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IONOSPHERIC DATA IN JAPAN

FOR APRIL 1961

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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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. 0234x)

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

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

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

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

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

1 = 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

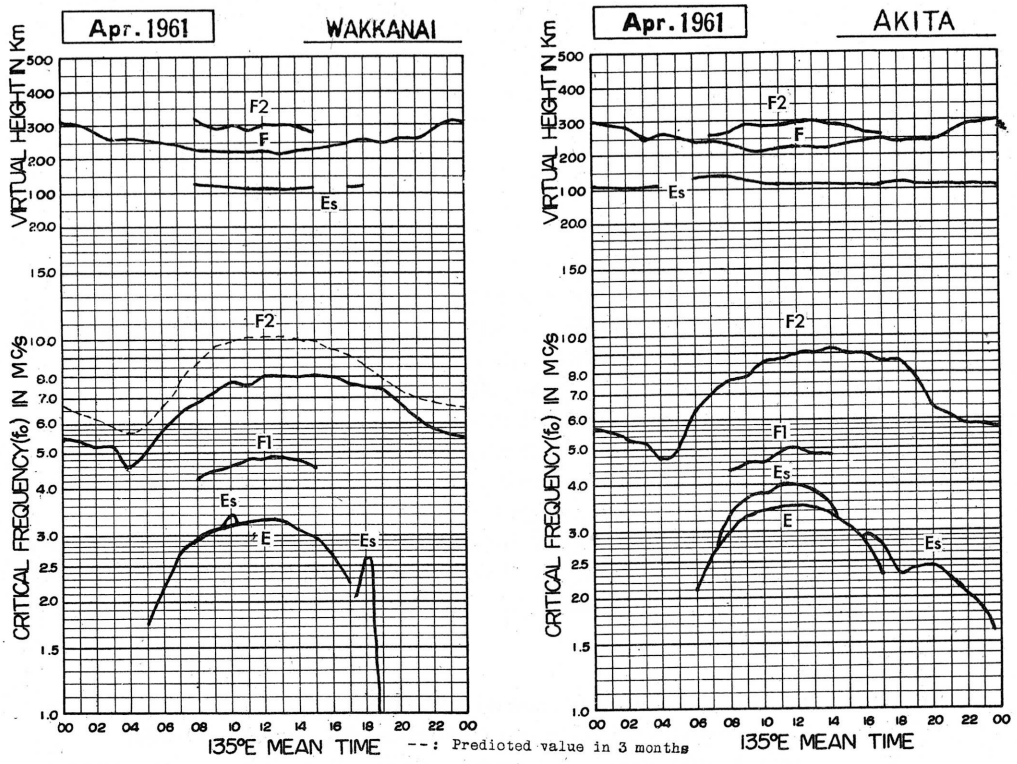
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

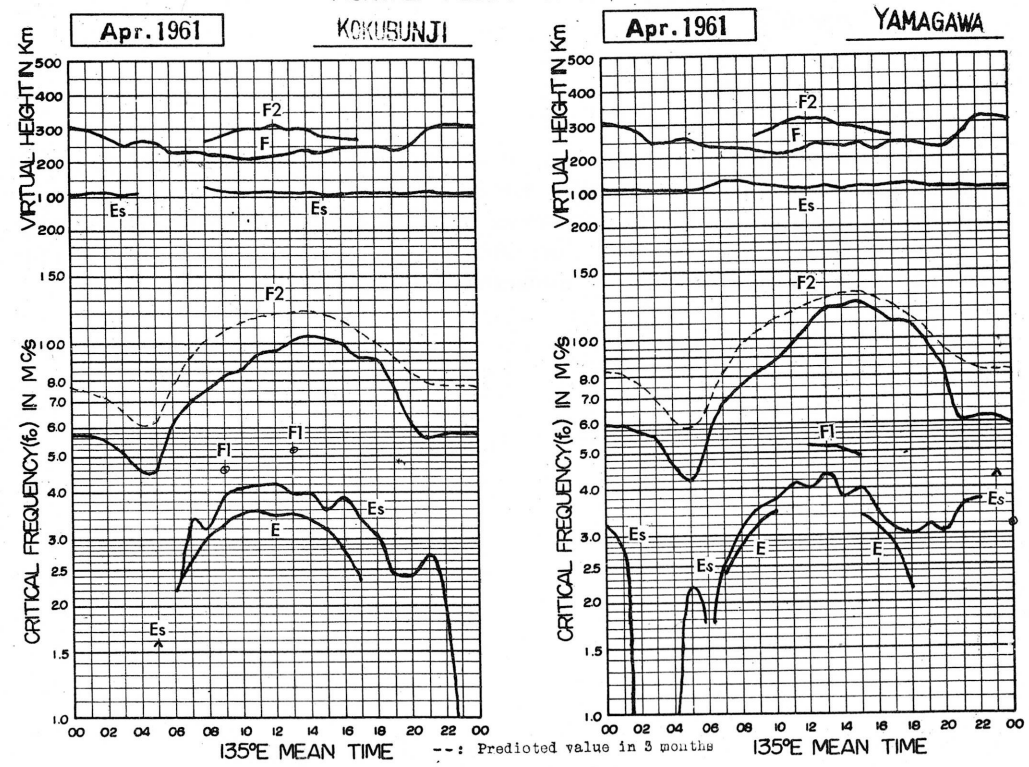
The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

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



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	8.8	9.5	10.2	9.7	4.8	10.3^{H}	10.6^{H}	8.1	7.6	7.2	7.0	7.1	6.8	6.3	6.0
2	6.0	6.0	5.8	5.2	4.9	4.7	5.3	5.8^{H}	6.4	7.1	8.3	9.0	9.9	9.2	8.6	8.5	8.5^{H}	8.6	8.3	7.3	7.0	6.0	5.3	5.3
3	5.3	5.4	5.1	4.6	4.4	4.5	5.6	5.8^{H}	6.4	7.2	7.2	7.7	8.5	9.1	7.7	8.4	7.9	7.3	6.7	6.8	5.3	5.4	5.5	5.0
4	4.5	4.4	4.6	4.3	4.2	5.1	5.4	5.9	7.4	8.7	9.0	9.4	10.0	9.0^{H}	8.3^{H}	7.1	7.2^{H}	7.6	8.4	6.8	6.0	5.3	5.2	5.3
5	5.1^{F}	5.1^{F}	5.1^{F}	4.9	4.4	4.8	5.8	6.3^{H}	7.2	8.3	8.5	9.2	8.9	8.9	8.6	8.3	7.7	6.8	6.9	6.4	6.3	6.2	5.9	6.0
6	5.6	5.4	5.4	5.3	4.5	5.0	6.0^{H}	7.0^{H}	7.6^{H}	8.4	8.7	9.0	8.9	8.8	8.3^{H}	8.2^{H}	8.0^{H}	7.6	8.5	7.8	6.1	6.1	6.1	5.6
7	5.5	5.6	5.3	5.0	5.0	5.6	6.2	7.8^{H}	8.1	8.1	7.9	8.3^{H}	8.8^{H}	8.7	8.0^{H}	8.0^{H}	7.7	7.7	8.3	7.6	6.7	5.8	5.5	5.6
8	5.5	5.5	5.6	5.5	4.2	4.8	6.3	7.4	8.5^{H}	9.6^{H}	10.5^{H}	9.4	9.2	9.3	9.0	9.0	8.5	7.7	7.4	7.6	7.0	5.3	5.0	5.0
9	4.9	4.6	4.9	4.9	4.6	4.7	6.0	6.4	8.5	8.6	8.4	8.4	8.6	9.6	9.4	9.5^{H}	8.8^{H}	8.4	6.7	6.5	6.1	6.1	5.8	6.4
10	6.2	4.0	3.8	3.6	3.2	3.9	5.3	5.2^{H}	6.0	6.2	5.8	6.0	6.5	6.6	7.0	6.6	6.1	6.1	6.8	6.4	5.8	5.7	5.2	4.5
11	4.6^{H}	4.6^{F}	5.0	5.0	4.6^{g}	5.0^{g}	5.3	5.3	5.9	6.3	7.8	8.0	7.6	7.3^{H}	8.0^{H}	7.3^{H}	8.0^{H}	6.7	7.6	7.5	6.4	5.5	4.5	4.5
12	4.6^{F}	4.5^{F}	4.3^{F}	3.7^{F}	3.7^{F}	3.8	5.0^{H}	5.7	5.6	6.3	6.9	6.5	7.0	7.3	6.6	6.6^{H}	6.7^{H}	6.5	7.6	^{U}7.6^{S}	6.2	5.0	4.5	4.4
13	4.6	4.3	4.5	4.8	4.3	4.5	5.0	6.3^{H}	6.4	6.5	7.8	7.3	6.7	7.0	7.1	6.8^{H}	7.0^{H}	7.0	6.6	7.3	6.6	5.6	5.0	5.0
14	4.8	4.6	4.6	4.0	4.1	4.5	5.0	4.3	5.3	6.9	6.7	7.1	6.5	6.8	6.8	6.7	6.4^{H}	6.1	6.7	7.4	7.1	6.8	5.8	5.5
15	5.3	5.1	4.8	4.0	3.3	3.6	5.3^{H}	5.0	6.0^{H}	6.0^{H}	6.0	6.0^{H}	7.3	7.9	7.8	8.7	7.6	6.8	7.0	6.1	6.1	5.8	5.1	5.0
16	4.8	4.5	4.3	F	F	F^{s}	4.9	6.0^{H}	6.8^{H}	8.2	9.8	9.3	8.1	7.7^{H}	8.5	8.3	8.4^{H}	7.9	7.6	7.1	7.0	6.2	5.8^{F}	5.9^{F}
17	F	^{H}F	F	5.4^{F}	4.3^{F}	5.0^{F}	5.0	5.3^{H}	5.7	6.7	6.7	7.4	7.0	6.8	7.6	7.6	7.6	8.1	7.1	6.9	6.8	6.5	6.0	5.8
18	5.8	5.8	5.7	5.6	4.8	5.3	5.7	6.3	6.7^{H}	7.6^{H}	7.9^{H}	8.5	8.1	7.5^{H}	7.6	8.0^{H}	8.8^{H}	8.6	8.1	7.0	6.9	6.0	5.5	5.7
19	5.6	5.6	5.6	5.4	4.6	5.0	5.4	6.0^{H}	6.3^{H}	7.1	8.0^{H}	7.9	8.0	8.6	8.0	7.5	7.5^{H}	7.8	7.4	7.6	6.7	6.6	6.0	5.9
20	5.7	5.8	5.5	5.3	4.9	5.7	6.5	6.9^{H}	7.7^{H}	8.0	8.1^{H}	8.3	8.3	8.2	8.1^{H}	7.3^{H}	7.3^{H}	7.5	7.5	8.3	8.1	7.0	5.6	5.2
21	5.2	5.1	5.0	5.0	5.2	5.8	7.5	7.7^{H}	7.9^{H}	7.8^{H}	7.3^{H}	7.2^{H}	7.3^{H}	8.0	8.2	7.9^{H}	8.1^{H}	8.4^{H}	8.9	8.5	7.0	6.5	5.9	5.6
22	5.5	5.6	5.5	5.4	5.2	5.8	6.6	7.7^{H}	8.6	7.8^{H}	7.6^{H}	7.2	7.3^{H}	7.7	8.0	8.9	9.3^{H}	8.8^{H}	8.0	7.8	6.7	6.5	6.0	6.0
23	5.8	5.8	5.7	5.9	5.5	5.4	6.3	6.4^{H}	5.8^{H}	6.3	6.8	7.5	7.2^{H}	7.5^{H}	7.9	8.0	8.2^{H}	7.7^{H}	7.7	7.9	7.3	6.8	6.3	6.2
24	^{I}5.9^{F}	^{I}6.0^{F}	6.0^{F}	5.9^{F}	5.0^{F}	5.6	6.3	6.9^{H}	7.3^{H}	6.6	6.8	7.3^{H}	8.0	7.4	7.7	8.0^{H}	7.7^{H}	7.5^{H}	6.8	7.1	6.8	6.7	6.3	6.3
25	6.2	6.0	^{I}5.9^{F}	5.6^{F}	5.8^{F}	6.2^{F}	5.5	6.0^{H}	6.5	7.3	7.1	6.8^{H}	7.8	8.4	9.2	8.6^{H}	8.0^{H}	7.9	7.6	^{U}7.6^{S}	7.1	6.2^{H}	5.4^{H}	5.4^{F}
26	5.1^{F}	5.0	4.7	4.6	4.7	6.0	7.0	6.6	7.0	6.8^{H}	6.8^{H}	7.4	8.0	8.9	9.4	9.1	8.9^{H}	8.2	7.5	7.6	7.0	6.5	6.0	5.6
27	5.3^{F}	5.3^{F}	5.0^{F}	5.2	4.8	5.0	5.1^{H}	5.3	5.6	5.8	5.8	6.6	6.7	7.3	7.3	7.5	8.0	7.5	8.4	7.3	6.4	6.3	6.0	5.8
28	5.7	5.4	5.7	5.4	4.9	5.6	7.0	6.5^{H}	6.8	6.5	6.1	5.9	6.6	7.7	8.1	8.3	8.5	8.3	8.0	7.2	6.5	6.5	6.1	6.0
29	^{U}6.3^{F}	5.6	5.6	5.4	5.2	6.1	^{U}7.4^{S}	7.0	6.8	7.4	7.8	7.5	8.1	7.9	8.6	8.2	7.8	8.2	8.1	^{I}8.0^{A}	^{U}8.1^{S}	^{U}7.2^{S}	6.6	6.3
30	6.3	6.1	6.1	5.6	5.7	6.2	7.5	8.1	7.7	7.0	7.7	7.7	7.6	8.3	8.7	8.9	8.7^{H}	8.5^{H}	7.9	7.9	7.8	7.2	6.6	6.4
31																								
No.	28	28	28	28	28	28	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	5.5	5.4	5.2	5.2	4.6	5.0	5.7	6.3	6.8	7.2	7.8	7.6	8.0	8.0	8.0	8.1	8.0	7.7	7.6	7.4	6.8	6.2	5.8	5.6
u.Q	5.8	5.7	5.6	5.4	5.0	5.6	6.4	6.9	7.6	8.1	8.3	8.5	8.6	8.9	8.6	8.6	8.5	8.2	8.1	7.6	7.0	6.6	6.0	6.0
L.Q	5.0	4.6	4.8	4.7	4.3	4.7	5.3	5.7	6.2	6.5	6.8	7.2	7.2	7.4	7.7	7.5	7.6	7.3	7.0	7.0	6.3	5.8	5.3	5.2
Q.R	0.8	1.1	0.8	0.7	0.7	0.9	1.1	1.2	1.4	1.6	1.5	1.3	1.4	1.5	0.9	1.1	0.9	0.9	1.1	0.6	0.7	0.8	0.7	0.8

foF2

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

The Radio Research Laboratories, Japan.

W 1

6

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Apr. 1961 | foF1 | 135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	L	L	L										
2									4.2	4.5	4.9	4.6	4.8	U4.6 L										
3									4.4	4.5	4.6	4.8	4.7	I4.8 A	U4.5 L	L	L							
4										U4.5 L	I4.6 L	U4.8 L	4.6											
5									L	4.5	U4.7 L	4.7	4.7	4.6 H	L	L	L							
6										4.3	U4.4 L	U4.8 L	U4.8 L	L										
7										L				U4.5 LH										
8												L	L	LH	L	L								
9									U4.2 L	U4.4 L	U4.6 L	I4.8 L	5.0	4.8	4.6									
10									4.1	4.2	4.4 H	4.6	4.6	4.5	4.3	U4.1 L								
11									4.2	4.4	4.6	4.5	4.5											
12								4.0	4.3	4.3	I4.5 A	4.5	4.6	4.5	4.2									
13									4.3	4.3	4.4	4.5	4.5	4.4	U4.4 L									
14									4.3	4.4	4.5	4.6	4.5	4.5	4.3	4.2 H								
15											4.6		4.8	4.6	4.5	4.3								
16										4.8	5.0	4.6	4.9		A	A								
17										4.5	4.5	I4.8 A	4.9	4.9	4.8	A								
18												4.8	5.0											
19										4.8		5.0	5.0	4.9	4.6	4.8								
20										4.6		5.0	4.9	5.0										
21										4.5				5.1	4.8									
22									4.5			4.9		5.1	4.8	4.6								
23										4.6	4.9	4.8			5.0	4.8								
24										4.5	4.8		4.8	4.9	4.8									
25									4.4	4.8	4.8		5.0	4.9	4.8									
26									4.4			5.2	U5.0 L	5.0	4.9	4.5								
27								4.2	4.4	4.8	4.7	4.8	5.0	4.9	4.8	4.6								
28									4.4	4.6	5.0 H	I5.0 A	5.0	I5.0 A	4.7	4.6	4.1							
29									.7	4.8	5.0	U5.0 L	I5.0 A	5.0	4.8	4.4								
30								A		4.5	5.0	5.0	I5.0 A	5.2	4.9	4.9								
31																								
No.								2	13	23	21	23	24	22	19	11	1							
Median								4.1	4.3	4.5	4.6	4.8	4.8	4.9	4.8	4.6	4.1							

The Radio Research Laboratories, Japan.

foF1

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

W 2

10

IONOSPHERIC DATA

Apr. 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						C	C	C	C	3.00	3.00	3.20	3.60	3.30	3.20	2.90	2.60	2.20						
2							I 2.10 S	2.40	2.80	3.10	3.00	3.20	3.15	3.30	3.20	2.95	2.60	S						
3						S	2.10	2.50	2.70	3.05	3.00	3.10	2.90	3.50	3.00	3.00	2.60	2.10	S					
4						S	2.05	2.60	2.90	3.00	3.00	3.50	A	A	A	3.00	U 2.70 A	A	A					
5						S	S	2.50	2.90	2.65	I 2.90 A	3.45	3.50	I 3.25 A	3.00	3.00	U 2.60 S	2.25	S					
6						S	I 2.10 S	2.60	2.95	2.90	3.00	I 3.25 A	3.30	3.30	3.20	2.90	2.50	2.30	S					
7						S	2.10	2.65	3.00	3.10	3.10	3.20	3.30	3.25	3.15	3.05	2.75	A	S					
8						S	2.10	2.80	2.95	3.10	3.15	3.30	3.50	3.30	3.15	3.00	2.60	A	A					
9						S	2.10	2.80	3.00	3.20	3.00	3.25	3.30	3.20	3.15	3.00	2.50	2.20	S					
10						S	2.15	2.80	3.00	3.10	3.15	3.00	3.00	2.95	3.00	I 2.75 A	2.35	2.15	S					
11						A	I 2.20 A	2.60	3.00	3.10	3.15	3.20	3.25	I 3.30 A	3.10	3.00	2.70	2.15	S					
12						1.50	2.15	2.60	2.95	3.05	3.20	3.00	2.90	3.00	2.80	3.00	2.60	I 2.20 A	S					
13						S	2.05	2.80	2.90	3.00	3.10	3.20	3.00	3.15	3.05	2.90	2.60	2.15	S					
14						S	2.10	2.60	3.00	3.10	3.20	3.30	3.30	3.30	3.05	2.95	2.60	2.25	S					
15						I 1.75 S	2.15	2.50	2.90	3.05	3.20	3.10	A	A	A	3.00	A	A	S					
16						1.50	2.20	2.70	3.00	3.15	3.25	3.00	I 3.10 A	3.30	3.15	3.00	2.60	2.15	S					
17						2.20 H	2.85	3.05	3.20	3.20	3.25	3.25	3.20	I 3.00 A	2.90	I 2.50 A	I 2.20 A	S						
18						1.60	2.20	2.65	3.05	3.10	3.00	3.00	3.00	3.00	3.20	3.00	2.70	2.15						
19						S	2.25	2.70	3.00	3.05	3.25 H	3.20	3.45	3.35	3.20	3.00	2.65	2.35	S					
20						S	2.25	2.70	2.95	3.15	3.40	3.25	3.45	3.25	3.20	3.00	2.80	2.25	S					
21						2.00	2.35	2.70	3.00	3.15	3.20	I 3.35 S	3.60	3.40	3.20	3.15	2.85	2.35	S					
22						S	I 2.40 A	2.80	3.00	3.30	3.45	3.40	3.50	3.45	3.30	3.15	2.90	2.45	S					
23						S	2.50	2.80	3.05	3.30	3.50	3.55	U 3.40 R	3.35	3.20	3.00	2.50	2.25	S					
24						S	2.30	2.95	3.10	3.30	3.40	3.45	3.30	3.20	3.20	3.05	2.80	2.50	S					
25						1.95	2.40	2.90	3.00	3.25	I 3.40 S	3.50	3.30	3.25	3.00	2.90	2.90	2.35	S					
26						S	2.30	2.70	3.00	3.30	I 3.40 S	I 3.40 R	3.25	3.40	3.35	3.15	2.90	2.35	S					
27						S	2.30	2.95	3.05	3.25	3.30	3.35	I 3.60 B	3.60	3.30	3.10	2.95	2.40	S					
28						S	A	2.95	3.15	3.25	3.35	3.40	U 3.55 S	3.30	3.20	3.05	2.65	S						
29						A	2.35	2.90	3.15	I 3.30 S	3.55	3.70	3.55	I 3.20 S	I 3.15 S	3.25	2.80	2.25	S					
30						A	2.55	2.95	3.10	3.25	3.45	3.50	3.25	3.30	3.15	3.00	3.00	2.55	S					
31																								
No.						7	27	29	29	30	30	30	28	28	28	30	29	23						
Median						1.75	2.20	2.70	3.00	3.10	3.20	3.25	3.30	3.30	3.15	3.00	2.65	2.25						

foE

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

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	3.3	3.4	G	2.6[G]	G	G	G	G	G	E	E	E	E	E	E
2	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	S	S	E	E	E	E	E
3	E	E	J2.3	E	1.6	S	G	G	G	G	G	4.3	4.3	5.2	G	G	G	G	S	E	E	E	E	2.6
4	2.0	E	2.6	J2.3	J2.8	S.	G	G	3.5	G	3.3	G	3.9	J4.1	7.1	G	J3.0	J3.3	J3.3	J2.4	J2.9	2.4	E	2.5
5	2.6	1.8	J2.5	J2.1	1.5	S	2.3	G	G	G	3.4	G	G	3.5	3.6	G	G	G	2.3	J3.3	J3.3	2.5	E	E
6	E	E	E	E	E	S	2.5	G	G	3.4	3.5	3.4	G	G	G	G	G	G	S	E	2.3	E	2.3	E
7	E	E	E	E	E	S	G	G	G	G	G	2.8[G]	G	G	G	G	2.3[G]	2.9	J2.3	E	E	E	E	E
8	E	E	E	E	E	S	G	3.8	3.4	3.5	G	G	G	G	G	2.2[G]	G	2.2	2.4	E	E	E	E	E
9	E	E	E	E	E	S	2.3	G	G	G	G	G	G	G	2.6[G]	G	G	G	S	E	E	E	E	E
10	J1.8	E	E	E	E	S	G	G	3.5	3.5	3.9	3.7	4.2	4.1	3.5	3.3	G	G	2.6	J4.4	2.6[M]	J4.1	E	E
11	2.3	E	E	E	1.6	2.0	2.2	G	G	4.2	3.8	G	G	3.5	G	G	G	G	2.3	E	E	E	E	E
12	2.6	J2.3	E	E	E	G	G	3.3	3.9	4.0	J5.4	3.5	4.1	3.7	3.5	2.4[G]	G	2.3	S	E	E	J3.3	J4.4	J3.3
13	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E
14	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E
15	E	E	E	E	E	S	G	3.4	3.5	3.7	3.9	3.9	3.9	3.6	3.7	2.5[G]	2.9	J2.6	S	E	E	E	E	E
16	E	J2.3	J2.3	E	E	G	G	G	4.3	4.8	3.8	3.5	4.0	4.6	J5.8	J7.0	3.4	3.0	S	E	J2.9	J4.9	E	J4.3
17	J4.3	E	1.8	J2.3	J3.3	J5.0	G	3.2	G	4.0	4.2	J6.1	3.8	4.3	3.3	J5.7	J6.2	3.0	3.0	J3.4	2.0	E	E	E
18	E	2.0	E	E	E	G	2.8	3.2	G	3.8	G	G	3.3	G	G	G	G	G	J3.3	E	E	E	E	E
19	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	2.6[G]	G	G	S	E	E	E	E	E
20	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E
21	E	E	E	E	E	G	G	G	G	G	4.0	S	G	G	G	G	G	G	2.4	J3.5	E	E	E	E
22	E	E	E	E	E	S	2.8	G	G	G	G	G	G	G	G	G	G	G	J3.2	E	E	E	E	E
23	E	E	E	E	E	S	G	G	G	G	4.1	4.0	4.1	G	G	3.5	G	G	S	E	E	E	J2.3	E
24	E	E	E	E	E	S	G	G	G	3.9	G	4.3	G	G	G	G	G	G	G	E	E	E	E	E
25	E	E	E	E	E	G	G	G	G	G	S	G	3.8	G	3.5	G	G	G	S	E	E	E	E	E
26	E	E	E	E	E	S	G	G	G	G	S	G	4.1	G	G	G	4.1	3.2	S	E	E	E	E	E
27	E	E	E	E	E	S	G	G	G	G	G	G	B	G	4.7	G	G	3.6	3.2	J4.0	E	J3.3	E	E
28	E	E	E	E	E	S	J2.9	G	4.2	4.1	4.5	5.6	4.8	5.4	4.3	G	3.5	J3.3	J4.6	E	E	E	J3.0	J5.1
29	J5.3	E	E	E	E	3.5	G	3.6	5.2	4.5	4.0	J4.9	J7.3	J8.0	J7.5	G	5.0	J5.3	3.2	J10.0	E	J5.2	E	J3.0
30	J2.1	2.3	J3.0	J4.3	J2.6	2.6	G	4.5	3.8	G	4.4	5.0	5.5	4.0	3.9	3.3	G	G	S	E	E	E	E	E
31																								
No.	29	29	29	29	29	10	28	29	29	30	28	29	29	30	30	30	30	29	15	30	30	30	30	30
Median	E	E	E	E	E	G	G	G	G	G	3.4	G	G	G	G	G	G	G	2.6	E	E	E	E	E
U.Q	1.8	E	E	E	E	2.6	G	G	3.5	3.8	4.0	3.8	4.1	4.0	3.6	G	G	3.0	3.2	E	E	E	E	E
C.Q	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	2.4	E	E	E	E	E
Q.R																			0.8					

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Apr. 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										G	G		2.6G											
2							S																	
3			E		E	S						4.3	G	5.0				S						
4	E		E	E	E	S			G		G		3.7	4.0	4.0		2.7	2.7	2.3	E	E	E		E
5	E	E	E	E	E	S	G				3.4			3.2	G				G	3.0	E	E		E
6						S	G			G	G	3.4							S		E		E	
7						S						G					G	2.3	G					
8						S		G	G	G						G		2.2	2.0					
9						S	G								2.5G				S					
10	E					S			G	G	G	G	G	4.0	G	3.1			G	3.2	E	E		
11	E				E	1.7	E2.2A			G	G			3.3					G					
12	E	E						G	G	3.8	5.0	G	G	G	G	2.4G		2.3	S			E	E	E
13						S													S					
14						S													S					
15						S		G	G	G	G	3.8	3.4	3.3	3.2	2.4G	2.7	2.3	S					
16		E	E						G	4.2	G	G	4.0	4.5	4.8	6.7	G	G	S		2.8	4.5		E
17	E		E	E	E	E		G		G	4.2	6.0	G	4.3	3.3	4.7	6.0	3.0	2.9	3.2	E			
18		E					G	G		G			G						E					
19						S										2.5G			S					
20						S													S					
21											G	S							G	3.5				
22							2.7												G					
23						S					G	G	G			G			S				E	
24						S				G		G												
25													G		E3.5A				S					
26						S					S		G				G	G	S					
27						S							B		G			G	G	4.0		E		
28						S	2.5		G	G	4.4	5.0	4.8	5.1	4.1		G	G	4.3				E	E
29	E					2.3		G	5.0	4.5	G	4.5	6.7	4.8	4.4		4.7	5.0	G	A		4.0		E
30	E	E	E	3.6	2.5	2.4		4.3	G		4.3	4.8	5.0	G	G	G			S					
31																								
No.	8	5	6	4	6	4	6	7	9	13	15	13	15	12	12	9	8	11	13	7	6	7	4	6
Median	E	E	E	E	E	2.0	G	G	G	G	G	3.4	G	4.0	G	G	G	2.3	G	3.2	E	E	E	E

foEs

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

The Radio Research Laboratories, Japan.

