4.6	^{I} 4.4 ^{S}
4	4.1	4.0 ^{S}	4.1 ^{S}	^{I} 4.2 ^{S}	^{u} 3.9 ^{S}	4.0 ^{S}	4.2	7.1	9.3	9.7	9.5 ^{S}	10.1	10.8	10.9	10.1	9.3	8.6	8.4	6.2	5.4	C	C	C	C
5	C	C	C	C	C	C	C	C	C	^{J} 9.1 ^{R}	8.4	8.6	8.8	^{J} 9.6 ^{S}	9.3	9.4	9.0 ^{S}	8.6 ^{S}	7.1	3.9	3.6	3.6	3.9	3.8 ^{S}
6	3.8	3.9	4.0	3.8 ^{S}	3.6	3.9	4.4	6.1	8.4	7.6	9.2	9.7	10.5	9.7	10.0	10.2	9.4	8.9	8.5	7.1	5.8	4.6 ^{S}	^{u} 4.8 ^{S}	^{J} 5.3 ^{S}
7	^{u} 5.0 ^{S}	4.9 ^{S}	^{u} 5.1 ^{S}	^{J} 5.8 ^{S}	3.0	3.0	3.9	6.6	8.5	10.5	11.7	11.4	10.2	10.2	9.9	9.1	7.4	6.5	6.6	5.4	4.2	4.3	4.6	^{u} 4.7 ^{S}
8	4.6	4.2	4.3	4.4	4.3	4.2 ^{S}	4.8 ^{S}	6.7	8.2	9.8	10.8	9.7	9.9	10.5	10.1 ^{R}	9.4	8.4	C	C	5.8	4.8	4.3	3.8	^{J} 3.8 ^{S}
9	4.1	4.1	4.1 ^{S}	4.1	4.0	4.2 ^{S}	4.8 ^{S}	6.7	7.0	8.3	9.1	10.9	11.2	12.3	^{J} 11.7 ^{R}	10.7	9.2	7.8 ^{S}	6.3	5.2	4.6	4.2	4.1	3.9
10	4.0	3.9	^{u} 4.0 ^{S}	4.0 ^{S}	4.1	3.6	4.6	6.8	7.5 ^{S}	8.5	9.4 ^{S}	9.3	11.1	11.6	11.5	10.9	9.7 ^{S}	9.1 ^{S}	7.5	5.7	^{D} 7.1 ^{S}	^{D} 7.5 ^{S}	^{J} 9.0 ^{S}	^{D} 8.0 ^{S}
11	^{J} 4.5 ^{S}	^{J} 8.2 ^{S}	6.1	F	F	C	C	C	C	^{u} 8.5 ^{S}	^{J} 7.0 ^{R}	^{J} 8.1 ^{S}	7.8	7.0	7.4 ^{S}	6.6	7.1	6.7	5.8	4.5	3.2	3.3	3.4	3.4
12	3.6	3.6	3.6	3.8	3.4	3.7	4.4	6.6	8.2	7.8	8.4	8.4	8.9	10.4	9.5 ^{S}	8.1	7.9	7.3 ^{S}	6.6	6.3	5.1	5.0	4.5	4.8
13	4.4	4.1	4.1	4.1	4.1	3.6 ^{S}	4.9	7.5 ^{S}	8.3	8.7	8.4	9.0	8.7	8.6	9.3	^{u} 9.6 ^{S}	8.7	8.2	6.8	5.0	4.9	5.0	5.0	4.7
14	^{J} 3.9 ^{S}	4.1	4.2 ^{S}	4.1	4.2	3.2	4.8	6.7	7.8	9.5	10.7	11.2	10.9	11.0 ^{R}	10.7	11.0	10.6	8.4	6.3	4.4	4.8	4.9	4.9	4.6
15	4.6	4.2	4.1	4.0	3.9 ^{S}	4.1	4.8	7.4 ^{S}	9.1 ^{S}	10.2	9.6	10.9	10.4	9.3	9.3	8.3	8.6	8.6	8.2	6.0	4.6	4.5	4.6	4.6 ^{S}
16	4.4	4.8	4.6 ^{S}	4.0	3.4	3.2	4.2	C	C	C	11.5	^{J} 10.8 ^{S}	^{u} 8.3 ^{S}	8.2	9.4	9.5 ^{S}	8.4	8.0	7.4	6.0	5.2	4.1	4.3	4.2
17	4.3	4.4	4.5	4.5	4.0	4.2	5.8	7.6	8.7	8.5	9.5	10.4	10.5	9.9 ^{S}	9.0	8.7	8.6	8.2	6.7	6.8	6.2	5.9	5.5	4.5
18	3.8	4.0	4.0	4.0	3.5	3.6	5.5	7.5 ^{S}	^{J} 9.1 ^{S}	8.9	^{u} 9.0 ^{R}	10.3	10.9	10.3	9.4	8.7	8.1	7.9	7.7	5.6	5.1	5.2 ^{S}	5.2	5.1
19	4.9 ^{S}	4.6	4.4	^{u} 4.5 ^{S}	4.4	4.2 ^{S}	5.1	7.9	8.3	8.8	10.0	12.3	11.7	10.5	9.5	^{I} 9.2 ^{S}	^{I} 9.0 ^{R}	^{I} 9.2 ^{R}	^{u} 9.0 ^{S}	6.0	4.4	4.5	4.6	^{u} 4.5 ^{S}
20	4.4	4.4	4.7 ^{S}	4.2	3.3	3.5	5.2	7.0 ^{S}	8.9	11.2	12.6	^{J} 11.9 ^{R}	12.4	12.4	11.3	9.2	8.9 ^{S}	^{J} 9.8 ^{S}	10.5	7.5	4.6 ^{H}	^{u} 4.5 ^{S}	^{J} 5.1 ^{S}	4.9 ^{S}
21	4.8 ^{S}	4.9	4.6 ^{S}	4.5	4.5	4.0	6.2	7.5 ^{S}	8.4	9.5	11.1	11.1	11.6	12.9	12.1	10.5	^{I} 9.5 ^{R}	8.6	9.1	6.8	5.0	4.8	4.6	4.4
22	4.5	4.5	4.5	4.6	4.4	4.2	5.6	7.3	8.6	8.3	9.0	10.3	11.2	11.2	11.1	11.0	10.4	10.1 ^{S}	8.4	5.6	5.1	5.0	4.6	4.6
23	4.6	4.8 ^{S}	^{u} 4.6 ^{S}	^{J} 5.2 ^{S}	3.8	3.0	5.4	7.6	8.6	8.8	9.4	9.8	11.7	11.9	10.8	10.4	10.7	11.1	9.2	5.2	5.1	5.2	5.0	5.0
24	4.7	4.6	4.7 ^{S}	^{u} 5.2 ^{S}	4.0	3.5 ^{S}	^{J} 5.4 ^{R}	7.4	10.0	^{J} 10.3 ^{S}	10.7	10.7	10.9	11.0	10.4	9.3	9.1	9.3 ^{S}	8.9	7.7	7.0	6.7	6.2	6.2 ^{S}
25	6.1	^{u} 5.6 ^{S}	^{J} 5.3 ^{S}	5.2 ^{S}	^{u} 4.9 ^{S}	^{I} 5.0 ^{S}	6.5	9.3	9.4	10.3	10.9	11.3	12.3	12.0	11.8	10.2	^{J} 9.8 ^{S}	^{J} 9.3 ^{S}	^{J} 9.3 ^{S}	7.6	6.7	6.5	6.1	5.9
26	5.6	5.8	5.8	5.5 ^{S}	4.1	3.8 ^{S}	^{u} 6.0 ^{S}	7.9	8.3	8.7	10.3 ^{S}	11.5	12.6	12.5	11.6	11.4	11.0	11.3	^{I} 10.1 ^{A}	7.8	6.2	6.3	6.1	5.9
27	5.6	5.4 ^{S}	^{u} 5.5 ^{S}	5.6 ^{S}	4.8	4.5	6.7	7.8	8.0	8.4	9.2	11.2	12.4	11.7	11.2	10.8	10.5	11.2	11.3	8.7	6.6	6.4	6.1	6.1
28	6.0	5.8	^{I} 5.5 ^{S}	4.5	^{u} 5.1 ^{S}	^{u} 5.4 ^{S}	7.9	8.6	8.3	9.1	10.4	10.5	12.6	13.2	12.3	11.9	10.9	11.2	11.7	8.2	5.7	5.5	^{u} 5.4 ^{S}	5.8
29	5.9	5.6	^{I} 5.6 ^{S}	^{u} 5.4 ^{S}	4.6	4.8	6.9	8.0 ^{S}	8.2	10.2	10.9	12.1	11.8	11.2	11.0	10.9	11.0	10.4	9.1	7.2	6.6	6.7	6.8	7.0
30	6.5 ^{S}	6.5 ^{S}	6.2	5.7	5.0 ^{S}	5.1	6.6	8.4	8.4	9.3	10.7	11.0	12.1	12.0	11.5	11.4	10.4	10.2 ^{S}	9.0	6.8	6.5	6.5	6.5	6.7 ^{S}
31	6.3	6.6	6.5	6.3 ^{S}	5.1 ^{S}	4.5	5.7	7.8	8.7	10.5	11.0	12.3	12.8	12.5	11.8	11.6	10.6	10.1	^{u} 9.4 ^{S}	7.4	7.0	6.8	6.9	6.6
No.	30	30	30	29	29	29	29	28	28	30	31	31	31	31	31	31	31	30	30	31	30	30	30	30
Median	4.6	4.6	4.6	4.4	4.1	4.0	5.1	7.4	8.4	9.0	9.6	10.5	10.9	10.9	10.1	10.0	9.2	8.8	8.0	6.0	5.1	5.0	4.8	4.7
U.Q.	5.0	5.4	5.3	5.2	4.4	4.2	5.9	7.8	8.8	9.8	10.8	11.2	11.8	12.0	11.5	10.9	10.4	10.1	9.1	7.2	6.2	6.3	6.1	5.9
L.Q.	4.3	4.1	4.1	4.0	3.6	3.5	4.5	6.7	8.2	8.5	9.0	9.7	10.2	9.9	9.5	9.2	8.6	8.2	6.7	5.2	4.6	4.3	4.5	4.4
Q.R.	0.7	1.3	1.2	1.2	0.8	0.7	1.4	1.1	0.6	1.3	1.8	1.5	1.6	1.1	2.0	1.7	1.8	1.9	2.4	2.0	1.6	2.0	1.6	1.5

foF2

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

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

Mar. 1961 | 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	3.8	L	L	A	L	L								
2											L	L	L	L	L	L								
3									L	L	L	L	L		L	L								
4										L	L	L	L	L	L	L	L							
5							C	C	C	L	L	L	L	L	L	L								
6											L	L		L	L	L								
7										L	LH	L	L	L	L	L								
8									L	L	L	L	L	L			L	C						
9									L	L	L	A	L	L			L							
10										L	L	L	4.4	L	L	L	L							
11							C	C	C	"4.2" L	L	L	S	L	L	L	L							
12										L	L	L	"4.9" L	L	L		L							
13										L	L	L	L	L	4.2 L									
14									L	L	L	L	L	"5.0" L	L	L	L							
15									L	L	L	L	4.8 H	5.1 L	L	L	L							
16								C	C	C	L	L	L	"4.4" L	"4.3" L	L	L							
17									L	L	L	L	4.7 L	L	S	A								
18									L	L	L	4.6 L	4.7 L	L	"4.5" L	L	L							
19									L	4.9 L "4.7" L		L	L	L	"4.4" L	L								
20										"4.5" L	L	L	L	L	L									
21									LH	"4.3" L	L	LH	"5.1 H"	"5.0 H"	4.8 L	4.1 L	L							
22								L	L	L	L	L	L	L	L	L								
23									L	L	L	S	"4.8" L	L	L	L	L							
24									L	L	L	LH	L	L	L	L								
25										L	LH	4.7	L	L	L	L								
26										L	LH	L	5.4 L	"5.0" L		L								
27									L	L	L	L	L	L	S	L								
28										L	L	L	"5.3" L	L	L	L								
29										"5.0" L	L	L	L	L	L	L	L							
30									L	L	LH	L	L	L	L	L	L							
31									L	L	L	"5.2" L	LH	L	L	L	L							
No.										5	2	3	9	5	5	1								
Median										"4.5	"4.2	4.7	4.8	"5.0	"4.4	4.1								

foF1

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

IONOSPHERIC DATA

Mar. 1961 | 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	2.80	2.95	3.10	3.50	I3.50^{A}	I3.35^{A}	3.30	3.10	I2.55^{S}	S						
2							S	I2.20^{S}	2.70	2.95	A	A	A	u3.50^{S}	3.30	3.05	I2.70^{S}	S						
3							S	I2.30^{S}	2.60	2.80	I3.20^{A}	I3.50^{A}	3.55	3.40	3.30	3.05	I2.60^{S}	C						
4							S	S	2.65^{S}	u3.15^{S}	I3.30^{A}	u3.50^{R}	R	B	I3.20^{B}	2.90	I2.60^{B}	S						
5							C	C	C	B	I3.20^{S}	I3.40^{B}	3.35	I3.50^{S}	3.25	3.00	I2.50^{B}	S						
6							S	I2.20^{S}	2.70	u2.95^{S}	I3.30^{S}	3.45	3.55	3.35	3.20	3.00	S	S						
7							S	S	u2.55^{S}	I2.85^{S}	3.10	3.35	3.35	I3.40^{A}	I3.25^{R}	2.95	S	S						
8							S	S	2.35	3.10	3.20	3.50	3.50	3.45	3.20	u3.00^{A}	S	C						
9							S	S	2.85	3.05	u3.55^{R}	3.25	A	A	A	A	S	u2.15^{S}						
10							S	u2.35^{S}	2.60	3.00^{S}	3.25	3.30	u3.30^{A}	I3.30^{A}	I3.30^{A}	I2.90^{A}	B	S						
11							C	C	C	2.95	3.40	C	C	S	3.35	2.95	2.55	S						
12							S	2.20	2.55	3.00	3.25	3.30	3.40	3.30	3.20	2.90	S	S						
13							S	I2.30^{S}	2.40	3.05	3.25	3.45	I3.40^{R}	I3.40^{A}	3.35	I3.00^{S}	B	B						
14							B	S	2.70	3.05	I3.35^{B}	I3.35^{R}	3.45	u3.40^{S}	3.30^{R}	3.10	I2.65^{A}	S						
15							S	2.20^{S}	I2.80^{R}	3.10	3.60	R	R	I3.45^{R}	u3.30^{S}	3.05	S	S						
16							S	C	C	C	3.25	I3.20^{S}	u3.30^{R}	u3.40^{S}	3.30	3.05	2.85	I2.10^{S}						
17							S	I2.30^{S}	u2.85^{R}	3.15	3.35	u3.50^{R}	3.55	3.50	3.35	3.10	2.80^{R}	B						
18							u1.80^{S}	u2.30^{S}	2.55	3.05	3.35	3.40^{S}	3.50	3.45^{S}	I3.30^{A}	3.10	A	S						
19							u1.70^{S}	I2.40^{S}	2.90	3.00	A	A	S	A	3.35	3.20	B	B						
20							1.85	I2.40^{S}	2.80	3.10	I3.50^{R}	3.55	3.50	u3.50^{R}	3.30^{S}	I3.10^{S}	I2.80^{S}	S						
21							1.75	I2.30^{S}	I2.70^{A}	3.20	I3.40^{S}	I3.50^{R}	I3.40^{A}	I3.30^{A}	I3.40^{A}	3.15	2.80	2.35						
22							S	S	2.85	3.10	3.30	I3.40^{S}	u3.50^{R}	I3.40^{B}	3.35	3.05	2.80	S						
23							S	S	I3.00^{S}	I3.20^{R}	I3.35^{R}	I3.45^{S}	R	B	3.40	3.10	u2.80^{S}	S						
24							I1.90^{B}	I2.40^{S}	3.05	I3.20^{R}	I3.40^{R}	I3.50^{R}	3.50^{S}	A	S	A	3.05	S						
25							u1.70^{S}	I2.60^{S}	2.70	A	A	R	R	R	3.45	I3.30^{A}	2.60	A						
26							2.00	I2.60^{S}	3.00	3.20	I3.40^{R}	I3.70^{R}	I3.60^{A}	3.60^{R}	3.50	3.20	2.85	I3.30^{B}						
27							S	S	3.05	3.30	I3.15^{A}	I3.40^{A}	I3.60^{A}	3.70^{S}	3.35^{S}	3.25	2.90	u2.25^{S}						
28							2.30	I2.40^{B}	3.00	3.30	3.50	A	A	R	I3.40^{R}	3.35^{R}	I2.70^{A}	I2.40^{A}						
29							S	I2.50^{S}	3.00	3.35^{R}	I3.50^{R}	I3.60^{B}	I3.70^{R}	I3.60^{S}	3.40	3.30	3.00	A	B					
30							2.10^{S}	I2.45^{S}	3.00	3.10	3.20	3.65	A	A	A	A	2.90^{R}	I2.40^{S}	S					
31							1.85	2.20	u3.05^{S}	3.30	R	R	R	R	I3.40^{A}	3.15	A	A	B					
No.							10	19	28	28	27	24	20	21	28	28	20	7						
Median							1.85	u2.30	2.80	3.10	3.30	u3.45	3.50	u3.40	3.30	3.10	2.80	u2.30						

foE

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

The Radio Research Laboratories, Japan.

