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IONOSPHERIC DATA IN JAPAN

FOR NOVEMBER 1961

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THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

F－155

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

CONTENTS

SITES OF THE RADIO WAVE OBSERVATORIES

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_0F2, f_0F1, f_0E — The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.

f_0E_s — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bE_s — The ordinary wave frequency at which the highest blanketing E_s layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f-min — That frequency below which no echoes are observed.

$(M\,3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$(M\,3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ The lowest virtual height of the trace used to give the f_0E_s.

$hpF2$ The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 f_0F2.

$ypF2$ The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 f_0F2).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.

B Measurement influenced by, or impossible because of, absorption in the vicinity of f-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the nomal frequency range. Used in a qualifying sense, see below.

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

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

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

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

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

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

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

O Measurement refers to the ordinary component.

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D *greater than.....*

E *less than.....*

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magnetoionic component.

c. Description of Standard Types of E_s

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

l At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.

h An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.

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

r An E_s trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thich layer included in the E layer tables: f_0E, $h'E$) by the lack of group retardation in the F traces at corresponding frequencies.

a An E_s pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.

s A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l*, *h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, *q*, at frequencies near the E region critical frequency.

f An E_s trace which shows no appreciable increase of height with

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

a. Daily Data

Steady flux The mean value of recorded base level. Outstanding occurrences are to be omitted except the phenomena with duration of hours or more.

Variability Variability is expressed in four grades as follows:

0=no burst
1=a few bursts
2=many bursts
3=exceptionally many bursts

Number of bursts is determined relatively in comparison with the base level. If the number of bursts be fixed, the variability is greater, when bursts are widely distributed, than in the case of being concentrated in a short period.

b. Outstanding occurrences

Starting time When the start is not obvious, 20% rise time of smoothed flux is adopted and x is suffixed. (e.g. 0234x)

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

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

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

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

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

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

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

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

N = normal
U = unstable
W = disturbed

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

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

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

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

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

Circuits and Drop-out intensity

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

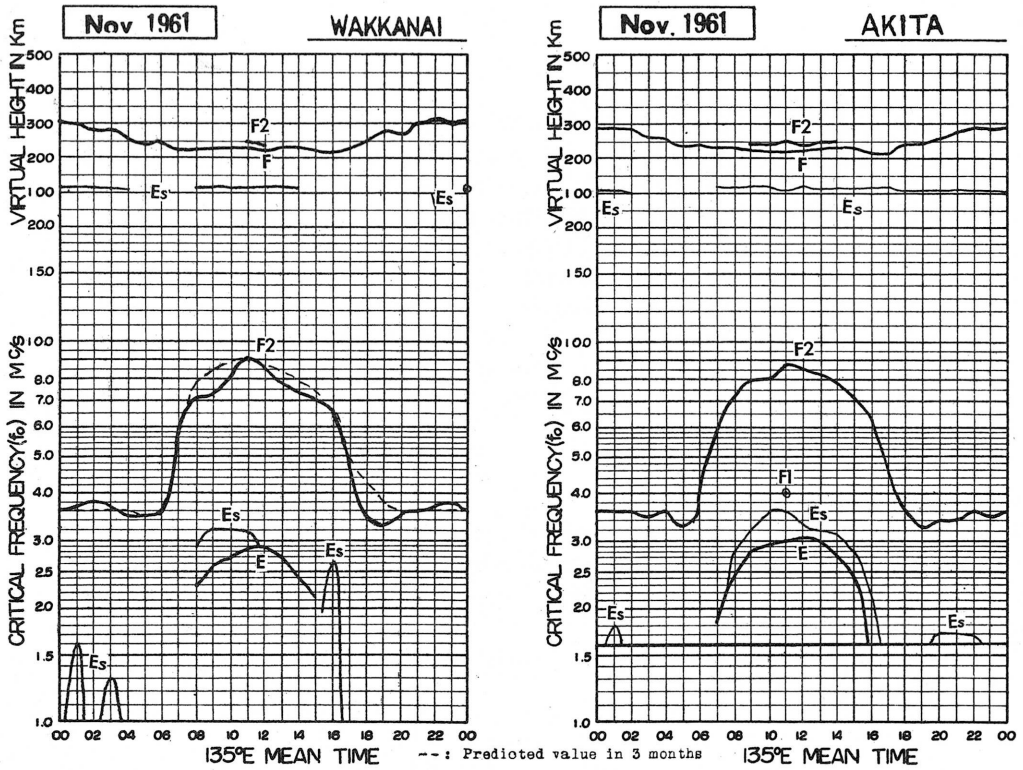
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1—	1	1+
2—	2	2+
3—	3	3+

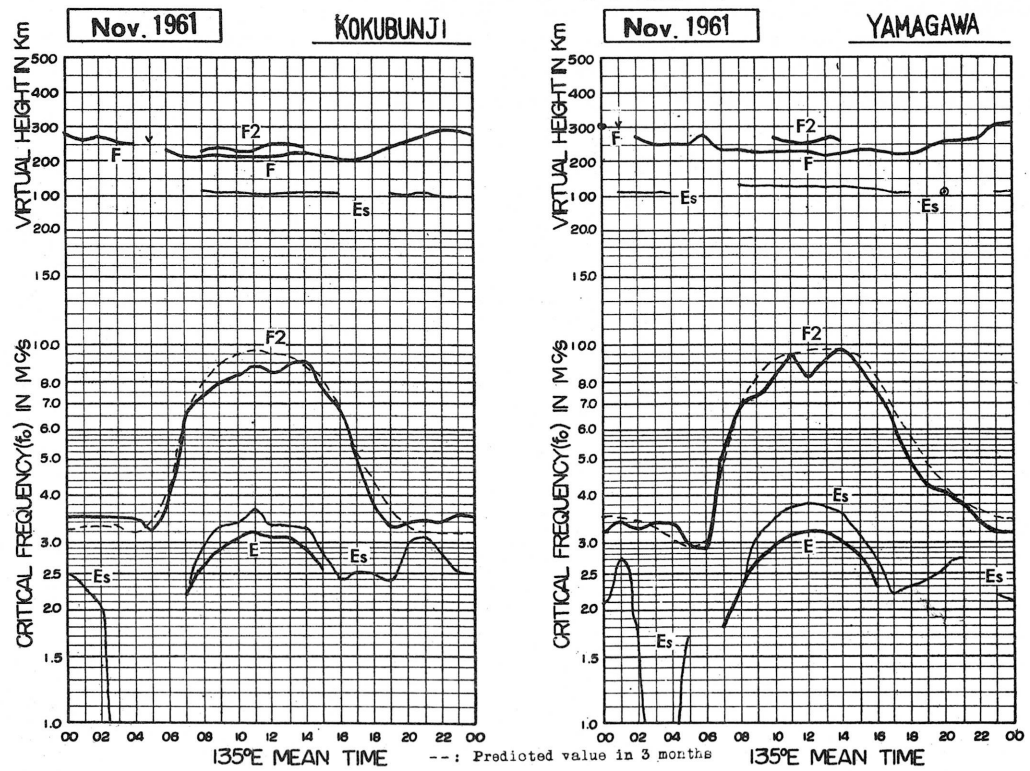
The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

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



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

Nov. 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	I 3.0A	I 3.0A	I 3.0A	3.2	3.3	3.1	3.4	5.6	6.6	7.2	7.2	8.1	9.6	7.5	6.4	6.3	7.1	5.3	3.7	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	7.3	8.0H	8.4	8.4	7.6H	6.6	6.3	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	8.0H	8.7	9.3H	8.9H	7.4	6.9	6.5	8.1	6.3	4.0	3.5	3.5	3.6	3.6	3.8
4	3.6	3.8	3.8	3.7	3.7	3.5	3.5	5.6	7.3	7.0H	7.8H	9.9	8.5	7.8	7.6	6.7	7.3	4.8	3.4	3.6	3.5	3.4	3.7	4.0
5	4.1	4.1	4.3	4.3	4.5	4.7	3.8	5.6	7.1	7.2	8.1	8.7	8.9	8.4	7.3	7.2	6.0	5.6	4.6	5.0	5.0	4.8	5.0	4.7
6	3.9	4.2	4.0	4.4	4.6	4.0	4.3	8.3	7.4	9.6	12.2	11.0	8.6	8.0	7.8	8.0	7.9	6.5	4.4	4.3	4.1	4.3	4.5	U 4.5S
7	4.3	4.6	4.3	4.2	4.3	4.1	4.5	6.3	7.1	7.0	8.5H	9.0H	8.9	7.5	8.1	7.3	7.3	5.4	4.5	4.3	4.0	3.7	3.7	3.6
8	3.6	3.5	3.6	3.3	3.3	3.3	3.6	5.3	6.3	C	C	C	9.6	8.5H	9.7	9.4	7.0	5.1	4.5	4.3	I 4.4F	I 4.4F	I 4.5F	4.5
9	4.7	I 4.6FS	I 4.5FS	I 4.6F	4.4	I 3.7F	I 3.6F	5.8	7.6	7.3	8.8	8.9	8.9	8.4	9.7H	8.2	J 7.3S	4.8	4.5	4.8	3.6	3.7	3.8	F
10	F	F	4.1	4.2	3.5F	I 3.4F	3.2	6.2	7.4	8.0	8.5	9.3	9.3H	8.4	8.0	7.6	7.2	4.8	3.2	2.6	3.0	3.1	3.3	3.5F
11	3.6F	3.9	3.8	3.7	3.5F	3.1	3.6	6.3	8.0	7.3	8.2	10.0	9.1	7.9H	7.6	7.4	7.1	4.0	3.0	3.1	3.2	3.2	3.6	3.7
12	3.4	3.4	3.4	3.4	3.5	3.3	3.2	C	C	C	C	C	C	C	C	C	6.7	5.5	5.0	5.0	3.7	3.6	3.9	3.9
13	3.7	4.0	4.2	3.8	4.6	3.2	3.6	6.4	8.5	11.0	11.6	11.2	10.9	8.6	8.4	8.6	6.1	4.8	3.4	3.3	3.5	3.6	3.7	3.8
14	3.8	4.0	3.8	4.0	4.0	3.7	3.7	5.8	7.5	7.8	8.6	9.5	8.7H	8.7	8.0	7.2	7.2	5.7	3.3	3.0	3.0	3.3	4.0	3.8
15	3.6	3.8	3.8	4.2	4.2	4.2	4.5	5.8	7.5	8.0	8.8	9.9H	10.3H	8.5	8.3	I 7.7C	6.0	3.8	3.6	3.3	3.5	3.6	4.0	4.0
16	4.0	3.9	3.8	4.0	3.9	3.9	3.8	7.0	I 7.4R	7.0H	6.9H	8.7	8.5H	7.7H	7.1	6.5	7.2	4.1	2.6	3.1	3.8	3.7	3.9	4.0
17	3.9	4.0	4.0	4.0	4.3	3.5	3.4	5.6	7.6	7.6	7.7H	9.1	8.3	7.0	7.6	6.9	6.6	3.7	3.3	3.5	3.0	3.1	3.2	3.2
18	3.3	3.5	3.6	3.6	4.5	3.0	2.6	5.4	8.1	7.9H	9.3	11.1	8.4	8.2H	7.1	8.3	5.8	3.3	3.0	3.3	3.7	3.6	3.3	3.3
19	4.0	3.0	3.2	3.2	3.0	3.1	3.2	C	C	C	C	C	C	C	C	C	7.2	4.5	3.8	3.0	3.0	2.9	3.2	3.3
20	3.7	3.6	3.3	3.2	3.3	3.0	3.0	5.6	7.2	7.9	7.7	9.6	7.9H	7.0	7.3	8.0	6.2	4.5	3.5	I 3.8A	4.0	3.0	2.8	3.0
21	3.3	3.3	3.6	3.4	3.5	3.5	3.5	5.6	6.4	7.1	8.6H	9.0	8.0	9.3H	8.0	7.3	4.9	3.3	2.7	3.0	3.5F	I 4.0F	F	F
22	3.5	3.1	3.0	3.0F	3.1F	3.6	3.2	I 5.6S	7.0	6.5H	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	4.3	2.7	3.2	3.5	3.3	3.4	C	C
24	C	C	C	C	C	C	C	C	C	6.8	6.4	7.5H	7.0H	6.5H	6.7H	5.3V	U 5.0S	4.3	3.5	3.7	3.4	I 3.7SF	3.9	F
25	F	F	F	F	FS	U 4.5S	I 4.5S	5.0	5.9	7.2ZH	8.3	6.9H	I 8.5C	6.6H	6.5	6.3	5.9	3.3	I 3.4SF	2.9	3.6F	F	F	F
26	4.3	F	F	F	SF	I 3.8S	2.6	4.3	5.9	6.4	6.6	8.0	7.8	6.6	6.6	5.8	4.3	3.2	3.0	3.1	I 3.1S	3.6	F	F
27	F	I 3.6F	I 3.6F	3.4F	3.2	3.3F	I 3.4SF	4.9	5.6	I 6.6C	U 7.5S	6.8	7.2	6.6	6.6	U 6.6S	I 5.2SH	2.9	2.6	I 2.8S	2.9	3.1	3.4	3.2
28	3.1	3.3	3.1	3.2	3.1	3.3	3.0	4.8	6.0	6.6	7.1	7.6H	6.1	6.3	6.8	5.5F	4.9	2.9	2.5	2.5	2.7	3.0	3.0	3.0
29	3.0	3.2	3.1	3.2	3.0	3.0	3.2	5.0	7.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	7.2	7.6	8.3	7.3H	6.6	6.6	7.1	5.3	4.3	2.9	2.9	3.2	3.3	I 3.5F	I 3.6F
31																								
No.	22	22	23	23	23	25	25	23	23	25	24	24	25	25	25	25	27	27	27	26	26	25	22	20
Median	3.6	3.7	3.8	3.7	3.5	3.5	3.5	5.6	7.2	7.2	8.2	9.0	8.5	7.7	7.3	7.2	6.6	4.5	3.4	3.3	3.5	3.6	3.7	3.8
U.Q	4.0	4.0	4.0	4.2	4.3	3.8	3.8	6.2	7.5	7.9	8.6	9.8	9.0	8.4	8.0	7.8	7.2	5.3	4.0	3.8	3.7	3.7	3.9	4.0
L.Q	3.4	3.3	3.3	3.2	3.3	3.2	3.2	5.3	6.4	7.0	7.6	8.2	8.0	6.8	6.6	6.4	5.3	3.3	3.0	3.0	3.1	3.2	3.3	3.3
Q.R	0.6	0.7	0.7	1.0	1.0	0.6	0.6	0.9	1.1	0.9	1.0	1.6	1.0	1.6	1.4	1.4	1.9	2.0	1.0	0.8	0.6	0.5	0.6	0.7

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

Nov. 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										A		L	L											
2									C			L												
3									C															
4												L												
5													L											
6																								
7																								
8										C	C	C	L											
9																								
10																								
11												L	L											
12									C	C	C	C	C	C	C	C								
13												L	L											
14												L												
15																								
16																								
17												L	L											
18																								
19									C	C	C	C	C	C	C	C								
20												L												
21																								
22											C	C	C	C	C	C								
23									C	C	C	C	C	C	C	C								
24									C															
25											L		C											
26																								
27										C		L												
28																								
29										C	C	C	C	C	C	C								
30									C															
31																								
No.																								
Median																								

foF1

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

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

foE

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

The Radio Research Laboratories, Japan.