W 5

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Apr. 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	C	C	C	C	C	C	C	C	C	2.10	2.30	2.40	2.10	2.30	2.35	2.00	2.00	2.00	E 2.00^{S}	E 2.00^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
2	C	E	E	E	E	E 1.40^{S}	E 2.00^{S}	1.90	1.95	2.05	2.00	2.40	2.10	2.80	2.40	2.30	2.00	E 2.30^{S}	E 2.30^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 1.90^{S}	E 2.00^{S}
3	E 2.00^{S}	E	E	E	E	E 1.80^{S}	E 2.00^{S}	1.85	2.00	2.00	2.00	2.40	2.00	2.40	2.05	2.30	2.00	1.90	E 1.90^{S}	E 1.90^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}	E 1.85^{S}
4	E 1.90^{S}	E	E	E	E	E 1.60^{S}	E 1.95^{S}	1.90	2.00	1.90	2.30	2.00	2.00	1.95	2.00	1.85	1.70	1.80	E 1.60^{S}	E 1.60^{S}	E 1.50^{S}	E 1.80^{S}	E 1.80^{S}	E 1.85^{S}
5	E 1.90^{S}	E	E	E	E	E 1.30^{S}	E 1.75^{S}	1.70	1.90	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E 1.70^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 1.90^{S}
6	E 1.90^{S}	E	E 2.00^{S}	E	E	E 1.20^{S}	E 2.00^{S}	1.85	2.00	2.00	2.00	2.15	2.60	1.90	2.30	1.85	2.00	1.90	E 1.80^{S}	E 1.90^{S}	E 1.80^{S}	E 2.00^{S}	E 1.50^{S}	E 1.90^{S}
7	E 1.90^{S}	E	E	E	E	E 1.20^{S}	E 2.00^{S}	1.90	2.00	2.00	2.80	2.00	2.00	2.30	2.30	2.00	1.60	1.60	E 1.90^{S}	E 1.90^{S}	E 1.90^{S}	E 2.00^{S}	E 1.80^{S}	E 1.90^{S}
8	E 1.80^{S}	E 1.60^{S}	E	E	E	E 1.20^{S}	1.50	1.80	2.00	2.00	2.00	2.30	2.00	2.45	2.30	1.90	2.00	1.70	E 1.60^{S}	E 2.00^{S}	E 2.00^{S}	E 1.80^{S}	E 2.00^{S}	E 2.00^{S}
9	E 1.80^{S}	E 1.60^{S}	E	E	E	E 1.50^{S}	1.85	1.85	1.95	2.00	2.40	2.00	2.00	1.90	2.00	2.00	1.90	2.00	E 1.80^{S}	E 1.90^{S}	E 1.90^{S}	E 1.85^{S}	E 1.85^{S}	E 2.00^{S}
10	E 1.50^{S}	E	E	E	E	E 1.20^{S}	1.80	1.70	2.00	1.90	2.00	2.30	2.00	2.00	2.40	2.00	2.00	2.00	E 2.00^{S}	E 1.80^{S}	E 1.70^{S}	E 1.80^{S}	E 1.90^{S}	E 1.90^{S}
11	E 2.00^{S}	E	E 1.10^{S}	E	E	E	1.60	2.00	2.00	2.00	2.20	2.10	2.35	2.30	2.00	2.05	2.00	2.00	E 1.80^{S}	E 2.00^{S}	E 2.00^{S}	E 1.80^{S}	E 1.90^{S}	E 1.80^{S}
12	E 1.80^{S}	E	E	E	E	1.30	1.60	1.90	2.00	2.10	2.00	2.00	2.00	2.15	2.30	2.00	2.00	1.85	E 1.60^{S}	E 2.00^{S}	E 2.00^{S}	E 1.90^{S}	E 1.30^{S}	E 1.90^{S}
13	E 2.00^{S}	E 1.70^{S}	E	E	E	E 1.50^{S}	1.90	1.60	2.00	2.00	2.30	2.30	2.30	2.20	2.00	2.00	2.00	2.00	E 1.80^{S}	E 1.90^{S}	E 2.00^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}
14	E 1.90^{S}	E	E	E	E	E 1.70^{S}	1.60	1.85	2.00	2.00	2.20	2.20	2.00	2.30	2.20	2.00	2.00	2.00	E 1.85^{S}	E 1.80^{S}	E 1.90^{S}	E 1.80^{S}	E 2.00^{S}	E 1.90^{S}
15	E 1.90^{S}	E	E	E	E	E 1.80^{S}	1.90	1.90	1.95	1.90	2.30	2.00	2.20	2.40	2.00	2.00	1.90	1.90	E 1.90^{S}	E 1.90^{S}	E 1.70^{S}	E 1.70^{S}	E 1.95^{S}	E 1.70^{S}
16	E 1.90^{S}	E	E	E	E	E 1.40^{S}	1.60	1.90	1.95	2.00	2.10	2.15	2.10	2.30	2.00	2.30	2.00	1.90	E 1.80^{S}	E 2.00^{S}	E 1.80^{S}	E 2.00^{S}	E 1.85^{S}	E 1.30^{S}
17	E 2.00^{S}	E	E	E	E	E 1.30^{S}	1.80	2.00	2.00	2.10	2.40	2.30	2.50	2.30	2.30	2.00	1.90	2.00	E 1.85^{S}	E 1.90^{S}	E 1.60^{S}	E 2.00^{S}	E 2.20^{S}	E 1.90^{S}
18	E 1.60^{S}	E	E	E	E	E 1.30^{S}	1.70	2.00	2.05	2.15	2.00	2.40	2.40	2.50	2.10	2.00	2.00	2.00	E 1.70^{S}	E 2.00^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}	E 1.90^{S}
19	E 2.00^{S}	E	E	E	E 1.80^{S}	E 2.00^{S}	1.85	2.00	2.30	2.00	2.30	2.40	2.40	2.30	2.30	2.00	2.00	2.00	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
20	E 2.00^{S}	E 2.00^{S}	E	E	E	E 2.00^{S}	2.00	1.90	1.90	2.00	2.50	2.50	2.00	2.00	2.00	2.00	2.00	2.00	E 2.00^{S}	E 2.00^{S}	E 1.80^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
21	E 2.00^{S}	E 2.00^{S}	E	E	E	1.40	1.85	1.95	2.00	2.00	2.10	E 3.90^{S}	2.85	2.85	2.40	2.40	2.00	2.00	E 1.95^{S}	E 1.90^{S}	E 2.40^{S}	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}
22	E 2.00^{S}	E 1.30^{S}	E 1.90^{S}	E	E	E 2.00^{S}	1.95	1.95	2.00	2.30	2.00	2.30	2.10	2.10	2.10	2.00	2.00	2.00	E 1.90^{S}	E 2.00^{S}	E 2.00^{S}	E 1.70^{S}	E 2.00^{S}	E 2.00^{S}
23	E 2.00^{S}	E 1.70^{S}	E	E	E	E 1.90^{S}	2.00	2.00	2.40	2.10	2.70	2.70	2.50	2.50	2.80	2.30	2.00	1.95	E 1.90^{S}	E 2.20^{S}	E 2.00^{S}	E 2.00^{S}	G 2.00^{S}	E 1.90^{S}
24	E 2.00^{S}	E	E	E	E 1.70^{S}	E 2.00^{S}	2.00	2.00	2.00	2.10	2.40	3.00	2.80	3.00	2.80	2.20	2.00	2.00	E 1.90^{S}	E 2.10^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
25	E 2.00^{S}	E 1.80^{S}	E	E	E	E 1.80^{S}	1.90	1.90	2.00	2.20	E 3.70^{S}	2.30	2.80	3.00	2.00	2.10	2.10	2.00	E 2.00^{S}	E 2.10^{S}	E 2.10^{S}	E 2.00^{S}	E 2.00^{S}	E 1.60^{S}
26	E 2.00^{S}	E	E 2.00^{S}	E	E 1.70^{S}	E 1.80^{S}	1.90	2.00	2.40	2.40	E 3.60^{S}	3.00	2.40	2.30	2.30	2.00	2.00	1.90	E 2.00^{S}	E 2.10^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
27	E 1.90^{S}	E	E	E	E	E 2.00^{S}	1.90	2.00	2.00	2.00	2.30	2.30	4.20	2.70	2.00	2.15	2.15	2.00	E 2.00^{S}	E 2.30^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
28	E 2.20^{S}	E 1.70^{S}	E 2.00^{S}	E 1.85^{S}	E	E 1.90^{S}	2.00	2.00	2.50	2.30	2.20	2.40	E 3.00^{S}	3.00	3.00	3.00	2.00	E 2.00^{S}	E 2.20^{S}	E 2.00^{S}	E 2.00^{S}	E 2.20^{S}	E 2.00^{S}	E 2.00^{S}
29	E 2.00^{S}	E	E	E 1.85^{S}	E 2.00^{S}	E 1.70^{S}	2.00	2.00	2.20	E 3.30^{S}	3.00	3.00	3.00	E 3.40^{S}	E 3.00^{S}	2.40	2.00	2.00	E 2.00^{S}	E 2.20^{S}	E 2.20^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
30	E 2.00^{S}	E	E	E	E	1.30	2.00	2.10	2.30	2.30	3.00	2.70	2.20	3.00	2.90	2.20	2.30	2.00	E 2.20^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}	E 2.00^{S}
31																								
No.	29	20	24	27	25	29	23	29	29	29	28	29	29	29	29	30	30	29	30	30	30	30	30	30
Median	E 2.00	E	E	E	E	E 1.50	1.90	1.90	2.00	2.00	2.20	2.30	2.20	2.30	2.30	2.00	2.00	2.00	E 1.90	E 2.00	E 2.00	E 2.00	E 2.00	E 1.95

f-min

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

The Radio Research Laboratories, Japan.

W 6

11

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	3.10	3.00	3.10	3.05	3.00	2.95H	3.20H	3.25	3.20	3.05	2.85	2.85	2.75	2.85	2.80
2	2.85	2.85	3.10	2.85	2.70	2.75	3.10	2.80H	3.05	3.10	3.00	2.95	3.25	3.15	3.15	3.25	3.20H	3.20	3.10	3.15	2.95	3.05	2.85	2.75
3	2.80	2.75	2.80	2.85	2.85	3.00	3.30	3.25H	3.00	3.20	2.95	2.90	2.80	3.10	3.00	3.00	3.15	3.25	3.15	3.05	2.80	2.65	2.85	2.85
4	2.65	2.70	2.75	2.70	2.70	3.15	3.35	3.20	3.10	3.20	3.05	3.00	3.20	3.20H	3.30	3.30	3.25H	3.25	3.20	3.25	2.70	3.00	2.75	2.80
5	2.70F	2.75F	2.85F	2.85	2.80	3.15	3.25	3.35H	3.30	3.35	3.05	3.05	3.05	3.15	3.15	3.20	3.25	3.25	3.20	2.95	2.85	2.90	2.80	2.80
6	2.80	2.85	2.95	3.05	3.05	3.20	3.40H	3.30H	3.30H	3.20	3.15	3.15	3.10	3.10	3.00H	3.10H	3.10H	3.15	3.25	3.20	3.00	2.85	2.90	2.85
7	2.80	2.85	2.85	2.80	2.80	3.15	3.40	3.35H	3.40	3.20	3.05H	3.00H	2.85H	3.15	3.10H	3.20H	3.15	3.15	3.25	3.15	3.05	2.90	2.75	2.80
8	2.75	2.75	2.80	3.25	3.00	3.15	3.60	3.25H	3.05H	2.95H	3.15H	3.15	3.00	3.10	3.05	3.20	3.25	3.25	3.20	3.05	3.15	3.15	2.75	2.70
9	2.80	2.70	2.80	2.85	3.25	3.05	3.40	3.20	3.20	3.20	3.15	3.10	3.00	3.15	3.10	3.20H	3.20H	3.25	3.15	2.80	2.75	2.65	2.60	2.80
10	3.15	3.00	2.75	2.80	2.65	2.85	3.50	3.40H	3.00	3.25	3.15	3.10	2.90	3.30	3.30	3.20	3.15	3.05	3.15	3.15	2.85	3.00	2.90	2.80
11	2.65F	2.70F	2.80	2.85	2.85X	3.05X	3.10	3.30	3.30	3.00	3.15	3.25	3.15	3.05H	3.15H	3.00H	3.10H	3.10	3.15	3.15	3.15	3.15	2.80	2.65
12	2.65F	2.65F	2.80F	3.05F	2.70F	2.75	2.80H	3.30	3.05	3.10	3.15	3.00	3.05	3.15	3.20	3.25H	3.25H	3.15	3.15	U3.15S	3.20	3.00	2.80	2.70
13	3.00	2.80	2.85	3.10	3.25	3.20	3.15	3.20H	3.15	3.20	3.20	3.25	3.15	3.15	3.25	3.20H	3.20H	3.25	3.05	3.25	3.05	3.05	2.80	2.90
14	2.80	2.85	2.85	2.80	2.90	3.25	3.50	3.25	2.80	3.20	3.15	3.25	3.25	3.25	3.40	3.45	3.15H	3.20	3.00	3.00	2.85	2.85	2.65	2.65
15	2.75	2.75	2.85	3.00	2.80	3.20	3.50H	3.40	3.15H	2.95H	3.00	3.00H	2.90	2.95	2.95	3.15	3.15	3.05	3.15	2.85	2.95	2.85	2.80	2.70
16	2.65	2.65	2.70	F	F	FS	3.30	3.05H	3.10H	2.95	3.15	3.25	3.20	3.10H	3.20	3.10	3.20H	3.20	3.15	3.10	3.15	3.05	I2.80F	2.65F
17	F	F	F	3.00F	3.00F	3.05F	3.20	3.15H	3.00	3.30	3.15	3.20	3.25	3.05	3.10	3.10	3.15	3.20	3.25	2.85	2.85	3.10	2.85	2.70
18	2.75	2.85	3.00	3.20	3.15	3.20	3.35	3.25	3.20H	3.15H	3.05H	3.25	3.15	3.25H	3.15	3.10H	3.15H	3.25	3.20	3.00	2.85	2.85	2.75	2.80
19	2.80	2.85	2.80	3.10	3.05	3.20	3.30	3.55H	3.00H	3.10	3.00H	2.90	3.10	3.15	3.25	3.20	3.20H	3.20	3.15	3.05	3.00	2.90	2.85	2.80
20	2.80	2.85	2.80	2.85	2.75	3.10	3.10	3.35H	3.25H	3.25	3.05H	3.15	3.15	3.00	3.15H	3.15H	3.15H	3.15	3.05	3.10	3.10	3.15	2.90	2.80
21	2.80	2.75	2.80	2.85	2.85	3.05	3.20	3.25H	3.20H	3.25H	3.15H	2.80H	3.05H	2.95	3.05	3.05H	3.00H	3.10H	3.15	3.15	3.10	2.90	2.90	2.75
22	2.85	2.75	2.80	3.10	2.85	3.15	3.25	3.20H	3.25	3.20H	3.20H	3.15	3.00H	3.00	3.00	3.00	3.05H	3.30H	3.15	3.10	2.90	2.90	2.85	2.65
23	2.70	2.70	2.80	3.05	3.20	3.25	3.15	3.15H	3.20H	3.15	3.10	3.20	3.05H	3.05H	3.00	3.00	3.10H	3.10H	3.00	3.00	2.80	3.05	2.80	2.85
24	D2.85F	I2.80F	2.50F	3.05F	2.85F	3.05	3.05	3.20H	3.20H	3.35	3.05	3.00H	3.00	3.10	3.05	3.15H	3.15H	3.20H	3.20	2.95	2.85	2.75	2.85	2.80
25	2.75	2.70	I2.85F	2.85	2.85F	3.25F	3.30	3.15	3.15	3.10	3.15	2.85H	2.95	2.90	2.95	3.00H	3.05H	3.15	3.05	U3.05S	3.10	2.95F	2.80F	2.80F
26	2.80F	2.75	2.70	2.85	2.85	3.10	3.30	3.20	3.25	3.25H	2.75H	2.85	2.95	2.90	3.05	3.05	3.10H	3.15	3.20	3.05	2.80	2.90	2.85	2.85
27	2.70F	2.60F	2.60F	2.85	2.70	2.90	2.85H	2.90	3.20	3.10	3.15	3.05	3.05	3.10	3.10	2.95	3.15	3.05	3.15	3.10	2.80	2.90	2.75	2.60
28	2.70	2.75	2.85	2.85	2.90	3.20	3.15	3.25H	3.00	2.85	3.05	3.05	2.80	2.95	2.95	3.05	3.05	3.15	3.15	3.15	2.80	2.80	2.80	2.65
29	U2.85F	2.80	2.80	2.85	2.85	3.20	U3.40S	3.35	3.20	3.10	3.15	2.95	3.00	2.85	3.15	3.10	3.10	3.10	3.10	I3.00A	U2.85S	U2.90S	2.90	2.80
30	2.85	2.80	2.85	2.90	2.95	3.05	3.10	3.20	3.15	3.10	3.10	3.05	2.80	3.00	2.90	3.00	3.00H	3.15H	3.10	2.85	2.95	2.90	2.75	2.70
31																								
No.	28	28	28	28	28	28	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	2.80	2.75	2.85	2.90	2.90	3.15	3.30	3.25	3.15	3.20	3.10	3.05	3.05	3.10	3.10	3.10	3.15	3.20	3.15	3.05	2.95	2.90	2.80	2.80

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

The Radio Research Laboratories, Japan.

W 7

15

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Apr. 1961

M(3000)F1

135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	L	L	L										
2									3.50	3.60	3.55	3.80	3.50	U3.75L										
3									3.55	3.55	3.70	I3.70A	3.55	I3.50A	U3.65L	L	L							
4										U3.75L	I3.90L	U3.65L	3.75											
5									L	3.80	U3.75L	3.65	3.75	3.65H	L	L	L							
6										3.95	U3.90L	U3.65L	U3.60L	L										
7										L				U3.55LH										
8												L	L	LH	L	L								
9									U3.55L	L	L	L	3.55	3.55	3.60									
10									3.80	3.65	3.75H	3.50	3.60	I3.55A	3.70	U3.70L								
11									3.60	3.65	3.50	3.80	3.80											
12								3.50	3.60	3.50	I3.70A	3.75	3.70	3.75	3.80									
13									3.65	3.75	3.80	3.85	3.80	3.80	U3.60L									
14									3.55	3.65	3.80	3.65	3.80	3.80	3.75	3.55H								
15											3.60		3.60	3.55	3.55	3.55								
16										A	3.55	3.90	3.70		A	A								
17										3.65	I3.65A	I3.55A	3.65	3.65	3.55	A								
18												3.75	3.60											
19										3.55		3.50	3.60	3.60	3.70	3.75								
20										3.70		3.60	3.65	3.55										
21										3.85				3.55	3.50									
22									3.70			3.70		3.55	3.70	3.50								
23										3.60	3.65	3.70			3.40	3.50								
24										3.85	3.75		3.65	3.70	3.55									
25									3.65	3.60	3.65		3.50	3.45	I3.55A									
26									3.85			3.45	U3.45L	3.60	3.50	3.75								
27								3.55	3.60	3.55	3.70	3.80	3.45	3.45	3.55	3.55								
28									3.85	3.75	A	A	A	A	A	3.50	3.70							
29									A	A	3.45	I3.50LA	I3.60A	I3.55A	I3.55A	3.70								
30								A		3.80	I3.60A	I3.60A	I3.65A	3.60	3.55	3.45								
31																								
No.								2	13	20	19	21	23	21	18	11	1							
Median								3.50	3.60	3.65	3.70	3.65	3.60	3.55	3.55	3.55	3.70							

M(3000)F1

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Apr. 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										260	295	270	270	290										
2									325	295	310	280	270	275										
3									330	280	315	305	325	290	U300 L	I275 L	L							
4										275	270	290	270											
5									270	270	280	270	290	270	285	265	245							
6										260	260	275	280	290										
7										L				275										
8												270	285	295	285	270								
9									265	270	270	290	310	290	280									
10									345	300	330	340	355	295	290	275								
11									300	350	295	270	280											
12								300	335	325	300	320	320	305	300									
13									305	295	280	280	295	300	295									
14									425	300	315	290	290	300	275	270								
15											335		360	315	315	290								
16										315	285	265	280		295	A								
17										295	305	305	305	320	310	280								
18												280	295											
19										320		280	300	300	275	300								
20										285		300	280	295										
21										250				335	290									
22									270			295		335	310	300								
23										300	310	310			310	310								
24										275	320		300	310	320									
25									310	310	295		325	330	295									
26									295			340	330	325	305	285								
27								375	330	355	310	345	320	315	325	325								
28									335	325	350	335	370	335	300	305	275							
29									275	310	310	325 L	I320 A	315	290	280								
30								270		280	300	320	315	325	325	310								
31																								
No.								3	15	24	22	25	26	25	22	15	2							
Median								300	320	295	300	290	300	300	300	285	260							

h'F2

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

The Radio Research Laboratories, Japan.

W 9

17

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

18

Apr. 1961

h'F

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

h'F

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

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

W 11

19

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

20

Apr. 1961

Types of Es

135° E Mean Time (G.M.T. + 9h.)

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

The Radio Research Laboratories, Japan.

Types of Es

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

W 12

IONOSPHERIC DATA

Apr. 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	6.4	6.1	6.1	5.5	5.5	5.5	7.0	8.7	9.9	9.7	9.8R	11.0H	11.1	10.9	11.1	11.9	9.4	8.1	7.5	7.0	7.0	6.8	6.8	6.1
2	6.4	6.4	6.2	5.0	5.0	5.0	6.7	8.3	8.4	11.0	11.6	11.8	12.1	11.3	10.2	9.6S	8.9	9.1	9.0	7.2	5.9	5.9	5.6	5.5
3	5.4	5.5	5.3	5.0	4.5	4.6	6.1	7.5	8.0	8.8	9.8R	9.7	10.2	11.0	10.3R	10.5	9.4	8.7	7.4	6.9	5.5	5.3	5.6	5.8
4	5.3	5.0S	5.0	5.0	4.8	5.1	7.1	7.0	7.9	9.4	11.0	11.4	11.6	10.7	9.2	8.5	7.5	7.6	8.6	6.9	5.5	5.4	5.6	5.4
5	I5.2F	I5.2F	I5.2F	I4.9F	4.4	4.5	6.1	7.0	8.5	8.7	10.0	11.2	10.4	10.6	9.6R	9.1	7.5	7.0	7.5	6.8	6.5	6.1R	F	F
6	5.9	5.8	5.5	5.0	4.9	4.9	6.4	6.9	8.6	9.0	8.9	8.9	9.5	9.7R	9.7	9.0	8.6	8.6	9.0	8.6	6.0	5.5	5.6	5.6
7	5.4	I5.4C	5.3	5.1	4.9	5.0	6.6	7.2	8.4	7.6	8.3	9.1	8.7	8.8	8.6	9.0	8.5	8.8	9.0	7.9	5.7	5.1	5.1	5.3
8	5.2	5.1	5.1	5.3	3.9	4.1	6.0	7.4	8.4	9.7R	10.5	10.8	10.5	10.1	10.5	10.3	9.2	8.5	7.7	7.3	6.4	I5.6C	5.1	5.1
9	5.1	5.0	5.1	5.3	4.6	4.1	6.1	U7.5R	7.9	9.0	9.7	U9.9R	U9.9R	10.5	11.0	10.7	9.8R	8.5	7.5	6.9	6.4	6.5	6.5	6.9
10	8.8S	4.4	3.8	3.9	3.6	3.6	6.3	6.3H	5.5H	6.1	6.5	6.9	7.4	7.5	8.0	8.0	6.9	7.1	7.8	8.1	5.6	5.4	5.2	5.0
11	4.9	I4.9F	I5.0F	5.0	4.6	4.4	5.6	6.5	7.2	7.7	9.6	10.1R	9.9R	9.0	8.8	8.9	8.9	8.8	8.9	8.9R	5.8	4.5	4.5	4.6
12	4.5	4.4	4.3	4.0	4.0	4.0	5.3	7.0	6.5	7.1	7.7	8.8	9.0	8.1	7.6	7.1	8.0	8.0	8.0	8.2	5.8	4.5	4.4	4.4
13	4.4	4.1F	4.3F	4.2F	I4.0F	4.2	5.7V	6.6	8.0	8.6	8.7	8.3	7.6	7.6	8.0	7.7	7.4	7.8	8.6	8.4	6.1	4.9	I4.9S	I4.9S
14	4.9	4.8S	4.4	3.9	4.2	4.9	5.6	5.0	6.4	8.2	8.8	7.9	7.9	7.2	7.3	7.0	6.9	7.0	7.8	I7.8S	6.9	6.7	6.3	6.2
15	6.0	5.6	5.5	4.9	3.9	4.8R	5.3	5.1	5.9	6.3	7.2	6.8	7.4	9.3	9.0	9.1	9.1	8.2	7.8	7.0	6.5	5.8S	5.2F	I5.4F
16	5.4	5.1	4.9S	4.9	3.9F	4.3F	5.3	5.5	7.5H	9.3	10.6	11.1	10.3	9.4	9.6	9.8R	8.8	8.6	8.0	7.8	7.0	5.9	5.9	5.9
17	5.9	5.5	I5.8F	I5.4F	4.5	4.5	5.3	6.8	7.5	7.6	8.0	8.0	8.8	8.2	8.6	9.0	8.7	8.7	7.4	7.2	6.6	6.4	5.8	5.8F
18	I5.8F	5.7	5.9	5.4	4.1	4.4	5.6	6.4	6.9	7.9	9.1	9.1	9.5	8.8	8.4	8.9	9.5	9.0	8.1	7.3R	6.2	5.9	5.7	5.6
19	5.6	5.5	5.3	5.2	4.2	4.6	6.0	6.9	7.5	8.6R	9.2	9.4	9.0	9.0	9.0	8.7	8.0	8.0	7.9	7.8	6.5	6.6	6.5	6.0
20	6.1	6.0	6.0	5.6	5.0	5.4	6.8	6.9	7.5	8.1	8.7	9.1	9.7	9.0	8.6	8.0	7.7	8.5	9.2	9.5	8.2	6.1	5.3	5.1
21	5.1	5.0	4.9	4.8	4.9	5.5	8.1	8.1	8.0	7.1	7.1	7.6	8.4	7.8R	8.5	9.0	9.3	9.5	9.5R	8.6	6.4	6.1	6.0	6.0
22	5.6	5.6	5.4	5.5	5.2	6.0	7.1	7.9	8.1	7.5	7.4	7.5	7.8	8.3	9.5	10.2R	9.9R	9.6	8.9	7.5	6.5	6.4	6.0	5.9
23	6.0	5.9	5.8	6.0	4.8	5.6	7.0	6.6	6.6	7.1	7.4V	7.9	7.7	8.2R	8.7	9.0	9.1	8.8	8.7	8.6	7.3	7.0	6.4	6.7
24	6.2	I6.2F	I6.4F	6.1	4.7F	5.6	6.9	7.1	8.1	7.6	7.5	7.5	8.7	8.9	8.7	9.6	8.6	7.9	7.6	7.3	6.8	6.1	6.1	6.1
25	6.2	5.9	5.9	5.9	5.6F	5.7	5.7	6.6	6.9	7.9	8.5	7.6	8.6	8.9	9.9	10.3	9.2	9.0	8.9	8.6R	7.1	5.7	5.4	5.7
26	5.6	5.7F	5.3F	5.3F	5.2F	6.4	7.1	7.1	7.0	7.5	7.1	7.6	9.1	10.0	10.8	10.5	9.3	8.8	8.8	8.3	7.3	6.4	6.3	6.1
27	5.9	5.6	5.4	5.4	5.4	5.5	6.9	6.1	6.5	7.1	6.8	7.4	7.9	8.4	9.4	8.7	9.1	8.7	U9.8R	7.1	6.1	6.2	6.0	6.0
28	5.9F	5.8F	5.6F	5.4F	I5.0A	5.4	6.6	7.6	7.8	7.7	7.6	7.5	7.6	9.0	J10.4R	U9.9R	9.6	9.4	U8.7R	8.3	6.5	6.1R	6.3	6.1R
29	I6.0F	5.6	5.6F	5.4	5.2	5.9	7.7	6.7	7.0	7.5	7.6	8.6	9.3	9.4	U9.7R	9.4	9.2	9.0	9.1	9.4	8.0	7.4	6.6	6.0F
30	6.1F	6.3F	F	F	F	6.0	7.6	7.8	7.6	7.1	7.6	8.1	8.1	I9.1R	9.2	U9.8R	10.7	10.1	9.1	8.5	7.6	7.3	7.0	6.7
31																								
No.	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
Median	5.7	5.6	5.3	5.2	4.7	5.0	6.4	7.0	7.6	7.8	8.6	8.7	9.0	9.0	9.2	9.0	9.0	8.6	8.6	7.8	6.5	6.1	5.8	5.8
U.Q	6.0	5.8	5.8	5.4	5.0	5.5	7.0	7.5	8.1	8.8	9.7	9.9	9.9	10.0	9.9	9.9	9.3	9.0	9.0	8.5	7.0	6.4	6.3	6.1
L.Q	5.2	5.0	5.0	4.9	4.2	4.4	5.7	6.6	6.9	7.5	7.5	7.6	7.9	8.3	8.6	8.7	8.0	8.0	7.8	7.2	6.0	5.5	5.2	5.4
Q.R	0.8	0.8	0.8	0.5	0.8	1.1	1.3	0.9	1.2	1.3	2.2	2.3	2.0	1.7	1.3	1.2	1.3	1.0	1.2	1.3	1.0	0.9	1.1	0.7

foF2

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

The Radio Research Laboratories, Japan.