K 3

35

IONOSPHERIC DATA

Mar. 1961 | 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	2.1^{s}	S	S	E	E	S	S	S	G	3.1	3.4	3.8	4.2^{M}	]7.2	G	G	S	S	S	S	S	S	S	S
2	S	S	S	E	S	S	S	S	G	3.2	]3.7	3.8	3.7	G	G	G	S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S	G	3.0	3.3	3.4	3.6	G	G	2.6^{q}	S	C	S	S	S	S	S	S
4	S	S	S	S	E	S	S	S	G	G	3.4	G	G	B	B	G	B	S	S	S	C	C	C	C
5	C	C	C	C	C	C	C	C	C	B	G	B	G	S	3.6	3.7	]4.0	]5.6	]7.8^{Y}	S	S	]3.9	S	S
6	S	S	S	E	E	S	S	S	G	G	G	G	G	G	G	G	S	S	S	S	S	S	S	S
7	S	S	S	S	E	S	S	S	G	G	3.4	3.6	3.8	3.5	G	G	S	S	S	S	S	S	S	S
8	S	S	E	S	E	S	S	S	G	3.3	3.4	3.7	G	3.6	G	3.4	S	C	C	S	S	S	S	S
9	S	1.8^{M}	S	E	E	S	S	S	3.1	G	G	]5.8^{Y}	4.0	3.9	3.5	]3.8	]3.0	G	S	S	S	S	S	S
10	S	E	E	E	S	S	S	2.1	3.0	3.4	3.5	3.8	4.0	3.9	3.4	]3.4	2.7	S	S	S	S	E	E	2.1
11	S	E	E	E	2.2^{M}	]3.2	C	C	C	G	G	4.2	4.5	]4.5	G	G	G	S	S	]5.0	S	S	1.8	]3.6
12	]3.0	]2.9	2.2	2.2^{M}	E	S	S	G	G	G	3.5	3.9	3.9	4.0	]3.9	]4.0	3.0	S	S	S	]3.0	S	S	2.4^{s}
13	]2.8	]2.0	2.0^{M}	E	E	E	S	S	3.0	G	G	G	3.1^{q}	3.5	3.4	3.4	3.4	B	]3.7	]3.4	E	S	S	E
14	S	S	S	E	E	S	B	S	G	G	B	G	G	G	3.5	3.3	3.0	2.8	]2.7	]3.5	]3.8	]4.5	4.3	2.5^{M}
15	]2.4	]2.4	E	1.8^{M}	E	E	S	G	G	G	3.0^{q}	3.4	3.2^{q}	3.0^{q}	G	G	S	S	S	E	2.2^{M}	2.2	E	]3.4^{s}
16	3.3	]3.6	]4.0	E	]2.6^{Y}	2.3	S	C	C	C	G	G	2.6^{q}	G	G	G	G	S	S	E	S	S	E	S
17	S	E	S	E	2.0^{M}	2.3	1.9	S	G	G	G	G	G	2.8^{q}	3.8	4.5	4.2^{Y}	]3.5	S	S	S	S	E	S
18	S	E	S	E	E	S	G	G	3.0	2.5^{q}	2.9^{q}	3.2^{q}	3.4^{q}	3.2^{q}	]3.8	2.6^{q}	]3.5	]3.2	2.3^{s}	S	E	S	E	S
19	S	S	E	E	E	S	G	S	3.2	3.3	3.6	3.5	3.4^{q}	3.8	3.0^{q}	3.3	]3.5	3.5	]3.5	]6.7	S	S	S	S
20	S	S	1.9^{M}	E	E	S	G	S	3.0	3.4	3.1^{q}	3.2^{q}	3.3^{q}	3.3^{q}	G	G	S	]2.7	]2.5^{s}	]3.6	2.3^{M}	S	]2.3^{s}	S
21	S	S	E	E	E	S	G	S	2.8	3.0^{q}	2.8^{q}	3.4^{q}	3.8	3.1	3.5	]3.1^{q}	G	G	S	S	S	S	E	E
22	S	E	E	E	E	E	S	S	G	G	G	D2.8^{s}	3.0^{q}	B	3.7	3.5	4.6^{M}	]4.0	]3.5	]4.9	]3.0	2.5^{M}	2.2^{M}	S
23	E	S	E	E	E	S	S	S	2.7^{q}	3.0^{q}	3.2^{q}	3.2^{q}	3.3^{q}	B	3.2^{q}	2.4^{q}	G	2.2^{q}	]2.6	]2.7	2.2	S	S	E
24	E	E	E	E	S	S	B	G	G	2.9^{q}	3.0^{q}	3.3^{q}	3.3^{q}	4.4^{M}	3.2^{q}	]4.2	G	S	]2.4	]2.8	]2.0	S	S	S
25	S	E	E	E	E	S	G	S	3.4	3.6	]3.9	3.9	3.3^{q}	G	2.9^{q}	3.4	]3.6	]3.2	2.8	]2.6	S	S	S	S
26	S	S	E	S	S	S	G	S	G	G	3.1^{q}	3.4^{q}	4.0	4.5	4.4	3.9	3.7	3.2	]11.3	S	S	S	S	E
27	E	E	E	E	E	S	S	S	3.5	3.6	4.0	4.1	3.6	3.3^{q}	2.6^{q}	G	G	3.1	]2.7	S	E	]1.9	S	E
28	S	E	E	E	E	S	G	G	3.6	4.5	4.3	3.9	3.7	3.2^{q}	G	G	3.3	2.3^{s}	S	S	S	S	2.4^{M}	S
29	]3.4	2.3^{M}	2.0^{s}	E	]1.4^{s}	2.1^{M}	S	S	3.2	3.1^{q}	2.7^{q}	B	2.8^{q}	G	4.6	3.7	3.1	]3.4	3.3	]2.3	S	S	E	E
30	S	E	E	E	E	S	G	S	3.1	3.4	3.8	G	3.8	3.8	3.5	3.4	G	S	]3.3	]2.8	2.1^{M}	2.3^{M}	3.9	2.6^{M}
31	2.1^{M}	S	E	S	]1.4	S	G	G	2.9^{q}	3.2^{q}	3.3^{q}	3.1^{q}	3.4^{q}	3.3^{q}	]3.8	2.9^{q}	]2.8	]2.7	2.1	S	S	S	S	S
No.	10	16	20	24	25	7	10	7	28	29	30	28	31	27	30	31	22	16	15	13	11	7	13	13
Median	2.2	E	E	E	E	2.1	G	G	G	G	G	G	G	G	G	G	3.0	3.2	2.8	2.8	2.2	2.3	E	E
U.Q.	3.0	2.2	E	E	E	2.3	G	G	3.0	3.3	3.5	3.8	3.8	3.9	3.6	3.5	3.5	3.4	3.5	4.2	3.0	3.9	2.4	2.6
L.Q.	E	E	E	E	E	E	G	G	G	G	3.2^{q}	G	3.3^{q}	3.3^{q}	G	G	G	2.5	2.5	2.4	E	1.9	E	E
Q.R.											0.3		0.5	0.6				0.9	1.0	1.8		2.0		

foEs

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

IONOSPHERIC DATA

Mar. 1961 | 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	^{u}2.1^{s}	S	S			S	S	S		3.1	3.4	3.7	3.8	5.7			S	S	S	S	S	S	S	S
2	S	S	S		S	S	S	S		3.2	3.7	3.6	3.6				S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S		3.0^{G}	3.3	3.4	3.1^{G}			2.6^{G}	S	C	S	S	S	S	S	S
4	S	S	S	S		S	S	S			^{E}3.4^{R}			B	B		B	S	S	S	C	C	C	C
5	C	C	C	C	C	C	C	C	C	B		B		S	3.5	3.5	3.9	5.6	E	S	S	2.4	S	S
6	S	S	S			S	S	S									S	S	S	S	S	S	S	S
7	S	S	S	S		S	S	S			3.4	3.6	3.8	3.5			S	S	S	S	S	S	S	S
8	S	S		S		S	S	S		3.2	3.4	3.6		3.6		3.1	S	C	C	S	S	S	S	S
9	S	1.8	S			S	S	S	3.1			5.6	3.9	3.5	3.4	3.8	2.7		S	S	S	S	S	S
10	S				S	S	S	2.1	2.9	3.3	3.4	3.8	3.7	3.7	3.4	3.3	2.6	S	S	S	S			2.0
11	S				E	2.5	C	C	C			3.7	^{u}4.0^{s}	4.5				S	S	3.4	S	S	^{u}1.8^{s}	2.1
12	1.9	1.8	^{u}2.2^{s}	1.7		S	S				3.5	3.8	3.8	3.9	3.8	3.9	S	S	S	S	2.5	S	S	E
13	2.2	2.0	E				S	S	2.9				^{E}3.1^{R}	3.4	3.4	^{u}3.4^{s}	3.3	B	3.6	2.8		S	S	
14	S	S	S			S	B	S			B				3.5	3.2	3.0	2.7	2.5	3.3	3.3	2.3	3.9	E
15	2.2	2.0		E			S				3.0^{G}	^{E}3.4^{R}	^{E}3.2^{R}	^{E}3.0^{R}			S	S	S		2.0	1.9		2.6
16	2.5	2.5	3.8		2.2	2.1^{s}	S	C	C	C			2.6^{G}					S	S		S	S		
17	S		S		E	1.7	1.9	S						2.7^{G}	3.7	4.5	4.2	^{u}3.0^{A}	S	S	S	S		S
18	S		S			S			3.0	2.5^{G}	2.8^{G}	3.1^{G}	3.3^{G}	3.1^{G}	3.7	2.6^{G}	2.9	2.7	2.2	S		S		S
19	S	S				S		S	3.1	3.2	3.6	^{E}3.5^{R}	3.4^{G}	3.7	3.0^{G}	^{u}2.8^{A}	3.5	3.5	3.4	3.6	S	S	S	S
20	S	S	E			S		S	3.0	3.4	3.0^{G}	3.1^{G}	3.0^{G}	3.2^{G}			S	S	1.9	E	1.8	S	2.2	S
21	S	S				S		S	2.8	2.9^{G}	^{E}2.8^{S}	3.1^{R}	3.6	^{E}3.1^{A}	3.5	2.9^{G}			S	S	S	S		
22	S						S	S				^{D}2.8^{S}	3.0^{G}	B	3.7	3.5	4.1	4.0	3.3	4.8	2.5	2.4^{S}	E	S
23		S				S	S	S	^{E}2.7^{S}	^{E}3.0^{R}	^{E}3.2^{R}	^{E}3.2^{S}	3.3^{G}	B	3.1^{G}	2.4^{G}		^{E}2.2^{S}	2.3	2.6	2.2	S	S	
24					S	S	B			^{E}2.9^{R}	^{E}3.0^{R}	^{E}3.3^{R}	3.2^{G}	4.2	^{E}3.2^{S}	4.2		S	2.4	2.5	1.8	S	S	S
25	S					S		S	3.2	3.6	3.6	3.8	^{E}3.3^{R}		2.8^{G}	3.3	G	2.8	2.1	2.3	S	S	S	S
26	S	S		S	S	S		S			3.1^{G}	^{E}3.4^{R}	3.8	4.0	4.4	3.9	3.7	3.0	A	S	S	S	S	
27						S	S	S	3.2	3.5	3.7	^{u}4.1^{s}	^{E}3.6^{R}	3.3^{G}	2.6^{G}			2.9	2.6	S		1.9	S	
28	S					S			3.5	4.2	4.3	3.9	3.7	^{E}3.2^{R}			3.2	^{u}2.3^{s}	S	S	S	S	1.9	S
29	2.6	1.8	1.6		E	E	S	S	3.1	3.1^{G}	^{E}2.7^{R}	B	^{E}2.8^{R}		4.4	3.6	^{E}2.7^{S}	3.2	2.7	2.2	S	S		
30	S					S		S	3.1	3.4	3.7		3.8	3.8	3.5	3.3		S	3.3	2.6	1.9	E	2.9	2.5
31	E	S		S	E	S			2.8^{G}	3.2^{G}	3.3^{G}	^{E}3.1^{R}	^{E}3.4^{R}	^{E}3.3^{R}	3.7	2.8^{G}	2.8	2.5	2.1	S	S	S	S	S
No.	7	6	5	2	5	4	1	1	14	17	22	21	24	20	19	20	14	13	15	11	8	6	6	6
Median	2.2	1.9	1.6	E	E	1.9	1.9	2.1	3.0	3.2	^{E}3.4	3.6	^{E}3.4	3.5	3.5	3.3	3.1	2.9	2.5	2.6	2.1	2.1	2.0	2.0

foEs

Sweep 1.0 Mc to 20.0 Mc in 2.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

