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IONOSPHERIC DATA IN JAPAN

FOR MAY 1961

Vol. 13 No. 5

Issued in July 1961

Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES
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CONTENTS

SITES OF THE RADIO WAVE OBSERVATORIES

Ionospheric observation is carried out at the following four observatories in Japan.

	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°03.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-machi, Kitatama-gun, Tokyo-to
Yamagawa	31°12.5′N.	130°37.7′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_0F2 f_0F1 f_0E	The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.
f_0E_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_bE_s	The ordinary wave frequency at which the highest blanketing E_s layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f-min	That frequency below which no echoes are observed.
$(M\,3000)\,F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$(M\,3000)\,F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$	The lowest virtual height of the trace used to give the f_0E_s.
$hpF2$	The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 f_0F2.
$ypF2$	The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 f_0F2).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

A	Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.
B	Measurement influenced by, or impossible because of, absorption in the vicinity of f-min.
C	Measurement influenced by, or impossible because of, any non-ionospheric reason.
D	Measurement influenced by, or impossible because of, the upper limit of the nomal frequency range. Used in a qualifying sense, see below.
E	Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.
F	Measurement influenced by, or impossible because of, the presence of spread echoes.
G	Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.
H	Measurement influenced by, or impossible because of, the presence of a stratification.
L	Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.
M	Measurement questionable because the ordinary and extraordinary components are not distinguishable.
N	Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.
O	Measurement refers to the ordinary component.
R	Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.
S	Measurement influenced by, or impossible because of, interference or atmospherics.
V	Forked trace which may influence the measurement.
W	Measurement influenced or impossible because the echo lies outside the height range recorded.
X	Measurement refers to the extraordinary component.
Y	Intermittent trace.
Z	Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D	*greater than......*
E	*less than......*
I	Missing value has been replaced by an interpolated value.
J	Ordinary component characteristic deduced from the extraordinary component.
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U	Uncertain or doubtful numerical value.
Z	Measurement deduced from the third magnetoionic component.

c. Description of Standard Types of E_s

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

l	At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.
c	An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.
h	An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.
q	An E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
r	An E_s trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thich layer included in the E layer tables: f_0E, $h'E$) by the lack of group retardation in the F traces at corresponding frequencies.
a	An E_s pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.
s	A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l*, *h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, *q*, at frequencies near the E region critical frequency.
f	An E_s trace which shows no appreciable increase of height with

frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual height: *h* or *l*.

n	An *E* trace which cannot be classified into one of the standard types. This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.

d. Multiple Reflections from E_s

When the ionogram shows the presence of multiple reflections from E_s, the number of traces seen should be recorded after the letter indicating the type.

B. SOLAR RADIO EMISSION

Solar radio emission is received on 200 Mc at Hiraiso Radio Wave Observatory using a 6×4 dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

a. Daily Data

Steady flux	The mean value of recorded base level. Outstanding occurrences are to be omitted except the phenomena with duration of hours or more.
Variability	Variability is expressed in four grades as follows: 0 = no burst 1 = a few bursts 2 = many bursts 3 = exceptionally many bursts Number of bursts is determined relatively in comparison with the base level. If the number of bursts be fixed, the variability is greater, when bursts are widely distributed, than in the case of being concentrated in a short period.

b. Outstanding occurrences

Starting time	When the start is not obvious, 20% rise time of smoothed flux is adopted and *x* is suffixed. (e.g. 0234*x*)
Maximum time	When the instantaneous maximum can not be taken, the smoothed maximum is used and *x* is suffixed. (e.g. 0539*x*)
Time of end	When the phenomena have ended obscurely the time of 20% of maximum smoothed flux is written.
Type	Outstanding emissions are classified as follows: On another point of view, the classification in the URSI Interchange code is to be added.

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

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

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

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

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

N = normal
U = unstable
W = disturbed

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

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

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

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

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

Circuits and Drop-out intensity

WS……WWV 20 Mc, 15 Mc and 10 Mc (Washington)
SF……WNA-27: 7.6550 Mc, WND-20: 10.4925 Mc, WNC-93: 13.7525 Mc, WMJ-30A2: 20.8173 Mc (San Francisco)
HA……WWVH 15 Mc and 10 Mc (Hawaii)
TO……JJY 15 Mc and 10 Mc (Tokyo)
MN……DZM-28: 14.5850 Mc (Manila)
LN……GIJ-34: 14.6702 Mc (London)

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

Start-times and Durations

Types

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

Importances

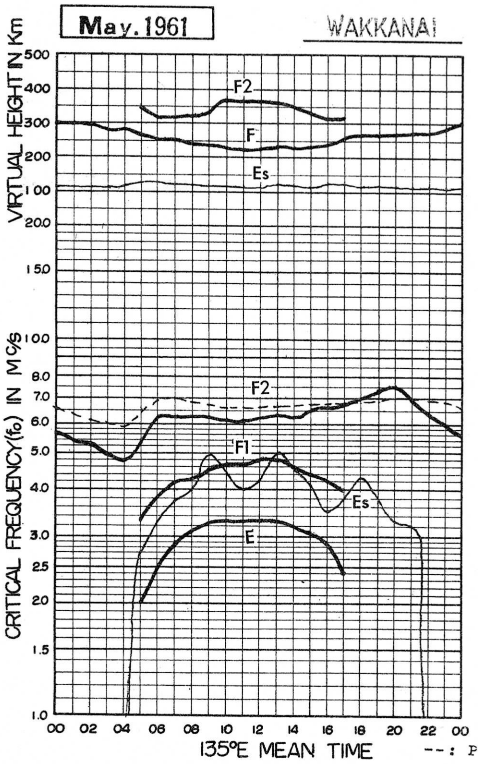
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

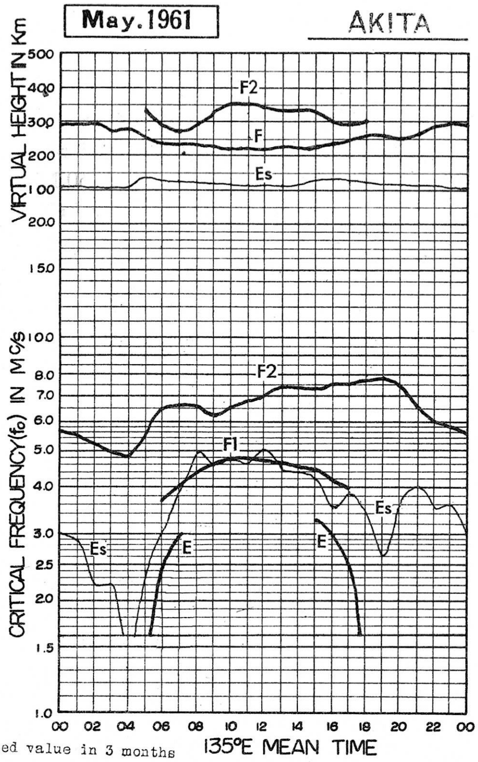
1−	1	1+
2−	2	2+
3−	3	3+

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

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

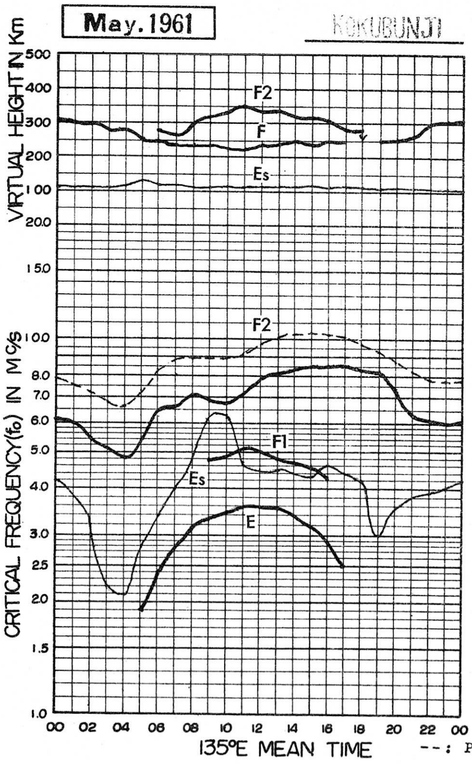
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

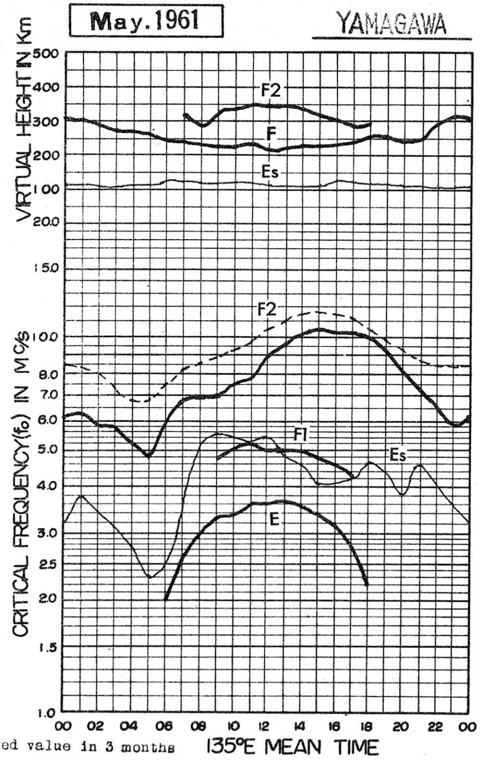




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





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

IONOSPHERIC DATA

May. 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	6.3	6.1	5.5	5.6	5.3	6.1	7.5	8.1^{H}	8.7	7.3	7.4^{H}	8.3^{H}	8.8	8.5^{H}	8.2^{H}	8.8	9.3^{H}	8.3	7.7	7.6	7.8	7.3	7.0	6.8
2	6.7	6.3	5.3	5.0	4.8	5.2	7.1^{H}	6.8^{H}	7.0	6.8	7.2	7.4	7.3	8.4	8.7	8.2^{H}	7.1	6.8	6.4	7.0	7.5	$^{U}7.6^{S}$	6.4	6.0
3	5.8	5.2	5.3	5.0	5.2	6.5	7.6	7.7	8.1	7.7	7.3^{V}	8.0	8.7	8.1	7.8	7.9^{H}	7.0^{H}	6.9	7.3	8.1	$^{U}8.3^{S}$	7.6	6.0	5.9
4	5.8	5.8	5.5	5.4	5.0	5.3	6.4^{H}	6.9^{H}	7.1	7.3	6.8	7.3	7.3	7.9	8.2	$^{I}8.0^{B}$	7.5^{H}	6.8	6.6	7.4	7.3	7.2	6.4	6.1
5	5.9	5.8	5.6	5.4	5.3	6.0	7.0	6.8	6.4	6.3	7.1	6.5^{H}	7.7	7.6	7.3	6.4	6.8	7.2^{H}	7.5	$^{I}7.7^{A}$	7.6	$^{U}7.1^{S}$	5.6	5.0
6	5.0	4.7	4.3	4.0	3.9	4.2	5.1	W	A	A	A	5.0	5.0	$^{I}5.2^{A}$	5.3	5.3	5.3	5.8	6.0	6.0	6.0	5.3	5.4	5.1
7	4.7	4.7^{F}	5.1^{F}	4.3	3.6	4.0^{H}	5.0	5.0	$^{I}4.8^{A}$	5.3	5.2	5.3	$^{I}5.2^{A}$	5.8	6.2	6.0	5.5	5.5^{H}	6.2	7.6	6.4	5.4	5.3	5.0
8	5.0	4.8	4.9	4.8	4.3	5.4	5.6	6.0	6.0	5.7	6.0	6.0	6.0	6.0	5.9	6.0	6.3	6.5^{H}	6.8	6.8	6.1	5.8	5.4	5.4
9	F	F	F	4.7	4.3	5.1	5.7	5.9	6.0	5.6	6.0	6.0	6.3	7.2	7.5	7.9	7.0^{H}	7.5^{H}	7.6	7.6	7.0	6.6	5.9	5.4
10	5.2	4.9	4.8	4.8^{F}	4.7	4.8	5.0	5.4	5.6	$^{I}5.6^{A}$	5.3	5.2	5.3	$^{I}5.7^{A}$	6.0	6.0	6.0	5.9	5.8	6.4	7.0	7.0	6.0	4.7
11	4.8	4.6	4.5	4.6	4.6	5.2	6.5^{H}	6.1^{H}	6.0	$^{J}6.1^{A}$	$^{I}6.6^{A}$	7.0	8.3	8.8	8.1	7.2	7.2	6.6^{H}	6.8	7.6	7.5	6.6	5.8	5.3
12	5.1	5.0	4.4	4.5	4.0	4.0	4.9	$^{J}4.5^{A}$	$^{I}4.8$	4.8	$^{I}4.9^{R}$	$^{I}5.0^{R}$	5.0	5.0	5.5	5.5	$^{I}5.6^{A}$	5.7	5.5	5.8	6.1	6.0	5.3	4.6
13	4.5	4.4	4.3	4.0	3.8	5.3	5.2	5.0	5.1	5.3	6.3	6.1	6.3	7.7	7.6	7.0	6.4	6.0^{H}	5.5	5.8	6.5	6.5	5.4	5.3
14	5.3	4.9	5.0	4.6	4.5	5.3	7.6^{H}	7.1	6.3	6.3	5.6^{H}	6.0	6.5	6.5	6.2	6.5	6.8	6.8	6.6	7.3	8.0	7.5	6.6	5.6
15	5.0	4.6	4.7	4.6	4.3	5.0	6.1	C	C	A	5.8	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C	C
17	C	C	C	C	C	C	C	C	C	A	A	5.3	6.4	5.8	5.9	A	A	A	A	A	$^{U}7.6^{S}$	$^{U}6.8^{S}$	$^{U}6.2^{S}$	5.6
18	5.4^{F}	5.1^{F}	5.3^{F}	5.0^{F}	4.8^{F}	5.3	6.0	6.0	6.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	6.9	7.0	7.2	7.2	7.2	7.1	7.4	8.0	7.1	$^{I}7.0^{F}$	7.0
20	6.6	5.8	5.7	5.3	5.6	6.1	7.0	6.8	6.3	6.1	5.4	5.8	6.3	6.3	5.8	6.1	6.7	7.0	7.5^{H}	6.9	6.8	6.5	6.6	6.4
21	6.5	6.1	5.8	5.5	5.3	6.3^{H}	6.1^{H}	6.3	6.1	$^{U}6.4^{R}$	$^{I}6.8^{A}$	$^{U}7.3^{R}$	7.9	7.3	7.6	7.5	7.4	7.1^{H}	7.1	7.6	7.6	8.0	$^{I}7.5^{S}$	$^{U}7.1^{S}$
22	6.4	6.2	6.0	6.0	6.1	6.0	7.5^{H}	6.9	$^{I}6.8^{R}$	$^{I}7.1^{R}$	7.1	7.2^{H}	7.8	7.6	7.9	8.1	8.0	$^{U}7.3^{S}$	7.8	$^{I}7.8^{S}$	7.8	7.2	$^{I}7.0^{S}$	6.8
23	6.2	6.0	6.0	5.9	6.1	6.1	6.6	5.5	6.0	5.3	5.8	6.3	6.3	6.5	7.3	6.6	7.8	7.8	7.0	7.0	7.2	6.5	6.3	6.3
24	6.1	5.8	5.7	5.1	5.0	5.4	6.1	6.0	5.8	A	A	A	A	A	5.3	5.5	5.6	$^{I}5.8^{A}$	5.8	$^{I}5.7^{A}$	$^{I}6.4^{A}$	$^{U}6.8^{S}$	F	F
25	F	F	5.0^{F}	$^{I}5.0^{F}$	$^{I}5.4^{F}$	$^{I}6.3^{A}$	7.7	7.3^{F}	6.3	6.3	5.8	5.9	5.3	6.1	6.3	6.6	6.4	7.3	6.8	$^{I}7.6^{C}$	7.6	7.0	6.8	$^{I}6.4^{S}$
26	5.7	6.2	6.0	C	C	C	C	C	C	C	A	A	5.3	5.3	$^{I}5.5^{A}$	5.8	5.7	$^{I}5.8^{A}$	$^{I}6.1^{A}$	6.3	F	F	F	F
27	5.3	5.1	5.0	5.0	$^{U}4.5^{S}$	5.3	6.2	6.4	6.5	6.7	$^{I}6.8^{A}$	7.0	7.0	7.0	6.9	6.7	6.5	$^{I}6.4^{A}$	7.0	7.5	$^{I}8.0^{A}$	7.7	6.9	6.3
28	F	F	F	F	F	6.6^{F}	$^{I}6.4^{A}$	6.1	C	C	C	C	C	C	C	C	C	C	8.2	$^{I}8.0^{A}$	$^{I}7.6^{A}$	$^{U}7.4^{S}$	$^{I}7.0^{FS}$	$^{I}6.5^{F}$
29	6.0	5.6^{F}	5.3^{F}	$^{I}5.8^{F}$	$^{I}6.2^{F}$	7.3	6.8	6.8	A	A	A	A	5.6	5.9	5.6	6.3	$^{I}6.3^{A}$	6.5	7.3	$^{U}8.0^{S}$	7.6	7.0	6.1	6.0
30	5.6	5.6	5.5	5.3^{F}	5.6^{F}	5.5^{F}	6.3	$^{I}6.6^{A}$	6.7	$^{I}7.0^{A}$	7.1	6.6	$^{I}6.3^{A}$	6.0	5.7	6.2	6.4	6.6	7.4^{H}	8.1	$^{I}7.5^{S}$	6.8	$^{U}7.0^{SF}$	5.7^{F}
31	F	F	F	F	4.0	4.7	5.3	5.3^{F}	5.6	5.1	5.8	6.0	5.6	5.8	$^{I}5.4^{A}$	5.8	6.3	6.8	$^{I}7.4^{A}$	$^{I}7.9^{S}$	9.1	8.4	$^{I}7.2^{S}$	6.6
No.	24	24	25	25	26	27	27	25	23	21	22	23	25	26	27	26	26	26	27	27	27	27	26	26
Median	5.6	5.4	5.3	5.0	4.8	5.3	6.3	6.3	6.3	6.3	6.2	6.1	6.3	6.4	6.3	6.6	6.6	6.8	7.0	7.4	7.5	7.0	6.4	6.0
U.Q	6.2	5.9	5.6	5.4	5.3	6.1	7.0	6.8	6.7	6.9	7.1	7.2	7.5	7.6	7.6	7.5	7.2	7.2	7.4	7.7	7.8	7.4	7.0	6.4
L.Q	5.0	4.8	4.8	4.6	4.3	5.1	5.6	5.7	5.8	5.4	5.8	5.8	5.4	5.8	5.7	6.0	6.3	6.0	6.2	6.9	6.8	6.5	5.7	5.3
Q.R	1.2	1.1	0.8	0.8	1.0	1.0	1.4	1.1	0.9	1.5	1.3	1.4	2.1	1.8	1.9	1.5	0.9	1.2	1.2	0.8	1.0	0.9	1.3	1.1

foF2

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

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

May. 1961

foF1

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									4.5	4.6			^{U}5.0^{L}			4.5								
2									4.4	4.6	5.0	4.8	5.0^{H}	5.0	4.8									
3									4.3	4.7	4.7	4.8	4.8	4.8	4.5									
4									4.3	4.5	4.8	4.8	5.0	4.8	4.8	B								
5									4.3	4.5	4.8	4.7	4.8	4.8	4.4	^{I}4.6A	4.2							
6						3.0	3.5	3.9	A	A	A	4.3	^{I}4.3A	^{I}4.3A	4.3	4.3	4.1	3.8						
7							3.7	4.0	A	A	A	^{I}4.5A	^{I}4.6A	^{I}4.6A	^{I}4.4A	^{I}4.2A	4.1							
8								4.1	4.3	4.6	4.7	4.7	4.5	4.5	4.6	4.4	4.1							
9								4.1	4.3	4.6	4.6	4.5	4.8	4.8	4.4	44								
10								4.1	4.3	^{I}4.4A	4.7	4.6	^{I}4.6A	^{I}4.5A	^{I}4.4A	4.3	4.1							
11									A	A	A	4.7	^{I}4.7A	^{I}4.6A	4.5	4.3	A							
12						3.2	3.6	A	C	A	^{U}4.3^{R}	^{U}4.4^{R}	4.4	^{I}4.4A	A	A	A	A						
13						3.1	3.9	4.2	4.3	^{I}4.5A	4.5	4.6	4.7	^{I}4.5A	4.5	^{I}4.3A	4.1							
14								4.2	4.3	^{I}4.5A		4.8	4.7	4.8	4.5	4.5	4.1	A						
15						3.5	3.8	C	C	A	4.7	C	C	C	C	C	C	C						
16						C	C	C	C	C	C	C	C	C	C	C	C	C						
17						C	C	C	C	A	A	A	4.6	4.7	A	A	A	A						
18							A	A	A	C	C	C	C	C	C	C	C	C						
19						C	C	C	C	C	C	C	C	A	4.9	4.5	4.3	4.0						
20								4.3	^{I}4.5A	^{I}4.8A	4.8	4.8	4.8	4.8	4.8	4.5	4.3	4.0						
21								4.2	5.0	A	A	A	5.0	4.8	4.9	4.8	4.4							
22								4.3	A	A	A		5.0	5.0	4.9	4.6	^{I}4.4A							
23						3.4	3.9	4.5	4.7	^{I}4.6B	^{I}4.8B	4.9	5.0	^{I}5.0A	^{I}4.8A	^{I}4.6A	4.3	4.1						
24							A	A	A	A	A	A	A	A	4.6	4.5	4.2	4.0A						
25								A	A	^{I}4.8^{A}	4.8	4.7	^{I}4.8	4.8	4.6	4.3	4.3	^{I}4.0A						
26						C	C	C	C	C	A	A	^{I}4.6A	A	A	A	A	A						
27							A	4.3	4.4	^{I}4.6A	^{I}4.8A	4.9	4.9	^{I}4.8A	^{I}4.7A	^{I}4.5^{A}	4.3	A						
28							A	4.1	C	C	C	C	C	C	C	C	C	C						
29									A	A	A	A	^{I}4.7A	^{I}4.6A	4.6	A	A	A						
30								A	4.4	^{I}4.5A	A	A	A	A	4.5	4.3	4.2	3.9						
31						3.4	3.9	A	A	A	4.5	4.6	^{I}4.6A	^{I}4.6A	^{I}4.5^{A}	^{I}4.3^{A}	4.2	A						
No.						6	7	13	15	15	15	18	24	22	23	20	17	7						
Median						3.3	3.8	4.2	4.3	^{U}4.6	4.7	4.7	4.8	4.8	4.6	4.4	4.2	4.0						

foF1

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

The Radio Research Laboratories, Japan.

W 2

IONOSPHERIC DATA

May. 1961 **foE** 135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 2 3.6' N
Long. 1 4 1° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						2.00	2.50	2.80	3.10	3.25	3.30	3.30	3.10	3.50	3.30	3.00	2.70	2.35	S					
2						1.80	2.50	2.70	3.00	3.10	3.25	3.30	3.55	3.50	$^{I}3.35^{R}$	$^{I}3.15^{A}$	2.90	$^{I}2.30^{A}$	S					
3						S	S	2.90	3.10	3.25	3.40	3.60	3.50	3.40	3.20	3.05	2.90	2.50	S					
4						$^{I}1.90^{S}$	2.45	2.90	3.00	3.25	3.25	3.40	3.40	3.40	3.20	$^{I}3.10^{B}$	2.85	2.35	S					
5						2.00	2.35	2.90	3.20	3.30	3.45	3.50	3.50	3.40	3.20	3.00	2.85	2.45	S					
6						1.70	2.30	2.80	3.05	3.25	3.30	3.40	3.30	$^{I}3.25^{B}$	3.20	3.05	2.90	2.40	S					
7						1.95	2.45	2.90	3.10	3.20	3.30	3.35	3.25	2.95	$^{I}2.80^{A}$	$^{I}2.90^{A}$	3.00	2.30	S					
8						1.85	2.35	2.70	2.95	3.00	3.00	3.00	3.30	3.05	3.15	$^{I}3.00^{B}$	2.90	2.30	S					
9						A	2.35	2.90	3.10	3.25	3.35	3.30	3.30	3.15	3.10	3.00	2.80	2.35	S					
10						2.00	2.50	2.90	3.10	3.20	3.30	3.30	3.25	3.20	3.15	3.05	2.90	2.40	S					
11						2.05	2.45	2.90	3.00	3.10	3.20	3.20	3.25	3.15	2.85	3.00	2.50	A	A					
12						2.00	2.50	2.75	$^{I}3.05^{C}$	3.10	3.25	3.25	3.10	3.25	3.25	3.10	2.90	2.30	S					
13					E	S	2.40	2.85	3.05	3.20	3.20	3.30	3.25	3.20	3.05	$^{I}3.09^{S}$	2.80	2.30	S					
14						A	2.50	$^{I}2.75^{R}$	3.00	3.20	3.25	3.30	3.30	$^{I}3.35^{S}$	3.40	3.20	2.80	2.40	S					
15						2.00	2.35	C	C	B	3.20	C	C	C	C	C	C	C	C					
16						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
17						C	C	C	C	B	B	B	3.25	3.20	3.25	3.10	2.85	2.35	S					
18					1.30	B	B	B	B	C	C	C	C	C	C	C	C	C	C					
19						C	C	C	C	C	C	C	C	3.20	3.10	3.00	$^{I}2.90^{B}$	2.50	S					
20					B	2.00	2.60	3.00	3.10	3.20	3.30	3.50	3.30	3.20	3.30	$^{I}3.05$	$^{I}3.00^{A}$	2.80	2.20					
21						S	2.50	3.00	3.20	3.30	3.45	3.20	$^{I}3.15^{A}$	$^{I}3.15^{B}$	3.30	A	A	A	A					
22					S	B	$^{I}2.60^{B}$	3.00	3.15	$^{I}3.30^{B}$	$^{I}3.40^{B}$	$^{I}3.55^{B}$	3.55	$^{I}3.40^{B}$	$^{I}3.30^{B}$	3.25	3.05	2.50	1.95					
23					S	B	B	B	3.15	$^{I}3.35^{B}$	$^{I}3.50^{B}$	3.50	3.70	3.60	3.35	3.15	$^{I}2.90^{S}$	2.60	S					
24					S	2.10	2.60	3.00	3.20	3.25	3.25	3.35	3.50	3.30	3.30	3.15	2.95	2.35	2.00					
25					B	2.15	2.60	3.00	3.20	3.25	3.25	3.50	3.50	3.50	3.30	3.15	2.90	2.60	S					
26						C	C	C	C	C	3.20	3.20	3.00	3.35	3.30	3.15	2.95	2.35	S					
27						2.10	2.60	2.95	3.10	3.20	3.05	3.15	3.20	3.00	2.90	3.10	3.10	2.35	S					
28						$^{I}1.90^{S}$	2.30	2.95	C	C	C	C	C	C	C	C	C	A	S					
29					1.30	2.15	2.70	2.90	3.15	3.25	3.30	3.30	3.30	3.30	3.10	3.15	3.00	2.60	S					
30						2.00	2.60	2.95	3.10	3.30	3.30	3.20	3.00	A	A	A	3.00	2.50	S					
31						2.10	2.60	2.95	3.10	3.10	3.30	3.50	$^{I}3.25^{A}$	3.10	3.05	3.10	2.90	2.55	S					
No.					2	19	24	24	24	24	26	25	26	26	26	25	26	25	3					
Median					1.30	2.00	2.50	2.90	3.10	3.25	3.30	3.30	3.30	3.25	3.20	3.10	2.90	2.40	2.00					

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

The Radio Research Laboratories, Japan.

W 3

IONOSPHERIC DATA

May.1961 **foEs** 135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	G	G	G	G	3.7	G	G	3.5	G	G	G	G	G	S	E	E	E	E	E
2	E	E	E	E	E	G	G	G	G	G	G	G	G	4.2	G	J3.2	G	2.4	S	E	E	E	E	E
3	E	E	E	E	E	S	S	3.4	3.9	4.0	G	G	4.2	G	G	G	3.4	G	S	E	E	E	E	E
4	E	J2.3	2.1	1.7	1.8	S	3.0	3.2	G	G	G	G	G	G	4.4	B	3.2	4.3	6.0	E	E	2.7	E	J3.2
5	J3.0	J2.3	E	E	E	2.5	3.6	4.1	4.0	4.3	4.1	G	4.5	4.0	5.0	J5.2	G	3.8	J5.1	J7.0	J5.2	J5.3	E	E
6	E	E	E	E	E	J5.0	G	G	4.1	5.0	J4.8	G	4.3	J5.3	J5.0	G	3.5	3.3	4.3	2.8	E	J2.8	E	E
7	E	E	E	E	2.0	2.6	3.0	4.0	J5.2	4.3	J5.0	4.5	J6.3	J5.1	J5.1	J5.3	3.4	3.7	3.4	J4.2	J3.3	J3.6	J2.3	E
8	E	E	E	E	E	G	G	G	G	3.4	3.5	G	G	G	G	B	G	2.7	S	E	E	E	E	J3.3
9	E	J2.3	J2.8	J3.3	2.0	2.2	G	G	3.5	4.0	G	G	5.0	3.6	4.3	G	G	G	S	E	E	E	E	E
10	E	2.0	J2.3	J4.5	E	2.7	3.6	G	4.6	J6.4	G	4.6	5.3	J6.5	6.4	G	G	3.8	J5.4	J4.0	J3.3	J2.3	J2.5	E
11	E	E	E	E	E	G	3.1	3.8	4.8	J6.1	J8.2	J5.0	J5.3	5.0	J5.2	4.2	J4.5	J3.0	2.5	J3.0	2.8	E	J3.4	J2.3
12	J2.1	2.7	E	E	E	2.5	3.1	4.0	C	4.0	4.0	4.3	3.8	4.9	4.8	5.3	J7.4	7.2	J3.6	J3.5	J4.3	J3.6	2.5	2.7
13	E	E	1.8	E	G	S	3.3	4.0	G	4.3	4.3	4.0	4.2	4.5	4.0	J5.6	3.5	3.0	3.5	J3.3	J4.2	J4.3	J2.2	E
14	E	E	J2.5	J5.0	J2.3	2.2	G	G	3.8	5.0	3.8	5.0	4.0	S	G	G	G	J4.3	3.0	J2.9	J5.0	J3.3	E	E
15	E	E	E	E	E	3.0	J4.3	C	C	J6.8	4.0	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	J7.8	5.7M	5.0	3.8	G	5.5	J7.7	J7.1	J6.1	J6.0	J6.3	J7.2	J5.3	J6.3	6.1
18	J2.3	E	E	E	G	2.7	4.2	5.0	6.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	J6.8	4.2	G	B	G	G	J3.5	2.3	J2.5	J4.3	2.6
20	E	E	E	E	B	3.3	G	3.8	J6.5	J5.3	4.0	3.9	3.9	4.0	4.5	G	J5.2	G	3.0	2.8	J5.0	J4.3	E	E
21	J4.3	1.8	E	E	E	2.9	3.8	3.8	G	5.0	J6.0	J5.6	3.6	B	G	J6.3	J3.3	J4.3	J4.9	J5.0	2.9	J3.3	J5.3	7.3
22	J5.3	J3.0	E	E	S	3.0	3.3	3.6	J6.3	5.5	5.4	B	G	B	5.1	G	4.4	J5.8	J5.0	J5.0	J5.3	J3.2	J4.9	J4.3
23	J4.2	J3.5	J3.3	E	S	B	B	B	4.0	B	B	G	G	5.0	5.1	J5.2	4.3	3.6	4.3	2.8	E	E	J2.8	E
24	J3.3	J3.0	S	J3.3	S	J4.3	J4.3	4.5	4.9	J7.5	J13.3	J17.3	J7.8	J8.3	G	4.1	3.8	J6.8	2.9	J5.6	J9.0	J7.3	J7.3	J6.3
25	J5.3	J4.5	J3.5	J4.3	J2.8	D7.3S	J7.3	J6.4	J6.0	J7.3	4.6	G	5.2	4.2	4.3	G	G	4.0	J4.3	D4.3C	3.0	J3.3	E	E
26	J2.3	J2.3	2.4	C	C	C	C	C	C	C	J6.5	8.0	6.3	J7.7	J7.3	4.8	5.6	J12.0	J11.9	J4.3	J4.9	J3.3	J2.8	J5.7
27	J2.3	J2.8	E	E	E	3.0	4.9	G	3.9	J6.2	J11.5	J5.3	4.8	J6.3	J7.5	4.9	5.0	11.5Y	J11.3	J7.3	J11.0Y	J7.8	E	E
28	J2.5	J4.2	E	S	E	J4.6	J6.3	3.6	C	C	C	C	C	C	C	C	C	C	J12.0	J11.8	J10.3Y	J6.4	J2.3	J4.8
29	J2.5	E	S	E	G	4.2	4.3	J5.0	J11.3	J12.0	J11.0	J7.3	J5.2	J5.5	G	5.0	J6.3	J6.5	J4.3	J4.8	J3.3	E	E	E
30	E	E	E	S	S	3.0	J4.8	J8.0	J6.3	J8.1	J6.3	J8.2	J12.0	J5.3	J5.7	3.5	3.5	3.3	3.6	J3.9	J5.5	J5.0	J3.3	J3.6
31	J4.0	J3.3	J4.6	J3.3	J3.3	2.6	3.5	J5.2	J5.3	J4.4	G	G	J7.1	J5.3	J6.0	J10.3	J6.3	J6.3	J7.4	J4.3	J4.3	E	E	E
No.	28	28	26	25	22	23	25	25	24	25	26	25	26	24	27	25	26	27	23	28	28	28	28	28
Median	E	E	E	E	E	2.7	3.3	3.8	4.0	5.0	4.4	4.0	4.2	5.0	4.5	4.1	3.5	3.8	4.3	3.7	3.3	3.2	E	E
U.Q	2.5	2.8	2.3	2.5	1.8	3.3	4.3	G	5.6	6.6	6.0	5.2	5.3	5.3	5.2	5.2	5.0	6.1	6.0	4.9	5.1	4.3	3.0	3.4
L.Q	E	E	E	E	E	2.2	G	G	G	4.0	G	G	3.5	4.0	G	G	G	2.7	3.4	2.8	E	E	E	E
Q.R						1.1				2.6			1.8	1.3				3.4	2.6	2.1				

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

The Radio Research Laboratories, Japan.