A 1

21

IONOSPHERIC DATA

Apr. 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									L	L	L	4.2	L	L	L	L								
2									L	L	L	L	L	L^{H}	L	L	L							
3									L	L	4.6	L	L	L	L	A	L							
4										L^{H}	L	L	A	A	A	A	A							
5									L	L	L	L	L	L	L	L								
6									L	4.6^{L}	L	L	A	L	L	L								
7									L	L	L	L	L	L	L	L	L							
8									L	L	A	L	L	L	L	L	L							
9									L	L	L	L	L	4.9	L	L	L							
10								L	L	4.6^{L}	4.5	I 4.8^{A}	4.7	I 4.4^{L}	I 4.5^{L}	L	L							
11									L	L	A	L	L	L	I 4.5^{L}	L	L							
12								L	L	4.6^{L}	4.6	I 4.7^{L}	I 4.7^{L}	4.6	4.5^{L}	L	L							
13									4.4^{L}	4.5^{L}	4.5^{L}	I 4.6^{L}	4.8^{L}	4.6^{L}	4.5^{L}	4.3^{L}	L							
14									4.3^{L}	I 4.5^{L}	4.6	4.6^{L}	4.6^{L}	4.6^{L}	4.6^{L}	L	L							
15									4.1^{L}	L	A	L	L	L	L	L	L							
16										L	L	L	4.8^{L}	I 4.8^{L}	L	A	A							
17									L	I 4.7^{L}	I 5.0^{L}	L	L	L	L	L	L							
18									L	I 4.8^{L}	I 5.0^{L}	5.0^{L}	4.8^{L}	I 5.0^{L}	5.0	L	A	A						
19								L	L	I 4.8^{L}	I 4.8^{L}	I 5.0^{L}	I 5.0^{L}	I 5.0^{L}	I 4.8^{L}	L	L	L						
20								L	L	I 4.6^{L}	4.6^{L}	I 5.0^{L}	5.0^{L}	L	L	L	L	L						
21								L	L	L	L	L	5.1	I 4.8$^{L}_{H}$	I 4.8^{L}	4.6^{L}	L	L						
22									L	4.7^{L}	I 4.6^{L}	I 4.8^{L}	I 5.1^{L}	5.0^{L}	4.7^{R}	I 4.6^{L}	4.1^{L}	L						
23										L	L	5.0^{L}	I 5.0^{L}	4.8^{L}	5.0^{L}	A	L							
24									L	L	I 5.0^{L}	I 5.0^{L}	5.0^{L}	I 5.0^{A}	5.0^{L}	L	A							
25							L		L	L	L	L	R	5.0	L	L	L	L						
26									L	L	L	L	5.1	I 4.9^{L}	L	L	A							
27								L	I 5.0^{L}	I 4.9^{L}	L	L	B	L	A	L								
28								L	4.5^{L}	A	L	A	5.4	4.8^{L}	I 4.8^{L}	A	A							
29								L	L	4.6^{L}	L	A	A	A	A	A	A							
30									L	A	A	5.0^{L}	A	A	R	4.7^{L}	L	L						
31																								
No.									5	12	11	12	14	15	12	4	1							
Median									4.4	^{U}4.6	4.6	^{U}4.9	5.0	4.8	4.8	4.6	4.1							

foF1

Sweep 1.60 Mc to 2.00 Mc in 2.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 2

22

IONOSPHERIC DATA

Apr. 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							1.90	255	[300R	R	R	R	R	355	[330R	310	270	220						
2							B	[255R	305	325	[340R	[345A	[345R	350	330	305	275	220						
3							B	255	290	[310R	[335R	350	355	R	R	[310A	[270A	220						
4							B	240	[290R	320	R	A	A	A	A	A	A	A						
5							1.80	255	[290R	R	R	A	A	A	A	A	A	A						
6							1.95	255	290	R	R	R	A	A	A	A	A	A						
7							1.85	260	300	R	R	R	345	345	[330A	310	280	A						
8							1.80	255	300	330	R	R	R	A	340	320	A	A						
9							1.90	260	[300R	325	345	[350R	350	350	[330R	340	275	225						
10							1.95	255	300	[330R	R	R	R	R	325	305	270	220						
11							1.95	255	295	315	[330R	[340R	B	R	A	[305R	[280R	225						
12							1.95	260	305	320	345	350	350	345	325	[300A	265	215						
13							A	260	305	R	R	R	[340R	340	325	305	275	230						
14							R F	[260R	300	R	R	R	R	R	R	320	[280A	220	E					
15							2.10	260	290	325	R	R	A	345	[320R	[295R	[270R	A						
16							2.00	255	R	R	R	R	R	R	[345R	325	R	R	B					
17						E	A	A	A	R	R	R	R	B	R	A	R	A	B					
18							2.05	270	[320R	[340R	R	R	B	A	R	R	[285A	240	B					
19							2.15	295	R	R	R	B	B	A	A	R	280	235	B					
20							2.15	270	R	R	R	R	B	B	R	R	R	240	B					
21							2.10	275	315	R	R	B	B	R	B	R	305	R	B					
22							2.10	275	[305R	330	R	R	R	A	R	335	305	R	B					
23						B	[220R	285	[320R	345	R	B	B	R	R	R	A	A	A					
24						E	2.35	290	330	R	R	355	R	R	R	A	A	250	B					
25							2.30	280	330	350	R	R	R	R	R	[330R	[290R	245	B					
26							2.40	290	315	355	R	B	R	A	R	R	R	240						
27							2.30	300	[330R	355	R	B	B	R	R	[335R	295	R	E					
28							A	R	R	R	R	R	B	R	R	R	R	A						
29						B	2.20	290	[335R	R	B	B	B	B	R	R	R	R						
30							A	R	R	R	B	A	B	B	R	R	305	255	E					
31																								
No.						2	22	27	24	15	5	6	6	7	10	16	18	16	3					
Median						E	2.10	260	3.00	330	U340	U350	350	345	U330	310	280	230	E					

foE

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

IONOSPHERIC DATA

Apr. 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	G	G	G	3.9	4.0	4.1	3.5	3.1G	2.9G	2.5G	G	2.7	E	E	E	E	E	E
2	E	E	E	E	E	E	2.5	3.0	G	3.5	3.8	3.9	4.0	G	G	G	2.5G	2.6	∫1.9	E	E	E	E	E
3	E	E	E	E	2.3	∫2.5	2.1	G	3.5	G	G	G	G	4.4	G	∫5.3	2.9	G	E	∫2.3	E	E	E	E
4	E	E	E	2.1	E	E	G	G	G	G	G	3.7	∫5.0	∫8.9	∫5.0	∫4.8	∫6.1	∫2.7	∫2.3	3.1	∫1.8	E	∫2.3	2.2
5	E	E	E	2.1	2.3	∫2.0	G	G	G	3.6	∫4.0	4.1	4.2	4.7	∫6.4	3.1	∫2.8	∫3.6	∫2.3	∫2.3	∫2.4	∫2.3	∫5.9Y	E
6	E	E	E	∫1.8	E	E	G	G	3.1	3.5	3.5	3.3G	∫5.6	∫3.9	∫3.9	∫4.3	∫4.2	∫3.5	∫3.2	∫2.8	∫2.5	∫2.5	∫2.1	E
7	E	C	E	E	E	E	G	G	G	3.4	3.6	3.5	∫5.8Y	2.8G	∫2.7G	∫2.9G	3.4	∫3.4	∫3.1	∫2.9	∫2.5	2.3	E	E
8	E	E	E	E	E	E	G	G	G	3.7	4.7	4.0	3.7	3.6	2.7G	2.9G	∫3.2	∫3.8	∫5.2	∫3.5	∫2.3	C	2.3	2.2
9	E	E	2.1	∫6.0Y	E	E	2.5	G	G	3.6	3.5	3.5	G	G	G	G	G	G	E	E	E	2.3	E	E
10	E	E	E	2.0	2.3	2.1	G	G	3.3	4.1	∫6.2	∫6.1	3.7	G	G	G	2.5G	2.3	2.5	∫3.1	∫7.8	E	E	∫3.7
11	2.2	E	E	E	E	E	G	3.0	3.7	4.3	∫5.6	3.9	3.6	3.7	3.4	3.9	G	1.9G	∫2.4	∫2.9	2.0	E	E	2.2
12	2.2	∫1.8	2.2	E	E	E	G	G	3.4	G	G	3.6	G	G	G	3.0	2.4G	∫2.3	1.8	∫2.4	∫2.4	∫1.8	∫2.8	∫2.9
13	2.2	∫2.3	E	E	E	∫1.9	2.5	G	3.6	3.7	3.6	G	3.7	G	G	G	G	G	E	∫2.4	E	E	E	E
14	E	E	E	E	E	E	2.7	G	G	G	3.5	4.2	G	G	G	G	2.9	G	2.0	∫2.3	2.0	E	E	E
15	E	E	E	2.2	E	E	G	3.0	3.5	∫5.0	∫5.1	3.6	∫4.0	G	G	G	2.4G	2.3	E	E	E	E	2.2	2.1
16	∫3.5	∫2.2	∫2.0	∫2.0	∫2.9	E	G	3.0	G	3.8	3.7	G	G	G	4.5	∫4.9	∫6.3	∫5.3	∫3.0	∫6.5	∫2.9	∫4.3	∫3.6	∫2.9
17	2.2	∫6.3	∫3.8	∫5.6	∫2.8	2.1	∫3.0	3.4	3.3	4.1	4.2	4.0	4.6	4.2	4.0	4.3	∫5.4	2.7	2.0	∫3.4	∫4.3	∫2.5	∫1.9	2.1
18	∫3.8	E	∫2.4	E	∫1.8	E	G	G	3.5	G	3.7	3.6	4.1	∫4.5	G	4.0	∫5.3	4.0	G	∫2.5	∫2.8	∫5.2	∫1.9	∫3.1
19	∫2.4	∫2.3	2.2	E	E	E	G	3.5	3.7	3.9	G	B	3.7	4.1	3.6	G	G	G	2.0	E	E	E	E	E
20	E	E	E	2.3	E	E	G	G	3.5	G	G	G	B	B	G	G	G	2.9	2.2	∫1.9	2.2	E	E	E
21	E	2.2	2.2	E	E	E	G	G	3.6	3.6	G	B	4.0	G	B	G	G	3.0	2.4	2.4	∫3.5	∫2.8	∫2.8	∫3.0
22	∫2.3	∫2.0	2.2	E	E	E	2.6	3.5	3.7	4.5	3.9	∫4.8	G	∫5.2	4.4	3.6	3.2	3.0	2.7	∫3.4	6.0	∫2.2	2.0	2.2
23	E	E	E	E	E	∫2.2	G	3.5	3.6	4.0	4.5	4.1	B	3.9	4.5	∫5.5	∫4.4	∫3.6	∫2.0	E	E	∫1.9	2.2	E
24	2.2	E	E	E	E	G	G	3.4	G	3.8	4.0	4.0	4.6	∫5.0	4.3	4.0	∫4.2	G	2.4	∫3.5	∫2.9	∫2.3	E	E
25	E	E	E	E	E	E	G	G	4.0	3.8	4.6	4.0	4.6	4.1	4.0	G	G	G	G	E	∫1.8	∫3.1	2.2	E
26	E	E	2.2	1.9	E	E	G	G	G	G	G	B	4.2	4.2	3.5	4.1	∫5.2	∫6.1	∫4.2	∫2.8	∫2.5	E	E	E
27	E	E	E	E	E	E	2.7	3.6	4.5	4.2	4.0	B	B	4.2	∫5.3	G	3.6	∫5.5	3.6	∫4.2	∫3.6	∫3.2	∫2.3	∫6.1
28	∫2.9	∫5.4	∫5.3	∫6.1	∫8.3	∫4.9	∫3.8	3.0	3.5	4.7	4.7	∫6.3	4.9	4.0	4.4	∫5.2	∫5.9	4.8	∫3.3	∫2.8	∫3.5	∫2.9	∫6.0	∫1.8
29	∫2.6	∫5.8	∫4.9	∫2.8	∫3.3	G	G	G	G	G	4.3	∫5.9	4.9	4.9	∫5.3	∫5.0	∫5.7	3.5	3.0	∫2.2	∫2.7	∫2.2	∫2.8	∫6.0
30	2.2	∫4.9	∫2.7	∫3.2	∫2.9	∫3.0	3.2	3.1	3.6	∫6.0	∫5.2	4.1	∫5.3	∫6.2	4.3	3.5	G	2.7	3.0	∫2.8	∫3.2	2.2	2.1	∫2.3
31																								
No.	30	29	30	30	30	30	30	30	30	30	30	26	27	29	29	30	30	30	30	30	30	29	30	30
Median	E	E	E	E	E	E	G	G	3.4	3.7	3.8	4.0	4.0	3.9	3.5	G	2.9	2.7	2.3	2.4	2.4	2.2	2.0	1.8
U.Q	2.2	2.2	2.2	2.1	2.3	1.9	2.5	3.0	3.6	4.1	4.5	4.1	4.6	4.4	4.4	4.3	4.4	3.6	3.0	3.1	2.9	2.5	2.3	2.3
L.Q	E	E	E	E	E	E	G	G	G	G	3.5	3.5	3.5	G	G	G	G	1.9	1.8	1.9	E	E	E	E
Q.R											1.0	0.6	1.1					2.7	1.2	1.2				

foEs

Sweep 1.60 Mc to 20.0 Mc in 2.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Apr. 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										3.5	3.8	4.0	U3.5B	3.1G	2.9G	2.5G		2.6						
2							2.3	3.5		3.5	3.7	3.9	4.0				1.8G	2.6	1.9					
3					E	1.8	2.1		3.2					4.4		5.2	2.9			E				
4				E								3.7	5.0	8.2	4.7	4.5	5.1	2.5	1.8	2.0	E		E	E
5				E	E	E				3.5	3.9	3.6	3.8	3.7	3.9	3.1	2.8	3.5	2.0	E	2.2	E	E	
6				E					3.1	3.4	U3.5B	U3.3E	5.4	U3.9B	3.5	4.2	4.1	3.1	3.0	1.7	2.5	1.7	E	
7		C								3.4	3.6	3.5	G	2.7G	U2.7B	2.9G	3.2	3.2	3.1	2.9	2.5	E		
8										3.7	U4.7B	4.0	3.7	3.6	2.7G	2.8G	3.0	3.7	3.5	3.5	1.7	C	E	E
9			E	E			G			3.5	U3.5B	3.5										E	E	
10				E	E	E			3.3	4.0	4.0	5.0	3.7				2.0G	1.9	2.4	2.0	2.9			2.0
11	E							3.0	3.6	U4.3B	5.6	3.9	U3.6B	U3.7B	3.4	3.6	1.8G	2.4	1.8	E				E
12	E	E	E						3.3			3.6				3.0	2.3G	2.0	1.7	2.0	1.8	E	E	E
13	E	E				E	2.5		3.4	3.6	3.6		3.6							E				
14							2.5				3.5	3.9					2.9		1.8	1.9	E			
15				E				3.0	3.5	4.5	4.7	3.6	4.0				2.4G	2.3					E	E
16	2.6	2.1	E	1.9	2.6			3.0	3.8	3.7					4.4	4.9	4.8	4.3	2.1	6.3	2.3	4.0	2.0	2.5
17	E	E	E	3.5	1.9	2.0	3.0	3.4	3.3	4.1	4.2	4.0	4.2	4.2	4.0	4.2	3.8	2.7	2.0	3.3	4.0	2.0	E	E
18	2.3		E		E				3.4		U3.7B	U3.6B	3.9	4.5		4.0	5.2	4.0		2.0	2.5	4.0	E	1.8
19	E	E	E					3.4	3.7	3.9		B	U3.7B	4.0	3.6				2.0					
20				E					3.5				B	B				2.9	2.1	1.9	E			
21		E	E						3.6	U3.6B		B	4.0		B			3.0	2.3	E	3.1	2.6	2.0	2.9
22	2.0	E	E				2.6	3.5	3.7	4.0	3.9	4.4		4.8	3.9	3.6	3.1	3.0	2.3	E	4.4	E	E	E
23						G		3.5	3.6	3.9	4.5	4.1	B	U3.9B	4.3	4.8	4.0	3.4	2.0			E	E	
24	E							3.4		3.8	4.0	4.0	4.6	U5.0B	4.1	4.0	4.1		2.4	3.5	2.0	2.0		
25									3.5	3.8	4.6	4.0	E4.6B	U4.1B	U4.0B						1.7	E	E	
26			E	E								B	4.2	U4.2B	E3.5R	4.0	4.2	5.9	4.0	2.0	2.1			
27							U2.7B	3.6	4.0	4.0	4.0	B	B	4.0	5.2		U3.6B	4.3	1.9	4.0	3.6	3.0	2.0	5.0
28	E	E	E	3.5	A	3.6	3.5	3.0	3.5	4.7	4.7	6.3	4.9	3.9	E4.4B	4.9	5.8	3.6	3.2	2.5	2.0	2.7	2.0	E
29	2.4	E	E	E	E						U4.3B	U5.9B	U4.9B	4.9	5.3	U5.0B	4.8	3.5	2.5	2.0	2.0	E	1.9	4.4
30	E	E	2.0	1.8	2.5	3.0	3.2	U3.1B	3.6	6.0	U5.2B	4.1	U5.3B	E6.2B	E4.3B	3.5		2.7	3.0	2.6	3.2	E	E	E
31																								
No.	12	10	12	13	9	8	10	12	19	22	22	22	20	19	17	19	22	23	23	23	21	17	18	15
Median	E	E	E	E	E	1.8	2.6	3.4	3.5	3.8	4.0	4.0	4.0	4.0	3.9	4.0	3.4	3.0	2.1	2.0	2.2	E	E	E

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

The Radio Research Laboratories, Japan.

A 5

IONOSPHERIC DATA

Apr. 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	1.65	1.70	1.70	2.00	2.00	2.05	2.00	2.00	2.00	1.85	E	E	E	E	E	E	E
2	E	E	E	E	E	E	1.70	1.65	1.75	2.00	1.75	1.85	2.05	1.70	1.75	1.65	1.65	E	E	E	E	E	E	E
3	E	E	E	E	E	E	1.75	1.75	1.70	1.70	1.80	2.00	2.00	2.00	2.00	1.85	1.70	1.70	E	E	E	E	E	E
4	E	E	E	E	E	E	1.80	1.65	1.70	1.65	1.85	2.00	2.00	2.00	1.90	1.70	1.65	E	E	E	E	E	E	E
5	E	E	E	E	E	E	1.70	1.65	1.65	1.75	1.70	1.70	2.00	2.00	1.80	1.75	1.75	E	E	E	E	E	E	E
6	E	E	E	E	E	E	1.65	1.70	1.75	1.75	1.80	2.05	1.90	2.00	1.75	1.75	1.65	E	E	E	E	E	E	E
7	E	C	E	E	E	E	E	1.75	1.70	1.75	2.00	2.05	2.00	1.90	1.70	E	1.65	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	1.70	1.80	2.00	2.10	1.90	1.80	2.00	1.75	1.75	1.70	1.70	E	E	E	C	E	E
9	E	E	E	E	E	E	1.70	1.70	1.65	1.90	1.85	1.95	2.60	2.00	1.95	1.80	1.70	1.65	E	E	E	E	E	E
10	E	E	E	E	E	E	1.70	1.70	1.80	1.70	2.10	2.00	1.95	1.85	1.70	1.85	1.65	1.65	E	E	E	E	E	E
11	E	E	E	E	E	E	1.65	1.65	1.70	1.80	1.90	2.00	3.40	2.00	1.80	1.70	1.95	E	E	E	E	E	E	E
12	E	E	E	E	E	E	1.65	1.70	1.70	1.65	2.05	2.00	2.00	1.95	2.00	2.00	1.70	E	E	E	E	E	E	E
13	E	E	E	E	E	E	1.65	1.75	1.75	1.70	1.80	2.00	2.75	1.95	1.80	1.75	1.75	1.65	E	E	E	E	E	E
14	E	E	E	E	E	E	1.65	1.75	1.70	1.90	2.00	2.00	1.70	1.70	1.90	1.95	1.70	E	E	E	E	E	E	E
15	E	E	E	E	E	E	1.65	1.70	1.70	2.00	2.00	1.70	2.00	2.00	1.80	2.00	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	1.65	1.70	1.80	1.70	1.90	2.00	1.75	2.00	2.00	1.95	1.75	1.70	1.70	E	E	E	E	E
17	E	E	E	E	E	E	1.70	1.70	1.85	2.00	2.05	2.00	2.00	3.50	1.85	1.95	1.75	1.70	1.70	E	E	E	E	E
18	E	E	E	E	E	E	1.65	1.80	1.80	2.00	2.00	2.00	3.05	2.00	2.05	2.00	2.00	1.70	1.75	E	E	E	E	E
19	E	E	E	E	E	E	1.70	1.90	1.70	1.95	2.00	3.90	3.50	2.00	2.05	1.85	1.70	1.75	1.70	E	E	E	E	E
20	E	E	E	E	E	E	1.75	1.65	1.85	1.80	1.95	2.00	4.30	3.95	2.00	1.80	1.65	1.70	1.65	E	E	E	E	E
21	E	E	E	E	E	E	1.70	1.75	1.70	1.75	2.00	4.50	3.70	2.70	3.95	2.00	1.85	1.90	1.70	E	E	E	E	E
22	E	E	E	E	E	E	E	1.65	1.80	1.80	1.90	2.00	2.80	1.90	2.00	1.90	1.70	1.65	1.65	E	E	E	E	E
23	E	E	E	E	E	1.80	1.65	1.80	1.95	1.95	2.60	3.70	4.00	2.70	2.60	1.95	1.75	1.80	E	E	E	E	E	E
24	E	E	E	E	E	E	1.65	1.65	1.65	2.00	2.00	2.00	2.00	2.05	1.95	1.80	1.75	1.65	1.70	E	E	E	E	E
25	E	E	E	E	E	E	1.65	1.65	1.65	2.00	2.05	2.00	1.95	2.00	2.00	2.00	1.70	1.65	1.70	E	E	E	E	E
26	E	E	E	E	E	E	1.65	1.70	1.70	2.00	2.00	4.05	3.45	3.10	2.00	1.90	1.95	1.70	E	E	E	E	E	E
27	E	E	E	E	E	E	1.65	1.80	1.75	2.00	2.00	4.30	5.30	3.00	2.10	1.95	1.70	1.70	E	E	E	E	E	E
28	E	E	E	E	E	E	E	1.70	2.00	2.00	1.95	2.05	3.80	2.05	2.00	1.90	1.95	1.65	E	E	E	E	E	E
29	E	E	E	E	E	1.75	1.70	1.65	2.00	2.00	3.95	3.75	3.60	3.70	2.00	2.00	2.00	1.70	E	E	E	E	E	E
30	E	E	E	E	E	E	1.65	1.70	1.95	2.00	3.30	2.80	3.55	3.50	2.05	2.00	1.90	1.65	1.65	E	E	E	E	E
31																								
No.	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30
Median	E	E	E	E	E	E	1.65	1.70	1.70	1.90	2.00	2.00	2.05	2.00	2.00	1.90	1.70	1.65	E	E	E	E	E	E

f-min

Sweep 1.60 Mc to 20.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

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

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

The Radio Research Laboratories, Japan.