Mar. 1961 | 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	E1.95 S E2.30 S E1.70 S 1.50	1.30 E2.80 S E1.90 S E2.85 S	2.00	2.30	2.20	2.35	2.30	2.50	2.50	2.40	E2.60 S E2.30 S E1.85 S E1.90 S	E1.90 S E1.80 S E1.95 S E1.90 S												
2	E2.00 S E2.00 S E1.50 S 1.40	E1.60 S E2.20 S E1.70 S E2.50 S	2.20	2.20	2.30	2.60	2.50	2.30	2.20	2.30	E2.60 S E2.20 S E2.00 S E1.70 S	E1.80 S E1.85 S E1.70 S E1.80 S												
3	E1.80 S E1.85 S E1.85 S E1.80 S	E1.85 S E1.70 S E1.70 S E2.40 S	1.95	2.30	2.20	2.60	2.60	2.55	2.55	2.15	E2.45 S C E1.90 S E1.85 S	E1.80 S E1.75 S E1.80 S E1.85												
4	E2.10 S E2.50 S E1.80 S E1.80 S	1.50 E1.80 S 1.60 E2.70 S	2.10	E2.75 S	2.50	3.10	3.10	3.60	3.55	2.25	2.80	E2.60 S E1.90 S E1.70 S	C	C	C	C								
5	C	C	C	C	C	C	C	C	C	3.45	2.50	3.40	2.70	E3.95 S	2.40	2.25	2.60	E1.80 S E1.90 S E2.20 S	E1.80 S E1.90 S E1.70 S	E1.90 S				
6	E1.85 S E1.85 S E1.55 S 1.30	1.30 E1.95 S E1.80 S E2.65 S	1.90	2.65	2.30	2.85	2.60	2.80	2.35	2.15	E2.50 S E2.30 S E2.00 S E1.80 S	E1.85 S E1.60 S E1.70 S E1.70 S												
7	E1.70 S E1.70 S E1.55 S E1.50 S	1.50 E1.50 S E1.95 S E2.50 S	1.85	2.20	2.55	2.80	2.75	2.65	2.60	2.30	E2.60 S E2.30 S E1.85 S E1.70 S	E2.00 S E1.85 S E1.80 S E1.70 S												
8	E1.65 S E1.80 S 1.45 E1.85 S	1.50 E2.00 S E1.80 S E2.55 S	2.10	2.70	2.70	2.85	2.65	2.55	2.40	2.10	E2.50 S C C E1.80 S	E1.80 S E1.80 S E1.60 S E1.80 S												
9	E1.75 S E1.65 S E1.50 S 1.50	1.50 E1.80 S E1.85 S E2.50 S	2.10	2.00	3.15	2.50	2.20	2.50	2.40	2.50	E1.90 S 1.50 E2.10 S E1.95 S	E1.90 S E1.70 S E1.95 S E1.60 S												
10	E1.60 S 1.60 1.50 1.50	E1.90 S E1.80 S E2.10 S E1.80 S	1.75	2.25	2.30	2.35	2.50	2.70	2.65	2.00	2.45	E1.80 S E1.85 S E2.00 S E2.00 S	E1.20	1.40	E1.60									
11	E1.85 S 1.70 1.35 1.30	1.45 1.50 C C	C	2.75	E2.60 C E3.50 C		2.50	E3.50 S	2.40	2.20	2.10	E2.30 S E1.80 S E1.80 S E1.85 S	E1.80 S E1.50 S	1.50										
12	1.50 1.50 1.50 1.40	1.30 E2.00 S E1.60 S 1.80	2.20	2.15	2.60	2.00	2.35	2.45	2.15	1.90	E2.30 S E1.85 S E1.90 S E1.80 S	E1.80 S E1.70 S E1.85 S E2.00 S												
13	E1.60 S 1.50 1.45 1.40	1.40 1.50 E1.50 S E2.50 S	1.80	2.30	2.30	2.80	2.40	2.80	1.95	E2.50 S	2.65	2.45 E2.10 S E1.60 S	1.20	E1.90 S E1.70 S	1.40									
14	E1.60 S E1.80 S E1.85 S 1.40	1.50 E1.80 S 1.80 E2.50 S	1.85	2.10	3.60	2.80	2.60	2.35	2.50	2.50	2.50	E2.00 S E1.80 S E1.90 S	E1.75 S E1.85 S E2.00 S E1.85											
15	E1.85 S 1.40 1.50 1.40	1.60 1.50 E1.80 S E1.80 S	2.05	2.15	2.50	2.80	2.95	2.85	2.50	2.20	E2.80 S E2.30 S E2.00 S 1.50	E1.70 S E1.70 S 1.50 E1.80 S												
16	E1.85 S E1.65 S 1.60 1.50	1.60 E1.60 S E1.80 S C	C	C	2.30	2.80	2.30	2.50	2.85	2.10	E2.45 S E2.30 S E1.80 S 1.40	E1.95 S E1.70 S 1.50 1.50												
17	E1.95 S 1.60 E1.60 S 1.60	1.45 1.30 E1.70 S E2.70 S	2.00	2.20	2.40	3.05	2.80	2.35	2.70	2.20	2.45	2.10 E1.80 S E1.85 S E1.70 S E1.90 S	1.60 E1.70 S											
18	E1.70 S 1.50 E1.85 S 1.40	1.50 E1.80 S 1.30 E1.80 S	2.00	1.45	2.30	2.50	2.40	2.80	2.30	1.90	1.85	E1.85 S E1.50 S E1.70 S 1.60 E1.85 S	1.50 E1.80 S											
19	E1.85 S E1.90 S 1.40 1.40	1.40 E1.80 S 1.30 E2.50 S	2.10	2.30	2.25	2.50	2.85	2.50	2.40	2.10	2.50	2.70 E1.80 S E1.85 S E1.50 S E1.50 S E1.85 S E1.85												
20	E1.85 S E1.80 S 1.40 1.35	1.40 E1.85 S 1.50 E2.60 S	1.80	2.10	2.80	2.55	2.30	2.10	2.20	1.90	E2.50 S E2.40 S E1.75 S E1.80 S	E1.60 S E1.70 S E1.85 S E1.80 S												
21	E1.70 S E1.60 S 1.40 1.30	1.50 E1.60 S E1.40 S E2.50 S	1.90	2.20	2.60	2.60	2.40	2.25	2.50	1.90	2.40	2.10 E2.00 S E1.70 S E1.70 S 1.50	1.50											
22	E2.00 S 1.60 1.40 1.50	1.60 1.30 E1.90 S E2.60 S	2.00	2.15	2.35	2.55	2.55	3.50	2.10	2.40	E2.50 S E2.45 S E2.20 S E2.20 S	E1.95 S E1.85 S E1.60 S E1.90 S												
23	1.50 E1.85 S 1.40 1.50	1.50 E1.60 S E2.20 S E2.60 S	2.10	2.40	2.60	2.90	2.65	3.90	2.20	2.00	2.05	1.90 E1.70 S E1.80 S E1.85 S E1.80 S E1.85 S 1.50												
24	1.60 1.60 1.50 1.40	E1.50 S E1.80 S 1.30 E1.70 S	2.30	2.40	2.80	2.85	2.70	2.55	2.60	2.20	E2.50 S E2.20 S E1.70 S E1.70 S E1.60 S E1.85 S E1.80 S E1.85 S													
25	E1.90 S 1.30 1.60 1.40	1.40 E1.90 S 1.30 E2.80 S	2.20	2.50	2.50	2.85	3.00	2.50	2.55	2.50	2.10	E1.70 S E1.85 S E1.90 S E1.70 S E1.80 S E1.80 S E1.80 S												
26	E1.60 S E1.70 S 1.50 E1.30 S	E1.85 S E1.85 S 1.20 E2.80 S	2.10	2.60	2.40	2.90	2.85	2.30	2.85	2.60	2.35	2.35 E1.70 S E1.85 S E1.70 S E1.90 S E1.60 S 1.50												
27	1.40 1.50 1.50 1.20	1.40 E1.80 S E2.30 S E2.60 S	2.20	2.40	2.55	2.80	2.85	2.50	2.30	2.85	2.35	E1.70 S E1.80 S E1.80 S 1.40 E1.70 S E2.10 S 1.50												
28	E1.80 S 1.40 1.40 1.20	1.70 E1.95 S 1.60 2.60	1.95	2.50	2.40	2.70	2.65	2.50	2.60	2.50	2.35	E1.85 S E2.30 S E1.80 S E1.50 S E1.70 S E1.50 S E1.50												
29	E1.70 S E1.50 S E1.30 S 1.50	E1.60 S E1.70 S E2.10 S E2.60 S	2.00	2.65	2.40	3.90	2.60	2.80	2.80	2.50	E2.70 S 1.90 1.70 E1.85 S E1.80 S E1.85 S 1.50 1.50													
30	E1.85 S 1.50 1.50 1.50	1.50 E1.70 S 1.50 E2.60 S	2.30	2.30	2.80	2.80	2.65	2.85	2.80	2.50	2.60	E2.50 S E1.80 S E1.80 S E1.70 S E1.80 S E1.80 S E1.60 S												
31	E1.70 S E1.60 S 1.40 E1.70 S	1.20 E1.50 S E1.60 S 1.90	2.00	2.30	2.40	2.60	2.70	2.60	2.20	2.10	1.70	E1.70 S 1.70 E1.65 S E1.80 S E1.80 S E1.85 S E1.80 S												
No.	30	30	22	25	25	30	29	28	28	29	30	30	31	29	31	30	19	29	30	31	30	30	30	30
Median	E1.80	E1.60	1.45	1.40	1.50	E1.80	E1.70	E2.50	2.00	2.30	2.45	2.80	2.60	2.55	2.50	2.20	2.35	E2.20	E1.85	E1.80	E1.80	E1.80	E1.70	E1.75

f-min

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

The Radio Research Laboratories, Japan.

K 6

38

IONOSPHERIC DATA

Mar. 1961 | M(3000)F2 | 135° E Mean Time (G.M.T. + 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.85^{S}	^{U}2.95^{S}	^{I}3.15^{S}	3.00	3.05	^{J}2.75^{S}	3.05	3.30	3.30	3.30	3.25	3.15	3.10	3.10	3.00	3.20	3.15	3.30	3.20	3.00	2.90	^{U}2.80^{S}	2.80	2.60
2	2.65	^{U}2.95^{S}	^{I}3.25^{S}	^{I}3.40^{S}	^{J}3.05^{S}	^{J}2.75^{S}	2.85	3.35	3.35	3.40	3.35	3.10	3.15	3.00	3.05	3.05	3.25	3.35	3.05	2.95	3.10	3.00	2.85	2.80
3	2.90	2.85	2.85	2.90	2.90	3.00	3.25^{S}	3.35	3.30	3.40	3.25	3.20	3.20	3.05^{S}	3.15	3.10^{S}	3.15^{S}	^{I}3.20^{S}	3.15	3.05	^{U}3.10^{S}	2.75^{S}	2.90	^{I}3.00^{S}
4	2.85	2.80^{S}	2.90^{S}	^{I}3.00^{S}	^{U}2.95^{S}	2.85^{S}	3.05	3.35	3.35	3.40	3.15^{S}	3.15	3.25	3.20	3.15	3.15	3.20	3.35	3.20	3.15	C	C	C	C
5	C	C	C	C	C	C	C	C	C	^{J}3.30^{R}	3.35	3.15	3.15^{S}	^{J}3.15^{S}	3.10	3.20	3.35^{S}	3.25^{S}	3.25	3.00	2.75	2.75	2.80	2.70^{S}
6	2.70	2.85	3.00	2.85^{S}	2.60	2.80	3.20	3.30	3.35	3.30	3.05	3.00	3.15	3.10	3.00	3.05	3.10	3.15	3.15	3.00	2.90	2.95^{S}	^{U}2.70^{S}	^{J}2.80^{S}
7	^{U}2.85^{S}	2.65^{S}	^{U}2.90^{S}	^{J}3.30^{S}	2.90	2.75	2.80	3.10	3.05	3.15	3.25	3.15	3.15	3.15	3.35	3.30	3.35	3.15	3.10	3.15	2.85	2.80	3.00	^{U}2.95^{S}
8	3.00	2.85	2.80	2.90	2.80	2.85^{S}	3.15^{S}	3.20	3.15	3.15	3.25	3.20	3.05	3.15	3.05^{R}	3.25	3.35	C	C	3.10	2.90	3.00	2.75	^{U}2.50^{S}
9	2.70	2.85	2.90^{S}	2.95	2.80	2.85^{S}	3.15^{S}	3.45	3.30	3.10	3.00	3.10	3.05	3.15	^{J}3.15^{R}	3.25	3.35	3.45^{S}	3.15	3.15	3.05	2.85	2.75	2.55
10	2.65	2.65	^{U}2.60^{S}	2.75^{S}	2.95	2.95	3.05^{S}	3.15	3.20^{S}	3.10	3.20^{S}	3.00	3.05	3.05	3.10	3.20	3.30^{S}	3.30^{S}	3.25	2.60	S	S	S	^{I}2.90^{S}
11	^{J}2.70^{S}	^{J}2.90^{S}	2.95	F	F	C	C	C	C	^{U}3.30^{S}	^{J}3.25^{R}	^{J}2.80^{S}	3.20	3.15	3.40^{S}	3.25	3.30	3.30	3.30	3.10	2.80	2.75	2.50	2.50
12	2.65	2.50	2.70	2.90	2.80	2.70	3.20	3.35	3.50	3.20	3.30	3.30	3.10	3.25	3.40^{S}	3.40	3.40	3.30^{S}	3.15	3.05	3.10	2.75	2.90	3.00
13	2.85	2.80	2.75	2.85	3.15	2.80^{S}	3.10	3.35^{S}	3.50	3.55	3.20	3.20	3.20	3.15	3.15	^{U}3.35^{S}	3.45	3.55	3.25	2.80	2.85	2.90	3.00	3.00
14	^{J}2.80^{S}	2.70	2.70^{S}	2.90	3.10	3.10	3.15	3.30	3.10	3.15	3.05	3.10	3.00	3.10^{R}	3.05	3.20	3.40	3.55	3.30	2.65	2.70	2.65	2.80	2.90
15	3.00	2.85	2.75	2.85	2.55^{S}	2.70	2.95	3.25^{S}	3.20^{S}	3.25	3.15	3.15	3.15	3.10	3.25	3.30	3.35	3.35	3.40	3.35	2.85	2.70	2.70	3.00^{S}
16	2.95	2.70	3.05^{S}	2.95	2.90	2.65	2.95	C	C	C	3.30	^{J}3.35^{S}	^{U}3.20^{S}	3.15	3.20	3.40^{S}	3.35	3.25	3.25	3.20	3.15	2.85	2.80	2.70
17	2.65	2.60	2.85	3.00	2.80	2.80	3.30	3.45	3.45	3.30	3.10	3.15	3.15	3.25^{S}	3.10	3.15	3.20	3.30	3.30	2.95	3.05	3.05	3.10	3.20
18	2.80	2.75	2.80	3.05	2.75	2.80	3.10	3.30^{S}	^{J}3.40^{S}	3.15	^{U}3.05^{R}	3.00	3.20	3.10	3.20	3.30	3.25	3.40	3.40	3.25	2.75	2.85^{S}	2.90	2.95
19	2.80^{S}	2.80	2.55	^{U}2.80^{S}	2.60	2.60^{S}	2.95	3.30	3.20	3.05	2.90	3.15	3.15	3.05	3.15	^{I}3.10^{S}	R	R	^{U}3.35^{S}	3.00	2.75	2.65	2.65	^{U}2.60^{S}
20	2.70	2.90	3.05^{S}	3.25	2.65	2.70	3.20	3.10^{S}	3.05	3.15	3.15	^{J}3.10^{R}	3.05	3.15	3.10	3.15	3.15^{S}	^{J}3.25^{S}	3.35	3.35	2.60^{H}	^{U}2.80^{S}	^{J}2.75^{S}	2.70^{S}
21	2.70^{S}	2.85	2.85^{S}	3.00	3.00	2.75	3.25	3.45^{S}	3.35	3.05	3.15	3.05	2.95	3.20	3.20	3.10	^{I}3.15^{R}	3.20	3.25	3.25	2.80	2.95	2.65	2.70
22	2.65	2.65	2.65	2.80	2.95	2.85	3.20	3.30	3.35	3.10	3.10	3.20	3.05	3.05	2.95	3.10	3.15	3.25^{S}	3.30	2.95	2.75	2.95	2.70	2.70
23	2.65	2.70^{S}	^{U}2.85^{S}	^{J}3.10^{S}	2.95	3.35	3.25	3.40	3.30	3.30	3.10	2.85	3.10	3.10	3.05	3.10	3.05	3.30	3.50	3.10	2.75	2.85	2.90	2.80
24	2.60	2.60	2.75^{S}	^{U}3.10^{S}	2.95	2.85^{S}	^{J}3.25^{R}	3.25	3.25	^{J}3.15^{S}	3.05	3.05	3.00	2.95	3.00	3.00	3.10	3.25^{S}	3.25	3.05	2.95	2.90	2.85	2.75^{S}
25	2.95	^{U}2.85^{S}	^{J}2.80^{S}	2.85^{S}	^{U}2.65^{S}	^{I}2.80^{S}	3.05	3.35	3.20	3.30	3.05	2.85	3.00	2.95	3.05	2.95	^{J}3.05^{S}	^{J}3.20^{S}	^{J}3.15^{S}	3.15	2.95	2.90	2.80	2.80
26	2.70	2.85	3.00	3.10^{S}	2.95	2.75^{S}	^{U}3.35^{S}	3.30	3.35	3.10	2.90^{S}	2.95	3.10	2.95	2.95	3.00	3.00	3.20	^{I}3.20^{A}	3.10	2.85	2.85	2.80	2.70
27	2.75	2.80^{S}	^{U}2.85^{S}	3.05^{S}	2.95	3.10	3.30	3.45	3.40	3.20	3.00	2.85	3.00	3.00	2.95	2.95	3.05	3.05	3.25	3.25	2.90	2.70	2.75	2.70
28	2.70	2.75	^{I}2.85^{S}	2.65	^{U}2.50^{S}	^{U}2.80^{S}	3.30	3.35	3.25	3.20	3.10	2.75	2.95	2.95	2.95	2.95	3.00	3.05	3.35	3.50	2.65	2.55	^{U}2.70^{S}	2.75
29	2.80	2.85	^{I}2.85^{S}	^{U}3.05^{S}	2.75	2.90	3.20	3.45^{S}	3.05	3.05	3.00	3.00	2.95	2.95	3.00	2.95	3.10	3.15	3.20	3.00	2.70	2.70	2.75	2.75
30	2.75^{S}	2.75^{S}	2.90	2.95	3.00^{S}	2.75	3.20	3.30	3.30	3.10	3.05	2.80	3.00	2.95	2.96	3.00	3.10	3.15^{S}	3.20	3.00	2.70	2.65	2.60	2.70^{S}
31	2.75	2.80	3.00	3.10^{S}	2.95^{S}	2.80	3.15	3.20	3.10	2.95	2.90	2.95	2.95	2.95	2.95	2.95	3.00	3.10^{U}	3.20^{S}	3.00	2.85	2.75	2.75	2.75
No.	30	30	30	29	29	29	29	28	28	30	31	31	31	31	31	31	30	29	30	31	29	29	29	30
Median	2.75	2.80	2.85	2.95	2.90	2.80	3.15	3.30	3.30	3.20	3.10	3.10	3.10	3.10	3.10	3.15	3.20	3.25	3.25	3.05	2.85	2.80	2.80	2.75

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

Mar. 1961 | 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	4.25	L	L	A	L	L								
2											L	L	L	L	L	L								
3									L	L	L	L	L		L	L								
4										L	L	L	L	L	L	L	L							
5							C	C	C	L	L	L	L	L	L	L								
6											L	L		L	L	L								
7										L	LH	L	L	L	L	L								
8									L	L	L	L	L	L	L	L	L	C						
9									L	L	L	A	L	L			L							
10										L	L	L	4.05	L	L	L	L							
11							C	C	C	"3.55 L	L	L	S	L	L	L	L							
12										L	L	L	"3.50 L	L	L		L							
13										L	L	L	L	L	3.90 L									
14									L	L	L	L	L	"3.60 L	L	L	L							
15									L	L	L	L	3.70 H	3.50 L	L	L	L							
16								C	C	C	L	L	L	"3.95 L	"3.70 L	L	L							
17									L	L	L	L	3.75 L	L	S	A								
18									L	L	L	3.90 L	3.60 L	L	"3.75 L	L	L							
19									L	3.65 L	"3.65 L	L	L	L	"3.85 L	L								
20										"3.65 L	L	L	L	L	L									
21									LH	"3.90 L	L	LH	"3.50 H	"3.60 H	3.60 L	3.90 L	L							
22								L	L	L	L	L	L	L	L	L								
23									L	L	L	S	"3.70 L	L	L	L	L							
24									L	L	L	LH	L	L	L	L								•
25										L	LH	3.80	L	L	L	L								
26										L	LH	L	3.30 L	"3.60 L		L								
27									L	L	L	L	L	L	S	L								
28										L	L	L	"3.40 L	L	L	L								
29										"3.60 L	L	L	L	L	L	L	L							
30									L	L	LH	L	L	L	L	L	L							
31									L	L	L	"3.45 L	LH	L	L	L	L							
No.										5	2	3	9	5	5	1								
Median										"3.65	"3.95	3.80	3.60	"3.60	"3.75	3.90								