W 3

IONOSPHERIC DATA

Nov. 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	J4.3	J3.5	J6.0	J6.5	J2.5	J2.1	E	J3.3	J4.5	J4.3	J4.3	J5.0	J5.0	J5.0	3.2	G	2.6	J2.3	J2.5	C	C	C.	C	C
2	C	C	C	C	C	C	C	C	C	3.7	3.2	J3.2	J3.0	J3.1	3.1	2.6	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	3.0	3.2	3.1	3.0	3.3	3.1	S	J5.0	E	E	E	E	E	E	E
4	E	E	E	E	E	J2.5	E	S	G	G	G	G	G	G	G	S	S	E	E	E	J3.3	E	J3.3	J3.3
5	J3.0	J2.3	J3.0	J2.0	E	E	E	S	B	3.3	G	3.9	G	G	G	G	S	E	E	E	E	E	E	E
6	E	E	E	J2.1	J2.0	2.2	E	S	G	G	G	4.1	G	G	G	G	J2.6	J3.0	J3.0	E	E	J3.1	J3.0	J3.2
7	J3.1	J2.0	E	J2.0	J2.0	E	E	G	J3.1	J4.3	J5.0	J4.4	J3.2	G	G	J3.1	S	E	J4.3	J3.3	J3.0	J2.3	E	E
8	E	E	E	1.3	J2.3	J3.5	J3.3	J3.3	7.2	C	C	C	G	G	G	G	S	J2.3	E	E	E	E	E	E
9	E	E	J2.4	E	E	E	E	S	S	2.6G	G	G	J4.3	J4.4	2.9	J3.3	S	E	E	E	J5.4	J3.0	E	E
10	E	J3.0	E	E	E	E	E	G	2.5	G	G	G	G	G	G	S	S	E	E	E	J4.3	J3.1	2.7	J3.3
11	J2.6	E	J2.6	E	E	E	S	S	J3.2	J4.3	3.5	4.0	3.0	3.0	3.0	G	S	E	E	E	J3.3	E	J2.6	J4.0
12	E	J3.0	1.6	J2.0	E	E	E	C	C	C	C	C	C	C	C	C	S	E	E	E	E	J2.5	J3.3	24
13	E	J2.0	J2.1	1.8	1.3	E	E	S	J3.3	J4.2	J3.2	G	G	G	B	S	S	E	E	E	E	E	J3.2	J2.3
14	J2.3	J4.3	J3.8	J2.0	J2.3	E	2.4	2.6	G	G	G	G	G	G	G	S	S	E	E	E	E	E	E	J5.0
15	J4.3	E	E	E	E	E	E	S	2.9	3.1	J3.2	J3.3	J4.3	G	J3.3	C	S	E	E	E	E	E	E	E
16	E	E	E	1.6	E	E	E	S	G	G	G	S	G	G	G	G	S	E	E	E	E	E	E	E
17	E	E	E	1.6	1.8	E	E	S	G	G	G	3.0	3.0	J3.6	J3.2	S	S	E	E	E	E	E	E	E
18	E	J2.6	J3.0	J2.3	E	E	E	S	G	3.7	J4.3	J3.5	2.5G	3.0	G	S	E	E	J11.8	E	E	E	E	E
19	E	E	E	E	E	E	E	C	C	C	C	C	C	C	C	C	J6.0	J8.3	E	E	E	E	E	E
20	E	E	E	E	1.8	E	E	S	2.9	3.1	G	3.3	3.9	J7.0	J3.2	J4.0	J3.0	J12.0	J3.3	J3.4	E	E	E	E
21	E	J2.4	E	E	E	E	E	S	J4.3	J4.0	G	G	G	G	G	S	E	J3.0	J3.8	E	E	J3.0	J3.0	E
22	2.3	1.6	J2.0	2.1	E	E	E	S	3.1	3.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	S	E	E	E	E	E	C	C
24	C	C	C	C	C	C	C	C	C	3.2	J4.3	J3.3	2.9	G	G	G	E	E	E	E	E	J4.0	J4.3	J3.0
25	J3.0	J6.0	J3.3	E	J2.3	E	E	2.6	2.6	J6.1	J5.3	J5.0	C	G	G	G	J3.1	J5.0	J5.0	J5.0	J3.0	E	E	E
26	J4.3	J2.5	E	E	J2.3	J2.0	E	2.6	3.3	3.6	3.8	3.6	3.7	G	G	G	E	E	E	J2.9	J2.6	E	E	E
27	E	E	E	E	1.7	E	E	S	J3.6	C	J3.3	G	G	G	2.9	2.8	J2.6	J2.6	E	S	E	E	E	E
28	E	2.1	E	E	E	E	S	S	J4.4	J3.1	G	G	J4.3	J3.4	J3.3	2.9	S	E	E	E	E	2.6	E	E
29	E	E	E	J2.5	1.7	E	E	S	2.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	J4.5	J3.3	G	G	G	G	2.3	E	E	E	J2.5	E	E	E	E
31																								
No.	25	25	25	25	25	25	23	7	21	24	24	23	24	25	24	16	12	27	27	25	26	26	25	25
Median	E	1.6	E	1.3	E	E	E	2.6	2.9	3.2	3.2	3.2	G	G	G	G	2.6	E	E	E	E	E	E	E
U.Q	2.8	2.6	2.5	2.0	2.0	E	E	3.3	3.4	4.1	3.6	3.8	3.4	3.2	3.1	2.8	3.0	2.3	2.5	E	2.6	2.5	2.8	2.7
L.Q	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E
Q.R																								

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 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	A	A	A	24	E	E		2.6	2.7	4.0	3.4	4.1	3.0	3.0	3.1		2.5	E	E	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	G	G	3.0	3.0	3.0	2.8	24	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	G	G	3.0	3.0	3.2	24	S	2.1							
4						E		S								S	S				E		E	E
5	E	E	E	E				S	B	3.0		3.1					S							
6				E	E	E		S				G					G	E	E			E	E	E
7	E	E		E	E				3.0	3.3	3.0	3.0	3.0			2.2	S		E	E	E	E		
8				E	E	2.8	3.0	3.0	5.7	C	C	C					S	E						
9			E					S	S	2.5			4.0	4.0	2.7	2.8	S				E	E		
10		E							24							S	S				E	E	E	E
11	E		E				S	S	2.1	G	G	3.2	3.0	2.8	2.5		S				E		E	E
12		E	E	E				C	C	C	C	C	C	C	C	C	S					E	E	E
13		E	E	E	E			S	3.0	3.2	3.1				B	S	S						E	E
14	E	2.9	E	E	E		E	G								S	S							E
15	E							S	G	G	2.8	3.0	3.0		2.7	C	S							
16				E				S				S					S							
17				E	E			S				2.9	2.9	3.0	2.6	S	S							
18		E	E	E				S		3.0	3.3	3.2	G	2.7		S			E					
19								C	C	C	C	C	C	C	C	C	E	3.9						
20					E			S	G	G		G	G	G	3.0	2.3	E	3.1	E	A				
21		E						S	4.2	3.0						S		E	E			E	E	
22	E	E	E	E				S	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	S						C	C
24	C	C	C	C	C	C	C	C	C	2.8	3.2	3.2	2.9									E	E	E
25	E	3.2	E		E			G	2.6	G	3.2	3.1	C				G	E	E	E	E			
26	E	E			E	E		G	G	3.2	3.8	3.6	G							E	E			
27					E			S	3.0	C	3.0				G	28	E	E		S				
28		E					S	S	2.4	2.8			3.0	3.0	2.6	24	S					E		
29				E	E			S	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	4.1	3.0					G				E				
31																								
No.	9	13	10	13	12	5	2	5	15	18	13	14	13	9	10	7	7	8	7	5	7	8	8	8
Median	E	E	E	E	E	E	E	G	2.4	2.8	3.0	3.0	3.0	3.0	2.6	24	G	E	E	E	E	E	E	E

foEs

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

The Radio Research Laboratories, Japan.

W 5

IONOSPHERIC DATA

Nov. 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	E	E2.00s	E1.90s	2.00	2.00	2.05	2.10	2.00	2.05	2.00	2.00	2.00	E1.80s	E1.90s	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	2.00	2.00	2.05	2.00	2.00	2.00	2.00	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	2.00	2.00	2.05	2.15	2.10	2.00	E2.10s	E2.00s	E1.90s	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s
4	E2.00s	E2.00s	E1.30s	E1.90s	E	E	E1.90s	E2.10s	2.00	2.00	2.00	2.10	2.00	2.10	2.00	E2.40s	E2.00s	E2.00s	E1.90s	E2.10s	E2.00s	E2.20s	E2.00s	E1.80s
5	E1.80s	E1.30s	E	E	E	E	E2.00s	E2.10s	2.50	2.00	2.10	2.00	2.10	2.00	2.10	1.90	E1.85s	E2.00s	E2.00s	E2.00s	E2.00s	E2.10s	E2.10s	E2.00s
6	E2.00s	E1.70s	E2.00s	E	E	E	E1.85s	E2.10s	2.00	2.00	2.00	2.10	2.00	2.00	2.00	1.90	E2.00s	E1.80s	E1.90s	E2.00s	E2.00s	E2.00s	E1.90s	E1.80s
7	E1.90s	E	E2.00s	E	E	E1.30s	E1.90s	E1.85s	2.00	2.15	2.00	2.10	2.00	2.00	2.00	2.00	E1.90s	E2.00s	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s
8	E2.00s	E2.00s	E2.10s	E	E	E	E2.00s	E2.00s	1.90	C	C	C	2.00	2.00	2.00	2.10	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s
9	E2.00s	E2.00s	E2.10s	E	E	E1.20s	E1.90s	E2.00s	E2.30s	2.00	2.00	2.10	2.05	2.00	2.00	2.00	E2.00s	E1.90s	E1.90s	E2.00s	E1.90s	E2.00s	E2.00s	E2.00s
10	E2.00s	E	E	E	E	E1.50s	E1.70s	1.85	2.00	2.00	2.00	2.20	2.00	2.00	2.00	E2.15s	E1.95s	E1.90s	E1.90s	E1.85s	E1.80s	E1.90s	E1.90s	E1.90s
11	E2.00s	E	E	E	E	E1.20s	E1.80s	E2.00s	1.90	2.00	2.00	2.10	1.90	2.15	2.00	1.90	E1.90s	E1.90s	E1.60s	E2.00s	E1.90s	E1.90s	E2.00s	E1.90s
12	E2.00s	E	E	E	E	E1.30s	E1.90s	C	C	C	C	C	C	C	C	C	E2.00s	E1.90s	E1.90s	E2.00s	E2.00s	E1.50s	E2.00s	E1.85s
13	E2.00s	E	E	E	E	E1.30s	E1.90s	E2.00s	1.90	2.00	2.10	2.00	2.00	2.10	3.00	E2.10s	E2.00s	E1.40s	E1.90s	E2.00s	E2.00s	E2.10s	E2.00s	E2.00s
14	E1.90s	E	E	E	E	E1.70s	E1.80s	E1.90s	1.95	2.05	2.00	2.10	2.00	2.10	2.00	E2.10s	E2.10s	E2.00s	E2.00s	E2.00s	E1.90s	E2.00s	E2.00s	E2.00s
15	E1.80s	E1.60s	E	E2.00s	E	E1.50s	E1.85s	E1.90s	1.90	1.95	2.00	2.00	2.00	2.05	2.00	C	E2.10s	E2.00s	E2.00s	E2.00s	E2.00s	E2.10s	E2.00s	E2.00s
16	E2.00s	E2.00s	E1.80s	E	E	E	E1.90s	E1.90s	1.95	2.00	2.15	E3.10s	2.00	2.00	2.00	1.90	E2.00s	E1.80s	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E1.90s
17	E1.90s	E	E	E	E	E1.40s	E1.90s	E2.00s	2.00	1.80	2.15	2.00	1.90	2.00	1.90	E2.10s	E2.00s	E2.00s	E1.90s	E1.90s	E2.00s	E1.90s	E2.00s	E2.10s
18	E1.95s	E	E1.90s	E	E	E	E1.85s	E1.90s	2.00	2.00	2.00	2.00	2.00	2.00	2.00	E2.10s	E2.00s	E1.80s	E2.00s	E1.80s	E2.00s	E2.00s	E2.00s	E2.00s
19	E2.10s	E2.00s	E	E	E	E1.40s	E1.90s	C	C	C	C	C	C	C	C	C	E2.00s	E2.00s	E2.00s	E1.90s	E2.00s	E1.85s	E1.90s	E1.85s
20	E1.90s	E	E1.85s	E	E	E1.60s	E1.90s	E1.90s	E2.00s	2.00	2.00	2.00	2.00	2.00	1.90	2.00	E2.00s	E1.90s	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E1.90s
21	E1.85s	E1.70s	E2.00s	E	E	E	E2.00s	E1.85s	1.90	1.90	2.15	2.00	2.00	2.00	2.00	E2.00s	E2.00s	E2.00s	E1.90s	E1.90s	E2.00s	E1.90s	E1.90s	E2.00s
22	E1.80s	E	E	E	E1.80s	E1.50s	E1.90s	E2.00s	E2.00s	1.90	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E2.00s	E1.85s	E1.80s	E1.90s	E2.00s	E2.00s	C	C
24	C	C	C	C	C	C	C	C	C	2.00	2.00	2.00	1.90	2.00	2.00	2.00	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E1.90s
25	E1.90s	E	E	E	E	E1.20s	E1.90s	E1.95s	2.00	2.00	2.10	2.05	I2.05C	2.00	2.00	2.00	E1.90s	E1.90s	E1.80s	E2.00s	E2.00s	E1.90s	E1.90s	E1.80s
26	E2.00s	E1.40s	E	E	E	E	E1.90s	E2.00s	E2.10s	2.00	2.00	2.05	2.00	2.00	2.00	1.90	E1.90s	E1.90s	E1.90s	E1.90s	E1.90s	E2.00s	E1.85s	E2.00s
27	E2.00s	E1.60s	E	E	E	E1.70s	E1.85s	E2.00s	1.90	I2.00C	2.00	2.00	2.00	2.00	2.00	2.00	E1.90s	E1.80s	E1.85s	S	E2.00s	E2.00s	E2.00s	E1.90s
28	E2.00s	E1.50s	E2.00s	E1.80s	E	E1.80s	E1.50s	E1.80s	2.00	1.90	2.00	1.90	1.90	1.90	1.90	1.80	E1.90s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E1.90s	E2.00s
29	E1.90s	E1.90s	E2.00s	E	E	E1.90s	E2.00s	E1.90s	1.95	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	2.00	2.00	2.00	2.00	2.00	1.95	E2.00s	E2.00s	E1.95s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s	E2.00s
31																								
No.	25	25	14	22	24	25	25	23	21	25	24	23	25	25	25	17	27	27	27	25	26	26	25	25
Median	E2.00	E1.30	E	E	E	E1.30	E1.90	E1.95	2.00	2.00	2.00	2.05	2.00	2.00	2.00	2.00	E2.00	E1.90	E1.90	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

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I2.90A	I2.90A	I2.90A	3.00	3.05	3.25	3.40	3.55	3.50	3.45	3.40	3.20	3.35,	3.35	3.45	3.35	3.40	3.60	3.45	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	3.45	3.40	3.45	3.40	3.45H	3.50	3.50	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	3.55H	3.45	3.50H	3.45H	3.35	3.35	3.40	3.45	3.55	3.25	3.15	3.00	3.00	2.95	2.95
4	3.05	2.95	3.15	3.05	3.25	3.45	3.35	3.50	3.50	3.55H	3.35H	3.45	3.40	3.40	3.50	3.45	3.45	3.25	3.30	3.15	3.15	3.00	2.95	3.00
5	2.95	3.05	3.00	2.95	3.05	3.60	3.30	3.55	3.40	3.45	3.35	3.45	3.35	3.35	3.45	3.45	3.40	3.30	3.15	3.00	3.20	3.05	3.05	3.25
6	2.80	2.80	2.85	2.85	3.05	2.95	3.00	3.55	3.40	3.10	3.35	3.45	3.45	3.50	3.45	3.35	3.40	3.40	3.50	3.15	2.85	2.90	3.05	U2.95S
7	3.00	3.05	3.00	2.90	3.00	2.95	3.20	3.65	3.55	3.35	3.45	3.35	3.45	3.35	3.45	3.45	3.40	3.35	3.10	3.15	3.15	2.70	2.70	2.70
8	2.85	2.65	2.75	2.75	2.75	2.75	3.25	3.10	3.00	C	C	C	3.45	3.25H	3.35	3.45	3.50	3.30	3.20	3.00	I2.90F	I2.90F	I2.85F	2.80
9	2.95	I2.85FS	I2.85FS	I3.05F	3.05	I3.30F	I3.20F	3.45	3.40	3.45	3.45	3.25	3.55	3.45	3.50H	3.40	J3.55S	3.10	3.15	3.35	3.10	2.75	2.80	F
10	F	F	3.00	3.00	3.05F	I2.80F	3.10	3.40	3.40	3.40	3.35	3.35	3.35	3.25	3.40	3.40	3.40	3.70	3.35	3.10	2.95	2.90	2.90	2.85F
11	2.80F	2.95	3.05	3.05	3.00F	2.95	3.35	3.60	3.45	3.50	3.45	3.40	3.50	3.50H	3.40	3.50	3.55	3.50	3.15	3.20	3.15	2.95	3.05	2.95
12	2.90	2.95	2.95	3.00	3.15	3.25	3.15	C	C	C	C	C	C	C	C	C	3.30	3.15	3.10	3.30	2.95	2.80	2.60	2.80
13	2.85	2.90	2.95	2.90	3.30	2.85	3.20	3.30	3.25	3.45	3.45	3.15	3.45	3.50	3.40	3.50	3.60	3.35	3.25	3.05	3.15	2.90	2.95	2.95
14	3.05	3.00	2.95	2.95	3.05	3.25	3.45	3.60	3.45	3.45	3.50	3.40	3.45H	3.50	3.40	3.55	3.35	3.50	3.35	3.00	3.05	3.00	3.05	3.05
15	3.05	3.00	2.90	2.75	2.90	3.10	3.35	3.65	3.60	3.50	3.40	3.35H	3.50H	3.35	3.35	I3.55C	3.70	3.25	3.15	3.25	3.10	3.00	2.95	2.95
16	3.15	3.00	2.95	3.05	3.10	3.40	3.30	3.60	I3.50R	3.60H	3.40H	3.45	3.40H	3.25H	3.50	3.55	3.50	3.70	3.40	3.40	3.05	3.20	3.10	2.80
17	2.80	2.95	2.95	2.95	3.10	3.30	3.55	3.65	3.55	3.55	3.45H	3.55	3.55	3.30	3.45	3.40	3.65	3.25	3.35	3.35	3.00	3.10	3.05	3.00
18	2.60	2.75	3.10	3.00	3.45	3.65	3.10	3.35	3.45	3.30H	3.20	3.40	3.60	3.15H	3.40	3.45	3.60	3.05	2.65	2.75	2.85	2.85	2.65	2.55
19	3.25	2.80	2.90	3.35	2.95	3.25	3.05	C	C	C	C	C	C	C	C	C	3.60	3.40	3.40	3.10	3.25	2.95	3.05	2.80
20	2.75	3.10	3.35	3.15	2.95	3.05	3.15	3.65	3.55	3.65	3.50	3.35	3.25H	3.50	3.60	3.45	3.20	3.15	3.15	I3.10A	3.30	3.00	2.85	2.75
21	2.75	2.80	2.85	3.10	3.15	3.20	3.10	3.75	3.60	3.40	3.45H	3.45	3.50	3.55H	3.50	3.55	3.65	3.60	3.10	2.90	3.10F	I3.10F	F	F
22	2.85	3.10	2.90	2.95F	3.00F	3.35	3.30	I3.40S	3.55	3.25H	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.25	3.65	3.15	3.30	3.20	3.25	C	C
24	C	C	C	C	C	C	C	C	C	3.55	3.75	3.20H	3.70H	3.55H	3.10H	3.55V	U3.00S	3.25	3.15	3.30	3.25	I3.00SF	2.90	F
25	F	F	F	F	Fs	U3.20S	I3.30S	3.60	3.50	3.20RH	3.55	3.35H	I3.55C	3.40H	3.75	3.65	3.75	3.65	I3.30SF	3.10	3.05F	F	F	F
26	2.80	F	F	F	SF	I3.55S	3.45	3.30	3.45	3.45	3.60	3.40	3.60	3.65	3.50	3.80	3.35	3.20	3.00	3.25	I2.80S	2.70	F	F
27	F	I3.15F	I3.10F	2.95F	2.95	3.05F	I3.10SF	3.45	3.60	I3.60C	U3.25S	3.40	3.35	3.50	3.60	U3.35S	I3.50SH	3.60	3.25	I3.10S	2.95	2.90	3.05	2.90
28	2.85	2.95	2.90	2.95	3.05	3.40	3.45	3.75	3.65	3.55	3.30	3.50H	3.45	3.35	3.40	3.65F	3.10	3.10	3.10	3.30	3.15	3.00	2.85	2.75
29	2.85	2.75	2.90	3.05	3.00	3.00	3.00	3.20	3.45	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	3.45	3.30	3.30	3.65H	3.50	3.50	3.50	3.60	3.40	3.40	2.95	3.05	3.10	I2.80F	I2.80F
31																								
No.	22	22	23	23	23	25	25	23	23	25	24	24	25	25	25	25	27	27	27	26	26	25	22	20
Median	2.85	2.95	2.95	3.00	3.05	3.25	3.25	3.55	3.50	3.45	3.40	3.40	3.45	3.40	3.45	3.45	3.45	3.35	3.15	3.10	3.10	3.00	2.95	2.90