W 4

IONOSPHERIC DATA

Wakkanai

Lat. 45° 2 3.6' N
Long. 141° 41.1' E

May. 1961

fbEs

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										G			G				S							
2														G		3.1		2.4	S					
3						S	S	G	G	G			G				G		S					
4		E	E	E	E	S	G	G							G	B	G	4.1	5.9			E		E
5	E	E				G	G	4.0	4.0	4.3	4.1		G	G	G	5.0		3.5	5.0	A	5.0	3.0		
6						G			A	A	A		4.3	A	G		G	G	2.8	2.8		E		
7					E	G	G	G	A	4.3	4.7	4.5	A	4.5	4.3	4.5	G	G	3.1	4.0	3.0	3.0	E	
8										G	G					B		G.	S	E				E
9		E	E	E	E	2.2			G	G			G	G	G				S					
10		E	E	E		G	G		4.2	A		G	4.8	A	4.5			G	5.0	4.0	E	E	E	
11							G	G	4.8	A	A	4.3	5.0	4.6	4.1	4.1	4.3	3.0	2.4	2.8	2.4		2.4	E
12	E	E				G	G	A	C	$^{E}4.0^{A}$	G	G	G	4.8	4.7	5.1	A	5.0	3.2	3.0	4.0	E	E	E
13			E			S	G	4.0		$^{E}4.3^{A}$	4.2	G	G	4.5	G	5.3	G	G	G	3.2	3.8	4.0	E	
14			E	E	E	2.1			G	4.5	G	G	G	S				3.5	3.0	2.8	3.4	E		
15						G	G	C	C	A	G	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	A	A	4.7	G		5.1	A	A	A	A	A	3.6	4.3	4.9	5.0
18	E					G	4.0	$^{E}5.0^{A}$	4.5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	6.0	4.0		B			3.2	E	E	3.1	E
20					B	G		G	4.6	5.0	G	G	G	G	G		3.2		G	E	4.3	4.0		
21	E	E				G	G	G		4.8	A	5.6	$^{E}3.6^{R}$	B		4.2	3.1	3.1	4.0	4.6	E	2.8	E	4.2
22	3.1	E			S	G	G	G	A	A	5.0	B		B	4.8		4.3	5.8	4.2	4.0	E	E	4.5	E
23	E	E	E		S	B	B	B	G	B	B			4.9	5.0	4.8	4.1	G	3.5	2.7			E	
24	E	E	S	3.4	S	4.0	4.1	4.2	4.7	A	A	A	A	A		G	G	A	G	A	A	E	E	E
25	4.2	E	E	E	2.2	A	6.4	5.0	5.8	4.7	4.0		5.0	G	G			$^{E}4.0^{A}$	4.0	4.0	E	E		
26	E	E	E	C	C	C	C	C	C	C	A	A	5.0	5.0	A	5.0	4.4	A	A	3.2	3.0	E	E	4.0
27	E	2.6				G	4.1		G	5.2	A	4.3	4.5	6.0	4.9	4.3	4.1	A	4.5	3.9	A	E		
28	E	E		S		4.6	A	G	C	C	C	C	C	C	C	C	C	C	4.0	A	A	E	E	4.2
29	E		S			G	G	4.2	A	A	A	A	5.0	5.0		4.8	A	5.9	G	3.0	G			
30				S	S	G	4.2	A	4.0	A	4.5	4.8	A	4.6	3.9	3.2	G	G	3.3	$^{E}3.9^{A}$	A	4.0	2.5	$^{E}3.6^{A}$
31	E	E	E	E	E	G	G	4.4	4.8	4.0			5.0	4.5	A	4.8	G	4.5	A	4.0	4.2			
No.	13	14	9	7	6	19	18	15	18	23	19	14	21	19	19	15	18	21	22	23	20	19	14	11
Median	E	E	E	E	E	G	G	G	4.6	4.8	4.7	4.4	4.3	4.6	4.1	4.8	3.2	3.5	3.8	$^{E}3.9$	3.5	E	E	E

fbEs

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

The Radio Research Laboratories, Japan.

W 5

IONOSPHERIC DATA

May.1961

f-min

135° E Mean Time (G.M.T.+9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E2.00S	E	E	E	E	1.60	1.90	2.00	2.00	2.30	3.00	2.90	2.40	2.90	2.50	2.30	2.00	2.00	E2.30S	E1.90S	E2.10S	E2.00S	E2.00S	E2.00S
2	E2.00S	E2.00S	E2.00S	E2.00S	E	E	2.00	2.00	2.30	2.30	2.20	2.60	2.40	2.50	2.40	2.20	2.10	1.90	E2.20S	E2.00S	E2.20S	E2.00S	E2.00S	E2.00S
3	E2.00S	E2.00S	E2.00S	E2.00S	E	E2.00S	E2.70S	2.30	2.20	3.00	2.85	2.20	3.00	2.20	2.50	2.10	2.30	2.00	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.10S
4	E2.00S	E	E	E	E	E2.00S	2.00	2.00	2.00	2.30	2.00	2.10	2.00	2.40	2.00	I2.10B	2.00	2.00	E2.20S	E2.00S	E2.20S	E1.90S	E2.00S	E2.00S
5	E2.20S	E	E2.00S	E	E1.10S	1.70	2.00	2.00	3.00	2.30	2.50	3.00	2.30	2.25	2.00	2.00	2.00	1.80	E2.10S	E2.00S	E1.80S	E1.90S	E2.00S	E2.00S
6	E2.00S	E1.60S	E1.90S	E2.00S	E	1.20	2.00	2.00	2.30	2.30	3.00	2.20	2.30	3.20	2.70	2.10	2.40	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
7	E2.00S	E	E	E1.50S	E	1.20	2.00	2.00	2.00	3.00	3.00	3.00	3.00	2.50	2.50	2.50	2.30	2.00	E2.50S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
8	E1.90S	E2.00S	E	E	E1.70S	1.50	2.00	2.00	2.00	2.20	2.25	2.35	2.30	2.40	2.20	3.00	2.10	2.00	E2.30S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S
9	E2.00S	E	E	E	E	1.50	1.90	2.00	2.10	2.10	2.30	2.30	2.50	2.30	2.40	2.00	2.00	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E1.80S
10	E2.00S	E	E	E	E2.00S	1.70	1.90	2.10	2.85	2.40	3.00	2.20	2.40	3.00	2.50	2.00	2.10	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
11	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S	2.00	2.00	2.00	2.30	2.00	2.50	2.20	2.00	3.00	2.40	2.30	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
12	E2.00S	E	E2.00S	E2.00S	E2.30S	1.40	1.90	2.40	I2.46C	2.50	3.00	3.00	2.50	2.80	2.30	2.15	2.00	2.00	E1.80S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S
13	E2.00S	E2.00S	E	E	E	E2.00S	2.00	2.00	2.30	2.20	2.60	2.85	2.00	2.80	2.50	E2.90S	2.15	2.00	E2.00S	E2.00S	E1.90S	E2.00S	E2.10S	E2.00S
14	E1.90S	E2.00S	E	E2.00S	E	1.30	2.00	2.00	2.00	2.40	2.30	2.70	2.90	E3.50S	2.50	2.20	2.00	1.90	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
15	E1.90S	E2.10S	E2.00S	E2.00S	E2.00S	1.30	2.00	C	C	3.20	3.00	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	3.10	3.20	3.30	2.50	2.60	2.50	2.30	2.00	2.00	E2.00S	E1.80S	E1.90S	E1.60S	E1.80S	E1.90S
18	E2.00S	E1.60S	E	E	E	2.20	2.60	3.00	3.15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	3.00	2.40	2.10	3.10	2.00	E2.10S	E2.00S	E2.00S	E2.00S	E1.70S	E2.00S
20	E2.00S	E2.00S	E	E2.00S	2.00	1.90	1.90	2.15	2.10	2.30	3.00	2.20	2.40	2.90	2.50	2.40	2.10	2.20	1.90	E2.30S	E2.00S	E2.00S	E2.10S	E2.10S
21	E1.90S	E	E2.15S	E2.00S	E2.20S	E2.20S	2.00	2.10	2.40	3.00	3.00	2.80	3.00	4.60	2.30	2.10	2.00	2.00	2.00	E2.00S	E2.00S	E1.80S	E1.80S	E1.80S
22	E1.70S	E1.60S	E1.60S	E	E2.00S	2.30	2.90	2.80	2.90	4.20	3.80	4.60	3.00	4.20	4.00	2.15	2.50	2.10	E1.90S	E1.90S	E1.60S	E1.90S	E1.90S	E1.80S
23	E2.00C	E2.00S	E2.00S	E1.60S	E2.30S	2.80	3.00	4.00	3.00	4.70	4.80	2.30	2.40	3.00	2.60	2.30	E3.00S	2.00	E2.00S	E2.15S	E2.00S	E2.00S	E2.00S	E2.00S
24	E2.00S	E	E2.90S	E	E2.00S	1.50	2.00	2.20	2.15	2.15	2.20	2.50	2.20	2.20	2.15	2.10	2.00	2.00	1.70	E1.70S	E2.00S	E2.00S	E2.00S	E1.50S
25	E2.00S	E	E2.00S	E	E	1.60	2.15	2.15	2.20	2.10	2.20	2.30	3.00	2.50	2.30	2.10	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.20S
26	E2.00S	E	E	C	C	C	C	C	C	C	2.50	2.10	2.10	3.00	2.30	2.25	2.30	2.00	E2.00S	E2.00S	E1.80S	E2.00S	E2.00S	E1.80S
27	E2.10S	E2.10S	E2.00S	E	E2.20S	1.90	2.00	2.00	2.10	2.20	2.50	2.30	2.10	2.80	2.10	2.15	2.15	2.10	E2.00S	E2.00S	E2.00S	E2.10S	E2.10S	E2.00S
28	E2.10S	E2.10S	E2.10S	E2.20S	E1.60S	E2.00S	2.00	2.15	C	C	C	C	C	C	C	C	C	C	E2.00S	E2.10S	E2.00S	E1.90S	E2.00S	E2.10S
29	E2.00S	E2.00S	E2.00S	E1.90S	E	1.30	1.90	2.00	2.15	2.50	2.85	2.20	2.25	2.20	2.00	2.15	2.30	2.20	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
30	E2.00S	E2.10S	E2.10S	E2.50S	E2.00S	1.95	2.00	2.15	2.10	2.10	2.40	2.40	2.00	2.50	2.15	2.15	2.10	2.00	E2.00S	E2.00S	E2.20S	E2.00S	E2.00S	E2.00S
31	E2.00S	E2.00S	E	E	E2.00S	E2.00S	2.00	2.00	2.15	2.10	2.50	2.40	2.10	2.40	2.50	2.10	2.05	2.15	E2.00S	E2.00S	E2.00S	E2.00S	E1.80S	E2.00S
No.	28	28	28	27	27	21	25	26	25	26	27	26	26	25	27	25	25	27	28	28	28	28	28	28
Median	E2.00	E2.00	E1.95	E1.50	E1.60	1.60	2.00	2.00	2.20	2.30	2.60	2.40	2.35	2.60	2.40	2.15	2.10	2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00

f-min

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

The Radio Research Laboratories, Japan.

W 6

IONOSPHERIC DATA

May. 1961

M(3000)F2

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 2 3. 6' N
Long. 141° 41. 1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.80	2.85	2.85	2.75	2.75	2.90	3.05	3.20^{H}	3.45	3.25	3.05^{H}	3.00^{H}	3.10	2.95^{H}	2.85^{H}	2.95	3.15^{H}	3.10	3.15	2.90	2.80	2.75	2.70	2.80
2	2.75	3.00	2.90	2.85	2.75	2.70	3.15^{H}	3.25^{H}	3.15	3.15	2.90	3.05	2.80	2.95	3.05	3.10^{H}	3.20	3.10	3.05	2.85	2.80	${}^{U}3.05^{S}$	2.90	2.85
3	2.85	2.70	2.85	2.80	2.85	3.25	3.15	3.25	3.10	3.10	2.90^{H}	3.10	3.15	3.10	3.05	3.15^{H}	3.15^{H}	2.95	2.95	3.00	${}^{U}3.00^{S}$	3.15	2.85	2.85
4	2.80	2.85	2.95	3.10	3.10	3.15	3.15^{H}	3.10^{H}	3.10	3.15	3.10	3.10	3.05	3.05	3.05	${}^{I}3.15^{B}$	3.20^{H}	3.10	3.05	3.05	3.00	3.00	2.95	2.85
5	2.80	2.85	2.95	2.95	3.00	3.15	3.20	3.10	3.15	3.15	3.10	2.70^{H}	3.00	3.00	3.15	3.00	3.10	3.05	2.96	${}^{I}2.90^{A}$	2.95	${}^{U}2.95^{S}$	3.10	2.80
6	2.80	2.75	2.65	3.55	2.70	2.50	2.95	W	A	A	A	2.40	2.40	${}^{I}2.50^{A}$	2.75	2.85	2.60	2.80	2.95	2.95	2.95	2.85	2.95	2.75
7	2.55	2.75^{F}	3.15^{F}	3.25	2.85	2.75^{H}	2.95	3.00	${}^{I}2.60^{A}$	2.90	2.90	2.70	${}^{I}2.65^{A}$	3.00	3.05	3.05	3.15	2.90^{H}	3.00	3.05	3.15	2.90	2.80	2.60
8	2.80	2.75	2.80	3.15	3.05	3.30	3.05	3.25	3.15	2.90	2.75	3.05	3.00	2.95	3.05	2.95	3.10	3.10^{H}	3.10	3.10	3.00	2.90	2.90	2.70
9	F	F	F	3.05	3.00	3.10	3.05	3.20	3.20	3.20	3.00	3.25	2.95	3.05	3.05	3.10	3.15^{H}	3.15^{H}	3.15	3.10	3.05	3.10	2.90	3.10
10	2.95	2.80	2.90	2.90^{F}	3.20	3.15	2.90	2.85	3.05	${}^{I}3.00^{A}$	2.85	3.10	2.15	${}^{I}3.00^{A}$	3.15	3.15	3.15	3.20	3.05	2.90	2.85	3.15	3.15	2.80
11	2.85	3.05	2.90	3.05	3.20	3.25	3.35^{H}	3.15^{H}	2.95	${}^{I}2.95^{A}$	${}^{I}2.90^{A}$	2.75	2.85	3.05	3.10	3.10	3.20	3.20^{H}	2.95	3.05	3.05	3.10	2.95	2.90
12	2.80	2.80	2.75	2.90	2.90	2.50	2.90	${}^{I}2.80^{A}$	${}^{I}2.75^{C}$	2.70	${}^{I}2.60^{R}$	${}^{I}2.55^{R}$	2.70	2.45	2.90	2.95	${}^{I}3.10^{A}$	3.20	3.10	3.10	2.85	3.00	2.95	2.80
13	2.65	2.75	2.80	2.85	2.90	3.25	3.25	2.80	2.85	2.65	3.00	2.65	2.50	2.90	3.05	3.15	3.20	3.20	3.20	2.95	2.75	2.90	2.90	2.75
14	2.85	2.65	2.85	3.00	3.00	2.90	3.30^{H}	3.30	3.15	3.15	3.20^{H}	2.85	2.95	2.95	3.05	2.85	2.95	3.20	3.10	2.95	3.00	3.05	2.90	2.95
15	2.90	2.85	2.85	3.00	2.80	2.85	3.05	C	C	A	3.00	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	A	A	2.75	2.95	2.95	3.15	A	A	A	A	A	${}^{U}3.05^{S}$	${}^{U}2.95^{S}$	${}^{U}3.05^{S}$	2.85
18	2.95^{F}	2.85^{F}	2.95^{F}	2.85^{F}	2.95^{F}	3.15	3.15	3.15	2.60	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	3.00	2.95	3.05	3.05	3.05	2.95	2.95	2.95	2.90	${}^{I}2.90^{F}$	2.95
20	3.00	2.95	2.85	2.90	3.05	3.00	3.05	3.10	3.05	2.95	2.80	2.70	2.90	2.95	2.80	2.70	2.80	3.00	3.05^{H}	3.00	2.80	2.80	2.75	2.80
21	2.85	2.80	2.75	2.80	2.90	3.00^{H}	3.10	3.50	3.05	${}^{U}3.10^{R}$	${}^{I}3.00^{A}$	${}^{U}3.00^{R}$	3.00	3.00	3.05	3.05	3.05	3.10^{H}	3.05	3.05	3.00	2.90	${}^{I}2.90^{S}$	${}^{U}2.80^{S}$
22	2.80	2.85	2.85	2.85	3.00	3.00	3.20^{H}	3.25	${}^{I}2.90^{R}$	${}^{I}2.90^{R}$	2.95	2.65^{H}	2.80	2.90	2.90	2.90	3.05	${}^{U}3.00^{S}$	3.05	${}^{I}3.10^{S}$	2.95	2.80	${}^{I}2.80^{S}$	2.80
23	2.90	2.75	2.80	2.90	2.90	2.80	3.10	2.75	2.65	3.25	2.75	3.05	2.85	2.80	2.85	2.85	3.10	3.10	3.15	3.00	${}^{I}2.85^{A}$	2.75	2.80	2.70
24	2.80	2.85	2.80	2.95	2.75	3.15	2.80	2.80	2.80	A	A	A	A	A	2.65	2.95	3.05	${}^{I}2.85^{A}$	3.05	${}^{I}2.85^{A}$	${}^{I}2.85^{A}$	${}^{U}2.80^{S}$	F	F
25	F	F	2.90^{A}	${}^{I}3.00^{F}$	${}^{I}2.85^{F}$	${}^{I}2.95^{A}$	3.10	3.00^{F}	3.05	2.85	2.75	2.85	2.55	2.65	2.85	2.90	2.65	2.85	2.80	${}^{I}2.85^{C}$	2.95	2.80	2.70	${}^{I}2.65^{S}$
26	2.55	2.60	2.75	C	C	C	C	C	C	C	A	A	2.60	2.85	${}^{I}2.80^{A}$	2.90	3.00	${}^{I}2.40^{A}$	${}^{I}2.75^{A}$	3.05	F	F	F	F
27	2.70	2.75	2.95	3.05	${}^{U}2.85^{S}$	3.10	3.05	3.15	3.10	3.00	${}^{I}3.00^{A}$	2.95	3.10	2.85	2.95	3.00	3.10	${}^{I}2.95^{A}$	2.85	2.80	${}^{I}2.95^{A}$	2.95	2.90	2.95
28	F	F	F	F	F	3.20^{F}	${}^{I}3.20^{A}$	3.10	C	C	C	C	C	C	C	C	C	C	3.05	${}^{I}2.95^{A}$	${}^{I}2.90^{A}$	${}^{U}2.95^{S}$	${}^{I}2.85^{FS}$	${}^{I}2.95^{F}$
29	2.85	2.95^{F}	2.90^{F}	${}^{I}2.90^{F}$	${}^{I}2.95^{F}$	3.15	3.25	3.25	A	A	A	A	3.05	3.00	3.00	2.85	${}^{I}3.00^{A}$	3.00	3.00	${}^{U}3.05^{S}$	3.05	2.95	2.95	2.90
30	2.90	2.90	3.00	3.10^{F}	3.20^{F}	3.05^{F}	3.00^{H}	${}^{I}3.10^{A}$	3.05	${}^{I}3.00^{A}$	3.15	3.35	${}^{I}2.95^{A}$	3.00	2.90	3.05	3.00	3.05	2.95^{H}	3.00	${}^{I}3.05^{S}$	2.90	${}^{U}2.95^{FS}$	2.95^{F}
31	F	F	F	F	2.80	2.90	3.05	2.70^{F}	3.20	2.65	3.05	2.95	2.95	3.05	${}^{I}2.80^{A}$	2.80	2.85	2.85	${}^{I}2.85^{A}$	${}^{I}2.85^{S}$	2.85	3.05	${}^{I}3.10^{S}$	3.10
No.	24	24	25	25	26	27	27	26	23	21	22	23	25	26	27	26	26	26	27	27	27	27	26	26
Median	2.80	2.85	2.85	2.90	2.90	3.05	3.10	3.10	3.05	3.00	3.00	2.95	2.95	2.95	3.00	3.00	3.10	3.05	3.05	3.00	2.95	2.95	2.90	2.80

M(3000)F2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Wakkanai

Lat. 45° 2 3.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									3.80	3.80			$^{U}3.60^{L}$			3.60								
2									3.70	3.60	3.40	3.60	3.45^{H}	3.35	3.60									
3									3.70	3.70	3.90	3.75	3.70	3.60	3.75									
4									3.80	3.75	3.70	3.85	3.65	3.45	3.55	B								
5									A	A	$^{I}3.60^{A}$	3.80	3.75	3.45	3.90	$^{I}3.50^{A}$	3.50							
6						3.05	3.40	3.60	A	A	A	3.95	$^{I}3.80^{A}$	$^{I}3.70^{A}$	3.60	3.75	3.40	3.30						
7							3.30	3.40	A	A	A	A	A	$^{I}3.65^{A}$	$^{I}3.75^{A}$	3.65	3.65							
8								3.65	3.60	3.75	3.55	3.65	3.85	3.60	3.50	3.65	3.65							
9								3.75	3.65	3.60	3.65	3.80	3.75	3.55	3.85	3.60								
10								3.65	$^{I}3.60^{A}$	$^{I}3.55^{A}$	3.60	3.70	$^{I}3.70^{A}$	$^{I}3.70^{A}$	$^{I}3.65^{A}$	3.60	3.65							
11									A	A	A	A	A	A	A	A	A							
12						3.15	3.40	A	C	A	$^{U}3.85^{R}$	$^{U}3.90^{R}$	3.90	$^{I}3.70^{A}$	A	A	A	A						
13						3.60	3.45	$^{I}3.45^{A}$	3.70	$^{I}3.65^{A}$	$^{I}3.40^{A}$	3.65	3.60	$^{I}3.70^{A}$	3.40	$^{I}3.65^{A}$	3.80							
14								3.75	3.75	$^{I}3.80^{A}$		3.55	3.60	3.50	3.65	3.60	3.65	A						
15						3.30	3.40	C	C	A	3.70	C	C	C	C	C	C	C						
16						C	C	C	C	C	C	C	C	C	C	C	C	C						
17						C	C	C	C	A	A	A	3.55	3.25	A	A	A	A						
18							A	A	A	C	C	C	C	C	C	C	C	C						
19						C	C	C	C	C	C	C	C	A	3.35	3.55	3.65	3.65						
20								3.55	$^{I}3.65^{A}$	$^{I}3.60^{A}$	3.90	3.85	3.40	3.55	3.55	3.60	3.50	3.45						
21								3.80	3.40	A	A	A	$^{I}3.65^{R}$	$^{I}3.60^{B}$	3.60	3.60	3.55							
22								3.60	A	A	A		3.75	B	A	B	$^{I}3.55^{A}$							
23						3.45	3.35	$^{I}3.55^{B}$	3.40	$^{I}3.75$	$^{I}3.65^{B}$	3.90	3.60	$^{I}3.50^{A}$	$^{I}3.45^{A}$	$^{I}3.50^{A}$	$^{I}3.60^{A}$	3.60						
24							A	A	A	A	A	A	A	A	3.65	3.55	3.55	A						
25								A	A	$^{I}3.55^{A}$	3.55	3.85	$^{I}3.60^{A}$	3.55	3.65	3.75	3.50	$^{I}3.30^{A}$						
26						C	C	C	C	C	A	A	$^{I}3.70^{A}$	A	A	A	A	A						
27							A	3.55	3.70	$^{I}3.70^{A}$	$^{I}3.65^{A}$	A	A	A	A	A	A	A						
28							A	3.90	C	C	C	C	C	C	C	C	C	C						
29									A	A	A	A	A	A	3.50	A	A	A						
30								A	A	A	A	A	A	A	3.80	3.55	3.60	3.55						
31						3.45	3.55	A	A	A	3.45	3.80	$^{I}3.70^{A}$	$^{I}3.70^{A}$	$^{I}3.65^{A}$	$^{I}3.55^{A}$	3.45	A						
No.						6	7	13	13	13	15	15	20	18	20	17	16	6						
Median						3.40	3.40	3.60	3.70	$^{U}3.70$	3.65	3.80	3.70	3.60	3.60	3.60	3.60	3.50						

M(3000)F1 Sweep 1.0 Mc to 18.0 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May. 1961

$h'F2$

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 2 3. 6' N
Long. 1 4 1° 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	265			300			300								
2									290	310	350	295	355	320	300									
3									275	300	310	310	300	290	310									
4									315	300	315	320	325	300	300	$^{I}290^{B}$								
5									280	315	320	360^{H}	330	315	295	$^{I}330^{A}$	305							
6						465	355	W	A	A	A	540	550	$^{I}540^{A}$	440	400	460	360						
7							360	385	$^{I}445^{A}$	415	425	425	$^{I}475^{A}$	375	340	325	320							
8								395	320	400	390	360	370	370	355	360	310							
9								310	315	320	350	315	360	330	315	300								
10								375	355	$^{I}370^{A}$	425	470	675	$^{I}370^{A}$	320	315	305							
11									360	$^{I}380^{A}$	$^{I}360^{A}$	360	350	290	310	290	295							
12						465	370	$^{I}425^{A}$	C	A	R	R	475	540	400	A	A	A						
13						290	315	400	420	470	360	420	450	345	310	$^{I}295^{A}$	280							
14								270	300	315		390	360	360	340	360	315	270						
15						360	315	C	C	A	365	C	C	C	C	C	C	C						
16						C	C	C	C	C	C	C	C	C	C	C	C	C						
17						C	C	C	C	A	A	460	360	380	A	A	A	A						
18							295	$^{I}335^{A}$	340	C	C	C	C	C	C	C	C	C						
19						C	C	C	C	C	C	C	C	340	350	310	305	290						
20								300	325	370	465	450	380	370	420	410	360	315						
21								260	370	330	$^{I}345^{A}$	$^{I}335^{A}$	320	320	325	315	300							
22								275	$^{I}315^{A}$	$^{I}330^{A}$	340		365	350	345	320	305							
23						350	300	435	405	$^{I}380^{B}$	420	350	415	385	350	370	305	285						
24							365	380	390	A	A	A	A	A	475	385	350	$^{I}330^{A}$						
25								305	$^{I}330^{A}$	365	445	410	530	445	370	350	395	330						
26						C	C	C	C	C	A	A	490	$^{I}430^{A}$	$^{I}415^{A}$	385	375	A						
27							300	310	300	340	$^{I}345^{A}$	350	325	$^{I}340^{A}$	350	320	315	A						
28							A	270	C	C	C	C	C	C	C	C	C	C						
29									A	A	A	A	A	370	365	360	$^{I}340^{A}$	$^{I}320^{A}$						
30								A	310	$^{I}330^{A}$	305	350	$^{I}345^{A}$	370	400	355	330	310						
31						350	320	430	350	485	370	360	400	350	$^{I}440^{A}$	410	350	330						
No.						6	10	18	22	20	19	20	24	25	25	23	20	10						
Median						355	320	320	320	335	360	360	360	360	350	330	315	320						

$h'F2$

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

The Radio Research Laboratories, Japan.

W 9

IONOSPHERIC DATA

May. 1961

h'F

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	270	290	280	300	260	250	240^{H}	245	220	230^{H}	210^{H}	215	230^{H}	225^{H}	225	250^{H}	260^{H}	260	260	280	290	275	290
2	300	250	260	280	310	265	260^{H}	240^{H}	240	225	230	235	235^{H}	235	220	230^{H}	230	250	260	285	290	260	250	275
3	300	300	300	310	300	255	250	240^{H}	250	220	225	210	215	240	210	205^{H}	260^{H}	240	265	265	260	250	235	300
4	300	300	275	270	240	250	240^{H}	250^{H}	230	240	235	220	225	220	230	$^{I}240^{B}$	240^{H}	$^{I}265^{A}$	$^{I}260^{A}$	260	260	265	250	285
5	305	300	280	260	270	255	260	$^{I}285^{A}$	$^{I}265^{A}$	$^{I}255^{A}$	$^{I}250^{A}$	215	240	250	230	$^{I}240^{A}$	250	290^{H}	A	A	A	270	250	290
6	300	300	325	350	330	300	280	255	A	A	A	225	$^{I}225$A	$^{I}230^{A}$	230	220	265	280	285	275	260	300	285	325
7	370	300	270	250	310	260^{H}	275	265	A	A	A	A	A	$^{I}230^{A}$	$^{I}220^{A}$	$^{I}255^{A}$	240	240^{H}	300	$^{I}270^{A}$	260	310	310	310
8	310	310	285	250	250	260	235	235	215	225	215	205	235	235	235	235	240	240^{H}	265	245	255	270	290	325
9	315	300	300	270	265	270	240	235	250	225	220	230	230	220	240	215	250^{H}	250^{H}	265	250	250	250	270	260
10	290	310	290	270	250	255	275A	250	$^{I}240^{A}$	$^{I}250^{A}$	235	235	$^{I}230^{A}$	$^{I}225^{A}$	$^{I}220^{A}$	240	240	280	$^{I}270^{A}$	$^{I}280^{A}$	290	265	250	290
11	300	285	300	275	250	250	250^{H}	250^{H}	A	A	A	A	A	A	A	A	A	250^{AH}	270	265	260	250	275	295
12	300	300	275	280	305	290	270	A	C	A	240	235	240	$^{I}275^{A}$	A	A	A	A	A	285A	$^{I}285^{A}$	265	270	300
13	310	310	310	290	310	260	260	$^{I}250^{A}$	225	$^{I}245^{A}$	$^{I}240^{A}$	260	250	$^{I}245^{A}$	285	$^{I}250^{A}$	240	250^{H}	255	295A	$^{I}310^{A}$	$^{I}270^{A}$	260	300
14	290	310	300	270	280	260	250^{H}	225^{H}	220	$^{I}250^{A}$	210^{H}	230	230	215	240	235	240	A	A	A	A	265	250	260
15	260	320	300	295	285	260	260	C	C	A	235	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	A	A	A	220	280	A	A	A	A	A	A	A	A	A	A
18	290	290	260	265	300	260^{H}	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	A	250	205	235	230	250^{H}	$^{I}270^{A}$	260	270	325A	260
20	265	265	270	290	265	260	245	250	$^{I}250^{A}$	$^{I}240^{A}$	225	210	220	230	240	230	250	265	270^{H}	210	$^{I}285^{A}$	$^{I}295^{A}$	285	310
21	305	290	305	295	310	275^{H}	285^{H}	250	215	A	A	A	$^{I}245^{B}$	$^{I}230^{B}$	230	240	230	260^{H}	$^{I}270^{A}$	$^{I}270^{A}$	270	285	260	$^{I}275^{A}$
22	$^{I}285^{A}$	285	290	280	260	245	250^{H}	250	A	A	A	B	215	B	A	B	$^{I}260^{A}$	A	A	A	270	265	$^{I}270^{A}$	295
23	290	320	300	280	300	260	265	$^{I}240^{B}$	250	$^{I}230^{B}$	$^{I}230^{B}$	215	225	$^{I}235^{A}$	$^{I}250^{A}$	$^{I}250^{A}$	$^{I}250^{A}$	260	265^{A}	265^{A}	260	260	300	315
24	305	300	290	$^{I}280^{A}$	300	A	A	A	A	A	A	A	A	A	230	270	235	$^{I}255^{A}$	265	$^{I}270^{A}$	$^{I}270^{A}$	275	290	305
25	$^{I}300^{A}$	300	300	290	310	A	A	A	A	$^{I}255^{A}$	250	205	$^{I}260^{A}$	220	235	220	245	$^{I}270^{A}$	$^{I}270^{A}$	$^{I}260^{A}$	255	270	305	290
26	320	310	310	C	C	C	C	C	C	C	A	A	$^{I}245^{A}$	A	A	A	A	A	A	A	300^{A}	300	285	$^{I}320^{A}$
27	310	330	300	250	285	260	$^{I}250^{A}$	240	240	A	A	A	A	A	A	A	A	A	A	A	A	250	260	265
28	340	330	305	320	270	$^{I}265^{A}$	$^{I}240^{A}$	235	C	C	C	C	C	C	C	C	C	C	A	A	A	270	270	$^{I}270^{A}$
29	285	300	285	290	280	265	260	A	A	A	A	A	A	A	220	A	A	A	275	255	250	260	255	285
30	300	290	285	275	250	235	A	A	A	A	A	A	A	A	225	225	240	260	A H	A	A	A	265	$^{I}310^{A}$
31	300	320	315	290	300	250	250	A	A	A	250	230	$^{I}230^{A}$	$^{I}245^{A}$	$^{I}250^{A}$	$^{I}245^{A}$	240	A	A	A	$^{I}290^{A}$	250	220	205
No.	28	28	28	27	27	25	23	19	14	13	16	16	20	19	21	20	21	19	18	19	22	26	27	27
Median	300	300	295	280	285	260	250	250	240	240	230	220	230	235	230	235	240	260	265	265	265	270	270	290

h'F

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

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

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

h'Es

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

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Wakkanai

Lat. 45° 2 3.6' N
Long. 141° 41.1' E

May. 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											
2														h		l		l						
3								h	C	C			C				h							
4		f2	f	f	f		h	h							h		h	h	C			f		f
5	f	f				f	h	C	C	C	C		h	C	C	C2		h	C2	f5	f3	f2		
6						C			C	C	C		C	C2	C		h	C	C	f		f		
7					f	C	h	h	C	C	C	C	C2	C	l	l2	C	C	C	f2	f	f4	f	
8										C	C							C						f
9		f	f	f2	f	l			h	h			C	C	C									
10		f	f	f		C	h		h	C		C	C	C2	C2			C	C3	f	f	f	f	
11							h	C	C2	C3	C2	C	C2	C	C	C	C2	l	l2	f	f		f	f
12	f	f				C	h	C		C	C	C	C	C	h	h	C2	C2	C	f	f	f	f	f
13			f				h	C		C	C	C	C	C	C	C2	C	C	h	f	f2	f2	f	
14			f2	f	f	f			h	C	C	C	C					h	C	f	f2	f		
15						C	C			C2	C													
16																								
17										C2	C	C	C		h	C2	C3	C2	C3	f4	f2	f4	f4	f5
18						h	h	C	C															
19														C2	C					f	f	f	f3	f
20						h		C	C	C2	C	C	C	C	C		l		h	f	f2	f2		
21	f2	f				C	C	C		C	C2	C3	l			l	l	l	C.l	f2	f	f2	f2	f2
22	f2	f				C	h	C	C2	C	C				C		C	C	C3	f2	f2	f2	f3	f2
23	f2	f	f						C					h	C	C	C	C	C2	f			f2	
24	f	f		f3		C2	C2	C	C2	C2	C2	C6	C2	C2		h	C	C2	h	f2	f3	f	f2	f2
25	f3	f2	f	f	l	C3	C4	C2	C3	C	C		C	h	h			C	C2	f3	f	f		
26	f	f	f								C2	C2	C	C	C2	C	C	C2	C4	f2	f	f2	f2	f3
27	f	f3				C	C2		C	C2	C2	C	C	C2	C2	C	C	C5	C2	f2	f5	f		
28	f	f2				C2	C2	C											C2	f2	f3	f2	f	f2
29	f					C	C	h	C3	C2	C2	C3	C	C2		h	C3	C4	C	f2	f			
30						C	C	C2	C2	C2	C2	C2	C2	l	l	l	h	C	C4	f2	f4	f2	f3	f2
31	f3	f2	f2	f	f	C	h	C3	C2	C			l2	C	C3	C2	h	C2	C4	f2	f3			
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