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

IONOSPHERIC DATA

Mar. 1961 | 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										Z50	Z50	Z60	Z55	Z55	Z50	Z55								
2											Z55	Z60	Z60	Z80	Z60	Z55								
3									Z40	Z50	Z55	Z65	Z70		Z60	Z55								
4										Z45	Z60	Z55	Z60	Z60	Z55	Z50	Z40							
5							C	C	C	Z50	Z55	Z60	Z80	Z75	Z65	Z55								
6											Z60	Z70		Z70	Z60	Z70								
7										Z70	Z60	Z60	Z60	Z60	Z55	Z50								
8									Z40	Z55	Z55	Z55	Z75	Z70	Z60	Z50	Z50	C						
9									Z30	Z55	Z75	Z60	Z75	Z80			Z40							
10										Z60	Z60	Z90	Z90	Z75	Z75	Z55	Z50							
11							C	C	C	Z60	Z55	345	300	320	Z70	Z55	Z50							
12										Z40	Z75	Z60	300	Z70	Z50		Z45							
13										Z50	Z55	Z70	Z75	Z80	Z60									
14									Z50	Z50	Z60	Z60	Z60	Z75	Z80	Z65	Z45							
15									Z50	Z50	Z60	Z75	Z55	Z95	Z55	Z55	Z50							
16								C	C	C	Z60	Z55	Z55	Z75	Z60	Z55	Z40							
17									Z50	Z55	Z60	Z70	Z70	Z55	Z60	Z60								
18									Z50	Z50	Z55	Z75	Z60	Z60	Z60	Z60	Z50							
19									Z30	Z80	Z75	Z75	Z55	Z60	Z55	Z60								
20										Z85	Z60	Z70	Z85	Z70	Z55									
21									Z40	Z55	Z70	Z55	300	Z75	Z60	Z55	Z55							
22								Z25	Z20	Z70	Z70	Z95	Z85	Z85	Z85	Z70								
23									Z50	Z55	Z65	Z60	Z95	Z80	Z80	Z75	Z60							
24									Z55	Z55	Z70	Z65	Z60	Z75	Z60	Z60								
25										Z70	Z60	Z75	Z85	Z85	Z80	Z55								
26										Z60	Z80	Z80	300	Z85		Z90								
27									Z30	Z95	Z80	320	Z80	Z65	Z85	Z60								
28										Z50	Z90	320	305	300	Z80	Z75								
29										Z75	Z65	300	Z75	Z90	Z85	Z80	Z65							
30									Z40	Z55	Z60	Z60	Z95	Z90	Z75	Z70	Z55							
31									Z55	Z60	Z70	305	Z85	Z85	Z60	Z75	Z60							
No.								1	15	Z8	31	31	30	30	Z9	Z7	15							
Median								Z25	Z40	Z55	Z60	Z70	Z75	Z75	Z60	Z60	Z50							

h'F2

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

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

Mar. 1961 | 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	300	300	z55	z35	z45	E330S	z55	z40	z30	z00	195	z45	z15	I240A	z05	z30	z45	z40	z10	z50	z55	z95	310	350
2	350	305	z55	z25	z55	E350S	E300S	z25	z40	z30	z30	z15	z05	z15	z25	z30	z45	z20	z10	z50	z55	z60	315	305
3	z90	z90	300	300	300	z60	z55	z30	z05	z30	z00	z40	z30	z30	z10	z25	z50	I230C	z10	z25	z55	300	z95	z60
4	300	E305S	z85	z55	z55	z80S	z55	z30	z30	z30	z05	z15	z05	z05	z30	z20	z10	z30	z15	z35	C	C	C	C
5	C	C	C	C	C	C	C	C	C	z05	z05	z05	z50	E255S	z45	z40	z45	E255A	z05	z50	z85	320A	300	300
6	300	300	z60	z55	305	300	z40	z30	z30	z30	z25	z10	z55	z30	z30	z25	z45	z35	z50	z40	z55	z55	305	300
7	300	305	z95	z35	z55	300	z95	z45	z40	z30	z30H	z05	z30	z10	z20	z40	z30	z30	z30	z35	z80	300	z90	z80
8	z60	z95S	z85	z85	z90	300	z50	z30	z05	z25	z15	z30	z10	z15	z50	z30	z25	C	C	z20	z50	z55	z95	380
9	305	z90	z75	z55	z70	z55	z40	z30	z25A	z30	z20	I220A	z15	z20	z50	z50A	z10	z15	z30	z45	z50	z55	300	340
10	305	345	345	300	z55	z50	z50	z20	z30	z25	z05	z20	z05	z40	z10	z45	z40	z35	z10	300	355	310	z55	z50
11	305	300	z45	345	345	330	C	C	C	z30	z15	E285A	I220S	E300A	z45	z25	z20	z30	z15	E275A	E290S	z95	350	360
12	345	355	350	z60	z55	300	z50	z30	z30	z05	z20	z25	z20	z30	E245A	z45	z30	z35	z25	z45	z55A	z60	z85	z55
13	z60	z90	300	z65	z45	z55	z40	z35	z30	z30	z05	z05	z25	z15	z25	z55	z50	z30	z30	z60A	z55	z55	z55	z55
14	300	300	305	z80	z45	z55S	z45	z30	z05	z15	z20	z15	z10	z30	z20	z40	z45	z25	z15	E360A	350A	310	E330A	z95
15	z55	z60	z55	z60	345	305	z50	z40	z10	z40	z20	z20	z00H	z10	z20	z20	z30	z30	z20	z10	z50	z95	305	z95
16	z90	300A	E320A	z55	z95	350S	z60	C	C	C	z45	z20	z25	z20	z15	z40	z40	z30	z30	z05	z55	z50	z55	305
17	325	310	310	z50	z55	z80	z30	z30	z30	z05	z05	z05	z05	z50	z30	I250A	E255A	z30	z30	z55	z45	z55	z45	z30
18	z95	305	z95	z45	z55	300	z45	z45	z30	z10	z10	z05	z00	z35	z30A	z05	z40	z45	z30	z20	z85	z95	z70	z55
19	z90	z95	305	300	305	345	z50	z40	z30	z20	z10	z30	z10	z05	z10	z25	z55	z45	z45	z50A	z60	310	320	305
20	315	z75	z50	z05	310	300	z40	z35	z50	z30	z30	z10	z05	z25	z10	z45	z40	z50	z40	z10	z10H	305	305	z90
21	305	300	z85	z50	z55	z60	z40	z30	z10	z00	z10	z00H	195H	z00H	z10	z10	z25	z40	z40	z10	z45	z55	z80	310
22	310	310	305	z60	z50	z50	z35	z25	z00	z30	z10	z30	z40	z30	z35	z30	E250A	z40	z20	E345A	z80A	z85	300	305
23	320	305	300	z35	z40	305	z40	z35	z25	z20	z10	z20	z05	z40	z25	z10	z30	z45	z10	z25	300A	z90	z70	z80
24	320	340	300	z50	z50	z60	z40	z40	z25	z25	z00	z05H	z45	z30	z05	E250A	z50	z45	z35	z40	z40	z50	z60	z95
25	z55	z55	z55	z60	z60	z95	z40	z30	z25	z25	z00H	z05	z15	z05	z25	z35	z45A	z50	z40	z25	z45	z55	z75	300
26	310	z95	z55	z30	z55	z60	z30	z25	z20	z05	z00H	z05	z05	z45	E250A	z50	z55	z50	I240A	z15	z30	z70	z60	z95
27	300	305	z60	z50	z30	z50	z30	z30	z20	z00	z05	z45	z20	z25	z40	z10	z45	z55	z40	z20	z25	z80	E300S	305
28	310	300	z55	350	355	305	z30	z40	z25	z40	z30	z10	z05	z35	z50	z45	z50	z50	z30	z05	z50	300	320	305
29	300	z90	z90	z50	z50	z60	z25	z25	z20	z10	z05	z25	z25	z45	E260A	z35	z50	z50	z30	z40	z60	300	z95	z80
30	z85	z75	z55	z50	z45	z75	z40	z40	z25	z05	z00H	z00	z10	z10	z05	z05	z35	z50	z30A	z40	z75	300	325	300
31	z95	z85	z55	z30	z10	z55	z30	z40	z30	z20	z10	z00	z00H	z30	z25	z30	z40	z50	z35	z25	z55	z85	z85	z80
No.	30	29	29	30	30	28	28	28	28	30	31	30	31	29	28	30	29	29	30	28	29	30	28	30
Median	300	300	z85	z55	z55	z80	z40	z30	z25	z25	z10	z15	z10	z30	z25	z30	z40	z40	z30	z35	z55	z90	z95	300

h'F

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

The Radio Research Laboratories, Japan.

K 10

IONOSPHERIC DATA

Mar. 1961 | K'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	105	S	S	E	E	S	S	S	G	140	115	160	105	105	G	G	S	S	S	S	S	S	S	S
2	S	S	S	E	S	S	S	S	G	E 190 G	110	110	110	G	G	G	S	S	S	S	S	S	S	S
3	S	S	S	S	S	S	S	S	G	145	125	115	115	G	G	115	S	C	S	S	S	S	S	S
4	S	S	S	S	E	S	S	S	G	G	130	G	G	B	B	G	B	S	S	S	C	C	C	C
5	C	C	C	C	C	C	C	C	C	B	G	B	G	S	155	145	120	115	115	S	S	110	S	S
6	S	S	S	E	E	S	S	S	G	G	G	G	G	G	G	G	S	S	S	S	S	S	S	S
7	S	S	S	S	E	S	S	S	G	G	150	145	120	115	G	G	S	S	S	S	S	S	S	S
8	S	S	E	S	E	S	S	S	G	E 200 B E	175 G	155	G	E 195 B	G	130	S	C	C	S	S	S	S	S
9	S	110	S	E	E	S	S	S	E 200 G	G	G	110	115	115	110	110	110	G	S	S	S	S	S	S
10	S	E	E	E	S	S	S	105	175	150	150	110	110	110	110	100	115	S	S	S	S	E	E	130
11	S	E	E	E	105	105	C	C	C	G	G	E 205 G	135	150	G	G	G	S	S	115	S	S	110	110
12	115	115	110	105	E	S	S	G	G	G	165	140	130	120	130	110	120	S	S	S	115	S	S	105
13	105	105	105	E	E	E	S	S	110	G	G	G	100	115	150	130	110	B	110	110	E	S	S	E
14	S	S	S	E	E	S	B	S	G	G	B	G	G	G	140	140	125	115	110	110	105	105	105	105
15	105	105	E	105	E	E	S	G	G	G	105	110	105	115	G	G	S	S	S	E	105	110	E	110
16	110	110	105	E	105	105	S	C	C	C	G	G	105	G	G	G	G	S	S	E	S	S	E	E
17	S	E	S	E	105	105	110	S	G	G	G	G	G	100	145	135	150	125	S	S	S	S	E	S
18	S	E	S	E	E	S	G	G	135	105	105	105	105	105	105	105	100	100	105	S	E	S	E	S
19	S	S	E	E	E	S	G	S	150	140	110	110	105	105	110	105	100	120	115	110	S	S	S	S
20	S	S	105	E	E	S	G	S	150	150	110	105	105	105	G	G	S	S	115	110	105	S	105	S
21	S	S	E	E	E	S	G	S	110	105	105	105	105	105	110	100	G	G	S	S	S	S	E	E
22	S	E	E	E	E	E	S	S	G	G	G	105	105	B	150	150	130	120	120	115	110	110	105	S
23	E	S	E	E	E	S	S	S	110	105	105	110	105	B	105	105	G	100	100	110	110	S	S	E
24	E	E	E	E	S	S	B	G	G	110	110	110	110	105	110	100	G	S	100	110	110	S	S	S
25	S	E	E	E	E	S	G	S	110	110	110	180	110	G	110	125	105	100	100	100	S	S	S	S
26	S	S	E	S	S	S	G	S	G	G	110	105	105	175	150	145	130	125	110	S	S	S	S	E
27	E	E	E	E	E	S	S	S	145	120	110	105	105	105	105	G	G	125	120	S	E	105	S	E
28	S	E	E	E	E	S	G	G	125	110	110	110	110	110	G	G	110	110	S	S	S	S	105	S
29	110	105	105	E	110	110	S	S	140	110	105	B	105	G	115	125	105	100	100	100	S	S	E	E
30	S	E	E	E	E	S	G	S	145	125	110	G	110	110	115	110	G	S	100	100	100	110	115	110
31	110	S	E	S	110	S	G	G	110	110	110	110	105	105	100	100	100	105	105	S	S	S	S	S
No.	7	6	5	7	5	4	1	1	13	15	21	21	25	19	19	20	15	13	15	11	8	6	6	6
Median	110	110	105	105	105	105	110	105	135	110	110	110	105	110	110	110	110	115	110	110	110	110	105	110

K'Es

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

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

Mar. 1961

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									h	C	h	l	l_z										
2										h	l	l	l											
3										h	l	l	l			l								
4											h													
5															h	h	l_z	l_z	f			f_3		
6																								
7											h	h	C	l										
8										h	h	h		h		h								
9		f							h			l	l	l	l	l_z	l							
10								l	hl	h	h	C	C	l	l	l_z	l							f
11					f_3	f_z						h	h	h						f			f	f_3
12	f_z	f_z	f_z	f_z							h	hl	h	C	h_z	C	l		f	f	f_z			f
13	f	f	f						C				l	l	hl	h	l		f_z	f_z				
14															h	h	l	l	f	f_3	f_3	f_z	f_5	f
15	f_z	f		f							l	l	l	l							f	f		f_3
16	f_z	f_z	f_z		f_z	f_3							l											
17					f	f_z	l							l	h	h_z	h	h_z						
18									h	l	l	l	l	l	l_z	l	l_z	l_z	f					
19									h	h	l	l	l	l	l	l	l	h_z	f_z	f_z				
20			f						h	h	l	l	l	l				h	f	f	f		f_z	
21									l	l	l	l	l	l	l	l								
22												l	l		hl	h	C	h_z	f_z	f_3	f_z	f_z	f	
23									l	l	l	l	l		l	l		l	f	f_z	f_z			
24										l	l	l	l	l_z	l	l_z			f	f_z	f			
25									C	l_z	l	hl	l		l	hl	l_z	l_z	f	f_z				
26											l	l	l	hl	h	h	h_z	l	f_3					
27									h	C	l	l	l	l	l			C	f_z			f		
28									h	C	C_z	l	l	l			l	l					f_z	
29	f_z	f_z	f		f	f			hl	l	l		l		C	C	l	l_z	l_z	f				
30									h	h	C		l	l	l	l			l_3	f_z	f_z	f	f_3	f_z
31	f				f				l	l	l	l	l	l	l_z	l	l	l_z	l					
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

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

K 12

IONOSPHERIC DATA

Mar. 1961 | 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	355	330	300	300	305	S	305	280	285	295	295	300	305	300	305	300	300	285	280	305	325	350	370	400
2	395	350	290	260	305	355	335	255	290	255	285	305	305	305	305	300	300	255	295	330	305	310	375	360
3	350	350	355	350	350	305	295	250	285	255	295	300	300	300	305	305	300	300	295	300	310	355	335	325
4	350	355	335	320	315	345	305	255	285	255	300	300	300	300	300	300	300	255	285	295	C	C	C	C
5	C	C	C	C	C	C	C	C	C	265	285	305	305	305	305	300	275	285	255	300	355	355	355	355
6	360	350	310	330	395	355	290	260	285	295	305	320	305	305	330	310	300	300	305	305	340	335	385	355
7	355	400	345	280	330	355	345	300	305	305	305	310	300	300	295	285	255	285	300	285	345	355	345	330
8	320	350	350	350	350	350	300	285	300	300	300	300	310	305	305	290	275	C	C	295	340	305	360	415
9	375	350	330	320	355	325	290	250	265	300	340	305	310	305	300	295	255	255	300	300	310	325	355	405
10	395	395	400	380	315	305	300	285	290	310	305	325	330	310	305	295	295	280	280	405	S	S	S	360
11	385	375	305	F	F	C	C	C	C	295	260	270	300	305	285	295	275	260	255	300	320	350	405	415
12	395	405	360	320	350	355	295	255	255	295	300	295	310	300	275	260	260	260	300	300	305	360	345	305
13	355	350	375	350	300	350	300	255	255	255	300	300	305	305	300	300	275	250	270	345	345	340	310	305
14	355	385	385	335	300	300	285	285	300	305	305	305	330	310	310	300	275	250	260	395	390	385	350	345
15	315	340	350	350	400	375	310	280	300	300	300	305	300	305	300	295	295	260	255	255	335	365	380	325
16	305	350	320	320	330	380	310	C	C	C	295	285	285	300	300	295	305	290	285	275	305	345	350	380
17	395	395	355	310	355	350	260	255	265	295	305	300	300	300	300	300	300	285	280	335	305	310	305	280
18	355	375	355	300	350	350	295	275	285	300	325	310	300	300	300	300	295	285	280	275	355	355	350	335
19	355	355	405	365	400	400	310	290	280	315	330	305	300	310	300	305	R	R	285	300	355	400	395	400
20	395	345	300	260	405	355	295	300	305	310	300	310	330	305	305	300	300	300	285	255	390	365	375	360
21	385	360	350	330	315	355	285	255	255	310	300	305	345	305	305	300	300	295	295	275	350	330	365	395
22	395	400	400	355	310	310	280	255	290	305	305	335	330	315	325	305	300	295	260	330	360	345	385	380
23	400	385	345	300	300	360	295	295	295	295	310	345	325	310	305	305	305	295	255	300	395	355	350	355
24	400	400	370	305	320	320	265	300	300	300	310	305	325	345	310	305	305	300	295	305	330	330	355	355
25	320	345	350	355	360	350	300	255	300	300	305	355	325	350	315	320	305	300	300	300	310	345	360	370
26	395	365	320	300	310	355	280	260	265	305	335	355	340	335	345	345	320	300	290	300	345	350	350	380
27	385	385	355	310	310	300	260	255	270	315	325	365	335	325	335	330	315	315	295	280	325	365	365	390
28	400	380	360	440	440	365	295	265	285	300	310	385	355	345	345	330	320	305	285	250	395	405	400	385
29	360	355	360	305	355	330	280	260	305	305	310	345	330	350	330	385	305	300	295	305	375	385	370	365
30	360	355	345	330	320	355	295	290	285	310	310	350	345	350	320	320	305	300	295	305	375	400	400	370
31	385	360	330	300	305	350	290	285	305	310	330	350	345	345	330	340	315	305	300	310	350	370	375	355
No.	30	30	30	29	29	28	29	28	28	30	31	31	31	31	31	31	30	29	30	31	29	29	29	30
Median	370	360	350	320	330	350	295	260	285	300	305	305	310	305	305	300	300	290	285	300	345	355	360	360

hpF2

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

The Radio Research Laboratories, Japan.