A 7

27

IONOSPHERIC DATA

Apr. 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									L	L	L	4:30	L	L	L	L								
2									L	L	L	L	L	L^{H}	L	L	L							
3									L	L	4:00	L	L	L	L	A	L							
4										L^{H}	L	L	A	A	A	A	A							
5									L	L	L	L	L	L	L	L								
6									L	380^{L}	L	L	A	L	L	L								
7									L	L	L	L	L	L	L	L	L							
8									L	L	A	L	L	L	L	L	L							
9									L	L	L	L	L	360	L	L	L							
10								L	L	350^{L}	360	I 370^{A}	375	I 390^{L}	I 365^{L}	L	L							
11									L	L	A	L	L	L	I 360^{L}	L	L							
12								L	L	370^{L}	370	I 370^{L}	I 355^{L}	355	365^{L}	L	L							
13									365^{L}	365^{L}	395^{L}	I 380^{L}	375^{L}	370^{L}	355^{L}	370^{L}	L							
14									355^{L}	I 360^{L}	390	390^{L}	385^{L}	380^{L}	370^{L}	L	L							
15									375^{L}	L	A	L	L	L	L	L	L							
16										L	L	L	370^{L}	I 370^{L}	L	A	A							
17									L	I 370^{L}	I 360^{L}	L	L	L	L	L	L							
18									L	I 365^{L}	I 355^{L}	360^{L}	390^{L}	I 375^{L}	360	L	A	A						
19								L	L	I 370^{L}	I 375^{L}	I 370^{L}	I 360^{L}	I 365^{L}	I 370^{L}	L	L	L						
20								L	L	I 390^{L}	395^{L}	I 375^{L}	365^{L}	L	L	L	L	L						
21								L	L	L	L	L	360	I 360^{H}	I 360^{L}	365^{L}	L	L						
22									L	390^{L}	I 400^{L}	I 390^{L}	I 370^{L}	I 360^{A}	390^{R}	I 370^{L}	380^{L}	L						
23										L	L	360^{L}	I 365^{L}	360^{L}	350^{L}	A	L							
24									L	L	I 365^{L}	I 380^{L}	345^{L}	I 340^{A}	345^{L}	L	A							
25							L		L	L	L	L	R	350	L	L	L	L						
26									L	L	L	L	355	I 365^{L}	L	L	A							
27								L	I 345^{L}	I 350^{L}	L	L	B	L	A	L								
28								L	360^{L}	A	L	A	340	380^{L}	I 365^{L}	A	A							
29								L	L	385^{L}	L	A	A	A	A	A	A							
30									L	A	A	360^{L}	A	A	R	350^{L}	L	L						
31																								
No.									5	12	11	12	14	15	12	4	1							
Median									360	370^{U}	375	370^{U}	365	365^{U}	360	370	380							

M(3000)F1 Sweep 60 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

A 8

IONOSPHERIC DATA

Apr. 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									250	255	260	255H	270	280L	295	255								
2									245	270	260	280	280	275	265	260	260							
3									255	290	275	295	305	300	285	280	255							
4										255	300	290	290	I 270A	260	285	255							
5									255	260	290	275	285	290	260	260								
6									260	255	260	I 285L	300	300	295	290								
7									250	255	290	275	270	300	295	290	260							
8									255	265	270	280	290	295	295	275	260							
9									250L	290	290	285	290	300	280	270	255							
10								265H	345L	350	305	345	300	300	295	285	260							
11									275L	295	305	290	260	290	290	290	275							
12								280	275	310	300	300	295	295	295	290	285							
13									280	275	280	275	300	295	290	275	275							
14									320	300	290	300	280	285	295	270	270L							
15									295	345	300	345L	330	315	305	300	255							
16										295	275	285	285	290	295	275	255							
17									290	290	290	295	290	300L	300	290	255							
18									255L	260	285	280	290	305	295	290	270	250						
19								260	280	300	290	305	300	300	295	290	265	255						
20								250	285L	275	295	300	290	295	285	280L	290	290						
21								250	250	255	290L	310	335	295	320	300	280	265						
22									260	260	260	300	345	305	305	300	270	260						
23										330L	310	295	315	310	305	300	295							
24									270	285	290	295L	340	305	310	285	270							
25							245		290L	300	280	330L	305	320	300	295	270	270						
26									255	295	300L	370	350	300	305	275	275							
27								285	310L	290	300	310	310	330	300	295								
28								275	280	295	305	I 300A	360	330	295	295	290A							
29								250	280L	295	290L	340	300	300	300	295	290							
30																								
31																								
No.							1	8	26	29	29	29	29	29	29	29	25	6						
Median							245	260	270	290	290	295	300	300	295	290	270	260						

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

The Radio Research Laboratories, Japan.

A 9

IONOSPHERIC DATA

Apr. 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	290	290	285	290	305	320	250	245	240	210	220	210	225	240	225	240	245	245	245	250	280	270	260	280
2	295	255	245	245	295	290	245	245	235	230	225	230	240	210 H	210	240	235	250	245	225	245	245	275	295
3	295	295	255	255	250	255	245	245	245	220	205	240	205	I 230 A	245	250	245	245	240	240	245	300	300	270
4	280	300	300	270	280	255	245	245	205 H	205 H	235	245	A	A	A	I 245 A	I 255 A	245	245	235	245	270	290	295
5	310	285	280	245	245	255	245	240	215	200	225	200	220	205	210	230	245	245	245	240	255	260	290	290
6	270	270	255	245	250	245	245	245	240	220	205	205	I 210 A	210	210	I 240 A	255	255	245	230	240	290	300	290
7	290	I 290 C	280	255	305	275	235	245	245	205	210	195	205	225	245	245	250	255	245	245	235	260	310	310
8	300	300	290	240	245	245	245	245	245	235	I 210 A	230	200	230	210	245	245	245	245	240 A	245	I 250 C	270	305
9	305	310	290	245	235	245	245	245 H	240	220	205	205	225	225	235	245	245	245	235	245	295	320	325	305
10	240	205	295	295	305	300	245	235	235	I 220 A	I 210 A	I 235 A	240	230	220	245	245	245 H	250	240	240 A	255	265	295
11	320	295	295	255	245	255	245	245	250	I 240 A	I 230 A	220	240	225	205	240 A	245	255	250	235	215	255	295	305
12	330	295	295	245	305	295	255	265	245	225	205	200	250	220	225	240	245	260	250	235	220	250	295	295
13	300	325	290	250	260	245	245	250	245	220	210	205	210	200	235	245	245	250	250	230	210	250	290	295
14	295	290	305	350	300	250	245	245 H	225	205	220	210	195	245	210	215	245	255	250	255	245	300	300	305
15	310	305	285	255	270	240	245	245	250	I 270 A	I 250 A	220	I 245 A	240	240	235	245	255	245	245	240	250	305	300
16	I 325 A	295	300	245	I 245 A	220	245	245	225 H	250	225	230	240	225	A	A	A	260	245	I 250 A	245	I 280 A	300	320 A
17	295	295	290	260 A	245	245	220	245	210 H	245	240	215	240	240 A	210	A	A	250	245	255 A	I 250 A	255	255	320
18	325 A	300	255	235	210	250	250	240	225	245	205	205	205	I 225 A	245	255	A	A	245	240	250 A	I 280 A	290	320
19	305	300	280	245	240	250	245	245	240	210	215	210	220 B	230	210	240	245	245	250	245	245	275	275	290
20	295	295	280	250	295	255	245	245	240	210	215	225	I 210 B	200	205	225	250	255	260	245	240	215	255	295
21	295	300	295	295	290	255	245	240	235	230	215	I 230 B	205	195 H	245	245	250	245	245	245	250 A	I 280 A	275	I 290 A
22	310 A	295	280	255	260	250	245	245	240	220	205	I 210 A	225	I 220 A	200	240	235	245	250	235	I 250 A	260	290	320
23	325	310	285	245	245	250	245	245	245	225	I 210 A	240	235	I 210 B	240 A	A	A	255	255	245	245	255	280	295
24	295	295	290	245	240	255	245	245	245	245	245	205	A	A	240 A	I 225 A	I 245 A	255	250	I 250 A	245	270 A	290	295
25	295	300	300	260	255	240	220	235	225	245	I 240 A	215	I 230 A	245	255 A	250	245	250	255	245	240	230	290	300
26	300	295	295	290	265	255	245	245	230	220	215	230	240	I 215 A	I 240 B	250 A	I 245 A	I 245 A	255	245	245	245	260	285
27	305	305	310	295	280	285	250	250	245 A	245	220	230	I 225 B	245	I 230 A	250	260	275	250	I 250 A	I 280 A	300 A	300 A	I 305 A
28	310	300	325	A	A	A	245	250	245	A	A	A	A	210	B	A	A	270	245	240	245	295 A	290	295
29	290	300	295	255	260	245	245	230	245	210	A	A	A	A	A	A	A	245	250	245	240	255	250	I 280 A
30	275	295	280	255	295 A	255 A	245	245	225	I 230 A	I 240 A	220	A	A	A	210	250	245	245	245	255 A	260	275	305
31																								
No.	30	30	30	29	29	29	30	30	30	29	28	28	25	26	25	25	24	29	30	30	30	30	30	30
Median	300	295	290	255	260	255	245	245	240	220	215	220	225	225	225	240	245	250	245	245	245	260	290	295

h'F | Sweep 160 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

R'Es

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

The Radio Research Laboratories, Japan.

A 11

IONOSPHERIC DATA

Apr. 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										C	C	C	C	l	l	l		fz						
2							h	h		h	h	hl	h				l	hl	f					
3					f	fz	h		h					cz		l3	l2			f				
4				f								l2	l2	l3	l2	l2	l2	l2h	fz	fz	f		f	f
5				f	f	f				h	C	l	l	l	l	l	l2	l4	f3	f	f	fz	fz	
6				f					h	h	C	l	l2	l2	l	l2	l3	l4	f3	fz	fz	fz	f	
7										h	C	C	l	l	l2	l	hl2	l2	fz	fz	fz	f		
8										h	cz	C	C	l2	l	l2	l2	l2	f3	f3	f		f	fz
9			f	f			l			h	h	C										f	f	
10				f	f	f			h	hz	cz	cz	h				l	l	fz	f	fz			fz
11	f							hz	hz	cz	cz	h	C	C	l	cz		l	fz	f	f			f
12	f	f	fz						hz			h				l	l2	l2	h	fz	fz	f	f	fz
13	f	fz				f	hzl		hz	C	C		C							fz				
14							h				h	h					l		h	fz	f			
15				f				hz	hz	hz	cz	C	l2				l2	l					fz	f
16	fz	fz	fz	fz	fz			h		h	h				h	cz	cz	c3	c3	f4	f3	f4	fz	f4
17	fz	fz	fz	f3	f3	cl	l2	h2l2	l	h	h	h	C	h	C	l2	cz	h2l	h2	f3	f3	f3	f	f
18	fz		f		f				h		h	h	C	l2		h	h2l	h2		fz	fz	f3	f	fz
19	f	fz	f					h	h	h			h	l	l				h					
20				f					h									h	hz	f	f			
21		f	f						h	h			h					hz	hz	f	fz	fz	fz	f
22	fz	f	f				h	h	h	h	h	C		l2	h	h	h	h	hz	f	f3	f	f	f
23						C		hz	h	hz	h	h		h	C	cz	l2	l2	l			f	f	
24	f							h		h	h	h	h	cz	C	l2	l2		h2	f3	f3	fz		
25									h	h	h	h	h	h	h						f	f	f	
26			fz	f									h	hl	l	h	hz	cz	f3	fz	fz			
27							h	h	h	h	h			h	hz		h	cz	h	f3	fz	fz	fz	fz
28	fz	fz	fz	f4	f3	fz	l2	C	h	h	h	cz	h	h	h	cz	c3	l3	fz	f3	fz	fz	fz	f
29	fz	fz	fz	fz	fz						h	h	C	h	C	C	C	cz	fz	f	fz	f	fz	f4
30	f	fz	f	fz	f3	fz	l2	cz	h	cz	cz	l	C	C	cz	C		h	h	fz	fz	f	f	fz
31																								
No.																								
Median																								

Types of Es | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 12

IONOSPHERIC DATA

Apr. 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	6.5	6.1	6.1	5.6	5.3	5.2	7.1	9.0	10.2	9.3	9.9	10.8	12.1	12.2	11.9	11.9	11.1	8.5	7.3	6.6	6.8	6.9	6.6	6.2
2	6.2	6.5	6.4	5.1	4.5	4.6	6.2	8.0	9.0	11.2	12.4	12.9	13.3	12.7	11.7	10.5	9.5	9.9	9.0	7.5	5.4	5.9	5.7	5.7
3	5.4	5.4	5.7	4.9	4.4	4.4	6.6	8.3	8.5	8.9	10.6	10.9	10.8	11.7	11.9	11.5	10.2	9.2	8.0	6.5	5.7	5.4	5.5	6.0
4	5.6	5.0	4.8	5.2	4.8	4.8	6.6	7.1	7.7	9.5	11.1	12.9	12.9	11.5	10.3	9.9	8.5	7.9	8.6	7.1	5.3	5.2	5.3	5.5
5	5.2	5.4	5.3	5.0	4.2	4.1	5.9	7.1	8.7	9.1	10.9	12.4	12.4	11.9	11.0	9.1	7.6	7.8	7.5	7.0	6.4	6.5	6.2	6.1
6	6.2	6.1	5.8	4.6	4.8	4.6	6.3	7.2	8.4	9.5	8.3	8.8	10.5	10.7	10.4	10.0	9.3	8.8	9.1	8.2	5.9	4.6	5.2	5.4
7	5.1	4.8	5.2	5.0	4.3	4.5	6.8	7.1	8.2	7.8	8.4	9.9	9.3	8.8	9.6	10.1	9.5	9.4	9.5	7.8	5.5	4.8	5.1	5.1
8	5.2	5.0	5.2	5.0	4.1	4.0	5.8	6.8	8.5	9.2	10.7	10.9	11.4	11.4	11.0	10.8	10.1	9.1	9.0	7.0	5.9	5.6	5.3	5.2
9	5.1	5.0	5.2	5.5	4.4	3.9	5.9	7.7	7.7	8.3	9.7	10.8	11.2	11.0	12.1	11.3	10.1	9.3	9.1	7.3	6.0	6.8	6.4	6.5
10	9.0	5.9	3.8	3.7	3.8	4.8	7.1	7.0	6.8	6.1	7.1	8.4	8.7	9.1	8.7	8.8	8.1	8.2	8.3	9.3	5.9	4.9	4.8	4.9
11	4.7	4.6	4.5	4.6	4.4	4.3	6.1	6.2	7.3	8.1	9.2	11.0	11.5	10.3	9.9	9.9	10.3	10.0	10.5	9.3	4.5	4.2	4.5	4.5
12	4.3	4.4	4.2	4.1	4.0	4.3	5.7	7.3	7.7	7.5	9.0	9.6	11.1	9.4	C	C	C	C	C	7.6	5.2	4.1	4.3	4.4
13	4.2	4.2	4.1	3.6	3.4	4.1	6.1	6.9	7.3	8.9	8.5	9.6	9.5	9.2	9.2	8.6	8.0	8.6	9.5	8.8	5.6	4.4	4.6	4.7
14	4.8	4.5	4.1	3.5	4.1	4.8	5.9	6.2	6.8	8.6	9.4	8.5	8.8	8.0	7.6	7.5	7.4	8.0	8.8	7.4	6.3	6.0	5.4	C
15	S	5.9	5.6	5.2	4.8	4.3	5.2	5.9	6.2	7.8	8.5	8.5	8.4	10.3	10.3	10.0	10.0	9.0	9.1	8.3	6.9	5.2	5.3	5.5
16	5.2	5.4	5.2	5.6	4.0	4.1	5.7	5.9	7.4	10.1	10.9	11.6	11.6	11.9	11.2	10.8	10.2	9.2	9.1	8.1	6.7	5.6	6.0	6.0
17	5.5	6.0	5.9	5.5	4.4	4.1	5.7	6.7	7.5	8.4	8.7	9.0	9.6	10.6	10.1	10.5	9.8	8.8	8.3	7.5	6.2	5.7	5.2	5.5
18	5.7	5.8	5.5	5.6	3.5	4.0	5.8	6.4	7.8	8.5	9.5	10.5	9.6	10.0	10.6	9.9	10.5	9.2	8.5	7.5	6.0	5.6	5.7	5.6
19	5.7	5.9	5.6	5.0	4.2	C	C	C	C	C	9.5	10.0	9.6	9.7	10.3	10.1	8.8	8.3	8.5	7.8	6.4	6.2	6.6	6.4
20	6.2	6.1	6.5	6.1	5.0	4.6	7.1	7.0	7.4	8.2	9.0	9.5	10.8	9.4	9.1	8.6	8.2	9.3	10.0	9.9	7.1	5.8	5.7	5.6
21	5.4	5.4	4.9	4.9	4.8	5.9	8.3	7.6	7.6	7.2	6.9	7.8	8.8	9.1	9.2	10.3	10.5	10.3	9.7	7.5	6.1	5.2	6.2	5.7
22	6.2	5.8	5.6	5.6	5.2	6.1	7.4	7.2	7.6	7.6	7.5	8.2	8.6	9.3	10.7	11.3	10.8	10.0	9.0	7.4	6.5	6.0	5.8	5.7
23	5.8	5.8	6.0	5.8	4.8	5.9	6.6	6.7	7.1	8.3	8.6	8.5	8.2	9.3	9.7	9.4	9.6	9.6	9.1	7.9	6.9	6.4	6.4	6.3
24	6.0	6.3	6.0	6.0	5.1	5.9	7.6	7.4	8.5	8.7	8.3	7.5	9.0	10.3	10.0	10.6	9.7	8.6	8.5	8.0	6.2	5.6	5.8	5.9
25	6.0	5.8	5.7	5.4	5.4	5.1	6.0	6.6	7.4	8.3	8.5	9.2	9.5	9.4	10.5	11.4	10.5	10.1	9.6	9.8	7.0	5.0	5.1	5.2
26	5.2	5.4	4.0	5.0	5.1	5.7	6.8	7.1	7.1	7.6	7.7	8.2	9.9	11.3	11.6	11.4	9.4	9.0	9.6	9.6	6.9	6.3	6.4	6.3
27	6.0	6.1	5.5	5.4	5.5	5.9	7.9	6.9	7.4	7.6	8.1	8.2	9.0	9.8	10.5	10.0	10.4	10.2	9.3	7.2	5.8	6.0	6.2	6.1
28	5.7	6.1	5.8	6.0	5.4	5.4	6.6	8.3	8.6	7.4	7.5	8.6	9.0	10.0	11.6	11.6	11.4	10.4	10.6	8.5	6.6	6.0	6.2	6.1
29	6.0	6.0	5.7	5.6	5.4	6.6	6.4	7.0	7.0	7.3	7.7	9.4	10.1	10.3	10.7	10.6	10.3	9.8	10.8	9.6	8.8	7.4	7.3	6.3
30	6.3	6.2	6.1	5.7	5.1	6.1	7.5	7.4	7.6	7.2	7.6	9.0	9.3	9.9	10.6	10.9	12.1	11.9	10.6	8.6	7.7	7.5	7.5	7.2
31																								
No.	29	30	30	30	30	29	29	29	29	29	30	30	30	30	29	29	29	29	29	30	30	30	30	29
Median	5.7	5.8	5.6	5.2	4.6	4.6	6.4	7.1	7.6	8.3	8.6	9.4	9.6	10.2	10.5	10.3	10.0	9.2	9.1	7.8	6.2	5.6	5.7	5.7
U. Q.	6.1	6.1	5.8	5.6	5.1	5.8	7.1	7.4	8.4	9.0	9.7	10.8	11.2	11.3	11.1	11.1	10.4	10.0	9.6	8.6	6.8	6.2	6.2	6.2
L. Q.	5.2	5.0	4.9	4.9	4.2	4.2	5.9	6.7	7.3	7.6	8.1	8.5	9.0	9.4	9.8	9.9	9.0	8.6	8.5	7.4	5.8	5.2	5.2	5.3
Q. R.	0.9	1.1	0.9	0.7	0.9	1.6	1.2	0.7	1.1	1.4	1.6	2.3	2.2	1.9	1.3	1.2	1.4	1.4	1.1	1.2	1.0	1.0	1.0	0.9

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

Apr. 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	L	L	L	A	"5.2L	L	L								
2									L	L	L	L	L	L	L	"4.2L	L							
3									L	L	L	L	SH	"5.2S	L	4.2L								
4										L	LH	L	L	"5.0L	A	A	A							
5								L	LH	LH	"5.1H	L	LH	L	L	A								
6									L	"4.5L	L	L	"5.3H	L	L	L								
7									L	L	S	LH	L	L	"5.1L	L								
8									L	L	S	S	S	AS	L	AS	S							
9									L	L	S	S	L	S	L	S	L							
10									L	S	S	S	S	S	S	S								
11									L	L	L	A	L	"4.8L	L	L	L							
12								L	L	L	L	L	L	L	C	C	C	C	C					
13									L	"4.5L	L	L	L	L	L	L	L	L						
14									L	4.7L	4.8L	5.0L	L	L	L	L	L	AS						
15										A	L	L	L	L	L	L	L	L						
16										L	S	L	L	"5.2L	L	L	A		A					
17									L	L	L	S	L	S	L	S	A							
18									L	S	L	L	S	A	A	S	L							
19							C	C	C	C	5.0L	"5.5L	L	5.3L	L	L	L							
20									L	4.5L	L	S	S	L	L	L	L	L						
21									L	L		LH	L	L	S	L	L							
22										L	L	"6.0L	L	A	5.3	4.6	L	A						
23									L	5.1L	L	L	L	L	L	A	L	A						
24									L	S	S	S	S	S	S	S	L							
25									L	L	L	S	A	S	L	LH	L							
26									L	"5.2L	L	L	L	S	L	L		L						
27										S	S	AS	S	AS	S	S	AS	L						
28									S	A	A	A	A	L	L	A	A	A	A					
29									L	S	S	S	S	S	S	L	L	L						
30								L	4.4L	L	L	L	A	5.3L	A	A	A	A						
31																								
No.									1	6	3	3	1	7	2	3								
Median									4.4	"4.6	5.0	"5.5	"5.3	"5.2	"5.2	4.2								

foF1

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

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

Apr. 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	I2.50S	3.00	3.20	u3.20A	A	B	A	3.45	I3.20A	2.80	u2.20R	S					
2							B	I2.40S	2.85	3.30R	3.45	u3.60S	3.65	I3.50R	3.25	3.10	B	B	B					
3							S	I2.50S	3.00	3.10	3.15	3.40R	I3.30A	u3.35A	3.35R	3.05	I2.70B	S	B					
4							1.90	I2.50S	I3.05A	R	R	R	A	R	A	A	A	2.25	B					
5							1.95	I2.50S	3.05	3.00	3.25	I3.20R	I3.50A	A	A	A	A	A	S					
6							B	I2.60S	3.10	A	R	A	R	A	R	A	A	I2.30S	B					
7							2.00	I2.55S	I3.00A	3.30	3.40	R	R	B	A	A	A	A	B					
8							2.30R	I2.65S	3.10	u2.85R	S	S	A	S	A	A	S	S	A					
9							S	S	S	S	S	S	S	3.25	u3.40S	3.15	S	B	S					
10							S	I2.50S	u3.15S	S	S	S	S	S	S	I3.30S	S	S	S					
11							S	S	S	R	A	B	B	B	B	B	A	2.40	B					
12							I2.30R	I2.70S	u2.85R	3.10R	B	B	B	B	C	C	C	C	C					
13							I2.20S	I2.40S	R	R	A	B	B	R	R	u3.25R	I2.70S	2.30S	A					
14							2.20	I2.70A	3.00	R	S	S	I3.50S	3.50	I3.40A	3.10	I2.80S	A	S					
15							S	I2.70S	I3.00A	I3.10A	S	S	A	A	A	A	A	A	1.80					
16							1.90	I2.55S	3.05	u3.35RI	3.30AI	3.45A	I3.35R	I3.40R	3.25	3.20	I2.90SI	2.40A	A					
17							I2.25S	I2.55S	I3.10A	I3.35A	I3.50A	u3.60S	I3.60A	A	A	3.20	2.90	A	A					
18							2.05	I2.65S	u3.20S	A	A	B	A	A	A	A	A	B	A					
19							C	C	C	C	A	R	R	R	R	A	I2.80S	2.20	I1.80A					
20							S	S	S	A	A	R	I3.55RI	3.45A	3.35R	3.00R	I2.85SI	2.35S	1.70					
21							2.30	I2.70S	3.15	3.55	u3.70S	R	R	u3.55R	S	R	I3.00Su	2.40R	S					
22							2.55	I2.80S	3.25	3.60	I3.60RI	3.70SI	3.80RI	3.70SI	3.50Bu	3.30R	2.95	2.50	B					
23							2.25	I2.80R	3.00	3.45	B	B	B	u3.50AI	3.35A	3.10	A	A	B					
24							2.40	I2.90S	3.40	3.60	u3.75SI	3.55A	u3.40RI	3.30Su	3.15S	3.05S	I2.85SI	2.50S	A					
25							S	I2.80S	3.25	3.45	3.55	I3.60B	I3.60BI	3.50SI	3.40S	3.35	I3.00S	S	S					
26							2.10RI	2.80B	3.20	I3.40A	3.40	B	B	I3.55AI	3.40A	I3.30RI	3.00Au	2.35R	S					
27							I2.40SI	2.80S	3.35	3.35	3.55SI	3.60S	I3.50Bu	3.55u	3.40RI	3.30S	2.85	S	A					
28							S	S	3.35	A	B	A	B	A	A	A	A	S	S					
29							S	S	B	3.60	3.75	I3.75B	B	B	A	I3.10A	I2.90S	S	B					
30							R	u3.20SI	3.15A	3.60	3.75	I3.60A	I3.60A	I3.50A	3.50R	A	A	A	B					
31																								
No.							16	24	24	19	15	11	12	14	14	17	15	12	3					
Median							2.20	u2.65	3.10	3.35	3.50	u3.60	u3.50	u3.50	u3.40	3.20	u2.85	u2.35	1.80					