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

W 12

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2'E

Akita

May. 1961

foF2

135° E Mean Time (G.M.T.+ 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	6.7	6.9	5.9	5.6	5.6	6.2	8.5	8.2	7.9	7.9	7.3	9.1	9.4	9.5	9.2	I9.8R	9.6	9.2	8.1	7.8	7.6	7.3	7.0	6.9
2	6.6	6.6	6.0	5.3	4.9	5.7	7.5	8.5	7.7R	8.6	8.0	8.0	8.7R	9.6R	9.8R	9.6	8.8	8.1	7.6	7.8	8.1	8.1	5.9	5.6
3	5.6	5.5	5.4	5.2	5.2	6.3	6.9	8.4R	7.4	7.8	7.2	7.8R	8.8R	9.4	I8.0R	8.2	7.9	7.5	8.1	9.1	8.6	7.1	6.4	6.1
4	6.0	6.0	6.0	5.9	4.5	5.1	6.7	7.1	7.6	8.0	8.1	7.5	8.6	I8.6R	8.1	8.6	8.6	7.8	7.5	7.6	7.0	6.5	I6.5F	I6.0F
5	6.1	6.0	5.7	5.5	5.4	6.0	6.8	7.5V	I7.2A	6.8	7.2	7.2	C	C	C	7.6	7.5	7.5	7.5	I8.0C	8.4	6.5	I6.0A	5.4F
6	I5.4A	5.4F	4.9F	I4.6RS	I4.6F	4.4	5.0	G	A	A	R	A	A	I5.4A	5.6	5.3	5.0	5.6	6.5	6.8	5.7	5.0	5.5	5.0
7	I5.0F	I4.8F	5.3F	4.8	3.7F	4.0	5.5	5.3	5.3	5.3	5.5	6.1	6.1R	6.7	7.0	7.0	6.9	6.6	6.9	8.0	6.0	5.1	5.1	I5.0A
8	5.1F	5.0	4.9	4.4	4.1	5.5	5.4V	6.0	6.5	6.0	6.1	6.9	6.6	6.5	6.5	I6.8A	7.5	7.6	7.6	7.1	5.8	5.5	I5.6RS	5.1F
9	F	F	4.8F	5.0	4.4	4.6	6.1	6.5	6.8	6.0	6.6	6.5	7.9	7.8	8.0	9.2	8.4	7.5	7.8	8.3	7.8S	6.0	5.9	6.0
10	5.3	5.1	5.1	4.7	4.5	5.0	5.5	5.4	6.3	6.7	6.4	6.7	6.5	6.9	6.7	7.1	7.2	7.2	6.9	7.5	I7.4RS	7.0	6.0	5.7
11	5.4	5.5	5.0F	4.6	4.4	5.3	6.7	6.0	6.6	6.1	7.1	I8.4R	I9.3R	10.2	9.4	I8.2R	7.6	7.8	7.4R	8.2	7.1	6.6F	6.6F	6.1
12	5.6	5.5	5.5	5.0	4.6	4.5	5.0	G	C	R	A	5.0	I5.6R	5.8	5.9	6.2	5.6	I5.8A	I6.0A	6.4	6.4F	6.0	5.2F	4.3F
13	4.4	I4.4F	4.2F	I4.2F	3.9F	5.0	5.4	5.3	5.6	6.1	7.0	7.8	8.1	8.9	I9.2R	8.4	8.0	6.0	6.1	6.8	6.7	6.0	5.7	5.5
14	5.5	5.0	4.8	4.7	I4.6C	5.4	7.9	6.7	6.1	6.0	6.3	6.7	7.4	7.6	7.5	7.6	7.9	7.9	7.4	8.2	8.6	7.3	6.0	5.4F
15	5.6F	I5.2F	4.9F	5.0	4.7	5.3	6.5	6.1	6.6	A	A	I6.2A	I6.2A	6.0	5.8	6.3	7.0	7.2	I7.8A	8.4	6.8	6.1F	5.6	I5.4F
16	5.0	4.9	5.0	4.8	4.8F	5.5	6.5	6.7	6.4	5.7	6.2	7.0	6.9	7.6	7.4	6.6	5.9	6.1	8.3	9.5	8.6R	4.9	4.6	4.6
17	I4.4A	I4.4A	I4.4RF	4.4	4.7F	6.3	5.6	I5.7A	I6.2A	A	A	A	I7.2A	7.1	6.4	A	A	5.8	I6.6A	7.5S	I7.4RF	I6.8RF	F	F
18	F	F	F	F	F	5.5	6.0	6.1	6.0	6.0	6.2	6.4	7.1	7.4	7.3	I7.1A	7.2	6.4	6.5	7.3	7.6R	7.0	7.1	6.6
19	6.0	5.5	5.2F	I4.9F	I5.0F	5.3	6.0	6.8	7.4	8.0	8.0	7.7R	7.9	8.1	8.2R	8.0	8.3	7.9	7.4	8.4	7.6	6.9S	F	F
20	F	6.0	5.5F	5.5F	5.6	5.9	7.0	7.1	6.6	6.3	5.8	6.4	6.7	7.4	7.0	7.0	I7.4A	I8.0A	8.1	7.2	6.1	6.1	F	F
21	6.3F	5.9F	F	F	5.2F	6.5	7.0	6.9	I7.1A	6.8	6.6	7.2	8.7	7.9	8.0	8.6R	8.3	7.5	7.7	7.8R	I7.3F	F	F	F
22	F	F	F	F	F	6.7	7.1	7.0	6.9	8.1	8.0	7.8	8.1	8.3	I8.8R	I9.5R	9.0	8.5	8.3	8.1	7.6	7.2	7.0	I6.9F
23	6.7	6.0	6.0	6.0	6.0	6.8	7.1	6.5	6.6	6.2	6.2	7.1	6.7	6.8	8.1	7.3R	I8.2C	8.3R	8.0	7.2	6.4	6.3	6.5	6.4
24	6.5	5.9	5.4	5.1	4.8F	5.5	5.6	5.7	5.9	6.0	5.8H	5.6	5.5	5.5	5.7	5.7	6.0	5.7	5.4	5.9	6.2F	6.1	I5.8A	5.8F
25	F	F	F	I5.2F	I5.0F	5.8	8.0	8.0R	7.3	7.1	6.8	6.8	6.5H	6.6	7.5	7.2	7.0	7.4	8.1	I7.8RS	7.8	6.8	6.9	6.8
26	6.3F	6.2F	F	A	4.6	5.1	5.9	6.2	I6.1C	I5.4A	I5.6A	I5.6R	5.8	5.5R	5.5	I5.9A	6.3	6.2	6.1	I6.5A	6.5	I6.0F	I5.8F	F
27	F	F	F	5.0F	F	F	6.5F	7.7	6.5	6.9	7.6	I6.9A	7.1	7.8R	7.4	7.4	7.5	6.9	7.3	8.1	7.9	I7.4A	I7.2F	F
28	A	F	F	F	F	F	I7.0A	7.6R	6.3H	C	C	C	C	C	C	C	C	C	I9.2R	I9.3RS	8.5	6.8F	6.6	I6.9F
29	7.0F	6.1	5.5F	5.1F	5.4	6.6	7.0	7.4	I6.6A	6.3	I5.6R	6.1	I6.4A	I6.3A	6.3	6.8	7.1	7.6	I8.6R	I8.6A	7.5	C	F	F
30	F	F	F	F	I5.0F	5.1	6.2	6.9	I7.4A	I7.8A	7.5	6.8	6.8	6.6	6.6	7.4	7.8	7.7	I8.0A	8.1S	7.6	7.0	I6.4F	6.2F
31	5.8F	F	A	F	F	I4.7A	5.6	A	A	A	6.0	I6.2A	5.9	6.0	I6.0A	I6.0A	6.7	7.0	7.8	8.1	I8.4R	I8.4RS	7.0F	5.8F
No.	23	23	22	24	26	29	31	30	28	25	26	28	28	29	29	29	29	30	31	31	31	29	26	24
Median	5.6	5.5	5.2	5.0	4.8	5.5	6.5	6.7	6.6	6.3	6.6	6.8	7.0	7.4	7.4	7.3	7.5	7.5	7.6	7.8	7.5	6.6	6.0	5.8
U.Q	6.3	6.0	5.5	5.2	5.2	6.2	7.0	7.4	7.2	7.8	7.3	7.6	8.1	8.2	8.1	8.1	8.2	7.8	8.1	8.2	7.8	7.0	6.6	6.3
L.Q	5.3	5.0	4.9	4.7	4.5	4.8	5.6	6.0	6.2	6.0	6.1	6.3	6.4	6.4	6.4	6.7	7.0	6.4	6.9	7.2	6.5	6.0	5.7	5.4
Q.R	1.0	1.0	0.6	0.5	0.7	1.4	1.4	1.4	1.0	1.8	1.2	1.3	1.7	1.8	1.7	1.4	1.2	1.4	1.2	1.0	1.3	1.0	0.9	0.9

foF2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May.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	L	5.1L	5.0L	5.0L	5.0L	L	L							
2								L	L	L	B	I4.9B	5.1L	5.0L	4.8L	L	LH							
3								L	L	4.6L	L	B	B	B	I4.8L	L	L							
4								L	A	I4.8A	I4.8A	5.2R	4.9	4.8	4.6L	4.6L	L							
5								A	A	A	A	A	C	C	C	4.5L	L	L						
6						2.7	3.4	3.9	I4.0A	I4.2A	4.2	A	A	A	4.4	4.3	4.1	3.8	L					
7							I3.7A	4.0L	I4.3A	4.5	A	A	I4.6A	4.7	I4.6R	I4.5A	4.2L	4.0L	L					
8								L	4.4	4.6	4.6	I4.6B	4.6R	I4.6R	4.6	I4.4A	4.2	L						
9								L	4.4H	I4.6LH	4.7L	4.8L	4.6	I4.6R	4.5	I4.6B	4.3L	L						
10									I4.4A	I4.5A	4.6	4.7	I4.6A	I4.6A	4.5	4.5	L	L						
11								L	L	L	I4.8A	I4.8A	A	A	A	A	A	A						
12						L	I3.6A	4.0	I4.2C	4.3	I4.4A	I4.6A	4.5	4.5	4.5	4.3	A	A						
13									L	4.6	A	A	A	A	A	A	L							
14							L	L	L	A	L	R	4.8R	I4.7R	4.6	4.5	4.2L	A						
15						L	3.8	4.1L	4.4	A	A	A	A	I4.6A	4.7	I4.4A	A	A	A					
16							L	I4.2A	I4.4A	I4.6A	4.7	4.6R	4.7	I4.6B	4.6	I4.5L	A	A	A					
17							A	A	A	A	A	A	A	B	B	A	A	A						
18							L	A	A	A	4.8L	R	B	B	4.6L	A	L	A	L					
19							L	A	4.6L	4.7L	I4.8A	I5.0R	4.9	4.9R	4.7L	4.5	4.4L	L						
20								L	4.6L	4.6	4.8	4.7R	R	R	A	A	A	A						
21						L	L	L	A	5.0	I4.8A	5.0	I4.8B	I5.0R	I4.9A	I4.7A	4.5	L						
22								A	5.0	A	A	A	A	R	A	4.6	A	A						
23							L	4.3	I4.5A	I4.7L	I4.8L	I4.7R	4.9	4.6	4.6R	4.6L	I4.5C	L						
24							A	A	A	R	A	A	A	4.7R	I4.6B	4.4	4.2R	4.0L	L					
25							A	A	A	A	4.9R	4.9	4.7R	B	B	4.5	4.3	4.2L						
26						A	3.8	A	C	I4.5A	I4.6A	4.5R	I4.6R	4.6R	A	A	A	4.0	A					
27							L	A	A	4.7	B	A	B	I4.8A	A	A	4.5	A	A					
28						L	A	A	A	C	C	C	C	C	C	C	C	C	A					
29							A	A	A	4.6	B	B	A	A	A	4.4	4.2	A	L					
30								A	A	A	A	A	A	A	4.6	4.3	4.3L	4.0	A					
31						A	A	A	A	A	B	A	A	B	I4.5A	I4.4A	4.2	I3.9A	A					
No.						1	5	6	12	17	15	15	15	17	20	20	14	7						
Median						2.7	3.7	4.0	U4.4	4.6	4.8	4.8	4.7	4.7	4.6	4.5	4.2	4.0						

foF1

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

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

May. 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						E	$^{I}2.30^{R}$	3.05	R	R	R	B	B	R	R	R	3.00	2.50	B					
2						E	2.45	3.00	$^{I}3.25^{R}$	R	B	B	B	B	B	R	$^{I}2.85^{R}$	2.40	E					
3						E	$^{I}2.40^{R}$	2.95	R	R	B	B	B	B	R	B	$^{I}2.85^{R}$	2.45	E					
4						B	2.40	R	R	R	R	B	B	R	B	B	3.00	$^{I}2.50^{R}$	B					
5						B	2.55^{H}	3.05	R	R	R	B	C	C	C	R	R	R						
6						E	2.25	2.90	$^{I}3.20^{R}$	$^{I}3.45^{R}$	R	R	R	R	R	3.30	3.00	2.50	E					
7						B	2.45	2.95	R	R	B	B	B	R	R	R	2.95	$^{I}2.45^{R}$	B					
8						B	2.45	2.90	R	R	R	B	B	R	R	3.10	2.80	2.45	E					
9							A	A	R	R	3.55	R	R	3.55	3.50	3.40	3.05	R	A					
10						B	2.40	$^{I}3.05^{R}$	R	R	R	3.65	R	R	R	R	R	R	E					
11							2.45	R	R	R	R	B	B	B	B	B	R	B	E					
12						E	2.30	R	C	R	A	A	B	B	R	3.15	2.95	2.55	B					
13						E	2.45	R	R	R	R	R	R	R	R	R	R	2.60	1.70					
14						1.75	2.50	3.00	R	R	R	B	B	B	B	B	R	R	B					
15						B	R	R	R	B	B	B	A	A	A	R	R	R	B					
16						B	2.55	R	R	R	B	B	B	B	B	B	R	R	B					
17						B	$^{I}2.35^{R}$	2.80	R	R	B	B	B	B	B	R	R	R	B					
18						E	2.45^{H}	2.80	R	R	R	R	B	B	B	R	R	R	B					
19						1.95	R	R	R	R	R	R	R	R	R	B	R	2.55	B					
20						1.75	2.55	R	R	R	R	B	R	R	R	A	A	A	A					
21						B	2.60	$^{I}3.05^{R}$	R	R	B	B	B	B	A	A	A	A	R					
22						2.05	$^{I}2.70^{R}$	$^{I}3.15^{R}$	R	R	R	R	R	R	A	3.40	3.05	$^{I}2.70^{R}$	B					
23						B	$^{I}2.60^{R}$	2.95	R	R	R	B	B	B	R	R	C	2.55	B					
24						1.85	$^{I}2.60^{R}$	2.95	R	R	R	B	R	R	R	$^{I}3.20^{R}$	2.95	2.60	B					
25						2.00	2.70	3.05	R	R	B	B	B	R	R	R	$^{I}3.10^{R}$	2.70	B					
26						R	R	3.00	C	R	R	B	R	R	R	A	$^{I}2.90^{R}$	$^{I}2.50^{R}$	B					
27						R	R	3.05	R	R	B	B	B	B	B	3.25	$^{I}2.90^{R}$	2.50	B					
28						1.95	$^{I}2.60^{R}$	2.85	R	C	C	C	C	C	C	C	C	C	B					
29						R	R	R	R	R	R	B	B	R	R	R	3.05	2.50	1.95					
30						R	$^{I}2.65^{R}$	3.00	3.25	R	R	B	B	R	R	A	R	2.75	B					
31						R	R	R	R	R	R	B	A	R	R	B	R	2.50	1.95					
No.						14	24	20	3	1	1	1		1	1	7	15	19	9					
Median						E	2.45	3.00	$^{U}3.25$	$^{U}3.45$	3.55	3.65		3.55	3.50	3.25	2.95	2.50	E					

foE

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

The Radio Research Laboratories, Japan.

A 3

IONOSPHERIC DATA

May. 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	2.3	E	J1.9	E	2.2	2.0	G	3.3	G	G	3.9	3.9	3.9	G	G	G	G	G	2.1	E	E	E	E	E
2	E	E	E	E	E	G	G	3.1	4.0	4.2	B	4.4	B	B	B	G	G	G	2.3	E	J1.8	2.2	J2.4	E
3	E	E	E	E	E	2.0	3.0	3.6	G	G	B	B	B	B	B	B	G	3.0	2.3	J2.3	J2.3	J2.5	J2.0	E
4	J1.9	E	E	E	E	B	G	3.9	4.4	4.8	J6.9	4.4	4.2	B	B	B	3.5	4.0	J3.8	J2.5	J2.2	J4.0	J4.0	E
5	E	E	J2.0	J2.9	J4.1	2.4	3.1	4.1	J7.4	J6.3	J5.9	J6.3	C	C	C	4.2	3.6	J4.2	J5.7	C	J7.3	J7.3	J6.5	J4.5
6	J7.9	J5.0	J3.0	J2.3	E	G	G	G	J5.8	J10.1	4.1	J7.4	J6.1	J5.9	G	G	3.4	G	2.4	E	E	J3.3	E	J5.4
7	J2.0	J3.4	2.2	E	2.2	2.4	4.0	3.9	4.9	4.2	4.5	J6.8	J6.5	4.1	4.0	4.2	3.2	G	G	J2.3	J3.6	J3.8	J3.6	J6.0
8	J4.8	E	J1.9	J1.8	E	G	G	G	G	3.6	3.7	B	B	4.4	J8.3Y	J7.9	3.1	3.6	G	J2.0	E	2.3	J2.1	J3.5
9	J2.8	J2.9	J2.1	J2.8	J2.3	J2.3	J3.0	3.5	3.5	3.5	3.7	G	3.8	G	4.0	G	G	2.9	J2.8	E	J2.8	J3.2	J2.3	J2.7
10	J1.8	2.0	2.1	E	E	G	2.7	3.9	J5.5	4.6	3.7	G	5.0	4.6	4.3	4.4	4.1	3.5	3.0	J2.2	J3.0	J2.4	J2.4	J2.4
11	J2.4	J4.1	J3.4	E	E	1.9	2.7	3.7	4.1	4.2	J5.4	4.7	J7.3	8.2	4.7	J5.8	J6.7	J5.3	3.1	2.2	J6.2	J4.3	J3.9	J3.6
12	2.3	2.4	J2.5	J3.7	E	2.6	J4.1	3.5	C	4.4	J7.4	4.5	3.9	3.8	G	3.6	J4.8	J6.0	J6.4	J3.8	J5.9	J2.8	J5.4	J1.9
13	J3.8	J3.3	E	E	J2.3	2.2	G	3.0	G	3.9	4.8	J5.1	4.9	4.6	J5.9	J5.9	3.8	G	2.8	J2.1	J5.1	J6.6	J4.9	J2.3
14	J2.8	J2.3	2.1	E	C	2.5	G	3.5	3.5	J5.0	J4.9	B	B	3.6	B	B	G	4.0	2.3	J2.6	J2.4	J6.1	J3.5	J2.9
15	J3.0	J3.1	J2.1	2.2	J1.8	2.5	3.0	3.3	4.2	J10.5	J8.3	J8.1	J6.3	4.6	3.9	5.0	4.4	J5.5	J8.1	J5.0	J2.0	J4.9	J5.3	J6.8
16	J1.8	J2.8	J1.9	E	E	2.1	3.1	J6.0	J5.0	J5.0	3.7	4.0	B	B	B	B	J5.3	J5.8	J6.0	J7.7	J5.3	3.6	J2.9	J2.4
17	J5.1	J6.0	J4.0	J3.8	E	J3.3	4.0	J5.6	J5.5	J8.1	J7.3	J7.4	J7.0	4.2	B	J6.2	J7.2	J6.1	J11.3	J7.9	J6.8	J6.3	J6.4	J7.0
18	J6.1	J2.8	J5.9	J3.4	E	2.2	3.4	J4.9	J4.9	4.6	4.4	4.5	4.1	3.9	B	J7.0	3.7	J3.9	2.6	E	E	E	J3.0	J2.3
19	J3.2	J3.4	J3.3	J3.3	J2.0	2.5	3.5	J5.6	4.0	4.7	J5.9	4.5	4.2	4.1	4.0	B	4.0	3.2	J3.6	2.0	1.8	J4.0	J2.9	J4.7
20	J7.0	J4.8	2.0	E	2.2	2.4	3.4	4.0	4.3	4.6	4.6	B	G	G	J5.1	4.7	J8.3	J7.4	5.7	J6.7	J5.0	J7.4	J6.9	J7.9
21	J2.9	J1.8	J2.5	J2.5	E	G	G	3.6	J8.1	4.1	4.8	4.5	5.4	4.7	J7.2	J7.0	J3.3	3.9	J3.2	J8.0	J8.8	J6.1	J3.8	J6.0
22	J2.8	J3.8	J4.0	J5.0	J3.7	3.5	3.3	J5.1	4.0	4.9	J5.5	5.3	J5.8	4.5	J6.1	G	5.0	J5.4	J3.6	E	J1.8	J3.8	J2.8	J10.0Y
23	J3.3	J3.3	J2.9	J2.8	J3.2	2.5	3.0	J3.6	J5.1	4.2	3.8	B	B	B	G	4.0	C	3.7	J5.2	J5.0	E	E	2.2	E
24	E	E	J1.8	E	E	2.4	J4.4	J5.4	J6.0	4.1	4.6	J5.5	J6.1	4.2	G	3.5	G	G	2.1	E	J6.5	J8.5	J8.6	J6.2
25	J5.5	J5.4	J4.4	J5.0	J2.7	J4.4	J5.2	J6.9	J6.9	J5.6	J6.0Y	B	B	4.5	4.1	G	G	3.0	J3.4	J3.5	J3.0	J2.1	J2.6	2.1
26	J4.8	J5.0	J1.8	J8.0	J8.9	J5.3	J3.9	J5.8	C	J5.5	J7.4	4.1	G	J5.7Y	5.0	J6.5	J6.0	J3.9	J4.9	J5.8	J5.8	J6.8	J8.8	J7.4
27	J6.3	J4.2	J2.9	J1.8	J2.1	2.6	3.4	J5.3	J7.2	J6.8	3.7	J6.5	B	J5.1	J5.6	J7.0	G	J5.1	J4.8	J6.1	J4.9	J10.4	J3.5	J3.9
28	J9.0	J6.0	J4.3	J2.9	J2.6	G	J7.8	J5.3	4.6	C	C	C	C	C	C	C	C	C	J6.8	J3.0	J4.0	J7.0	J7.0	J3.8
29	J5.1	J2.4	J6.4	J6.1	E	J4.5	J6.1	J6.6	J7.3	4.1	4.1	4.3	J8.7	J8.3	4.5	4.0	3.5	J5.6	J5.9	J9.5	J9.5	C	J5.2	J6.1
30	J4.9	J2.9	2.2	2.2	E	J3.6	3.9	J5.7	J9.1	8.4.	J6.8	J5.9	5.6	J6.8	4.4	3.7	G	J3.8	J6.9	J2.8	J8.3	J4.9Y	J6.1	J4.9
31	J3.5	J2.8	J6.7	J5.9	J6.8	J5.8	J5.3	J8.2	J8.5	J5.6	4.5	J6.3	J5.0	4.2	J6.8	J7.3	4.0	4.0	J3.3	J4.6	J4.8	J6.8	J1.8	2.0
No.	31	31	31	31	30	30	31	31	29	30	28	24	21	24	22	25	29	30	31	30	31	30	31	31
Median	3.0	2.9	2.2	2.2	E	2.4	3.1	3.9	4.9	4.6	4.7	4.6	5.0	4.4	4.4	4.2	3.5	3.9	3.4	2.6	3.6	4.0	3.5	3.6
U. Q	5.1	4.1	3.4	3.4	2.3	2.6	4.0	5.6	6.4	5.6	6.0	6.3	6.2	4.9	5.6	6.4	4.6	5.3	5.7	5.0	5.9	6.6	5.4	6.0
L. Q	2.0	1.8	1.9	E	E	2.0	G	3.5	4.0	4.1	4.0	4.4	4.0	4.0	3.9	G	G	3.0	2.4	2.0	1.8	2.5	2.4	2.1
Q. R	3.1	2.3	1.5			0.6		2.1	2.4	1.5	2.0	1.9	2.2	0.9	1.7			2.3	3.3	3.0	4.1	4.1	3.0	3.9

foEs

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

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

May. 1961

fbEs

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	1.8		3.3			E3.9B	3.9	3.9						2.0					
2								3.1	3.5	U4.2B	B	E4.4B	B	B	B				2.0		1.7	E	1.9	
3						1.9	2.8	3.4			B	B	B	B	B	B		3.0	2.3	2.0	U2.3B	2.5	2.0	
4	E					B		3.9	U4.4B	4.5	5.7	4.4	U4.2B	B	B	B	3.4	3.5	3.4	2.1	E	3.4	3.0	
5			1.7	1.8	2.5	1.9	3.0	4.2	A	5.6	5.3	5.7	C	C	C	3.9	3.6	3.0	5.5	C	4.0	5.2	A	1.9
6	A	4.5	E	E					A	A	4.0	A	A	A			3.3		2.0			3.0		2.8
7	E	E	E		E	2.0	4.0	3.7	4.9	3.6	E4.5B	5.4	5.5	3.9	E4.0B	4.2	3.2			E	1.7	3.0	U3.6B	A
8	2.0		E	E						3.5	3.7	B	B	4.3	4.5	A	3.1	3.6		E		E	E	E
9	E	E	E	E	E	2.0	2.8	3.4	3.5	U3.5B	3.7		U3.8B		3.6			2.6	2.5		E	2.7	E	2.0
10	E	E	E				2.6	3.5	5.0	4.6	3.6		4.6	4.6	4.0	4.0	3.5	2.5	2.9	1.7	2.0	E	2.0	2.0
11	E	1.8	1.8			1.9	2.7	3.6	4.0	4.0	4.9	E4.7B	E7.3B	E8.2B	E4.7B	5.8	6.7	4.8	3.0	E	5.0	4.2	3.5	2.5
12	1.9	E	1.8	2.0		2.5	U4.1B	3.5	C	4.2	A	U4.5B	3.7	U3.8B		3.5	4.8	A	A	3.5	3.5	1.7	2.9	E
13	E	E			E	1.7		3.0		3.8	U4.8B	5.0	U4.9B	E4.6B	5.3	5.2	3.5		2.0	1.7	2.8	5.0	4.0	E
14	1.8	1.8	E		C	G		3.1	3.5	5.0	4.7	B	B	U3.6B	B	B		4.0	U2.3B	2.5	E	E	E	1.9
15	2.0	2.8	1.7	E	E	2.0	2.6	3.2	U4.2B	A	A	A	A	U4.6B	3.9	4.9	U4.4B	U5.5B	A	5.0	E	4.4	1.9	2.5
16	E	1.9	E			2.1	2.7	5.6	4.9	5.0	U4.7B	U4.0B	B	B	B	B	4.5	5.3	5.5	5.6	2.8	E	2.0	2.0
17	A	A	3.5	3.1		2.9	3.9	A	A	A	A	A	A	E4.2B	B	A	A	5.1	A	6.5	6.5	2.5	4.5	2.1
18	4.0	E	E	E		2.2	3.4	4.9	4.9	E4.6B	4.2	E4.5B	E4.1B	E3.9B	B	A	U3.7B	U3.9B	U2.6B				3.0	2.0
19	2.6	E	2.0	2.6	E	2.3	3.4	4.7	3.8	4.4	5.5	4.4	4.0	4.1	3.9	B	3.2	U3.2B	3.5	2.0	E	3.5	E	3.5
20	4.0	E	E		E	2.4	3.4	3.8	3.9	4.0	4.4	B			5.1	4.6	A	A	5.2	5.4	5.0	5.0	5.0	1.8
21	1.7	E	E	E				3.5	A	4.0	E4.8B	4.3	U5.4B	4.2	5.4	6.0	3.3	3.4	U3.2B	3.2	5.3	5.3	3.4	4.6
22	E	E	3.3	E	E	3.4	3.2	4.7	4.0	4.9	5.3	5.1	5.3	4.2	5.0		5.0	5.0	3.5		E	3.5	2.5	2.9
23	3.3	E	2.9	2.0	2.0	2.1	2.9	3.5	U5.1B	3.8	U3.8B	B	B	B		3.9	C	3.4	3.8	5.0			E	
24			E			2.3	4.4	5.3	5.2	U4.1B	E4.6B	5.5	5.0	4.0		3.5			2.1		4.8	2.5	A	2.0
25	1.7	1.7	2.2	2.0	1.8	3.9	4.9	6.5	6.9	5.2	4.5	B	B	U4.5B	E4.1B			3.0	3.0	2.1	2.9	E	E	E
26	1.8	E	E	A	2.3	4.5	3.6	5.0	C	A	A	4.1		4.0	5.0	A	5.8	3.8	3.7	A	4.5	4.0	3.1	3.2
27	1.8	E	1.7	E	E	2.3	3.1	5.0	5.8	3.9	E3.7B	A	B	E5.1B	5.1	5.5		E5.1B	4.6	6.0	4.2	A	3.1	3.5
28	A	3.3	2.9	2.1	E		A	4.9	E4.6B	C	C	C	C	C	C	C	C	C	4.5	3.0	4.0	3.5	3.2	3.0
29	2.6	2.1	3.9	1.7		3.5	5.9	5.7	A	4.0	E4.1B	E4.3B	A	A	E4.5B	3.9	3.2	5.1	2.1	A	6.0	C	1.8	3.1
30	3.0	2.0	E	E		2.6	3.6	4.9	A	A	6.0	5.6	4.9	5.5	4.2	3.7		3.6	A	2.5	4.5	E	4.1	2.8
31	3.0	2.4	A	3.1	2.8	A	5.0	A	A	A	E4.5B	A	U5.0B	E4.2B	A	A	3.5	4.0	U3.3B	4.5	3.1	E	1.7	E
No.	27	24	27	19	15	24	23	29	25	27	27	22	18	18	16	19	20	23	29	23	26	27	29	26
Median	1.8	E	E	1.7	E	2.2	3.4	3.9	4.9	4.4	4.7	E4.8	5.0	4.2	E4.5	4.9	3.6	3.8	3.3	3.0	3.0	3.0	2.9	2.0

fbEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May. 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	1.65	1.75	1.75	2.00	2.00	3.50	3.50	3.45	2.40	1.90	1.85	1.75	1.70	E	E	E	E	E
2	E	E	E	E	E	E	1.65	1.65	1.75	1.95	4.70	3.65	4.00	4.70	4.55	1.90	1.85	1.65	1.65	E	E	E	E	E
3	E	E	E	E	E	E	1.70	1.70	1.75	2.00	4.20	5.50	5.45	5.15	2.00	3.60	1.70	1.65	E	E	E	E	E	E
4	E	E	E	E	E	1.75	1.65	1.65	1.95	2.05	2.00	3.60	3.60	2.00	3.70	3.55	1.70	1.70	1.70	E	E	E	E	E
5	E	E	E	E	E	1.70	1.65	1.70	2.70	2.65	2.80	3.60	C	C	C	2.00	1.70	1.70	E	C	E	E	E	E
6	E	E	E	E	E	E	1.70	1.65	2.00	2.00	2.60	2.00	2.00	2.00	2.00	1.85	2.50	1.65	E	E	E	E	E	E
7	E	E	E	E	E	1.70	1.65	1.70	2.00	2.00	3.55	3.65	3.55	2.00	2.00	2.00	1.95	1.65	2.00	E	E	E	E	E
8	E	E	E	E	E	1.70	E	1.65	1.75	2.00	2.00	5.15	3.95	2.00	2.05	1.70	2.55	1.65	E	E	E	E	E	E
9	E	E	E	E	E	E	E	1.65	1.65	2.00	2.50	1.95	1.90	1.95	1.95	1.70	1.65	1.70	E	E	E	E	E	E
10	E	E	E	E	E	1.70	1.65	1.65	1.70	1.90	2.30	2.00	2.70	2.40	2.00	1.70	1.70	1.70	E	E	E	E	E	E
11	E	E	E	E	E	E	1.70	1.80	1.90	2.00	2.60	3.80	3.45	3.50	3.45	3.45	1.80	1.75	1.95	E	E	E	E	E
12	1.85	E	E	E	E	E	1.65	1.90	I 1.90^C	1.95	2.00	2.70	3.00	2.90	2.00	2.00	1.90	1.70	1.70	E	E	E	E	E
13	E	E	E	E	E	E	1.70	1.70	1.80	2.00	2.60	2.00	2.00	2.05	2.00	2.00	1.85	1.75	1.65	E	E	E	E	E
14	E	E	E	E	C	E	1.65	1.90	2.00	2.00	2.60	4.00	3.90	3.20	3.95	3.55	1.75	1.90	1.70	E	E	E	E	E
15	E	E	E	E	E	1.80	1.70	1.70	1.95	3.05	3.20	3.45	2.95	2.95	3.00	3.00	2.00	1.80	1.75	E	E	E	E	E
16	E	E	E	E	E	1.75	1.70	1.70	1.90	2.05	3.45	3.45	4.00	5.40	3.80	4.00	1.70	1.65	1.70	E	E	E	E	E
17	E	E	E	E	E	1.65	1.95	1.75	1.75	2.00	3.50	3.45	3.50	3.95	5.30	2.00	1.80	1.90	1.70	E	E	E	E	E
18	E	E	E	E	E	E	1.70	1.75	1.95	1.95	2.00	2.00	3.60	3.70	3.95	2.05	1.95	1.70	1.70	E	E	E	E	E
19	E	E	E	E	E	1.65	1.65	1.70	1.80	2.00	2.00	2.55	2.00	2.70	2.00	3.70	1.70	1.80	1.70	E	E	E	E	E
20	E	E	E	E	E	1.65	1.70	1.70	1.80	2.00	2.55	4.00	3.40	3.55	2.00	2.00	2.00	1.75	1.65	E	E	E	E	E
21	E	E	E	E	E	1.70	1.70	1.75	1.90	1.95	3.65	3.50	5.00	3.50	2.00	1.70	1.80	1.70	1.65	E	E	E	E	E
22	E	E	E	E	E	1.70	1.70	1.80	1.90	1.85	2.00	2.00	2.10	2.00	2.05	2.00	2.00	1.80	1.70	E	E	E	E	E
23	E	E	E	E	E	1.75	1.70	1.70	1.70	1.90	3.15	4.00	4.00	3.95	2.05	2.00	I 1.75^C	1.70	1.75	E	E	E	E	E
24	E	E	E	E	E	1.70	1.70	1.70	1.95	2.05	2.05	3.80	2.00	3.00	2.60	1.90	1.70	1.70	1.95	E	E	E	E	E
25	E	E	E	E	E	1.65	1.70	1.90	2.00	2.00	3.70	4.20	4.00	2.05	2.60	2.00	2.00	1.80	1.85	E	E	E	E	E
26	E	E	E	E	E	1.70	1.70	1.70	I 1.90^C	2.00	2.00	3.50	3.40	2.05	2.55	2.00	1.80	1.70	1.70	E	E	E	E	E
27	E	E	E	E	E	1.65	1.70	1.90	1.95	2.00	3.50	3.55	5.45	3.45	3.60	2.00	2.00	1.80	1.75	2.00	E	E	E	E
28	E	E	E	E	E	1.70	1.75	1.75	2.00	C	C	C	C	C	C	C	C	I 1.90^C	1.75	E	E	E	E	E
29	E	E	E	E	E	1.65	1.70	1.70	2.00	2.00	2.00	3.55	3.75	2.05	2.05	2.00	1.95	1.70	1.65	E	E	E	E	E
30	E	E	E	E	E	1.70	1.70	1.70	1.70	2.05	2.00	3.55	3.50	2.05	2.00	2.00	1.95	1.70	1.75	E	E	C	E	E
31	E	E	E	E	E	1.70	1.70	1.80	1.90	2.00	2.00	3.55	3.00	2.00	2.00	3.25	2.05	1.75	1.65	E	E	E	E	E
No.	31	31	31	31	30	31	31	31	31	30	30	30	29	29	29	30	30	31	31	30	31	30	31	31
Median	E	E	E	E	E	1.65	1.70	1.70	1.90	2.00	2.60	3.55	3.50	2.90	2.05	2.00	1.85	1.70	1.70	E	E	E	E	E