K 13

IONOSPHERIC DATA

Mar. 1961 | ypF2 | 135° E Mean Time (G.M.T. + 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	90	80	50	80	85	S	75	50	40	50	55	90	70	80	90	90	55	70	110	90	80	80	75	100
2	95	55	50	50	90	90	105	70	35	55	40	75	85	85	85	85	45	75	100	75	90	85	70	85
3	70	95	85	60	85	95	40	60	60	90	55	55	55	95	60	60	65	50	70	55	85	95	70	75
4	95	100	65	80	80	90	90	65	45	95	55	80	55	90	55	55	55	85	70	60	C	C	C	C
5	C	C	C	C	C	C	C	C	C	80	45	65	80	60	55	50	70	35	90	105	85	90	90	130
6	85	65	85	75	100	90	75	85	45	55	75	80	75	90	65	75	65	85	85	90	105	60	70	90
7	50	95	50	65	75	95	85	95	90	70	45	60	55	55	50	60	95	100	95	70	85	90	50	70
8	75	80	95	95	90	70	50	65	55	50	50	45	75	50	90	65	60	C	C	75	105	90	85	90
9	75	55	65	75	80	80	60	45	80	85	65	55	85	55	65	50	75	65	85	50	85	80	90	95
10	100	100	95	70	80	95	100	65	75	85	45	70	50	85	65	50	50	50	65	100	S	S	S	60
11	65	30	95	F	F	C	C	C	C	40	100	100	80	80	45	50	70	75	60	90	80	100	90	80
12	40	100	85	80	85	90	55	60	55	90	50	50	50	50	70	70	65	85	80	90	90	90	60	80
13	90	55	75	95	55	95	95	55	50	45	75	55	60	75	55	45	45	45	80	100	100	70	85	90
14	55	70	110	70	60	95	70	60	95	55	90	90	65	75	65	55	40	55	85	105	105	110	110	60
15	100	65	100	95	95	110	110	95	45	50	95	55	70	60	45	45	50	65	75	90	110	85	75	70
16	90	100	70	80	90	115	90	C	C	C	50	45	90	75	55	55	40	100	70	75	80	100	90	75
17	60	100	55	85	100	95	50	55	45	50	75	50	75	80	65	80	65	60	50	110	80	85	80	75
18	90	70	100	95	95	95	80	70	50	70	70	85	55	70	50	45	60	55	65	70	95	90	90	65
19	85	95	100	80	95	100	80	65	80	80	115	60	65	75	75	60	R	R	35	145	95	85	100	85
20	60	60	95	90	95	95	60	75	80	60	60	85	65	75	85	55	95	55	40	80	110	90	80	95
21	100	90	65	65	80	90	60	75	75	80	55	80	65	80	90	85	70	60	50	75	100	70	130	60
22	95	95	95	90	85	100	70	75	55	80	80	60	65	80	80	75	85	50	130	70	135	65	110	75
23	85	110	60	95	105	95	50	30	50	55	85	105	70	75	85	90	80	55	50	100	100	90	65	90
24	95	95	80	90	85	80	80	55	45	85	85	85	75	85	85	90	65	45	50	90	90	85	90	90
25	75	70	95	90	130	100	95	65	50	55	90	90	70	85	80	85	90	50	55	95	95	100	85	85
26	90	80	75	55	85	90	65	90	70	100	85	60	45	70	70	55	75	55	70	85	100	95	95	115
27	60	65	90	60	85	95	95	60	80	70	70	80	70	80	70	75	80	85	50	70	120	100	80	65
28	55	70	75	60	75	80	50	80	65	55	85	80	90	60	85	110	80	90	45	55	120	115	100	70
29	90	85	90	60	95	115	115	75	95	95	85	60	75	80	75	60	90	85	60	100	120	70	85	120
30	95	110	60	70	80	95	100	55	65	85	75	100	70	60	85	80	85	85	60	95	115	95	105	85
31	70	90	70	80	90	95	85	65	90	120	80	60	80	95	75	110	90	85	50	100	105	120	110	95
No.	30	30	30	29	29	28	29	28	28	30	31	31	31	31	31	31	30	29	30	31	29	29	29	30
Median	85	80	80	80	85	95	80	65	60	70	75	70	70	75	70	60	70	65	70	90	100	90	85	85

ypF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 14

IONOSPHERIC DATA

Mar. 1961 | 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	L4.8	L4.9	L5.0	4.5	L4.3	3.3	L3.3	5.6	7.9	8.2	8.8	L9.5	11.0	11.7	12.6	12.1	L11.3H	11.4	I9.6S	L7.1S	L6.3	5.6	I5.0S	I4.7S
2	I4.7S	L4.8S	L5.6S	5.2	3.7	2.8	2.9	5.6	L8.3S	8.4	8.5H	L9.8S	11.0	12.5S	12.8	11.3	10.7	10.4H	9.1	L7.5S	6.8	5.7	5.0	I4.9S
3	4.7S	4.6	L4.5S	4.5	L4.8S	4.2S	3.9	5.9	L7.5S	8.3H	8.9H	9.0	10.7	11.3	11.0H	11.3H	11.8S	I12.0S	11.0	I9.0S	I7.3S	5.6	I5.2S	L4.5S
4	I4.2S	I4.0S	I4.1S	L4.3S	4.5S	3.3	3.2	I5.5C	8.3	I8.6C	9.2H	I9.9C	11.6	12.5	12.8	L12.0S	10.7S	11.2H	9.2	I7.5S	7.3S	6.2S	5.7S	5.3S
5	S	C	C	L4.2S	L4.3S	3.1	3.0	5.5	L7.5S	8.7H	8.1H	8.9H	L10.3S	11.1	11.8	11.2	10.8H	L9.9S	8.9	I6.6S	L5.4S	4.6	4.4	4.3S
6	L3.9S	3.9	4.0	I4.0S	L3.7S	I3.7S	3.6	5.5	L7.6S	8.0	9.2H	L9.6S	9.9	11.1	11.2	11.5	10.3	L9.9S	S	I9.9S	I6.5S	5.7S	I5.4S	5.0
7	5.1	5.0	5.1	5.0	3.9	3.3	3.3	5.2	L7.9S	11.0	11.3	11.1H	11.2H	11.3	10.9	10.4S	9.1	L7.8S	I7.2S	6.3S	L5.1S	4.5	L4.7S	I5.0S
8	I4.8S	3.9	L3.8S	4.0S	3.7	3.8S	4.0	L6.1S	7.1	8.3	I10.2SH	I9.4SH	9.2H	L9.7SH	11.0H	10.7	L9.9S	8.8	L8.0S	I6.9S	5.7	5.1	L4.0S	3.8
9	4.0	L4.2S	4.0S	I4.0S	4.0S	I4.1S	3.8	5.9	6.5H	L7.7SH	8.5H	10.8H	11.3H	11.9H	12.3	12.9	L11.3S	9.0	7.2S	I7.2S	5.9	5.0	3.9	I3.6S
10	L3.7S	3.5	3.6	3.9	4.1	3.1	3.0	6.0	I7.0C	8.3	8.6	L9.6S	10.8	12.1S	12.2	11.6S	10.6H	9.3S	8.6	6.9S	S	Fs	S	S
11	S	S	6.6	S	Fs	S	S	F	I11.2S	10.7	9.2	I9.5SH	10.7	10.6	8.8	L7.4S	L8.0S	8.2	L7.7S	5.6	L4.7S	L3.8S	4.0	L3.9S
12	3.8S	3.6	3.6S	3.8S	3.9	3.2	3.4	6.4S	L7.4S	7.1SH	L7.6S	9.4	9.4S	10.6	11.2	9.2H	L8.2S	L8.0S	L8.1S	L7.7S	5.5	5.0	I4.6S	4.1
13	I4.0S	L3.8S	3.7	3.6S	L4.0S	2.8	3.2	6.0S	8.1	8.4	8.5H	L9.6SH	8.7H	9.1H	10.9H	10.6H	L10.0S	9.0	L7.7S	5.9	5.8	L5.4S	L5.1S	4.6
14	S	S	S	4.4	4.0	2.8	2.6	5.5	L7.7S	9.1	11.0H	11.7	11.7	12.2	12.6	13.0	12.6	9.0	L7.4S	L6.6S	L6.5S	6.0	6.0	5.2
15	5.3	4.7S	4.4	4.3	L3.8S	4.2	4.0	6.2	8.5	9.1	9.3H	11.4	11.4	11.2	10.6	L9.6SH	L9.9SH	9.1S	8.1	6.7S	6.3S	6.1S	6.1S	6.1
16	L6.1S	4.8	4.6	4.3	3.4	3.1	3.2	5.8	8.6	11.3S	11.4	10.4	9.6	9.3	9.8SH	L9.7SH	9.7	8.2	L7.7S	I7.3S	5.7	5.0S	4.4S	4.2
17	4.5	4.5	4.7	4.7S	C	C	C	C	C	L8.1S	9.5S	9.9	10.8	11.5H	11.9H	10.8H	I9.9SH	9.0	8.3	I7.6S	I6.7S	I6.3S	6.0	4.0
18	L3.7S	3.7	L3.7S	3.8	3.1	3.0	3.6	L6.6S	8.4	8.5	8.8H	11.2H	11.3H	11.9H	11.7H	11.1H	L9.8S	9.1	9.0	7.0S	5.2	5.3	5.6	5.4
19	5.1	4.8S	4.5	4.6	4.4	4.4	4.6	7.1	L7.6S	8.0	L9.8S	12.4	12.4	12.1	12.1	11.4H	11.4H	11.3	L9.9S	I6.8S	5.9	5.2	L5.1S	5.3
20	5.4	5.5	5.1	3.2	3.0	3.1	3.4	5.9	8.6	11.4	12.7	11.5	11.9	13.1	12.7	10.5	L9.7SH	10.5	L9.9S	L7.8S	5.8	L5.1S	5.3S	L5.6S
21	5.1	5.1	I5.0S	4.7S	4.3	3.5	4.0	L7.1S	8.6	8.9H	L9.9SH	11.8SH	13.2H	S	S	13.0	11.8H	L11.3SH	L10.1S	L8.4S	L6.6S	5.1	5.1	4.8
22	4.7S	4.8	4.7	4.9	5.0	4.7	3.8	6.5	8.0H	8.3H	8.9H	10.4SH	12.0H	13.3H	13.1H	12.9H	12.0SH	11.6	L10.0S	I7.4S	L6.3S	5.4	5.2	4.8
23	I4.7S	L4.8S	4.7	5.1	3.8	3.1	3.5	6.6	7.9	8.6H	L10.0S	11.4	12.4	13.5	13.1	12.7H	12.1H	11.7H	10.4H	8.3	6.4	6.2	6.5	6.1
24	5.7	5.5	L5.5S	6.1	3.9	3.4	3.7	6.8	9.0	10.8	11.3SH	11.2H	11.8H	12.3H	12.3H	11.7SH	10.9H	11.4H	11.1S	9.1H	L7.9S	I7.3S	S	S
25	S	C	C	C	C	C	C	C	C	L10.2S	11.0H	11.2SH	12.6H	14.1H	13.6SH	12.0SH	10.7H	L10.8S	I11.6S	I10.1S	L8.2S	S	S	S
26	6.3S	5.8	5.9	5.5	4.2	3.6	4.1S	I7.0S	8.4	8.9H	10.8H	12.0	L13.4C	14.0S	L13.8S	13.2H	12.7H	I12.3S	I12.1S	11.0	L8.2S	I6.9S	6.1S	5.8
27	5.7	5.6	5.7	L6.1S	5.0	4.1	4.1	7.0S	L7.3S	7.4S	8.6H	10.9H	12.7	12.8	12.4	12.5	12.7H	12.9	12.1S	L11.4S	L8.0S	S	S	Fs
28	Fs	Fs	L6.4S	5.2	5.5	I6.0S	5.8S	L7.5S	9.2S	L9.4S	9.6H	11.1H	13.1H	I13.9SH	I14.1SH	I14.0SH	I14.1SH	I13.8S	13.0	I10.0S	I7.1SH	S	S	S
29	S	S	C	C	C	C	C	C	C	C	10.8H	11.2H	12.6H	13.7	L14.6S	13.4H	12.4SH	11.3	11.2S	9.3S	I7.6S	S	S	S
30	6.8	6.8S	I6.6S	5.8	5.2	4.8	4.8	L8.0S	10.5S	8.2SH	10.0H	11.6	12.9	13.6	12.9	12.3H	12.4	11.4H	11.1	8.9	I7.4S	6.8S	I6.6S	L6.5S
31	6.6	6.7	I7.2S	L6.6S	4.2	3.5	4.0	6.3	8.8	L9.8SH	11.1H	11.8	13.4	L13.6S	13.5	13.3	12.7	L12.0S	11.3S	I10.4S	L8.2S	I7.3S	I7.0S	I6.9S
No.	25	25	27	28	27	27	27	27	28	30	31	31	31	30	30	31	31	31	30	31	30	26	25	25
Median	4.8	4.8	4.7	4.5	4.0	3.4	3.6	6.1	8.0	8.6	9.5	10.9	11.4	12.1	12.3	11.6	10.8	10.5	9.4	7.5	6.4	5.5	5.2	4.9
U.Q	5.6	5.3	5.6	5.2	4.4	4.1	4.0	6.8	8.6	9.4	10.8	11.4	12.6	13.3	12.9	12.9	12.1	11.4	11.1	9.1	7.3	6.2	6.0	5.5
L.Q	4.1	4.0	4.0	4.0	3.8	3.1	3.2	5.6	7.6	8.2	8.8	9.6	10.7	11.2	11.2	10.7	9.9	9.0	8.1	6.9	5.8	5.1	4.6	4.3
Q.R	1.5	1.3	1.6	1.2	0.6	1.0	0.8	1.2	1.0	1.2	2.0	1.8	1.9	2.1	1.7	2.2	2.2	2.4	3.0	2.2	1.5	1.1	1.4	1.2

foF2

Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | foF1 | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	L	L	L	L								
2												L	L	L	I5.0L	L	L							
3												L	L	L										
4								C		C		C	L	5.1L	5.0L	L								
5													L	4.8L	4.8L	4.7L								
6												L	L	L	L	L								
7														5.1H	I4.6L	B								
8																								
9															L	4.6	L							
10									C			L	L	L	L	L								
11													5.0L	5.0L	A	A	L							
12											L	L	L	5.0L	4.6L									
13																								
14											C	L	A	5.1	5.0L	4.7L	L							
15												L	4.9	5.0L	4.8L									
16											L	4.9L	I4.9L	I5.0L										
17							C	C	C		L H	L	L											
18																								
19											L	L	L	L	5.1L									
20										L	L	5.0L	L	L	L H	L								
21														5.3L	L	L								
22																								
23											L H	L	L	5.3L	A									
24																								
25							C	C	C															
26												L	L	L	L			C						
27													L	L	A	L								
28																								
29							C	C	C	C				L	5.4L	L								
30												L	L	5.3L	L									
31												L	L H	L	L	L	L							
No,												2	3	11	9	3								
Median												5.0	4.9	5.1	5.0	4.7								