M(3000)F2 Sweep 1.0 Mc to 18.0 Mc in 1 min sec in automatic operation.

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

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

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

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

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

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										225		260	255											
2									C			245												
3									C															
4												250												
5													250											
6																								
7																								
8										C	C	C	250											
9																								
10																								
11												250	235											
12									C	C	C	C	C	C	C	C								
13												235	235											
14												235												
15																								
16																								
17												235	235											
18																								
19									C	C	C	C	C	C	C	C								
20												250												
21																								
22											C	C	C	C	C	C								
23									C	C	C	C	C	C	C	C								
24									C															
25											245		C											
26																								
27										C		250												
28																								
29										C	C	C	C	C	C	C								
30									C															
31																								
No.										1	1	9	6											
Median										225	245	250	240											

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

Nov. 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	I340A	I350A	I350A	335	260	250	260	235	235	I215A	235	210	200	235H	240	225	230	210	240	C	C	C.	C	C
2	C	C	C	C	C	C	C	C	C	235	225H	220	225	235H	240	225	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	230H	210H	230H	210H	240	230	230	225	210	225	260	300	295	310	300
4	300	290	260	265	250	220	240	220	225	225H	220H	240	220H	240	245	220	220	210	235	270	260	300	305	295
5	290	290	285	285	265	215	240	210	225	225	240	230	205	240	225	230	220	230	240	280	260	270	270	240
6	335	300	350	310	250	260	275	240	230	220	240H	230	210H	225H	235	230	220	220	220	260	300	310	290	270
7	285	280	280	310	270	260	250	215	240	240	210H	230H	220H	220	240	235	225	230	260	285	260	340	350	350
8	320	365	370	375	360	A	A	A	I250A	C	C	C	230	240H	240	230	210	250	230	280	285	305	290	300
9	300	300	300	250	245	205	280	245	230	220H	200H	230	235	240	240H	225	215	225	250	250	275	305	315	300
10	315	300	260	250	230	250	260	220	220	235	210H	210H	220H	225H	235	230	220	205	230	310	300	320	310	310
11	320	285	260	260	255	285	250	225	235	225	235H	225	225	235H	225H	230	215	205	260	280	270	285	300	300
12	310	300	310	290	255	220	250	C	C	C	C	C	C	C	C	C	215	225	250	250	230	305	320	320
13	325	305	300	320	250	230	235	220	245	240	220	215	210	220	235	235	210	220	235	285	290	305	315	310
14	285	I300A	320	300	270	240	250	220	215	230	225	215	230H	240H	240	230	225	210	240	300	270	300	280	280
15	315	300	285	325	285	250	235	215	220	215	215H	215H	230H	230	235	I220C	210	230	250	270	290	300	300	295
16	280	290	300	290	250	225	250	235	215	220H	210H	240H	235H	235H	235	225	220	205	275	295	275	260	275	315
17	305	280	285	285	255	220	225	220	220	215H	230H	230	230	240	235	235	220	215	250	250	270	280	275	320
18	330	320	315	300	235	205	300	235	220	240H	245	235	235	220H	240	220	210	225	365	340	330	300	380	400
19	260	350	285	250	300	250	290	C	C	C	C	C	C	C	C	C	215	I235A	220	280	280	310	300	335
20	275	270	240	235	275	250	260	220	225	220	235	230	225H	225	240H	240	205	I245A	260	I270A	245	250	350	350
21	325	325	305	250	265	225	255	210	I220A	220	235	230H	225	250H	240	220	205	240	300	305	270	265	260	260
22	295	270	265	315	290	250	250	230	230	225H	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	210	230	270	230	265	255	C	C
24	C	C	C	C	C	C	C	C	C	220	230	215H	220H	235H	220H	220	210	240	250	250	265	265	310	275
25	230	I310A	275	265	255	230	230	215	225	240H	240	220H	I230C	225H	225	220	215	200	300	250	270	285	295	270
26	275	275	260	260	255	220	230	220	235	230	230	255	220	220	220	215	210	235	280	275	I290A	335	315F	300F
27	290	270	230	250	265	260	270	225	210	I225C	225	235	235	235	225	220	245H	235	275	I285S	300	300	280	300
28	330	300	300	300	240	245	230	220	220	220	250	225	225	225	225H	225	210	225	305	280	290	280	320	330
29	330	310	300	285	275	295	260	220	225	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	A	225	225H	205H	235	230	240	210	220	250	300	270	290	335	320
31																								
No.	25	25	25	25	25	24	24	22	23	24	24	24	25	25	25	25	27	27	27	26	26	26	25	25
Median	305	300	285	285	255	240	250	220	225	225	230	230	225	235	235	225	215	225	250	280	270	300	305	300

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

h'Es

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

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f_2	f_3	f_3	f_2	f	f		l	l	l_2	l_2	l	l	l_2	l		l	f	f					
2										C	C	l	l	l	l	l								
3										C	C	l	l	l	l		l							
4						f															f		f	f_2
5	f	f	f	f						l		l												
6				f	f	f						C					C	f	f			f	f	f_2
7	f_2	f		f	f				l	l_2	l	l	l			l			f	f	f	f		
8				f	f_2	f_5	f_2	l_2	$l\bar{3}$									f			f_2	f		
9			f							l			l	l	l	l					f	f_2	f	f
10		f							l												f		f	f
11	f		f						l	C	C	l	l	l	l						f		f	f
12		f_2	f	f																		f	f	f
13		f	f_2	f	f				l	l	l												f	f
14	f	f_3	f_2	f	f_2		f_2	l																f_2
15	f_2								C	C	l	l	l		l									
16				f																				
17				f	f							l	l	l_2	l									
18		f	f	f						C.l	l_2	l	l	l					f					
19																	f	f_2						
20					f				h	h		C	C	C	l	l	f	f_2	f	f_3				
21		f							l_2	l_2								f_2	f			f	f	
22	f	f	f	f					h	h														
23																								
24										l	l	l	l									f_2	f	f
25	f	f_2	f		f			h	l	C	l	l					C	f	f_2	f	f			
26	f	f			f	f		h	h	$h.l$	h	h	C							f	f			
27					f				l		l				h	l	f	f						
28		f							l	l			l	l	l	$l.h$						f		
29				f	f				h											f				
30										l_2	l					h								
31																								
No.																								
Median																								

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

Types of Es

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 1961 | foF2 | 135° E Mean Time (G.M.T. + 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.2	3.1	3.1	3.1	3.3	2.8	3.7	5.5	7.2	6.4R	8.0	I7.8R	I8.8R	8.9	7.8	7.0	6.3	5.7	I4.2A	3.0	3.3	I3.4A	I3.4A	3.4
2	C	C	C	C	C	C	C	C	C	8.4	8.0	8.3R	8.5	8.4	8.1	6.7	6.1	6.0	4.1	3.5	I3.7R	3.9	3.6	3.6
3	4.0	3.8	3.8	3.5	3.2	3.0	3.6	7.1	I8.6R	8.3	8.6	9.1	8.8	8.2	7.6	7.0	6.6	6.8	I3.8A	3.3	3.5	3.7	3.7F	3.6
4	3.6	3.6	3.8	3.6	3.9	3.5	3.8	5.6	U7.5R	7.9	7.1	8.5	8.6	8.8	7.6	7.2	6.8	5.7	I3.4A	3.2	3.7	3.5	3.5	3.7
5	3.6	3.9R	4.0	4.0	4.1	3.8	4.1	5.8	7.1	8.5	7.4	9.6	8.5	8.8	8.5	6.8	5.9	6.3	5.4	4.6R	I4.6S	4.5S	4.6	4.8S
6	I4.2A	L4.1R	4.1	4.3	4.9	3.9	4.5S	I7.9R	9.0	I9.4R	11.7R	11.3	10.1	7.8	7.9	8.1	8.0	6.3	5.0	3.8	3.6	4.0	I4.3S	4.1
7	4.0	4.0	I4.0R	4.0	4.2S	4.1	4.5	I7.4R	7.7	8.1	8.1	9.2	8.1	9.0	8.6	7.9	7.3	5.4	4.2S	4.6S	I4.4S	3.6	3.6	3.5
8	3.6	3.6	3.6	3.6	I3.5A	3.5	4.0	5.9	7.8	10.6RU	11.7R	11.3	10.1	I9.9R	10.7	10.1	7.6R	4.5	4.4	4.6	4.7	4.1S	4.5S	4.1
9	4.3	4.1	4.0	4.0	3.6	3.1	3.4	6.2	8.1	10.1	8.0	8.8	I9.0R	9.3	8.6	8.9	6.9	I5.0RS	4.3	4.4	3.5	3.4	3.6	3.6
10	3.7	3.9	3.6	3.4	3.5	2.9	4.0	6.7	R	C	C	C	C	C	C	C	C	5.1	3.6	3.0	3.4R	3.4	3.7	3.6
11	3.6F	3.9	3.9	3.8F	3.6	3.8S	4.5	6.5	7.8	8.4	8.1	9.1	9.4	8.6	8.0	7.6	6.7	5.1	3.2	2.9	3.6S	3.5	3.3	3.3
12	3.5	3.5S	3.6	I3.6F	3.9	3.3	3.4	6.0	6.7	8.5	7.8	9.4	I9.2R	8.1	8.6	9.1	7.1	4.8	4.6	4.3	3.8S	3.9	3.6	I3.9RS
13	3.8	4.0	4.1	4.0	4.5	3.7	3.6S	6.4	8.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	8.5	8.6	I9.5R	I9.4R	8.8	7.9	8.1	7.0	5.2	3.6	3.0	I3.4R	3.5	I3.7R	3.6
15	3.6	3.8	U3.9S	3.9	4.0	I4.0R	I5.0R	I7.0R	7.4	8.3	8.3	U10.2R	J10.2R	9.3	9.1	8.0	6.0	C	C	C	3.6	3.9	4.0R	I4.0R
16	I3.8R	3.7	3.9	4.0	3.9	I3.5R	3.7	7.1	8.0	8.2	7.4	7.3	7.7H	9.3	8.3	7.3	5.9	5.7	3.6	2.7	3.1	3.7	3.6	3.6R
17	I3.6R	I3.6RS	3.5	3.5	3.6	3.2R	3.2	5.9	I7.0R	7.7	7.7	8.6	7.3	7.2	7.9	7.1	6.6	4.6	3.0	3.5	3.2	3.1	3.0	3.1
18	3.1	I3.2RS	I3.2RS	3.5	3.7	2.2	2.9	5.0	7.9	I8.4C	8.5R	10.3R	8.7	8.2	7.8	7.6	6.3	3.5	3.0	R	RS	3.9RS	3.5R	3.5R
19	I3.8RS	I3.5RS	3.6	3.4	3.0	3.5	3.3	6.8	U9.8R	8.8R	9.9	11.6	I9.5R	U9.6R	9.2	7.8	7.8	4.3	4.2	2.9	3.4	3.0	I3.0F	3.2F
20	I3.4F	I3.6F	3.7	2.7	2.6	2.8	3.2	5.8	7.4	7.8	8.7	I9.8RH	9.0H	7.4	7.2	8.0	6.6R	4.9	3.4	3.8	4.1S	I3.4RS	2.6	2.9
21	3.0	3.2	3.2	3.4	3.1	3.3	3.6S	6.5S	I6.9R	6.6	9.0	9.0R	7.6	8.3R	I8.2R	7.9	5.6	I3.8RS	3.1	3.3S	F	F	F	F
22	F	RF	4.1	I3.6F	3.8	I3.7RE	I4.0RS	5.4	7.1	6.9	8.1R	I8.6R	7.4	7.1	6.1	7.1S	5.3S	3.7S	3.7	3.5	I3.4A	I2.9A	3.1	I3.2RS
23	3.3	3.0	3.0	3.1	3.3	3.1	3.2	5.6	6.1V	7.6R	I8.2R	I8.0R	6.7	6.7	7.4	5.6	5.1	2.8	2.9	3.5	3.5S	3.1	I3.6S	2.7
24	2.8	3.0S	3.2	3.2	3.1	3.0	3.1	5.9	6.6	6.8H	7.8	7.0	7.6	6.1	I6.4RH	5.9RH	4.6	3.3	3.6	3.6	I3.2RS	I3.4A	F	F
25	F	C	F	F	F	F	3.0F	4.9S	6.1	7.2	8.0	8.1	7.8	6.4	6.8	6.3	5.1	4.2S	2.4	3.1	2.6	RS	F	F
26	F	F	F	F	RF	3.1	2.5	4.6	6.1	6.6	6.6	7.9	8.3	7.7	6.6	5.6	4.8	4.3S	3.0	3.0	3.0	3.1	3.2	F
27	F	3.3S	3.3	3.4	3.1F	2.7	3.1	6.1S	6.5R	7.1	I7.7RH	8.6	J7.4R	8.0	7.3	6.7	5.3S	I3.9S	2.9R	3.1	I2.8A	2.7	3.1S	3.1S
28	2.9	3.1	3.0	3.1S	3.2	3.0	2.6	I5.2R	6.8	6.1	7.1	7.1	6.8	6.3F	7.0	6.2	5.8	I3.4RS	2.5	2.6	I2.8S	2.5	2.9	2.9
29	2.8	2.9	3.1	3.0	3.0	2.7S	2.9	5.5	7.0	7.0	8.3	8.7	6.9	7.8	6.9	6.5	5.6	3.4	3.1	3.0	3.4	3.2	3.3S	I3.4RS
30	3.4S	3.4	3.6	3.5	3.4	3.5	3.6S	5.7	7.0	6.5	7.6	8.4	8.2	7.0	7.0	7.1	6.4	3.8	3.2	2.9	3.0	3.0S	3.2S	I3.4S
31																								
No.	24	25	26	26	26	27	28	28	27	28	28	28	28	28	28	28	28	28	28	27	27	27	26	25
Median	3.6	3.6	3.6	3.5	3.6	3.3	3.6	5.9	7.2	8.0	8.0	8.8	8.5	8.2	7.8	7.2	6.3	4.7	3.6	3.3	3.4	3.4	3.6	3.5
U. Q	3.8	3.9	3.9	3.9	3.9	3.7	4.0	6.6	7.9	8.4	8.6	9.6	9.1	8.8	8.4	8.0	6.8	5.6	4.2	3.8	3.7	3.9	3.7	3.6
L. Q	3.2	3.2	3.2	3.4	3.2	3.0	3.2	5.6	6.8	7.0	7.7	8.2	7.6	7.3	7.1	6.7	5.6	3.8	3.0	3.0	3.2	3.1	3.2	3.2
Q. R	0.6	0.7	0.7	0.5	0.7	0.7	0.8	1.0	1.1	1.4	0.9	1.4	1.5	1.5	1.3	1.3	1.2	1.8	1.2	0.8	0.5	0.8	0.5	0.4

foF2

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

The Radio Research Laboratories, Japan.