f-min

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

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

May. 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	2.75	3.05	2.70	2.75	2.70	2.90	3.30	3.45	3.25	3.20	3.10	3.05	3.05	3.05	3.05	I3.00R	3.10	3.20	3.10	2.95	2.90	3.00	2.85	2.70
2	2.75	3.00	3.05	2.95	2.75	3.00	3.20	3.40	3.40R	3.40	3.10	2.80	2.80R	3.05R	2.95R	3.10	3.15	3.10	3.00	2.95	3.00	3.10	2.90	2.70
3	2.75	2.70	2.65	2.80	2.80	3.20	3.25	3.30R	3.20	3.20	3.35	2.95R	3.00R	3.10	I3.10R	3.10	3.25	3.00	3.10	3.20	3.20	3.15	2.85	2.80
4	2.85	2.85	3.00	3.25	2.95	3.10	3.20	3.35	3.20	3.25	3.10	2.90	3.15	I3.00R	3.05	3.05	3.15	3.20	3.15	3.15	3.10	2.95	I2.90F	I2.90F
5	2.90	2.90	2.95	3.00	2.85	3.30	3.15	3.10V	I3.20A	3.00	2.90	2.80	C	C	C	3.10	3.05	3.00	2.85	I2.90C	3.00	2.90	I2.80A	2.75F
6	I2.70A	2.65F	2.70F	I2.70RS	I2.70F	2.65	2.90	G	A	A	R	A	A	A	2.90	2.70	2.20	2.70	2.95	3.15	2.90	2.65	2.60	2.70
7	I2.65F	I2.70F	2.80F	3.00	3.30F	2.90	2.95	2.95	2.80	2.60	2.65	2.95	3.00R	3.10	3.10	3.15	3.10	3.10	3.10	3.10	3.25	2.65	2.80	I2.75A
8	2.70F	2.85	2.75	3.15	3.00	3.30	3.20V	3.30	3.20	3.05	2.80	3.05	3.10	3.00	2.95	I3.05A	3.15	3.15	3.20	3.25	2.85	2.85	I2.80RS	2.80F
9	F	F	2.95F	3.00	3.25	3.30	3.20	3.40	3.35	3.10	3.00	2.85	3.05	3.10	3.00	3.20	3.10	3.10	3.05	3.10	3.10S	2.90	2.85	3.00
10	2.80	2.80	3.00	3.15	3.15	3.25	3.15	3.10	3.20	3.15	3.20	3.05	3.00	3.10	3.00	3.15	3.20	3.35	3.05	3.00	I3.10RS	3.10	2.90	2.80
11	2.70	2.85	2.90F	3.05	3.00	3.20	3.50	3.35	3.30	3.15	2.95	I2.90R	I2.90R	2.95	3.10	I3.10R	3.05	3.20	3.15R	3.20	3.15	3.20F	2.90F	2.85
12	2.80	2.80	2.90	2.85	3.05	2.90	2.80	G	C	R	A	2.45	I2.80R	2.70	2.90	3.05	3.05	I3.00A	I3.10A	3.05	2.85F	3.10	2.90F	2.85F
13	2.80	I2.65F	2.85F	I2.80F	2.65F	3.15	3.25	3.10H	2.75	2.80	2.80	2.80	2.85	2.75	I3.05R	3.00	3.30	3.20	3.05	3.00	3.10	2.75	2.70	2.60
14	2.80	2.70	2.75	3.00	I3.00C	3.00	3.30	3.50	3.60	2.85	2.90	2.90	3.10	3.10	3.00	3.00	3.00	3.10	3.00	3.10	3.10	3.30	2.85	2.80F
15	2.75F	I2.80F	2.75F	2.85	2.90	3.05	3.30	3.50	3.20	A	A	I3.10A	I2.90A	2.85	2.85	3.00	3.20	3.10	I3.10A	3.20	3.00	2.85F	2.90	I2.85F
16	2.90	2.75	2.80	2.90	3.00F	3.20	3.10	3.45	3.25	2.85	2.90	3.05	2.80	2.90	3.20	3.20	2.90	2.70	2.90	3.00	3.50R	2.80	2.65	2.75
17	I2.70A	I2.60A	I2.60RF	I2.70F	3.10F	3.45	3.30	I2.75A	I3.00A	A	A	A	I3.00A	3.10	3.30	A	A	2.95	I2.90A	2.95S	I3.00RF	I3.10RF	F	F
18	F	F	F	F	F	3.25	3.25	3.40	3.00	3.15	2.85	2.80	3.00	3.05	3.15	I3.10A	3.30	3.10	3.00	2.95	3.00R	2.95	2.95	3.00
19	3.05	2.95	3.00F	I2.90F	I2.95F	3.20	3.15	3.15	3.15	3.15	2.90	3.00R	2.90	3.10	3.20R	3.10	3.10	3.10	3.00	3.05	3.00	2.90S	F	F
20	F	3.00	2.90F	2.90F	3.10	3.00	3.25	3.30	3.05	3.05	2.95	2.80	2.80	2.95	2.90	2.85	I2.80A	I2.90A	3.35	3.20	2.80	2.60	F	F
21	2.85F	2.90F	F	F	2.75F	3.15	3.30	3.10	I3.35A	3.10	2.90	2.85	3.00	3.00	2.95	2.90R	3.10	3.10	3.05	3.10R	I3.10F	F	F	F
22	F	F	F	F	F	3.20	3.00	3.10	2.85	3.00	2.90	2.80	2.85	3.00	I2.80R	I3.00R	3.10	3.05	3.05	3.05	3.00	2.85	2.90	I2.80F
23	2.80	2.90	2.75	2.85	2.85	3.05	2.85	3.00	2.95	3.00	2.75	3.10	2.85	2.80	3.00	3.00R	I3.00C	3.10R	3.15	3.30	2.70	2.70	2.65	2.65
24	2.75	2.80	2.85	2.80	2.70F	3.10	2.70	2.75	2.65	2.70	2.85H	I2.55A	2.55	2.40	2.80	2.95	2.95	3.00	2.80	2.90	2.80F	2.65	I2.90A	2.70F
25	F	F	F	I3.00F	I2.90F	2.95	2.80	3.15R	2.75	2.85	2.90	2.75	2.65H	2.75	2.95	2.90	2.90	2.60	2.90	I2.90RS	2.90	2.65	2.70	2.65
26	2.65F	2.65F	F	A	2.85	2.65	2.65	2.90	I3.00C	I2.90A	I2.80A	I2.80R	2.75	2.60R	2.60	I2.80A	3.05	3.05	2.95	I3.00A	2.80	I3.00F	I2.90F	F
27	F	F	F	2.90F	F	F	3.05F	3.35	2.80	2.75	3.10	I3.00A	2.85	3.00R	2.90	3.00	3.05	3.05	2.90	3.00	2.95	I2.90A	I2.90F	F
28	A	F	F	F	F	F	I3.00A	3.30R	2.90H	C	C	C	C	C	C	C	C	C	I2.90R	I3.10RS	3.15	2.80F	2.80	I2.70F
29	2.85F	2.90	2.85F	2.80F	2.70	3.35	3.15	3.20	I3.30A	3.10	I2.90R	3.10	I2.90A	I2.90A	2.90	2.95	3.00	2.95	I3.00R	I3.15A	3.10	C	F	F
30	F	F	F	F	I3.10F	3.10	3.10	3.15	I3.10A	I3.10A	3.20	2.90	3.05	3.00	2.90	3.00	3.10	3.00	I3.05A	3.05S	2.90	3.10	I2.90F	2.90F
31	3.00F	F	A	F	F	I2.90A	3.10	A	A	A	2.90	I2.90A	2.70	2.85	I2.90A	I2.80A	2.85	2.85	2.80	2.80	I2.85R	I3.10RS	3.00F	I2.75F
No.	23	23	22	24	26	29	31	30	28	25	26	28	28	28	29	29	29	30	31	31	31	29	26	24
Median	2.80	2.80	2.85	2.90	2.90	3.10	3.15	3.20	3.20	3.05	2.90	2.90	2.90	3.00	2.95	3.00	3.10	3.10	3.05	3.05	3.00	2.90	2.90	2.80

M(3000)F2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May. 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	L	3.55L	3.60L	3.60L	3.45L	L	L							
2								L	L	L	B	I3.60B	3.45L	B	B	L	L H							
3								L	L	3.80L	L	B	B	B	I3.70L	L	L							
4								L	A	I3.55A	I3.70A	3.50R	I3.80A	3.60	3.75L	3.45L	L							
5								A	A	A	A	A	C	C	C	3.40L	L	L						
6						3.15	3.30	3.40	I3.60A	I3.75A	4.10	A	A	A	3.40	3.50	3.40	3.30	L					
7							I3.35A	I3.35AL	I3.45A	3.60	A	A	I3.70A	3.55	I3.65R	I3.55A	3.55L	3.50L	L					
8								L	3.60	3.70	4.00	I3.75B	3.85R	I3.70R	I3.60A	I3.60A	3.55	L						
9								L	3.80H	I3.80LH	3.90L	3.70L	4.05	I3.85R	4.00	I3.50B	3.55L	L						
10									I3.50A	I3.50A	3.70	3.65	I3.70A	I3.80A	3.80	3.40	L	L						
11								L	L	L	A	A	A	A	A	A	A	A						
12						L	I3.40A	3.60	I3.80C	I3.80A	I3.90A	I3.75A	3.80	3.60	3.55	3.55	A	A						
13									L	3.70	A	A	A	A	A	A	L							
14							L	L	L	A	L	R	3.55R	I3.65R	3.70	3.50	3.60L	A						
15						L	3.60	3.80L	I3.80A	A	A	A	A	A	3.60	I3.55A	A	A	A					
16							L	A	A	A	3.95	3.80R	3.70	I3.70B	3.65	I3.70L	A	A	A					
17							A	A	A	A	A	A	A	B	B	A	A	A						
18							L	A	A	A	3.70	R	B	B	3.45L	A	L	A	L					
19							L	A	3.50L	I3.70A	I3.65A	I3.65R	3.80	3.80R	3.75L	3.80	3.50L	L						
20								L	3.70L	3.75	3.65	3.90R	R	R	A	A	A	A						
21						L	L	L	A	3.65	I3.65A	3.65	I3.65B	R	A	A	3.55	L						
22								A	3.45	A	A	A	A	R	A	3.90	A	A						
23							L	3.40	I3.55A	I3.70L	I3.90L	I3.80R	3.70	3.85	3.80R	3.60L	I3.35C	L						
24							A	A	A	R	A	A	A	3.60R	I3.65B	3.45	3.65R	3.50L	L					
25							A	A	A	A	3.45R	3.70	3.75R	B	B	4.00	3.40	3.30L						
26						A	A	A	C	I3.60A	I3.70A	4.00R	I3.60R	R	A	A	A	A	A					
27							L	A	A	3.75	B	A	B	A	A	A	3.35	A	A					
28						L	A	A	A	C	C	C	C	C	C	C	C	C	A					
29							A	A	A	3.50	B	B	A	A	A	3.60	3.50	A	L					
30								A	A	A	A	A	A	A	3.35	3.70	3.30L	3.60	A					
31						A	A	A	A	A	B	A	A	B	A	A	3.50	I3.35A	A					
No.						1	4	5	11	16	14	14	15	12	17	18	14	6						
Median						3.15	U3.40	3.40	U3.60	U3.70	3.70	3.70	3.70	3.70	3.65	3.55	3.50	3.40						

M(3000)F1

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May 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	265	270	290	325	295	300	315	305	275							
2								250	255	275	305	305	350	305	295	295	290							
3								265	260	295	285	345	335	305	295	300	280							
4								260	295	295	305	370	305	315	300	305	290							
5								280	I295A	I310A	325	370	C	C	C	305	305	295						
6						395	345	G	A	A	I410R	A	A	A	395	430	555	395	305					
7							345	350	I380A	495	I405B	I400A	I370A	340	345	300	295	295	295					
8								295	315	350	405	350	345	350	350	I350A	300	275						
9								255	295	I290L	345	395	345	295	305	295	295	280						
10									305	325	305	330	345	340	345	305	300	270						
11								260	295	295	350	350	I340A	I310A	295	300	I310A	295						
12						345	I355A	G	C	R	A	A	440	425	395	345	I340A	I315A						
13									L	295	395	350	345	350	290	300	285							
14							260	250	250	365	380L	390	340	305	345	310	295	290						
15						305	280	270	300	A	A	A	I380A	395	400	350	295	315	A					
16							I270L	275	305	405	355	350	395	345	300	315	355	I395A	320					
17							275	A	A	A	A	A	A	335	345	A	A	A						
18							270	260	I325A	340	395	400	345	335	305	I330A	295	295	295					
19							290	295	300	295	330	345	345	315	295	300	295	280						
20								285	315	350	520	400	395	350	360	355	A	A						
21						285	255	280	I260A	330	370A	370	325	345	345	330	295	295						
22								270	385	305	330	350	330	245	350	305	290	295						
23							345	345	350	345	I380L	345	400	365	340	345	I320C	295						
24							380	I380A	I410A	430	400	I490A	I480A	520	410	355	350	335	L					
25							290	290	I345A	320	350	400	410	395	345	370	350	395						
26						I370A	395	345A	I350C	I390A	I410A	I430B	425	475	A	A	A	310	310					
27							325	295	I310A	375	325	I325A	370	340	345	345	305	330	305					
28						280	I280A	270	I290A	C	C	C	C	C	C	C	C	C	290					
29							A	305	I295A	345	I420B	345	I370A	I365A	355	350	315	315	295					
30								300	I305A	I310A	305	I355A	345	345	355	340	300	305	A					
31						I350A	A	A	A	A	I380B	I375A	I370A	390	I400A	I400A	345	335	300					
No.						7	16	27	26	25	27	26	27	28	28	28	27	23	9					
Median						345	290	280	300	325	355	355	345	340	345	330	300	295	300					

h'F2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May. 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	295	260	295	295	310	260	245	245	225	230	240B	225	210	215	240	245	245	245H	245	245	270	260	270	295
2	290	255	245	245	290	250	245	245	245	I230A	I230B	I215B	210	I210B	I220B	225	200H	245	255	270	255	245	230A	280
3	300	295	295	285	290	250	245	245	240	235	I215B	I210B	I210B	I215B	220	225	245	245	260	255	245	245	255	295
4	290	295	255	240	245	255	250	I245A	A	A	A	240	I210A	I210B	205	I240B	245	260	260	245	245	I280A	300A	255
5	280	280	255	255	295A	245	250	A	A	A	A	A	C	C	C	I240A	I250A	250A	280A	I270C	255	A	A	330
6	A	A	300	305	295	300	295	255	I250A	I245A	220	A	A	A	B H	240	240	255	285	250	245	I285A	305	I305A
7	310	345	295	250	245	265	A	A	I245A	245	A	A	I220A	240	I230A	I235A	250	250	255	245	235	A	A	A
8	330A	295	290	245	255	245	240	245	210	230	200	I220B	220	245	I245A	I235A	245	I225A	250	240	245	260	290	295
9	300	295	290	250	245	245	250	225	230H	235H	215	230	200	200	210	I220B	225	245	255	240	245	I250A	260	270A
10	280	300	270	235	245	245	245	240A	I250A	I245A	240	245	I240A	I240A	225	I255A	275	245	255	260	245	245	245	290
11	300	290	265	245	255	250	245	245	I235A	I240A	A	A	A	A	A	A	A	A	275	245	I250A	I280A	305A	295
12	290	290	295	290	260	I270A	I250A	I240A	I235C	I225A	I220A	I220A	215	240	245	245	A	A	A	285	305	245	300A	290
13	305	315	295	290	305	245	245	225H	235	220	A	A	A	A	A	A	240	245	260	260	250	A	A	305
14	310	300	295	260	I275C	250	245	245	220	I220A	I215A	220	240	235	230	235	225	I250A	250	260	245	215	270	290
15	300	325A	295	270	300	265	245	235	I240A	A	A	A	A	A	230	A	A	A	A	255	220	I250A	255	290A
16	270	300	295	290	265	245	235	A	A	I215A	200	240B	220	I250B	225	270	I250A	A	A	295A	205	245	320A	305A
17	I315A	I335A	I350A	I340A	245	245	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	245F	I255A	295
18	I290A	295	295	255	270	250	250	A	A	A	220	I220A	I235B	I230B	225	I245A	290	I255A	260A	245	245	245	290	255
19	270	250	255	I285A	275	255	245	I240A	240	A	A	225	205	210	205	215	245	255	290	260	240	I255A	260	I280A
20	I295A	260	275	290	255	245	245	I240A	225	215	I230A	210	240B	I240B	A	A	A	A	260A	290A	A	A	A	300
21	265	260	300	295	295	260	245	220	I225A	225	I225A	I210A	I210B	240	A	A	245	255	295	255	I285A	I305A	345A	330A
22	245	280	310A	285	280	255	245	I240A	225	A	A	A	A	220	A	225	I245A	I250A	265	245	245	290A	290A	300A
23	295A	300	300A	285	295	255	245	240	I220A	220	205	200	245	220	210	245	I250C	255	255	255A	250	280	300	305
24	265	245	255	290	295	255	A	A	A	B	A	A	A	240A	I230B	235	240	240	245	295	I270A	290A	I290A	280
25	340A	290	290	250	290	260	A	A	A	A	I240A	215	235	I245B	I240B	190	255	270	295	270	250	290	295	300
26	310F	340	300	I265A	280A	A	A	A	C	I240A	I225A	225A	245	230A	A	A	A	A	A	I290A	310A	I300A	295A	I300A
27	330	300	275	245	260	255	250	A	A	220	B	A	B	A	A	A	230B	A	A	I290A	280	I295A	290	290
28	I295A	300A	290	275	295	245	A	A	A	C	C	C	C	C	C	C	C	C	A	255	245	270A	300A	320A
29	285	280	I305A	305	300	250	A	A	A	240A	B	B	A	A	A	A	250	I240A	250	A	A	C	340	305A
30	295	295	255	245	255	255	260	A	A	A	A	A	A	A	A	225	245	I250A	I260A	245	290A	245	I275A	295A
31	280A	295	A	A	A	A	A	A	A	A	B	A	A	B	A	A	245	I260A	I250A	305	305	245	235	255
No.	30	30	30	30	30	29	23	18	18	19	16	17	18	20	17	20	24	22	24	29	28	26	27	30
Median	295	295	295	270	280	250	245	240	235	230	U220	220	220	230	225	235	245	250	260	255	250	260	290	295

h'F

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

The Radio Research Laboratories, Japan.

A 10

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

May. 1961

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

The Radio Research Laboratories, Japan.

h'Es

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

IONOSPHERIC DATA

May. 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	f		f2		f	h		h			h	c	c						h					
2								h	h	h		h							h		f2	f	f2	
3						h	h2	h2										h	h2	f2	f2	f2	f	
4	f2							h2	h2	h	c3	c	h				h	h2	h2	f2	f2	f3	f4	
5			f2	f3	f4	h	h2	h2	c2	c2	c	c				h	h2	c2	f3		f2	f3	f3	f2
6	f4	f3	f2	f2					h2	h2	h	c	h	h2			h		c2			f2		f2
7	f2	f3	f		f	h	h3	h2	h2	h	h	c	c	c	c	c	h			f2	f3	f2	f3	f4
8	f2		f2	f2						c	c			h	h	h2	h	c2l		f		f	f2	f2
9	f2	f2	f2	f	f2	f2	l2	hl2	h	h	h		h		h			h	l2		f	f2	f	f
10	f	f	f				h	h2	h2	h	c		h2	h	h	h2	h2	h	h2	f2	f3	f	f3	f2
11	f2	f2	f2			h	h	h	h	c	c	c	c2	c	c	c2	c2	c2	h2	f	f3	f2	f2	f2
12	f	f	f	f2		h2	h2	h		c	l2	l	c	c		h	h2	c2	c3	f3	f3	f2	f2	f2
13	f2	f3			f	c2		h		h	c	c	c	c	c2	c2	h		h	f2	f2	f4	f2	f2
14	f2	f2	f			h		h	h	c	c			c				h2	c2	f2	f2	f	f2	f2
15	f2	f3	f2	f	f	h	h	h	c	c2	c2	c	l	l	l	h	h	c2	c4	f2	f	f3	f2	f2
16	f	f2	f			h	h	c2	c2	c	h	c					h2	h2	c2	f5	f2	f2	f2	f2
17	f4	f3	f4	f3		h3	h2	c2	c2	c2	c2	c2	c	h		h3	h2	h2	c2	f3	f5	f2	f3	f3
18	f4	f2	f2	f2		h2	h	h2	h2	h2	h	c	h	h		h2	h	h	h2				f2	f2
19	f2	f	f2	f2	f	h2	h2	h2	h	h	c	c	c	h	h		h	h	h2l	f	f	f3	f2	f4
20	f2	f2	f		f	h2	h2	h2	h	c	c				c	hl	c2l2	h2l2	l2	f4	f4	f2	f4	f2
21	f2	f	f2	f				h2	c4	h	c	c	c	c	l	l2	l	hl	h2	f3	f2	f5	f3	f5
22	f	f2	f3	f3	f2	h2	h2	h2	h	h	c2	c	h	c	l		h2	h2	c2		f	f4	f3	f3
23	f2	f2	f3	f2	f3	h2	h	h2	c	c	h					h		h2	c3	f2			f	
24			f2			h2	h2	h2	h2	h	h	h	h2	h		h			h2		f5	f2	f3	f2
25	f2	f2	f2	f2	f2	h2	h2	c2	c3	c	h			h	h			h	h2	f2	f3	f	f	f
26	f2	f2	f	f2	f2	h2	h2	h2		c	c3	h		h	h	h2l	h	h2	h2	f2	f4	f3	f2	f3
27	f3	f2	f2	f2	f2	h2	h2	c2	c2	h	h	c2		c	h	h2		c2	c	f3	f2	f3	f4	f4
28	f3	f2	f3	f2	f		c2	h2	h2										c3	f2	f2	f3	f3	f3
29	f6	f2	f3	f3		h2	h2	c2	c2	h	h	h	c2	c	h2	h	h	h2	h2	f3	f3		f2	f2
30	f3	f2	f	f		h2	h2	h2	c3	c2	c2	c	c	c2	c	l		h2	c3	f2	f3	f2	f3	f2
31	f2	f2	f2	f2	f2	h3	h2	c2	c3	c	c	c	l	h	h	h2	h	h	h2	f3	f2	f2	f2	f
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mav. 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	U 7.0S	7.1	6.0	5.6	5.6	6.5	8.9	8.0	8.1	I 8.2C	I 8.6C	9.5	10.8R	J 10.7R	10.3	10.6	J 10.9R	10.3S	9.0S	8.4	7.3S	J 6.3S	I 6.6S	6.8
2	6.9S	6.9	6.7	U 5.1S	4.6	5.1S	U 7.1S	8.9	8.5	8.7	7.6	8.4	9.9	10.3	10.3	10.6	10.2	9.1	9.0	9.3	9.0	7.5S	6.0	5.6
3	5.8	I 5.8S	5.5	5.3	5.4	6.3	7.5R	8.4	7.7R	I 7.4A	7.7	8.1	9.4	9.8	9.3	9.0	9.2	U 9.0S	9.5	J 9.5S	8.5	6.8	6.5	6.0
4	6.1	6.0	I 6.4S	J 5.4S	4.3	5.1	6.6	7.1	8.0	8.3	8.5	8.9	9.4	8.8	9.0	9.2	8.9	9.2	9.0	8.3	7.1	I 6.5S	6.2	6.2
5	J 6.3S	6.5	5.9	U 6.1S	J 5.6S	6.4	6.5	7.1	7.5	7.0	I 7.5A	8.8	9.7	10.5	9.2	I 8.6A	8.0	7.9S	U 8.2S	9.8	8.3	5.4	I 5.5A	5.5
6	U 5.6S	J 5.6F	4.4	4.6S	I 4.6F	4.4	I 4.8F	S	A	A	A	I 5.3AS	I 5.4S	I 5.5S	5.7	U 5.4S	U 4.9S	5.7	6.8	7.1	5.4	4.6	5.0	5.2
7	4.6S	4.9S	5.0	4.8	4.0	4.6	5.9	5.8	6.0	5.9	6.0	6.8	7.7	8.2	8.1	8.3	9.1	J 8.7R	8.1	8.0	6.7	5.2	5.3	5.5
8	U 5.2S	5.6	4.9S	4.4S	4.3	4.9	5.8	5.9	6.7	6.3	I 6.6A	7.6	7.8	7.4	7.6	U 8.2S	8.5	9.1	8.4	7.2	6.0	5.6	5.7	5.6S
9	5.5	U 5.4S	5.1	5.3	4.7	4.4	5.8	7.3	7.2	T 6.2R	6.2	7.3	8.5	9.5	9.9	9.9	9.5	7.9S	9.0R	U 8.7S	7.4	5.7	6.0	U 6.0S
10	5.6	5.4S	5.3S	J 5.5S	4.4	I 5.4S	5.3	I 6.1S	7.1	7.8	7.8	8.3	7.9	8.2	7.5	8.2	7.8	U 8.5S	U 8.0R	U 8.5SH	7.9	I 6.4S	6.1	6.0
11	5.9	6.2	I 5.6AS	4.6	4.4	5.4	6.2	5.8	J 6.5S	6.4H	7.6	U 9.1R	9.7	10.8R	U 10.1S	9.4	I 8.7A	9.3	8.4	9.0	7.3S	5.7	J 6.3S	7.5
12	I 6.2S	6.0	I 5.8S	U 4.9S	J 5.2S	J 5.4S	5.5	U 5.1S	A	S	I 5.2A	I 5.6S	I 6.2S	6.5	6.6	6.7	6.5	6.5	6.7	I 6.6A	6.2	5.5	5.1	4.8
13	4.4	4.5S	I 4.2A	J 4.4S	4.2	5.0S	6.2	I 5.6S	6.3	6.8	7.0	8.1	9.1	9.3	10.0	9.3	9.0	7.0	7.0	8.5	7.1S	5.1	J 5.6F	I 5.8A
14	5.8	5.5	U 5.2S	T 5.0S	5.0	5.8S	7.6	6.6	6.1	I 6.0S	6.8R	7.2	8.0	8.3R	8.0	8.9	U 8.1S	8.0	8.3R	I 8.4R	U 8.2R	6.5	5.5	5.6
15	5.8	5.1S	5.0S	U 4.8S	4.9S	5.7	6.9S	U 6.8S	I 6.4S	I 6.1S	I 6.2S	I 6.5A	I 6.6S	U 6.4S	6.8	7.2	I 7.6A	I 8.1A	I 8.4S	I 7.7R	I 6.5S	I 5.9S	5.6	5.7
16	5.1	I 4.9A	4.4S	4.8S	4.4	5.9	J 7.1S	6.5	I 6.6A	I 7.2A	I 6.8A	I 7.4A	7.2	8.2	J 8.4R	7.4	I 6.7A	I 7.0A	I 8.2A	I 9.7A	7.4	I 5.0A	4.8	4.9
17	4.7	I 4.2A	4.2F	4.5	I 4.9S	5.7	5.3	I 6.0A	I 6.4A	J 7.1R	6.9	6.8	7.5	8.3	7.7	7.2	I 6.0A	6.6	I 7.4A	8.3	7.6	6.9	6.6	I 6.3S
18	I 6.0A	U 5.2S	U 5.0S	6.2	5.6	6.2	6.5	I 6.2C	6.2	I 6.4A	I 6.8A	7.1	7.9	8.9	8.6	7.9	I 7.4R	I 7.3A	7.3	I 7.8A	I 8.0S	7.2	7.1	7.1
19	I 6.2R	6.0	I 5.7S	5.2	5.0	J 5.6S	J 6.4R	6.9	7.6	I 8.0A	8.1	8.5	8.7	9.0	9.5	9.3	I 9.3R	J 8.9R	8.2	8.9	7.9	7.2	7.0	6.7
20	U 6.5F	6.3	I 5.8A	5.8	J 5.4S	6.1	6.5R	I 7.2S	7.1	6.8	I 6.7A	6.7	7.3	8.7	8.8	8.1	I 8.3A	I 8.6A	9.8R	7.9	5.6	5.9S	I 5.9S	U 6.1S
21	I 6.4AS	I 6.1S	I 5.4S	I 5.0S	U 5.2S	5.9S	6.5	6.7	8.0	6.5	A	A	U 8.3A	8.6	8.9	9.4	J 9.4R	9.1S	8.0	8.3	7.5	6.5	6.6	U 7.1S
22	7.2S	6.8	J 6.5S	7.2	6.3	6.6	U 6.8R	6.8	J 7.7R	8.6	8.2	8.6	8.5	9.1	I 9.2S	10.3	I 9.6R	I 9.0S	U 9.0R	8.1	7.5	I 7.3S	7.0	6.8
23	I 6.6S	6.7	I 6.1S	J 6.4S	I 6.2S	I 6.4S	6.9	U 6.6S	7.1V	7.0	6.8	7.2	7.8	7.5	8.4	9.0	8.7	U 9.5S	9.5	7.3	U 5.6S	I 6.2S	I 6.2S	I 6.4S
24	J 6.5S	6.0	I 5.0A	I 4.8A	I 4.6S	I 5.5A	I 5.8A	A	A	U 6.1S	5.9	I 5.8S	I 5.6A	6.1	I 6.2S	6.3S	J 5.9S	5.6	5.6	6.6	6.0	J 5.8S	I 5.6A	I 5.5A
25	I 5.6A	J 5.9S	I 5.4SF	4.7	I 4.4A	5.2	7.2	J 8.6S	I 8.1A	8.5	8.3	8.1	8.0	7.8	8.4	8.6	I 8.3A	J 8.0S	9.1	J 7.9A	7.5	7.2	6.9	6.5
26	6.7	I 7.3A	6.9	6.5	4.2	J 4.4S	6.0	6.5	I 6.6A	I 5.8A	I 5.6S	6.0	6.1S	6.3	I 6.2A	6.4	6.6	6.7	6.6	6.6	6.8	6.0	5.9	J 5.6S
27	5.5	5.4	5.3	J 5.2F	4.8	J 5.3S	6.8	7.4	6.6	7.2	6.9	I 7.2A	7.7	8.0	8.2	I 8.7A	8.6	8.3	8.2	8.5	J 8.0S	7.5	I 7.2F	I 7.0F
28	6.1F	I 6.2A	U 6.2A	S	S	6.6	7.1S	7.6	I 7.0A	I 6.6A	6.8	I 7.0A	7.2	7.3	7.8	8.4	9.5	10.3	J 10.4R	I 11.0R	8.9	J 6.6S	J 7.1S	7.0
29	7.3F	6.9	6.1	5.6	5.4	6.2	I 7.2C	8.4	A	A	6.6	6.8	8.1	7.5	7.2	7.7	8.3	9.0	9.5	9.6	7.4	6.2	5.9F	J 6.3F
30	6.5	6.4	5.7	5.1	4.5	5.2	I 6.4A	6.7	7.9	I 8.2A	7.4	7.0	7.2	7.4	8.3	8.5	8.9R	8.8	8.9	8.4	8.0	7.2	6.5	6.6
31	6.6	I 6.2F	I 5.1F	I 4.8F	U 4.9S	4.9	5.8	I 6.3A	A	I 6.0A	6.4	I 6.5A	6.3	J 6.3R	6.4	I 6.5C	7.2	7.7	I 8.2R	I 7.8A	J 8.1S	U 9.0S	I 6.4A	J 5.0S
No.	31	31	31	30	30	31	31	29	26	28	29	30	31	31	31	31	31	31	31	31	31	31	31	31
Median	6.1	6.0	5.4	5.1	4.8	5.5	6.5	6.7	7.1	6.9	6.8	7.2	7.9	8.2	8.4	8.5	8.5	8.5	8.3	8.3	7.4	6.3	6.1	6.0
U.Q.	6.5	6.4	6.0	5.6	5.4	6.2	7.1	7.4	7.7	7.9	7.6	8.3	8.7	9.1	9.2	9.3	9.2	9.1	9.0	8.9	8.0	7.2	6.6	6.7
L.Q.	5.6	5.4	5.0	4.8	4.4	5.1	5.8	6.2	6.5	6.2	6.5	6.8	7.2	7.4	7.5	7.4	7.4	7.3	8.0	7.8	6.7	5.7	5.6	5.6
Q.R.	0.9	1.0	1.0	0.8	1.0	1.1	1.3	1.2	1.2	1.7	1.1	1.5	1.5	1.7	1.7	1.9	1.8	1.8	1.0	1.1	1.3	1.5	1.0	1.1

The Radio Research Laboratories, Japan.

foF2

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

K 1

IONOSPHERIC DATA

May. 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	C	C	5.6^{L}	L	L	L	L	L	L						
2									L	L	5.5^{L}	5.5^{L}	U 5.8^{L}	L	L	L	L	L						
3								L	L	A	U 5.1^{L}	5.1	5.1^{L}	5.0	5.0^{L}	U 5.1^{L}	L	L						
4								L	U 4.7^{L}	U 4.8^{L}	L	L	L	L	A	L	A	A	A					
5								L	A	A	A	A	A	A	A	A	A	A						
6							3.5	S	A	A	A	AS	S	4.4	U 4.5^{S}	4.4	4.1	3.9^{L}	L					
7							L	4.2^{L}	A	4.7	U 4.8^{R}	5.1	R	4.7	4.8^{L}	4.7^{L}	U 4.4^{L}	L	L					
8								L	L	U 4.8^{L}	A	L	L	4.9	4.7	AS	L	L						
9								L	L	U 4.4^{L}	L	4.8	S	4.8	4.8	4.3	4.1	L						
10								4.6^{S}	L	4.8^{S}	5.0^{L}	4.9	S	S	S	S	L	L						
11								L	L		4.9^{S}	U 5.1^{L}	L	A	A	A	A	A						
12							3.8^{L}	4.2^{L}	A	U 4.7^{R}	A	S	U 4.4^{S}	4.8	4.5	A	A	A	A					
13							L	S	L	S	U 5.0^{R}	L	U 5.0^{R}	S	A	A	A	L						
14							L	L	L	5.0^{S}	A	U 5.1^{R}	A	5.0	A	4.6	U 4.4^{L}	U 3.6^{L}	L					
15							L	AS	S	L	S	A	S	AS	4.7	S	A	A	A					
16							L	L	A	A	A	A	S	S	L	C	A	A	A					
17								A	A	A	4.9	4.8	4.9	L	S	S	A	A	A					
18							L	C	A	A	A	A	5.1^{L}	U 5.3^{S}	5.1^{L}	4.4^{S}	A	A	A					
19							L	L	A	A	A	5.5^{L}	S	AS	S	L	A	A						
20								S	A	A	A	A	AS	5.0^{R}	A	A	A	A	A					
21								S	S	A	A	A	A	L	L	5.0^{S}	L	L	A					
22									S	A	S	U 5.5^{L}	U 5.5^{L}	S	S	L	S	A						
23							S	S	A	A	A	U 5.0^{L}	S	5.1^{R}	5.2^{L}	U 5.1^{L}	S	A						
24							A	A	A	A	S	S	A	U 4.7^{R}	4.7^{S}	A	4.3	L	A					
25								A	A	A	A	U 5.2^{L}	A	S	S	4.9	A	S	A					
26							L	A	A	A	4.7	U 4.7^{R}	4.7	U 4.7^{S}	A	4.5	4.3	4.0^{L}	U 3.3^{L}					
27							A	4.2^{L}	A	L	A	A	5.1^{L}	A	A	A	A	A						
28							A	A	A	A	A	A	4.9^{L}	A	A	A	A	A	A					
29							C	A	A	A	4.8^{L}	5.1^{S}	4.9	A	4.7	U 4.5^{L}	4.4^{H}	A	A					
30							A	L	A	A	A	A	A	A	S	4.9^{L}	A	4.0^{L}	A					
31						L	U 3.8^{L}	A	A	A	A	A	A	A	4.6	C	A	A	A					
No.							3	4	1	7	9	15	11	12	12	12	7	4	1					
Median							3.8	4.2	U 4.7	U 4.8	4.9	5.1	5.0	4.8	4.7	4.6	4.3	4.0	U 3.3					

foF1

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

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

May. 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							U2.35S	I2.90A	3.15	I3.30C	I3.50C	I3.70A	U3.80R	3.70R	I3.60A	I3.30R	3.15	I2.40S	I1.90A					
2							2.40	2.75	3.25	B	B	U3.75R	I3.70B	I3.55R	3.20	3.20	I2.85R	2.50	I1.80B					
3						B	I2.50B	B	R	3.20	R	B	R	3.55	3.30R	3.25	U3.00R	I2.45B	A					
4						S	2.35	2.90	3.10	U3.30R	B	R	I3.60B	I3.50R	I3.40B	3.35R	I2.90S	2.50	A					
5						S	2.40	I2.90B	3.30	3.40	3.55	3.70	U3.80R	3.60	3.40	3.10	I2.80R	A	S					
6						S	U2.30R	I2.80S	3.10	3.30	3.50	U3.60R	B	R	S	3.05	2.90	2.50S	B					
7						A	2.50R	U2.80R	3.20	3.45	3.55	U3.60R	I3.55A	I3.40A	3.15	3.00	I2.80B	I2.40A	B					
8						S	I2.40A	I2.75S	3.30	3.20	I3.20A	I3.60R	I3.80A	U3.60A	I3.40R	I3.15S	2.80	I2.50A	S					
9						S	S	B	A	R	I3.40R	3.50	I3.50R	I3.40R	3.35	3.35R	2.90	U2.30R	B					
10						I2.05S	I2.55B	I2.85B	I3.20A	3.45	U3.50R	I3.60B	3.60R	I3.50B	I3.40R	3.25	2.90	2.30	B					
11						U1.85S	U2.30R	2.85	3.15	3.50	3.50	I3.50A	A	A	3.15	A	A	2.55	B					
12						A	I2.05A	I2.70R	A	A	A	A	3.80	I3.60R	3.45	3.40	3.10	2.50	A					
13						S	A	A	A	3.35	I3.50A	I3.50A	I3.60B	I3.50B	3.35R	3.10	I2.80A	R	B					
14						S	I2.40R	I2.80R	3.00	3.30	A	A	A	3.60R	I3.65A	I3.20A	I2.90R	I2.40B	B					
15						I1.90S	I2.30B	I2.65S	U3.00R	A	A	A	A	A	A	I3.20R	I2.95B	A	B					
16						S	2.20R	2.65S	3.00	A	A	A	A	I3.80A	I3.40R	I3.30A	A	S	S					
17						B	B	S	A	A	A	B	B	B	B	3.20	I2.95S	I2.45A	B					
18						B	B	I2.85C	3.00	I3.30A	A	A	A	A	I3.65R	3.40	A	S	S					
19						S	I2.40S	I2.90S	3.15	3.40	I3.60B	B	B	A	S	A	A	B	B					
20						S	I2.50B	I2.90S	3.20	U3.50A	A	A	A	A	A	3.40	A	B	B					
21						I2.10S	I2.30S	I2.80S	B	B	A	A	A	A	A	3.30	A	B	B					
22						S	B	U3.10A	3.30	3.50	U3.65R	3.75	A	A	A	I3.30S	U3.05A	I2.60S	B					
23						S	B	I2.85S	3.05	A	A	R	R	3.60R	3.65	I3.35S	3.00	I2.55S	S					
24						S	I2.40B	I2.90S	U3.25R	I3.40A	I3.55B	I3.65A	I3.70B	I3.60B	I3.45B	I3.20S	A	B	B					
25						B	B	I2.85S	I3.10S	3.20	A	A	A	3.60R	I3.60B	I3.30R	I3.10A	S	A					
26						I1.85S	U2.40R	I2.80S	3.10	I3.10C	I3.20A	R	A	A	3.40	3.15	2.85	I2.50B	A					
27						1.75	2.40	2.65R	U3.20A	I3.30A	3.30	I3.40A	3.50	I3.60R	3.40R	3.15	3.00	2.45R	A					
28						S	2.35	I2.70S	I2.90A	3.05	3.30R	3.55	3.60R	3.60	3.40	3.20	2.90	I2.50R	B					
29						2.00	I2.40C	2.85	3.20	3.30	3.40	3.55	I3.60B	3.40	3.30	3.15	2.90	2.65	A					
30						I2.00A	2.55	2.80	I3.10A	3.35	3.40	3.45	3.40	A	A	A	R	A	A					
31						I1.90A	2.55	I2.70B	I3.00A	I3.10A	3.25	3.40	A	A	3.40	I3.45C	I3.05B	I2.55S	S					
No.						9	24	27	25	23	18	17	15	19	23	28	23	20	2					
Median						U1.90	U2.40	U2.80	3.15	3.30	U3.50	U3.60	U3.60	U3.60	3.40	3.20	U2.90	U2.50	U1.85					