foE

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Apr. 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	E	E	E	E	E	S	S	S	3.3	3.9	4.5	4.2	7.3Y	4.2	3.3G	3.2	2.2G	G	]2.0Y	2.1	S	E	E	E
2	E	E	E	E	S	S	G	S	G	3.6	3.8	4.1	4.4	3.0G	G	2.4G	B	2.7	2.1Y	2.5	]2.7	S	E	E
3	E	E	E	E	E	S	S	S	3.2	3.3	3.4	4.2	3.7	3.8	3.6	2.7G	3.1	2.7	2.6	2.1	2.1M	E	E	]2.5
4	E	E	E	2.1M	2.1M	E	G	S	3.0	3.1G	3.4G	3.4G	3.9	3.3G	8.7M	]5.4	5.6M	2.8	1.9	2.0	2.3	]2.2	]1.5	]2.7
5	E	]2.4	E	E	E	S	G	S	G	3.3	3.5	3.8	3.9M	4.0	]4.2	]5.3S	]4.0	3.6	]7.6	]3.4	]6.3	2.9M	]1.7	]3.6
6	]4.1	]2.5	2.3	]3.6	]3.4	2.1M	G	S	G	3.5	3.5G	3.9	3.6G	4.0	3.3G	]3.7	3.2M	S	G	S	E	S	S	S
7	S	S	E	E	E	S	G	S	3.1	3.1G	G	3.2G	3.3G	B	3.5	]3.8	]5.0	]3.7	4.7	]3.5	2.2M	S	S	S
8	S	E	2.3M	E	E	E	G	S	3.3	3.0	3.9	4.1	]6.6	]5.3	]4.3Y	5.3	4.1	S	]3.6	E	E	E	2.7	S
9	S	S	S	S	S	S	S	S	S	S	4.1	3.8	S	G	G	G	S	B	S	S	S	S	S	S
10	S	S	E	S	2.1	S	S	S	G	4.0	4.0	4.2	4.4	4.2	4.2	S	S	S	3.1	2.2	]2.7	]5.2	S	S
11	]2.5	S	S	S	S	S	S	S	G	G	]5.2S	5.4M	B	4.0	3.9	B	3.3	G	B	]3.4	1.9Y	4.3M	S	E
12	E	E	E	E	S	S	G	S	3.1	3.4	5.0M	B	4.1	4.0	C	C	C	C	C	S	S	E	E	E
13	2.1	]5.1Y	2.3	E	E	S	S	S	2.5G	3.3G	3.6	B	B	3.4G	3.0G	2.6G	S	G	]2.3	2.3	2.1M	]1.9S	S	E
14	E	E	E	E	E	E	]2.8	3.0	G	G	S	S	S	3.8	4.0	G	3.5S	]4.0S	]4.6	]2.6	]2.4	S	E	C
15	S	S	2.1	]1.6	S	S	3.2	S	3.5	]8.5	4.4	4.4	4.5	]4.1	3.4	]3.6	3.6M	]3.0Y	G	E	E	E	E	E
16	]2.6	]3.5	]2.4	]4.0	]4.0	2.8	G	S	3.7	G	]4.1	3.9	G	3.9	4.4	3.7	]5.8	]4.0	]5.3Y	]6.8	]4.2	]6.4	]3.3S	]3.9
17	]3.0	]4.2	2.2	1.8	1.7	D1.6S	S	3.2	3.9	3.6	4.2	4.7	4.7	5.0	4.3	4.3	]5.4	]3.4	1.9	E	2.8	]4.4	]5.7Y	]5.4
18	1.8	4.8M	E	E	E	E	2.4	S	G	4.2M	3.8	3.9	4.5	]5.9	6.0M	4.5	]3.6	]3.4	]3.8	]4.1	S	S	E	E
19	E	S	]2.2	2.3	2.1	C	C	C	C	C	3.7S	G	G	3.4G	3.5G	3.4	]2.8	1.9G	2.2	1.9	E	E	E	E
20	E	E	E	E	E	S	S	3.2	G	4.1	4.3	3.3G	4.2	3.0G	2.9G	2.7G	S	S	2.8	]3.8	]3.4S	]2.2	E	E
21	E	E	E	1.9M	S	S	G	S	3.4	4.1	4.2	3.9	G	G	S	3.9	S	3.4	2.1	]2.4	]3.0	3.8S	]2.9	3.1M
22	S	S	S	S	S	S	G	S	4.0	4.4	4.2	]5.9Y	4.0	4.7	5.3Y	G	3.8	5.2M	]5.4	]3.4	]3.5	]3.8	3.6	S
23	S	E	E	E	E	S	G	]3.6	4.1	4.4	4.6	B	4.0	4.1	4.1	]5.0Y	]4.6	]9.9Y	3.4	]4.2	2.3	S	1.9	]3.5
24	3.0M	E	E	1.5	E	S	4.5	S	G	4.0	G	4.2	G	S	G	G	S	S	]4.7	]4.1	]4.1	]3.6	2.2	E
25	S	E	S	S	S	S	S	G	3.4	4.4	4.3	4.2	4.6	S	G	G	G	G	S	S	E	E	]2.3	2.1
26	]4.4	]1.5	E	E	S	S	G	3.5	3.8	4.0	3.9	4.3	4.7	4.9	3.9	3.2G	4.2	4.6M	]3.2	]3.0	]3.1	]2.7	]3.6	E
27	E	E	E	1.8M	E	S	S	4.1	4.6	4.3	4.6	]8.4	4.5	]7.2	4.4	G	]5.7	S	2.1	2.3	]5.9	4.8	]3.6	]5.3
28	]3.5	]2.1Y	]3.9S	]4.1	]5.6	]8.1	]4.2	S	4.3	]5.9	]7.4	]6.1	]5.4	]5.3	5.2M	5.4M	7.4M	]4.6	]5.6	]3.4	]4.3	]3.0	3.0M	4.0M
29	S	S	S	]2.7	]3.6S	S	S	S	B	4.1	4.3	4.5	4.1	3.9	4.2	3.9	3.3	S	B	E	1.9	E	]2.6	]2.5
30	2.1	S	3.0	3.4	3.3	]3.8	]3.5	3.8	3.4	4.2	4.6	4.3	]6.2Y	4.1	]6.1	]10.5	9.3	8.9	]3.6	E	E	]4.0	S	E
31																								
No.	21	21	25	25	21	9	18	8	27	28	29	26	26	27	28	27	22	21	25	26	26	23	23	23
Median	E	E	E	E	E	D1.6	G	3.4	3.2	4.0	4.1	4.2	4.2	4.0	4.0	3.6	3.9	3.4	3.1	2.4	2.4	2.7	1.9	E
U.Q.	2.8	2.4	2.2	2.2	2.7	3.3	2.8	3.7	3.7	4.2	4.4	4.4	4.6	4.7	4.4	4.5	5.4	4.3	4.6	3.4	3.4	4.0	3.0	3.5
L.Q.	E	E	E	E	E	E	G	3.1	G	3.2	3.6	3.9	3.7	G	3.3	G	3.3	G	2.1	2.0	1.9	E	E	E
Q.R.								0.6		1.0	0.8	0.5	0.9		1.1		2.1		2.5	1.4	1.5			

foEs

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

The Radio Research Laboratories, Japan.

K 4

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	S	S	3.2	3.8	4.4	3.9	6.9	4.0	3.3^{q}	3.2	2.2^{q}		S	E	S			
2					S	S		S		3.6	3.8	4.1	4.4	^{E}3.0^{R}		2.4^{q}	B	2.7	2.1	2.1	2.3	S		
3						S	S	S	3.2	3.3	^{E}3.4^{R}	4.2	3.7	3.8	3.6	2.7^{q}	3.1	2.6	2.3	2.1	E			1.8
4				E	E			S	^{E}3.0^{S}	^{E}3.1^{R}	^{E}3.4^{R}	^{E}3.4^{R}	3.9	^{E}3.3^{R}	8.4	5.3	5.5	2.6	1.9	1.9	1.8	E	E	2.5
5		1.8				S		S		3.3	3.5	3.8	3.6	3.9	4.0	^{u}5.0^{S}	3.2	2.8	4.5	1.8	2.6	1.9	E	2.3
6	2.6	2.3	1.9	3.3	2.2	E		S		3.4	^{E}3.5^{R}	3.9	^{E}3.6^{R}	3.9	^{E}3.3^{R}	3.6	^{u}2.9^{S}	S		S		S	S	S
7	S	S				S		S	3.1	3.1^{q}		^{E}3.2^{R}	^{E}3.3^{q}	B	3.5	3.7	4.2	3.6	3.5	2.6	2.0	S	S	S
8	S		^{E}2.3^{S}					S	^{E}3.3^{S}	^{E}3.0^{R}	3.8	^{E}4.1^{S}	^{E}6.6^{S}	^{E}5.3^{S}	^{E}4.3^{s}	5.0	4.0	S	3.6				^{E}2.7^{S}	S
9	S	S	S	S	S	S	S	S	S	S	^{E}4.1^{S}	3.8	S				S	B	S	S	S	S	S	S
10	S	S		S	1.8	S	S	S		4.0	^{E}4.0^{S}	^{E}4.2^{S}	^{E}4.4^{S}	4.1	3.9	S	S	S	S	1.9	2.5	2.6	S	S
11	2.5	S	S	S	S	S	S	S			4.9^{S}	5.0	B	3.9	3.9	B	3.3		B	3.4	1.8	3.2	S	
12					S	S		S	3.1	^{E}3.4^{R}	4.5	B	^{u}4.1^{S}	4.0	C	C	C	C	C	S	S			
13	E	A	E			S	S	S	^{E}2.5^{R}	^{E}3.3^{R}	3.6	B	B	^{E}3.4^{R}	^{E}3.0^{R}	2.6^{q}	S		2.2	2.2	E	E	S	
14							Cr	3.0^{S}			S	S	S	3.7	3.7		3.4	^{E}4.0^{S}	3.1	2.5	2.3	S		C
15	S	S	^{u}1.9^{S}	E	S	S	3.0	S	3.5	A	3.8	4.4	4.3	3.8	3.4	3.3	3.1	2.6						
16	2.6	2.9	1.5	3.7	A	2.5		S	3.5		^{E}4.1^{S}	3.8		3.8	4.2	3.5	5.1	^{u}3.8^{S}	5.2	6.1	3.9	2.8	2.6	1.9
17	1.8	^{u}4.2^{S}	2.0	1.5	1.5	^{D}1.6^{S}	S	3.2	3.7	3.6	4.2	4.6	4.6	^{u}5.0^{S}	4.3	^{E}4.3^{S}	5.0	3.2	1.8		2.5	2.9	1.8	2.0
18	E	^{u}4.7^{S}					2.4	S		4.2	3.8	3.9	4.5	5.5	5.7	4.3	3.4	3.4	3.8	3.4	S	S		
19		S	1.7	2.1	1.9	C	C	C	C	C	3.7			3.4^{q}	3.4^{q}	3.2	^{E}2.7^{S}	1.9^{q}	2.1	1.7				
20						S	S	2.8		3.9	3.9	^{E}3.3^{S}	^{E}4.2^{S}	^{E}3.0^{R}	2.9^{q}	2.6^{q}	S	S	2.8	3.4	3.4	1.7		
21				E	S	S		S	3.4	4.0	4.2	3.8			S	3.9	S	2.7	^{E}2.1^{S}	1.9	2.4	^{E}3.8^{S}	2.4	2.4
22	S	S	S	S	S	S		S	3.9	4.1	4.2	4.6	4.0	^{E}4.7^{R}	5.2		3.6	5.2	3.5	2.5	1.7	2.8	2.9	S
23	S					S		3.6	3.9	4.1	^{E}4.6^{R}	B	4.0	4.1	4.1	5.0	4.0	A	2.1	2.4	1.8	S	1.9	2.9
24	2.6			1.3		S	4.1	S		4.0		^{E}4.2^{S}		S			S	S	4.7	^{E}4.1^{S}	3.8	2.4	1.8	
25	S		S	S	S	S	S		3.3	4.1	4.3	4.2	^{u}4.6^{S}	S					S	S			^{E}2.3^{S}	1.8
26	^{u}4.0^{S}	E			S	S		3.2	3.6	3.8	3.9	4.3	^{u}4.7^{S}	^{u}4.3^{S}	3.8	^{E}3.2^{R}	4.1	3.8	3.2	2.9	1.7	2.6	3.3	
27				E		S	S	3.1	4.3	^{E}4.3^{S}	4.3	7.2	^{E}4.5^{s}	6.5	^{E}4.4^{S}		5.7	S	^{E}2.1^{S}	E	3.1	3.6	3.6	3.6
28	3.5	E	S	4.0	AS	AS	4.1	S	^{E}4.3^{S}	5.4	6.1	6.1	5.3	4.8	4.8	5.2	6.9	4.6	5.6	3.4	^{u}4.3^{S}	2.8	2.8	S
29	S	S	S	2.2	3.0	S	S	S	B	4.1	^{E}4.3^{S}	^{E}4.5^{S}	4.1	3.9	4.0	3.8	^{E}3.3^{S}	S	B		E		1.9	2.2
30	E	S	E	2.7	1.7	3.2	2.8	3.4	3.4^{s}	4.1	4.5	4.3	6.2	4.1	6.1	9.5	7.0	^{u}8.9^{S}	2.1			3.9	S	
31																								
No.	10	8	7	12	9	4	6	7	17	24	22	22	19	23	22	20	21	16	21	20	20	14	13	11
Median	2.6	2.6	1.7	1.8	1.9	2.8	2.9	3.2	3.4	3.8	3.9	^{E}4.1	^{E}4.2	3.9	3.9	3.6	3.6	3.3	2.8	2.3	2.3	2.7	^{E}2.3	2.2

fbEs

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

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

Apr. 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	1.70	1.30	1.30	1.40	1.50	E 1.70 S	E 2.40 S	E 2.70 S	2.10	2.35	2.50	2.80	3.80	2.90	2.80	2.10	1.90	1.90	E 1.70 S	E 1.85 S	E 1.80 S	1.50	1.50	1.45
2	1.50	1.50	1.40	1.70	E 1.60 S	E 1.50 S	1.95	E 2.65 S	1.90	2.45	2.50	2.80	2.80	2.70	2.60	1.90	2.70	2.30	1.55	E 1.70 S	E 1.70 S	E 1.70 S	1.50	1.60
3	1.60	1.50	1.10	1.50	1.20	E 1.50 S	2.10	E 2.60 S	1.90	2.35	2.30	2.70	2.55	2.50	2.80	2.30	2.80	E 1.95 S	1.85	E 1.95 S	E 1.60 S	1.40	1.50	1.40
4	1.50	1.60	1.40	1.40	E 1.70 S	1.40	1.50	E 2.60 S	2.00	2.30	2.40	2.60	2.50	2.60	2.20	2.15	2.00	1.80	1.55	E 1.50 S	E 1.60 S	1.40	E 1.50 S	1.40
5	1.40	1.20	1.20	1.20	1.50	E 1.50 S	E 1.50 S	E 2.80 S	2.35	1.95	2.40	2.80	2.30	2.70	2.55	2.10	2.40	1.50	E 1.95 S	E 1.70 S	E 1.70 S	E 1.60 S	1.30	1.40
6	1.45	E 1.60 S	1.40	1.45	1.20	1.50	1.80	E 2.85 S	1.80	2.60	2.95	2.50	2.70	2.70	2.50	1.85	1.80	E 2.50 S	1.80	E 1.80 S	1.50	E 1.80 S	E 1.85 S	E 1.80 S
7	E 1.80 S	E 1.90 S	1.60	1.50	1.50	E 1.95 S	1.55	E 2.60 S	1.70	2.75	2.50	2.85	2.80	3.65	2.20	2.20	2.60	1.75	1.85	E 1.85 S	E 1.85 S	E 1.70 S	E 1.85 S	E 1.85 S
8	E 1.95 S	1.40	E 1.70 S	1.30	1.45	1.50	1.85	E 2.85 S	2.30	2.05	E 3.75 S	E 3.65 S	2.85	E 3.65 S	2.85	2.80	2.80	E 3.70 S	2.10	1.70	1.80	1.70	1.70	E 1.90 S
9	E 1.75 S	E 1.70 S	E 1.70 S	E 1.70 S	E 1.55 S	E 1.90 S	E 2.50 S	E 3.00 S	E 3.30 S	E 3.60 S	E 3.50 S	E 3.60 S	E 4.10 S	2.85	2.70	2.10	E 3.65 S	2.65	E 2.20 S	E 2.10 S	E 1.70 S	E 1.85 S	E 1.60 S	E 1.80 S
10	E 1.70 S	E 1.70 S	1.05	E 1.75 S	1.20	E 2.90 S	E 4.70 S	E 3.30 S	2.60	E 3.70 S	E 3.70 S	3.70 S	E 3.50 S	E 3.55 S	E 3.60 S	E 3.90 S	E 3.65 S	E 3.10 S	E 3.00 S	E 1.70 S	E 1.80 S	E 1.70 S	E 2.00 S	E 1.90 S
11	E 1.80 S	E 1.70 S	E 1.60 S	E 1.70 S	E 1.70 S	E 1.80 S	E 2.65 S	E 3.80 S	E 3.10 S	2.70	3.45	3.70	3.90	3.60	3.50	3.60	2.80	1.80	2.00	E 1.70 S	E 1.50 S	E 1.50 S	E 1.80 S	1.50
12	1.70	1.60	1.50	1.30	E 1.85 S	E 1.80 S	1.70	E 2.80 S	2.50	2.50	3.80	3.60	3.70	3.60	C	C	C	C	C	E 1.70 S	E 1.80 S	1.40	1.80	1.60
13	1.50	E 1.80 S	1.40	1.20	1.50	E 1.70 S	E 2.50 S	E 2.60 S	2.30	2.85	3.30	3.80	3.70	2.90	2.85	2.30	E 2.80 S	E 2.00 S	1.50	1.30	1.40	E 1.60 S	E 1.70 S	1.40
14	1.50	1.40	1.40	1.10	1.10	1.40	E 1.85 S	1.80	2.00	2.15	E 3.75 S	E 3.95 S	2.85	2.80	2.00	2.25	E 2.50 S	E 2.00 S	E 1.50 S	E 1.60 S	E 1.50 S	E 1.60 S	1.20	C
15	E 1.60 S	E 1.70 S	1.45	1.30	E 1.40 S	S ~	E 2.30 S	E 2.90 S	1.70	2.10	2.20	2.70	2.80	2.20	2.20	2.00	2.50	1.70	1.50	1.40	1.40	1.45	1.40	1.50
16	1.50	1.45	1.40	1.30	E 1.80 S	E 1.70 S	1.45	E 2.90 S	2.10	2.20	2.50	2.40	2.50	2.10	2.10	2.20	2.00	1.70	1.30	E 1.85 S	1.50	E 1.50 S	E 1.50 S	1.50
17	1.20	E 1.80 S	1.20	1.10	1.05	E 1.50 S	E 2.70 S	E 2.80 S	2.00	2.20	2.10	2.60	2.80	2.50	2.40	2.10	2.50	1.60	1.50	1.20	1.30	E 1.60 S	1.30	E 1.40 S
18	1.30	1.20	1.30	1.30	1.20	1.25	1.70	E 2.80 S	1.95	2.10	2.50	3.60	3.50	2.50	E 3.10 S	2.50	2.50	2.50	1.30	1.45	E 1.60 S	E 1.80 S	1.50	1.50
19	1.50	E 1.70 S	1.30	1.30	1.30	C	C	C	C	C	2.50	3.05	2.85	3.20	2.40	2.10	E 2.70 S	1.50	1.50	E 1.60 S	1.40	1.30	1.30	1.40
20	1.20	1.20	1.30	1.30	1.15	E 1.80 S	E 2.50 S	2.00	E 2.40 S	2.00	3.10	3.10	2.80	2.50	2.50	2.10	E 2.80 S	E 2.60 S	1.40	E 1.60 S	1.30	1.20	1.30	1.20
21	1.40	1.40	1.45	1.10	E 1.70 S	E 1.70 S	1.50	E 2.95 S	2.10	2.00	2.85	2.80	2.85	2.50	E 4.00 S	2.70	E 3.30 S	2.00	E 1.70 S	E 1.50 S	E 1.70 S	E 1.80 S	1.50	1.25
22	E 1.70 S	E 1.50 S	E 1.70 S	E 1.85 S	E 1.40 S	E 1.80 S	1.95	E 3.20 S	1.95	2.20	2.20	2.30	2.50	3.20	3.60	2.10	2.85	2.10	1.80	E 1.60 S	1.30	E 1.70 S	E 1.70 S	E 1.70 S
23	E 1.70 S	1.40	1.45	1.30	1.50	E 1.80 S	1.60	2.00	2.10	1.90	3.55	4.10	3.65	2.80 ~	3.40	2.00	2.60	1.70	1.50	1.50	1.45	E 1.60 S	E 1.50 S	1.45
24	1.45	1.40	1.30	1.10	1.20	E 1.95 S	1.80	E 3.80 S	2.10	2.45	2.55	2.80	2.80	E 5.20 S	2.55	2.55	E 3.10 S	E 3.00 S	1.60	1.55	1.40	1.50	1.65	1.35
25	E 2.20 S	1.60	E 2.20 S	E 1.70 S	E 2.60 S	E 2.10 S	E 2.90 S	E 2.10 S	2.00	2.10	2.50	3.70	3.95	E 7.00 S	2.40	2.20	2.50	E 2.00 S	E 1.80 S	1.50 S	1.40	1.30	E 1.70 S	E 1.50 S
26	1.40	1.20	1.30	1.20	E 1.70 S	E 1.60 S	1.60	2.90	1.90	2.80	2.50	3.65	3.85	3.50	2.50	2.25	E 2.60 S	2.10	E 1.60 S	1.30	1.40	1.20	1.45	1.40
27	1.40	1.40	1.20	1.05	1.45	E 1.60 S	E 2.60 S	2.65	2.20	2.05	2.10	2.80	3.50	3.05	2.70	2.35	2.50	E 2.80 S	1.70	1.60	1.60	1.30	1.50	E 1.70 S
28	E 1.65 S	E 1.65 S	E 1.50 S	E 1.70 S	1.35	1.30	E 2.10 S	E 4.00 S	2.20	3.00	3.95	3.45	3.90	3.70	2.70	2.40	2.90	E 2.70 S	E 2.45 S	E 2.30 S	E 2.60 S	E 1.85 S	E 1.95 S	E 1.90 S
29	E 1.95 S	2.00	E 2.20 S	E 1.80 S	E 1.90 S	E 2.40 S	E 2.60 S	E 3.40 S	3.60	2.60	3.45	3.80	3.70	3.55	3.05	2.20	E 3.20 S	E 2.60 S	2.15	1.60	1.40	1.50	1.60	E 1.70 S
30	E 1.75 S	E 1.80 S	E 2.30 S	E 1.80 S	1.10	E 1.80 S	1.85	E 2.80 S	2.35	2.60	2.75	3.65	3.10	3.20	2.60	2.10	2.60	1.95	1.80	1.40	1.30	E 1.65 S	E 1.60 S	1.40
31																								
No.	18	18	22	22	18	28	16	29	26	27	26	26	28	26	26	28	20	17	21	30	16	30	20	19
Median	1.50	1.40	1.35	1.30	1.25	E 1.70	1.70	E 2.80	2.10	2.25	2.50	2.80	2.85	2.80	2.60	2.20	2.50	1.80	1.55	E 1.60	1.40	E 1.60	E 1.50	1.40

f-min

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

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

Apr. 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	2.75	2.75	2.85^{s}	2.55^{su}	2.60^{s}	2.55^{s}	3.10	3.10	3.25	3.10	2.95	2.75	2.90	2.95	2.95	3.05	3.15	3.25	3.15	2.75	2.65	2.75	2.75	2.75
2	2.75	2.95	3.05	2.95	2.65	2.70^{s}	3.00	3.05	3.05	2.95	3.00	3.05	3.00	3.05	3.10	3.10	3.15^{s}	3.15^{s}	3.30^{s}	3.15	2.75	2.80	2.65	2.80
3	2.75	2.80	3.00^{s}	3.00^{s}	2.85	2.80	3.30	3.35	3.20	2.90	2.90	3.00	2.95	2.90	3.05	3.05	3.10^{R}	3.20^{R}	3.15	3.10	2.80	2.60	2.55	2.80
4	2.90	2.75	2.70^{s}	2.85^{su}	2.70^{s}	2.90	3.35	3.25	3.00^{H}	2.95	2.80	3.10	3.05	3.05	3.20	3.15	3.30	3.15	3.20	3.25	2.80	2.65	2.75	2.75
5	2.70	2.75	3.00^{s}	3.00^{s}	3.05	2.75	3.20	C	C	3.10	3.00	3.05	3.05^{R}	3.10	3.20	3.20	3.15	3.15	3.20	3.05	2.80	2.75	2.75	2.80
6	2.80	2.85	3.10	2.95	2.90	2.90^{s}	3.35	3.30	3.30	3.25	3.00	2.95	2.85	2.90	2.90^{R}	3.00^{s}	3.10^{s}	3.30^{s}	3.30^{s}	3.30^{s}	3.15	2.75^{s}	2.70^{s}	2.75^{s}
7	2.75^{s}	2.80	2.90^{s}	3.00^{s}	2.70^{s}	2.75^{s}	3.35	3.50^{s}	3.20	3.15^{R}	3.00	3.00^{R}	3.10^{R}	2.95	2.90^{R}	3.05	3.15	3.15^{R}	3.40^{s}	3.20	3.05	2.70	2.55	2.75
8	2.70	2.75	2.80^{s}	3.00^{s}	2.85^{s}	2.80	3.30	3.15	3.05	2.95	2.90	2.85^{R}	2.95	3.05	3.00	3.05^{s}	3.05^{s}	3.10^{s}	3.10^{s}	3.15	2.80	2.75	2.60^{s}	2.70^{s}
9	2.75^{s}	2.55^{s}	2.90^{s}	3.00^{s}	2.95^{s}	3.05^{s}	3.20^{s}	3.10^{s}	3.25	2.90	2.90	2.95	2.95^{s}	2.90^{s}	2.90	3.00	3.00^{s}	3.05^{s}	3.30^{s}	2.90^{s}	2.75^{s}	2.55^{s}	2.65^{s}	2.60^{s}
10	3.20^{s}	3.05^{s}	2.60^{s}	2.50^{s}	2.60^{s}	2.50^{s}	3.05^{s}	3.25^{s}	3.25^{s}	3.00^{s}	2.80^{s}	3.20	3.00	3.10^{s}	3.10	3.15	3.10	3.05^{s}	3.20^{s}	2.15^{s}	3.40	2.55	2.70^{s}	2.75^{s}
11	2.55	2.65^{s}	2.65^{s}	2.90^{s}	2.85^{s}	2.80^{s}	3.30^{s}	3.40	3.15^{s}	3.00	2.95	3.00^{R}	3.05	3.10^{R}	2.95	2.95	2.90	3.30^{s}	3.30^{R}	3.35^{s}	3.35	2.60	2.65	2.65
12	2.55	2.70	2.70	2.75	2.60	2.75^{s}	3.15	3.15	3.25	2.95	3.05	3.00^{R}	3.25	3.10	C	C	C	C	C	3.65^{s}	3.45	2.60	2.65	2.70^{s}
13	2.70	2.60^{A}	2.70	3.05	2.90	2.95^{s}	3.30	3.20^{H}	3.15	3.15	3.15	3.00	3.05	3.05	3.05	3.25	3.05	3.15	3.15	3.50	3.20	2.65	2.80^{s}	2.65
14	2.75^{s}	2.85	2.60^{s}	2.50	2.65	3.10^{s}	3.25	3.20^{s}	3.15	3.15	3.30	3.30^{R}	3.10	3.15	3.15	3.10	3.10^{s}	3.10	3.30	3.25^{s}	3.00^{s}	2.70^{s}	2.75^{s}	C
15	S	2.70^{s}	2.85^{s}	2.75^{s}	2.90^{s}	3.25^{s}	3.15	3.30^{s}	3.00^{s}	3.05^{A}	2.95	3.20	2.95^{s}	2.85	2.90	3.00^{s}	3.00	3.00	3.10	3.00^{s}	3.05	2.65	2.65	2.60
16	2.70^{s}	2.75	2.80^{s}	3.05	2.70^{A}	2.85^{s}	3.30	3.05	2.85	2.90	3.00	3.00	3.05	3.05	3.05	3.05	3.15	3.15	3.20	3.05	3.00	2.65	2.55^{s}	2.70
17	2.65^{s}	2.70^{s}	3.05	3.10^{s}	3.10^{s}	2.95	3.15	3.15	3.20	3.15	3.10	2.90	3.05^{u}	3.00^{su}	2.95^{R}	3.05	3.15	3.15^{s}	3.15	3.20^{s}	2.90	2.75^{s}	2.85^{s}	2.55
18	2.60^{s}	2.70^{s}	2.95^{s}	3.25^{s}	2.70	3.00	3.30	3.10^{s}	3.30	2.90	3.05	3.05	3.00	2.95	3.00	2.95	3.15^{s}	3.25	3.20	3.10	2.95	2.70^{R}	2.65^{R}	2.60^{s}
19	2.65	2.70^{s}	2.90^{s}	3.00	2.95	C	C	C	C	C	3.05	2.90	3.00	3.00	2.90	3.15	3.15	3.15	3.20^{s}	3.20	2.75	2.75^{s}	2.70	2.75^{s}
20	2.70	2.75^{s}	2.75^{s}	3.10	2.75	2.85^{s}	3.35	3.15^{s}	3.15^{s}	3.15	3.00	2.90	3.00	3.00	2.95	3.00	3.00	2.95	3.20	3.15^{s}	3.15	2.85	2.65	2.70
21	2.75	2.75^{s}	2.70^{s}	2.70^{s}	2.70^{s}	3.05^{s}	3.60	3.40	3.40	3.35	3.05	2.95	2.90	3.00	2.90	2.90^{s}	3.05^{s}	3.20^{s}	3.20	3.30^{s}	2.90	2.80^{s}	2.75	2.80^{s}
22	2.75	2.90^{s}	2.70^{s}	2.80^{s}	3.05^{s}	2.90^{su}	3.25^{s}	3.35	3.30	3.15	2.95	2.80	2.80	2.90^{s}	2.90	3.00	3.05^{R}	3.10^{s}	3.15^{s}	3.25	2.60^{s}	2.85^{s}	2.70	2.60
23	2.60^{s}	2.65^{s}	2.80^{s}	2.95^{s}	2.90^{s}	2.90	3.35^{R}	3.25	3.10	3.15	3.05	3.15	2.80	2.90	3.00	2.90	3.05	3.10^{A}	3.20^{R}	3.10^{s}	3.05	2.80^{s}	2.75^{s}	2.55
24	2.75	2.80^{s}	2.80^{s}	3.10^{s}	2.55	2.85^{s}	3.15	3.10	3.20	3.20	3.10^{s}	2.70	2.90	2.95	2.75	3.00	3.10^{s}	3.10	3.15^{s}	3.10^{s}	2.75^{s}	2.70^{s}	2.65^{s}	2.65^{s}
25	2.70^{s}	2.60^{s}	2.65^{s}	2.80^{s}	2.80^{s}	2.95^{s}	3.15^{s}	3.05^{s}	2.95	2.90	2.95	2.85	2.85	2.80	2.75^{R}	3.00	3.05	2.95	3.30	3.25	3.15^{s}	2.70	2.60^{s}	2.75
26	2.80^{s}	2.70^{s}	2.80^{s}	2.80^{s}	2.80	3.15	3.15	3.25	3.05	3.00	2.85	2.80	2.75	3.00	3.00	3.15	3.00	2.90	3.10	3.15^{s}	3.10	2.80	2.70	2.70
27	2.80	2.75	2.75^{s}	2.80^{s}	2.75^{s}	2.70	3.40	3.15	3.00	3.05	3.05	2.85^{s}	2.80	2.85^{s}	2.85^{s}	2.80	2.90	3.05	3.20^{s}	2.95^{s}	2.60^{s}	2.65^{s}	2.60^{s}	2.60
28	2.50^{s}	2.60^{s}	2.60^{s}	2.80^{s}	2.70^{s}	2.90^{s}	3.00^{s}	3.00^{s}	3.15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	3.15	2.75	2.95	2.85	2.80	3.00	2.90^{s}	3.00	2.95	2.85^{s}	3.15^{s}	2.95	2.75^{s}	2.65^{s}	2.70^{s}
30	2.60^{s}	2.75	2.95^{s}	2.90^{s}	2.60^{s}	2.95	3.30	3.15	3.40	3.00	2.90	2.90	2.80	2.80	2.80	2.90	3.00	3.10	3.10	3.15	2.85	2.80^{s}	2.70	2.60
31																								
No.	28	29	29	29	29	28	28	27	27	28	29	29	29	29	28	28	28	28	28	29	29	29	29	28
Median	2.70	2.75	2.80	2.95	2.75	2.90	3.30	3.15	3.15	3.05	3.00	2.95	2.95	3.00	2.95	3.00	3.10	3.10	3.20	3.15	2.95	2.70	2.65	2.70