A 1

21

IONOSPHERIC DATA

Nov. 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	A	4.6	L	L	L									
2										A	L	A	L	L	L									
3										L	4.1 L	4.0 L	L	L	L									
4										L	L	L		L	L									
5											L	3.8	L	L										
6									L	L	L		L	L	L									
7									3.1	I 3.6 L	I 4.0 L	I 3.8 L	L	L										
8										L	L	L	L	L	L									
9										L			L H											
10										C	C	C	C	C	C	C	C							
11										A	4.0 L	4.0 L												
12										L	L	L	L	L	L									
13										C	C	C	C	C	C	C	C							
14									C	L	A	I 4.0 L	I 3.8 L	L										
15										L	L	L	L											
16											A	I 3.9 L	L											
17											L		L		L									
18										C	L	L	L	L	L									
19										L	A	L	L											
20											L	L		L										
21										L			L H											
22										L		L	L	L H										
23										L	L	L H	A	L										
24											L		L	L										
25															3.4									
26											3.9 L	L	L	L										
27												L		L	L									
28											L	L	L											
29											L	L	L	L	L									
30											L	L	L	L	L									
31																								
No.									1	1	4	7	1		1									
Median									3.1	U 3.6	4.0	4.0	U 3.8		3.4									

foF1

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

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

Nov. 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								A	A	A	A	A	A	3.05	2.95	I 2.60A	R							
2								C	C	A	A	A	3.10	3.00	2.80	A	A							
3								R	A	2.90	3.00	A	A	A	A	A	A							
4								A	2.65	I 2.90A	3.00	I 3.05R	3.10	A	A	A	A							
5								1.95	I 2.50A	A	A	A	3.10	3.00	2.85	2.45	A							
6								2.00	A	A	3.00	3.05	3.05	2.95	2.80	A	R							
7								R	A	A	A	3.05	3.05	2.95	2.70	A	E							
8								A	A	A	A	A	A	A	A	A	A							
9								R	2.50	2.80	3.00	3.10	3.15	3.05	2.85	2.50	B							
10								A	A	C	C	C	C	C	C	C	C							
11								R	A	A	A	A	3.05	3.00	A	A	E							
12								R	R	A	A	A	3.05	3.00	I 2.70A	R	A							
13								1.95	A	C	C	C	C	C	C	C	C							
14								C	C	A	A	A	3.05	2.95	2.80	I 2.40A	E							
15								A	A	A	A	A	3.05	I 2.85A	A	A	A							
16								B	A	A	A	3.00	3.05	3.00	I 2.75A	R	B							
17								B	2.45	2.80	2.95	3.00	A	A	A	A	E							
18								I 2.00R	2.50	I 2.75C	2.90	A	A	A	I 2.65A	A	A							
19								A	A	2.75R	I 2.90A	2.95	2.95	A	A	A	E							
20								I 2.00R	I 2.50A	2.85	2.95	I 2.95A	3.05	2.80	A	A	1.80							
21								E	2.45	I 2.80A	2.95	I 2.90A	2.95	I 2.80A	I 2.65A	2.25	E							
22								E	2.50	2.80	2.95	I 3.00A	3.05	2.95	2.80	A	R							
23								1.80	2.50	I 2.80R	2.90	I 3.00A	I 3.00A	I 2.90A	2.75	A	S							
24								S	I 2.40A	I 2.80R	2.90	I 3.00A	3.05	3.00	I 2.70A	A	E							
25								1.85	2.45	I 2.70A	3.00	3.10	I 3.05A	3.00	2.80	2.40								
26								E	2.35	2.80	2.95	3.00	3.05	3.00	A	A								
27								A	R	A	A	A	A	3.05	2.75R	I 2.20A								
28								A	I 2.45A	2.80	2.95	3.00	3.05	3.00	I 2.70A	2.30	E							
29								E	I 2.40R	A	A	A	A	A	2.70	A								
30								R	A	A	A	A	A	A	2.65	2.30	E							
31																								
No.								11	14	14	15	15	20	20	19	9	10							
Median								1.85	2.50	2.80	2.95	3.00	3.05	3.00	2.75	2.40	E							

foE

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

The Radio Research Laboratories, Japan.

A 3

23

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	J2.3	E	E	E	J2.8	J4.8	J6.2	J7.2	J6.0	3.8	3.8	3.4	3.0	G	E	J7.2	J2.8	J2.5	J3.3	J3.4	J2.8
2	C	C	C	C	C	C	C	C	C	J6.1	3.9	J8.3	G	3.9	3.2	3.1	2.3	J3.1	J2.8	J2.0	J1.7	E	E	E
3	E	E	E	E	E	E	E	G	J3.0	3.6	G	3.5	3.3	3.1	3.1	2.9	2.2	J2.8	J6.2	J6.0	E	J2.0	J2.0	J1.7
4	J1.9	E	E	E	J1.9	J2.2	J1.7	J2.4	J2.8	J3.1	3.2	3.3	3.5	3.2	3.1	2.8	1.9	J2.8	J6.7	J2.9	J2.0	J1.9	E	E
5	J2.5	J2.6	J2.4	E	E	E	E	G	J2.5	3.0	3.4	3.6	3.6	G	G	J3.8	J4.8	E	E	E	J2.3	E	J2.0	E
6	J2.8	J2.8	J1.7	E	E	E	E	J3.8	J2.8	J2.9	3.3	2.6G	2.6G	G	3.6	J4.5	2.3	E	J5.0Y	J2.9	E	J1.9	J2.6	J2.3
7	J1.9	E	E	E	E	E	E	G	J3.1	J2.9	J4.1	G	G	3.5	2.3G	2.5	J2.3	J1.8	J3.0	J2.9	J4.9	J2.8	J1.7	J2.4
8	E	E	E	J3.0	J2.8	E	E	J2.3	J4.2	J6.0	J3.3	J4.8	3.7	J3.4	J3.1	J2.9	J2.4	J2.3	J2.8	E	E	E	E	J2.3
9	J2.3	J2.3	E	E	E	E	E	G	G	G	G	J3.2	G	G	G	G	G	J2.4	E	E	E	E	E	J2.8
10	E	J1.7	E	E	E	E	E	J2.4	J3.7	C	C	C	C	C	C	C	C	E	E	E	E	E	J2.2	J1.7
11	E	E	E	E	E	E	E	G	J3.0	J5.3	4.3	3.8	G	G	J3.8	J3.2	G	E	E	E	J2.4	J2.8	J2.3	J2.4
12	E	J1.7	J1.7	E	J2.0	E	E	G	G	J3.5	J3.7	J3.6	G	J2.3G	J3.7	G	2.4	J2.9	J2.3	E	2.1	J2.8	J2.0	J2.4
13	J2.8	J2.7	J2.8	J2.3	J1.8	E	E	G	2.5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	3.1	J5.8	J3.3	2.4G	2.6G	2.9	J2.5	G	E	E	E	E	E	E	E
15	J1.8	J1.9	J2.3	J2.5	J1.9	E	E	J1.9	J2.4	3.2	J4.0	J4.2	J3.2	J3.6	J3.6	J4.1	J3.0	C	C	C	E	E	E	E
16	E	E	E	E	E	E	E	2.3	2.7	J4.2	J4.0	2.7G	G	J5.8	3.1	2.7	2.8	J1.9	E	E	E	E	E	E
17	E	E	E	E	E	E	E	G	G	3.1	3.6	3.8	3.6	3.6	J3.2	J2.9	G	J2.4	J1.8	J1.9	J1.8	J1.7	E	E
18	J1.8	J1.8	E	E	E	E	E	G	2.9	C	3.6	J6.0	J3.8	J3.3	J3.8	J2.8	2.0	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	2.1	J2.8	J4.2	J4.9	G	2.5G	J3.0	2.9	2.2	G	E	J2.3	J5.8	E	J1.8	J1.8	E
20	J2.9	J1.8	E	J1.7	E	E	E	G	2.7	J3.0	3.8	3.8	G	G	2.7	J2.8	G	J2.8	J2.9	E	J1.8	J1.9	J2.0	E
21	J2.3	E	J2.0	J1.8	E	E	E	G	J2.9	2.8	J3.7	J2.9	3.2	3.5	3.3	2.6	G	J2.3	J1.8	E	J1.8	J2.4	J1.9Y	E
22	J1.9	J2.3	J1.9	E	E	J1.8	E	G	G	3.4	3.6	3.0	3.5	G	2.1G	J3.0	J2.5	E	E	E	J2.8	J3.6	E	E
23	E	E	E	E	E	E	E	G	G	G	G	J3.5	J5.2	J3.4	G	2.6	S	J2.4	E	J1.9	J2.9	J2.7	J2.5	J2.3
24	E	E	J2.0	E	E	E	E	2.2	J3.3	G	3.5	3.6	3.7	3.6	3.6	3.1	G	2.2	J2.0Y	E	E	J4.9Y	J2.3	J2.2
25	J2.8	C	J1.8	E	E	E	E	G	G	3.6	G	4.2	3.5	G	G	G	E	E	E	E	E	E	J2.4	E
26	E	J2.0	J1.8	E	J2.8	E	E	G	G	G	G	G	G	2.8G	3.3	2.5	S	E	E	E	E	E	E	J2.5
27	E	J2.3	J1.9	E	E	E	E	2.7S	G	J3.5	3.7	J5.0	4.1	G	3.0	2.4	J3.0	E	E	J2.4	J2.5	E	E	E
28	E	E	E	E	E	E	E	2.3	3.4	3.0	J3.1	3.7	3.3	3.6	J4.2	2.7	2.6	J2.9	E	J1.9	J2.2	E	E	E
29	E	J1.8	J1.7	E	E	E	E	G	G	J3.6	J4.3	3.6	3.6	3.6	2.6G	J2.8	J2.8	E	E	E	J2.4	J2.8	J2.5	E
30	J1.8	J2.8	E	J1.8	E	E	E	G	J2.8	3.6	3.6	J3.7	J6.0	J3.7	G	G	G	E	J2.0	E	E	E	E	E
31																								
No.	28	27	28	28	28	28	28	28	28	27	28	28	28	28	28	28	26	28	28	28	29	29	29	29
Median	E	1.7	E	E	E	E	E	G	2.8	3.2	3.6	3.6	3.3	3.2	3.1	2.8	2.1	E	E	E	1.7	1.7	1.7	E
U.Q	2.1	2.3	1.8	E	E	E	E	2.3	3.0	3.6	4.0	4.0	3.6	3.6	3.5	3.0	2.5	2.4	2.8	2.2	2.4	2.8	2.2	2.3
L.Q	E	E	E	E	E	E	E	G	G	2.9	3.2	3.1	G	G	2.4	2.5	G	E	E	E	E	E	E	E
Q.R										0.7	0.8	0.9			1.1	0.5								

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 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				2.4	3.5	3.2	6.0	4.0	3.5	3.5	3.2	2.7			A	2.1	E	A	A	2.4
2	C	C	C	C	C	C	C	C	C	5.5	3.5	4.1		3.4	A	3.0	2.1	3.1	2.5	E	E			
3									2.8	3.0		3.3	3.3	3.0	2.9	2.7	2.0	E 2.8 B	A	2.5		E	E	E
4	E				E	1.7	E	2.4	2.0	3.1	3.2	3.1	3.5	3.1	2.9	2.8	1.9	2.8	A	2.8	E	E		
5	2.5	2.5	E						2.5	2.9	3.1	3.2	3.4			3.2	4.5				2.5		E	
6	A	2.5	E					1.7	2.6	2.8	3.2	2.5 G	2.5 G		3.1	2.6	1.8		E	2.3		E	1.8	E
7	1.7								2.6	2.8	3.5			2.5	2.2 G	2.4	1.7	E	2.8	2.1	2.5	E	E	E
8				2.8	A			2.1	4.0	3.3	3.1	3.1	3.2	3.0	2.8	2.5	2.1	2.0	2.0					E
9	E	E										2.0						1.9						E
10		E						2.1	3.0	C	C	C	C	C	C	C	C						E	E
11									3.0	4.0	3.4	3.3			3.5	2.7					E	E	E	E
12		E	E		E					3.0	3.1	3.2		2.2 G	2.8		2.1	2.2	1.8		E	E	E	2.0
13	E	E	E	E	E				2.5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	2.8	4.1	3.1	2.3 G	2.5 G	2.2	2.5								
15	E	E	1.8	E	E			1.9	2.4	3.1	3.2	3.6	2.8	3.3	2.8	2.8	2.3	C	C	C				
16								2.3	2.7	3.2	4.0	2.6 G		2.0	2.8	2.5	2.2	E						
17										3.1	3.3	3.2	3.1	3.3	3.0	2.8		E	E	E	E	E		
18	E	E							2.8	C	3.2	3.5	3.5	3.0	2.8	2.5	1.8							
19								2.1	2.7	2.9	4.0		2.0 G	1.9	2.9	U 2.2 B			E	2.2		E	E	
20	E	E		E					2.6	G	G	3.5			2.6	2.6		2.3	2.2		E	E	2.0	
21	E		E	E					2.8	2.8	3.0	2.9	2.5	3.1	2.8	2.3		2.3	E		E	E	E	
22	E	E	E			E				3.2	3.4	U 3.0 R	3.3		2.0 G	2.4	2.0				A	A		
23												3.0	A	2.9		2.4	S	E		E	1.9	2.3	E	E
24			E					2.1	2.6		3.4	3.4	3.5	3.1	2.9	2.7		1.7	E			A	E	E
25	E	C	E							3.0		3.5	3.2										2.0	
26		E	E		2.2									2.7 G	3.0	2.4	S							E
27		E	E					2.2		3.0	3.0	3.2	3.3		2.9	2.4	2.9			2.1	A			
28								2.0	2.7	2.9	2.6	2.1	G	3.2	3.1	2.6	1.7	2.0		E	E 2.2 S			
29		E	E							3.0	3.6	3.3	3.0	2.9	2.5 G	2.4	2.0				E	E	E	
30	E	E		E					2.6	2.9	3.1	3.5	3.5	3.0					2.0					
31																								
No.	13	14	12	7	6	2	1	11	19	23	23	25	20	20	23	24	15	13	14	11	14	15	15	12
Median	E	E	E	E	E	E	E	2.1	2.7	3.0	3.2	3.2	3.2	3.0	2.9	2.6	2.0	2.0	2.0	2.1	E	E	E	E

foEs

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

The Radio Research Laboratories, Japan.

A 5

25

IONOSPHERIC DATA

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

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

f-min

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

The Radio Research Laboratories, Japan.