The Radio Research Laboratories, Japan.

foE

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

K 3

IONOSPHERIC DATA

May. 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	3.0	4.1	3.8	C	C	4.1	G	G	J3.7	G	G	S	2.3	E	S	2.5^{M}	E	E
2	'S	E	E	E	E	E	2.9	3.2^{S}	3.7	3.9	3.9	G	B	G	G	G	G	2.9	3.1	J2.7	J2.5	E	J1.6^{S}	E
3	E	E	J2.4	E	1.3	2.6^{S}	3.1	3.3	J4.3	J7.1	3.9	B	3.1^{G}	G	G	G	G	3.2	J5.1	J2.7	S	1.7	J3.1	J1.6
4	1.5^{S}	E	E	E	E	S	2.8	3.3	3.4	G	B	4.2	4.4	4.6	4.9	4.0	J8.1	J5.6	J6.4	J3.8	J4.2	J3.7	J3.0	J4.4
5	J4.2	J6.9	J3.8	J3.3^{S}	3.4	2.1	J3.9	3.6	5.2	J6.5	J7.5	J5.9	6.0^{M}	4.8	J9.3	J9.3	J5.7	4.9^{M}	5.0	2.2	2.1^{M}	J4.2	J8.8	J5.2
6	5.4^{M}	4.0^{M}	J4.3^{S}	J1.6	E	S	G	S	4.3	4.3	J6.6	4.4	4.3	G	G	G	3.1	2.9^{S}	2.1	E	E	S	E	J2.5
7	3.2	3.4^{M}	J4.3	2.6^{M}	1.5	2.0^{M}	3.0	3.5	4.9	4.6	4.5	4.3	4.7	4.4	4.2	3.4	3.3	2.3	B	J1.8	E	J3.3	J3.5	4.1
8	J4.3	J4.9	J1.8	E	E	S	2.1^{G}	S	3.7	4.2	J6.8	4.8	4.1	4.5	4.0	5.0^{S}	3.9	J3.8	3.7	J2.3	2.4^{M}	S	S	S
9	J4.4	J5.1	J2.8	S	2.5^{M}	J3.1	S	3.6	3.6	3.0^{G}	G	4.7	4.6	G	3.7	G	3.4	J3.5	J3.3	3.0	J5.0	J2.5	E	J2.8
10	2.5^{M}	2.2^{M}	E	E	J1.5	G	B	3.5	4.5	4.4	3.8	B	4.5	4.5	4.5	4.3	4.0	J3.4	2.0	1.4	2.0	J3.1	J2.1	J2.1
11	J2.0^{Y}	2.2	J9.3^{Y}	J2.9	J4.0	G	G	3.4	4.2	4.4	4.1	J5.1^{S}	5.0^{S}	J6.6	J9.0	7.4^{M}	9.0^{M}	4.9	5.0	J2.3	E	J4.4	J3.8	J6.3
12	J4.1	J3.4	J4.2^{S}	J3.3	2.3	J2.9^{S}	J3.4	3.4	4.6^{M}	4.5^{M}	J5.0^{Y}	4.3	G	G	3.9	J6.1	5.0	5.6^{M}	J5.4	J6.5	J5.4	J5.0	J3.3	J4.0
13	J3.2	J4.7	4.6^{M}	2.1	2.2	J3.3	J3.4	4.6^{M}	3.9	4.6	4.2	4.6	4.5	4.6	4.9	J5.9	J5.2	3.1	J2.8	J2.4	J3.4	J3.0	J3.5	J8.0
14	3.2	2.4	2.3	2.1^{M}	E	S	3.2	3.4	4.6	4.4	J7.4^{Y}	4.6	6.4$^{M}_{Y}$	G	4.7^{M}	3.2^{Y}	G	3.2	2.7	J2.5	3.8	J3.4	J3.4	J3.0
15	J3.0	J2.6^{Y}	2.3	2.1^{M}	2.0^{M}	S	J3.8	4.8^{M}	4.7^{M}	3.8	4.8	J11.6	4.5	4.8	3.8	4.5	7.2^{M}	8.6	5.6	4.2	J6.0	J4.3	J4.0	3.0
16	J3.6	J5.7	2.0	E	J2.6^{Y}	S	2.8	3.4	5.3	J8.3	7.4	J8.9	4.1	4.0	G	D3.2^{C}	J7.3	J8.5	8.7	J8.8	7.1	5.4^{M}	J2.6^{S}	2.8^{Y}
17	J4.5	J6.7	2.0	2.1^{M}	S	2.6	J3.5	6.3^{Y}	7.3	6.5^{M}	3.8	B	B	B	4.5	4.7	5.1	5.8	J8.1	J8.0	J7.3	4.3	J3.5	J5.5
18	5.8^{M}	7.1^{M}	J3.9$^{S}_{Y}$	J3.6	S	G	G	C	5.9^{M}	6.7	J7.1	8.8	4.1	4.1^{S}	G	4.3	J8.1	J9.3	4.8	8.9	J3.3^{S}	S	S	S
19	S	4.4	J3.2	S	E	S	S	3.5	J6.8	8.5	J6.4	4.2	4.4	4.7	4.4	3.5	5.0	3.7	2.9	2.2	J3.5	J3.0	J4.8	J4.9
20	J4.6	J3.9	6.0^{S}	J4.0^{S}	S	3.0	J3.9	4.2	4.8	J6.4	J8.5	6.0^{M}	5.8^{S}	4.5^{M}	J8.1	J6.8	8.7	13.5	J5.0	J5.1	J3.5	J4.8	4.8	J5.2
21	6.2$^{S}_{Y}$	4.2^{S}	3.7$^{S}_{Y}$	2.2	S	S	3.2	S	4.3	J5.5	J13.0	13.5^{M}	8.7^{M}	4.6	3.9^{S}	4.5	4.4	4.2	J3.3	2.4	J3.6	J4.6^{S}	4.5^{M}	3.8^{S}
22	J4.6	J3.9	J6.3	6.9^{M}	2.2	J3.1	3.1	3.8	4.7	7.3^{M}	4.4	4.1	4.0	4.2	4.6	3.9	4.6	J6.5	B	S	S	S	J5.3	J4.3
23	4.2^{M}	J3.8	J3.8	J7.5	J3.4^{Y}	S	J3.9	4.2^{S}	6.4	J6.7	J7.4	G	G	4.0	4.4	4.3	4.6	J5.5	J4.0	J4.0	4.1^{M}	4.8^{M}	4.2^{M}	4.1
24	3.7^{M}	2.3^{M}	5.9^{M}	5.0$^{M}_{S}$	2.1^{M}	5.0^{S}	7.5^{M}	J7.6	8.5^{M}	J8.0	4.4	4.9^{S}	J6.0	B	B	5.2^{Y}	3.2	3.0	4.5	S	S	S	J11.5	J5.8
25	5.4^{M}	E	J3.5^{Y}	J8.3^{Y}	J7.8	J3.4	J4.3	J6.2	11.9^{M}	8.5^{M}	J8.3	4.7	J8.0^{Y}	4.4	4.5	4.1	7.3	4.7^{M}	6.7	J8.6	J3.2	J3.4	J3.9	J4.0
26	J4.0	J8.0	4.6^{M}	2.2	J2.6^{Y}	J3.9	J4.2	J5.9	J7.8	J7.9	3.9	4.6	4.0	4.6	J5.4	4.0	3.7	3.0	2.3	J2.8	3.6^{M}	J3.9	J6.2	J6.3
27	5.0	J3.4	J2.5	J3.6	J2.7	2.5	J4.7	J4.0	7.2^{M}	4.7	6.4^{M}	J11.3	4.0	7.2^{M}	J6.7	8.9^{M}	4.9	J4.1	J3.4	J4.1	J4.5	J5.5	J4.4	J3.9
28	4.3^{M}	J8.5	J8.7	J3.9	J3.6	J2.7^{Y}	J5.1	J5.7	J13.4	J12.6	J8.1	8.8^{M}	J5.3^{Y}	J5.4	J6.3	J7.9	4.5	J5.8	J5.0	J5.0	J8.3	J5.0^{S}	J5.2	J3.9
29	J4.3	2.3	2.1^{M}	2.0^{M}	E	J3.2	C	J9.6	J12.6	8.9^{M}	J5.3	4.1	4.3	J5.0	4.3	3.9	G	J5.4	4.5	J5.0	J4.4	J3.5	3.9^{S}	J2.7
30	J3.9	2.3^{M}	J3.3^{S}	2.2^{M}	2.2^{M}	2.8	J7.6	4.5	J6.3	J9.6	J8.2	J6.3	J7.9	J5.3	4.9^{S}	4.8^{M}	J5.5	J4.2	J4.2	J3.6	2.9^{M}	E	4.2	4.8
31	J4.9	J4.0	J3.0	J3.2	2.0^{M}	J3.4	3.5	11.6^{M}	J11.3^{Y}	J15.2	J6.3	J8.2	J5.2^{S}	J5.3	3.8	C	J4.7	4.9	J4.1	7.3^{M}	J5.1	J3.9	J9.5	2.5
No.	29	31	31	29	27	21	27	27	31	30	29	28	29	29	30	29	31	30	29	29	27	26	29	29
Median	4.2	3.8	3.3	2.2	2.1	2.8	3.4	4.0	4.8	6.4	6.3	4.7	4.5	4.5	4.4	4.3	4.6	4.4	4.2	3.0	3.6	3.8	3.9	4.0
U.Q.	4.6	4.9	4.3	3.6	2.6	3.2	3.9	5.7	7.2	8.0	7.4	7.2	5.6	4.8	4.9	5.6	5.7	5.6	5.0	5.0	5.0	4.6	4.8	5.0
L.Q.	3.2	2.3	2.1	E	E	2.0	2.9	3.4	4.3	4.4	4.2	4.2	4.0	G	3.8	3.4	3.3	3.2	3.0	2.3	2.5	3.0	3.0	2.8
Q.R.	1.4	2.6	2.2			1.2	1.0	2.3	2.9	3.6	3.2	3.0	1.6		1.1	2.2	2.4	2.4	2.0	2.7	2.5	1.6	1.8	2.2

The Radio Research Laboratories, Japan.

foEs

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

K 4

IONOSPHERIC DATA

May. 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						S	3.0	3.8	3.7	C	C	$^{U}4.1^{R}$			3.7			S	2.1		S	2.0		
2	S						2.7	3.1	3.5	3.8	3.9		B					2.9	2.8	2.6	2.5		1.5	
3			E		E	2.4	3.0	3.3	4.3	A	$^{U}3.9^{S}$	B	$^{E}3.1^{R}$					2.9	4.3	2.0	S	1.7	2.7	E
4	1.5					S	2.6	3.2	3.4		B	4.1	4.4	4.5	$^{E}4.9^{S}$	3.6	6.8	5.6	5.8	3.6	3.9	2.0	2.1	2.5
5	E	2.9	2.5	2.6	2.2	2.1	3.9	3.6	5.2	5.4	A	5.8	5.7	4.8	5.9	A	5.5	4.7	2.9	2.2	E	3.5	A	3.0
6	4.2	2.7	2.5	E		S		S	A	A	A	AS	S				3.0	2.7	2.1			S		2.2
7	$^{U}3.2^{S}$	2.1	E	2.5	1.4	1.8	2.9	3.3	4.9	4.4	$^{U}4.4^{S}$	4.1	4.3	4.3	4.0	3.3	2.8	2.3	B	E		2.4	1.9	2.5
8	3.1	2.7	1.4			S	$^{E}2.1^{S}$	S	3.5	4.2	A	3.8	4.0	4.3	4.0	$^{E}5.0^{S}$	3.8	3.4	3.1	2.0	E	S	S	S
9	2.2	2.0	1.7	S	$^{U}2.5^{S}$	2.9	S	3.3	3.6	$^{E}3.0^{R}$		4.5	$^{U}4.3^{S}$		3.7		3.4	3.2	2.8	E	4.9	1.7		2.6
10	2.5	E			E		B	3.5	3.7	3.8	3.8		4.1	$^{E}4.5^{S}$	$^{E}4.5^{S}$	4.3	3.6	3.0	$^{E}2.0^{S}$	1.4	1.8	2.4	2.0	1.8
11	1.5	1.8	3.3	2.7	3.3			3.3	$^{U}4.2^{S}$	3.8	3.9	4.6	4.8	6.1	8.2	6.1	A	4.0	3.9	2.3		2.9	3.1	4.0
12	3.7	2.8	3.6	$^{U}3.2^{S}$	1.4	2.5	3.2	3.3	A	$^{U}4.0^{S}$	A	S			3.8	5.8	5.0^{S}	5.5	5.4	A	4.9	$^{U}4.0^{A}$	2.8	2.8
13	2.6	3.7	A	1.3	1.9	S	3.0	S	3.8	4.2	4.2	4.3	4.3	$^{E}4.6^{S}$	4.9	5.6	5.1	3.0	2.7	E	3.1	2.9	3.1	A
14	2.1	2.1	1.9	1.5		S	2.8	3.4	4.5	4.4	5.8	$^{U}4.2^{R}$	6.3		$^{U}4.7^{R}$	3.1		3.1	2.5	2.3	2.3	3.1	E	2.1
15	2.2	2.6	2.3	1.8	1.8	S	3.2	$^{U}4.8^{S}$	S	3.8	S	A	$^{E}4.5^{S}$	$^{E}4.8^{S}$	3.8	$^{E}4.5^{S}$	A	A	4.9	4.0	5.1	4.1	3.6	2.0
16	3.0	A	1.8		E	S	2.7	3.3	A	A	A	A	$^{E}4.1^{S}$	4.0		$^{D}3.2^{C}$	A	A	A	A	5.9	A	E	2.8
17	E	A	2.0	1.8	S	2.6	3.4	A	A	6.2	3.8	B	B	B	4.5	$^{E}4.7^{S}$	A	5.8	A	5.1	5.9	4.0	2.9	4.9
18	A	4.0	3.5	2.8	S			C	5.8	A	A	6.5	3.9	4.1		4.2	5.2	A	4.3	A	2.6	S	S	S
19	S	3.5	3.0	S		S	S	$^{U}3.4^{S}$	6.7	A	6.0	4.1	4.3	$^{E}4.7^{S}$	3.9	3.5	5.0	3.6	2.9	2.2	3.4	2.8	2.8	2.6
20	3.6	3.6	A	2.7	S	S	3.9	$^{U}4.2^{S}$	4.8	6.1	A	6.0	$^{E}5.8^{S}$	4.4	7.4	6.8	A	A	3.7	4.4	3.3	2.3	3.4	3.8
21	AS	3.7	3.6	2.2	S	S	3.2	S	4.1	5.5	A	A	A	4.4	3.9	3.8	4.2	3.4	3.0	2.4	2.5	3.1	4.4	3.5
22	2.7	3.2	3.3	6.4	1.9	2.9	3.1	3.7	4.2	7.2	4.4	4.1	4.0	4.1	$^{E}4.6^{S}$	$^{U}3.8^{S}$	4.0	6.5	B	S	S	S	3.6	3.1
23	2.7	3.5	2.9	2.8	2.9	S	3.8	$^{E}4.2^{S}$	6.0	6.2	5.7			3.9	4.1	4.3	4.5	5.5	3.5	3.9	4.1	$^{E}4.8^{S}$	3.8	3.4
24	2.9	2.1	A	A	$^{E}2.1^{S}$	A	A	A	A	5.8	S	S	A	B	B	$^{U}4.9^{S}$	3.2	2.7	4.3	S	S	S	A	A
25	A		2.6	1.9	A	2.7	3.5	$^{U}6.1^{S}$	A	5.9	4.9	4.3	5.7	$^{U}4.4^{S}$	4.5	3.7	A	$^{E}4.7^{S}$	4.9	A	2.1	3.1	2.6	3.1
26	2.5	A	4.2	1.7	2.6	3.6	3.6	5.7	A	A	3.9	4.4	3.9	4.1	A	3.8	3.6	3.0	2.2	2.6	2.5	3.8	4.0	3.6
27	2.7	2.7	E	2.9	2.2	2.2	4.6	3.4	5.9	4.6	5.6	A	4.0	6.7	6.7	A	4.9	4.1	3.1	3.9	4.2	2.1	3.6	3.1
28	2.4	A	2.9	1.8	2.1	2.7	5.1	5.0	A	A	5.7	A	4.3	5.2	5.8	5.2	4.5	5.4	3.8	4.8	7.2	1.8	3.9	3.2
29	3.5	E	E	E		2.7	C	7.5	A	A	4.2	4.1	4.0	4.8	4.0	3.8		4.1	3.3	3.0	3.6	1.8	1.9	2.0
30	3.1	1.7	1.6	E	1.8	2.2	A	3.8	6.0	A	5.9	6.2	5.6	4.8	$^{U}4.8^{S}$	4.1	5.0	3.0	3.8	2.2	2.2		3.0	2.6
31	3.2	2.2	2.5	2.3	E	2.8	2.7	A	A	A	4.7	A	5.1	5.3	3.8	C	4.5	4.9^{S}	3.5	A	3.0	3.6	A	2.5^{S}
No.	27	26	27	22	18	15	24	25	30	29	26	24	23	18	21	21	26	29	29	27	24	23	26	27
Median	2.7	2.8	2.5	2.2	1.9	2.7	3.2	3.6	5.5	5.9	5.6	4.6	4.3	4.4	4.1	4.2	5.0	4.0	3.5	2.6	3.2	2.9	3.0	2.8

foEs

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

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

May. 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	1.40	1.30	1.30	1.20	1.10	$^{E}1.50^{S}$	1.70	$^{E}2.60^{S}$	1.80	$^{I}2.50^{C}$	$^{I}3.00^{C}$	3.50	3.60	3.40	2.20	2.10	2.30	$^{E}2.50^{S}$	1.60	1.30	$^{E}1.70^{S}$	$^{E}1.50^{S}$	1.40	1.30
2	$^{E}1.85^{S}$	1.60	1.20	1.10	1.10	1.30	1.60	$^{E}2.60^{S}$	2.60	3.50	3.80	3.60	3.90	2.60	2.45	2.20	2.20	2.20	1.85	1.35	$^{E}1.50^{S}$	1.20	1.10	1.05
3	1.40	1.10	$^{E}1.50^{S}$	1.15	1.05	2.10	2.50	2.95	2.30	2.40	3.20	3.80	2.50	2.50	2.20	2.25	2.60	2.65	1.40	$^{E}1.60^{S}$	$^{E}1.80^{S}$	1.30	1.45	1.30
4	1.10	1.40	1.20	1.20	1.20	$^{E}1.70^{S}$	1.70	1.85	2.20	2.30	4.20	3.30	3.75	2.80	3.40	2.00	1.90	1.80	1.40	$^{E}1.70^{S}$	1.40	1.35	1.30	1.45
5	1.45	1.50	1.30	$^{E}1.60^{S}$	1.10	$^{E}1.70^{S}$	1.40	2.95	2.30	2.40	2.80	2.50	3.50	2.95	2.30	2.20	1.95	1.70	$^{E}1.60^{S}$	$^{E}1.50^{S}$	1.35	1.40	1.30	1.20
6	$^{E}1.50^{S}$	1.40	1.30	1.10	1.10	$^{E}1.50^{S}$	1.70	$^{I}2.50^{S}$	2.00	2.20	2.60	2.60	3.70	2.55	2.60	2.30	2.60	1.80	1.70	1.20	1.30	$^{E}1.60^{S}$	1.30	1.40
7	1.40	1.20	1.45	$^{E}1.40^{S}$	1.20	1.10	1.60	2.00	2.05	2.60	2.50	2.60	3.35	3.30	2.60	2.10	2.60	2.00	1.90	$^{E}1.60^{S}$	1.40	$^{E}1.60^{S}$	1.30	1.40
8	1.20	1.40	1.10	1.10	1.05	$^{E}1.50^{S}$	1.60	$^{E}2.80^{S}$	2.00	2.10	2.60	2.50	2.60	3.15	2.30	2.40	2.65	2.50	$^{E}2.10^{S}$	$^{E}1.70^{S}$	$^{E}1.70^{S}$	$^{E}1.90^{S}$	$^{E}1.95^{S}$	$^{E}1.80^{S}$
9	$^{E}1.95^{S}$	$^{E}1.70^{S}$	$^{E}1.60^{S}$	$^{E}1.70^{S}$	$^{E}1.60^{S}$	$^{E}2.00^{S}$	$^{E}2.70^{S}$	2.80	2.20	2.10	2.40	2.40	2.50	2.30	2.30	2.55	2.65	1.70	2.00	1.30	1.35	1.40	1.30	1.45
10	$^{E}1.80^{S}$	1.20	1.30	1.40	E	$^{E}1.40^{S}$	2.65	2.80	2.20	2.25	2.75	3.10	2.70	3.60	2.50	2.30	2.50	1.80	1.70	1.10	1.20	$^{E}1.70^{S}$	1.30	1.45
11	$^{E}1.40^{S}$	1.20	$^{E}1.50^{S}$	1.10	1.30	1.10	1.50	2.60	2.30	2.40	2.50	3.50	2.80	3.00	2.50	2.80	2.60	1.80	1.95	1.30	1.40	1.30	1.10	$^{E}1.70^{S}$
12	1.45	1.30	1.25	1.20	1.10	$^{E}1.50^{S}$	2.10	1.80	2.20	2.20	2.70	2.95	3.10	2.80	2.30	3.00	2.60	1.80	1.50	$^{E}2.00^{S}$	1.45	1.20	1.30	1.10
13	$^{E}1.50^{S}$	1.10	1.20	1.05	1.40	$^{E}1.95^{S}$	1.50	$^{E}2.00^{S}$	1.90	2.30	3.10	3.60	3.60	3.60	2.55	2.30	2.60	1.80	1.80	$^{E}1.60^{S}$	$^{E}1.60^{S}$	1.70	$^{E}1.60^{S}$	$^{E}1.70^{S}$
14	1.30	$^{E}1.60^{S}$	1.30	1.05	1.40	$^{E}1.50^{S}$	1.80	1.80	2.10	2.10	2.95	3.05	2.60	3.00	2.45	2.40	2.60	2.55	1.70	1.20	1.50	1.50	$^{E}1.60^{S}$	1.50
15	$^{E}1.60^{S}$	$^{E}1.60^{S}$	1.35	1.10	1.20	$^{E}2.30^{S}$	2.60	1.90	2.50	2.20	3.10	3.00	3.00	2.50	2.50	2.30	2.80	2.20	2.50	$^{E}1.90^{S}$	1.45	$^{E}1.70^{S}$	1.45	1.50
16	1.30	$^{E}1.70^{S}$	1.00	1.40	1.20	$^{E}2.50^{S}$	1.50	2.30	2.20	3.15	3.20	3.15	3.10	3.60	2.80	2.00	2.50	$^{E}2.80^{S}$	$^{E}2.80^{S}$	$^{E}1.70^{S}$	$^{E}1.90^{S}$	$^{E}2.00^{S}$	$^{E}2.20^{S}$	$^{E}1.80^{S}$
17	$^{E}2.00^{S}$	$^{E}2.00^{S}$	$^{E}1.80^{S}$	1.40	$^{E}1.60^{S}$	1.80	2.60	$^{E}3.10^{S}$	2.80	3.20	3.45	3.80	4.20	3.60	3.60	2.85	$^{E}2.70^{S}$	2.20	2.30	$^{E}1.90^{S}$	$^{E}1.80^{S}$	$^{E}2.10^{S}$	$^{E}1.85^{S}$	$^{E}1.95^{S}$
18	$^{E}2.00^{S}$	$^{E}1.50^{S}$	$^{E}1.70^{S}$	$^{E}1.60^{S}$	$^{E}1.70^{S}$	1.90	2.60	$^{I}2.70^{C}$	2.50	3.40	3.50	3.35	3.50	3.35	2.80	2.55	3.00	$^{E}2.55^{S}$	$^{E}2.60^{S}$	$^{E}2.60^{S}$	$^{E}2.00^{S}$	$^{E}1.90^{S}$	$^{E}2.00^{S}$	$^{E}2.00^{S}$
19	$^{E}2.60^{S}$	$^{E}1.70^{S}$	1.45	$^{E}1.40^{S}$	1.50	$^{E}2.60^{S}$	$^{E}2.70^{S}$	$^{E}2.90^{S}$	2.80	2.80	3.60	3.75	3.75	3.05	2.80	2.50	2.55	2.65	2.20	1.80	$^{E}1.95^{S}$	$^{E}2.00^{S}$	$^{E}1.90^{S}$	$^{E}1.60^{S}$
20	$^{E}1.95^{S}$	$^{E}1.70^{S}$	$^{E}1.80^{S}$	$^{E}1.60^{S}$	$^{E}1.80^{S}$	$^{E}2.80^{S}$	2.60	$^{E}2.80^{S}$	2.50	2.80	3.40	2.90	2.80	2.80	2.80	2.50	2.60	2.60	1.85	$^{E}1.90^{S}$	$^{E}1.80^{S}$	$^{E}1.70^{S}$	$^{E}1.80^{S}$	$^{E}2.00^{S}$
21	$^{E}2.00^{S}$	$^{E}1.90^{S}$	$^{E}1.75^{S}$	$^{E}1.90^{S}$	$^{E}1.95^{S}$	$^{E}2.80^{S}$	2.60	2.20	3.10	3.60	3.10	3.60	3.40	3.30	3.50	2.60	2.85	2.60	2.55	$^{E}1.80^{S}$	$^{E}1.90^{S}$	$^{E}2.00^{S}$	$^{E}1.70^{S}$	$^{E}1.80^{S}$
22	$^{E}1.60^{S}$	$^{E}1.90^{S}$	$^{E}1.95^{S}$	$^{E}1.50^{S}$	$^{E}1.50^{S}$	$^{E}2.50^{S}$	2.60	2.70	2.50	2.60	2.60	2.90	2.85	2.80	3.15	2.70	2.80	$^{E}1.90^{S}$	2.60	$^{E}2.10^{S}$	$^{E}1.85^{S}$	$^{E}2.00^{S}$	$^{E}1.80^{S}$	$^{E}1.90^{S}$
23	$^{E}2.00^{S}$	$^{E}1.80^{S}$	$^{E}1.50^{S}$	$^{E}1.70^{S}$	$^{E}1.60^{S}$	$^{E}2.80^{S}$	2.65	$^{E}2.90^{S}$	2.15	2.50	3.30	3.40	3.20	2.90	2.70	2.50	2.70	$^{E}2.70^{S}$	$^{E}2.00^{S}$	$^{E}2.00^{S}$	$^{E}1.90^{S}$	$^{E}1.80^{S}$	$^{E}1.95^{S}$	$^{E}1.85^{S}$
24	$^{E}1.80^{S}$	$^{E}1.85^{S}$	$^{E}1.80^{S}$	$^{E}1.65^{S}$	$^{E}1.85^{S}$	$^{E}2.60^{S}$	2.60	$^{E}2.80^{S}$	2.85	3.30	3.65	3.50	3.60	4.10	3.90	$^{E}3.70^{S}$	2.60	2.60	2.00	$^{E}1.80^{S}$	$^{E}1.70^{S}$	$^{E}1.70^{S}$	1.50	$^{E}1.80^{S}$
25	$^{E}2.00^{S}$	1.50	$^{E}1.80^{S}$	$^{E}1.70^{S}$	$^{E}1.80^{S}$	1.95	2.60	$^{E}3.00^{S}$	2.80	2.80	3.10	3.40	3.15	2.80	3.70	2.60	2.60	$^{E}2.50^{S}$	1.50	$^{E}2.00^{S}$	1.45	1.10	1.45	1.45
26	1.40	1.45	1.30	1.25	1.40	1.80	1.80	$^{E}2.80^{S}$	2.20	$^{E}3.90^{C}$	2.50	2.50	3.00	2.50	2.20	2.25	2.60	2.50	1.40	1.20	1.30	$^{E}1.60^{S}$	1.40	1.20
27	$^{E}1.60^{S}$	$^{E}1.50^{S}$	1.20	1.30	1.05	1.40	1.60	2.10	1.90	2.15	2.10	2.70	2.40	3.00	2.35	2.10	2.60	1.80	1.50	$^{E}1.50^{S}$	$^{E}1.55^{S}$	1.45	$^{E}1.50^{S}$	1.10
28	$^{E}1.80^{S}$	1.50	$^{E}1.75^{S}$	1.20	1.05	$^{E}1.80^{S}$	1.80	$^{E}2.80^{S}$	$^{E}2.85^{S}$	2.00	2.50	3.30	3.10	2.90	1.95	2.00	2.60	1.90	1.90	1.30	$^{E}1.70^{S}$	$^{E}1.50^{S}$	1.20	1.45
29	1.20	1.20	1.10	1.40	1.10	1.50	$^{I}1.70^{C}$	2.10	2.00	2.20	2.30	2.50	3.65	2.20	2.30	2.10	2.50	2.00	1.20	1.30	1.10	1.45	1.30	1.35
30	1.45	1.30	$^{E}1.45^{S}$	1.30	$^{E}1.70^{S}$	1.45	1.50	1.90	2.60	2.00	2.40	2.35	2.15	2.30	2.00	1.90	2.00	1.85	1.60	$^{E}1.60^{S}$	1.45	1.50	1.30	1.45
31	1.20	1.35	1.35	1.35	1.20	1.50	1.80	2.60	2.60	2.10	2.30	2.10	2.60	2.80	2.20	$^{I}3.20^{C}$	3.50	$^{E}2.65^{S}$	$^{E}2.30^{S}$	$^{E}1.70^{S}$	$^{E}2.40^{S}$	$^{E}1.80^{S}$	$^{E}2.00^{S}$	$^{E}1.60^{S}$
No.	31	18	18	20	20	31	29	20	30	30	31	31	31	31	31	30	30	25	26	31	31	31	18	18
Median	$^{E}1.50$	1.30	1.30	1.20	1.15	$^{E}1.80$	1.80	2.25	2.25	2.40	2.95	3.10	3.10	2.90	2.50	2.30	2.60	2.00	1.75	$^{E}1.60$	$^{E}1.55$	$^{E}1.60$	1.30	1.40

f-min

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

May. 1961

M(3000)F2

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	U2.75S	2.90	2.85	2.80	2.55	2.75	3.25	3.40	3.05	I3.05C	I2.90C	2.85	2.90R	J3.00R	2.85	2.85	J2.95R	3.10S	3.10S	2.95	3.00S	J3.05S	I2.80S	2.55
2	2.60S	2.75	3.10	U3.00S	2.60	3.10S	U3.25S	3.25	3.20	3.20	2.90	2.60	2.75	2.85	2.85	3.00	3.15	3.05	3.00	2.90	3.10	3.05S	2.75	2.65
3	2.55	I2.70S	2.75	2.75	2.75	C	C	C	C	A	3.00	2.85	2.90	2.95	3.00	2.90	3.00	U3.00S	3.05	J3.15S	3.20	2.90	2.70	2.70
4	2.65	2.65	I2.90S	J3.25S	2.95	3.10	3.05	3.10	3.10	3.00	2.95	2.90	2.95	3.05	2.90	3.00	3.05	3.05	3.05	3.15	2.95	I2.80S	2.65	2.65
5	J2.75S	2.75	2.85	U2.80S	J2.75S	3.15	3.10	2.95	3.20	2.85	I2.60A	2.85	2.80	3.05	3.00	I2.95A	2.95	2.90S	U2.95S	3.05	3.15	3.05	A	2.60
6	U2.65S	J2.65F	2.75	2.60S	I2.75F	2.70	I2.50F	S	A	A	A	I2.40AS	I2.50S	I2.60S	2.75	U2.55S	U2.30S	2.60	2.80	3.00	2.70	2.60	2.60	2.65
7	2.55S	2.55S	2.80	I3.10S	2.75	3.00	2.90	2.85	3.00	2.55	2.65	2.80	2.85	3.05	2.95	2.90	3.00	J3.10R	2.90	3.00	2.95	2.65	2.60	2.70
8	U2.50S	2.70	2.85S	2.70S	2.90	3.30	3.30	3.00	2.85	2.85	I2.75A	2.95	2.95	2.85	2.90	U2.80S	2.95	3.10	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	R	2.80	2.90	2.85	2.95	2.95	3.00	3.10	3.05S	2.80R	U3.15S	3.00	2.85	2.70	U2.80S
10	2.90	2.75S	2.75S	J3.15S	2.80	I3.20S	3.40	I2.90S	3.05	3.00	2.90	3.00	2.95	3.15	3.00	3.05	2.95	U3.20S	U3.20R	U3.05SH	3.30	I2.80S	2.70	2.80
11	2.65	2.90	I3.05AS	3.00	2.85	3.20	3.10	3.10	J2.95S	2.70H	2.75	U2.85R	2.70	2.80R	U2.95S	3.05	I2.90A	3.00	3.10	3.10	3.05S	2.75	J2.50S	2.55
12	I2.65S	2.70	I2.80S	U2.75S	J2.85S	J2.95S	2.75	U2.75S	A	S	I2.40A	I2.60S	I2.70S	2.80	2.80	2.95	2.95	2.95	3.00	I2.95A	2.90	2.70	2.75	2.70
13	2.60	2.45S	I2.60A	J2.75S	2.60	3.05S	3.20	I3.15S	2.95	3.00	2.55	2.70	2.75	2.65	2.90	2.95	3.10	3.05	2.85	3.05	3.15S	2.80	J2.65F	I2.65A
14	2.75	2.65	U2.80S	U2.85S	2.70	2.95S	3.45	3.30	3.25	I3.20S	2.85R	2.90	3.00	2.90R	2.75	2.90	U3.10S	2.90	2.95R	I3.05R	U3.15R	2.90	2.65	2.65
15	2.75	2.75S	2.60S	U2.75S	2.65S	2.85	3.20S	U3.15S	I3.00S	I2.80S	I2.85S	I2.90A	I2.90S	U2.85S	2.80	2.80	I2.95A	I3.00A	I3.05S	I3.15R	I3.10S	I2.75S	2.65	2.80
16	2.75	I2.60A	2.75S	2.90S	2.70	2.90	J3.40S	3.25	I3.10A	I3.00A	I2.60A	I3.00A	2.50	2.70	J2.85R	2.95	I2.80A	I2.50A	I2.70A	I3.10A	3.30	I2.70A	2.50	2.65
17	2.65	I2.65A	2.65F	2.70	I3.20S	3.45	3.10	I2.90A	I2.85A	J2.85R	2.85	2.80	2.70	3.00	2.80	2.90	I2.90A	2.80	I2.85A	3.00	2.75	2.75	2.70	I2.65S
18	I2.75A	U2.60S	U2.80S	2.80	2.90	3.20	3.25	I3.15C	2.80	I2.80A	I2.85A	2.70	2.80	2.90	2.90	3.05	I3.05R	I3.00A	2.90	I2.90A	I2.90S	2.90	2.75	2.80
19	I2.80R	2.85	I2.80S	2.85	2.80	J3.00S	I3.00R	2.90	3.00	I2.95A	2.95	2.85	2.85	2.90	2.85	2.95	I2.95R	J3.10R	2.95	2.90	2.90	2.90	2.85	2.80
20	U2.75F	2.85	I2.75A	2.80	J2.75S	3.15	3.05R	I2.95S	2.95	2.85	I2.80A	2.60	2.60	2.85	2.95	2.85	I2.80A	I2.85A	3.25R	3.05	2.65	2.50S	I2.60S	U2.65S
21	AS	S	I2.70S	I2.70S	U2.70S	3.05S	3.20	2.85	3.25	3.05	A	A	A	2.80	2.90	2.95	J3.10R	3.05S	3.10	2.95	3.05	2.60	2.55	U2.55S
22	2.75S	2.65	J2.60S	2.85	2.85	3.05	U3.25R	2.95	J2.90R	2.90	2.90	2.85	2.70	2.65	I2.90S	2.85	I2.95R	I3.00S	U3.05R	3.05	2.95	I2.75S	2.75	2.65
23	I2.60S	2.65	I2.70S	J2.80S	I2.80S	I2.70S	2.70	U2.90S	2.70V	2.80	2.80	2.80	2.95	2.80	2.75	2.90	2.65	U3.05S	3.15	3.20	U2.75S	I2.60S	I2.60S	I2.65S
24	J2.85S	2.95	I2.90A	I2.70A	I2.60S	I2.90A	I2.85A	A	A	U2.65S	2.60	I2.50S	I2.50A	2.70	I2.80S	2.80S	I2.85S	2.95	2.85	2.80	3.00	J2.60S	I2.65A	I2.70A
25	I2.60A	J2.75S	I2.95SF	2.80	I2.80A	2.85	3.00	J3.15S	I2.85A	2.80	2.75	2.75	2.75	2.70	2.75	2.80	I2.75A	J2.55S	2.75	I3.00A	2.80	2.65	2.60	2.55
26	2.55	I2.70A	2.85	2.95	2.65	J2.75S	2.70	2.80	I2.80A	I2.60A	I2.50S	2.65	2.60S	2.55	I2.70A	2.70	2.90	2.95	2.95	2.90	2.80	2.65	2.55	J2.70S
27	2.70	2.75	2.80	J2.90F	2.90	J3.10S	2.80	3.10	3.00	2.90	2.85	I2.70A	2.85	2.75	2.80	I2.85A	2.90	2.90	2.85	2.95	J2.75S	2.95	F	F
28	2.80F	I2.80A	U2.85A	S	S	3.15	3.25S	3.30	I3.10A	A	3.05	I2.85A	2.90	2.75	2.80	2.75	2.85	2.85	J3.00R	I3.15R	3.25	J2.95S	J2.70S	2.55
29	2.75F	2.90	2.80	2.80	2.75	3.05	I3.10C	3.30	A	A	2.85	2.65	2.95	2.95	2.90	2.85	2.80	3.00	3.05	3.20	3.25	2.75	2.70F	J2.85F
30	2.70	2.80	3.00	2.95	2.90	3.05	I3.00A	3.00	2.90	I3.10A	2.95	2.75	2.65	2.70	2.75	2.95	2.95R	3.05	3.00	3.00	3.10	3.00	2.75	2.75
31	2.70	I2.75F	I2.65F	I2.60F	U2.55S	2.65	2.90	A	A	A	2.80	I2.80A	2.80	J2.70R	2.80	I2.80C	2.80	C	R	A	C	R	A	C
No.	29	29	30	29	29	29	29	26	24	24	29	30	30	31	31	31	31	30	29	29	29	29	27	28
Median	2.70	2.75	2.80	2.80	2.75	3.05	3.10	3.05	3.00	2.90	2.85	2.80	2.80	2.85	2.85	2.90	2.95	3.00	3.00	3.05	3.00	2.75	2.65	2.65

The Radio Research Laboratories, Japan.