foF1 | Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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	2.4	E	E	E	S	S	G	G	G	3.7	3.9	4.3	3.7	4.8	G	3.1	4.0	3.1	3.1	2.2	S	2.5	S
2	S	S	E	E	E	S	S	G	G	G	G	G	3.7	G	3.6	G	G	2.7	2.3	2.2	2.4	2.5	2.7	2.2
3	S	S	E	E	E	S	S	G	G	G	G	3.7	G	3.5	3.4	3.2	2.9	2.6	S	S	1.9	S	2.3	S
4	S	S	S	E	E	S	S	C	G	C	G	C	3.7	G	3.7	3.3	3.1	G	G	S	S	S	S	S
5	S	C	C	E	E	E	S	G	G	G	3.4	3.5	G	G	3.9	3.1	2.1	3.5	2.8	S	2.7	S	S	S
6	S	S	E	E	E	S	S	G	G	G	G	G	G	G	3.5	3.2	2.8	3.3	2.4	2.1	S	S	S	S
7	S	S	E	E	E	S	S	G	G	G	3.4	3.5	G	G	3.4	3.5	3.4	2.7	G	S	S	S	S	S
8	S	S	E	E	E	S	S	G	G	G	G	G	G	4.1	G	G	G	2.8	S	S	S	2.2	S	S
9	S	S	E	E	E	E	S	G	G	G	3.7	G	3.6	4.3	3.5	6.0	4.5	4.9	3.1	2.9	3.0	2.1	2.2	S
10	S	S	E	E	E	S	S	G	C	2.5	3.9	3.7	4.3	5.3	4.0	3.8	3.5	2.7	S	2.1	S	S	S	S
11	2.1	2.3	2.9	2.2	2.4	2.2	1.9	G	2.2	2.7	G	G	G	4.4	5.6	3.8	3.3	3.1	2.0	S	S	S	S	S
12	2.4	2.3	2.0	3.2	4.3	2.4	3.2	2.4	G	G	3.7	3.7	4.0	4.4	4.0	3.7	3.5	2.7	2.5	S	S	S	2.2	2.3
13	S	S	E	E	E	E	S	G	G	G	G	G	2.6	4.3	4.9	3.8	3.9	3.8	2.2	2.1	2.7	2.1	S	S
14	S	S	S	E	1.7	S	S	2.2	2.9	3.4	C	3.8	5.2	4.3	3.9	4.1	G	2.8	S	S	S	S	S	S
15	S	2.2	2.8	1.6	2.1	3.1	S	G	G	2.4	3.5	3.7	G	G	G	G	G	G	G	S	S	S	S	S
16	S	2.3	E	E	E	S	2.3	4.5	2.2	2.6	2.6	2.6	G	G	G	G	G	G	G	S	S	S	S	S
17	S	S	E	E	C	C	C	C	C	2.3	2.7	3.4	G	G	G	G	2.3	3.2	3.7	2.2	S	S	S	S
18	S	S	E	E	E	S	S	2.3	3.0	3.2	3.3	3.4	G	G	G	3.7	3.5	2.3	G	2.9	2.3	S	S	S
19	S	S	E	E	E	S	S	G	3.0	3.3	3.6	3.8	G	G	G	G	G	3.2	3.5	6.0	3.8	3.5	3.3	S
20	S	S	E	E	E	S	S	2.2	2.8	3.4	C	3.8	4.1	3.8	G	G	2.9	2.8	2.4	2.3	2.0	3.4	5.7	2.2
21	3.7	S	E	1.5	E	S	S	G	2.7	3.1	3.6	3.7	3.7	G	2.3	2.4	G	3.4	2.4	1.5	S	S	S	S
22	S	2.3	E	E	1.4	S	S	G	G	2.9	2.9	3.3	3.2	4.2	4.1	5.7	5.0	2.8	2.1	2.2	2.8	5.1	4.5	S
23	S	S	E	E	E	E	S	G	G	G	G	3.7	3.8	4.0	5.7	3.9	4.6	3.7	2.6	2.0	2.4	S	2.5	3.0
24	2.3	S	2.0	1.5	1.8	S	S	G	2.5	3.5	3.8	4.0	4.2	4.2	4.0	4.5	3.2	2.9	2.5	S	S	S	S	S
25	S	C	C	C	C	C	C	C	C	3.0	3.5	3.7	B	G	G	2.7	2.2	2.1	2.2	S	S	S	S	S
26	S	S	E	E	E	S	S	G	G	G	3.2	3.2	3.3	3.1	3.1	G	2.7	C	G	S	S	S	S	S
27	S	S	E	E	E	S	S	G	G	G	G	G	3.8	4.7	6.5	4.9	4.0	G	2.4	2.3	S	S	S	S
28	S	S	E	E	E	E	S	2.8	3.4	3.7	4.2	4.7	5.5	6.5	5.1	3.1	3.3	2.9	2.3	2.2	2.5	S	2.2	2.2
29	2.5	2.8	C	C	C	C	C	C	C	C	3.7	4.0	4.2	4.4	4.3	3.9	3.5	3.2	3.8	4.3	4.9	S	S	2.9
30	S	S	2.1	E	E	S	S	G	3.2	3.7	4.1	4.1	4.7	5.4	6.9	7.6	7.3	5.9	2.4	3.1	5.8	3.2	S	S
31	3.4	S	E	E	E	E	S	G	G	G	G	3.4	3.3	3.3	3.4	3.1	2.9	3.0	2.4	1.4	S	S	S	S
No.	6	7	26	29	28	9	3	27	27	29	29	30	30	31	31	31	31	30	27	18	14	8	10	6
Median	2.4	2.3	E	E	E	E	2.3	G	G	G	3.3	3.6	G	3.7	3.6	G	3.1	2.8	2.4	2.2	2.6	2.8	2.5	2.2
U.Q	3.4	2.4	E	E	E	2.3	2.8	G	G	3.2	3.7	3.8	4.1	4.3	4.3	3.9	3.5	3.3	2.6	2.9	3.0	3.4	3.3	2.9
L.Q	2.3	2.3	E	E	E	E	2.1	G	G	G	G	G	G	G	G	G	G	2.7	2.0	2.1	2.3	2.2	2.2	2.2
Q.R	1.1	0.1					0.7											0.6	0.6	0.8	0.7	1.2	1.1	0.7

foEs

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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	2.40	2.15	I 2.25 R	I 2.40 R	I 2.50 R	I 2.60 A	2.50 R	2.40	A	A	S					
2								S	2.50	2.90	I 2.15 R	2.30	I 2.45 A	2.60	2.40	2.30	2.05	I 2.45 A	A					
3								S	2.30	2.90	3.10	I 2.40 R	2.50 R	I 2.30 R	I 2.30 A	2.25	2.00	2.55	S					
4								C	2.30	I 2.90 C	R	C	R	I 2.40 R	2.40 R	2.15	I 2.95 A	2.50 H	S					
5								B	2.30	2.70	2.25	2.30	R	R	R	2.20	2.90	2.45	A					
6								S	2.50	2.00	2.25	2.40	2.50	2.40	I 2.40 A	2.25	2.90	A	S					
7								S	2.30	2.80	2.20 R	2.20	I 2.35 R	2.50	A	A	A	2.55	1.60					
8								S	2.40	2.90	2.20	2.40	2.50	2.50	2.40	2.25	2.90	2.50	S					
9								B	2.50	2.90	2.30 R	2.30	I 2.50 A	A	A	A	A	A	A					
10								S	I 2.40 C	2.00	2.30	2.40	2.50	2.45	2.30	2.05	2.80	2.20	S					
11								S	2.40	2.80	2.20	I 2.25 R	I 2.40 R	2.50	I 2.30 R	2.15 R	2.90	2.40	S					
12								S	2.40	2.90	2.20	I 2.40 R	2.50 R	2.50	2.40	2.20	2.90	2.40	A					
13								S	2.60	2.00	2.20	2.40 R	I 2.50 R	2.60	I 2.40 A	2.30 R	2.00	2.50	S					
14								1.90	2.60	2.00	I 2.30 C	2.50	2.50	2.50	2.40	I 2.30 A	2.20	I 2.55 A	S					
15								2.00	2.60	2.05	2.25	2.40	I 2.45 R	I 2.50 R	I 2.45 R	2.30	2.10	2.50	S					
16								A	2.60	2.10	2.40	2.50	2.50	2.50 R	2.40	2.20	2.00	2.60	1.80					
17							C	C	C	2.90	I 2.25 R	2.30 R	2.50	2.55	2.50	2.35	2.10	2.55	S					
18								2.00	2.60 H	2.90 H	2.10	I 2.25 A	2.50	2.60	2.55	2.35	2.15	2.60	S					
19								2.20	2.70	2.10 H	2.35	I 2.40 R	R	R	2.50	2.30	2.10	2.65	S					
20								2.10	2.75 H	2.10	I 2.25 R	I 2.40 R	I 2.40 R	2.45	2.60	2.40 R	2.15	I 2.60 A	A					
21								2.15	2.70	2.10	2.30	2.40	2.50	I 2.55 R	I 2.50 R	2.30	2.10	2.70	A					
22								S	2.60	I 2.00 R	2.15 R	R	R	R	R	R	2.10	2.65	S					
23								2.05	2.70	2.05 H	I 2.35 R	2.50 R	2.60 R	2.60 R	I 2.45 A	A	A	A	S					
24								2.10	2.90	I 2.15 R	I 2.40 R	I 2.50 R	I 2.60 R	I 2.55 R	I 2.45 R	2.20	I 2.95 A	2.75	1.90					
25							C	C	C	A	A	A	B	R	R	R	2.20	2.80	2.10					
26								2.20	2.80	2.20 H	2.30 R	R	R	R	R	2.40	2.20	I 2.60 C	S					
27								2.10	2.90	2.30	2.50	2.50	A	A	A	A	A	2.75	A					
28								2.15	2.80	2.30	2.45	2.50	A	A	A	R	2.00	A	A					
29							C	C	C	C	R	R	R	R	R	2.40	2.20	2.80	2.00					
30								2.30	2.85	2.20	2.40	2.50 R	2.50 R	A	A	A	A	A	A					
31								2.10	2.80	2.20	2.40 R	R	R	R	R	2.30	2.00	2.70	2.00					
No.								13	28	29	28	25	21	20	20	23	25	25	6					
Median								2.10	2.60	2.00	2.25	2.40	2.50	2.50	2.40	2.30	2.00	2.55	1.95					

foE

Sweep 1.0 Mc to 20.0 Mc in 2.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 3

50

IONOSPHERIC DATA

Mar. 1961 | 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	E				S	S				3.7	$E_{3.9}{}^{B}$	$E_{4.3}{}^{B}$	$E_{3.7}{}^{B}$	4.8		G	3.7	2.7	2.6	2.2	S	2.4	S
2	S	S				S	S						$E_{3.7}{}^{B}$		3.2			2.7	G	$E_{2.2}{}^{B}$	E	E	2.3	2.2
3	S	S				S	S					G		$E_{3.5}{}^{B}$	$E_{3.4}{}^{B}$	3.2^{G}	2.8^{G}	2.5	S	S	E	S	1.9	S
4	S	S	S			S	S	C		C		C	$E_{3.7}{}^{B}$		$E_{3.7}{}^{B}$	G	G			S	S	S	S	S
5	S	C	C				S				G	3.5			$E_{3.9}{}^{B}$	3.0^{G}	$E_{2.1}{}^{B}$	3.4	2.6	S	2.6	S	S	S
6	S	S				S	S								G	3.1^{G}	2.8^{G}	3.3	G	2.0	S	S	S	S
7	S	S				S	S				G	G			$E_{3.4}{}^{B}$	$E_{3.5}{}^{B}$	3.3	2.3		S	S	S	S	S
8	S	S				S	S							4.1				2.1	S	S	S	2.1	S	S
9	S	S					S				G		G	4.3	G	4.2	3.2	4.7	G	2.4	1.9	E	E	S
10	S	S				S	S		C	24^{G}	3.9	$E_{3.7}{}^{B}$	4.1	4.4	$E_{4.0}{}^{B}$	$E_{3.8}{}^{B}$	3.3	G	S	2.0	S	S	S	S
11	1.9	2.0	1.9	E	1.7	1.7	E		2.2^{G}	2.6^{G}				4.3	4.8	$E_{3.8}{}^{B}$	3.2	3.0	G	S	S	S	S	S
12	2.2	2.1	1.9	1.7	2.3	1.8	2.6	G			3.6	$E_{3.7}{}^{B}$	$E_{4.0}{}^{B}$	4.4	$E_{4.0}{}^{B}$	G	3.3	G	2.1	S	S	S	S	E
13	S	S					S						2.6^{G}	4.3	4.3	$E_{3.8}{}^{B}$	3.5	$E_{3.8}{}^{B}$	2.2	2.0	2.5	E	S	S
14	S	S	S		E	S	S	G	G	3.4	C	$E_{3.8}{}^{B}$	5.1	4.2	3.8	3.6		G	S	S	S	S	S	S
15	S	2.1	1.8	$E_{1.6}{}^{B}$	1.8	2.9	S			24^{G}	G	G								S	S	S	S	S
16	S	E				S	E	4.1	2.1^{G}	2.5^{G}	2.5^{G}	2.6^{G}								S	S	S	S	S
17	S	S			C	C	C	C	C	2.3^{G}	2.7^{G}	G					2.3^{G}	G	3.7	2.0	S	S	S	S
18	S	S				S	S	G	G	G	G	G				G	G	1.9^{G}		2.8	E	S	S	S
19	S	S				S	S		G	G	G	G						3.2	2.4	A	$E_{3.8}{}^{S}$	3.3	A	S
20	S	S				S	S	G	G	G	C	G	3.9	G			2.8^{G}	$E_{2.8}{}^{B}$	G	2.2	2.0	2.2	4.6	2.0
21	2.2	S		1.5		S	S		2.5^{G}	3.0	G	G	G		2.3^{G}	2.4^{G}		3.4	2.3	$E_{1.5}{}^{S}$	S	S	S	S
22	S	2.0			1.3	S	S			$E_{2.9}{}^{R}$	2.8^{G}	$E_{3.3}{}^{R}$	$E_{3.2}{}^{R}$	4.2	$E_{4.1}{}^{B}$	5.7	4.9	2.4	G	E	2.5	4.2	3.2	S
23	S	S					S					G	G	G	5.2	3.9	4.6	3.2	2.4	1.9	1.9	S	2.3	2.5
24	1.9	S	1.8	$E_{1.5}{}^{B}$	1.4	S	S		2.5^{G}	G	G	4.0	G	4.2	G	4.1	G	G	2.5	S	S	S	S	S
25	S	C	C	C	C	C	C	C	C	$E_{3.0}{}^{B}$	G	G	B			27^{G}	2.2^{G}	1.9^{G}	2.0	S	S	S	S	S
26	S	S				S	S				3.2^{G}	$E_{3.2}{}^{R}$	$E_{3.3}{}^{R}$	$E_{3.1}{}^{R}$	$E_{3.1}{}^{R}$		2.6^{G}	C		S	S	S	S	S
27	S	S				S	S						G	4.6	6.5	3.8	3.6		G	E	S	S	S	S
28	S	S					S	2.8	3.4	G	4.2	4.6	5.0	5.6	4.7	$E_{3.1}{}^{R}$	G	G	G	1.8	S	S	$E_{2.2}{}^{S}$	E
29	2.5	2.6	C	C	C	C	C	C	C	C	G	G	4.2	G	4.3	G	G	G	3.7	4.2	4.2	S	S	2.4
30	S	S	E			S	S		G	G	4.1	$E_{4.1}{}^{B}$	4.7	4.3	4.2	6.8	4.6	5.7	2.4	2.6	5.3	1.9	S	S
31	2.8	S					S					$E_{3.4}{}^{R}$	$E_{3.3}{}^{R}$	$E_{3.3}{}^{R}$	$E_{3.4}{}^{R}$	3.1^{G}	27^{G}	G	2.4	$E_{1.4}{}^{S}$	S	S	S	S
No.	6	7	5	4	6	3	3	6	10	15	19	18	15	19	19	18	24	24	21	17	12	8	10	6
Median	2.2	2.0	1.8	$E_{1.5}$	1.6	1.8	E	G	G	G	G	G	G	4.2	$E_{3.7}$	G	G	2.4	2.2	2.0	2.1	2.0	2.3	2.1