A 6

IONOSPHERIC DATA

Nov. 1961 | M(3000)F2 | 135° E Mean Time (G.M.T. + 9h.) | **Akita** | Lat. 39° 43.5' N, Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	305	310	295	320	330	340	365	360	360^{R}	340	360^{R}	335^{R}	350	345	345	360	345	340^{A}	305	290	310^{A}	300^{A}	295
2	C	C	C	C	C	C	C	C	C	360	340	350^{R}	340	340	355	350	340	355	325	300	310^{R}	310	295	285
3	300	295	305	315	310	305	325	350	365^{R}	355	350	340	345	340	350	345	340	365	330^{A}	280	300	300	295^{F}	300
4	305	295	300	310	310	320	330	340	325^{R}	370	360	330	345	350	345	360	365	365	340^{A}	310	290	305	295	300
5	315	295^{R}	300	305	300	330	315	355	330	345	355	330	335	335	350	370	340	320	340	315^{R}	300^{S}	295^{S}	305	335^{S}
6	310^{A}	285^{R}	275	280	310	310	295^{S}	340^{R}	340	325^{R}	335^{R}	335	345	335	330	350	350	335	360	305	300	275	300^{S}	300
7	300	310	300^{R}	280	290^{S}	300	320	350^{R}	345	360	360	335	330	335	350	340	350	335	315^{S}	320^{S}	330^{S}	280	285	270
8	285	280	280	260	270^{A}	285	320	345	325	315^{R}	345^{R}	340	320	315^{R}	325	335	350^{R}	340	310	310	325	300^{S}	290^{S}	300
9	285	300	290	305	330	325	325	355	345	355	350	345	340^{R}	335	340	355	360	330^{S}	305	320	320	290	270	290
10	285	300	310	295	330	295	310	350	R	C	C	C	C	C	C	C	C	345	320	295	300^{R}	300	300	290
11	295^{F}	300	310	285^{F}	300	295^{S}	315	355	355	350	350	350	330	350	340	345	360	360	320	310	300^{S}	315	305	295
12	300	290^{S}	300	300^{F}	310	330	325	335	360	360	335	340	340^{R}	335	335	340	355	340	310	310	315^{S}	290	310	290^{S}
13	290	270	290	280	315	310	310^{S}	325	330	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	360	345	330^{R}	345^{R}	330	345	355	345	350	315	310	290^{R}	295	320^{R}	320
15	285	280	300^{S}	285	295	300^{R}	335^{R}	365^{R}	350	355	315	330^{R}	335^{R}	340	350	355	355	C	C	C	295	310	310^{R}	305^{R}
16	300^{R}	300	290	305	310	325^{R}	325	365	340	365	360	345	320^{H}	345	355	370	345	350	345	280	305	310	310	295^{R}
17	285^{R}	285^{S}	290	300	310	345^{R}	320	355	360^{R}	360	340	345	345	360	340	360	365	350	305	320	320	320	305	290
18	280	270^{S}	270^{S}	300	355	335	310	340	355	340^{C}	350^{R}	310^{R}	335	330	350	330	360	340	295	R	R S	300^{S}	270^{R}	265^{R}
19	300^{S}	300^{S}	305	310	300	315	310	350	335^{R}	340^{R}	335	335	330^{R}	335^{R}	340	350	360	330	315	305	300	310	300^{F}	310^{F}
20	290^{F}	305^{F}	325	335	290	290	315	365	350	335	340	360^{R}_{H}	300^{H}	330	375	350	365^{R}	355	310	325	310^{S}	355^{S}	275	260
21	275	285	300	295	310	305	320^{S}	345^{S}	370^{R}	365	345	335^{R}	340	335^{R}	350^{R}	355	355	340^{S}	305^{S}	335	F	F	F	F
22	F	R^{F}	320	290^{F}	290	305^{R}_{F}	325^{S}	340	360	365	355^{R}	360^{R}	355	345	375	355^{S}	360^{S}	305^{S}	340	340	340^{A}	285^{A}	300	310^{S}
23	320	335	315	300	315	315	325	375	350^{V}	345^{R}	360^{R}	355^{R}	375	345	360	345	365	340	280	305	315^{S}	305	320^{S}	300
24	285	300^{S}	295	325	320	325	320	355	370	335^{H}	355	360	345	360	390^{R}_{H}	335^{R}_{H}	355	340	335	335	335^{R}	310^{A}	F	F
25	F	C	F	F	F	F	335^{F}	365^{S}	370	345	340	355	360	355	360	360	355	340^{S}	325	330	320	R S	F	F
26	F	F	F	F	R^{F}	310	325	330	360	375	350	340	350	360	375	375	350	320^{S}	310	345	305	295	320	F
27	F	305^{S}	300	305	320^{F}	320	320	350^{S}	350^{R}	365	355^{R}_{H}	350	360^{R}	360	345	360	360^{S}	350^{S}	315^{R}	310	300^{A}	290	290^{S}	295^{S}
28	285	300	300	300^{S}	325	335	315	340^{R}	370	380	340	340	360	340^{F}	360	340	365	340^{S}	290	310	340^{S}	305	285	250
29	270	280	285	305	310	295^{S}	315	330	345	345	340	360	350	350	355	340	360	350	335	320	300	290	300^{S}	295^{S}
30	300^{S}	295	290	290	295	315	310^{S}	350	370	355	330	340	355	350	350	350	360	330	320	340	320	305^{S}	300^{S}	280^{S}
31																								
No.	24	25	26	26	26	27	28	28	27	28	28	28	28	28	28	28	28	28	28	27	27	27	26	25
Median	290	295	300	300	310	315	320	350	350	355	345	340	340	340	350	350	360	340	320	310	305	300	300	295

M(3000)F2

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

The Radio Research Laboratories, Japan.

A 7

27

IONOSPHERIC DATA

Nov. 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	A	3.90	L	L	L									
2										A	L	A	L	L	L									
3										L	3.90 L	3.90 L	L	L	L									
4										L	L	L		L	L									
5											L	4.25	L	L										
6									L	L	L		L	L	L									
7									4.20	I 3.95 L	I 3.90 L	I 4.10 L	L	L										
8										L	L	L	L	L	L									
9										L			L H											
10										C	C	C	C	C	C	C	C							
11										A	4.00 L	3.95 L												
12										L	L	L	L	L	L									
13										C	C	C	C	C	C	C	C							
14									C	L	A	I 3.95 L	I 4.00 L	L										
15										L	L	L	L											
16											A	I 4.00 L	L											
17											L		L		L									
18										C	L	L	L	L	L									
19										L	A	L	L											
20											L	L		L										
21										L			L H											
22										L		L	L	L H										
23										L	L	L H	A	L										
24											L		L	L										
25															4.15									
26											3.85 L	L	L	L										
27												L		L	L									
28											L	L	L											
29											L	L	L	L	L									
30											L	L	L	L	L									
31																								
No.									1	1	4	7	1		1									
Median									4.20	U 3.95	3.90	3.95	U 4.00		4.15									

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

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Nov. 1961 | h'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										230	240A	305	260	255	250									
2										240	250	245	250	255	260									
3										245	245	250	250	250	245									
4										245	245	255		250	250									
5											245	245	255	250	255									
6									245	250	255		245	245	255									
7									240	245	245	250	240	255										
8										265	240	245	250	250	250									
9										240			250											
10										C	C	C	C	C	C	C	C							
11										245	245	245												
12										250	245	255	250	245	250									
13										C	C	C	C	C	C	C	C							
14									C	240	245	250	245	235										
15										240	245	245	245											
16											245	245	245H											
17											250		245		250									
18										1250C	245	255	245	250	245									
19										235	245	255	245											
20											250	240		245										
21										235			245											
22										245		240	250	250										
23										245	225	240	235	245										
24											255		250	235										
25															245									
26											245	245	250	245										
27												255		245	250									
28											250	245	230											
29											255	250	240	250	240									
30											245	255	240	240	245									
31																								
No.									2	17	23	22	23	19	14									
Median									240	245	245	250	245	250	250									

h'F2

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

The Radio Research Laboratories, Japan.

A 9

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	295	245	I295A	255	240	245	220	230	210	I220A	230	240	220	230	235	220	210	I235A	I265A	280	A	A	A
2	C	C	C	C	C	C	C	C	C	A	230	I210A	225	235	240	235	220	220	230A	290	270	255	295	300
3	265	255	275	240	250	245	245	245	245	225	200	205	235	220	235	240	225	I210A	I220A	I275A	255	290	295	295
4	280	255	265	245	245	240	240	220	240	240	215	200	245	245	230	235	220	220	I225A	I270A	265	275	290	275
5	I285A	I285A	285	260	265	225	245	220	230	245	205	195	240	235	245	225	I230A	230	220	255	I265A	255	255	235
6	I250A	I290A	295	305	250	245	245	245	225	215	235	245	210	210	240	240	225	210	215	I240A	255	305	270	250
7	255	255	255	290	280	270	245	240	215	205	I210A	200	205	245	245	235	220	210	I260A	270	245	305	305	300
8	305	310	325	I330A	I340A	295	280	235	245A	250	240	235	240	235	245	235	210	205	250	245	245	255	290	285
9	305	260	260	255	245	220	230	230	230	225	220	245	210H	245	230	240	205	205	250	240	235	280	305	300
10	290	270	255	260	245	260	235	215	230	C	C	C	C	C	C	C	C	200	205	250	270	270	290	295
11	295	280	255	270	275	285	245	205	230	I230A	210	200	235	245	240	230	220	205	230	260	265	245	250	295
12	295	295	295	300	255	235	230	205	210	225	210	200	215	230	245	245	215	210	245	245	245	295	270	I300A
13	295	300	295	295	255	210	230	240	245	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	220	I215A	200	210	205	230	240	220	200	220	240	295	280	245	210
15	290	300	290	295	285	250	245	210	210	230	230	220	205	245	235	235	205	C	C	C	255	255	260	250
16	265	270	285	255	245	200	245	225	220	245	I200A	205	205	245	240	225	210	205	205	E290E	290	280	255	280
17	300	300	295	285	265	245	245	235	220	230	240	245	205	245	240	230	210	210	245	245	240	240	255	295
18	235	345	330	285	220	E205E	255	230	245	240	235	225	220A	230	230	240	205	205	295	320	280	280	300	325
19	295	295	280	255	290	270	240	240	230	225	I210A	220	220	245	235	225H	215	200	245	I235A	260	250	330F	290
20	305	270	240	240	E260E	290	245	215	235	220	200	220	220H	205	240	240	215	210	245A	245	245	210	I280A	340
21	340	300	295	275	255	255	250	220	210	200	235	245H	200H	245	230	235	210	I220A	255	240	265	275	250	250
22	280	245	245	255	270	245	240	205	235	205	235	235	225	200H	220	240	220	230	245	240	I245A	I280A	290	255
23	250	240	260	295	260	235	230	215	215	205	225	200H	I220A	205	245	210H	210	200	285	255	245	I255A	240	255
24	255	275	285	245	250	255	245	230	205H	235	245	245	245	220	210H	220	210	210	240	240	225	I260A	290	295
25	270	I250C	275	260	210	210	240	205	225	245	245	240	210H	230	205	235	210	210	235	255	240	290	I280A	255
26	255	255	290	260	230	235	230	230	240	230	215	240	225	230	215	210	225	240	250	240	260	290	255	305
27	290	290	265	255	245	250	245	210	240	235	220H	235	245	230	220	220	210	235	245	I255A	I265A	295	300	290
28	300	290	295	255	255	205	E240E	240	240	220H	210	205	225	225H	245	240	210	205	E250E	250	I240S	275	290	340
29	330	320	295	260	250	290	245	240	235	230	I230A	240	210	245	225	220	205	200	230	245	290	290	290	290
30	270	285	295	280	280	245	240	240	220	220	210	I205A	210	205	200	245	210	205	290	220	245	270	265	300
31																								
No.	28	28	28	28	27	28	28	28	28	27	28	28	28	28	28	28	28	28	27	27	29	28	28	28
Median	290	285	285	260	255	245	245	230	230	225	220	220	220	230	235	235	210	210	245	245	255	275	285	290

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

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

h'Es

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

The Radio Research Laboratories, Japan.

A 11

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

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

Types of Es

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

The Radio Research Laboratories, Japan.

A 12

IONOSPHERIC DATA

Nov. 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	3.4	3.4	3.4	3.3	3.2	2.9	4.1	I 6.4 S	6.7	6.7	7.7	J 8.9 R	8.4	J 9.3 S	9.7	u 8.1 R	6.3	u 5.1 S	4.6	3.1	3.2	3.4	3.4	3.6
2	3.5	3.4	3.4	3.5	J 4.1 SJ	2.9 R	4.1	6.6	7.0	I 8.4 A	8.3	8.3	7.9	9.4	8.8	J 7.5 R	J 5.9 S	I 5.7 S	4.5	3.5	3.9	J 4.3 S	3.9	3.9
3	4.0	u 4.1 SU	3.6 SJ	4.0 S	2.8	2.9	u 4.2 SU	6.8 SU	8.0 S	8.9	u 9.9 S	8.5	8.2	7.9	8.6	7.1	7.1	u 6.5 S	4.3	3.4	3.9	I 3.6 A	3.6	3.6
4	3.6	3.5	3.5	u 3.6 S	3.5	J 3.0 S	4.1 SI	5.8 S	6.9	8.8	9.0	7.8	8.0	9.8 S	I 9.1 S	7.9 S	6.7	5.5	4.0	3.1	I 3.4 AJ	3.5 S	3.6	3.7
5	3.5 S	3.5	3.5	u 3.6 S	3.6 SI	3.4 SI	4.4 S	6.9	7.2	8.8	9.0	7.9	10.0 S	8.9	8.5	I 7.0 C	6.2	6.3	5.6	4.4	4.3	J 4.5 Su	4.5 SJ	4.9 S
6	3.0	3.6 S	C	C	C	C	C	C	C	I 9.7 RJ	10.9 R	11.5	10.4	8.4	J 8.0 RJ	8.7 R	7.4	6.2	5.4	3.6	3.5	I 3.6 A	4.2	4.1
7	3.6	u 3.9 S	3.4	3.5	3.6	3.7 Su	4.8 SJ	8.2 S	8.7	u 9.4 S	8.6	8.9	8.7	J 8.9 RJ	9.9 S	8.2	7.4	C	C	C	C	A	I 3.6 AI	3.7 A
8	3.9 SI	3.6 A	u 3.9 S	3.6 S	3.5 SI	3.8 SJ	4.3 SI	7.2 SJ	8.5 SJ	10.1 S	11.7	12.1	J 10.4 SJ	10.8 RJ	10.9 R	10.9	J 8.4 R	5.3	4.7	5.6	5.1	4.0	3.8	4.1
9	3.9	4.1	3.9	3.9	3.8	3.3	3.9	6.9	J 8.3 RJ	10.4 RJ	8.5 R	C	C	9.9 S	10.9	8.8	7.6	5.5	I 4.0 S	4.2	3.8	3.1	3.1 S	3.3
10	3.5	3.6	3.4	3.2	3.6 S	2.7	4.0	6.9 S	8.4 RJ	8.3 R	8.7	9.8	9.7	u 10.1 RI	9.8 RJ	8.0 R	6.6	4.9	4.0	3.1	3.1	3.5	3.9	3.9
11	3.9	4.1	4.0	3.8	3.9	3.9	4.7	I 7.2 Su	7.4 R	8.0	9.0 R	8.8	8.4	9.3	u 9.6 S	7.8	6.7	5.6	3.4	2.9	J 3.5 S	3.4	3.2	3.3
12	3.4	3.4	3.5	3.8	3.9 S	3.6	3.5	u 5.6 SI	7.5 SJ	8.5 R	7.9	8.9	8.9 RJ	9.4 S	9.1	8.7	J 7.6 R	5.1	4.2	4.3	4.0	3.8	3.8	4.0
13	C	C	C	C	C	C	C	C	C	10.5	12.6	11.9	10.6 RI	9.3 SJ	10.0 SI	9.0 S	J 7.3 S	4.8	4.3	3.4	3.2	3.6	4.0 S	3.8
14	3.6	3.8	3.8	3.9	4.0	3.5	4.0	6.8	J 8.4 RI	9.0 R	8.8	9.0	J 10.1 RI	9.8 R	9.1	7.9	I 7.0 SI	5.2 S	3.8	3.4	3.3	3.7	J 4.3 S	3.4
15	3.4	3.7 S	3.6 S	3.9	3.9	u 3.7 S	4.6	J 8.6 S	8.6	8.0 S	8.4	u 9.9 SI	I 10.0 RI	9.6 S	9.5	J 8.2 R	7.4	4.9	3.3	3.3	3.8	3.8	4.1	u 3.8 S
16	3.8	3.7	3.7	3.8	3.7	J 3.5 S	3.9	u 6.5 SI	7.6 RJ	8.3 RJ	8.4 R	8.2	7.6 SJ	9.0 SJ	9.3 SI	7.8 S	6.4	5.0	3.3	2.8 S	I 3.1 A	3.4	3.5	3.5
17	u 3.4 S	3.4	3.5	3.4	J 3.4 SJ	3.4 S	3.5	6.3	I 7.6 S	7.3	7.4	J 8.8 S	8.3 S	7.5	8.1	7.8	6.7 S	5.0 S	3.0	3.3	3.4	3.1	2.6	3.0
18	2.9	2.9 S	3.0 S	3.5	3.6	2.5	2.9	4.8 SI	7.5 CI	8.0 S	9.4	I 10.0 SI	I 9.1 R	9.1	9.1	7.2	7.4 R	4.4	u 2.2 S	2.5	3.7	I 4.2 S	3.4	3.7
19	4.2	4.1	u 3.8 S	3.9	3.2	4.5 S	3.8 S	7.3 S	8.7	10.0	8.4	J 9.9 SJ	J 10.4 R	9.8 R	8.9	7.7	6.8	5.1	4.1	3.2	3.0	3.2	2.9	I 3.1 A
20	3.3	3.5	3.1	3.3	2.4	J 2.9 S	3.9	u 6.7 S	7.5	7.3	8.7	J 10.9 R	J 8.6 R	8.3 R	J 9.1 R	7.1	u 7.9 S	5.1	3.7	4.0	3.5	2.8	2.6	2.9
21	3.1	3.3	3.2	3.5	3.2	3.2	3.8	I 7.8 SJ	8.5 R	6.2	9.0	8.9 R	8.4	8.8	J 9.5 S	7.8 S	6.4	4.4	u 3.4 R	3.2	I 3.1 A	3.4	3.3	3.4
22	3.3	3.4	3.5	3.3	3.4	3.2	3.6 S	6.0	7.2	u 7.7 S	7.7	8.7	7.8	7.4	6.5	5.7	J 6.2 R	4.2	3.8	3.1	3.1	2.7	3.0	3.2
23	3.3	3.4	2.9	2.9 S	3.2	2.9	3.3	I 5.4 SJ	6.3 S	7.2	7.1	6.6	7.4	J 6.6 R	6.5	6.7 R	5.5	3.4	2.4 S	2.9	3.4	3.1	3.5	3.0
24	2.9	3.1	3.1	3.4	3.4	2.9	3.2	I 6.2 SJ	6.5 S	6.8	8.4	6.9	6.9	6.5	6.7	J 6.0 S	5.3	3.9	3.4	3.3	I 3.6 S	2.9	3.2	3.2 S
25	3.5	3.4	3.1	J 3.5 SJ	4.3 Su	3.8 S	2.6 R	5.1 SJ	6.2 S	6.7	7.7	8.7	7.6	7.8	6.9	6.0	5.6	4.1	3.0	2.8	2.8	3.0	3.3	3.6
26	3.9	3.6	3.5	3.8	3.3	3.0	3.0	J 5.9 S	6.5	7.8	6.7	7.7	J 8.1 S	7.8 S	6.6	5.9	5.3	4.1	3.0	3.2	2.9	3.1	3.1	3.1
27	3.2	3.2	3.2	3.3	3.5	2.7	u 2.7 S	5.8 S	6.3	6.9	7.6 R	7.6	9.2	8.1	J 6.9 S	6.9	6.3	4.0	3.9	I 4.0 A	I 3.2 AJ	2.4 S	2.9	3.1
28	3.1	3.1	3.4 S	3.2	J 3.7 S	3.2 SJ	2.7 S	5.4 S	7.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	7.1	J 8.4 R	10.0	7.6	7.6	7.6	6.7	6.4	4.1	3.6	3.0	3.1	3.3	3.3	3.3
30	I 3.5 A	3.5	3.4	3.5	3.5	3.2	3.2	6.3 S	7.0	6.8	7.0	8.2	9.0	7.9	6.5	6.5	u 5.5 S	4.6	4.0 S	3.1	2.9	2.9	3.1	3.1
31																								
No.	28	28	27	27	27	27	27	27	27	29	29	28	28	29	29	29	29	28	28	28	28	28	29	29
Median	3.5	3.5	3.5	3.5	3.5	3.2	3.9	6.5	7.5	8.0	8.4	8.8	8.5	8.9	9.1	7.8	6.7	5.0	3.8	3.3	3.4	3.4	3.4	3.5
U. Q.	3.7	3.7	3.6	3.8	3.8	3.6	4.1	6.9	8.4	9.0	9.0	9.9	9.8	9.5	9.6	8.2	7.4	5.4	4.2	3.6	3.8	3.6	3.8	3.8
L. Q.	3.3	3.4	3.2	3.3	3.3	2.9	3.2	5.8	6.9	7.2	7.7	8.2	8.0	7.8	7.2	6.8	6.2	4.3	3.4	3.1	3.1	3.1	3.1	3.2
Q. R.	0.4	0.3	0.4	0.5	0.5	0.7	0.9	1.1	1.5	1.8	1.3	1.7	1.8	1.7	2.4	1.4	1.2	1.1	0.8	0.5	0.7	0.5	0.7	0.6