M(3000)F2

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

K 7

IONOSPHERIC DATA

May. 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	C	C	3.35^{L}	L	L	L	L	L	L						
2									L	L	3.45^{L}	3.20^{L}	u3.10^{L}	L	L	L	L	L						
3								L	L	A	u3.50^{L}	3.55	3.50^{L}	3.60	3.35^{L}	u3.35^{L}	L	L						
4								L	u3.55^{L}	u3.50^{L}	L	L	L	L	A	L	A	A	A					
5								L	A	A	A	A	A	A	A	A	A	A						
6							2.95	S	A	A	A	AS	S	3.80	u3.55^{S}	3.45	3.40	3.10^{L}	L					
7							L	3.35^{L}	A	3.60	S	3.35	R	3.45	3.45^{L}	3.40^{L}	u3.40^{L}	L	L					
8								L	L	u3.40^{L}	A	L	L	3.25	3.40	AS	L	L						
9								L	L	u3.85^{L}	L	A	S	3.70	3.55	3.50	3.65	L						
10								3.50^{S}	L	3.50^{S}	3.40^{L}	3.45	S	S	S	S	L	L						
11								L	L		3.45^{S}	u3.45^{L}	L	A	A	A	A	A						
12							3.15^{L}	3.35^{L}	A	u3.40^{R}	A	S	u3.85^{S}	3.55	3.55	A	A	A	A					
13							L	S	L	S	u3.40^{R}	L	u3.25^{R}	S	A	A	A	L						
14							L	L	L	3.50^{S}	A	u3.30^{R}	A	3.40	A	3.50	u3.40^{L}	u3.45^{L}	L					
15							L	AS	S	L	S	A	S	AS	3.60	S	A	A	A					
16							L	L	A	A	A	A	S	S	L	C	A	A	A					
17								A	A	A	3.45	3.55	3.55	L	S	S	A	A	A					
18							L	C	A	A	A	A	3.50^{L}	u3.20^{S}	3.35^{L}	A	A	A	A					
19							L	L	A	A	A	3.25^{L}	S	AS	S	L	A	A						
20								S	A	A	A	A	AS	3.00^{R}	A	A	A	A	A					
21								S	S	A	A	A	A	L	L	3.40^{S}	L	L						
22									S	A	S	u3.45^{L}	u3.20^{L}	S	S	L	S	A						
23							S	S	A	A	A	u3.60^{L}	S	3.35^{R}	3.45^{L}	u3.50^{L}	S	A						
24							A	A	A	A	S	S	A	u3.60^{R}	3.40^{S}	A	3.45	L	A					
25								A	A	A	A	u3.25^{L}	A	S	S	3.30	A	S	A					
26							L	A	A	A	3.70	u4.00^{R}	3.60	u3.45^{S}	A	3.55	3.35	3.25^{L}	L					
27							A	3.80^{L}	A	L	A	A	3.40^{L}	A	A	A	A	A						
28							A	A	A	A	A	A	3.35^{L}	A	A	A	A	A	A					
29							C	A	A	A	3.30^{L}	3.45^{S}	3.65	A	3.45	u3.35^{L}	3.40^{H}	A	A					
30							A	L	A	A	A	A	A	A	S	3.45^{L}	A	3.50^{L}	A					
31						L	u3.40^{L}	A	A	A	A	A	A	A	3.50	C	A	A	A					
No.							3	4	1	7	8	14	11	12	12	11	7	4						
Median							3.15	3.40	u3.55	u3.50	3.45	3.45	3.50	3.45	3.45	3.45	3.40	3.35						

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

May. 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									260	C	C	340	285	310	310	310	280	260						
2									280	280	320	350	330	310	300	290	265	270						
3								250	260	A	305	330	310	305	300	315	290	280						
4								255	300	295	310	315	315	285	315	290	305^{A}	280	275^{A}					
5								265	260	305	A	345	345	290	300	A	305	300^{A}						
6							405	S	A	A	A	AS	S	S	420	450	565	405	300					
7							280	355	325	455	410	380	340	305	305	330	300	275	275					
8								280	310	350	A	350	315	345	340	340	300	280						
9								260	255	300	360	360	315	300	300	295	260	275						
10								S	315	315	340	310	$^{U}340^{S}$	295	305	300	305	280						
11								260	350^{S}		360	345	350	310	$^{E}310^{A}$	295	A	290						
12							375	405	A	S	A	S	S	375	365	355	310	$^{E}350^{A}$	$^{E}320^{A}$					
13							260	S	340	320	420	360	350	350	305	300	270	260						
14							255	255	290	S	$^{E}350^{A}$	350	345	325	360	315	280	300	280					
15							275	310	S	300	S	A	S	AS	350	350	A	A	270					
16							250	260	A	A	A	A	$^{E}410^{S}$	355	300^{S}	310	A	A	A					
17								A	A	$^{E}360^{A}$	340	355	380	315	320	310	A	$^{E}360^{A}$	A					
18							260	C	$^{E}360^{A}$	A	A	$^{E}440^{A}$	350	320	310	305	305	A	300^{A}					
19							260	290	$^{E}350^{A}$	A	310	340	340	335	325	310	310	280						
20								300	310	$^{E}360^{A}$	A	$^{E}440^{A}$	$^{E}420^{S}$	350	350^{A}	360^{A}	A	A	260					
21								$^{E}320^{S}$	260	350^{A}	A	A	A	350	320	310	290	280	260					
22									325	$^{E}350^{A}$	320	350	360	380	355	310	290	$^{E}300^{A}$						
23							300	$^{E}325^{S}$	$^{E}410^{A}$	$^{E}390^{A}$	355^{A}	355	330	350	350	320	345	260^{A}						
24							A	A	A	$^{E}440^{A}$	$^{E}405^{S}$	S	A	455	S	355^{S}	345	315	$^{E}350^{A}$					
25								275	A	350^{A}	350	355	355^{A}	395	350	345	A	$^{E}390^{S}$	305					
26							360	$^{E}360^{A}$	A	A	S	400	$^{U}400^{S}$	390	A	380	330	320	290					
27							310	260	$^{E}350^{A}$	325	350^{A}	A	355	370	$^{E}365^{A}$	A	305	305						
28							$^{E}250^{A}$	260	A	A	320^{A}	A	340	365	350	350	320	300^{A}	270					
29							C	$^{E}300^{A}$	A	A	355	410	330	330	340	350	330	300	260					
30							A	310	$^{E}320^{A}$	A	310	$^{E}400^{A}$	360	355	$^{E}350^{S}$	310	305	290	280					
31						370	320	A	A	A	300	A	360	405	350	$^{I}365^{C}$	330	315	290					
No.						1	14	17	15	12	18	19	24	29	27	29	25	23	14					
Median						370	280	265	300	320	340	350	340	345	320	315	305	280	280					

The Radio Research Laboratories, Japan.

h'F2

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

IONOSPHERIC DATA

May. 1961

h'F

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	305	255	255	280	305	295	245	250	240	I235C	I215C	205	245	220	250A	245	250	250	255	255	275	250	300	305
2	305	260	245	245	290	255	250	250	245	245	210	250	205	215	240	240	210	245	275	260	250A	245	245	300
3	310	300	295	280	280	240	240	250	E255A	I255A	230	230	205	220	210	240	230	255	E280A	250A	230	250	290	300
4	300	300	255	210	230	250	245	240	230	230	250	240	250A	250	I245A	245	A	A	A	250A	280A	255	305	310
5	300	305	295	260	260	230	255	245	A	A	A	A	A	A	A	A	A	A	280A	250	230	E250A	I285A	360A
6	E410A	330A	305	325	290	295	290	S	A	A	A	AS	I255S	245	250	240	250	260	290	250	250	305	260	310
7	E400A	350	295	260A	260	290	250	250	A	E280A	E355As	245	260	260A	250	245	250	250	260	245	225	290	350	310
8	370	305	255	250	250	245	245	240	245	255A	I250A	220	240	E290A	250	AS	E295A	260A	240	220	240	290	295	285
9	300A	305	300	255	220	250A	230	230	230	210	245	E300A	240	210	220	245	225	260	260	250	E260A	250	295	305
10	300	295	280	230	250	245	225	245	250A	245	230	230	260	I250S	I250S	255	260	260	255	230H	245	250A	300	300
11	305	275	E290A	270A	310A	250	245	240	E295A	240H	225	E260A	250	A	A	A	A	A	E260A	250	230	300	310	E350A
12	E310A	305	310	E330A	250	300	290A	245	I255A	290A	I250A	I255S	210	250	250	A	A	A	A	A	E310A	350A	290	E350A
13	E340A	E460A	I340A	290	310	260	250	I250S	245	250A	255	245	E300A	S	A	A	A	250	270	255	250A	305	E360S	I345A
14	305	305	300	290	290	255	250	250A	E260A	260	I230A	250A	I250A	245	I245A	230	245	250A	260	260	250	240	300	305
15	310	320	340	305	300	285	E290A	I260As	I270S	220	S	A	S	AS	245	S	A	A	A	250A	260A	E345A	E350A	290
16	305	I330A	305	290	290	255	250	240	A	A	A	A	S	245	210	I245C	A	A	A	A	E250A	A	360	310A
17	345	I380A	350	305	250	245	250A	A	A	A	210	225	230	210	I220S	S	A	A	A	E290A	E355A	E350A	305	E350A
18	I315A	E360S	350A	290	255	250	245	I240C	A	A	A	A	220	250	225	A	A	A	A	A	255A	255	300	300
19	275	300A	260A	260	260	255	250	250	A	A	A	210	250	I240As	250	240	I245A	I250A	270	255	255	260	290	290
20	300A	300A	I305A	300	255	250	255	E280S	A	A	A	A	AS	E300A	I230A	A	A	A	I250A	250A	E340A	350A	360A	355A
21	I325As	300A	E340A	310	300	255	250	I250S	210	A	A	A	A	245	260	245	255	255	I255A	255	250A	310A	E360A	E340A
22	300	305	E350A	E350A	255	255	250	245	255	I220A	245	205	240	205	I240S	250	245	I245A	255	250	255	250	310A	340A
23	E340A	305A	300A	310A	300	245	I275S	I240S	A	I230A	I230A	205	250	255	245	240	250	I255A	260A	250A	E350A	I350S	340A	360A
24	295	255	I280A	I330A	350S	I270A	A	A	A	A	S	S	A	245	265	I'250A	245	235	I265A	275	255	305	I320A	I350A
25	I355A	300	260	250	I310A	260A	290	A	A	A	A	270A	I250A	255	255A	245	A	S	A	A	255	300A	310	350
26	350A	I330A	E310A	250	E310A	E350A	E355A	A	A	I250A	230	225	245	250	I260A	255	255	255	255	260	270A	E350A	360A	360A
27	350A	340A	300	300	270	250	I260A	220	A	E300A	A	A	240	A	A	A	I260A	A	E290A	260	280A	260	310A	300A
28	290A	I295A	300A	290	285	260	A	A	A	A	A	A	E295A	A	A	A	A	A	A	250A	E260A	250	310A	E350A
29	350A	250	255	255	290	250	C	A	A	A	E300A	230	210	I220A	255	260	225H	I250A	I250A	250	240	260	315	300
30	305	255	250	250	255	260	I255A	240	A	A	A	A	A	A	S	250	I255A	250	I250A	245	250	240	300A	300
31	330A	300	305	325	290	310	250	A	A	A	A	A	A	A	250	C	A	A	A	A	255	250A	I245A	285
No.	26	29	28	29	30	30	26	22	11	15	15	17	21	21	25	19	17	18	20	25	25	27	28	26
Median	305	300	300	280	280	255	250	245	245	245	230	230	245	245	250	245	250	250	E260	250	250	260	300	305

h'F

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

The Radio Research Laboratories, Japan.

K10

IONOSPHERIC DATA

May, 1961

h'Es

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

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

h'Es

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

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

May. 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							h	h	h			l			l				h			f		
2							h	h	h	h	h							h	h2	f2	f2		f2	
3			f2		f2	l	l	c	c	c2	h		l					h	l2	f2		f	f4	f
4	f2						h	h	h			h	h	c	l	h	h2	c2	l2	f2	f3	f2	f2	f3
5	f2	f2	f2	f2	f3	h	c	h	c	c2	c2	c2	c2	c	c2	c2	c3	l2	l3	f2	f	f3	f3	f3
6	f3	f2	f3	f					h2	c	c	c	l				h	h	l					f2
7	f3	f3	f2	f2	f	l	h2	h	c2	c	c	c	l	l	c	c	l	l		f		f2	f2	f2
8	f3	f2	f2				l		h	h	l2	c	l	hl	h	c	c2	l2	l	f	f2			
9	f2	f2	f2		f2	l2		l	hl	l		c	c		c		c	c	h2	f	f3	f		f2
10	f2	f			f			h	l	h	h		h	h	h2	c	c	c2	l	f	f2	f3	f2	f2
11	f	f	f2	f3	f2			c	c	c	c	l	l2	l2	l2	l2	l2	c2	l2	f2		f3	f3	f3
12	f2	f2	f2	f2	f	h2	l2	c	l	l2	l2	l			hl	h	h2	c3	l3	f3	f3	f3	f2	f3
13	f2	f3	f4	f2	f2	l	l2	l2	l	c	l	l	l	c	c	c2	l2	c	l	f	f3	f3	f3	f3
14	f3	f2	f2	f2			h	c2	c	c	l2	l	l2		l	l		h	l	f2	f2	f3	f2	f2
15	f2	f	f	f	f		h2	c	c2	l	l	l2	l	l	l	h	h2	l	l2	f2	f3	f3	f2	f
16	f2	f3	f2		f2		h	h	c	l	l	l	l	l		l	l2	l2	l2	f3	f3	f2	f	f2
17	f2	f2	f	f		h	l2	l2	l2	l	h				h	h	h	h2	h3	f2	f3	f3	f2	f3
18	f3	f3	f3	f2					c	l	l	l	l	l		h	h3	l3	l2	f3	f2			
19		f2	f2					h	c3	l2	l2	l	l	l	c	l	l	l	l	f	f2	f2	f2	f2
20	f2	f2	f2	f2		l	h2	l	c2	l	l2	l2	l	l	l2	c	l2	l2	l	f2	f2	f2	f3	f2
21	f2	f3	f3	f			l		l	l	l2	l2	l2	l	l	c	l	l2	l	f2	f2	f2	f4	f3
22	f2	f2	f3	f2	f2	l	h	c	c	c2	c	c	l	l	l2	c	c	c2					f2	f3
23	f2	f3	f2	f3	f2		h	l	c	l	l			h	h	h	c	l2	l3	f2	f3	f2	f3	f3
24	f2	f	f2	f3	f	l	l2	l2	c2	l2	l	h	l			l	l	l	l2				f2	f3
25	f3		f2	f	f3	l	l2	l	l3	c2	l	l	l2	h	h	h	c2	l3	l2	f2	f2	f3	f2	f3
26	f3	f3	f2	f	f3	h2	c2	l2	c2	l	l	c	l	l	h	h	c	l	l2	f3	f3	f3	f3	f3
27	f3	f3	f2	f4	f3	c	c3	c	c2	l	c2	l2	c	c2	c2	c2	c2	c3	l2	f3	f3	f3	f3	f3
28	f3	f3	f3	f2	f2	l	c2	l2	l	c2	c2	c2	c	c2	c2	c2	c2	c2	l3	f3	f4	f	f3	f3
29	f4	f	f	f		c		c2	c3	c2	c2	c	l	c	c	h		c2	l2	f4	f3	f	f2	f3
30	f3	f	f	f	f	h	c2	c2	c3	c2	c	c2	c2	l2	l2	l2	c2	l2	l4	f2	f2		f3	f2
31	f3	f3	f2	f3	f	h2	c	l2	l2	l2	c2	c2	l2	l2	h		l	l	l2	f3	f2	f2	f3	f
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

K 12

IONOSPHERIC DATA

May. 1961

hpF2

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4′ N
Long. 139° 29.3′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U385S	345	355	370	400	365	285	265	305	I310C	I340C	355	345R	J340R	355	350	J330R	310S	305S	330	350S	J300S	I360S	41[illegible]
2	400S	355	300	U310S	395	305S	U295S	300	305	300	350	400	360	350	350	340	305	330	340	350	310	310S	360	400
3	410	I390S	360	360	375	C	C	C	C	A	330	355	350	350	330	355	330	U335S	330	J300S	305	345	370	385
4	400	395	I325S	J290S	315	305	305	305	310	315	350	350	350	315	350	335	315	305	310	305	330	I350S	390	390
5	J360S	360	355	U345S	J350S	285	300	320	300	330	A	360	375	310	335	I350A	345	345S	U350S	310	300	310	A	405
6	U425S	J400F	355	400S	I365F	380	F	S	A	A	A	AS	S	S	G	G	G	410	350	305	360	400	415	385
7	425S	405S	360	I300S	350	320	330	355	A	G	G	385	350	320	330	355	330	J310R	350	320	310	385	405	385
8	U450S	385	350S	355S	320	275	280	330	355	355	I370A	355	345	355	355	U350S	310	305	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	R	380	380	350	330	345	320	305	310S	350R	U300S	305	350	390	U360S
10	355	360S	350S	J295S	350	I290S	250	I320S	330	335	350	335	350	305	325	320	335	U305S	U300R	U305SH	300	I360S	390	365
11	400	345	I305AS	330	340	295	300	300	J350S	390H	400	U360R	390	355R	U330S	310	I345A	330	305	300	305S	355	J435S	405
12	I390S	380	I380S	U355S	J355S	J335S	375	G	A	S	A	S	S	375	370	355	I355A	355	325	I340A	340	390	345	380
13	400	455S	I420A	J350S	400	310S	295	I310S	330	320	425	395	360	400	350	340	300	300	350	310	300S	360	J400F	I395A
14	385	390	U360S	U350S	380	325S	270	255	300	I360S	350R	350	350	350R	380	350	U305S	335	330R	I305R	U305R	330	400	395
15	380	355S	400S	U360S	360S	355	300S	U300S	I325S	I355S	I360S	I360A	I350S	U355S	355	355	I345A	I315A	I320S	I305R	I300S	I355S	395	360
16	355	I390A	390S	350S	375	345	J265S	285	A	A	A	A	420	395	J335R	330	A	A	A	A	255	I375A	425	395
17	400	I400A	400F	390	I300S	250	300	A	A	A	350	385	400	330	355	335	I350A	355	I335A	315	385	385	365	I385S
18	I390A	U390S	U380S	355	335	295	300	I300C	A	A	A	A	380	350	350	345	I320R	I330A	345	I350A	I340S	345	380	350
19	I350R	350	I350S	350	360	J310S	I305R	330	A	A	345	355	355	350	355	345	I340R	J310R	330	340	330	335	355	355
20	U355F	345	I370A	385	J355S	300	305R	I320S	310	I360A	I380A	I400A	S	380	350	370	I370A	I355A	300R	300	400	420S	I405S	U390S
21	AS	S	I390S	I390S	U370S	305S	295	350	295	310	A	A	A	365	350	350	J305R	305S	300	320	310	405	430	U400S
22	390S	380	J405S	A	305	300	U295R	335	J350R	350	350	360	400	400	I370S	350	I335R	I320S	U305R	305	335	I370S	355	400
23	I400S	355	I370S	J390S	I350S	I375S	390	U325S	I350VS	I350A	355	360	345	360	390	350	400	U305S	305	300	U365S	I405S	I405S	I400S
24	J350S	310	I330A	I370A	I400S	I325A	I380A	A	A	A	S	S	A	G	S	I370S	I355S	355	355	350	335	J390S	I400A	I395A
25	I400A	J360S	I340SF	350	I350A	335	330	J300S	A	385	390	390	390	405	365	365	I365A	J405S	355	I330A	350	380	400	415
26	440	I395A	355	305	390	J365S	400	A	I360A	A	S	G	G	G	I395A	385	355	335	315	320	350	400	405	J380S
27	385	390	380	J350F	350	J310S	350	300	I320A	350	350	I355A	360	390	390	I360A	350	350	350	335	J360S	345	F	F
28	350F	I350A	U345A	S	S	300	275S	300	I330A	A	A	I350A	340	375	355	385	355	350	J320R	I310R	290	J330S	J380S	400
29	400F	350	355	355	380	305	I295C	I270A	A	A	355	410	350	350	350	350	360	345	315	300	280	375	400F	J365F
30	380	355	305	330	335	300	I305A	335	345	I330A	345	I375A	400	395	360	345	345R	320	330	305	320	305	350	365
31	380	I390F	I400F	I400F	U390S	395	350	A	A	A	350	I390A	380	A	370	C	C	C	R	A	C	R	A	C
No.	29	29	30	28	29	29	28	23	18	17	21	24	25	27	29	29	28	29	28	28	29	29	27	28
Median	390	380	360	350	355	310	300	305	330	350	350	360	355	355	355	350	340	330	330	310	320	360	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

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

May. 1961

ypF2

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	U 60^{S}	100	85	75	100	130	65	80	75	I 95^{C}	I 90^{C}	90	85^{R}	J 60^{R}	80	70	J 75^{R}	70^{S}	90^{S}	75	60^{S}	J 85^{S}	I 90^{S}	95
2	95^{S}	100	85	U 85^{S}	100	90^{S}	U 50^{S}	45	50	50	100	145	135	95	95	60	90	65	65	55	60	95^{S}	135	95
3	95	I 90^{S}	90	135	80	C	C	C	C	A	70	95	100	95	115	90	75	U 105^{S}	65	J 55^{S}	90	100	125	75
4	95	105	I 75^{S}	J 60^{S}	90	85	90	90	85	80	55	65	80	90	55	60	80	90	95	55	115	I 100^{S}	105	105
5	J 90^{S}	95	95	U 80^{S}	J 105^{S}	75	55	85	95	125	A	95	120	95	60	I 80^{A}	95	100^{S}	U 80^{S}	85	65	90	A	90
6	U 75^{S}	J 100^{F}	95	95^{S}	I 90^{F}	85	F	S	A	A	A	AS	S	S	G	G	G	95	95	90	135	95	85	90
7	75^{S}	100^{S}	85	I 70^{S}	105	80	85	90	A	G	G	70	105	80	115	95	80	J 90^{R}	95	85	100	110	95	70
8	U 55^{S}	70	95^{S}	90^{S}	85	75	65	60	95	90	I 90^{A}	50	65	95	90	U 95^{S}	90	85	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	R	65	70	140	70	70	80	90	90^{S}	100^{R}	U 95^{S}	100	55	105	U 85^{S}
10	60	95^{S}	90^{S}	J 55^{S}	100	I 80^{S}	65	I 70^{S}	70	105	100	70	95	90	80	95	70	U 70^{S}	U 70^{R}	U 90$^{S}_{H}$	55	I 100^{S}	65	80
11	95	60	I 90$^{A}_{S}$	70	105	50	95	95	J 50^{S}	125^{H}	100	U 85^{R}	105	90^{R}	U 80^{S}	90	I 65^{A}	70	90	60	45^{S}	100	J 65^{S}	100
12	I 80^{S}	95	L 70^{S}	U 135^{S}	J 95^{S}	J 60^{S}	120	G	A	S	A	S	S	70	75	55	I 50^{A}	50	75	I 60^{A}	105	105	110	70
13	95	45^{S}	I 80^{A}	J 95^{S}	95	90^{S}	55	I 55^{S}	75	80	80	100	100	95	95	60	95	95	100	85	55^{S}	85	J 95^{F}	I 85^{A}
14	110	105	U 95^{S}	U 105^{S}	80	80^{S}	50	70	50	I 60^{S}	110^{R}	95	50	95^{R}	75	95	U 85^{S}	105	85^{R}	I 85^{R}	U 80^{R}	115	100	105
15	75	100^{S}	100^{S}	U 85^{S}	140^{S}	90	55^{S}	U 55^{S}	I 95^{S}	I 110^{S}	I 110^{S}	I 75^{A}	I 90^{S}	U 100^{S}	90	90	I 70^{A}	I 80^{A}	I 70^{S}	I 55^{R}	I 80^{S}	I 95^{S}	100	85
16	95	I 105^{A}	65^{S}	55^{S}	120	55	J 45^{S}	70	A	A	A	A	85	105	J 115^{R}	125	A	A	A	A	110	I 95^{A}	75	110
17	105	I 70^{A}	95^{F}	100	I 80^{S}	50	105	A	A	A	145	115	95	65	135	75	I 100^{A}	100	I 90^{A}	105	105	70	90	I 100^{S}
18	I 60^{A}	U 105^{S}	U 115^{S}	100	65	60	45	I 90^{C}	A	A	A	A	70	95	80	150	I 85^{R}	I 90^{A}	100	I 100^{A}	I 110^{S}	60	75	95
19	I 110^{R}	95	I 100^{S}	100	135	J 90^{S}	I 140^{R}	120	A	A	100	100	100	95	90	55	I 90^{R}	J 85^{R}	80	65	110	70	95	90
20	U 95^{F}	100	I 100^{A}	110	J 100^{S}	90	100^{R}	I 95^{S}	90	I 130^{A}	I 90^{A}	I 100^{A}	S	65	90	85	I 120^{A}	I 110^{A}	60^{R}	90	100	125^{S}	I 115^{S}	U 105^{S}
21	AS	S	I 110^{S}	I 105^{S}	U 125^{S}	90^{S}	100	95	50	90	A	A	A	95	55	95	J 85^{R}	85^{S}	95	95	95	100	75	U 100^{S}
22	105^{S}	120	J 95^{S}	A	105	95	U 60^{R}	70	J 100^{R}	65	95	90	100	100	I 80^{S}	95	I 90^{R}	I 75^{S}	U 90^{R}	90	70	I 100^{S}	140	100
23	I 100^{S}	95	I 120^{S}	J 60^{S}	I 120^{S}	I 100^{S}	105	U 80^{S}	I 95$^{V}_{S}$	I 90^{A}	95	95	85	135	105	95	95	U 90^{S}	75	55	U 130	I 140^{S}	I 95^{S}	I 100^{S}
24	J 95^{S}	95	I 90^{A}	I 100^{A}	I 100^{S}	I 95^{A}	I 145^{A}	A	A	A	S	S	A	G	S	I 55^{S}	I 80^{S}	140	100	105	70	J 105^{S}	I 100^{A}	I 80^{A}
25	I 90^{A}	J 90^{S}	I 100$^{S}_{F}$	95	I 100^{A}	110	75	J 90^{S}	A	80	105	105	110	140	95	90	I 135^{A}	J 100^{S}	105	I 90^{A}	95	120	100	95
26	65	I 80^{A}	90	90	110	J 130^{S}	100	A	I 90^{A}	A	S	G	G	G	I 65^{A}	110	90	70	90	125	110	105	140	J 80^{S}
27	110	105	70	J 95^{F}	95	J 85^{S}	145	95	I 90^{A}	55	100	I 120^{A}	135	105	105	I 100^{A}	95	100	105	70	J 135^{S}	65	F	F
28	105^{F}	I 85^{A}	U 65^{A}	S	S	90	75^{S}	90	I 60^{A}	A	A	I 95^{A}	105	120	90	115	100	95	J 75^{R}	I 85^{R}	70	J 65^{S}	J 115^{S}	130
29	95^{F}	145	100	100	115	100	I 95^{C}	I 90^{A}	A	A	90	90	100	100	95	95	135	100	130	55	75	80	95^{F}	J 80^{F}
30	115	140	90	115	80	95	I 80^{A}	65	95	I 70^{A}	100	I 95^{A}	100	155	135	100	60^{R}	125	75	140	80	95	100	125
31	115	I 110^{F}	I 135^{F}	I 125^{F}	U 105^{S}	105	95	A	A	A	145	I 70^{A}	70	A	125	C	C	C	R	A	C	R	A	C
No.	29	29	30	28	29	29	28	23	18	17	21	24	25	27	29	29	28	29	28	28	29	29	27	28
Median	95	100	90	95	100	90	80	85	90	90	100	95	100	95	90	90	90	90	90	85	95	95	100	95