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

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

Apr. 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	L	L	L	A	"3.45 L	L	L								
2									L	L	L	L	L	L	L	"4.00 L	L							
3									L	L	L	L	SH	"3.45 S	L	3.80 L								
4										L	LH	L	L	"3.60 L	A	A	A							
5								L	LH	LH	"3.40 H	L	LH	L	L	A								
6									L	"3.80 L	L	L	"3.40 H	L	L	L								
7									L	L	S	LH	L	L	"3.35 L	L								
8									L	L	S	S	S	AS	L	AS	S							
9									L	L	S	S	L	S	L	S	L							
10									L	S	S	S	S	S	S	S								
11									L	L	L	A	L	"3.50 L	L	L	L							
12								L	L	L	L	L	L	L	C	C	C	C	C					
13									L	"3.65 L	L	L	L	L	L	L	L	L						
14									L	3.65 L	3.50 L	3.80 L	L	L	L	L	L	AS						
15										A	L	L	L	L	L	L	L	L						
16										L	S	L	L	"3.30 L	L	L	A		A					
17									L	L	L	S	L	S	L	S	A							
18									L	S	L	L	S	A	A	S	L							
19							C	C	C	C	3.65 L	"3.30 L	L	3.40 L	L	L	L							
20									L	3.85 L	L	S	S	L	L	L	L	L						
21									L	L		LH	L	L	S	L	L							
22										L	L	"3.35 L	L	A	A	3.65	L	A						
23									L	3.35 L	L	L	L	L	L	A	L	A						
24									L	S	S	S	S	S	S	S	L							
25									L	L	L	S	A	S	L	LH	L							
26									L	"3.45 L	L	L	L	S	L	L		L						
27										S	S	AS	S	AS	S	S	AS	L						
28									S	A	A	A	A	L	L	A	A	A	A					
29									L	S	S	S	S	S	S	L	L	L						
30								L	3.85 L	L	L	L	A	"3.40 L	A	A	A	A						
31																								
No.									1	6	3	3	1	7	1	3								
Median									3.85	"3.65	3.50	"3.35	"3.40	"3.45	"3.35	3.80								

M(3000)F1

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

The Radio Research Laboratories, Japan.

K 8

IONOSPHERIC DATA

Apr. 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									250	260	275	300	305	290	290	260								
2									255	285	260	295	285	275	260	265	255							
3									255	255	280	275	295	320	275	275								
4										280	315	290	275	275	E300A	255	260							
5								230	240	270	300	280	270	270	275	255								
6									255	255	260	300	310	300	300	295								
7									260	255	295	295	300	305	305	280								
8									280	275	300	295	305	285	300	280	265							
9									250	275	295	300	300	300	300	270	255							
10									275	S	335	300	315	300	300	290								
11									280	295	300	300	290	280	300	290	290							
12								290	280	285	300	300	285	290	C	C	C	C	C					
13									260	270	260	300	285	295	290	265	275	270						
14									275	285	255	260	255	280	285	255	270	E300S						
15										A	310	290	310	315	300	290	275	265						
16										295	280	285	300	290	300	280	255		255					
17									290	285	290	300	305	300	290	295	265							
18									290	D300S	290	290	285	300	300	295	275							
19							C	C	C	C	290	305	290	305	295	270	260							
20									285	285	325	330	300	300	300	300	280	300						
21									255	255		350	325	305	325	310	290							
22										260	280	355	350	325	310	285	265	260						
23									300	310	300	300	320	325	315	300	290	A						
24									295	295	285	E360S	350	305	305	300	270							
25									270	310	315	305	310	E350S	325	290	280							
26									260	310	300	360	350	305	300	275		290						
27										300	300	E355AE	345S	315	315	300	295	260						
28									285	250	310	310	330	320	300	275	290A	255	255					
29									250	280	310	320	310	310	305	300	285	275						
30								255	265	310	345	300	330	340	320	E360AE	290A	E290A						
31																								
No.								3	24	27	29	28	29	29	29	28	21	8	2					
Median								255	270	285	300	300	305	300	300	280	275	270	255					

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

Apr. 1961 | h'F | 135° E Mean Time (G.M.T. + 9h.)

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

42

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	z90	z85	z60	z85	305	330	z50	z30	z30	z10	E z55A	z05	I z20A	z40	z45	z25	z40	z40	z40	z55	300	z80	z55	z95
2	z85	z55	z50	z45	300	z75	z40	z40	z25	z05	z25	z30	z55A	z10	z15	z25	z35	z50A	z40	z30	z50	z75	305	300
3	305	300	z50	z50	z45	z60	z30	z40	z25	z30	z10	z10	z00H	z20	z45	z05	z50	z50	z30	z45	z55	z90	305	300
4	z55	310	z95	z75	z95	z55	z35	z30	z05H	z05	z05H	z50	z45	z10	I z35AI	z50AI	z50A	z50	z50	z30	z55	305	305	310
5	305	305	z55	z50	z40	z55	z30	z20	195H	z05H	195H	z10	195H	z25	z50AI	z40A	z40A	z50	E z55A	z40	z70	z90	z70	300A
6	z95A	z80	z55	E 300A	z55	z50	z35	z30	z30	z10	z00	z00	190H	z45	z25	z50	z50A	z50	z45	z25	z10	z85	305	300
7	300	310	z80	z55	305	300	z30	z30	z30	z20	E z45S	185H	z20	z35	z20	z55A	z60A	z60	z50	z30	z10	300	345	305
8	310	300	E 300S	z10	z45	z55	z40	z45	z50	z30	z05	S	S	AS	E z75As	AS	S	z50	z50	z25	z50	z70	315	305
9	310	330	z85	z45	z45	z55	z35	z50	z35	z25	I z10S	I z10S	z50	I z25S	z30	z55	z45	z45	z50	z45	z80	330	315	330
10	z50	z15	z55	320	325	350	z55	z55	z50	z50	I z40S	I z60S	z80S	z50	z35	z60	z65	z70	z55	z30	z20	345	305	305
11	350	325	305	z65	z55	z70	z35	z50	z45	z40	E z55A	I z30A	z20	z25	z45	z20	z55	z50	z55	z25	z05	E 400A	310	310
12	335	300	z95	z50	345	300	z50	z55	z45	z25	z55A	z20	z40	z50	C	C	C	C	C	z10	z05	310	310	305
13	315	I 320A	300	z10	z60	z60	z40	z00H	z30	z25	z05	z25	z05	z15	z25	z20	z30	z55	z50	z20	z20	z90	300	310
14	300	300	300	345	300	z55	z40	z50	z40	z15	z05	z05	z10	z10	z40	z30	E z55S	I z60As	z55	z50	z50	325	305	C
15	325	305	z75	z55	z50	I z20S	z50	z50	E z55S	I z30A	z40A	z40A	E z80A	z45	z05	z50A	z50	z50	z50	z50	z25	z50	305	305
16	320	310	z60	z60A	I 300A	E 300A	z40	z45	z50	z25	I z40S	z20	z25	z45	z50A	z40	I z50A	z60AI	z50AE	z90A	z50A	340AE	350A	310
17	310	E 350A	z55	z50A	z50	z80	z45	z45	z50	z40	E z50AE	z70A	E z50A	z60A	z50	I z50S	I z50A	z45	z45	z40	z50	305	305	350
18	305	U 310As	z50	z20	z00	z50	z30	z40	z45	E z65A	z20	z00	E z60A	A	A	z50	z30	z50	z50A	z55A	z45	300	300	325
19	305	300	z80	z50	z50	C	C	C	C	C	z00	z25	z05	z20	z10	z00	z40	z50	z50	z40	z50	z75	z90	z90
20	300	300	z60	z50	z60	z90	z35	z30	z50	z00	z20	E z45S	I z50S	z40	z20	z25	E z50S	z55	z55	z50A	z50A	z45	z40	z90
21	300	300	300	z95	300	z65	z40	z45	z30	z40	z20	195H	z05	z05	U z05S	z50	z50	z60	z45	z30	z55	I 305S	325	320
22	305	300	z95	E 300S	z55	z55	z45	z50	z50	z45	z30	z40	z20	A	A	z40	z60	I z50A	z50A	z40	z50	z95	340A	345
23	345	305	z60	z50	z50	z55	z30	z45	z55	z45	I z45S	z35	z45	z45	z50A	I z45AE	E z95A	I z60A	z50	z50	z30	z60	310	350
24	320A	300	z60	z40	z55	z60	z55	z55	z45	z30	z25	I z20S	z25	I z30S	z50	z30	z45	z55	E z55AE	z60AE	z90A	305	325	310
25	305	305	300	z55	z50	z45	z50	z50	z30	z45	E z50AE	z50A	I z35AI	z45S	z45	z40H	z45	z50	z55	z45	z30	z30	300S	z90
26	E 370S	305	z95	z75	z60	z55	z50	z45	z30	z20	z55	z40	z50AE	z60S	z40	z50A	z60A	z60	z55	z45	z30	z95	320A	z95
27	305	305	300	z95	z95	z60	z50	z45	z60A	I z50S	z50	I z55As	I z55S	I z50As	I z30S	I z45S	I z50As	z45	z45	z30	335	345	345	360
28	350	300	I 310S	305	AS	AS	E z75As	z55	S	A	A	A	A	E 300A	E 315A	A	A	A	A	z30	E z60A	310A	300AI	z95S
29	300	300	z90	z55	z90	z45	z10	z30	z10	z45	I z30S	I z40S	z50	z30	z45	z50	z50	z55	z65	z45	z40	z45	z80	305
30	315	305	z75	z55	305	z85	z50	z45	z25	z50	E z60AE	z95A	I z45A	z50A	A	A	A	A	z50	z45	z50	305A	z95	310
31																								
No.	z9	z9	z9	z8	z9	z7	z8	z9	z7	z7	z3	z4	z5	z5	z4	z6	z4	z7	z6	z8	z8	z9	z9	z9
Median	305	300	z80	z55	z60	z60	z40	z45	z35	z30	z20	z20	z25	z35	z40	z40	z50	z50	z50	z40	z50	z95	305	305

h'F

Sweep 1.0 Mc to 20.0 Mc in 2° min/sec in automatic operation.

The Radio Research Laboratories, Japan.

K 10

IONOSPHERIC DATA

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

Apr. 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									C	C	C	l	l	l	l	l_z	l		l	f				
2										hl	h	hl	hl	l		l		h	l	f	f_z			
3									h	h	h	C	l	C	h	l	h	C	l	f	f			f
4				f	f				l	l	l	l	l	l	l_z	l_z	l_3	C	l	f	f	f	f	f_z
5		f_z								h	C	C	l	l	l_z	l	l_z	l	l_3	f_z	f_z	$f_z f_z$	f_z	$f_z f$
6	f_z	f_z	f_z	f_3	f_z	f				l	l	l	l	l	l	l_z	l_z							
7									l	l		l	l		hl	l_z	l_z	l_z	l	f	f			
8			f						h	C	l	l	l	l	l	ll	ll		l_2				f	
9											l	l												
10					f_z					l	l	l	l	l	l				l	f	f_z	f_z		
11	f										l	l		l	l		l			f_z	f	f_3		
12									C	C	l_z		l	l										
13	f	f_3	f_z						l	l	l			l	l	l			l	f_z	f	f		
14							h	l						h	l		h	l	l_2	f_z	f_z			
15			f	f			h		l	l_z	C_z	l_z	l	l_z	l	l_z	l	l_z						
16	f_z	f_3	f_z	f_4	f_z	f_z			h		l	l		h	h	h	C	l_z	l_3	f_3	f_3	f_z	f_z	f_z
17	f_z	f_3	f_z	f_3	f_z	f		h	l	l	l	C	l	l	l_z	C	Cz	l_z	l		f_z	f_z	f_z	f_z
18	f	f_4					h			l_z	l	l	l_z	l	l_z	l_z	l_z	h_z	l_3	f_z				
19			f_z	f_3	f_z						l			l	l	l	l	l	C	f				
20								h		Cl	l	l	C	l	l	l			C_z	f_3	f_z	f		
21				f					h	h	h	h				h		h	l	f	f_z	f_z	f_z	f_z
22									h	h	C	h	C	h	h		h	h_z	h_3	f	f_z	f_z	f_3	
23								h	h	h	l		h	C	l	C	l_z	l_3	l	f	f		f	f_3
24	f_z			f			h			h		l							l_z	f_3	f_z	f_z	f	
25									h	h	C	h	h										f_z	f_z
26	f_3	f_z						h	h	l	h	l	h	h	l	l	h	Cz	l_z	f_3	f_z	f_z	f_3	
27				f				h	h_z	h	h	h_z	l	h	h		h_z		l	f	f_z	f_3	f_z	f_3
28	f_z	f	f	f_3	f_z	f_z	l_z		h	l	l	l_z	l_z	l_z	l	l	l_z	l_z	l_z	f_z	f_z	f_z	f_z	f_z
29				f_z	f_z					h	h	l	h	l	l	l h	h				f		f_z	f_z
30	f		f	f f	$f_z f_z$	f_z	l	h	l	h	h	l	l	h	Cz	l_3	l_z	l_z	l			f_3		
31																								
No.																								
Median																								

Types of Es | Sweep 10 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

[ ] 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	360	385	350^{s}	395^{su}	405^{s}	405^{s}	300	305	285	305	345	370	350	350	345	310	300	295	300	355	395	365	350	380
2	380	340	305	310	385	370^{s}	305	305	310	350	335	345	325	315	330	300	305^{s}	300^{s}	290^{s}	300	355	360	395	370
3	395	360	310^{su}	305^{s}	345	350	275	260	300	345	330	320	345	355	315	325	305^{R}	300^{R}	300	300	355	400	405	365
4	330	395	355^{u}	350^{s}	360^{u}	330	255	280	310^{H}	340	355	325	310	325	310	300	300	290	300	280	360	400	395	385
5	390	370	340^{u}	310^{s}	300	355	285	C	C	305	340	320	305^{R}	305	310	295	300	300	300	305	350	365	380	370
6	355	350	310	335	350	315^{u}	255	285	295	295	330	330	350	350	350^{R}	320^{su}	310^{s}	300^{s}	290^{s}	280^{s}	295	365^{s}	390^{s}	355^{s}
7	370^{s}	370	340^{s}	330^{s}	380^{s}	360^{s}	255	250^{s}	295	300^{R}	325	310^{R}	335^{R}	350	335^{R}	310	300	305^{R}	295^{s}	295	300	395	430	390
8	385	390	340^{s}	305^{s}	330^{s}	355	265	295	310	325	345	340^{s}	345	305	335	305^{s}	300^{s}	300^{s}	300^{s}	260	350	375	395^{s}	390^{s}
9	390^{s}	415^{s}	350^{su}	310^{s}	315^{su}	315^{s}	275^{su}	295^{s}	275	350	350	330	335^{s}	345^{s}	325	305	305^{s}	305^{s}	295^{s}	350^{s}	370^{s}	405^{su}	400^{s}	400^{s}
10	300^{s}	380^{s}	395^{su}	430^{su}	380^{su}	445^{s}	300^{su}	295^{s}	275^{s}	S	355^{s}	305	330	305^{s}	305	305	300	305^{s}	300^{s}	295^{s}	250	405	370^{s}	375^{s}
11	405	395^{s}	395^{s}	335^{s}	350^{su}	350^{s}	250^{s}	250	300^{s}	305	345	330^{R}	325	310^{R}	340	335	345	295^{s}	270^{R}	255^{s}	250	405	395	395
12	405	395	360	350	405	375^{s}	300	305	300	305	320	345^{R}	305	310	C	C	C	C	C	250^{s}	250	400	400	390^{s}
13	390	380^{A}	395	300	350	310^{s}	255	295^{H}	300	300	300	330	310	320	310	290	310	305	300	255	285	395	365^{s}	390
14	360^{u}	355	400^{u}	430	395	310^{s}	285	280^{s}	300	310	285	285^{R}	305	300	305	305	300^{s}	305	290	295^{u}	315^{s}	390^{su}	375^{s}	C
15	S	385^{s}	340^{su}	350^{s}	310^{s}	270^{s}	300	290^{s}	305^{su}	325^{A}	350	300	350^{s}	350	350	330^{s}	310	350	310	305^{s}	300	395	400	400
16	365^{u}	375	350^{s}	305	370^{A}	335^{s}	255	300	345	335	320	330	330	320	330	315	305	305	300	305	300	405	405^{s}	395
17	395^{su}	385^{s}	320	300^{s}	300^{s}	310	280	300	300	305	310	345	335^{u}	320^{su}	345^{R}	320	300	305^{s}	300	300^{s}	310	375^{su}	355^{s}	425
18	390^{s}	370^{su}	310^{s}	295^{s}	345	305	255	300^{s}	300	340	315	305	310	330	320	330	305^{s}	300	300	305	320	390^{Ru}	400^{R}	400^{s}
19	400^{u}	395^{s}	340^{s}	300	310	C	C	C	C	C	325	350	330	350	330	300	300	300	300^{s}	300	355	385^{s}	380	370^{s}
20	390	380^{s}	360^{s}	320	355	360^{s}	255	300^{s}	290^{s}	300	350	355	330	330	345	335	330	345	300	300^{s}	295	350	385	385
21	380	385^{su}	380^{s}	370^{s}	365^{su}	305^{s}	250	255	260	260	305	360	350	330	350	350^{s}	320^{s}	300^{s}	300	285^{s}	330	370^{s}	405	370^{s}
22	365	350^{s}	390^{s}	365^{s}	320^{s}	330^{su}	255^{s}	255	295	300	305	385	360	350^{s}	355	320	305^{R}	305^{s}	300^{s}	300	300^{u}	350^{s}	390	405
23	400^{su}	400^{s}	360^{s}	330^{s}	320^{s}	330	250^{R}	280	305	280	320	300	350	350	350	350	310	315^{A}	300^{R}	305^{s}	305	360^{s}	395^{s}	410
24	385	390^{s}	350^{s}	300^{s}	400	350^{s}	300	300	305	300	300^{s}	375	355	330	395	315	300^{s}	300	300^{s}	300^{s}	345^{s}	405^{s}	390^{s}	405^{s}
25	360^{u}	410^{s}	395^{su}	355^{su}	350^{su}	350^{s}	295^{su}	285^{s}	345	345	350	350	350	355	375^{R}	330	310	330	300	300	300^{s}	385	410^{s}	395
26	390^{s}	395^{s}	350^{su}	355^{s}	350	300	295	285	295	350	320	385	380	345	330	305	310	335	300	300^{s}	300	360	385	395
27	400	395	385^{s}	390^{s}	380^{u}	380	260	300	305	305	310	AS	355	345^{s}	345^{s}	320	320	300	280^{su}	325^{s}	405^{s}	395^{su}	400^{s}	410
28	425^{u}	395^{s}	410^{s}	355^{s}	390^{s}	350^{A}	305^{u}	325^{s}	300	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	320	375	345	345	345	330	325^{s}	305	345	345^{u}	305^{s}	310	355^{s}	375^{s}	380^{s}
30	405^{s}	375^{u}	345^{s}	350^{su}	365^{s}	305	255	295	270	320	355	350	360	360	355	340	315	310	305	305	350	370^{s}	395	405
31																								
No.	28	29	29	29	29	28	28	27	27	27	29	28	29	29	28	28	28	28	28	29	29	29	29	28
Median	390	385	350^{u}	335	350	340	270	295	300	305	330	335	335	330	335	320	305	305	300	300	310	385	395	390

[ ] hpF2

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

The Radio Research Laboratories, Japan.

K 13

45

IONOSPHERIC DATA

Apr. 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	65	55^{s}	90^{s}	^{u}120^{s}	^{J}90^{s}	95	85	65	90	65	85	80	75	95	85	65	55	90	140	105	110	95	105
2	75	105	90	110	110	85^{s}	90	90	90	60	70	50	65	85	75	90	80^{s}	^{J}70^{s}	^{I}55^{s}	60	130	90	100	85
3	60	85	^{J}50^{s}	^{u}105^{s}	95	95	70	65	60	100	85	65	70	80	90	75	^{I}75^{R}	^{I}70^{R}	95	95	90	105	100	75
4	75	100	^{u}100^{s}	95^{s}	^{u}135^{s}	75	55	90	95^{H}	105	90	70	85	70	80	95	95	105	90	75	95	95	55	80
5	105	100	^{u}70^{s}	130^{s}	95	140	65	C	C	50	65	75	90^{R}	95	60	60	70	90	60	85	145	130	115	75
6	90	95	85	70	65	^{u}130^{s}	85	65	50	50	115	75	85	95	95^{R}	^{I}60^{s}	^{u}45^{s}	^{I}50^{s}	^{I}45^{s}	70^{s}	70	^{u}100^{s}	65^{s}	^{J}95^{s}
7	^{u}85^{s}	85	^{I}90^{s}	^{I}70^{s}	^{I}90^{s}	90^{s}	90	45^{s}	60	^{I}75^{R}	90	^{J}95^{R}	60^{R}	90	^{u}60^{R}	75	55	80^{R}	50^{s}	95	145	100	75	65
8	70	105	^{I}90^{s}	90^{s}	^{u}115^{s}	100	80	60	85	115	65	^{I}60^{s}	60	95	65	95^{s}	^{u}100^{s}	^{u}105^{s}	^{u}100^{s}	120	90	75	65^{s}	60^{s}
9	^{u}80^{s}	85^{s}	95^{s}	^{u}95^{s}	85^{s}	^{u}95^{s}	110^{s}	^{u}95^{s}	80	95	65	70	^{J}70^{s}	55^{s}	75	90	^{u}100^{s}	95^{s}	^{u}85^{s}	95^{s}	^{u}75^{s}	95^{s}	^{u}100^{s}	^{u}100^{s}
10	100^{s}	65^{s}	110^{s}	^{u}100^{s}	^{u}70^{s}	^{u}105^{s}	100^{s}	^{u}105^{s}	^{J}100^{s}	S	110^{s}	80	70	^{u}95^{s}	90	75	100	95^{s}	100^{s}	105^{s}	100	125	85^{s}	75^{s}
11	95	85^{s}	105^{s}	90^{s}	95^{s}	^{u}100^{s}	95^{s}	65	55^{s}	90	65	^{J}70^{R}	70	^{u}85^{R}	70	95	50	^{J}35^{s}	^{I}70^{R}	^{I}95^{s}	90	95	100	75
12	95	100	135	105	95	80^{s}	50	65	50	140	80	^{u}55^{R}	50	85	C	C	C	C	C	^{J}50^{s}	95	110	100	^{I}110^{s}
13	105	^{I}120^{A}	100	95	70	^{u}85^{s}	90	55^{H}	80	70	95	115	85	75	75	55	85	60	55	50	75	100	^{J}80^{s}	105
14	^{u}85^{s}	90	^{u}100^{s}	75	100	^{I}80^{s}	60	^{I}80^{s}	60	60	60	^{J}65^{R}	80	70	60	75	90^{s}	70	55	^{u}90^{s}	90^{s}	^{I}80^{s}	^{u}80^{s}	C
15	S	^{I}90^{s}	90^{s}	^{u}105^{s}	^{I}90^{s}	^{I}95^{s}	65	^{u}60^{s}	^{u}90^{s}	^{I}70^{A}	65	95	^{J}95^{s}	95	95	75^{s}	85	80	50	^{J}100^{s}	95	90	95	95
16	^{u}105^{s}	80	^{I}100^{s}	100	^{I}125^{A}	65^{s}	90	100	100	85	75	65	65	75	70	80	90	55	55	90	95	95	125^{s}	60
17	^{u}50^{s}	^{I}95^{s}	75	^{J}90^{s}	95^{s}	85	35	55	55	70	80	80	^{u}55^{c}	^{u}80^{s}	^{u}100^{R}	75	55^{s}	^{J}65^{s}	70	55^{s}	95	^{I}70^{s}	^{u}90^{s}	75
18	^{J}60^{s}	^{I}95^{s}	^{u}95^{s}	60^{s}	105	90	65	^{I}100^{s}	55	95	80	85	90	115	80	75	^{u}50^{s}	50	55	90	80	^{I}100^{R}	^{u}95^{R}	^{J}55^{s}
19	90	^{u}100^{s}	^{I}80^{s}	95	90	C	C	C	C	C	65	90	65	95	70	55	55	90	^{u}65^{s}	95	90	70^{s}	115	^{I}80^{s}
20	65	70^{s}	^{J}85^{s}	75	95	^{u}85^{s}	90	55^{s}	^{I}95^{s}	65	95	80	65	75	60	70	70	55	95	^{u}95^{s}	55	70	70	80
21	75	^{I}75^{s}	^{u}65^{s}	^{I}100^{s}	90^{s}	^{u}90^{s}	50	70	70	85	100	70	90	65	80	^{J}50^{s}	^{J}75^{s}	^{J}55^{s}	55	65^{s}	75	^{I}70^{s}	95	40^{s}
22	90	^{I}70^{s}	^{I}80^{s}	^{I}85^{s}	^{u}75^{s}	^{I}80^{s}	^{u}90^{s}	75	55	80	115	55	85	55^{s}	90	80	^{J}90^{R}	^{I}85^{s}	^{I}60^{s}	55	^{u}90^{s}	^{u}50^{s}	70	90
23	^{u}100^{s}	^{I}90^{s}	^{I}80^{s}	^{I}70^{s}	^{I}85^{s}	80	55^{R}	65	90	110	85	70	95	95	55	80	85	^{I}70^{A}	^{J}50^{R}	^{I}65^{s}	100	95^{s}	^{u}60^{s}	90
24	65	^{u}75^{s}	^{I}80^{s}	^{I}70^{s}	95	^{u}95^{s}	90	95	85	70	105^{s}	75	90	70	100	85	95^{s}	90	95^{s}	100^{s}	95^{s}	^{u}95^{s}	80^{s}	90^{s}
25	^{u}100^{s}	85^{s}	^{u}90^{s}	^{u}95^{s}	^{u}90^{s}	^{u}100^{s}	75^{s}	^{u}70^{s}	100	60	90	95	90	90	^{J}80^{R}	70	95	70	55	95	95^{s}	110	^{I}90^{s}	50
26	^{I}60^{s}	^{I}100^{s}	95^{s}	^{u}90^{s}	95	50	60	60	60	40	120	70	115	50	65	55	90	70	60	90^{s}	95	85	70	60
27	90	50	^{J}65^{s}	^{I}80^{s}	^{u}65^{s}	80	85	95	110	95	95	AS	95	100^{s}	75^{s}	90	85	100	90^{s}	^{u}100^{s}	110^{s}	100^{s}	^{u}95^{s}	90
28	^{u}105^{s}	110^{s}	^{I}120^{s}	100	^{I}100^{A}	^{I}125^{A}	^{u}95^{s}	110^{s}	100	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	90	75	90	100	100	80	85^{s}	90	85	^{u}105^{s}	^{u}140^{s}	135	75^{s}	80^{s}	75^{s}
30	75^{s}	85	^{u}105^{s}	100^{s}	^{u}100^{s}	95	90	90	80	85	95	110	135	95	95	95	85	85	85	75	100	^{I}100^{s}	100	110
31																								
No.	28	29	29	29	29	28	28	27	27	27	29	29	29	29	28	28	28	28	28	29	29	29	29	28
Median	90	90	^{u}90	95	95	90	85	70	80	85	85	75	85	85	80	75	85	70	60	90	95	95	90	80

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

The Radio Research Laboratories, Japan.