foF2

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

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

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

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L									
2									A	A	A	L	L	L	L									
3										L	L	L	L	L	L									
4										L	L	L	LH	L										
5										L	L	L	L	L	L	C								
6							C	C	C	L	L	L		L										
7										L	L	L	L	L										
8									L		L	L	L	L										
9										L		C	C	L										
10										L	L	L	L		L									
11												L	L	L	L									
12									L	L	L		L	L	L									
13							C	C	C	L	L		A	L	L	A								
14										L	L	L	L											
15										L		A	A	L	L									
16										L	L	"5.4L												
17										L	L		L		L									
18									C		L	L												
19										L		A		A	L									
20											L	"4.1L	L											
21											"4.4H			"3.8L	L									
22									L		L		L											
23													L											
24											L	L	L											
25											L	L	L	L	L									
26										L	L	L		L	L	L								
27										L	L	L	L											
28								L	L	C	C	C	C	C	C	C	C							
29								C	C			L	L	L	A									
30										L	L	L	L		"3.5L									
31																								
No.											1	2		1	1									
Median											"4.4	"4.8		"3.8	"3.5									

foF1

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

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

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

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

foE

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.5	E	S	1.8	2.1^{M}	S	S	S	3.0	T 4.1	T 3.8	4.2	3.9	3.7	3.3	2.8	2.3^{S}	S	2.5^{M}	T 3.1	2.1	2.3^{Y}	3.5	T 4.1
2	S	E	E	1.9	1.7	S	S	T 3.4	4.7	T 9.3	6.9	3.3	4.2	4.3	3.0	2.4^{q}	S	S	2.1	2.4	2.1	S	S	S
3	S	S	S	S	S	S	S	S	T 3.1	3.5	T 4.2	3.7	3.4	3.4	3.4	T 3.0	1.9^{q}	S	S	T 2.5	T 3.3	5.3^{M}	T 3.0	S
3	S	S	2.0	S	1.5	S	S	S	2.9	G$_T$	3.0^{q}	G$_T$	2.7^{q}	3.6	3.3	T 3.0	T 2.4^{S}	2.3	S	T 2.7^{Y}	T 3.5	S	2.3	2.5^{M}
5	S	S	2.1	S	2.5	3.0^{M}	S	S	T 3.0	3.3	3.4	3.3	3.0^{q}	3.4	G$_T$	C	T 3.6	T 3.4	3.2^{M}	2.2	3.4^{M}	S	S	S
6	S	S	C	C	C	C	C	C	C	3.1	3.3	2.7^{q}	G$_T$	G$_T$	3.3	3.6	S	S	2.5^{M}	T 2.4	T 2.4	4.3^{M}	3.4^{M}	2.5^{M}
7	S	2.3^{M}	S	E	S	S	S	S	3.1	2.7^{q}	3.0^{q}	2.9^{q}	2.6^{q}	T 3.3	T 4.0	G$_T$	S	C	C	C	C	T 5.1^{S}	5.9^{M}	T 4.9
8	4.1^{M}	3.8	S	2.4	2.2	S	S	S	2.8	4.7^{M}	3.5	4.3	T 3.6	3.1^{q}	4.0	T 3.6	T 2.8^{S}	T 2.7^{Y}	S	S	S	S	2.3^{M}	2.5^{M}
9	T 2.4	S	2.2	S	E	S	S	S	G$_T$	2.9^{q}	G$_T$	C	C	3.5	G$_T$	G$_T$	S	S	S	S	S	S	S	S
10	S	S	E	E	E	S	S	S	3.3	T 3.8	3.0^{q}	3.9	G$_T$	G$_T$	G$_T$	G$_T$	G$_T$	S	S	S	E	S	S	T 3.4
11	S	S	S	E	E	S	S	S	2.9	3.4	T 5.0	3.5	3.3	3.3	3.4	T 3.2	G$_T$	S	S	T 2.4	T 3.0	T 3.0	T 3.4	T 2.2
12	S	S	2.1	E	E	E	S	S	T 2.8	3.1	3.3	T 4.0	T 2.6^{q}	T 3.9	G$_T$	2.3^{q}	G$_T$	2.3	E	2.2	S	3.6	T 3.8	2.5
13	C	C	C	C	C	C	C	C	C	S	S	T 4.4	T 6.4	T 4.1	4.3	5.6^{M}	S	S	S	2.1^{Y}	S	S	S	S
14	S	S	S	E	E	S	S	G$_T$	S	S	3.4	T 3.8	3.2	3.3^{Y}	S	S	S	S	S	S	S	S	T 2.2	S
15	S	S	S	S	S	S	S	S	S	3.1	3.8^{M}	4.8	4.6	4.0	S	S	S	S	S	S	S	S	S	S
16	S	S	S	E	E	S	S	S	G$_T$	S	S	S	S	S	2.8	S	S	S	S	S	T 4.1	S	S	S
17	2.7^{M}	S	S	E	E	S	S	B	S	T 3.5	3.7	3.9	S	3.5	G$_T$	3.3	S	S	S	2.2	S	S	S	S
18	S	S	S	S	E	S	S	S	C	S	4.0	3.6	T 4.4	4.6	T 3.7	3.8	G$_T$	S	S	S	S	S	S	S
19	S	S	S	S	E	S	S	T 3.2	S	G$_T$	4.6	5.9^{M}	3.9	4.9	4.1	G$_T$	S	2.2	S	S	3.1	T 3.3	2.1	4.0
20	T 3.4	T 2.7	T 2.9^{Y}	E	T 3.2	S	B	S	2.7	2.9	3.4	3.3	3.1	3.2	3.1	2.6	3.7	S	S	S	S	S	2.4	2.3
21	S	T 2.8^{Y}	2.1	S	E	S	S	S	G$_T$	2.5^{q}	2.6^{q}	G$_T$	2.3^{S}	G$_T$	3.2	2.7	T 3.2^{Y}	T 3.8	3.7^{M}	T 3.0^{Y}	4.3^{M}	2.5	S	S
22	S	S	S	2.3^{M}	E	S	B	S	G$_T$	3.3	G$_T$	3.7	3.3	3.0	2.9	G$_T$	S	S	S	3.0^{M}	S	S	T 3.1	S
23	S	E	S	S	E	S	S	G$_T$	2.9	3.3	3.6	3.5	G$_T$	G$_T$	G$_T$	2.9	B	S	S	S	S	2.3	S	S
24	S	S	S	S	S	S	S	G$_T$	G$_T$	3.7	3.5	4.0	3.7	4.0	3.8	G$_T$	S	S	S	S	S	E	S	E
25	E	2.3	2.3	S	S	S	S	S	3.0	3.2	G$_T$	T 3.7	3.4	G$_T$	G$_T$	G$_T$	S	E	S	S	S	S	S	S
26	S	S	S	S	S	1.8	S	S	2.0	G$_T$	G$_T$	3.1	3.1	2.9	3.2	S	S	S	S	E	S	S	S	1.9
27	E	S	2.2	1.8	E	S	S	S	2.8	3.4	G$_T$	3.4	G$_T$	G$_T$	3.3	T 3.8	T 4.2	S	2.1	4.2^{M}	T 4.0	S	S	S
28	2.1	S	S	S	S	S	S	S	2.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	3.5	T 4.0^{S}	3.5	3.8	3.0	4.9^{M}	2.8	B	T 3.7	T 4.5	S	2.2	T 3.2	2.5	T 4.2
30	T 5.2	S	S	T 4.0	2.4	2.4	S	G$_T$	2.9	T 4.0	3.5	3.8	3.3	G$_T$	3.9^{M}	2.6	T 2.8	S	2.5^{M}	S	2.3	E	E	E
31																								
No.	9	8	10	14	20	4		6	22	25	27	27	26	28	27	24	13	8	9	14	14	12	14	14
Median	2.5	2.3	2.1	E	E	2.1		G$_T$	2.9	3.3	3.4	3.7	3.3	3.3	3.3	2.8	2.4	2.5	2.5	2.4	3.0	3.1	2.8	2.5
U. Q.	3.8	2.8	2.2	1.9	1.9	2.7		3.2	3.0	3.6	3.8	4.0	3.8	3.8	3.8	3.2	3.4	3.6	3.4	3.0	3.5	4.0	3.4	4.0
L. Q.	E	E	2.0	E	E	E		G$_T$	2.0	G$_T$	G$_T$	3.3	G$_T$	G$_T$	G$_T$	G$_T$	G$_T$	2.2	2.1	2.2	2.2	2.3	2.3	2.2
Q. R.			0.2						1.0			0.7						1.4	1.3	0.8	1.3	1.7	1.1	1.8

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 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	1.9		S	E	E	S	S	S	2.8	4.0	3.5	4.0	3.3	3.3	3.2	2.8	2.3	S	2.0	2.3	E	1.8	2.0	2.5
2	S			E	1.5	S	S	2.9	4.5	A	5.1	3.3	3.3	3.8	2.9	2.4^{q}	S	S	E	1.8	2.0	S	S	S
3	S	S	S	S	S	S	S	S	3.0	3.3	4.2	3.7	3.4	3.3	3.3	3.0	E 1.9^{s}	S	S	2.4	2.1	A	2.5	S
4	S	S	1.8	S	E	S	S	S	2.9		2.9^{q}		E 2.7^{R}	3.4	3.2	3.0	U 2.4^{s}	2.1	S	2.4	A	S	2.2	2.0
5	S	S	1.6	S	2.1	S	S	S	2.8	3.3	3.4	3.2	E 3.0^{s}	3.4		C	3.2	2.7	3.1	2.0	3.0	S	S	S
6	S	S	C	C	C	C	C	C	C	3.1	3.3	E 2.7^{R}			3.2	3.1	S	S	2.0	2.0	1.8	A	2.3	2.5
7	S	E	S		S	S	S	S	3.1	2.7^{q} U	2.6^{q} E	2.9^{A}	2.6^{q}	3.2	4.0		S	S	C	C	C	A	A	A
8	2.5	A	S	1.8	E 2.2^{s}	S	S	S	2.8	U 4.3^{s}	3.5	4.1	3.3	E 3.1^{R}	3.4	2.7	2.5	2.7	S	S	S	S	E	2.0
9	2.2	S	1.5	S		S	S	S		2.8^{q}		C	C	3.4			S	S	S	S	S	S	S	S
10	S	S				S	S	S	3.2	3.7	E 3.0^{s}	3.8						S	S	S		S	S	E
11	S	S	S			S	S	S	2.7	3.2	4.5	3.4	3.3	3.3	3.1	3.0		S	S	E	2.4	1.9	E	E
12	S	S	1.6				S	S	2.7	G	3.3	3.5	2.6^{q}	3.4		2.3^{q}		2.2		1.8	S	2.2	1.8	1.8
13	C	C	C	C	C	C	C	C	C	S	S	3.5	5.2	3.6	3.5	5.0	S	S	S	1.9	S	S	S	S
14	S	S	S			S	S		S	S	3.3	3.5	3.2	3.2	S	S	S	S	S	S	S	S	E	S
15	S	S	S	S	S	S	S	S	S	3.1	3.4	E 4.8^{s}	4.5	3.5	S	S	S	S	S	S	S	S	S	S
16	S	S	S			S	S	S		S	S	S	S	S	3.7	S	S	S	S	S	A	S	S	S
17	1.9	S	S			S	S	B	S	3.4	3.7	3.6	S	3.4		3.1	S	S	S	E	S	S	S	S
18	S	S	S	S		S	S	S	C	S	3.4	3.1	3.6	4.2	3.5	2.9		S	S	S	S	S	S	S
19	S	S	S	S		S	S	2.8	S		4.1	5.5	3.5	4.4	3.5		S	S	S	S	2.0	2.4	E	A
20	1.8	2.5	1.9		1.7	S	B	S	2.7	E 2.9^{s}	3.3	3.3	E 3.1^{R}	3.2	3.1	2.5	3.7	S	S	S	S	S	1.9	E
21	S	1.9	E	S		S	S	S		2.4^{q}	2.5^{q}		2.3^{q}		3.2	G	2.5	3.3	2.3	E	A	2.2	S	S
22	S	S	S	E		S	B	S		3.2		3.7	3.3	3.0	2.8		S	S	S	2.2	S	S	2.0	S
23	S		S	S		S	S		2.9	3.1	3.5	3.3				2.7	B	S	S	S	S	E	S	S
24	S	S	S	S	S	S	S			3.4	3.5	3.5	3.4	3.9	3.7		S	S	S	S	S		S	
25		1.8	2.0	S	S	S	S	S	2.9	3.2		3.6	3.3				S		S	S	S	S	S	S
26	S	S	S	S	S	E	S	S	2.0			3.1	E 3.1^{s}	G	3.2	S	S	S	S		S	S	S	E
27		S	E	1.6		S	S	S	2.7	3.2		3.4			3.1	3.0	3.1	S	2.0	A	A	S	S	S
28	2.0	S	S	S	S	S	S	S	2.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	3.0	4.0	3.5	3.3	2.7	4.9	2.5	B	1.9	3.0	S	E	2.1	1.9	2.6
30	A	S	S	2.7	1.8	1.9	S		2.6	3.2	3.2	3.5	3.3		3.2	2.1^{q}	2.6	S	E	S	E			
31																								
No.	7	5	8	6	6	2		2	17	22	22	24	22	21	20	17	9	6	8	13	13	10	13	12
Median	2.0	1.9	1.6	E	1.6	E		2.8	2.8	3.2	3.4	3.5	3.3	3.4	3.2	2.8	2.5	2.4	2.0	2.0	2.1	2.2	1.9	2.0