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

May. 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	I8.2S	8.5	I7.6S	5.9	5.9	5.8	I7.5S	8.8	J7.5S	8.0H	8.8H	J9.9S	J12.5S	J12.9S	J12.3S	12.8S	13.7S	J12.6S	I11.0S	I11.0S	I9.8S	J8.4S	U7.1S	I7.0S
2	6.7	U7.0S	J8.0S	5.9	4.8	4.6	J6.1S	I7.3S	8.8	J8.0SH	7.2H	8.3H	10.1SH	10.7SH	10.6H	11.9H	12.1H	11.8SH	I10.8S	10.9	I10.3S	8.8S	6.3SH	5.9S
3	U6.1S	6.1S	5.9	6.2	5.9	6.1	I7.5S	8.5	7.3S	J7.6SH	8.2	8.6	9.8H	10.5	11.1	11.6	11.8	J11.9S	I11.2S	10.8	8.9	I8.2S	J7.8S	S
4	S	I7.1S	I7.0S	6.3S	5.3	I5.2C	I5.8C	I6.9C	J7.4S	I7.9C	8.7	9.3	10.2	10.6S	10.7	11.0	11.5	U11.2S	10.6	9.5S	I7.7S	S	S	S
5	S	I7.5S	I7.3S	6.5	5.7	I5.7S	I7.1S	8.6	S	C	S	9.2	J10.1S	11.1H	10.8	10.6	11.5S	10.6	S	S	S	S	S	5.2
6	I5.2S	I5.2S	I4.8S	U4.7S	I5.3S	4.6S	J5.3S	4.9	4.4	A	C	C	I5.5C	C	C	6.1C	5.5	5.7C	C	C	C	C	C	C
7	C	C	C	C	I4.0C	3.8	5.6	I6.1C	I6.2C	6.9C	7.6	9.1	10.0	9.8	9.5S	11.2	12.4	11.5	10.5S	U9.3S	I8.1S	I6.7S	5.8	5.7
8	F	F	I5.8F	I5.6F	5.6	4.1	5.4	6.1	6.8H	7.3S	7.8S	8.1	9.4	9.1	9.2	10.6	10.9S	10.7	I9.7S	J8.4S	S	S	S	I7.0S
9	I6.9S	I6.5S	I6.4S	I6.3S	4.7	I3.8A	5.3	6.7	6.4	6.6	7.0	7.5	8.6	J10.0S	10.7	10.4	J9.5S	9.1SH	J10.4S	J10.4S	S	6.4	5.9	I5.8S
10	J5.7S	5.5S	J5.1S	5.2	4.1S	3.3	5.4	6.0	7.4SH	8.4	8.1	9.2	10.1	10.2	J9.6S	9.2S	J9.5S	J9.8S	11.0	J10.4S	I7.8S	6.2	I6.2S	I6.3S
11	I6.3S	6.3	J6.1S	5.2	4.3	3.7	5.5	6.2	6.1	6.8H	I8.6C	J9.8S	10.9	12.1S	12.6	11.7	11.1	J10.6S	J10.2S	J9.7S	J7.8S	J6.1S	5.8	5.5
12	F	Fs	F	5.0	4.9	4.5	5.4	J7.4S	6.7	I6.4A	J7.5S	I8.6A	I9.3A	J9.7S	9.6S	9.2S	9.0	J8.2S	8.0S	J7.7S	I7.0A	6.1	5.6	J5.4S
13	I5.3Fs	I5.3S	I5.2Fs	Fs	4.5	F	C	C	7.2S	J7.2S	7.9	I9.4S	J10.4S	10.5S	11.3	10.8	10.3	J10.0SH	J10.0SH	10.6S	J8.4S	U4.9SH	4.9	5.0H
14	I5.1S	Fs	J5.2S	I4.8F	J4.8S	4.6	6.1S	J7.2S	I6.5A	6.3H	7.5SH	7.9	9.1	J9.9S	10.2	10.7	10.5	10.3	J9.8S	10.7	J10.4S	I7.2S	6.0	5.9
15	5.9S	U6.1S	J5.0S	4.8	J5.0S	4.9	6.5	6.8	6.2	6.4	6.7	7.4	J7.8S	8.1	8.7	8.9	9.0	9.3S	J10.2S	I9.6A	I6.7A	I6.0S	A	A
16	S	Fs	F	Fs	Fs	5.3	5.6	J6.4S	I6.2A	6.4	7.2	7.0H	7.8	9.2S	10.6	10.5	J10.2S	9.2S	J10.1S	13.1	S	S	A	J5.3S
17	J5.2A	4.2S	I4.3S	5.5	F	3.6	4.7	6.0	7.0	7.4S	8.8	7.6	8.5	U9.7S	J10.1S	10.4	J10.3S	J10.3S	J10.3S	J9.4S	J8.0S	I7.2S	S	Fs
18	Fs	S	S	I6.2S	I5.9S	5.7	5.9	5.8	I6.3A	I6.7C	I6.9C	7.2	I8.5A	9.5	9.1	8.8	8.5	9.1S	8.8	9.2S	8.6	J8.0S	J7.5S	I7.4S
19	I7.4S	6.6S	5.6	I5.4F	5.2	5.7	6.5	7.0	7.4	7.4	7.7	8.5	9.3	9.5	J10.3S	11.3	11.2	10.8	J10.1S	J10.0S	8.9S	8.4	I7.5S	I7.2S
20	6.7	6.3	S	F	I6.0F	6.4S	6.0	6.9	7.1	J7.5S	A	A	9.0	10.4	11.3	10.4	10.0	11.2	I11.6S	9.1	A	A	A	S
21	S	Fs	Fs	F	F	5.0F	5.7	J7.6S	I7.3A	7.2S	I7.3A	7.2	8.9	9.1	10.1	11.6	10.9	9.4S	9.4S	8.7	I7.9S	6.8S	6.4	Fs
22	Fs	Fs	Fs	S	F	C	C	C	C	C	C	I8.7C	9.2	10.2	J10.5S	10.9	11.1	10.3	J9.5S	8.3	I7.6S	I7.6S	J7.6S	7.0
23	7.0	U7.1S	I6.7S	I6.2S	5.8	5.1S	6.3	7.7H	8.0	6.9	7.1	7.8	8.7	9.0	10.1	9.7	9.4	10.5	I9.8S	J8.0S	I6.8A	S	S	S
24	S	6.9	I5.4F	A	A	F	5.8	I6.9C	J7.5S	6.8	6.0	5.8	5.9	6.4	7.2	6.5	6.2	6.4	6.5	6.4	5.8	5.7S	5.7	5.9
25	I6.2S	J6.2S	5.8	J5.6S	5.4	5.4S	6.0S	7.2H	6.4H	I7.4A	8.5	8.9	U9.6S	U9.6S	10.6	11.3	10.3S	I9.8S	11.0	10.9	I9.8S	I8.1S	J6.7S	S
26	S	S	Fs	6.4	A	F	5.9S	I7.0SH	8.1H	7.0	7.1	7.3S	8.2	8.4	7.2	7.4S	8.3	9.2	J8.5S	J7.9S	U7.3S	5.9S	A	Fs
27	S	S	S	F	I4.8S	I4.4S	5.6	6.6S	I7.0A	J6.3R	I6.6A	7.3	7.6R	7.9	8.7	9.5	10.2S	J10.2S	U9.3S	9.0	8.7	J8.2S	I8.0S	S
28	S	F	S	I7.1S	6.3	I6.4S	6.5	6.9S	6.7	I6.6C	I6.9A	I7.1A	7.4R	8.1	8.7	9.2	J9.9S	11.2	I12.0S	10.8	9.0	I7.8A	J7.4S	S
29	Fs	S	A	5.8	F	F	8.5	7.9	6.3	I6.0A	6.1	7.5R	8.4	8.4	8.9	9.3	9.8	10.7	10.7S	I9.4S	J8.0S	I7.8A	J7.8S	J8.1S
30	F	F	Fs	Fs	5.1F	4.4F	5.8	7.8	9.3	8.1	8.0	7.8	8.5	10.0	10.6	10.2S	9.6S	9.6S	J9.8S	9.1S	J8.3S	8.2S	I7.5S	I7.1S
31	I6.4S	5.9S	J5.3S	F	F	4.7F	5.9	6.8	I7.1C	6.5	6.5	6.1	6.9	7.7	8.5	8.5	8.2	8.7	9.0	8.7	J8.2S	I7.2S	I6.6S	Fs
No.	16	18	19	21	23	26	29	29	29	28	27	29	31	30	30	31	31	31	29	29	25	24	21	18
Median	6.2	6.3	5.8	5.8	5.2	4.8	5.9	6.9	7.0	7.0	7.5	7.9	9.0	9.7	10.2	10.4	10.2	10.3	10.1	9.4	8.1	7.2	6.6	5.9
U.Q	6.8	7.0	6.7	6.2	5.8	5.7	6.4	7.5	7.4	7.4	8.1	9.0	10.0	10.2	10.7	11.2	11.1	10.8	10.8	10.6	8.9	8.2	7.5	7.0
L.Q	5.5	5.9	5.2	5.2	4.8	4.4	5.6	6.3	6.4	6.6	6.9	7.3	8.2	9.0	9.1	9.2	9.4	9.2	9.4	8.7	7.6	6.2	5.8	5.5
Q.R	1.3	1.1	1.5	1.0	1.0	1.3	0.8	1.2	1.0	0.8	1.2	1.7	1.8	1.2	1.6	2.0	1.7	1.6	1.4	1.9	1.3	2.0	1.7	1.5

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

May. 1961

f_oF1

135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	5.4^L	5.0	5.5	$^U4.9^L$	$^U5.0^L$							
2																								
3											L	L		5.4^L	$^U5.2^L$	4.8^L	4.8^L	L						
4										C	A	5.5^L	5.1	5.2^L	5.0	4.8	L	L						
5										C	$^U5.0^L$	5.3^L	4.9		5.0^H	$^I4.9^L$	$^U4.9^L$	A						
6								A	A	A	C	C	C	C	C	C	4.4	4.1	3.7^L					
7									C	A	A	A	A	A	A	A	A	4.2^L						
8										L	5.0^L	$^I5.2^L$	5.0	5.0	5.0	4.7	4.6	4.2						
9										$^I4.8^L$	$^U4.8^L$	5.0^L	4.9	4.7	4.7	4.6^L	4.2							
~~10~~										$^U4.6^L$	A	A	5.0	4.8	5.0^H	4.8	4.5^H	L	L					
11											C	5.1^L	5.0	5.0	4.9	4.8^L	4.6^L	4.1^L						
12										A	A	A	A	4.8	4.9	4.7	4.6	A						
13							C	C		A	$^U5.1^L$	5.2^L	5.1	5.0	5.1	4.8	4.5							
14												5.3	5.0^L	5.2	$^I4.9^A$	4.9	$^I4.7^A$	$^I4.2^L$	L					
15									4.3	4.9	4.9	5.1	5.1	4.9	4.8	4.7	A	A	A					
16									A	4.7^L	5.0		5.0	A	A	A	4.5	A	A					
17									L	L	5.0	4.8	5.2	5.0	4.9	4.6	4.5	4.3	L					
18									A	C	C	A	A	4.9	4.9	$^U4.8^L$	L	4.5	A					
19										A	$^I5.0^A$	$^U5.2^L$	A	A	A	A	4.6	$^U4.4^L$						
20									L	A	A	A	A	5.1	$^I5.0^A$	4.9	$^U4.9^L$	A						
21								A	A	$^U4.9^L$	A	A	A	A	A	5.0	4.7^L							
22							C	C	C	C	C	C	L^H	5.3	5.1	A	$^U4.9^L$	$^U4.4^L$	L					
23									$^I4.6^A$	4.5	$^I5.0^A$	5.2	5.1	$^I5.0^A$	$^I5.0^A$	$^U4.9^L$	4.9^L	A						
24								C	A	A	A	A	$^I4.8^A$	A	$^I4.7^A$	$^I4.7^A$	4.6	4.3	L					
25										A	5.0	5.2	5.1	5.0	5.2	4.9^L	4.8	L	A					
26										A	$^I5.0^A$	$^I5.1^A$	5.0	4.8	$^I4.9^L$	4.7	4.5	4.3	L					
27								A	A	A	A	$^I5.0^A$	4.9	$^I5.0^A$	4.9	4.6	4.6	A	A					
28										C	A	A	A	4.5	4.7	$^I4.8^A$	4.6	A	A					
29											L	$^I5.1^A$	$^I5.0^A$	5.0	5.0	4.8	A	A	A					
30								A	A	A	A	A	5.0	4.9	4.7	A	A	4.5^L	$^U3.8^L$					
31								L	C	A	A	A	A	$^I4.8^A$	A	$^I4.6^A$	4.6	4.1	3.8^L					
No.									2	6	11	15	19	23	24	24	24	13	3					
Median									$^U4.4$	$^U4.8$	$^U5.0$	5.2	5.0	5.0	5.0	4.8	4.6	4.3	$^U3.8$					

f_oF1

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

The Radio Research Laboratories, Japan.

Y 2

IONOSPHERIC DATA

May. 1961 **foE** 135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	260	3.05	335	350	I3.60R	R	A	I3.70A	I3.50A	I3.20R	285	225					
2							S	2.50	3.10	325	I3.50R	I3.60R	3.60	370	350R	330	3.10	280	2.20					
3							1.80	2.60	3.00	330	3.60	3.65	3.60	I355A	3.60	340	320	285	220					
4							C	C	3.10	I330C	3.40	3.45	3.70	I3.70R	3.60R	I340R	320	285	230					
5							S	2.60	320	I335C	3.55	I370R	I3.80R	R	R	R	320	280	2.05					
6							1.90	250	3.00	I330R	C	C	C	C	C	C	3.15	275	S					
7							2.10	I260C	I3.00C	3.45C	3.60	3.70	3.70	3.75	3.50	330	3.15	2.70	200					
8							S	A	A	A	R	3.60	3.70	3.70	A	A	3.15	2.80	220					
9							1.80	2.60	3.00	3.20	340	365	370	365	A	A	A	A	A					
10							A	I240A	3.00	A	A	A	3.60	3.60	3.45	335	3.10	280	220					
11							S	250	285	A	C	A	A	A	A	I345S	3.15	275	A					
12							1.85	250	3.00	I325A	345	A	A	A	A	A	I320A	280	220					
13							C	C	A	I315A	I335A	360	365	360	350R	340	310	275	210					
14							1.60	265	3.00	330	330	350	360	A	A	A	A	270	220	S				
15							1.80	A	A	A	A	A	A	A	A	A	A	A	A					
16							S	260	290	A	A	A	A	A	A	A	A	A	215					
17							1.80	250	A	A	A	A	A	A	R	340	315	275	220					
18							2.00	260H	3.00	I325C	I340C	350	I355A	I365R	370R	I345R	I320R	280	230					
19							2.10	270	310	340	360	370	370	A	A	A	A	290	A					
20							2.00	270	315	340	A	A	A	A	A	A	A	A	A					
21							2.00	265	290	A	A	A	B	350	355	I335R	330	290	230					
22							C	C	C	C	C	C	A	A	A	A	A	A	A					
23							210	270	310	330	340	360	A	A	A	350	330	285	235H					
24							1.90	I260C	310	330	350	360	I365R	I370R	I370R	340	315	275	I220A					
25							1.85	265	310	330	340	I360A	A	A	A	350R	330	285	A					
26							2.05	260	310	325	340	350	A	A	360	R	A	270	230					
27							2.10	250	290	300	I330R	I340R	A	A	A	I345A	325	275	215					
28							A	260	300	I330C	335	355R	360	I360A	360	345	320R	280	230					
29							2.10	270	300	I315A	340	350	360	360	A	A	A	280	215					
30							2.10	260	310	330	I350A	350	350	A	A	330	A	A	A	S				
31							2.00	270	I295C	320	330	350	A	A	A	A	A	A	I235A					
No.							20	26	26	23	21	21	16	13	12	17	20	24	22					
Median							200	260	300	330	340	360	360	365	360	340	320	280	220					

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

IONOSPHERIC DATA

May. 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	1.9	J2.2	J2.2	J2.1	J2.2	2.2	3.2	3.6	4.3	4.1	4.1	3.9	4.4	5.4	4.1	4.1	4.6	J5.4	J4.1	S	J1.5S	S	S
2	S	S	E	E	E	S	G	G	3.5	3.6	4.0	G	G	3.9	G	2.8G	2.3G	G	J2.5	2.2	S	S	S	S
3	S	S	S	E	E	E	2.4	3.1	3.9	4.1	4.1	4.7	3.8	J6.2	G	G	3.5	3.1	J5.2	5.4	3.0	J5.0	J3.4	J2.2
4	J2.3	2.3	J2.2	E	E	C	C	C	3.7	C	J5.2	J7.4	4.3	G	G	G	4.2	J5.4	3.7	2.5	J1.8S	D4.2S	2.2	J2.6
5	J6.2	S	J3.3	J3.4	J4.1	J2.3	3.3	J4.8	J6.2	C	5.0	4.5	3.9	G	G	4.1	4.3	J5.5	D6.9S	J6.5	J1.9	3.7	J4.1	J2.1
6	J2.0	D3.2S	1.8	E	J2.9	S	G	3.6	4.8	9.4M	C	C	C	C	C	C	3.5	3.2	3.3	2.1	E	S	C	C
7	C	C	C	1.9	3.2	J3.3	3.4	3.1	C	6.2	7.1	J5.4	J5.9	J7.7	J6.4	8.8M	J5.6	3.7	2.9	J3.7	3.6	J3.2	J4.6	3.7M
8	J3.7	3.4	J5.2	J3.2	3.2	J2.1	J2.4	2.9	3.2	3.7	4.0	4.0	4.3	4.0	4.4	J5.0	J3.1G	3.5	J4.7	J3.3	J2.2	J2.1	J1.6S	J1.7S
9	J2.0	J2.2	J1.9	4.7M	1.2	J4.8	3.0	G	3.3	3.5	3.7	4.0	4.0	4.4	3.9	6.0	J7.7	J9.1	J5.9	J5.2	S	S	S	J2.1
10	J1.5S	S	E	1.1	1.4	J1.7S	J2.8	3.0	3.3	3.6	5.0	5.2	4.7	4.1	G	G	G	G	J4.4	J4.4	J3.2	D3.6S	3.6	J2.4
11	J3.1	J2.5	J2.2	E	S	1.6	2.2	3.0	4.0	3.7	C	J4.6	3.8	4.2	3.9	3.9	3.6	3.4	3.0	J3.0	J4.6	J5.2	J3.1	3.8
12	J3.1	J2.6	2.1	3.2	J4.4	J1.5S	2.6	4.7	J5.3	7.0	7.1	J10.2	14.9M	J5.8	J5.0	4.5	4.0	4.4	J4.5	J5.6	J7.4	J4.3	5.6M	J5.4
13	J4.0	4.5	4.5M	3.8	J2.3	J2.9	C	C	J5.2	J5.6	3.4	G	3.9	3.4G	3.8	3.7	3.7	3.0	2.3	2.0	S	J2.4	J3.9	3.6
14	J1.8	J5.5	J2.0	J3.0	J2.8	J2.2	2.3	3.7	J3.3	5.9	J5.4	3.8	4.2	5.4	J6.9	J5.5	J8.4	3.0	J2.3	1.9	J1.5S	2.6	J2.6	J2.3
15	J1.7S	J1.5S	S	E	E	S	J2.1B	2.6	J3.4	3.8	4.0	11.5M	5.3	4.0	6.0M	3.9	4.7	J5.9	D9.1S	J11.9	D9.1S	J5.2	J10.3	D9.0S
16	D5.7S	J5.3	J3.6	J3.5	3.0	J2.3	2.1	3.9	7.6M	J5.4	6.4M	J8.4	J5.6	J7.1	9.2	J8.4	J5.1	J5.7	D9.1S	J12.2	J8.0	D9.1S	D9.0C	J5.0
17	J5.2	J3.7	J4.0	3.8M	J3.1	J2.6	2.5	2.8	3.4	J5.1	J4.5	4.2	J5.4	4.1	G	G	3.1G	G	2.6	J3.9	J3.2	J3.0	4.5	3.7
18	J5.0	J5.1	4.5M	J5.3	J4.0	J6.0	2.1	3.7	J6.3	C	C	J6.6	J9.7	3.8	3.6G	3.4G	G	4.2	J7.7	J5.1	D9.0S	6.0	5.9M	J2.7
19	J2.5	3.7M	J3.6	J2.3	J1.9	2.1	2.5	3.4	4.5	J5.3	5.0	4.7	J6.3	J8.5	J8.8	J6.3	3.3	3.6	J3.9	J5.4	D9.0S	J2.4	3.2	D6.8S
20	J5.4	J3.3	J5.5	J3.5	J4.0	1.6	3.0	3.9	J5.1	J5.6	J8.3	10.1	J11.5	J11.6	J8.7	J8.5	D13.3S	J10.5	D6.7S	D9.1S	J10.9	J8.7	D9.0S	J6.5
21	J3.2	6.3M	J3.1	J2.5	J2.4	S	3.0	J5.4	D9.2S	12.9M	12.4M	J6.4	6.1	J13.1	J7.2	4.1	3.9	4.2	6.8	J7.2	3.8	D5.7S	J2.9	J2.5
22	3.3	J5.1	J5.7	J3.3	3.2	C	C	C	C	C	C	C	3.9	4.5	J5.4	5.9	12.0M	J4.9	J5.3	D9.0S	J5.3	5.7M	3.9M	3.2
23	6.0	4.2M	3.1	J2.4	J1.8	J2.3	G	3.0	J5.3	3.9	7.5M	J5.1	J8.4	6.6	J5.5	5.2	5.0	J8.4	J7.9	J6.3	J8.5	5.9M	J5.4	J4.6
24	J3.2	J3.7	J5.4	5.8	6.9M	J1.5S	J4.1	C	J6.4	9.2M	5.5	J5.4	J6.8	5.2	5.2	5.8	3.7	G	J3.2	J2.9	3.2	D3.2S	J1.8	J3.3
25	J2.6	S	J5.3	3.7M	J5.4	J5.1	J4.2	J5.1	J6.5	12.3	J12.2S	4.2	4.3	J5.4	4.5	3.8	3.7	3.9	J5.3	J4.8	J3.9	3.2	J5.1	J3.3
26	J5.3	J3.3	3.2	J4.1	J4.4	J3.4	3.9	J8.6	J6.3	J5.4	J6.1	10.6M	J9.5	3.8	4.0	4.0	4.2	3.7	3.3	3.0	J3.1	5.0	5.9	3.9
27	5.9	5.3M	J5.3	J5.1	3.9	2.9	G	J5.4	D11.6S	9.1M	8.3	J5.2	J5.1	J5.9	4.4	3.8	4.3	J5.4	J6.4	J4.3	J5.3	S	J2.1	J3.1
28	3.2M	J5.1	J5.1	J2.2	6.0M	J3.3	2.3	4.2	4.4	C	J12.5	11.5	J5.6	4.6	4.4	5.5	4.1	J8.4	5.7	J3.8	J4.8	7.9	J5.1	J5.1
29	J5.2	J5.3	7.8	J3.7	J2.3	J2.3	3.3	6.9	J5.4	11.0M	J5.3	J7.4	J5.9	J5.1	4.8	3.4	J4.9	9.5	J8.6	J10.8	D9.1S	J8.7	J6.1S	J5.0
30	J5.1	5.0	J2.4	J3.1	J2.4	J3.1	3.2	J6.1S	J7.7	J10.4	J11.2	J7.4	7.0	J5.4	4.6	J5.8	6.0	J4.4	3.0	1.8	J1.8S	J2.3	J1.5S	S
31	J2.2	J3.8	J3.7	3.1	J2.4	2.1	J3.5	4.5	C	J7.2	7.1	J8.7	J8.4	J7.9	J8.4	J7.7	J3.4	3.1	2.8	S	2.2	J2.2	J8.5	6.0
No.	27	24	28	31	30	25	28	27	28	26	27	29	30	30	30	30	31	31	31	30	27	24	27	27
Median	3.2	3.8	3.4	3.1	2.8	2.3	2.5	3.7	5.2	5.5	5.4	5.2	5.4	4.8	4.6	4.1	4.1	4.2	4.7	4.4	3.8	4.6	4.1	3.6
U.Q	5.2	5.1	5.2	3.7	4.0	3.2	3.2	4.8	6.4	9.1	7.5	7.9	6.8	6.2	6.0	5.8	5.0	5.5	D6.7	6.3	8.0	D5.8	5.9	5.0
L.Q	2.3	3.0	2.2	1.9	1.9	1.9	2.2	3.0	3.6	3.9	4.1	4.2	4.0	4.0	3.8	3.7	3.5	3.1	3.0	3.0	2.2	2.5	2.9	2.5
Q.R	2.9	2.1	3.0	1.8	2.1	1.3	1.0	1.8	2.8	5.2	3.4	3.7	2.8	2.2	2.2	2.1	1.5	2.4	D3.7	3.3	5.8	D3.3	3.0	2.5

The Radio Research Laboratories, Japan.

foEs

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

IONOSPHERIC DATA

May. 1961

fbEs

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	1.8	2.1	1.3	1.9	1.9	G	3.1	3.5	4.3	$^{E}4.1^{B}$	4.1	G	4.4	4.2	4.1	4.1	4.5	5.4	4.1	S	S	S	S
2	S	S				S			G	G	G			$^{E}3.9^{B}$		2.8^{G}	2.3^{G}		2.1	E	S	S	S	S
3	S	S	S				2.3	G	3.7	4.1	$^{E}4.1^{B}$	4.5	$^{E}3.8^{B}$	4.9			G	G	3.7	4.5	2.1	2.3	2.0	1.8
4	1.9	2.0	E			C	C	C	G	C	5.0	4.4	4.3				4.2	3.7	2.9	2.2	S	2.3	E	1.9
5	A	S	2.2	2.9	3.3	1.8	3.3	4.3	A	C	4.8	4.5	G			4.1	4.1	5.2	$^{D}6.9^{S}$	A	E	A	A	2.0
6	1.9	2.0	1.6		2.7	S		3.6	4.1	A	C	C	C	C	C	C	G	3.2	3.3	1.9		S	C	C
7	C	C	C	1.8	A	2.9	$^{E}3.4^{C}$	$^{E}3.1^{C}$	C	6.2	6.5	5.1	5.7	7.4	5.5	4.7	5.1	3.6	2.9	3.6	2.7	2.7	4.3	2.1
8	2.0	1.8	2.1	1.9	2.1	1.8	G	G	G	3.5	3.9	4.0	4.2	4.0	$^{E}4.4^{B}$	4.4	2.9^{G}	3.5	4.1	3.1	2.0	2.0	S	S
9	E	E	$^{E}1.9^{S}$	2.7	$^{E}1.2^{B}$	2.2	G		G	G	G	4.0	4.0	3.8	G	G	3.8	3.7	4.1	2.6	S	S	S	E
10	S	S		E	1.4	S	1.9	G	G	G	4.8	5.1	4.5	4.1					3.1	4.4	3.1	2.1	2.1	1.9
11	2.0	2.1	1.7		S	1.6	G	2.9	3.9	G	C	4.0	$^{E}3.8^{B}$	4.2	G	3.8	3.4	G	2.7	2.0	4.2	2.6	2.4	1.8
12	2.1	2.1	2.0	2.5	3.0	S	G	4.0	5.0	A	6.3	A	A	4.4	4.8	4.3	4.0	4.3	4.4	5.2	A	3.0	3.8	4.3
13	1.8	1.8	2.5	2.5	2.0	2.2	C	C	4.5	4.9	G		G	3.4^{G}	$^{E}3.8^{B}$	G	3.5	G	G	1.9	S	2.1	3.3	1.9
14	$^{E}1.8^{S}$	3.1	1.5	1.9	1.8	1.8	2.1	3.7	A	4.6	5.2	G	4.2	4.4	5.5	4.8	5.0	2.5	2.0	1.9	S	1.7	2.4	2.0
15	S	S	S			S	G	G	$^{E}3.4^{B}$	3.8	4.0	4.5	4.8	4.0	4.6	3.9	4.6	5.9	7.1	A	A	4.7	A	A
16	4.3	4.2	3.0	2.9	2.0	1.9	G	3.6	A	3.6	4.9	4.7	4.4	6.6	8.0	8.4	4.2	5.7	8.9	12.0	A	A	A	A
17	A	3.4	A	2.4	2.4	1.7	2.5	G	G	4.5	3.9	4.2	4.9	3.9			2.8^{G}		G	3.8	3.2	2.6	A	2.6
18	4.1	2.2	3.5	1.8	2.0	3.0	G	3.7	A	C	C	6.6	A	$^{E}3.8^{B}$	3.6^{G}	$^{E}3.4^{R}$		4.1	5.6	4.5	3.6	4.5	3.0	2.3
19	2.1	E	2.8	2.0	1.9	E	2.5	G	4.3	5.2	5.0	4.6	6.0	7.9	8.1	6.0	G	3.5	3.9	5.1	7.8	2.0	2.9	A
20	S	2.0	2.3	3.2	1.8	1.6	2.6	3.6	4.0	5.4	A	A	5.2	4.5	5.5	4.7	4.2	10.2	5.6	8.7	A	A	A	4.7
21	2.5	2.7	2.5	2.1	1.7	S	2.6	4.7	A	4.5	A	5.8	$^{E}6.1^{B}$	6.7	6.9	G	G	4.2	4.6	$^{E}7.2^{S}$	2.3	E	2.0	2.0
22	2.3	1.8	2.3	1.4	2.0	C	C	C	C	C	C	C	$^{E}3.9^{B}$	4.3	4.9	5.0	4.3	3.3	3.0	4.7	5.3	3.6	3.9	3.0
23	5.4	E	2.4	1.8	1.8	1.9		G	5.1	3.8	6.8	4.7	4.1	5.2	5.5	4.7	4.5	4.9	3.7	$^{E}6.3^{B}$	A	2.5	A	4.1
24	2.8	3.6	4.1	A	A	S	3.9	C	5.0	5.7	$^{E}5.5^{B}$	5.1	5.7	4.7	5.1	5.1	3.6		2.9	2.3	2.6	$^{D}3.2^{S}$	E	2.5
25	1.9	S	1.9	2.7	4.6	4.2	3.7	3.7	5.1	A	4.1	4.2	4.3	4.7	4.5	3.8	3.6	3.6	4.6	4.7	$^{E}3.9^{S}$	$^{E}3.2^{S}$	4.9	2.0
26	4.8	$^{E}3.3^{S}$	2.2	2.6	2.9	3.1	3.7	5.4	5.7	4.9	6.0	5.5	4.0	$^{E}3.8^{B}$	4.0	G	4.0	3.7	3.3	2.7	2.9	2.3	A	2.3
27	4.7	2.2	4.7	4.2	2.9	2.4		4.3	A	A	A	5.2	4.7	5.6	4.3	3.7	4.2	5.2	6.2	4.2	5.3	S	1.9	2.6
28	2.1	3.6	3.0	1.9	1.6	2.7	G	4.2	4.0	C	A	A	5.5	4.3	4.4	5.5	3.8	5.4	4.6	3.1	4.8	A	2.2	4.6
29	2.5	2.6	A	2.8	2.2	1.8	3.2	6.0	4.2	A	4.8	6.7	5.9	4.7	4.7	G	4.6	8.8	8.3	8.3	5.3	A	2.5	4.1
30	4.4	3.6	1.7	2.0	2.1	2.3	2.8	5.1	6.6	7.7	4.9	5.2	4.6	4.3	3.9	5.2	5.1	3.6	G	1.8	S	2.0	S	S
31	E	2.5	2.6	2.0	1.7	1.9	3.1	3.6	C	5.4	5.8	5.3	5.0	5.0	4.7	4.9	3.4	2.9	G	S	2.2	1.9	4.7	A
No.	24	23	26	25	26	21	23	25	28	26	26	27	28	28	24	26	29	27	31	28	23	25	25	26
Median	2.2	2.1	2.3	2.1	2.0	1.9	2.3	3.6	4.2	4.8	4.9	4.7	4.4	4.4	4.6	4.2	4.0	3.7	3.7	4.0	$^{E}3.9$	2.6	3.3	2.4

fbEs

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

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

May. 1961

f-min

135° E Mean Time (G.M.T. + 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.80S	E1.60S	1.30	1.20	E	1.20	E1.70S	1.70	1.60	2.60	2.20	2.80	2.20	2.40	2.50	2.00	1.95	1.70	E1.60S	E1.50S	E1.90S	E1.80S	E1.90S	E1.70S
2	E1.60S	E1.80S	1.30	1.30	E	E1.80S	E1.70S	1.80	1.80	1.90	2.00	2.20	2.50	2.20	2.20	2.00	1.85	1.30	E1.70S	E1.80S	E1.50S	E1.90S	E1.80S	E1.90S
3	E1.80S	E1.80S	E1.90S	1.00	E	1.35	E1.70S	1.80	1.75	1.90	2.20	2.25	2.20	2.40	2.00	1.95	1.90	1.70	E1.80S	E1.60S	E1.40S	E1.60S	E1.60S	E1.70S
4	E1.70S	E1.80S	E1.70S	1.10	E	C	C	C	1.80	I2.00C	2.20	2.00	2.20	2.30	2.25	2.20	1.90	E1.90S	E1.70S	E1.60S	E1.90S	E1.70S	E1.90S	E1.70S
5	E1.70S	E1.60S	1.35	1.00	E	1.30	E1.70S	1.80	2.20	I2.30C	2.25	2.55	2.60	2.60	2.50	2.40	1.85	1.80	E1.50S	E1.60S	E1.70S	E1.60S	E1.70S	E1.50S
6	E1.50S	E1.75S	E1.40S	1.10	E	E1.70S	E1.60S	1.70	1.70	2.50	E2.50C	C	C	C	C	E2.50C	E2.20C	E1.80C	E1.85C	E1.60C	1.20	E1.70S	C	E2.20C
7	E1.80C	C	E2.30C	1.10	1.10	E1.70S	1.90	E2.70C	C	E2.50C	2.10	2.25	2.30	2.20	2.10	1.90	1.75	1.80	E1.70S	E1.70S	E1.80S	E1.80S	E1.90S	E1.60S
8	E1.60S	E1.60S	1.20	E	E	1.30	2.00	1.80	1.70	1.80	1.70	2.00	2.20	2.35	2.25	1.90	1.90	1.70	E1.70S	E1.65S	E1.70S	E1.70S	E1.90S	E1.70S
9	E1.60S	E1.80S	E1.70S	1.30	E	1.30	E1.70S	E1.70S	1.70	2.00	2.00	2.20	2.30	2.20	1.95	1.90	1.80	1.70	E1.50S	E1.70S	E1.80S	E1.70S	E2.00S	E1.60S
10	E1.60S	E1.80S	1.00	E	E	1.10	1.35	1.80	1.75	1.80	2.20	2.05	2.00	2.20	2.20	1.95	1.90	1.70	E1.50S	E1.60S	E1.70S	E1.70S	E1.80S	E1.70S
11	E1.60S	E1.70S	E1.40S	1.50	E1.70S	1.25	E1.70S	1.70	1.65	1.75	I2.10C	2.20	2.40	2.50	2.35	2.00	2.00	E1.50S	1.30	1.40	E1.70S	E1.60S	E1.80S	E1.70S
12	E1.70S	E1.60S	E1.80S	1.30	E	E1.70S	E1.70S	E1.70S	1.70	2.00	2.00	2.30	2.20	2.40	2.10	2.00	1.90	E1.70S	E1.70S	1.80	E1.60S	E1.70S	E1.80S	E1.70S
13	E1.70S	E1.70S	1.30	1.40	1.45	1.30	C	C	1.70	1.95	2.20	2.25	2.00	2.50	2.20	2.00	1.90	1.80	E1.70S	1.80	E1.80S	E1.70S	E1.80S	E1.60S
14	E1.70S	E1.80S	E	E	E	1.30	1.30	1.60	1.70	1.90	1.90	2.20	2.30	2.00	2.00	1.85	1.80	1.70	1.40	E1.70S	E1.80S	E1.50S	E1.75S	E1.50S
15	E1.80S	E1.70S	E1.70S	1.40	E	E1.75S	1.75	1.40	1.80	1.70	1.90	2.20	2.30	1.95	2.00	1.95	1.90	1.75	E1.60S	1.80	E1.80S	E1.70S	E2.10S	E1.80S
16	E1.60S	E1.70S	E1.70S	1.30	E	1.30	1.90	1.70	1.90	1.90	2.00	2.00	2.20	2.30	2.05	2.00	1.90	1.70	1.40	1.80	E1.70S	E1.75S	E1.75S	E1.70S
17	E1.60S	1.80	1.30	E	1.00	E1.50S	1.70	1.40	1.90	1.80	2.30	2.30	1.95	2.30	2.00	1.80	1.70	1.60	E1.80S	E1.60S	E1.70S	E1.80S	E1.80S	E1.60S
18	E1.70S	E1.70S	1.25	E	E	1.20	E1.60S	1.50	1.80	I1.80C	I2.05C	2.30	2.40	2.30	2.00	2.20	2.20	E1.50S	E1.60S	E1.70S	E1.60S	1.30	E1.80S	E1.70S
19	E1.60S	E1.80S	1.40	1.15	1.20	E1.80S	1.65	1.40	1.70	2.00	2.45	2.05	2.40	2.30	2.30	2.00	1.90	1.95	E1.70S	E1.65S	E1.90S	E1.70S	E1.80S	E1.60S
20	E1.90S	E1.90S	1.40	1.30	E	E1.40S	1.60	1.65	1.80	1.90	1.90	2.00	2.30	2.20	2.20	2.15	1.80	1.70	E1.60S	1.25	E1.60S	E1.65S	E1.70S	E1.60S
21	E1.55S	E1.70S	E	E	E	E1.70S	E1.60S	E1.60S	1.80	1.60	1.90	2.20	3.90	2.20	2.25	2.30	2.00	2.20	E1.80S	E1.70S	E2.00S	E1.60S	E1.85S	E1.80S
22	1.35	E1.60S	E	E	E	C	C	C	C	C	C	I2.40C	2.65	2.25	2.30	2.00	2.05	E1.60S	E1.50S	E1.75S	E1.90S	E1.70S	E1.90S	E1.80S
23	E1.70S	E1.70S	1.30	1.60	E	E1.70S	E1.60S	E1.70S	E1.70S	1.85	2.20	2.20	2.20	2.00	2.30	2.00	1.90	1.95	E1.50S	E1.60S	E1.60S	E1.60S	E1.70S	E1.60S
24	E1.60S	1.40	E1.80S	E	E	1.40	E1.55S	I1.70C	1.85	1.90	2.25	2.30	2.30	2.40	2.50	2.05	2.00	E1.70S	E1.60S	1.30	E1.80S	E1.70S	E1.70S	E1.70S
25	E1.80S	E1.90S	E1.60S	E	E	1.30	E1.70S	E1.60S	E1.80S	1.90	2.00	2.30	2.30	2.20	2.35	2.20	E1.90S	E1.75S	E1.70S	E1.60S	E1.80S	E1.80S	E1.80S	E1.80S
26	E1.60S	E1.80S	E1.70S	E	E	E1.60S	E1.70S	E1.70S	2.20	1.95	2.30	2.20	2.20	2.00	2.20	2.00	E1.90S	E1.90S	E1.60S	E1.60S	E1.60S	E1.65S	E1.90S	E1.90S
27	E1.60S	E1.80S	E	E	E	E1.60S	E1.70S	E1.80S	E1.80S	2.00	2.30	2.55	2.30	2.40	2.20	2.00	2.00	E1.60S	E1.85S	E1.40S	E1.70S	E2.00S	E1.70S	E1.70S
28	E1.60S	E1.60S	1.25	E	E	1.20	1.30	1.40	1.80	I1.80C	2.20	2.30	2.25	2.20	2.40	2.05	1.85	E1.60S	E1.55S	E1.60S	1.00	E1.70S	E1.60S	E1.70S
29	E1.65S	E1.60S	E	E	E	E	E1.50S	E1.70S	E1.50S	1.95	2.20	2.30	2.30	2.30	2.35	2.40	2.00	1.95	E1.60S	1.35	E1.90S	E1.70S	E1.90S	E1.80S
30	E1.70S	E1.75S	E	E	E	E1.60S	E1.50S	E1.70S	E1.70S	1.90	1.95	2.20	2.30	2.30	1.90	1.90	1.80	1.80	E1.60S	E1.60S	E1.80S	E1.60S	E1.80S	E1.70S
31	E1.60S	E1.60S	E1.70S	E	E	E1.50S	E1.60S	E1.70S	C	1.80	2.00	2.25	2.35	2.30	1.85	2.00	1.90	E1.60S	E1.60S	1.85	E1.70S	E1.75S	E1.80S	E1.75S
No.	31	30	18	31	30	15	28	26	26	29	29	30	30	30	30	30	30	27	31	31	31	31	30	31
Median	E1.60	E1.70	1.25	1.00	E	1.30	E1.70	E1.70	1.75	1.90	2.10	2.20	2.30	2.30	2.20	2.00	1.90	1.70	E1.60	E1.60	E1.70	E1.70	E1.80	E1.70