K 14

IONOSPHERIC DATA

Apr. 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	I 6.7 S	6.1	L 6.2 S	C	C	C	C	L 8.2 S	L 10.0 S	8.9	8.7 H	11.2 H	L 12.8 H	13.6	13.1 H	13.4 H	12.7 H	10.8	8.5	I 7.7 S	I 7.0 S	L 7.1 S	L 6.3 S	6.1 S
2	5.9	6.0	I 6.2 S	5.5	4.4	L 3.9 S	4.4	6.6	L 8.1 S	9.8	11.6	L 13.7 S	I 14.6 S	15.0	I 14.5 S	L 14.1 SH	13.1 H	12.1 S	11.1	9.3	I 7.1 S	L 6.2 S	L 6.4 S	I 6.2 S
3	6.0 S	6.0	I 6.5 S	5.3	L 4.7 S	4.2	4.8	I 7.0 S	L 8.2 S	8.6	10.3 H	11.2 H	11.2 H	12.1 H	13.7 H	12.4 H	11.0 H	9.1	I 9.2 S	7.0 S	6.2	5.9	I 5.3 S	L 5.5 S
4	6.0 S	5.4	I 5.2 S	5.3 S	5.3	4.1	4.5	L 6.5 S	L 7.6 S	9.3 H	11.3 H	12.9	I 14.1 S	I 14.4 S	I 13.8 S	12.1 S	L 10.2 S	9.2	9.2 S	9.0	6.3	I 5.4 S	5.3	5.8
5	I 5.5 C	L 5.3 S	4.9	4.9	L 4.0 S	3.2 S	4.3	I 7.1 S	L 8.1 S	8.9 H	10.4 H	12.3 H	S	S	12.5	10.8 H	10.0 SH	L 9.7 S	I 9.4 S	9.0	I 7.2 S	5.9	6.2	L 6.3 S
6	6.0	6.0	5.6	5.1	L 4.5 S	3.8	4.8	L 6.8 S	8.3	8.7 H	9.0 H	9.1 H	11.3	13.3	L 13.7 S	13.6 S	L 13.5 S	L 13.6 S	L 12.7 S	10.8	7.0 S	5.6	L 5.3 S	L 5.2 S
7	5.1	L 5.0 S	5.1	5.2	4.5	4.5	5.3	6.8	L 7.5 S	8.1	8.9 H	9.2 H	10.4 H	10.5	10.9	11.4	11.2	11.0	11.1	I 9.5 S	6.9	5.8	6.1	L 6.2 S
8	6.0	5.7	5.8	6.0 S	4.9	3.0	4.2	L 6.4 S	7.8	L 9.4 SH	10.2 H	10.6 H	12.3	13.0	12.7	12.4 S	11.1	11.2 SH	L 10.5 S	9.0	L 6.6 S	6.1 S	L 6.2 S	I 6.0 S
9	I 5.9 S	6.0 S	I 5.7 S	5.7 S	4.2 S	3.8 S	4.6	6.8	L 7.4 S	L 7.8 SH	9.2 H	L 10.6 SH	11.8	12.8	13.3 H	12.5	11.0	L 10.1 SH	10.9	L 10.1 S	L 8.6 S	I 8.8 S	I 8.8 S	8.9
10	8.7	S	4.2	L 3.7 S	L 3.9 S	3.8 S	I 5.7 S	L 8.0 S	6.8	7.0 H	8.7	L 9.6 S	10.9	11.9	10.5	10.9 H	11.0 H	L 10.2 SH	L 11.3 S	L 11.7 S	I 7.8 S	4.6	4.8 S	5.1
11	4.8	4.6	4.5	4.7 S	3.5	3.4	4.8	L 6.2 S	7.1	7.6 H	9.3	11.2	12.6 S	13.4	13.5	13.2 S	I 13.4 S	I 13.4 S	I 12.6 S	11.7	I 7.2 S	5.4	I 4.9 S	5.2 S
12	5.0	4.8 S	4.5	4.4	4.3	4.3	5.4	6.5	7.2 S	8.6 H	10.5 H	11.8 SH	13.4 H	13.7 S	13.3	13.0	L 11.9 S	12.2 SH	11.2 S	L 10.1 S	5.8	L 5.5 S	L 5.2 S	L 5.4 S
13	L 5.3 S	5.1 S	4.4	4.6	3.8	L 3.2 S	4.4	5.8	6.7	8.3 H	9.0 H	I 9.8 SH	12.3	12.2	11.7 S	11.2	10.7	I 10.3 S	10.6 S	I 9.9 S	I 7.3 S	4.7	4.9 S	5.2
14	5.0	4.7 S	4.3	4.2	I 4.2 S	4.4	5.6	L 6.4 S	L 7.7 SH	9.0	8.2	8.5	L 9.6 S	I 10.3 C	L 10.2 S	9.2	9.2	9.2	9.4 S	9.2 S	I 6.6 S	5.9	L 6.6 S	6.2
15	5.9	6.0	5.8	5.5	5.5	2.8	4.3	6.2	6.0	7.1	8.8 H	10.8 H	8.3 H	11.2 H	11.8	10.6	10.9 H	I 10.4 SH	10.7	I 9.7	8.3 H	L 5.2 S	L 5.2 S	5.5
16	L 5.4 S	5.3	L 5.2 S	5.0	3.6	3.2	4.6	5.8	7.4 S	I 9.7 SH	10.1 H	10.7 H	12.7	13.5	I 13.6 S	13.7	12.8	10.7	11.3	11.2	I 7.6 S	L 6.2 S	L 6.4 S	6.6
17	6.0 S	6.0 S	L 5.6 S	5.8	I 4.6 S	L 3.9 S	5.6	6.8	7.3	8.4	8.9	9.2	10.8	12.4	13.4	L 13.8 S	13.3	11.9	11.2 S	I 9.8 S	I 6.7 S	5.5 S	5.7	I 5.8 S
18	5.7	S	S	I 6.4 S	3.9	3.1	4.9	6.7	I 7.6 S	L 8.2 S	9.0	L 10.1 S	11.0	12.2 S	13.0 S	S	13.6	12.6 S	11.0	I 10.2 S	I 7.9 S	6.4	I 6.4 S	I 6.2 S
19	L 6.4 S	6.8	I 7.0 S	6.1 S	4.1	3.9 S	5.2	I 7.5 S	8.3	8.6 H	8.9 H	I 9.7 SH	L 10.5 SH	11.3 H	12.2	10.8	L 9.8 S	L 9.4 S	I 9.4 S	8.7	7.4 S	7.3 S	S	S
20	S	S	S	S	5.6	I 5.6 S	7.2 S	L 8.1 S	7.4	7.8 H	8.2 H	9.2 H	10.6 H	10.4 SH	10.0 S	L 10.2 SH	10.7 SH	11.7 H	L 11.9 S	L 10.4 S	I 7.6 S	6.8	6.4	I 6.4 S
21	I 6.2 S	I 6.1 S	L 6.2 S	5.6	5.7	I 6.2 S	L 6.5 S	L 7.2 S	6.9 H	7.7 S	L 7.9 SH	8.5 H	L 9.6 SH	10.5 SH	11.4	12.5	13.1	11.8	9.7	9.3	S	S	I 6.6 S	6.9 S
22	6.5 S	6.3 S	6.1	6.1 S	6.0 S	5.6	I 6.8 S	7.7 S	7.1	7.7	L 7.8 SH	8.7	L 9.8 C	11.1	11.8	12.5	12.2	10.6	9.5 S	I 9.0 S	L 8.6 S	L 7.6 S	I 7.2 S	I 6.6 S
23	L 6.6 S	I 6.5 S	6.5 S	6.6	6.0	4.2	5.4	6.5	L 7.6 S	8.2	8.6	8.8	9.3	10.5	11.3	12.0	12.2	11.9	11.3	I 10.2 S	8.5	I 7.0 S	S	S
24	I 7.0 S	6.7	6.9	5.9	5.6	5.4	7.0	I 7.8 S	8.9	8.7 H	7.5 SH	L 7.7 C	L 9.8 C	11.3	11.7	11.2 H	11.6 H	10.8 SH	I 10.0 S	9.3 S	L 7.7 S	6.8	L 6.7 S	L 6.6 S
25	I 6.5 S	L 6.2 S	5.8	L 5.7 S	5.1	4.3 S	5.3	L 7.3 S	L 7.6 S	C	C	C	L 9.8 SH	11.0	11.7	L 12.2 S	12.2 H	I 12.1 SH	L 12.4 S	I 11.2 S	I 8.5 S	6.1	5.9	I 6.2 S
26	6.3 S	6.1	5.9	5.6	5.3	5.0	L 6.3 S	I 7.2 S	7.1	L 7.5 SH	7.7 H	9.4 SH	11.5 H	12.5 H	L 12.4 SH	10.8 H	10.6 H	I 11.0 S	11.4	I 10.7 S	9.4	I 8.2 S	I 8.0 S	S
27	S	S	S	6.5	6.7	6.6 S	I 7.4 S	8.5	9.1	8.9	9.3 SH	L 10.0 SH	11.0	11.2	I 11.6 C	12.3	12.4	L 12.6 S	L 11.2 S	8.6	S	S	I 7.5 S	L 7.7 S
28	I 8.0 S	L 8.3 S	I 7.3 S	6.3	5.7	5.4 S	6.8	8.3	7.8	I 7.4 C	C	C	C	C	C	13.7	13.0	13.8 S	I 13.7 S	I 13.4 S	S	S	S	L 7.9 S
29	S	S	6.6 S	I 6.1 S	5.9	5.4	6.3	7.9	7.2 H	7.2 H	8.3 H	9.4 S	10.7	12.1	11.8	12.4	L 12.0 S	12.5 SH	I 12.7 S	L 12.6 S	S	S	S	S
30	I 6.9 S	7.0 S	6.8 S	6.2	5.7	L 5.6 S	6.9	L 8.2 S	L 7.4 S	6.9	L 7.4 SH	8.6	L 9.7 S	10.6	11.6	13.0	13.6 SH	13.3 H	I 11.9 S	S	S	S	S	S
31																								
No.	27	25	27	28	29	29	29	30	30	29	28	28	28	28	29	29	30	30	30	29	25	25	25	25
Median	6.0	6.0	5.8	5.6	4.7	4.2	5.3	6.9	7.6	8.3	8.9	9.8	11.0	12.1	12.2	12.4	12.0	11.1	11.1	9.8	7.3	6.1	6.2	6.2
U.Q	6.5	6.2	6.5	6.1	5.6	5.4	6.4	7.8	8.1	8.9	9.7	11.0	12.3	13.2	13.4	13.1	13.0	12.2	11.4	10.8	8.1	6.9	6.6	6.6
L.Q	5.5	5.3	5.1	5.0	4.2	3.6	4.6	6.5	7.2	7.6	8.2	9.2	9.8	11.0	11.6	11.0	10.9	10.3	9.7	9.0	6.8	5.5	5.3	5.5
Q.R	1.0	0.9	1.4	1.1	1.4	1.8	1.8	1.3	0.9	1.3	1.5	1.8	2.5	2.2	1.8	2.1	2.1	1.9	1.7	1.8	1.3	1.4	1.3	1.1

foF2

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

The Radio Research Laboratories, Japan.

Y 1

IONOSPHERIC DATA

Apr. 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							C																	
2											L	L	5.0 L	u5.2 L	L									
3																								
4												L	u5.2 L	L	L	L								
5													L	u5.1 L	u5.0 L									
6													L	L	5.2	L	L	L						
7										C				L	5.0 L	A	L							
8													5.2	L	A	A	A							
9													5.2	5.1	5.0	u4.7 L	L							
10											L	A	u5.3 L	i4.7 L	4.8									
11											L	L	L	i5.1 L	i5.1 L	i5.1 L	4.7	L						
12														i5.0 A	i4.9 A	4.8 L	L							
13													5.0	4.9	u4.9 L	u4.8 L	L							
14										L	4.6 L	i5.0 L	L	i5.1 C	i4.9 L	i4.7 L	u4.7 L							
15															A	L								
16													L	L	L	u5.0 L	L							
17										L	L	A	A	A	L	A	A							
18										L	L	i5.1 L	L	i5.3 A	5.2 L	5.0	L							
19															5.1 L	u4.8 L	L							
20																								
21															L	4.8	A	A						
22									L	L		u5.5 L	u5.3 L	i5.2 A	5.1	u4.9 L	A	A						
23										A	A	L	5.4 L	u5.5 L	u5.3 L	u5.1 L	u4.9 L	L						
24													5.2	u5.4 L	5.0									
25										C	C	C		u5.3 L	5.2	L H								
26																								
27													i5.4 L	L	i5.1 C	u5.1 L	A							
28										C	C	C	C	C	C	A	A	A						
29												L H	L	5.3	5.1 L	L	L							
30												L	i5.4 L	5.2	5.4 L	5.2								
31																								
No.											1	3	11	15	18	13	3							
Median											4.6	u5.1	5.2	u5.2	5.1	u4.9	u4.7							

foF1

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Apr. 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							C	2.20	2.90^{R}	↘2.5	A	A	A	A	A	A	A	A	A					
2							S	2.00	2.70	↘1.0	C	C	C	C	C	↘2.0^{H}	↘0.0	2.60	2.05					
3							S	2.25^{H}	I 2.80^{A}	↘2.5	↘4.0	I ↘5.5^{C}	↘6.0	C	C	I ↘2.5^{C}	2.75	2.60	A					
4							S	1.90	A	A	A	A	A	C	A	I ↘3.5^{A}	↘1.5	I 2.60^{A}	2.00					
5							S	2.20	2.70	↘2.0	C	C	C	C	C	C	↘1.0	2.70	2.10					
6							S	A	A	A	A	A	A	A	A	A	A	A	2.05					
7							S	2.20	2.80	I ↘2.0^{C}	C	C	C	C	C	I ↘4.0^{C}	↘1.0^{C}	2.60	1.75					
8							S	A	A	A	C	I ↘5.0^{C}	↘5.5^{C}	↘5.5^{C}	A	A	A	A	A					
9							S	I 2.1^{5A}	2.80	↘2.0	↘4.0	C	C	C	C	A	A	2.70	A					
10							S	A	2.80	↘3.0	C	C	C	C	C	C	↘0.5	2.70	A					
11							S	S	2.90^{R}	↘2.5	C	C	C	C	C	C	↘1.0	2.70	A					
12							S	2.30	2.80	↘2.0	C	C	A	A	A	C	↘1.0	2.55	A					
13							S	2.20	2.80	C	C	C	A	B	A	C	A	2.65	1.95					
14							S	2.40	2.80	↘2.0	C	C	A	C	C	↘4.0	↘1.0	2.70	2.00					
15							S	2.30	2.70	↘1.5^{C}	C	C	A	A	A	C	↘1.0	2.70	A					
16							S	R	I 2.85^{A}	A	A	A	C	C	C	C	↘3.0	2.85	2.30					
17							S	2.40	↘3.0	↘3.5^{C}	C	C	C	C	C	C	A	A	A					
18							S	A	A	A	A	A	C	C	C	C	I ↘2.5^{C}	2.85	2.10					
19							S	2.40	A	A	C	C	C	C	C	C	C	2.80	2.10					
20							S	2.50	↘3.0	I ↘3.0^{C}	↘4.0	C	C	A	A	A	A	2.80	2.20					
21							S	2.35	C	C	C	C	C	C	C	↘4.5^{C}	↘3.0	2.90	2.15					
22							S	A	A	↘4.0	C	C	C	C	C	C	↘4.0	2.85	2.15					
23							S	2.50^{H}	↘3.0	↘5.0	C	C	C	C	C	C	C	2.85	2.40					
24							S	2.70	↘3.0	↘5.0^{C}	↘5.0^{C}	C	C	C	A	I ↘4.0^{C}	I ↘3.5^{C}	2.90^{H}	2.25					
25							S	2.50^{H}	↘3.0	C	C	C	↘6.0	I ↘6.5^{C}	↘5.0	↘3.5	↘3.0	2.85	2.20					
26							S	2.50	↘3.0	↘4.0	↘6.0	C	C	↘9.5	↘7.5	↘5.0	↘3.0	2.85	2.20					
27							1.90	2.65^{H}	↘3.0	↘3.0	↘4.5	↘7.0	B	A	C	↘5.0	↘3.2	2.90	2.20					
28							A	2.60	↘3.0	C	C	C	C	C	C	↘4.0	I ↘3.1^{5A}	2.80	2.15					
29							S	A	A	A	A	A	A	A	↘6.5	I ↘4.5^{C}	↘3.2	2.90	2.20					
30							S	2.50	A	A	A	C	A	A	A	A	↘3.0	2.80	2.30					
31																								
No.							1	22	21	18	6	3	3	3	3	12	21	26	21					
Median							1.90	2.40	2.85	↘2.5	↘5.0	H ↘5.5	↘6.0	↘6.5	↘6.5	↘4.0	↘3.1	2.80	2.15					

foE

Sweep 1.0 Mc to 20.0 Mc in ↘3.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 3

IONOSPHERIC DATA

Apr. 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	S	E	C	C	C	C	2.5	G	G	3.5	3.8	3.6	4.4	3.8	4.2	4.3	5.2	4.5	4.9	5.1	4.3M	S	S
2	S	S	E	E	E	S	S	G	G	G	G	4.2	4.1	G	G	G	2.1G	G	3.4	3.5	3.2	2.6	S	2.1
3	1.7S	2.4	4.0M	2.9	E	E	S	G	3.2	3.6	3.8	4.2	3.9	G	5.0	8.1	5.4	8.4	D9.0S	4.0	2.4	2.3	2.6	3.1
4	S	S	S	E	E	E	S	G	3.0	3.3	3.6	3.8	4.1	3.2G	3.7	4.0	3.8	4.2	3.9	3.6	S	2.6	4.4M	3.6
5	C	2.7	S	S	S	E	S	G	G	G	G	G	G	3.5G	G	G	G	G	2.4	2.7	S	S	S	S
6	S	D5.7S	D4.8S	2.9	3.7	3.9	3.3	2.9	3.1	3.9	3.9	4.6	4.0	4.0	3.7	4.0	3.8	3.1	3.0	2.2	S	S	S	S
7	S	S	E	E	1.5	S	2.4	G	G	C	3.3G	3.4G	G	G	4.6	5.2	3.9	4.8	5.2	4.3	4.9	5.7M	4.5M	4.3M
8	S	S	E	E	1.5	2.3	1.4	2.3	3.0	3.4	G	3.9	4.7	5.3	5.4	6.9	5.4	3.7	D6.7S	5.2	2.9	S	S	S
9	S	S	S	E	E	S	S	2.9	3.1	G	G	7.6	4.0	C	3.4G	3.8	3.9	2.3G	2.6	S	S	S	S	S
10	S	S	S	E	E	S	S	2.4	3.1	3.8	4.2	4.9	4.0	4.5	G	G	G	G	3.0	3.1	3.0	2.5	3.7	5.2
11	S	S	S	E	E	S	G	2.3	3.0	3.8	4.5	4.4	4.7	4.5	4.3	4.0	3.5	G	2.3	1.9S	S	2.3	1.7S	D5.8S
12	2.0	S	S	E	E	1.5S	G	G	G	G	2.8G	3.3G	7.6	8.4	6.3	3.1G	2.8G	2.8	2.7	2.3	1.9	S	S	S
13	S	S	2.2	E	E	S	G	2.5	G	G	2.8G	3.0G	5.1	B	4.0	3.3G	3.2	3.0	3.1	S	S	S	S	S
14	S	S	S	E	E	S	G	2.6	3.1	3.7	3.9	3.8	4.7	5.4	G	3.1G	G	3.1	2.3	S	1.7S	S	S	S
15	S	S	E	E	1.5	S	G	G	4.2	5.2	6.4	5.8	3.9	4.2	5.1	2.7G	G	2.4G	2.3	2.5	2.2	S	S	S
16	S	S	S	E	2.1	2.3	2.3	2.1G	3.2	3.6	5.0	4.3	3.5G	4.3	G	4.0	3.6	3.1	2.2G	3.0	3.6	5.3	3.0	D5.7S
17	3.4	3.2	E	4.6	3.2	2.1	G	3.3	6.1	4.3	4.1	5.6	5.3	6.1	8.5	7.4	6.6	4.5	2.8	3.1	3.0	2.8	2.8	3.6M
18	3.2	3.2	E	E	E	E	S	2.8	3.3	3.4	4.0M	3.9	C	5.4	C	3.0G	G	G	G	2.0	2.3	5.2	S	2.3
19	S	S	E	E	E	S	G	3.1	3.0	3.3	3.4G	3.0G	C	C	3.0G	C	G	G	G	3.2	3.0	S	2.3	S
20	2.1	S	2.1	2.1	2.0	2.0	G	G	3.6	C	G	4.0	C	8.3	3.8	3.5	3.3	3.1	3.0	3.7	3.2	2.2	S	S
21	S	S	E	E	E	S	S	G	3.2	C	4.1	C	C	C	C	4.3	5.3	6.3	6.1	4.3	5.3	5.3	6.0M	5.2
22	3.6	2.6	2.6	2.5	2.4	2.3	2.9	3.8	3.5	4.2	4.8	4.7	C	6.8	4.3	4.1	4.9	4.6	4.3	5.9	5.8M	5.3	5.0	3.7
23	S	S	S	E	E	S	G	3.3	5.4	4.8	5.0	4.1	C	C	C	3.8	G	G	G	S	2.2	S	2.1	S
24	S	S	2.3	3.7M	3.0	3.1	2.2	3.2	3.4	4.2	3.8	C	4.4	4.1	3.8	G	G	G	G	2.1	S	3.0	3.8	2.5
25	2.4	S	E	E	E	S	G	2.8	3.6	C	C	C	6.0	G	G	G	3.7	4.0	6.2	D9.0S	5.6	4.0	3.8	4.6
26	4.6	3.0	D5.7S	3.0	E	2.2	G	3.3	3.6	3.8	3.9	4.3	C	6.6	11.7	5.4	G	11.1	6.5	6.5	D5.7S	D5.7S	D5.6S	6.4
27	3.8	S	1.7	S	E	S	2.1	2.8	4.0	6.2	4.3	G	B	4.4	C	3.9	5.1	5.6	D5.7S	D6.8S	8.3	D5.7S	5.8M	D4.4S
28	D2.9S	2.1	E	2.6	2.6	2.5	2.2	3.4	4.5	C	C	C	C	C	C	8.6	6.8	5.3	4.3	3.2	5.2	3.7	D5.8S	4.9
29	D5.7S	2.5	5.3	2.4	2.2	6.0	3.1	3.8	3.5	3.7	3.8	4.5	3.8	3.7	G	4.3	3.5	4.6	3.5	2.0	S	S	S	4.9
30	2.9	D4.3S	2.2	1.4	1.4	S	G	G	3.3	3.4	3.6	C	4.0	4.3	4.1	4.1	2.7G	2.1G	G	S	2.1	3.1	2.6	2.5
31																								
No.	11	10	21	27	28	15	21	30	30	25	28	25	21	24	25	29	30	30	30	25	22	19	17	18
Median	3.2	2.8	E	E	E	2.2	G	2.5	3.2	3.6	3.8	4.1	4.0	4.4	3.8	4.0	3.5	3.1	3.0	3.2	3.1	3.7	3.8	D4.4
U Q	3.8	3.2	2.4	2.5	2.0	2.5	2.2	3.1	3.6	4.0	4.2	4.6	4.7	5.4	4.8	4.3	4.3	4.6	4.5	4.6	5.2	5.3	D5.3	5.2
L Q	2.1	2.5	E	E	E	E	G	G	3.0	G	G	G	3.8	G	G	G	G	G	2.3	2.4	2.2	2.6	2.6	3.1
Q R	1.7	0.7							0.6				0.9						2.2	2.2	3.0	2.7	D2.7	2.1

The Radio Research Laboratories, Japan.

foEs

Sweep 1.0 Mc to 20.0 Mc in 3.0 ~~min~~ sec in automatic operation.