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

Nov. 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	E 1.70 S	1.10	E 1.60 S	1.40	1.20	E 1.50 SE	1.80 SE	2.50	1.80	2.10	1.90	2.00	2.00	2.20	2.05	1.70	E 2.00 SE	1.70 SE	1.90 S	E 1.65	1.50 SE	1.50 SE	1.50 SE	1.50
2	E 1.70 S	1.20	1.40	1.45	1.20	E 1.60 SE	1.70 SE	1.80	1.95	1.90	2.20	2.30	2.20	2.10	1.95	1.90	E 1.50 SE	1.70 SE	1.80 S	1.40	1.70 SE	1.70 SE	1.50 SE	1.50 S
3	E 1.80 SE	1.50 SE	2.00 SE	1.90	E 1.65 SE	1.50 SE	1.90 SE	2.60 S	1.80	2.20	2.15	2.70	2.95	2.30	1.90	1.95	E 1.70 SE	1.70 SE	1.70 SE	1.95	1.95 SE	1.70 SE	1.80 SE	1.50 S
4	E 1.80 SE	1.60 S	1.35	E 1.60 S	E	E 1.80 SE	1.80 SE	2.70	1.80	2.30	2.10	2.15	2.30	2.25	2.00	1.90	E 1.90 SE	1.80 SE	1.80 SE	1.50	E 1.70 SE	2.00 SE	1.70 SE	1.50 S
5	E 1.70 SE	1.50 SE	1.50 SE	1.20 S	1.10	E 1.70 SE	1.50 SE	2.50	E 1.90 S	2.00	2.00	2.00	2.10	2.35	2.00	I 1.95 C	2.10	E 1.75 SE	1.80 SE	1.70 SE	1.60 SE	1.70 SE	1.80 SE	1.50 S
6	E 1.50 SE	1.80 S	C	C	C	C	C	C	C	1.95	1.95	2.10	2.20	2.40	1.90	2.20	E 2.30 SE	1.50 SE	1.80 SE	1.80 SE	1.70 SE	1.95 SE	1.80 SE	1.75 S
7	E 1.85 SE	1.90 SE	1.70 S	1.20	E 1.50 SE	1.60 SE	2.50 SE	1.85 S	1.95	2.00	2.20	2.20	1.90	1.90	1.80	2.10	E 2.00 S	C	C	C	C	E 1.75 SE	1.90 SE	1.50 S
8	E 1.70 SE	1.80 SE	1.50 SE	1.50 S	1.05	E 1.85 SE	1.95 SE	2.20 S	E 1.95 S	2.00	2.10	2.20	1.80	2.30	2.10	1.80	E 1.90 SE	2.00 SE	E 1.70 SE	1.50 SE	1.80 SE	1.70 SE	1.50 SE	1.75 S
9	E 1.70 SE	1.95 S	1.10	E 1.75 S	1.25	E 1.70 SE	1.90 SE	E 2.80 S	2.10	2.05	2.40	C	C	2.80	2.45	1.95	E 2.30 SE	1.60 SE	1.50 SE	1.50 SE	1.50 SE	1.90 SE	1.70 SE	1.60 S
10	E 1.50 SE	1.50 S	1.30	1.20	1.30	E 1.95 SE	1.50 SE	1.95 S	1.80	2.25	2.10	2.60	2.20	2.10	1.95	2.00	E 1.70 SE	1.70 SE	1.80 SE	1.60 S	1.20 E	2.00 SE	1.50 SE	1.50 S
11	E 1.85 SE	1.80 SE	1.90 S	1.20	1.10	E 1.60 SE	1.70 SE	2.70 S	1.90	1.90	2.20	2.30	2.20	2.65	2.10	2.00	1.85	E 1.70 SE	1.60 S	E 1.60 SE	1.80 SE	1.50 SE	1.50 SE	1.80 S
12	E 1.50 SE	1.70 S	1.20	1.10	1.20	1.10	E 1.50 SE	2.30 S	1.80	2.05	2.00	2.20	2.00	1.95	2.00	2.00	1.60	E 1.70 SE	1.30 SE	1.65 S	E 1.50 SE	1.50 SE	1.50 SE	1.65 S
13	C	C	C	C	C	C	C	C	C	E 2.95 SE	3.20 SE	2.75 S	E 2.70 SE	2.90 SE	2.50 S	E 2.80 SE	2.50 SE	1.90 SE	2.60 S	E 1.50 SE	1.50 SE	1.50 SE	1.50 SE	1.85 S
14	E 1.50 SE	1.50 SE	1.55 S	1.50	1.55	E 1.70 SE	1.50 S	1.80	E 2.80 SE	2.80 SE	2.70 SE	2.80 S	2.80 S	2.40	E 2.90 SE	2.80 S	E 2.70 SE	2.40 S	E 1.50 SE	1.50 S	E 1.80 SE	1.50 SE	1.50 SE	1.80 S
15	E 1.50 SE	1.90 SE	1.50 SE	1.80 S	E 1.60 SE	1.80 SE	1.90 SE	2.70 S	E 2.80 SE	2.80 SE	2.95 SE	2.80 S	E 2.90 SE	2.60 SE	3.00 SE	2.70 S	E 2.20 SE	1.60 SE	1.80 SE	1.50 S	E 1.80 SE	1.95 SE	1.80 SE	1.80 S
16	E 1.50 SE	1.70 SE	1.50 S	1.30	1.20	E 1.60 SE	1.80 SE	2.20 S	E 2.50 SE	2.80 SE	2.90 SE	3.20 S	E 3.50 SE	3.50 S	2.10	E 3.00 SE	2.60 SE	2.10 SE	1.80 SE	1.90 S	E 1.45 SE	1.70 SE	1.65 SE	1.90 S
17	E 1.50 SE	1.75 SE	1.50 S	1.20	1.20	E 1.70 SE	2.10 S	2.00	E 2.90 SE	3.00 S	2.40	2.15	E 3.40 SE	2.90 S	2.35	E 2.85 SE	2.80 SE	2.40 SE	1.90 SE	1.90 S	E 1.90 SE	1.80 SE	1.80 SE	1.75 S
18	E 1.75 SE	2.10 SE	1.70 SE	2.00 S	E	E 1.70 SE	1.80 SE	2.70 S	C	E 2.90 SE	2.60 SE	2.90 S	1.95	E 2.70 SE	2.90 SE	2.65 S	2.15	E 1.75 SE	1.80 SE	2.30 S	E 1.80 SE	1.70 SE	1.90 SE	1.70 S
19	E 1.50 SE	1.50 SE	1.60 SE	1.50 S	1.40	E 1.90 SE	1.50 SE	2.00 S	E 2.60 S	2.00	E 3.00 SE	3.20 S	E 2.80 C	2.70 S	1.80	2.10	E 2.00 SE	1.50 SE	1.50 S	E 1.70 SE	1.80 SE	1.50 SE	1.40 SE	1.60 S
20	E 1.70 SE	1.80 S	1.35	1.50	1.10	E 1.50 S	1.40	E 2.60 S	1.90	2.20	2.25	2.35	2.10	2.30	2.25	1.90	2.60	E 1.70 SE	1.90 SE	1.80 S	E 1.50 SE	1.50 SE	1.80 SE	1.50 S
21	E 1.70 SE	1.80 SE	1.50 SE	1.70 S	1.30	E 1.60 SE	1.40 SE	1.95 S	2.10	2.00	2.10	2.10	1.95	1.95	2.40	E 1.95 S	E 1.50 SE	1.95 SE	1.50 SE	1.50 S	E 1.70 SE	1.70 SE	1.50 SE	1.50 S
22	E 1.50 SE	1.60 SE	1.70 S	1.40	1.40	E 1.50 S	1.40	E 1.90 S	1.90	1.90	2.10	2.50	2.60	2.00	2.20	1.90	E 2.00 SE	2.10 SE	E 1.70 SE	1.40 S	E 1.50 SE	1.50 SE	1.70 SE	1.70 S
23	E 1.50 S	1.20	E 1.50 SE	1.70 S	1.20	E 1.90 SE	1.50 SE	1.80 S	1.90	2.00	2.25	2.20	2.10	2.40	2.20	1.80	2.00	E 2.60 SE	1.80 SE	1.50 S	E 1.95 SE	1.70 SE	1.50 SE	1.50 S
24	E 1.70 SE	1.70 SE	1.50 SE	1.50 S	E 2.00 SE	1.50 SE	1.70 S	1.70	1.80	1.90	2.25	2.20	2.30	2.20	1.90	1.90	E 1.95 SE	1.90 SE	1.50 SE	1.80 S	E 1.95 S	1.40 E	1.50 S	1.30
25	1.20 E	1.75 SE	1.70 SE	1.85 S	E 1.50 SE	1.70 SE	1.80 SE	2.10 S	2.10	2.00	1.95	2.30	2.55	2.35	2.40	2.25	E 2.70 SE	1.70 SE	E 1.70 SE	1.55 S	E 1.75 SE	2.00 SE	1.80 SE	2.00 S
26	E 1.70 SE	1.60 SE	1.70 SE	1.90 S	E 1.60 SE	1.55 SE	1.80 SE	2.80 S	1.90	2.10	2.30	2.20	2.40	2.30	E 2.70 SE	2.60 S	E 2.60 SE	1.70 SE	2.20 S	1.50	E 1.70 SE	1.75 SE	1.70 SE	1.70 S
27	1.40 E	1.60 S	1.35	1.10	1.05	E 1.70 SE	1.50 SE	2.65 S	2.20	2.25	2.25	2.20	2.10	2.25	2.00	1.90	E 2.00 SE	1.70 SE	1.85 SE	E 1.70 SE	1.80 SE	1.80 SE	1.80 SE	1.70 S
28	E 1.90 SE	1.70 SE	1.90 SE	1.85 S	E 1.70 SE	2.40 SE	1.70 SE	1.95 S	E 2.05 S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	2.10	1.80	2.20	2.20	2.25	2.00	1.80	2.10	E 1.80 SE	1.70 SE	1.80 S	E 1.70 SE	1.50 SE	1.50 SE	1.80 S
30	E 1.80 SE	1.50 SE	1.70 S	1.40	1.20	E 1.50 S	1.50 SE	1.80	1.80	2.00	2.25	2.15	2.15	2.20	1.90	1.90	1.70	E 1.70 SE	1.70 SE	1.75 S	E 1.90 S	1.20 E	1.40	1.40
31																								
No.	28	28	27	27	20	27	27	27	19	23	23	22	22	23	24	21	29	28	28	28	28	29	29	29
Median	E 1.70	E 1.70	E 1.50	E 1.50	1.20	E 1.70	E 1.70	E 2.20	1.90	2.00	2.15	2.20	2.20	2.25	2.00	1.90	E 2.00	E 1.70	E 1.80	E 1.60	E 1.70	E 1.70	E 1.65	E 1.65

f-min

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

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.95	2.75	2.90	3.05	3.10	3.05	3.25	I 3.60 S	3.60	3.40	3.25	J 3.50 R	3.20	J 3.10 S	3.20	U 3.45 R	3.50	U 3.35 S	3.45	3.60	2.85	2.60	2.80	2.85
2	2.90	2.95	2.80	2.85	J 3.45 S	J 2.70 R	3.20	3.45	3.45	I 3.40 A	3.35	3.35	3.15	3.20	3.30	J 3.45 R	J 3.25 S	I 3.30 S	3.30	2.75	2.80	J 3.00 S	2.80	2.80
3	3.05	U 2.95 S	U 3.05 S	J 3.15 S	3.00	2.90	U 3.15 S	U 3.40 S	U 3.25 S	3.35	U 3.45 S	3.40	3.30	3.30	3.60	3.40	3.35	U 3.45 S	3.25	2.65	3.10	I 3.00 A	3.05	2.90
4	3.05	3.10	2.85	U 3.20 S	3.15	J 2.95 S	3.30	I 3.50 S	3.60	3.50	3.55	3.45	3.05	3.25 S	I 3.40 S	3.40 S	3.45	3.30	3.30	2.95	I 3.00 A	J 3.10 S	2.80	2.95
5	3.10 S	3.10	2.90 U	3.05 S	3.15 S	I 3.05 S	I 3.15 S	3.65	3.45	3.40	3.45	2.90	3.40 S	3.25	3.50	I 3.50 C	3.40	3.20	3.40	3.05	2.95	J 2.85 S	U 2.95 S	J 3.05 S
6	2.75	2.75 S	C	C	C	C	C	C	C	I 3.30 R	J 3.30 R	3.20	3.35	3.35	J 3.40 R	J 3.45 R	3.50	3.25	3.35	3.25	2.70	I 2.75 A	2.95	3.15
7	2.90	U 3.05 S	2.70	2.90	2.95	2.95 S	U 3.05 S	J 3.40 S	3.55	U 3.50 S	3.50	3.35	3.20	J 3.25 R	J 3.25 S	3.30	3.40	C	C	C	C	A	I 2.75 A	I 2.80 A
8	2.55 S	I 2.65 A	U 2.60 S	2.80 S	2.70 S	I 2.80 S	J 2.80 S	I 3.40 S	J 3.30 S	J 3.15 S	3.30	3.25	J 3.15 S	J 3.15 R	J 3.20 R	3.35	J 3.45 R	3.15	3.00	3.40	3.15	3.05	2.75	2.75
9	2.80	2.95	2.90	3.05	3.15	3.15	3.20	3.50	J 3.35 R	J 3.20 R	J 3.55 R	C	C	3.25 S	3.30	3.40	3.55	3.25	I 3.20 S	3.20	3.20	2.90	2.90 S	2.80
10	2.85	3.05	3.10	2.95	3.30 S	2.95	3.40	3.50 S	3.55 R J	3.40 R	3.35	3.25	3.20	U 3.25 R I	3.35 R J	J 3.75 R	3.50	3.25	3.20	3.30	2.90	3.10	2.95	2.95
11	3.05	2.95	3.05	2.85	2.85	2.85	3.40	I 3.50 S	U 3.50 R	3.45	3.50 R	3.50	3.25	3.30	U 3.45 S	3.35	3.60	3.40	3.35	3.05	J 2.95 S	3.00	2.80	2.75
12	2.95	2.90	2.85	2.80	3.30 S	3.15	3.15	U 3.40 S I	3.40 S	J 3.40 R	3.45	3.25	3.40 R	J 3.40 S	3.30	3.45	J 3.55 R	3.50	3.00	3.00	3.15	2.80	2.85	2.90
13	C	C	C	C	C	C	C	C	C	3.15	3.25	3.30	3.30 R	I 3.40 S	J 3.40 S I	3.55 S	J 3.60 S	3.35	3.20	3.45	2.80	2.90	J 3.00 S	2.95
14	3.05	3.00	2.90	2.90	3.25	3.00	3.25	3.55	J 3.45 R I	3.60 R	3.40	3.35	J 3.25 R I	3.35 R	3.40	3.40	I 3.60 S	I 3.50 S	3.15	2.95	3.00	2.85	J 3.10 S	J 3.20
15	2.90	2.85 S	3.05 S	3.05	2.80	U 2.95 S	3.15	J 3.50 S	3.85	3.25 S	3.30	U 3.25 S	I 3.30 R I	3.30 S	3.35	J 3.40 R	3.50	3.45	3.05	3.05	2.95	2.95	3.10	U 3.15 S
16	2.90	2.95	2.95	3.15	3.05	J 2.95 S	3.30	U 3.65 S	R	J 3.40 R	J 3.45 R	3.35	3.30 S J	3.45 S J	3.45 S I	3.60 S	3.45	3.40	3.60	3.25 S I	2.75 A	2.95	3.10	2.85
17	U 2.90 S	2.80	2.85	2.95	J 2.95 S J	2.95 S	3.10	3.50	I 3.55 S	3.30	3.25	J 3.30 U	3.35 S	3.35	3.20	3.55	3.45 S	3.20 S	3.35	3.05	3.35	3.25	3.10	2.75
18	2.75	2.75 S	2.70 S	3.15	3.50	3.15	3.05	3.30 S I	3.40 C I	3.25 S	3.30	I 3.25 S I	3.20 R	3.40	3.50	3.45	3.50 R	3.40	U 2.80 S	2.60	2.75	I 3.10 S	2.70	2.70
19	2.85	3.40	U 2.85 S	3.05	2.80	2.90 S	3.15	3.40 S	3.35	3.50	3.45	J 3.25 S J	3.15 R	J 3.25 R	3.50	3.50	3.25	3.30	3.20	3.15	3.00	3.15	2.75	I 2.80 A
20	2.70	3.25	3.20	3.05	2.90	J 2.95 S	3.05	U 3.45 S	3.70	3.55	3.75	J 3.65 R	J 3.50 R	3.35 R J	3.40 R	3.65	U 3.65 S	3.50	3.10	3.25	3.30	3.10	2.75	2.75
21	2.75	2.75	2.80	3.15	3.10	3.10	3.20	I 3.50 S J	3.75 R	3.55	3.35	3.35 R	3.45	3.40	J 3.40 S	3.60 S	3.45	3.65	U 3.40 R	3.10	I 3.00 A	2.95	2.75	2.95
22	2.75	3.05	3.05	3.05	3.00	3.10	3.30 S	3.50	3.45	U 3.50 S	3.40	3.55	3.45	3.40	3.70	3.50	J 3.55 R	3.30	3.25	3.25	3.25	2.95	2.80	3.00
23	3.05	3.25	2.95	2.80 S	3.10	2.95	3.05	I 3.50 S J	3.35	3.45	3.40	3.50	3.55	J 3.35 R	3.55	3.60 R	3.45	3.25	3.30 S	2.75	2.90	2.90	3.10	3.05
24	3.00	3.00	3.10	3.20	3.25	3.05	2.95	I 3.40 S J	3.55 S	3.40	3.45	3.60	3.50	3.40	3.60	J 3.65 S	3.40	3.35	3.05	3.20	I 3.20 S	3.10	2.85	2.90 S
25	2.90	3.05	2.90	J 2.90 S J	3.20 S U	3.40 S	3.05 R	3.50 S J	3.55 S	3.10	3.35	3.45	3.40	3.55	3.45	3.50	3.40	3.45	3.30	3.20	3.10	2.90	2.80	3.10
26	3.05	3.05	2.90	3.30	3.05	3.05	3.05	J 3.20 S	3.40	3.20	3.05	3.25	J 3.65 S	3.45 S	3.60	3.40	3.40	3.15	3.05	3.10	3.05	2.75	2.75	2.95
27	2.80	2.65	2.90	2.90	3.20	3.20	U 3.05 S	3.35 S	3.45	3.55	3.35 R	3.25	3.15	3.30	J 3.30 S	3.45	3.50	3.05	3.10	I 3.30 A	I 3.30 A	J 3.05 S	2.70	2.60
28	2.75	2.95	2.95 S	3.00	J 3.20 S	3.15	S J 3.00 S	3.20 S	3.50	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	3.40	J 3.30 R	3.40	3.40	3.30	3.40	3.60	3.60	3.40	3.20	3.15	2.95	3.05	2.70	2.70
30	I 3.10 A	2.85	2.95	3.00	3.10	3.10	3.15	3.50 S	3.60	3.55	3.40	3.30	3.45	3.70	3.50	3.55	U 3.40 S	3.35	3.50 S	3.20	3.20	3.00	2.75	2.60
31																								
No.	28	28	27	27	27	27	27	27	26	29	29	28	28	29	29	29	29	28	28	28	28	28	29	29
Median	2.90	2.95	2.90	3.05	3.10	3.00	3.15	3.50	3.50	3.40	3.40	3.35	3.30	3.35	3.40	3.45	3.45	3.35	3.20	3.15	3.00	3.00	2.80	2.90