f_bE_s

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Mar. 1961

f-min

135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.80S	E1.90S	1.80	1.30	1.05	E1.75S	E1.80S	1.70	1.75	1.85	1.90	1.90	1.90	1.95	2.10	1.90	1.90	1.80	E1.80S	E1.80S	E1.85S	E1.70S	E1.80S	E1.90S
2	E1.90S	E1.90S	1.70	1.30	1.40	E1.80S	E1.80S	1.80	1.80	1.80	1.90	1.90	1.90	2.20	1.90	2.00	1.90	1.80	E1.80S	E1.80S	E1.75S	E1.70S	E1.85S	E1.80S
3	E1.80S	E1.70S	1.80	1.40	1.30	E1.80S	E1.80S	1.70	1.75	1.80	1.80	1.85	2.00	1.90	2.00	2.20	1.90	1.80	1.80	E1.70S	E1.70S	E1.80S	E1.80S	E1.80S
4	E1.85S	E1.60S	E1.70S	1.00	1.00	E1.70S	E1.75S	C	1.80	I2.15C	1.85	I2.30C	2.45	2.20	2.00	2.00	2.00	1.70	E1.70S	E1.70S	E1.75S	E1.80S	E1.80S	E1.80S
5	E1.90S	C	C	1.30	E	1.70	E1.80S	1.70	1.70	1.70	1.80	1.85	1.90	2.00	1.95	1.70	1.80	1.70	E1.75S	E1.90S	E1.80S	E1.80S	E1.90S	E1.85S
6	E1.90S	E1.80S	1.80	1.35	E	E1.70S	E1.60S	E1.75S	1.80	1.75	1.90	2.00	2.40	2.05	2.20	1.90	1.80	1.70	E1.70S	E1.70S	E1.80S	E1.80S	E1.90S	E1.80S
7	E1.80S	E1.70S	1.40	1.80	E	E1.80S	E1.90S	1.90	1.70	1.80	1.80	2.20	2.10	2.00	1.90	1.80	1.80	1.70	1.30	E1.80S	E1.80S	E1.80S	E1.95S	E1.80S
8	E1.85S	E1.80S	1.30	1.00	E	E1.70S	E1.80S	1.80	1.70	1.80	1.80	2.00	2.05	2.05	2.20	1.80	1.80	1.70	1.90	E1.70S	E1.80S	E1.80S	E1.85S	E1.90S
9	E1.80S	E1.90S	1.90	1.75	1.80	1.80	E1.80S	1.70	1.70	1.80	1.90	1.90	2.20	2.20	2.00	2.00	1.80	1.75	E1.75S	E1.70S	E1.80S	E1.80S	E1.80S	E2.00S
10	E1.80S	E1.80S	1.80	1.90	1.40	E1.75S	E1.90S	1.70	I1.80C	1.80	1.80	2.00	1.95	2.10	1.90	1.90	1.70	1.80	1.80	E1.90S	E1.90S	E1.90S	E1.90S	E1.80S
11	E1.80S	E1.70S	1.70	1.70	E	E1.60S	E1.80S	2.00	1.70	1.70	1.85	1.90	1.90	2.20	1.85	1.90	1.80	1.80	E1.80S	E1.70S	E1.60S	E1.90S	E1.90S	E1.90S
12	E1.80S	E1.90S	1.30	E	E	E1.60S	E1.70S	1.70	1.70	1.80	1.90	2.00	2.05	1.85	1.95	1.90	1.80	E1.70S	E1.70S	E1.80S	E1.90S	E1.85S	E1.80S	E1.80S
13	E1.80S	E2.00S	1.70	1.80	1.40	1.90	E1.70S	1.90	1.80	1.70	1.80	1.90	2.05	1.90	1.90	1.80	1.95	1.80	E1.80S	E1.70S	E1.70S	E1.80S	E2.00S	E1.70S
14	E2.00S	E1.80S	E1.80S	E	E	E1.80S	E2.00S	E1.70S	1.80	1.70	E5.30C	1.90	2.00	2.00	1.90	1.90	1.80	1.70	1.80	E1.70S	E1.90S	E1.75S	E1.80S	E1.90S
15	E1.90S	E1.60S	1.30	E	E	E1.80S	E1.70S	1.70	1.70	1.70	1.80	1.85	2.10	2.25	2.20	1.90	1.80	1.65	E1.70S	E1.60S	E1.70S	E1.60S	E1.95S	E1.50S
16	E1.70S	E1.80S	1.60	1.60	1.70	E1.60S	E1.70S	1.70	1.70	1.80	2.20	2.00	2.00	2.00	2.05	1.80	1.80	1.70	E1.60S	E1.60S	E1.70S	E1.50S	E1.80S	E1.70S
17	E1.60S	E1.80S	1.20	1.40	C	C	C	C	C	1.65	1.80	1.85	1.90	1.85	2.20	1.80	1.60	1.60	E1.70S	E1.70S	E1.80S	E1.70S	E1.75S	E1.70S
18	E1.80S	E1.80S	1.60	1.75	1.00	E1.70S	E1.70S	1.65	1.70	1.70	1.70	1.95	2.10	2.20	1.80	2.20	1.80	1.60	E1.80S	E1.70S	E1.70S	E1.70S	E1.80S	E1.70S
19	E1.80S	E1.80S	1.70	1.70	1.00	E1.80S	E1.70S	1.70	1.70	1.70	1.80	2.00	2.20	2.10	1.90	1.85	1.80	1.70	E1.70S	E1.60S	E1.70S	E1.60S	E1.70S	E2.00S
20	E1.80S	E1.70S	1.30	1.20	1.20	E1.60S	E1.60S	1.70	1.65	1.80	E4.30C	2.00	1.90	2.00	1.90	1.70	1.70	1.60	E1.70S	E1.60S	E1.60S	E1.70S	E1.60S	E1.50S
21	E1.80S	E1.65S	1.80	E	1.30	E1.70S	E1.70S	1.70	1.65	1.80	1.80	1.85	1.90	2.50	1.90	1.90	1.80	1.10	1.20	1.20	E1.60S	E1.80S	E1.75S	E1.80S
22	E1.70S	E1.80S	1.60	1.30	E	E1.80S	E1.70S	2.20	1.75	1.80	2.05	2.40	2.20	2.40	2.20	2.05	2.30	E1.70S	E1.70S	E1.70S	E1.70S	E1.60S	E1.80S	E1.70S
23	E1.60S	E1.60S	1.70	1.20	1.20	1.20	E1.60S	1.80	1.70	1.85	2.05	2.25	2.40	2.20	2.20	1.90	1.70	1.60	E1.60S	E1.70S	E1.70S	E1.75S	E1.90S	E1.60S
24	E1.70S	E2.05S	1.20	1.00	1.00	E1.60S	E1.70S	1.70	1.65	1.80	1.90	1.90	2.50	2.00	2.05	1.90	1.85	1.75	1.70	E1.70S	E1.80S	E1.70S	E1.55S	E1.70S
25	E1.80S	C	C	C	C	C	C	C	C	1.90	2.20	2.30	4.80	2.50	2.80	2.30	1.75	1.60	E1.70S	E1.70S	E1.70S	E1.85S	E1.80S	E1.70S
26	E1.70S	E1.70S	1.60	1.20	1.00	E1.80S	E1.60S	1.90	1.60	1.80	2.00	2.30	2.40	2.30	2.40	2.10	1.60	I1.80C	E1.80S	E1.70S	E1.70S	E1.70S	E1.80S	E1.65S
27	E1.70S	E1.70S	1.20	1.10	1.10	E1.70S	E1.70S	1.70	1.70	1.90	2.00	2.30	2.30	2.30	2.40	2.30	1.90	1.80	1.60	E1.60S	E1.50S	E1.70S	E1.90S	E1.90S
28	E1.80S	E1.90S	1.20	E	1.30	1.30	1.60	1.80	1.65	1.90	1.90	2.20	2.40	2.10	2.10	2.10	1.80	1.70	E1.60S	E1.70S	E1.60S	E1.80S	E1.90S	E1.75S
29	E1.70S	E1.60S	C	C	C	C	C	C	C	C	2.20	2.10	2.55	2.40	2.40	2.10	2.00	1.80	1.75	E1.70S	E1.70S	E1.85S	E2.00S	E1.80S
30	E1.80S	E1.80S	1.30	1.10	1.30	E1.60S	E1.70S	1.70	1.90	1.90	2.30	2.45	2.60	2.70	2.25	2.30	2.05	1.75	1.65	E1.60S	E1.80S	E1.70S	E2.00S	E1.80S
31	E1.70S	E2.00S	1.60	1.20	1.20	1.10	E1.70S	1.80	1.75	1.80	2.00	2.20	2.40	2.55	2.40	1.90	1.80	1.60	1.20	1.10	E1.60S	E1.75S	E2.10S	E1.90S
No.	31	29	26	29	28	28	28	26	28	30	29	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E1.80	E1.80	1.60	1.30	1.00	E1.70	E1.70	1.70	1.70	1.80	1.90	2.00	2.10	2.10	2.05	1.90	1.80	1.70	E1.70	E1.70	E1.70	E1.75	E1.80	E1.80

f-min

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 6

IONOSPHERIC DATA

Mar. 1961 | 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	L2.70	2.85	L2.05	2.35	L2.10	2.80	2.85	2.20	2.45	2.30	2.40	L2.60	2.10	2.10	2.10	2.00	2.00H	2.15	L2.25	L2.15	L2.75	2.95	L2.80	L2.75
2	L2.75	2.75	L2.00	2.50	2.50	2.85	2.80	2.30	L2.50	2.35	2.20H	L2.05	2.05	2.05	2.20	2.20	2.10	2.20	2.20	L2.05	L2.15	2.10	2.80	L2.90
3	2.80	2.80	L2.75	2.90	L2.10	2.10	2.15	2.55	L2.55	2.35H	2.40H	2.15	2.10	2.20	2.05H	2.05H	2.15	L2.20	2.30	L2.10	L2.00	2.95	L2.05	L2.00
4	L2.90	L2.75	L2.80	L2.05	2.40	2.15	2.90	L2.15	L2.55	L2.40	2.30H	L2.25	2.10	2.15	2.15	L2.20	2.00	2.30H	2.30	L2.10	2.95	2.80	2.80	2.95
5	S	C	C	L2.10	L2.40	2.05	2.05	2.30	L2.50	2.50H	2.20H	2.10H	L2.05	2.00	2.15	2.15	2.25	L2.35	2.35	L2.20	L2.00	2.10	2.95	L2.05
6	L2.95	2.90	2.90	L2.00	L2.75	L2.90	2.05	2.50	L2.40	2.40	2.05H	L2.25	2.95	2.10	2.05	2.15	2.10	L2.05	S	L2.10	L2.00	2.80	L2.90	2.80
7	2.75	2.70	2.85	2.20	2.35	2.80	2.60	2.10	L2.20	2.25	2.25	L2.20H	2.20H	2.25	2.20	2.25	2.30	L2.30	L2.20	L2.20	L2.15	2.95	L2.10	L2.05
8	L2.15	2.10	L2.85	2.00	2.85	2.95	2.00	2.30	2.30	2.20	2.35H	L2.30H	2.25H	L2.10H	2.15	2.20	L2.35	2.30	2.30	L2.20	2.25	2.15	2.15	2.75
9	2.70	L2.85	2.85	L2.95	2.15	L2.00	2.85	2.45	2.55H	L2.25H	2.00H	L2.05H	2.20H	2.05H	2.15	2.25	L2.35	2.30	2.35	L2.10	2.20	2.10	2.10	L2.85
10	L2.80	2.70	2.75	2.80	2.20	2.20	2.75	2.55	L2.50	2.25	2.05	L2.00	2.00	2.15	2.20	2.25	2.20	L2.35	2.30	2.05	S	Fs	S	S
11	S	S	2.20	S	Fs	S	S	F	L2.40	2.35	2.15	L2.15	2.25	2.30	2.50	L2.50	L2.45	L2.55	L2.50	2.20	L2.40	L2.95	2.85	L2.85
12	2.90	2.65	2.85	2.95	2.15	2.95	2.75	2.50	L2.65	L2.55H	L2.20H	2.20	2.20H	2.15	2.30	L2.40H	L2.30	L2.40H	L2.35	L2.40	2.10	2.05	L2.10	2.15
13	L2.10	L2.80	2.80	2.05	L2.15	2.35	2.95	2.45	L2.45	2.50	2.20H	L2.30H	2.20H	2.95H	2.20H	2.25	L2.35	2.50	L2.45	L2.35	2.10	2.00	L2.15	2.05
14	S	S	S	2.90	L2.35	2.30	2.85	2.40	L2.25	2.10	2.15H	2.15	2.00	2.05	2.10	2.25	L2.35	L2.60	L2.25	L2.10	L2.90	2.95	L2.00	2.90
15	L2.05	L2.00	2.95	2.90	L2.75	2.90	2.95	L2.30	L2.35	L2.30	2.05H	2.15	2.10	2.15	2.15	L2.15H	L2.25H	L2.30	L2.40	L2.15	2.90	2.90	2.85	2.85
16	L2.35	L2.00	2.05	2.15	2.10	2.75	2.80	L2.30	2.20	L2.30	2.45	L2.30	L2.30	2.15	L2.20H	L2.15H	L2.40	L2.35	L2.25	L2.00	L2.00	L2.05	2.90	2.85
17	2.65	2.80	2.05	2.05	C	C	C	C	C	L2.35	2.20H	2.15	2.05	2.05H	2.20H	2.15	L2.20H	L2.35	L2.20	L2.15	L2.20	L2.15	L2.30	2.05
18	L2.75	2.85	2.90	2.95	2.05	2.80	2.15	L2.50	2.50	L2.35	2.05H	2.15	2.10H	2.10H	2.10H	2.20H	L2.20H	L2.25	L2.40	L2.15	2.95	2.90	2.95	2.90
19	2.90	2.75	2.75	2.85	2.75	2.75	2.75	2.40	L2.45	2.15	L2.90H	2.10	2.15	2.05	2.05	2.00H	L2.15H	L2.25	L2.45	L2.15	2.85	2.80	L2.60	2.65
20	2.75	2.95	L2.35	2.50	2.35	2.70	2.75	2.20	2.05	2.15	2.30	2.25	2.05	2.05	2.15	2.05	L2.15H	L2.30	L2.40	L2.45	2.95	L2.75	2.70	L2.80
21	2.85	2.80	L2.85H	2.15	2.15	2.70	2.05	L2.45	2.50	2.30H	2.05H	2.05H	2.05H	S	S	2.05	2.95H	L2.20H	L2.30	L2.35	L2.05	2.80	2.00	2.80
22	2.70	2.75	2.80	2.90	2.20	2.30	2.00	2.40	2.40H	2.30H	2.90H	2.80H	2.95H	2.05H	2.05H	2.10H	2.10H	2.20	L2.30	L2.10	L2.10	2.85	2.90	2.80
23	L2.70	L2.80	2.85	2.20	2.25	2.95	2.10	2.50	2.20	2.10H	2.95H	2.05	2.00	2.05	2.05	2.00H	2.10H	2.20H	L2.25	L2.15	2.90	2.80	2.85	2.85
24	2.75	2.65	L2.75	2.15	2.15	2.80	2.85	2.35	2.15	2.30	2.10H	2.00H	2.95H	2.00H	2.95H	2.95H	2.95H	2.05	2.20	2.15	L2.10	L2.75	S	S
25	S	C	C	C	C	C	C	C	C	L2.20	2.10H	2.00H	2.90H	2.05H	2.05H	2.00H	L2.00H	L2.95	L2.15	L2.20	2.00	S	S	S
26	2.75	2.80	2.05	2.20	2.30	2.95	2.00	L2.40	2.35	2.20H	2.95H	2.90	L2.90C	2.95	L2.90	2.95H	2.00H	L2.00H	L2.10H	2.20	L2.05	L2.95	2.80	2.75
27	2.75	2.75	2.90	L2.15	2.20	2.15	2.05	2.50	L2.50	2.15	2.80H	2.85H	2.00	2.00	2.90	2.90	2.00H	L2.05	2.15	L2.25	2.15	S	S	Fs
28	Fs	Fs	L2.00	2.60	2.55	L2.80	2.00	2.25	2.35	2.20	2.95H	2.75H	2.90H	L2.90H	L2.85H	L2.85H	L2.95H	L2.10	L2.25	L2.15	L2.70H	S	S	S
29	S	S	C	C	C	C	C	C	C	C	2.00H	2.80H	2.85H	2.90H	L2.00	2.05	2.05H	2.10	2.20	2.30	L2.70	S	S	S
30	2.85	2.75	L2.05	2.05	2.00	2.10	2.80	L2.30	2.35	2.10H	2.90H	2.90	2.90	2.95	2.95	2.90H	2.00	2.00	2.10	2.05	L2.85	2.75	L2.75	L2.80
31	2.80	2.90	L2.10	L2.25	2.00	2.85	2.90	2.20	2.10	L2.30H	2.00H	2.90	2.95	L2.90	2.90	2.00	2.00	L2.10	2.20	L2.15	L2.10	L2.80	L2.75	L2.80
No.	25	25	27	28	27	27	27	27	28	30	31	31	31	30	30	31	31	31	30	31	30	26	25	25
Median	2.80	2.80	2.90	2.05	2.15	2.95	2.90	2.40	2.40	2.30	2.10	2.10	2.05	2.05	2.10	2.15	2.15	2.25	2.30	2.15	2.00	2.95	2.90	2.85

M(3000)F2

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | 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												L	L	L	L	L								
2												L	L	L	I 3.50 L	L	L							
3												L	L	L										
4								C		C		C	L	3.60 L	3.55 L	L								
5													L	3.65 L	3.55 L	3.65 L								
6												L	L	L	L	L								
7														3.75 EH	I 3.85 L	B								
8																								
9															L	3.70	L							
10									C			L	L	L	L	L								
11													3.65 L	3.50 L	A	A	L							
12											L	L	L	3.65 L	3.80 L									
13																								
14											C	L	A	3.50	3.60 L	3.60 L	L							
15												L	3.75	3.60 L	3.65 L									
16											L	3.80 L	I 3.75 L	I 3.65 L										
17							C	C	C		L H	L	L											
18																								
19											L	L	L	L	3.60 L									
20										L	L	3.70 L	L	L	L H	L								
21														3.60 L	L	L								
22																								
23											L H	L	L	3.35 L	A									
24																								
25							C	C	C															
26												L	L	L	L			C						
27													L	L	A	L								
28																								
29							C	C	C	C				L	3.35 L	L								
30												L	L	3.50 L	L									
31												L	L H	L	L	L	L							
No.												2	3	11	9	3								
Median												3.75	3.75	3.60	3.60	3.65								

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1961 | h'F2 | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' E

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

h'F2

Sweep 1.0 Mc to 20.0 Mc in ↓0 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 9