The Radio Research Laboratories, Japan.

f-min

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

Y 6

IONOSPHERIC DATA

May. 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	$^{I}2.75^{S}$	2.80	$^{I}3.00^{S}$	2.85	2.70	2.70	$^{I}3.20^{S}$	3.55	$^{J}3.35^{S}$	3.05^{H}	2.95^{H}	$^{J}2.75^{S}$	$^{J}3.00^{S}$	$^{J}2.95^{S}$	$^{J}2.80^{S}$	2.85^{S}	3.00^{S}	$^{J}3.15^{S}$	$^{I}3.05^{S}$	$^{I}3.10^{S}$	$^{I}3.10^{S}$	$^{J}2.90^{S}$	$^{U}2.75^{S}$	$^{I}2.70^{S}$
2	2.70	$^{U}2.75^{S}$	$^{J}3.15^{S}$	3.25	2.90	2.75	$^{J}3.30^{S}$	$^{I}3.30^{S}$	3.30	$^{J}3.30^{SH}$	3.05^{H}	2.65^{H}	2.80^{SH}	2.90^{SH}	2.85^{H}	3.05^{H}	3.05^{H}	3.15^{SH}	$^{I}3.05^{S}$	3.10	$^{I}3.15^{S}$	3.30^{S}	2.70^{SH}	2.70^{S}
3	$^{U}2.50^{S}$	2.80^{S}	2.80	2.95	2.90	3.00	$^{I}3.30^{S}$	3.55	3.45^{S}	$^{J}3.30^{SH}$	3.05	2.90	2.85^{H}	2.80	2.90	3.00	3.05	$^{J}3.15^{S}$	$^{I}3.10^{S}$	3.30	3.05	$^{I}2.90^{S}$	$^{J}2.90^{S}$	S
4	S	$^{I}2.80^{S}$	$^{I}3.10^{S}$	3.15^{S}	3.10	$^{I}3.10^{C}$	$^{I}3.20^{C}$	$^{I}3.35^{C}$	$^{J}3.40^{S}$	$^{I}3.10^{C}$	3.05	2.90	2.95	2.85^{S}	2.95	2.90	3.15	$^{U}3.10^{S}$	3.10	3.15^{S}	$^{I}3.10^{S}$	S	S	S
5	S	$^{I}3.00^{S}$	$^{I}3.00^{S}$	3.00	2.90	$^{I}3.00^{S}$	$^{I}3.15^{S}$	3.45	S	C	S	2.80	$^{J}2.85^{S}$	3.00^{H}	3.00	2.85	2.95^{S}	3.10	S	S	S	S	S	2.60
6	$^{I}2.70^{S}$	$^{I}2.75^{S}$	$^{I}2.75^{S}$	$^{U}2.55^{S}$	$^{I}3.00^{S}$	3.15^{S}	$^{J}3.25^{S}$	2.55	2.25	A	C	C	$^{I}2.60^{C}$	C	C	2.85^{C}	2.60	2.70^{C}	C	C	C	C	C	C
7	C	C	C	C	$^{I}3.00^{C}$	2.80	3.05	$^{I}3.25^{C}$	$^{I}2.90^{C}$	3.05^{C}	2.80	2.85	3.00	3.00	2.85^{S}	2.85	3.15	3.15	3.00^{S}	$^{U}3.25^{S}$	$^{I}3.00^{S}$	$^{I}2.90^{S}$	2.70	2.55
8	F	F	$^{I}2.90^{F}$	$^{I}2.80^{F}$	3.25	3.15	3.30	3.30	3.15^{H}	2.95^{S}	3.10^{S}	2.80	2.90	2.95	2.75	2.95	3.00^{S}	3.20	$^{I}3.30^{S}$	$^{J}3.30^{S}$	S	S	S	$^{I}2.90^{S}$
9	$^{I}2.90^{S}$	$^{I}2.80^{S}$	$^{I}3.10^{S}$	$^{I}3.25^{S}$	3.50	$^{I}2.85^{A}$	3.20	3.35	3.30	3.15	3.00	2.80	2.70	$^{J}2.95^{S}$	3.05	3.15	$^{J}3.15^{S}$	2.85^{SH}	$^{J}2.90^{S}$	$^{J}3.20^{S}$	S	2.75	2.75	$^{I}2.80^{S}$
10	$^{J}2.75^{S}$	2.75^{S}	$^{J}2.80^{S}$	3.25	3.15^{S}	2.90	3.35	3.25	3.10^{SH}	3.15	3.05	2.95	3.00	3.15	$^{J}2.95^{S}$	3.00^{S}	$^{J}3.05^{S}$	$^{J}3.05^{S}$	3.15	$^{J}3.30^{S}$	$^{I}3.25^{S}$	2.75	$^{I}2.70^{S}$	$^{I}2.75^{S}$
11	$^{I}2.80^{S}$	3.00	$^{J}3.30^{S}$	3.10	3.25	2.95	3.40	3.40	3.30	2.90^{H}	$^{I}2.60^{C}$	$^{J}2.70^{S}$	2.80	3.00^{S}	3.15	3.15	3.10	$^{J}3.15^{S}$	$^{U}3.10^{S}$	$^{J}3.25^{S}$	$^{J}3.20^{S}$	$^{J}2.80^{S}$	2.95	2.75
12	F	F^{S}	F	2.90	3.10	3.15	2.85	$^{J}3.20^{S}$	3.30	$^{I}2.80^{A}$	$^{J}2.55^{S}$	$^{I}2.65^{A}$	A	$^{J}2.80^{S}$	2.85^{S}	2.95^{S}	3.05	$^{U}3.05^{S}$	3.15^{S}	$^{J}3.05^{S}$	$^{I}3.10^{A}$	3.10	2.75	$^{J}2.80^{S}$
13	$^{I}2.95^{FS}$	$^{I}2.85^{S}$	$^{I}2.95^{FS}$	F^{S}	2.90	F	C	C	3.20^{S}	$^{J}2.85^{S}$	2.55	$^{I}2.65^{S}$	$^{J}2.80^{S}$	2.75^{S}	2.95	3.00	3.10	$^{U}2.90^{SH}$	$^{J}3.15^{SH}$	3.25^{S}	$^{J}3.45^{S}$	$^{U}2.70^{SH}$	2.60	2.70^{H}
14	$^{I}2.70^{S}$	F^{S}	$^{U}2.95^{S}$	$^{I}2.95^{F}$	$^{J}2.90^{S}$	3.30	3.40^{S}	$^{J}3.45^{S}$	$^{I}3.45^{A}$	3.15^{H}	2.95^{SH}	2.80	2.90	$^{J}2.75^{S}$	2.75	2.95	2.95	3.10	$^{J}2.95^{S}$	3.10	$^{J}3.25^{S}$	$^{I}3.10^{S}$	2.65	2.75
15	2.90^{S}	$^{U}2.85^{S}$	$^{J}2.80^{S}$	2.85	$^{J}3.00^{S}$	3.10	3.40	3.55	3.60	3.05	3.00	2.75	$^{J}2.90^{S}$	2.85	3.00	2.95	2.95	3.00^{S}	$^{J}3.15^{S}$	$^{I}3.05^{A}$	$^{I}3.00^{A}$	$^{I}2.80^{S}$	A	A
16	S	F^{S}	F	F^{S}	F^{S}	3.45	3.45	$^{J}3.30^{S}$	$^{I}3.30^{A}$	3.45	2.95	2.80^{H}	2.55	2.60^{S}	2.95	3.00	$^{J}2.90^{S}$	2.75^{S}	$^{J}2.90^{S}$	3.45	S	S	A	$^{J}2.75^{S}$
17	$^{J}2.90^{A}$	2.65^{S}	$^{I}2.65^{S}$	3.00	F	3.35	3.40	2.95	3.20	2.85^{S}	3.05	2.90	2.65	$^{U}2.70^{S}$	$^{J}2.85^{S}$	3.05	$^{J}2.90^{S}$	$^{J}3.00^{S}$	$^{J}3.30^{S}$	$^{J}3.15^{S}$	$^{J}3.20^{S}$	$^{I}3.00^{S}$	S	F^{S}
18	F^{S}	S	S	$^{I}3.15^{S}$	$^{I}3.10^{S}$	3.25	3.45	3.30	$^{I}3.20^{A}$	$^{I}3.05^{C}$	$^{I}2.90^{C}$	2.80	$^{I}2.80^{A}$	2.95	2.95	2.90	2.90	3.00^{S}	2.85	3.15^{S}	3.10	$^{J}2.90^{S}$	$^{J}2.80^{S}$	$^{I}2.85^{S}$
19	$^{I}2.80^{S}$	2.90^{S}	3.10	$^{I}2.85^{F}$	2.90	3.05	3.40	3.25	3.25	3.00	3.00	2.80	2.85	2.80	$^{J}2.70^{S}$	2.90	2.95	3.00	$^{J}2.90^{S}$	$^{J}3.00^{S}$	3.05^{S}	2.95	$^{I}2.90^{S}$	$^{I}2.85^{S}$
20	2.85	2.75	S	F	$^{I}3.10^{F}$	3.45^{S}	3.35	3.25	3.10	$^{J}2.90^{S}$	A	A	2.60	2.70	2.90	2.80	2.70	2.85	$^{I}3.15^{S}$	3.25	A	A	A	S
21	S	F^{S}	F^{S}	F	F	2.95^{F}	3.15	$^{J}3.25^{S}$	$^{I}3.25^{A}$	2.95^{S}	$^{I}3.05^{A}$	2.55	2.80	2.70	2.75	2.95	3.00	3.00^{S}	3.00^{S}	3.00	$^{I}3.10^{S}$	2.80^{S}	2.80	F^{S}
22	F^{S}	F^{S}	F^{S}	S	F	C	C	C	C	C	C	$^{I}2.60^{C}$	2.50	2.70	$^{J}2.80^{S}$	2.90	2.95	3.00	$^{J}3.20^{S}$	3.05	$^{I}2.85^{S}$	$^{I}2.80^{S}$	$^{J}2.80^{S}$	2.75
23	2.75	$^{U}2.85^{S}$	$^{I}2.85^{S}$	$^{I}2.85^{S}$	3.00	2.85^{S}	3.10	3.20^{H}	3.15	3.00	A	2.75	2.75	2.80	2.95	2.85	2.80	3.05	$^{I}3.25^{S}$	$^{J}3.25^{S}$	$^{I}2.90^{A}$	S	S	S
24	S	3.10	$^{I}2.85^{F}$	A	A	F	3.05	$^{I}2.95^{C}$	$^{J}2.85^{S}$	3.00	2.55	2.65	A	2.65	2.95	2.90	2.85	2.95	3.05	3.05	2.90	2.65^{S}	2.70	2.75
25	$^{I}2.80^{S}$	$^{J}2.90^{S}$	2.85	$^{J}2.90^{S}$	2.85	3.00^{S}	3.30^{S}	3.20^{H}	3.15^{H}	$^{I}2.95^{A}$	2.95	2.65	$^{U}2.80^{S}$	$^{U}2.65^{S}$	2.80	2.90	2.90^{S}	$^{I}2.65^{S}$	2.75	2.95	$^{I}3.00^{S}$	$^{I}2.90^{S}$	$^{J}2.90^{S}$	S
26	S	S	F^{S}	3.15	A	F	3.15^{S}	$^{I}2.90^{SH}$	3.10^{H}	2.85	2.75	2.80^{S}	2.80	2.90	2.90	2.80^{S}	3.00	3.05	$^{J}2.75^{S}$	$^{J}2.95^{S}$	$^{U}3.10^{S}$	2.85^{S}	A	F^{S}
27	S	S	S	F	$^{I}2.80^{S}$	$^{I}2.95^{S}$	3.25	3.15^{S}	$^{I}3.10^{A}$	$^{J}2.95^{R}$	$^{I}2.75^{A}$	2.70	2.70^{R}	2.60	2.65	2.80	2.85^{S}	$^{J}2.95^{S}$	$^{U}2.85^{S}$	2.90	2.90	$^{J}2.95^{S}$	$^{I}2.85^{S}$	S
28	S	F	S	$^{I}3.00^{S}$	3.10	$^{I}3.25^{S}$	3.55	3.30^{S}	3.20	$^{I}3.05^{C}$	$^{I}2.85^{A}$	$^{I}2.90^{A}$	2.75^{R}	2.80	2.75	2.75	$^{J}2.80^{S}$	2.95	$^{I}3.10^{S}$	3.15	3.10	$^{I}2.85^{A}$	$^{J}2.75^{S}$	S
29	F^{S}	S	A	3.00	F	F	3.40	3.45	3.40	$^{I}3.10^{A}$	2.65	2.80^{R}	2.90	2.80	2.80	2.90	2.85	3.00	3.05^{S}	$^{I}3.00^{S}$	$^{J}3.00^{S}$	$^{I}2.90^{A}$	$^{J}2.85^{S}$	$^{J}2.85^{S}$
30	F	F	F^{S}	F^{S}	3.15^{F}	2.95^{F}	2.90	2.85	3.20	3.05	2.95	2.55	2.60	2.75	2.95	2.95^{S}	2.95^{S}	2.95^{S}	$^{J}3.05^{S}$	3.05^{S}	$^{J}2.95^{S}$	2.85^{S}	$^{I}2.95^{S}$	$^{I}2.95^{S}$
31	$^{I}3.05^{S}$	2.90^{S}	$^{J}2.85^{S}$	F	F	2.85^{F}	3.15	3.10	$^{I}3.25^{C}$	3.10	3.15	2.75	2.85	2.75	2.90	2.90	2.85	2.95	2.95	2.90	$^{J}3.05^{S}$	$^{I}2.90^{S}$	$^{I}2.75^{S}$	F^{S}
No.	16	18	19	21	23	26	29	29	29	28	26	29	29	30	30	31	31	31	29	29	25	24	21	18
Median	2.80	2.80	2.90	3.00	3.00	3.00	3.30	3.25	3.20	3.05	2.95	2.80	2.80	2.80	2.90	2.90	2.95	3.00	3.05	3.10	3.10	2.90	2.75	2.75

M(3000)F2

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

The Radio Research Laboratories, Japan.

Y 7

IONOSPHERIC DATA

May. 1961

M(3000)F1

135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	3.40L	3.60	3.45	E3.45L	E3.35L							
2																								
3											L	L		3.65L	E3.50L	3.55L	3.40L	L						
4										C	A	3.30L	3.70	3.55L	3.60	3.65	L	L						
5										C	A	3.40L	3.80		3.50H	I3.40L	E3.20L	A						
6								A	A	A	C	C	C	C	C	C	3.50	3.25	3.25L					
7									C	A	A	A	A	A	A	A	A	3.60L						
8										L	3.45L	I3.45L	3.65	3.60	A	A	3.50	3.55						
9										I3.50L	E3.55L	3.60L	3.85	3.70	4.10	4.15L	3.65							
10										E3.60L	A	A	A	3.60	3.50H	3.70	3.75H	L	L					
11											C	3.55L	3.50	3.50	3.55	3.65L	3.65L	3.60L						
12										A	A	A	A	A	A	3.30	3.40	A						
13							C	C		A	E3.40L	3.45L	3.60	3.65	3.40	3.60	3.55							
14												3.50	3.55L	3.50	I3.55A	A	I3.45A	I3.45L	L					
15									3.80	3.60	3.65	3.70	A	4.10	A	3.60	A	A	A					
16									A	3.65L	A		3.65	A	A	A	A	A	A					
17									L	L	3.50	3.75	A	3.70	3.50	3.75	3.60	3.35	L					
18									A	C	C	A	A	3.70	3.65	E3.60L	L	3.40	A					
19										A	I3.50A	E3.40L	A	A	A	A	3.50	E3.50L						
20									L	A	A	A	A	3.55	I3.40A	A	E3.20L	A						
21								A	A	A	A	A	A	A	A	3.60	3.55L							
22							C	C	C	C	C	C	LH	3.50	A	A	E3.35L	E3.45L	L					
23									A	3.80	I3.66A	3.50	3.55	I3.75A	A	A	A	A						
24								C	A	A	A	A	I3.50A	A	I3.75A	I3.55A	3.50	3.50	L					
25										A	3.50	3.65	3.70	A	3.45	3.55L	3.35	L	A					
26										A	I3.45A	I3.50A	3.65	3.75	I3.55L	3.70	3.45	3.40	L					
27								A	A	A	A	A	A	A	3.50	3.70	3.50	A	A					
28										C	A	A	A	4.20	3.80	I3.55A	3.50	A	A					
29											L	A	A	A	A	3.40	A	A	A					
30								A	A	A	A	A	3.70	3.75	3.75	A	A	3.55L	E3.65L					
31								L	C	A	A	A	A	A	A	I3.60A	3.40	3.45	3.40L					
No.									1	5	9	13	14	18	18	20	22	13	3					
Median									3.80	3.60	E3.50	3.50	3.65	3.65	3.50	3.60	3.50	3.45	3.40					

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

May. 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												340	310	300	325	320	300							
2																								
3											305	305		350	320	305	300	280						
4										C	300	330	310	330	310	310	290	270						
5										C	340	340	330		300	310	310	285						
6								A	A	A	C	C	C	C	C	390	460	410	325					
7									C	360	375	345	320	310	340	330	290	270						
8										310	325	350	330	325	345	330	290	275						
9										300	325	330	370	320	300	290	290							
10										290	295	330	320	295	295	310	300	290	280					
11											$^{I}370^{C}$	350	350	315	290	290	280	275						
12										A	430	$^{I}365^{A}$	$^{I}360^{A}$	330	325	305	300	290						
13							C	C		375	360	350	330	350	305	295	280							
14												355	330	350	340	315	300	280	285					
15									255	355	345	380	340	345	330	315	320	300	295					
16									A	280	350		410	390	340	335	305	345	$^{E}390^{A}$					
17									295	350	310	290	395	360	340	300	305	295	255					
18									A	$^{I}335^{C}$	$^{I}365^{C}$	$^{I}380^{A}$	$^{I}375^{A}$	320	310	310	325	300	300					
19										310	300	350	330	$^{E}375^{A}$	380	330	300	290						
20									280	300	A	A	400	350	315	320	345	A						
21								290	A	310	$^{I}345^{A}$	470	350	395	350	310	290							
22							C	C	C	C	C	$^{I}350^{C}$	400	355	345	330	300	285	255					
23									280	290	$^{I}315^{A}$	380	345	340	330	330	340	290						
24								$^{I}320^{C}$	300	$^{I}390^{A}$	$^{I}435^{A}$	$^{E}450^{A}$	$^{I}565^{A}$	430	350	355	380	350	300					
25										$^{I}350^{A}$	310	380	340	350	350	320	305	350	320					
26										355	$^{I}370^{A}$	365	355	335	355	360	320	290	280					
27								315	$^{I}315^{A}$	350	$^{I}385^{A}$	390	345	395	380	350	325	290	310					
28										C	A	$^{I}355^{A}$	370	335	350	355	335	310	275					
29											415	$^{E}390^{A}$	340	350	345	330	330	330	300					
30								320	290	$^{I}310^{A}$	310	380	400	350	310	305	305	305	280					
31								300	$^{I}290^{C}$	340	340	440	380	385	340	340	340	300	300					
No.								5	8	19	24	25	28	27	29	30	30	25	15					
Median								315	290	335	340	350	350	350	340	320	305	290	295					

The Radio Research Laboratories, Japan.

h'F2

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

IONOSPHERIC DATA

May. 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	305	275	255	235	295	310	245	240	235	250^{H}	250^{H}	230	210	250	250	250	270	255	270	260	240	235	290	295
2	320	300	245	220	230	300	250	235	245	240^{H}	215^{H}	200^{H}	225^{H}	210^{H}	240^{H}	220^{H}	220^{H}	235^{H}	250	255	245	230	240^{H}	300
3	330	305	290	255	255	255	235	240	235	240^{H}	240	260	225^{H}	$^{E}300^{A}$	210	255	240	245	260	250	240	260	270	275
4	300	305	250	225	225	$^{I}250^{C}$	$^{I}250^{C}$	$^{I}240^{C}$	230	$^{I}240^{C}$	$^{I}260^{A}$	255	220	210	250	250	$^{I}230^{A}$	255	260	235	230	255	275	280
5	$^{I}310^{A}$	285	260	255	290	260	255	255	$^{I}260^{A}$	C	A	275	220	250^{H}	240^{H}	245	280	A	$^{E}305^{S}$	$^{I}280^{A}$	230	$^{I}240^{A}$	$^{I}310^{A}$	320
6	330	325	310	320	270	240	255	$^{E}350^{A}$	A	A	C	C	C	C	C	225	250	260	305	255	240	300	$^{I}310^{C}$	315
7	310	$^{I}330^{C}$	280	235	$^{I}280^{A}$	345	275	265	$^{I}260^{C}$	A	A	A	A	A	A	A	A	250	255	250	245	250	370	350
8	310	290	275	270	245	225	250	245	240^{H}	245	225	225	230	225	A	A	235	250	250	245	245	295	300	270
9	270	300	270	245	220	300	255	245	230	225	210	240	205	220	205	205	$^{E}245^{A}$	275^{H}	295	245	210	255	290	295
10	300	290	290	210	240	270	250	240	230^{H}	225	A	A	A	235	210^{H}	205	205^{H}	250	260	245	235	255	305	300
11	305	295	235	230	240	260	245	240	255	205^{H}	$^{I}220^{C}$	240	250	250	230	230	210	240	255	240	250	255	270	340
12	340	300	300	300	300	250	250	270	265	A	A	A	A	A	A	A	275	$^{I}270^{A}$	270	290	A	255	350	$^{E}390^{A}$
13	290	280	305	295	300	310	C	C	A	A	210	205	210	205	250	205	220	240^{H}	255^{H}	250	220	250^{H}	400	325^{H}
14	290	350	270	290	275	245	250	245	$^{I}265^{A}$	270^{H}	$^{I}250^{AH}$	215	240	250	$^{I}250^{A}$	$^{I}255^{A}$	$^{I}260^{A}$	245	240	260	235	205	300	330
15	295	275	300	305	275	250	240	225	240	225	210	270	$^{I}220^{A}$	200	A	245	A	A	A	A	A	$^{E}360^{A}$	A	A
16	340	350	345	300	260	210	240	245	$^{I}230^{A}$	220	A	A^{H}	250	A	A	A	A	A	A	$^{E}300^{A}$	A	A	A	A
17	A	$^{E}410^{A}$	$^{I}380^{A}$	290	240	250	240	230	235	$^{E}300^{A}$	215	245	$^{I}250^{A}$	200	200	210	235	230	245	250	250	260	$^{I}285^{A}$	350
18	340	300	305	255	255	260	210	240	A	C	C	A	A	225	220	230	215	$^{I}240^{A}$	$^{I}265^{A}$	275	255	295	290	300
19	285	260	270	300	290	255	245	240	280	A	A	A	A	A	A	A	235	240	$^{E}290^{A}$	280	$^{E}335^{A}$	250	280	$^{I}305^{A}$
20	270	295	300	290	275	240	240	250	240	A	A	A	A	260	A	A	$^{E}305^{A}$	A	255	$^{I}280^{A}$	$^{I}295^{A}$	$^{I}320^{A}$	$^{I}350^{A}$	300
21	260	320	305	305	255	255	250	A	A	A	A	A	A	A	A	240	245	A	$^{E}290^{A}$	$^{I}270^{A}$	245	240	305	330
22	350	295	285	250	275	C	C	C	C	C	C	C	210^{H}	245	$^{I}255^{A}$	$^{I}230^{A}$	$^{I}245^{A}$	240	250	260	$^{E}325^{A}$	310	315	300
23	$^{E}375^{A}$	270	285	275	260	290	255	225^{H}	$^{I}235^{A}$	210	A	$^{E}275^{A}$	210	$^{I}230^{A}$	A	A	A	A	250	$^{E}290^{A}$	A	355	$^{I}375^{A}$	350
24	285	275	315^{A}	A	A	305	290	C	A	A	A	A	$^{I}260^{A}$	$^{I}225^{A}$	$^{I}235^{A}$	$^{I}260^{A}$	240	230	250	260	260	$^{E}370^{S}$	300	310
25	295	280	285	320	A	$^{E}340^{A}$	290	265^{H}	A^{H}	A	230	225	220	$^{I}255^{A}$	230	220	250	255	$^{I}250^{A}$	250	260	285	360	355
26	355	350	270	255	305	350	270	A^{H}	A^{H}	A	A	$^{I}235^{A}$	220	245	250	225	$^{E}270^{A}$	280	$^{I}270^{A}$	270	250	270	$^{I}340^{A}$	340
27	350	310	$^{E}345^{A}$	300	295	290	250	A	A	A	A	A	A	A	250	210	$^{E}275^{A}$	A	A	290	300	255	275	275
28	315	300	255	255	250	250	235	260	250	C	A	A	A	220	$^{E}270^{A}$	$^{I}240^{A}$	250	A	A	245	250	$^{I}275^{A}$	295	340
29	300	300	A	280	295	290	255	250	250	$^{I}220^{A}$	$^{I}240^{A}$	A	A	$^{I}240^{A}$	$^{I}225^{A}$	250	$^{I}240^{A}$	A	A	$^{E}300^{A}$	300	A	300	320
30	295	295	250	245	240	300	265	A	A	A	A	A	$^{E}260^{A}$	205	210	A	A	245	225	250	245	250	250	260
31	275	300	290	315	300	300	270	270	C	A	A	A	A	A	A	A	220	225	250	255	255	255	300	$^{I}350^{A}$
No.	29	30	29	30	29	29	29	23	20	13	13	14	18	22	19	22	22	22	23	27	25	27	29	28
Median	305	300	285	270	270	260	250	245	240	225	225	240	220	230	235	230	240	245	255	255	245	255	300	310

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

May. 1961

h'Es

135° E Mean Time (G.M.T. + 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

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

The Radio Research Laboratories, Japan.

h'Es

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

Y 11

IONOSPHERIC DATA

May.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		f	f5	f2	f4	f2	h2	h3	h	h	h	h	h	l	l	l2	hl	h2	h4	f5		f		
2									h	h	h			h		l2	l		l	f				
3							h	h2	h2	h	h	h	h	l2			hl2	h	c4	f6	f5	f3	f2	f2
4	f2	f2	f						h2		h3	h	h				h	h	c3	f2	f	f3	f	f
5	f3		f3	f5	f3	f2	h3	h2	h2		h	h	h			h	h2	h2	c3	f3	f	f2	f6	f2
6	f2	f2	f		f2			h2	h2	h2							h	h	c2	f				
7				f	f3f	f3	h2	h2		h	h2	h2	h2	c2	c2	h2	h2	h2	c2	f3	f4	f4	f2	f4
8	f2	f2	f3	f2	f3	f2	l	l2	l	hl	hl	h	hl	hl	hl2	l3	l3	h2l2	c4l	f2	f	f2	f	f
9	f	f	f	f3	f2	f3	l2h2		h	h	h	h	h	h	l	l	l2	l2	l3	f3				f
10	f			f	f2	f	l	h2l	hl	hl	hl	hl	h	h					c3	f4	f3	f2	f2	f
11	f2	f2	f			f2	h	h2	h3	l		l	l	l	hl	hl	hl2	h3l2	l2c3	f3	f4	f3	f3	f3
12	f2	f5	f	f5	f4	f	c3	h4	h3	l3	c3	l2	l3	l	l3	hl	hl2	h2	c3	f6	f3f2	f3	f4	f4
13	f2	f2	f2	f2	f	f3			h2l	h2l	l		h	l	h	h	h	h	h	ff		f3	f3	f3
14	f	f3	f3	f3	f	f	h2	h3	h4	c2	c2	h	h	l	l2	l2	l2	l3	l3	h	f	f	f2	f2
15	f	f					lh2	l2	l2	l2	l	h3l2	l2	l	l2	l2	h2l3	h3l2	h4l3	f3	f2	f3	f4	f3
16	f3	ff2	f3	f3	f2	f	h	h2	h4	l	l2	l	l	l3	l3	l4	l2	h4l3	c5l2	f2	f2f2	f5	f4	f4
17	f2f3	f2	f2f	f4	f2	f	h2	h2l	l	l2	l2	l	l2	l			l		h2	f2	ff2	f3f3	f2	f4
18	f7	f3	f3	f4	f4	f4	hl	h2	h3			h2	l3	l	l	l		h	c3	f5	f2	f6	f3	f6
19	f3	f	f3	f	f	f	h2	h2	h2	h2	h2	h	h2	l2	l4	l4	l	hl2	h3l2	f6	f4	f2	f3	f3
20	f4	f2	f2	f6	f4	f	h2	h3	h	h2	l3	l3	l3	l2	l2	l2	l2	l5	l3	f6f	f3	f3	f3	f4
21	f5	f3	f8	f3	f2		c3	h3	h4	l2	l2	l3	l2	c3	c3	h	h	h	c4	f3	f	f	f	f2
22	f3	f2	f3	f2	f3								l	l	l	l3	l2	l3	l2h2	f2	f4	ff4	f4	f3
23	f2	f2	f4	f2	f2	f		h2	h2	h2	c4	h	l	l3	hl	h	h2	h2	h3	f2	f2	f2	f3	f5
24	f4	f7	f7	f4	f3	f	c3		h4	h3	h2	h2	h	h	h	h2	h		l2	f3	f3	f4	f	f2f2
25	ff2		f2	f4	f5	f4	h	h4	h2	h3	h	l	l	h2l	l	h	h	h2	l3	f3	f5	f7	f3	f3
26	f4	f6	f5	f3	f3f	f7	h3	h3	h3	h2	h2	c2	l	l	h	hl	hl2	h2	c3	f3	f8	f2	f2	f2
27	f3	f2	f4	ff3	f2	f2		c3	c4	c3	c2	c3	l	l2	l	l	hl	h2l	c3	f4	f5		f2	f3
28	f2	f4	f7	f4	f3	f6	l2	h3	h2		h3	h6	h	hl	h	h	h	h3	h3	f3	f3	f3	f3	f5
29	f5	f4	f5	f3	f3	f	c3	h5	h2	l2	h2	h2	h	h2	hl	l	hl2	h5l	c6	f4	f5	f3	f2	f4
30	f5	f5	f2	f2	ff2	f4f	c3	h4	h4	h3	l2	c3	c2	l2	l	c3	l3	l2	l2	h	f	f3	f	
31	f	f5	f4	f2	f	f2	h2	h3		c3	c3	c3	l3	l2	l2	l2	l2	l2	h2l3		f	f	f2	f5
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.

Y12

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

Outstanding Occurrences

May 1961	Start-time	Duration	Type	Max. Int. Inst.	Max. Int. Smd.	Max. Time	Remarks
12	2341.7	~0.5	CD/4	770	200	-	
12	2353.5	~0.8	CD/4	>1900	490	-	off scale
13	0103.8	0.5	CD/4	>1900	250	-	off scale

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

May	Whole	L. N.			W W V				S. F.				W W V H				Warning				Principal magnetic storms		
1961	Day Index	06 12	12 18	18 24	00 06	06 12	12 18	18 24	00 06	06 12	12 18	18 24	00 06	06 12	12 18	18 24	00 06	06 12	12 18	18 24	Start	End	ΔH
1	2+	2	2	C	2	2	1	2	3	1	2	3	1	1	1	2	N	N	N	N			
2	3o	2	(2)	-	3	3	3	3	3	2	2	3	1	3	2	2	N	N	N	N			
3	2o	1	1	1	3	2	1	1	3	2	2	3	1	2	1	1	N	N	N	N			
4	1+	2	1	1	1	1	1	(1)	3	2	1	2	1	1	2	(2)	N	N	N	N			
5	3o	2	2	3	1	3	3	4	2	2	3	4	1	1	3	2	N	N	N	N	15xx	---	80^{γ}
6*	3+	3	2	1	4	4	3	4	4	3	3	4	2	3	3	2	U	U	U	U	---	---	
7*	4-	2	3	C	4	4	4	4	4	3	2	4	2	2	3	1	U	U	U	U	---	17xx	
8	3-	2	1	1	4	3	2	2	3	2	2	2	2	2	3	1	U	N	N	N			
9	3-	2	1	2	3	3	3	3	3	2	2	3	2	1	1	1	N	N	N	N			
10	2+	1	1	1	3	3	2	2	3	2	2	3	1	1	1	2	N	N	N	N			
11	3+	2	2	C	2	3	4	4	3	3	3	4	1	1	2	2	U	U	U	U			
12	3+	2	3	3	4	4	4	3	4	2	3	3	2	1	2	2	U	U	U	U			
13	3+	2	3	1	4	4	3	2	3	4	4	3	1	2	3	1	U	U	U	U			
14	3-	3	3	2	(3)	2	1	2	3	2	2	2	2	3	3	2	U	N	N	N			
15	2+	3	3	3	2	2	1	1	3	2	1	2	2	1	1	(2)	N	N	N	N			
[16]	3o	2	3	3	1	3	3	4	3	3	3	4	2	2	1	1	N	N	N	N	00.8	---	42^{γ}
[17]	2+	2	2	2	4	1	1	2	3	2	1	3	1	2	1	2	N	N	N	N	---	02xx	
[18]	2-	2	1	2	1	1	1	1	3	3	1	2	1	1	1	2	N	N	N	N			
19	1+	2	2	2	1	(1)	1	1	1	1	1	2	1	1	1	1	N	N	N	N			
20	2+	1	2	2	1	2	2	2	3	2	2	3	1	1	1	1	N	N	N	N			
21	2o	3	3	(3)	2	1	1	1	3	2	1	1	1	2	1	1	N	N	N	N			
22	2-	2	2	2	1	2	1	1	1	1	2	3	1	1	1	1	N	N	N	N	0137	---	57^{γ}
23	3-	3	3	3	1	3	2	3	3	2	2	2	1	2	2	2	N	N	N	N	---	18xx	
24	2+	4	3	2	2	2	1	1	1	2	2	2	2	1	1	1	N	N	N	N			
25	3o	2	2	2	2	3	4	3	2	2	3	3	1	1	1	1	N	U	U	U	01.0	---	90^{γ}
26	2+	3	3	2	2	1	2	1	3	2	2	2	1	1	1	1	U	U	U	U	---	03xx	
27	2-	2	3	2	1	1	1	1	2	2	1	1	1	1	1	1	N	N	N	N			
28	3-	3	3	(3)	1	2	1	2	3	2	2	3	1	1	1	1	N	N	N	N			
29	2+	3	2	2	1	1	1	1	3	3	3	3	2	1	(1	1)	N	N	N	N			
30	1o	1	1	-	1	1	1	1	1	2	1	1	2	2	2	2	N	N	N	N	04.3	---	
31	3-	1	(3	4)	1	3	4	4	1	1	2	3	1	2	2	1	N	N	U	U	---	---	

* = day of Special World Interval
( ) = inacculate
\- = impossible to evaluate

[ ] = Regular World Day
C = artificial accident
--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

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

IONOSPHERIC DATA IN JAPAN FOR MAY 1961
電波観測報告　第13巻　第5号

1961年7月20日 印　刷
1961年7月30日 発　行　（不許複製非売品）

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