Y 4

50

IONOSPHERIC DATA

Apr. 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	S		C	C	C	C	G			G	G	E3.6C	4.4	E3.8C	4.2	4.0	4.9	4.3	4.6	4.8	2.8	S	S
2	S	S				S	S					4.2	4.1				2.1G		3.3	A	A	2.4	S	2.0
3	S	2.1	1.8	1.8			S		G	G	G	4.2	E3.9C		4.8	5.1	4.2	7.5	4.1	3.4	1.8	1.9	2.1	E3.1S
4	S	S	S				S		G	G	G	G	G	E3.2C	E3.7C	4.0	3.8	4.0	3.5	4.2.7A	S	2.2	2.7	E3.6S
5	C	1.8	S	S	S		S							G					G	E2.7B	S	S	S	S
6	S	E	2.0	2.2	2.2	2.5	2.3	2.8	G	3.7	3.8	4.3	E4.0C	4.0	G	4.0	3.6	3.1	2.9	E	S	S	S	S
7	S	S			E1.5B	S	G			C	G	E3.4C			4.4	5.1	3.9	4.7	3.9	A	4.4	2.7	4.1	E4.3S
8	S	S			1.4	2.0	E1.4S	2.3	G	G		E3.9B	4.6	4.6	5.2	6.1	4.6	G	5.0	4.7	2.3	S	S	S
9	S	S	S			S	S	G	G			E7.6B	E4.0C	C	E3.4C	3.8	3.7	2.3G	G	S	S	S	S	S
10	S	S	S			S	S	G	2.6	3.8	4.1	4.8	E4.0C	E4.5B					3.0	2.8	2.5	2.1	3.7	2.4
11	S	S	S			S		G	2.7	G	4.5	4.4	4.5	E4.5C	E4.3C	E4.0C	3.5		G	S	S	E	S	2.0
12	1.8	S	S			S					E2.8C	E3.3C	7.6	5.5	6.3	E3.1C	2.8G	G	2.5	1.9	1.9	S	S	S
13	S	S	E			S		G			2.8G	E3.0C	4.7	B	E4.0B	E3.3C	G	3.0	3.1	S	S	S	S	S
14	S	S	S			S		G	G	G	3.8	3.8	4.6	E5.4C		3.1G		G	G	S	S	S	S	S
15	S	S			E1.5B	S			4.1	3.7	6.2	5.5	E3.9C	E4.2C	5.0	2.7G		2.4G	G	2.4	2.2	S	S	S
16	S	S	S		E	E	G	E2.1R	G	3.6	4.9	4.2	E3.5C	4.3		E4.0C	3.6	3.1	2.1G	2.7	3.6	2.2	2.6	3.1
17	2.1	2.4		2.2	2.6	E		3.3	6.1	4.2	4.1	5.5	5.3	6.1	4.8	5.7	6.4	4.4	G	3.1	E2.0B	2.8	E	2.6
18	3.0	2.4					S	G	G	E3.4C	E4.0C	E3.9C	C	5.4	C	3.0G				E	E	3.9	S	2.3
19	S	S				S		G	G	G	E3.4C	E3.0C	C	C	E3.0C	C				3.2	E3.0B	S	2.1	S
20	E	S	E	2.0	1.9	1.9			3.6	C		G	C	8.1	E3.8C	G	G	2.5	2.9	A	3.2	2.0	S	S
21	S	S				S	S		G	C	4.1	C	C	C	C	4.2	5.0	5.5	E6.1S	4.2	4.7	2.4	4.8	2.6
22	2.6	2.2	1.9	1.9	2.3	1.8	2.3	3.3	G	4.2	4.8	4.5	C	E6.8C	4.3	E4.1B	4.8	4.4	3.9	5.9	5.2	4.7	2.6	2.9
23	S	S	S			S		3.3	4.6	4.7	5.0	4.1	C	C	C	3.8				S	2.1	S	E	S
24	S	S	1.9	3.6	2.3	2.1	G	3.2	3.4	4.2	E3.8C	C	E4.4C	E4.1C	G					E	S	1.9	2.6	2.1
25	E	S				S		G	G	C	C	C	4.7				3.7	4.0	6.2	8.6	E5.6S	3.5	E3.8S	A
26	4.2	3.0	1.9	2.3		2.0		3.0	3.5	G	G	4.3	C	5.3	7.8	4.7		A	6.3	6.4	3.9	A	2.5	5.4
27	2.7	S	E1.7S	S		S	G	G	3.9	5.5	G		B	4.3	C	G	5.0	4.6	5.3	6.4	A	A	4.5	3.6
28	E	E		2.3	2.3	2.3	G	3.4	4.1	C	C	C	C	C	C	7.2	6.1	5.3	4.1	3.1	5.1	3.0	4.0	3.0
29	2.4	2.0	3.7	2.1	2.0	4.6	2.8	3.6	3.4	G	G	4.0	E3.8C	E3.7C		4.3	G	4.4	3.5	1.9	S	S	S	2.7
30	2.0	2.1	1.8	E1.4S	1.2	S			G	G	G	C	E4.0B	4.3	E4.1B	G	2.7G	E2.1B		S	1.8	2.8	2.1	2.2
31																								
No.	11	10	10	10	12	10	8	20	24	19	21	22	19	16	17	23	21	22	24	24	20	19	15	15
Median	2.1	2.1	1.8	2.2	2.0	2.0	G	G	G	E3.4	G	4.0	E4.0	4.3	E4.1	E4.0	3.7	4.0	3.2	3.2	E3.1	2.7	2.6	2.6

foEs

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

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Apr. 1961 | f-min | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.80S	E1.80S	1.30	C	C	C	C	1.70	1.60	1.90	2.05	2.20	2.20	2.40	2.05	2.20	1.85	1.60	E1.70S	E1.60S	E1.60S	E1.60S	E1.80S	E1.80S
2	E1.80S	E2.10S	1.20	E	E	E1.50S	E1.70S	E1.70S	1.70	1.85	2.00	2.00	2.70	2.20	2.20	2.00	1.60	1.80	E1.70S	E1.60S	E1.90S	E1.70S	E1.70S	E1.70S
3	E1.80S	E1.70S	1.20	E	1.20	1.20	E1.70S	1.70	1.70	1.80	2.05	2.00	2.40	2.20	2.35	2.00	1.85	1.65	E1.60S	E1.50S	E1.60S	E1.50S	E2.00S	E1.70S
4	E1.90S	E1.90S	E1.60S	1.20	1.20	1.30	E1.70S	E1.60S	1.60	1.70	1.85	2.00	2.00	2.20	1.90	2.05	1.60	1.60	1.60	E1.50S	E1.90S	E1.70S	E1.60S	E1.60S
5	C	E1.60S	E1.90S	E2.00S	E1.70S	1.60	E1.50S	1.65	1.70	1.85	1.90	2.00	2.40	2.35	2.20	2.10	1.70	1.70	1.65	1.10	E1.65S	E1.60S	E1.80S	E1.80S
6	E1.80S	E1.80S	1.20	1.70	1.80	E1.50S	E1.50S	1.75	1.70	2.20	2.20	2.45	2.20	2.40	2.25	2.20	1.90	1.55	1.70	E1.80S	E1.70S	E1.70S	E2.10S	E1.90S
7	E1.75S	E2.20S	1.75	1.30	1.20	E1.60S	1.60	1.75	1.80	E1.70C	2.00	2.60	2.50	2.20	2.20	2.25	1.90	1.80	E1.60S	E1.70S	E1.90S	E2.00S	E1.85S	E1.80S
8	E1.70S	E1.90S	1.20	1.00	E	1.25	1.25	E1.80S	2.00	2.20	2.10	2.30	2.30	2.60	2.20	2.20	2.00	1.80	1.15	E1.70S	E1.80S	E1.80S	E2.00S	E1.90S
9	E1.90S	E1.90S	E1.80S	1.70	1.70	E2.00S	1.60	1.80	1.90	2.05	2.25	2.45	2.60	E3.90C	2.35	2.20	1.95	1.85	E1.85S	E1.90S	E1.90S	E1.90S	E2.10S	E2.00S
10	E1.80S	E1.90S	E1.90S	1.80	1.80	E1.80S	E1.80S	E1.80S	1.90	2.05	2.40	2.30	2.40	2.40	2.45	2.10	2.20	E1.90S	E1.70S	E1.70S	E1.80S	E1.90S	E2.20S	E1.90S
11	E1.80S	E2.00S	E1.90S	1.80	1.60	E1.80S	E1.80S	E1.70S	1.90	2.20	2.30	2.30	2.40	E4.10C	2.50	2.50	2.30	1.95	E1.80S	E1.80S	E1.70S	E1.90S	E1.90S	E1.50S
12	E1.70S	E1.80S	E1.75S	1.25	E	E1.50S	E1.70S	1.70	1.65	2.20	2.20	2.20	2.75	2.60	2.60	2.20	1.80	1.60	1.65	E1.65S	E1.75S	E2.00S	E1.90S	E1.85S
13	E1.90S	E1.90S	1.60	1.65	1.15	E2.00S	E1.70S	1.70	1.70	1.85	2.30	2.60	3.20	4.40	2.40	2.20	1.90	1.85	E1.80S	E1.80S	E1.70S	E1.50S	E2.00S	E1.90S
14	E1.80S	E2.10S	E1.60S	1.30	1.60	E1.70S	1.80	1.70	1.75	1.70	2.00	2.05	3.40	2.60	2.65	2.00	1.85	1.80	1.65	E1.70S	E1.65S	E1.85S	E1.80S	E2.00S
15	E1.85S	E1.70S	1.70	1.85	E	E1.60S	1.70	1.70	1.90	1.85	2.25	2.40	2.55	3.40	2.35	2.20	2.05	1.90	E1.65S	E1.90S	E1.70S	E1.90S	E2.10S	E2.30S
16	E1.90S	E1.90S	E2.00S	1.30	E1.70S	E1.90S	E1.70S	E1.75S	1.90	1.80	2.30	2.30	2.50	2.30	2.40	2.20	2.20	1.90	E1.60S	E1.70S	E1.90S	E1.90S	E2.20S	E1.80S
17	E1.80S	E1.80S	1.90	1.30	1.70	E1.90S	2.00	1.90	1.90	2.10	2.40	2.50	2.80	E3.60C	2.45	2.50	2.20	E1.80S	E1.85S	E1.70S	E1.85S	E1.70S	E2.00S	E1.80S
18	E1.70S	E2.20S	2.10	1.90	1.90	1.25	1.90	E1.80S	1.95	2.20	2.45	2.60	E4.50C	E4.50C	2.40	2.35	2.20	2.05	E1.90S	E1.80S	E1.70S	E1.60S	E2.00S	E1.40S
19	E2.00S	E2.30S	1.70	1.70	1.80	E1.70S	E1.70S	1.80	1.90	2.10	2.30	2.50	E4.00C	E4.50C	2.30	E4.70C	1.90	1.95	E1.70S	E1.80S	E1.85S	E2.05S	E1.85S	E2.00S
20	E2.00S	E1.90S	E1.70S	1.70	1.30	1.20	2.00	1.80	1.90	1.90	2.10	2.60	E4.80C	E3.20C	2.40	2.50	1.90	1.90	E1.60S	E1.80S	E1.70S	E1.70S	E1.65S	E1.90S
21	E1.80S	E2.00S	1.80	E	1.80	E1.80S	2.00	1.70	1.90	2.10	2.40	2.50	E4.50C	2.60	2.60	2.05	1.85	1.80	1.65	E1.65S	E1.70S	E1.80S	E1.80S	E1.70S
22	E1.60S	E1.80S	1.20	E	E	E1.70S	E1.70S	1.80	1.80	1.90	2.30	2.45	E4.30C	2.70	2.65	2.40	2.20	1.85	1.60	E1.70S	E1.90S	E1.80S	E1.80S	E1.80S
23	E1.80S	E1.90S	E1.70S	1.20	E	E1.60S	2.00	1.70	1.90	2.00	2.30	2.50	E4.70C	E4.50C	E4.00C	2.30	1.90	1.90	E1.90S	E1.80S	E1.90S	E1.90S	E1.60S	E1.80S
24	E2.00S	E2.40S	E1.80S	1.65	1.60	E1.70S	E1.90S	1.80	1.90	1.90	2.45	2.50	E3.60C	2.60	2.30	1.95	2.30	1.85	1.65	E1.70S	E1.80S	E1.70S	E1.85S	E1.80S
25	E1.80S	E1.90S	1.40	1.80	1.70	E1.60S	E1.70S	1.80	1.90	C	C	C	2.30	2.40	2.20	1.90	1.90	E1.60S	1.85	E1.70S	E1.80S	E1.80S	E1.80S	E1.80S
26	E1.70S	E1.90S	E1.80S	E	1.75	1.10	E1.80S	1.85	1.90	1.90	2.20	2.75	2.65	2.50	2.20	2.20	1.90	1.80	E1.70S	E1.70S	E1.80S	E1.90S	E1.80S	E1.70S
27	E1.60S	E1.95S	1.30	E1.70S	1.20	E1.75S	E1.60S	1.80	1.80	2.20	1.90	2.20	4.40	2.50	E2.15C	1.90	1.85	E1.70S	E1.80S	E1.70S	E1.80S	E1.70S	E1.70S	E1.70S
28	E1.60S	E1.80S	1.30	1.20	1.00	E1.40S	E1.65S	1.60	1.90	E1.90C	C	C	C	C	C	2.00	1.80	E1.70S	E1.60S	E1.70S	E1.90S	E1.80S	E1.80S	E1.70S
29	E1.60S	E1.60S	1.20	E	1.10	1.30	E1.70S	1.70	1.90	2.30	2.30	E3.00C	E2.85C	E3.00C	E2.80C	E2.80C	1.90	E1.50S	E1.70S	E1.65S	E1.85S	E1.70S	E1.80S	E1.50S
30	E1.70S	E1.60S	E1.40S	E	E	E1.40S	2.00	1.60	1.80	2.70	2.25	E4.10C	E3.50C	E3.40C	E2.70C	2.20	2.10	1.70	E1.75S	E1.80S	E1.70S	E1.60S	E1.70S	E1.70S
31																								
No.	29	30	17	27	27	29	29	26	30	28	28	26	20	20	26	28	30	29	30	30	30	30	30	30
Median	E1.80	E1.90	1.30	1.30	1.20	E1.60	E1.70	1.70	1.90	1.95	2.25	2.40	2.50	2.45	2.35	2.20	1.90	1.80	E1.70	E1.70	E1.80	E1.80	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

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

M(3000)F2 Sweep 10 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

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53

IONOSPHERIC DATA

Apr. 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							C																	
2											L	L	↓3.65 L	↓3.50 L	L									
3																								
4												L	↓3.50 L	L	L	L								
5													L	↓3.55 L	↓3.60 L									
6													L	L	3.45 L	L	L	L						
7										C				L	3.45 L	A	L							
8													3.45	L	A	A	A							
9													3.50	3.55	3.60	↓3.60 L	L							
10											L	A	↓3.50 L	L4.00 L	3.85									
11											L	L	L	I3.45 L	I3.50 L	I3.60 L	3.45	L						
12														A	A	3.55 L	L							
13													A	3.65	↓3.45 L	↓3.65 L	L							
14										L	3.90 L	I3.60 L	L	I3.50 C	I3.60 L	I3.55 L	↓3.50 L							
15															A	L								
16													L	L	L	↓3.55 L	L							
17										L	L	A	A	A	L	A	A							
18										L	L	I3.65 L	L	I3.45 A	3.45 L	3.45	L							
19															3.50 L	C	L							
20																								
21															L	3.55	A	A						
22									L	L		↓3.40 L	↓3.45 L	I3.55 A	3.65	↓3.55 L	A	A						
23										A	A	L	3.45 L	↓3.35 L	↓3.40 L	↓3.55 L	↓3.40 L	L						
24													C	↓3.35 L	3.65									
25										C	C	C		↓3.50 L	3.50	L H								
26																								
27													I3.40 L	L	I3.50 C	↓3.40 L	A							
28										C	C	C	C	C	C	A	A	A						
29												L H	L	3.45	3.55 L	L	L							
30												L	I3.45 L	3.50	3.55 L	3.45								
31																								
No.											1	3	9	14	17	12	3							
Median											3.90	↓3.60	↓3.45	↓3.50	3.50	↓3.55	↓3.45							

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

The Radio Research Laboratories, Japan.

Y 8

IONOSPHERIC DATA

Apr. 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							C																	
2											310	305	295	290	290									
3																								
4												305	295	280	280	260								
5													290	280	275									
6													340	315	300	290	290	280						
7										C				305	305	300	280							
8													325	295	290	285	280							
9													320	305	290	270	260							
10											310	290	310	290	290									
11											310	310	300	300	300	300	295	260						
12														290	290	270	280							
13													310	280	290	290	280							
14										270	260	300	300	340	290	290	290							
15															295	295								
16													310	310	300	275	270							
17										280	290	325	315	310	305	285	270							
18										260	280	295	305	320	300	285	260							
19															290	270	290							
20																								
21															340	310	280	265						
22									245	265		335	330	330	310	295	280	260						
23										275	290	300	345	330	325	320	300	280						
24													345	320	295									
25										C	C	C		335	330	300								
26																								
27													305	310	r300 C	305	290							
28										C	C	C	C	C	C	300	285	290						
29												310	340	300	295	300	280							
30												340	335	340	340	315								
31																								
No.									1	5	7	11	19	22	25	22	18	6						
Median									245	270	290	305	310	310	295	290	280	270						

h'F2

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

The Radio Research Laboratories, Japan.

Y 9

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IONOSPHERIC DATA

Apr. 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	280	290	260	C	C	C	C	240	240	225	205H	190H	230H	250H	225H	250H	255H	250	245	290	340	285	260	290
2	310	290	250	240	240	255	275	245	240	230	230	245	250	240	230	230H	220H	250	250	235A	235A	300	300	300
3	300	300	250	240	245	240	245	240	235	230	220H	215H	200H	250H	I255AH	I255AH	I240AH	E300A	250	250	240	255	310	355
4	290	295	300	275	245	225	255	240	240	220H	210H	210	205	200	245	245	250	255	255	240	230	285	350	E390S
5	I300C	290	290	250	225	280	250	240	240	205H	195H	200H	250	240	230	215H	210H	250	255	250	235	240	295	295
6	290	260	260	250	255	260	250	240	240	230H	210H	225H	205	200	220	250	250	250	245	230	205	245	310	300
7	305	325	290	250	260	275	240	230	240	I220C	205H	205H	205H	E255B	270	A	260	275	250	235A	290	305	365	E405A
8	290	300	290	245	210	295	260	240	240	230H	210H	210H	270	E290A	A	A	A	235H	250	250	225	280	295	305
9	300	295	285	240	240	250	255	240	240	205H	200H	I270AH	260	220	245	225	240	240H	255	240	240	290	325	300
10	240	225	250	320	320	360	260	230	225	240	245	I260A	210	I215A	250	275H	200H	245H	260	235	205	255	360	320
11	310	325	300	250	245	260	245	245	245	240H	270	250	260	E300B	E300B	250	250	240	240	230	200	275	325	320
12	310	300	290	290	285	280	240	240	230	215H	200H	250H	I205AH	I220A	I240A	235	225	245H	250	230	205	290	325	305
13	300	290	275	245	245	250	230	235	225	225H	205H	200H	I200A	250	255	250	230	250	260	230	215	245	330	310
14	275	300	325	310	310	260	245	240	235H	230	220	210	I235A	I250C	215	210	230	255	255	240	220	330	330	320
15	330	315	300	255	240	250	245	240	250	245	AH	AH	250H	CH	A	240	225H	250H	260	245	230	260	340	345
16	310	310	305	245	220	310	250	240	245	225H	I245AH	240H	220	245	250	250	230	250	255	240	225	335	340	330
17	305	300	280	255	265	275	240	240	E290A	250	225	A	A	A	E300A	A	A	255	250	245	225	305	320	350
18	350	335	250	220	245	255	250	250	240	240	245	205	245	I265A	E295C	225	225	230	245	240	220	305	320	340
19	310	300	255	230	245	270	250	250	250	230H	220H	215H	200H	260H	I250C	I250C	225	230	260	250	260	270	300	295
20	290	305	280	250	255	310	250	230	240	220H	200H	220H	CH	AH	I250AH	200H	205H	255H	255	240A	240	255	285	305
21	310	310	300	285	280	250	225	230	220H	250	220H	210H	E250CH	250H	240	260	I270A	I260A	255	250	260	265	E360A	315
22	305	310	300	300	255	260	240	230	225	245	250H	250	240	A	230	250	I270A	A	250	270	290	280	310	350
23	320	310	290	245	225	215	230	240	270	I265A	I230A	230	255	250	210	210	230	235	250	240	235	255	290	295
24	300	300	280	300	285	255	245	245	245	250H	240H	250	I260C	265	220	240H	235H	240H	250	245	240	255	330	320
25	300	300	290	270	235	280	250	250	240	C	C	C	260H	220	240	200H	250H	275H	260	270	E280S	E300A	I355D	A
26	355	315	290	290	250	290	245	240	240	235H	220H	245H	240H	AH	I235AH	290H	230H	I265A	270	260	255	I260A	290	360
27	300	295	305	300	250	265	250	245	250	275	220H	210H	250	245	I230C	240	I250A	260	250	E280A	I310A	I340A	355	320
28	305	265	240	250	270	300	250	240	250	I250C	C	C	C	C	C	A	A	A	255	240	250	255	290	305
29	305	285	300	255	255	A	240	240	230H	220H	200H	200H	205	250	235	250	230	I270AH	270	250	235	230	240	305
30	315	310	280	250	250	255	235	235	230	230	220H	220	230	245	250	255	225H	225H	250	245	250	260	270	335
31																								
No.	30	30	30	29	29	28	29	30	29	29	27	26	26	21	24	26	27	27	30	29	29	29	29	27
Median	305	300	290	250	250	260	245	240	240	230	220	220	240	245	240	250	230	250	250	240	235	270	320	315

h'F

Sweep 10 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

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

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

K'Es

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

The Radio Research Laboratories, Japan.

Y 11

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IONOSPHERIC DATA

Apr. 1961

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								h2			l	l	l	l	l	l	l4	l3	l2	f2f5	f3f2	f4		
2												h	h				l		C4	f2	f2	f3		f2
3	f	f4	f3	f3					h2l2	h	h	h	h		h2	h2	h2	h2l2	h l4	f4	f2	f2	f	f2
4									l2	l	l	l	l	l	l	h l2	h l2	h2 l3	h3 l	f6		f	f2	f2
5		f												l					h2	f2				
6		f	f3	f2f	f2	f4	l4	l3	l3	l3	l	l	l	l	l	l	l2	h l4	C3	f				
7					f2		l				l	l			h	h2	h	h3	h4	f4f2	f3f2	f2	f3	f3
8					f	f2	l	l2	l	l		h	C	C	l3	l3	l2	l3	l4	f4	f2			
9								h2l	h			C2	C		l	l	l2	l	l2					
10								l	h l	h	h	h	h	h					l4	f2	f2	f f2	f3	f2
11								l	l	h	h	h	h	h	h	h	h		h l	f		f2	f	f2
12	f					f					l	l	l2	l	l3	l	l	h l	l4	f2	f			
13			f					h2			l	l	l		l	l	l	h	h2 l					
14								h2	h2	h	h l	h	l	l		l		h	h		f			
15					f				h2 l	h	h2	l2	l	l	l2	l		l	l	f2	f			
16					f	f	l	l	h l2	h l	h l	h l	l	h		h	h	h	l	f2	f8	f2	f2	f3
17	f2	f2		f2	f4	f		h2	h2	h	h	h2	h	h2	h	h2	h2 l	h l2	l2	f2f4	f	f3	f2	f2
18	f3	f2						l	l2	l	l	l		h		l				f	f	f2		f
19								h	l	l	l	l			l					f3	f2		f	
20	f2		f	f	f	f			h2			h		l2	l	l	l2	l h	h3 l	f2	f3	f2		
21									h l		h					h	h	h2	C2	f6	f2	f3	f3	f3
22	f3	f4	f2	f2	f7	f2	l3	l2	l	h	h	h		h	h	h	h2	h2	h3	f	f2	f3	f3	f3
23								h	h2	h	h	h				h					f		f	
24			f2	f3	f2	f2	h2	h	h	h	h		l	l	l					f		f2	f3	f2
25	f							h	h				C2				h	h3	C2	f	f2	f4	f6	f2f
26	f2f	f8	f3	f2		f2		h2	h	h	h	h		h2	h2	h2		h3	h4	f4	f2	f2f	f3	f3
27	f4		f				h2	h	h2	h2	h			h l		h	h2	h3	C3	f2	f3	f4	f3	f6
28	f	f		f2	f7	f4	l	h2	h2 l2							h2	h2 l	h l2	C2	f2	f	f2	f3	f3
29	f2	f2	f3	f5	f2	f5	l3	l2	l2	l	l	l	l	l		h l	h l	h2	C2	f				f2
30	f	f2	f	f	f				h l2	l	l		l	l	l2	h l	l	l			f2	f3	f2	f2
31																								
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

Y 12

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SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

Outstanding Occurrences

Apr. 1961	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
1	0118.7	1.3	CD/4	360	100	0119.9	
3	0715.3	1.5	CD/4	390	160	0715.5	
5	2057.5	5	CD/4	380	150	2100.2	
6	0013.1	3.5	CD/4	200	80	0013.7	
18	0838.0	1.3	CD/4	490	220	0839.1	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Apr. 1961	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	2+	2 1 2	1 - - 3	2 2 2 3	1 2 2 2	N N N N			
2	2o	3 1 1	(2) - - 1	3 2 2 3	2 1 2 2	N N N N			
3	3-	3 (2) 3	1 - - 3	3 3 3 2	2 1 2 2	N N U U			
4	2+	2 1 1	4 - 1 2	3 3 3 1	2 3 2 1	U U N N			
5	2o	3 1 2	3 - 1 1	2 3 2 1	1 1 1 2	N N N N			
6	1+	2 1 2	1 - 1 1	2 3 1 1	2 2 1 2	N N N N			
7	2o	2 - 1	1 - 1 3	2 2 3 2	1 1 1 2	N N N N			
8	2+	2 (1) 1	3 - - 2	2 2 2 3	1 1 1 2	N N N N			
9	3-	1 1 4	3 - 1 4	3 3 3 4	1 2 3 3	N N N N			
10	2+	(1 2) 1	3 - - 3	3 1 2 (3)	2 1 (2 2)	U U U U			
11	3o	1 4 3	1 - - 4	3 3 3 4	2 1 2 2	U U U U			
12	3o	2 (3) 1	4 - - 4	3 3 3 3	2 (2) 2 1	U U U U			
13	3-	1 (1) 2	1 - - 4	4 3 3 (4)	2 3 3 3	U U N N	1452	---	
14	3+	2 3 4	3 - - (4)	3 3 3 4	1 3 (3 2)	N N N N	---	---	
15	3o	1 - -	4 - - 4	4 3 3 3	1 2 2 1	U U U U	---	21xx	172γ
16	3o	2 - -	4 - 1 3	3 2 3 3	2 (2) 1 1	U U N N			
17	2o	1 1 1	4 - 1 1	3 3 3 2	1 (2) 2 (2)	N N N N			
[18]	3-	1 1 -	2 2 3 4	3 2 3 2	(3) 2 2 2	N N N N			
[19]	2+	1 2 -	3 2 1 3	2 (3) 2 2	1 (2) 2 2	N N N N			
[20]	2o	1 2 -	1 2 2 2	2 2 2 2	1 2 2 2	N N N N			
21	1o	1 1 1	2 1 1 1	1 1 2 1	1 1 1 (2)	N N N N			
22	2-	1 2 1	2 2 2 1	2 1 2 2	2 1 1 2	N N N N			
23	2-	2 1 2	(2) 3 1 1	2 1 1 1	2 1 1 1	N N N N			
24	1+	1 1 1	2 2 1 1	1 1 1 2	2 2 2 2	N N N N			
25	1+	1 C C	2 1 1 2	2 1 1 2	2 1 1 2	N N N N			
26	2o	1 3 3	2 1 1 3	1 1 1 3	2 1 1 3	N N N N			
27	2+	2 2 1	3 3 3 3	3 1 1 3	1 1 1 2	N N N N			
28	2o	2 1 1	3 3 1 1	3 2 1 (3)	3 1 2 1	N N N N			
29	2-	1 1 2	1 2 1 1	(3 3) 1 2	1 1 1 2	N N N N			
30	1+	2 (1) 2	1 2 1 1	1 1 1 3	1 1 1 2	N N N N			

ж = day of Special World Interval
( ) = inaccurate
--- = continuing magnetic storm
[ ] = Regular World Day
C = artificial accident
- = impossible to evaluate

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Apr. 1961	S W F								S E A			Correspondence		
	Drop-out Intensities (db)					Start-time	Duration	Type	Imp.	Start-time	Duration	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN										
6		30				11.32	10	S	2				x		
6		30			60	12.01	18	S	3+				x		

IONOSPHERIC DATA IN JAPAN FOR APRIL 1961
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