IONOSPHERIC DATA

Mar. 1961 | 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	↓15	280	270	240	240	250	295	250	240	225	240	240	260	260	I↓30A	225	220H	250	225	240	240	250	295	↓10
2	↓40	↓05	260	↓30	205	E295M	↓20	250	↓30	↓30	200H	225	245	250	245	250	225	245	↓30	240	220	250	↓00	↓00
3	↓00	270	↓00	290	255	245	245	↓35	↓35	200H	225H	225	225	240	220H	↓30H	↓35	240	↓30	220	210	250	250	275
4	290	↓10	↓10	255	↓35	↓35	290	I260B	240	I↓30C	225H	I220H	220	E250B	E↓35B	205	225	↓30H	225	220	240	240	280	275
5	295	I↓25C	I↓20C	260	220	255	290	245	↓30	205H	205H	205H	185	250	240	240	240H	245	↓30	220	250	255	280	255
6	290	295	295	275	260	295	265	↓30	240	225	200H	245	220	220	225	240	240	250	250	↓30	220	290	280	290
7	↓20	↓05	270	250	220	290	↓40	260	240	245	↓35	245H	200H	190H	240	E260B	240	240	240	210	250	↓00	285	265
8	255	255	290	260	255	290	285	↓30	↓30	225	200H	205H	↓30H	225H	195H	250	240	↓35	240	225	220	250	255	↓00
9	↓10	290	↓00	290	270	260	290	240	220H	215H	↓35B	↓30H	210H	245H	200	E260A	↓30	↓35	225	245	220	245	250	↓05
10	↓40	↓40	↓45	↓05	↓35	245	↓00	↓35	I240C	225	250	250	245	I265A	270	250	240H	245	↓30	240	↓40	255	260	225
11	275	↓00	260	255	↓45	↓05	280	260	250	240	↓30	210H	270	255	A	A	↓30	240	↓30	205	220	280	↓00	↓00
12	↓15	↓45	↓↓0	↓00	250	270	↓50	240	↓30	215H	210	E250B	E250B	240	E240B	220H	240	↓30	240	↓35	225	255	255	255
13	260	↓00	↓00	290	↓30	250	295	240	240	240	205H	225H	220H	↓30H	E275AH	250H	255	245	↓30	225	250	255	250	260
14	↓15	↓00	↓15	285	205	240	↓↓0	240	240	↓30	I215CH	245	A	↓35	↓30	240	240	↓30	↓35	↓35	250	255	255	280
15	255	255	275	260	↓10	↓15	265	250	240	240	↓30H	↓30	220	220	225	↓30H	240H	240	↓30	240	240	275	275	290
16	↓30	255	255	240	250	↓00	↓05	260	245	245	225	210	200	200	↓35H	220H	245	240	240	↓30	↓30	245	255	290
17	↓15	↓00	250	240	C	C	C	C	C	225	200H	220	220	220H	↓30H	220H	190H	250	250	240	↓30	250	↓30	240
18	↓10	↓00	290	260	210	↓00	260	240	240	225	205H	200H	205H	205H	190H	190H	250	225	240	↓30	↓30	290	280	280
19	280	↓00	↓10	↓00	275	↓00	↓00	225	↓30	↓30	215	205	205	220	220	220H	↓30H	245	↓35	A	E↓00A	↓25	I↓40A	↓40
20	↓00	275	225	200	↓70	↓20	275	240	250	240	240	240	220	205	210H	240	220H	250	250	225	240	290	E405A	295
21	290	290	290	245	220	275	280	240	240	225H	200H	195H	200H	225	220	220	225H	250H	240	220	210	295	270	290
22	↓25	↓15	↓00	280	250	240	260	↓30	210H	205H	195H	190H	250H	225H	E290BH	I240AH	I245AH	245	↓35	220	250	E↓40A	↓10	↓00
23	↓20	↓00	290	245	210	250	270	↓35	240	↓30H	210H	225	210	↓35	I↓35A	225H	I225AH	240H	240	225	250	255	280	290
24	↓00	↓↓0	↓00	240	210	275	290	240	240	240	220H	205H	↓30H	↓30H	↓35H	245H	↓35H	240	245	↓30	↓35	240	260	280
25	250	C	C	C	C	C	C	C	C	↓30	210H	200H	260H	245H	210H	240H	215H	240	255	↓30	↓30	245	260	255
26	290	290	255	240	205	250	255	↓30	↓30	210H	200H	210	240	240	↓30	210H	↓30H	I240C	245	↓30	215	245	255	290
27	↓00	↓00	270	245	210	↓30	245	↓30	↓30	210	205H	195H	↓35	260	I↓45A	225	225H	250	250	↓30	210	245	285	290
28	↓00F	↓00	255	↓20	↓40	240	↓35	240	240	220	↓30H	250H	I265AH	I↓35AH	275H	220H	↓35H	240	250	210	220H	290	↓20	↓05
29	295	270	C	C	C	C	C	C	C	C	225H	220H	205H	270	255	205	250H	250	245	245	270	290	↓05	290
30	275	290	250	↓30	240	250	290	245	240	220H	215H	220	260	220	↓30	I270AH	280	280	245	↓35	E↓25A	260	290	↓00
31	↓10	290	250	220	200	260	270	240	240	↓35H	220H	205	200H	225	240	225	240	240	250	240	225	255	↓05	↓00
No.	↓1	↓0	29	29	28	27	28	28	28	↓0	↓1	↓0	29	↓0	26	28	↓1	↓1	↓1	↓0	29	↓0	↓0	↓1
Median	↓00	↓00	290	255	240	260	290	240	240	225	215	220	220	↓30	↓30	↓30	↓35	240	240	↓30	↓30	255	280	290

h'F | Sweep 1.0 Mc to 20.0 Mc in ↓0 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

Mar. 1961 | R'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	105	E	E	E	S	S	G	G	G	165	160	150	105	130	G	110	110	110	110	105	S	105	S
2	S	S	E	E	E	S	S	G	G	G	G	G	105	G	110	G	G	110	110	110	110	105	100	100
3	S	S	E	E	E	S	S	G	G	G	G	175	G	135	105	115	115	120	S	S	105	S	105	S
4	S	S	S	E	E	S	S	C	G	C	G	C	140	G	140	140	120	G	G	S	S	S	S	S
5	S	C	C	E	E	E	S	G	G	G	150	145	G	G	160	105	105	140	130	S	115	S	S	S
6	S	S	E	E	E	S	S	G	G	G	G	G	G	G	115	110	110	110	110	110	S	S	S	S
7	S	S	E	E	E	S	S	G	G	G	150	140	G	G	110	110	110	110	G	S	S	S	S	S
8	S	S	E	E	E	S	S	G	G	G	G	G	G	140	G	G	G	120	S	S	S	105	S	S
9	S	S	E	E	E	E	S	G	G	G	150	G	110	110	110	110	115	110	110	105	105	105	100	S
10	S	S	E	E	E	S	S	G	C	105	140	150	130	120	120	120	120	125	S	100	S	S	S	S
11	115	110	110	110	110	105	105	G	115	110	G	G	G	140	130	135	130	120	120	S	S	S	S	S
12	120	110	110	110	105	105	105	105	G	G	150	150	140	130	125	125	120	130	100	S	S	S	110	110
13	S	S	E	E	E	E	S	G	G	G	G	G	105	135	130	160	150	130	120	110	110	110	S	S
14	S	S	S	E	110	S	S	145	140	135	C	150	125	125	125	105	G	115	S	S	S	S	S	S
15	S	105	110	110	110	105	S	G	G	105	145	140	G	G	G	G	G	G	G	S	S	S	S	S
16	S	110	E	E	E	S	110	105	105	110	105	105	G	G	G	G	G	G	G	S	S	S	S	S
17	S	S	E	E	C	C	C	C	C	105	105	140	G	G	G	G	100	150	135	120	S	S	S	S
18	S	S	E	E	E	S	S	145	150	125	125	105	G	G	G	130	130	105	G	135	130	S	S	S
19	S	S	E	E	E	S	S	G	150	150	145	145	G	G	G	G	G	130	120	115	110	110	110	S
20	S	S	E	E	E	S	S	155	150	140	C	130	125	130	G	G	105	100	100	120	110	115	115	115
21	115	S	E	110	E	S	S	G	115	110	130	140	140	G	105	105	G	135	130	100	S	S	S	S
22	S	115	E	E	110	S	S	G	G	110	110	105	110	150	150	130	125	100	125	100	110	110	110	S
23	S	S	E	E	E	E	S	G	G	G	G	140	140	130	105	105	105	105	120	120	100	S	105	105
24	110	S	105	105	105	S	S	G	110	135	130	125	120	125	125	120	115	155	125	S	S	S	S	S
25	S	C	C	C	C	C	C	C	C	110	110	110	B	G	G	105	105	105	105	S	S	S	S	S
26	S	S	E	E	E	S	S	G	G	G	110	110	110	110	105	G	100	C	G	S	S	S	S	S
27	S	S	E	E	E	S	S	G	G	G	G	G	110	110	110	105	105	G	100	120	S	S	S	S
28	S	S	E	E	E	E	S	140	135	130	125	120	110	110	105	105	125	120	140	110	110	S	105	105
29	105	110	C	C	C	C	C	C	C	C	140	135	140	130	130	125	135	145	130	120	110	S	S	110
30	S	S	105	E	E	S	S	G	135	125	120	120	115	110	110	110	110	110	110	125	120	115	S	S
31	110	S	E	E	E	E	S	G	G	G	G	110	110	110	110	110	110	150	130	105	S	S	S	S
No.	6	7	5	5	6	3	3	6	10	15	19	23	19	19	23	22	24	26	21	18	14	8	10	6
Median	110	110	110	110	110	105	105	140	135	110	130	140	120	125	115	110	110	120	120	110	110	110	105	110

R'Es

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

IONOSPHERIC DATA

Mar. 1961

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' 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		f2									h	h	h	l	hl		l	l2	l2	f2	f2		f3	
2													l		l			l2	l	f3	f	f2	f2	f
3												h		hl	l	l	l	l2			f		f2	
4													h		h	h	l							
5											h	h			hl	l2	l	h2l	hl2		f3			
6															l	l	l	l6	l2	f				
7											h	h			l	l	l	l2						
8														h				l2				f		
9											h		l	h2	l	l2	l2	l4	l2	f3	f2	f	f	
10										l2	h	hl	hl	h	h	h	h2	h l2		f				
11	f2	f2	f4	f	f3	f2	f2		l	l				hl	h	h	h	C2	C					
12	f3	f2	f4	f2	f3	f2	f4	l2			h	h	h	h	h	h	h	h2	l				f2	f2
13													l	hl	hl2	hl	h	h2	C	f	f3	f		
14					f			h2	h	h2		h	h	h	h	l		l						
15		f2	f2	f	f3	f5				l	hl	hl												
16		f					f	l2	l2	l2	l2	l												
17										l	l	h					l	h2l	h2	f2				
18								h2	h2	h	h	l				hl	hl2	l2		f3 f	f			
19									h2	h	h	h						h2	h2	f2	f5	f4	f3	
20								h	h	hl		hl	h	h			l2	l2	l2	f	f2	f3	f3	f2
21	f2			f					l	l	h	h	h		l	l		h3l2	h2l	f				
22		f2			f2					l	l	l	l	hl	hl	h2l	h2	l2	C	f	f2	f4	f5	
23												h	h	h	l2	l2	l2	l3	h2	f f	f2		f2	f4
24	f		f	f	f				l	h	h	h	h	h	hl	hl	l	h	C					
25										l	l	l				l	l	l	l2					
26											l	l	l	l	l		l2							
27													l	l	l2	l	l2		l2	f				
28								h3	h2	h	h	h	l2	l3	l3	l2	hl	l2	hl	f	f2		f	f
29	f3	f6									hl	hl	h	h	h	h	h	h	C4	f f2	f4			f2
30			f						h	h2	h	h	h	l	l	l4	l2	l3	l2	f f4	f3	f2		
31	f4											l	l	l	l	l	l2	hl3	h2l	f				
No.																								
Median																								

Types of Es

Sweep 10 Mc to 200 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 1x

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

Mar. 1961	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	4	4	(4)	-	4	0	0	(0)	-	0
2	(6)	(6)	(6)	-	(6)	(0)	(0)	(0)	-	(0)
3	(6)	(6)	(6)	-	(6)	(0)	(0)	(0)	-	(0)
4	(6)	(7)	(7)	-	(7)	(0)	(0)	(0)	-	(0)
5	7	7	7	-	7	0	0	0	-	0
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	(6)	-	-	-	-	(0)	-
8	6	(9)	-	(7)	6	0	(0)	-	(0)	0
9	(8)	(8)	(8)	-	(8)	(0)	(0)	(0)	-	(0)
10	(8)	(8)	(8)	-	(8)	(0)	(0)	(0)	-	(0)
11	(6)	(6)	(6)	-	(6)	(0)	(0)	(0)	-	(0)
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	(6)	(6)	(6)	-	(6)	(0)	(0)	(0)	-	(0)
16	(7)	(7)	(7)	-	(7)	(0)	(0)	(0)	-	(0)
17	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	(6)	-	-	-	-	-
19	-	(5)	-	-	(5)	-	(0)	-	-	(0)
20	(6)	7	8	-	7	(0)	0	0	-	0
21	6	7	6	-	6	0	0	0	-	0
22	8	7	7	-	7	0	0	0	-	0
23	8	6	6	-	7	0	0	0	-	0
24	7	7	6	-	7	0	0	0	-	0
25	17	62	45	-	44	2	2	2	-	2
26	7	8	9	-	8	0	0	0	-	0
27	7	6	(6)	-	7	0	0	(0)	-	0
28	8	9	(7)	-	8	0	0	(0)	-	0
29	6	7	8	-	7	0	0	0	-	0
30	11	8	8	-	9	0	0	0	-	0
31	13	13	10	-	12	1	1	1	-	1

Outstanding Occurrences

Mar. 1961	Start-time	Dura-tion	Type	Max. Inst.	Int. Smd.	Max. Time	Remarks
1	0715.1	0.9	ECD/8	> 3200	2300	-	off scale
27	0510.9	0.6	CD/4	1150	160	-	
27	0523.2	0.9	ECD/4	800	180	-	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Mar. 1961	Whole Day Index	L. N. 06-12	L. N. 12-18	L. N. 18-24	W W V 00-06	W W V 06-12	W W V 12-18	W W V 18-24	S. F. 00-06	S. F. 06-12	S. F. 12-18	S. F. 18-24	W W V H 00-06	W W V H 06-12	W W V H 12-18	W W V H 18-24	Warning 00-06	Warning 06-12	Warning 12-18	Warning 18-24	Principal magnetic storms Start	End	ΔH
1	1+	1	2	1	2	-	1	1	2	1	1	1	2	2	2	2	N	N	N	N			
2	1o	1	2	1	1	-	1	1	2	1	1	1	2	(1)	2	1	N	N	N	N			
3	1o	1	2	1	1	-	1	1	1	1	1	1	1	1	1	2	N	N	N	N			
4	1+	1	1	1	2	-	-	1	1	2	1	1	2	2	1	1	N	N	N	N			
5※	1+	1	2	2	1	-	-	2	1	1	1	1	1	3	1	2	N	N	N	N	14.0	---	151γ
6※	2o	2	2	2	3	-	-	2	1	1	2	1	1	1	2	1	N	U	U	U	---	20xx	
7	2-	1	1	2	2	-	-	2	2	1	1	2	1	1	1	1	N	N	N	N			
8	1+	1	1	2	1	-	-	1	1	2	1	1	1	2	1	1	N	N	N	N			
9	1+	1	2	2	2	-	-	1	1	1	2	1	1	2	1	1	N	N	N	N	1328	---	246γ
10	3-	1	2	2	2	-	-	4	1	2	2	4	1	(2)	-	2	N	N	U	U	---	24xx	
11	2o	1	1	1	4	-	-	3	3	2	2	1	2	3	2	1	U	N	N	N			
12	2-	1	2	3	2	-	-	1	1	2	1	2	1	1	2	1	N	N	N	N			
13	1+	1	2	2	1	-	-	3	1	1	1	1	1	2	2	(2)	N	N	N	N	14.6	---	
14	2+	2	2	2	3	-	-	3	1	2	1	3	2	1	2	2	U	U	U	U	---	---	73γ
15	3-	3	1	2	4	-	-	3	3	2	1	3	2	1	(1)	2	U	U	U	U	---	19xx	
16	2+	2	2	1	4	-	-	3	2	1	2	1	2	2	2	2	U	U	U	U			
17	2o	2	2	1	3	-	-	4	1	1	1	2	2	1	2	1	N	N	N	N			
18	2o	1	2	3	4	-	-	3	1	1	1	2	2	2	2	1	N	N	N	N	12.6	---	
19	3-	2	2	3	3	-	-	3	1	2	2	3	2	1	1	2	N	N	N	U	---	---	70γ
20	2o	1	2	3	2	-	-	2	3	1	1	2	1	1	1	1	U	U	N	N	---	20xx	
[21]	2-	1	2	2	1	-	-	3	2	1	1	1	1	1	2	1	N	N	N	N			
[22]	3-	3	2	2	3	-	-	2	2	2	2	1	1	2	1	1	N	N	N	N			
[23]	1+	1	1	2	1	-	1	1	1	1	2	2	2	(1)	2	2	N	N	N	N			
24	1o	1	2	1	1	-	1	1	2	1	1	1	2	1	1	2	N	N	N	N			
25	1+	1	2	-	1	-	1	1	1	1	2	1	2	1	1	2	N	N	N	N			
26	1+	2	3	3	1	-	1	1	1	1	1	1	1	1	1	(1)	N	N	N	N			
27※	1+	1	(2	1)	1	1	-	4	1	1	1	2	2	1	1	2	N	N	N	N	1503	---	63γ
28※	2o	3	2	2	4	-	1	2	1	1	1	2	1	1	1	1	U	U	U	U	---	19xx	
29	1o	1	(1)	2	1	-	1	2	1	1	1	1	1	1	1	1	N	N	N	N			
30	2-	3	2	1	1	(1)	1	1	2	2	2	1	1	2	1	1	N	N	N	N			
31	2-	2	1	1	1	-	1	3	2	2	2	2	1	1	1	1	N	N	N	N			

※ = day of Special World Interval

[ ] = Regular World Day

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

- = impossible to evaluate

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Mar. 1961	S W F								S E A			Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Start-time	Dura-tion	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN										
	None														

IONOSPHERIC DATA IN JAPAN FOR MARCH 1961
電 波 観 測 報 告　第13巻 第3号

1961年5月20日 印　刷
1961年5月30日 発　行　（不許複製非売品）

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