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

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

Nov. 1961 | M(3000)F1 | 135° E Mean Time (G.M.T. + 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L									
2									A	A	A	L	L	L	L									
3										L	L	L	L	L	L									
4										L	L	L	LH	L										
5										L	L	L	L	L	L	C								
6							C	C	C	L	L	L		L										
7										L	L	L	L	L										
8									L		L	L	L	L										
9										L		C	C	L										
10										L	L	L	L		L									
11												L	L	L	L									
12									L	L	L		L	L	L									
13							C	C	C	L	L		A	L	L	A								
14										L	L	L	L											
15										L		A	A	L	L									
16										L	L	"3.70"												
17										L	L		L		L									
18									C		L	L												
19										L		A		A	L									
20											L	"4.10"	L											
21											"3.85"			"3.90"	L									
22									L		L		L											
23													L											
24											L	L	L											
25											L	L	L	L	L									
26										L	L	L		L	L	L								
27										L	L	L	L											
28								L	L	C	C	C	C	C	C	C	C							
29								C	C			L	L	L	A									
30										L	L	L	L		"4.25"									
31																								
No.											1	2		1	1									
Median											"3.85	"3.90		"3.90	"4.25									

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

M(3000)F1

IONOSPHERIC DATA

Nov. 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											≥50	≥35	≥55	≥50	≥45									
2									≥50[A]	A	≥40	≥40	≥50	≥55	≥50									
3										≥45	≥45	≥45	≥50	≥50	≥45									
4										≥45	≥40	≥40	≥60	≥50										
5										≥45	≥45	≥30	≥50	≥50	≥30	C								
6							C	C	C	≥50	≥45	≥50		≥40										
7										≥45	≥50	≥40	≥30	≥50										
8									≥40		≥45	≥40	≥50	≥55										
9										≥40		C	C	≥50										
10										≥45	≥30	≥50	≥45		≥45									
11												≥40	≥40	≥50	≥45									
12									≥15	≥20	≥40		≥50	≥50	≥50									
13							C	C	C	≥50	≥25		≥45	≥45	≥50	≥35								
14										≥40	≥30	≥50	≥50											
15										≥30		≥30	≥50	≥45	≥40									
16										≥30	≥30	≥60												
17										≥30	≥35		≥45		≥50									
18									C		≥50	≥50												
19										≥30		≥55		≥40	≥10									
20											≥40	≥40	≥40											
21											≥55			≥50	≥40									
22									≥10		≥40		≥05											
23													≥25											
24											≥40	≥25	≥45											
25											≥55	≥45	≥45	≥45	≥45									
26										≥50	≥35	≥50		≥50	≥25	≥25								
27										≥45	≥45	≥50	≥50											
28								≥50	≥35	C	C	C	C	C	C	C	C							
29								C	C			≥50	≥50	≥55	≥50[A]									
30										≥25	≥35	≥40	≥55		≥25									
31																								
No.								1	5	17	23	22	22	18	16	2								
Median								≥50	≥35	≥45	≥40	≥40	≥50	≥50	≥45	≥30								

h'F2

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

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

Nov. 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	2.95	2.90	2.60	2.50	2.50	2.50	2.30	2.05	2.10	2.40	2.05	2.40	2.40	2.05	2.30	2.40	2.05	2.05	2.05	2.45	2.90	3.15	3.05	3.50^{A}
2	2.95	2.60	2.60	2.60	2.25	3.05	2.45	2.10	I 2.35^{A}	I 2.45^{A}	I 2.40^{A}	2.10	2.25	E 2.50^{A}	2.05	2.30	2.05	2.25	2.05	2.55	3.00	2.55	2.90	2.90
3	2.60	2.45	E 2.95^{S}	2.40	2.55	2.95	2.45	2.15	2.10	2.10	2.45	2.05	2.10	2.25	2.10	2.15	2.15	2.05	2.05	E 3.00^{A}	2.60	I 3.00^{A}	3.10	2.95
4	2.65	2.55	2.60	2.45	2.40	2.85	2.15	2.05	2.15	2.10	2.05	2.00	1.90^{H}	2.45	2.45	2.40	2.05	2.00	2.05	E 3.00^{A}	I 2.90^{A}	2.55	3.05	2.60
5	2.55	2.50	2.85	2.60	2.55	I 2.60^{S}	2.45	2.15	2.10	2.10	2.10	1.95	1.85	2.10	2.25	I 2.10^{C}	2.30	2.25	2.25	2.40	E 3.00^{A}	2.60	2.55	2.25
6	2.50	3.20	C	C	C	C	C	C	C	2.00	2.05	2.00	2.25	2.00	2.40	2.10	2.10	2.00	2.05	2.30	3.00^{A}	I 3.20^{A}	E 3.50^{A}	2.50^{A}
7	2.60	2.55	2.90	2.55	2.60	2.55	E 2.50^{S}	2.25	2.10	2.20	2.00	1.90	2.00	2.05	2.45	2.25	2.10	C	C	C	C	A	A	A
8	E 3.50^{A}	A	3.15	3.35	E 3.05^{S}	E 3.00^{S}	2.55	2.10	2.10	E 2.50^{A}	2.45	2.25	2.10	2.25	2.40	2.15	2.05	2.25	2.50	2.45	2.40	2.45	3.00	3.00
9	3.10	2.60	2.50^{A}	2.50	2.30	2.40	2.25	2.05	2.30	2.10	2.00	C	C	2.10	2.25	2.20	2.05	2.05	2.45	2.45	2.20	2.75	2.95	2.95
10	3.00	2.50	2.45	2.55	2.10	3.05	2.40	2.05	2.30	2.20	2.00	2.10	2.00	2.30	2.25	2.05	2.05	2.00	2.25	2.10	2.60	2.65	2.70	2.60
11	2.95	2.95	2.55	2.50	2.60	2.95	2.30	2.05	2.10	2.20	2.30	2.00	1.95	2.25	2.40	2.15	2.05	2.05	2.10	2.50	2.75	3.20	2.55	3.05
12	2.80	2.95	3.00	2.60	2.30	2.40	2.05	2.00	2.00	1.90	2.05	2.45	2.00	2.20	2.05	2.05	2.05	2.00	2.15	2.50	2.45	3.45	3.00	2.60
13	C	C	C	C	C	C	C	C	C	2.25	2.15	2.30	I 2.40^{A}	2.05	2.40	I 2.45^{A}	2.05	2.05	E 2.60^{S}	2.05	3.00	2.95	2.60	2.55
14	2.50	2.75	2.55	2.55	2.40	2.50	2.30	2.05	2.30	2.00	2.00	2.05	2.05	2.10	2.10	2.20	2.05	2.10	2.45	2.45	2.55	2.75	2.45	2.30
15	3.00	3.00	2.75	2.60	2.90	2.90	2.50	2.10	2.05	2.00	2.40	I 2.05^{A}	I 2.40^{A}	2.10	2.05	2.05	2.15	2.00	2.45	2.50	2.65	2.55	2.55	2.50
16	2.60	2.95	2.55	2.45	2.30	2.60	2.10	2.05	2.25	2.10	2.00	2.00	E 2.50^{S}	2.45	2.40	2.05	2.00	2.00	2.00	2.80	I 3.10^{A}	2.75	2.55	3.00
17	3.00	3.05	3.00	2.55	2.55	2.45	2.50	2.10	2.10	2.10	2.10	2.35	2.15	2.30	2.20	2.45	2.10	2.05	2.30	2.70	2.50	2.40	2.75	3.10
18	3.30	3.55	3.50	2.60	1.80	2.60	2.60	2.30	I 2.25^{C}	2.35	2.40	2.05	2.40	E 2.50^{A}	2.30	2.20	2.10	2.05	F 3.50^{S}	E 3.55^{S}	3.05	2.60	2.45	3.10
19	3.00	2.20	2.60	2.50	2.50	2.60	2.20	2.25	2.25	2.30	2.40	I 2.30^{A}	2.40	I 2.40^{A}	2.30	2.10	2.05	2.00	2.10	2.45	2.95	2.80	2.70	I 3.20^{A}
20	3.40	2.50	2.45	2.25	3.10	2.95	2.10	2.10	2.10	2.10	2.05	1.80	2.05	2.30	2.30	2.10	2.05	2.00	2.45	2.40	2.10	2.40	E 3.10^{A}	3.45
21	3.10	3.20	3.00	2.55	2.50	2.55	2.40	2.30	2.05	2.00	1.70^{H}	2.10	2.30	2.10	2.30	2.10	2.05	E 2.40^{A}	2.30^{A}	2.40	I 2.80^{A}	3.10	3.00	2.90
22	2.55	2.55	2.50	2.60	2.55	2.60	2.10	2.10	2.05	2.20	2.05	2.40	2.40	2.10	2.05	2.00	2.05	2.20	2.30	2.40^{A}	2.30	2.50	3.20	2.60
23	2.50	2.15	2.80	3.05	2.40	2.50	2.20	2.10	2.10	2.10	2.05	2.10	2.00	2.20^{H}	2.05	2.10	2.05	E 2.40^{S}	2.50	2.60	E 2.90^{S}	2.60	2.55	2.45
24	2.80	2.60	2.55	2.55	2.40	2.55	2.60	2.10	2.00	2.10	2.45	2.20	2.15	2.30	2.40	2.10	2.10	2.45	2.30	2.55	2.15	2.50	2.90	2.90
25	2.80	2.60	3.00^{A}	2.75	2.30	2.00	2.55	2.00	2.10	2.30	2.30	2.30	2.05	2.05	2.00	2.10	2.05	2.00	2.20	2.40	2.60	3.00	3.05	2.60
26	2.55	2.55	3.05	2.55	2.55	2.60	2.55	2.25	2.30	2.10	2.05	2.25	2.50	2.00	2.15	2.05	2.05	2.05	E 2.55^{S}	2.35	2.75	3.00	2.70	3.00
27	2.80	2.95	2.90	2.95	2.35	2.45	2.55	2.05	2.05	2.25	2.00	2.10	2.30	2.30	2.20	2.20	2.35	2.05	2.45	I 2.15^{A}	I 2.40^{A}	E 2.95^{S}	3.45	3.05
28	3.05	2.95	2.75	2.55	2.45	E 2.60^{S}	2.95	2.10	2.25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	2.30	2.50	2.50	2.05	2.10	I 2.30^{A}	2.25	2.00	2.05	E 2.80^{A}	2.55	2.55	2.90	3.40	E 3.90^{A}
30	I 2.75^{A}	2.75	2.90	E 3.00^{A}	2.50	2.50	2.45	2.10	2.20	2.10	2.15	2.10	2.00	2.30	2.00	2.15	2.00	2.05	2.20	2.30	2.60	2.40	3.00	3.25
31																								
No.	27	27	26	26	26	26	26	27	27	28	29	28	27	27	29	29	29	26	24	25	26	27	26	27
Median	2.80	2.60	2.75	2.55	2.50	E 2.60	2.40	2.10	2.10	2.10	2.05	2.10	2.10	2.20	2.25	2.15	2.05	2.05	2.25	2.45	2.60	2.75	2.90	2.90

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

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

Nov. 1961

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f^z			f	f				C	l_z	l_z	l_z	C	l	C	l	l		f	f^z	f	f^z	f^z	f^3
2				f	f			C	Cz	Cz	Cz	l	l_z	l	l	l			f	f	f			
3									l	Cz	l_z	l	l	C	C	l	l			f^z	f_z	f^3	f^3	
4			f^z		f				h		l		l	C	l	l_z	l	l		f^3	f^4		f^z	f
5			f^z		f^z	f^z			l_z	$h\,l^z$	$h\,l_z$	l_z	l	h			l_z	l_z	f^z	f	f^3			
6										l_z	l	l			h	l_z			f	f	f^z	f^3	f^z	f
7		f							l_z	l	l	l	l	l_z	l_z							f^3	f^z	f^3
8	f^3	f^z		f	f^z				l_z	l_z	l_z	l_z	l	l	l_z	l	l	l					f	f
9	f^z		f^z							l				h										
10									l_z	l_z	l	l_z												f_z
11									l	l_z	l_z	l	l	l	l	l_z				f^z	f_z	f^z	f^z	f^z	f^z
12			f						l	C	l_z	l_z	l	l		l		l				f^3	f^z	f^z
13												l_z	l_z	l_z	l_z	l				f				
14											l	l	l	l									f	
15										l	l	l	l	l_z										
16															l						f^z			
17	f									h	h	h		h		l				f				
18											C	l	l_z	l_z	$h\,l$	l								
19								C			l	l_z	l	l_z	C^z			l			f	f^z	f	f^z
20	f^z	f	f^z		f^z				h	h	l	l	l	l_z	l	l	l_z						f	f^z
21		f^z	f							l	l		l		h	h	l	f^3	f^z	f^z	f^3	$f\,f^z$		
22				f						h		h	h	l	l					f			f^z	
23									C	C	C^z	C				l						f^z		
24										l^z	h	h	h	h	$C\,z\,l$									
25		f^z	f^z						l_z	l		l	h											
26						f			h			h	C	l	h									f
27			f	f					C	$l\,h$		C			h	l	l		f	f^4	f^z			
28	f								h															
29										C	l	l_z	l	l	l_z	h		f^z	f^z		f	f	f^z	f^z
30	f^z			f^z	f	f			l	l	l	l	l		l	l	l		f		f			
31																								
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

Nov. 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	335	355	350	300	300	305	290	I250S	245	250	280	J250R	295	J300S	280	u250R	250	u250S	250	240	345	395	350	380
2	350	325	345	330	J255S	J350R	285	250	250	I260A	250	255	300	295	260	J250R	J255S	I270S	250	350	350	J310S	355	350
3	310	u305S	u315S	J285S	305	335	u285S	u255S	265	260	u250S	255	285	270	250	250	260	u255S	250	350	305	I330A	>20	350
4	330	305	345	u290S	290	J305S	255	I250S	250	255	250	250	310	280	I250S	250S	250	255	250	305	I330A	J305S	345	310
5	305S	305	335	u305S	295	I300S	I285S	245	250	255	250	330	265S	290	255	I250C	255	285	260	300	335	J350S	u305S	J300S
6	335	395S	C	C	C	C	C	C	C	I280R	J280R	300	255	275	J255R	J250R	250	260	255	290	375	I380A	350	285
7	320	u310S	355	320	330	335	u300S	J250S	250	u250S	260	255	295	J290R	J255S	255	255	C	C	C	C	A	I370A	I370A
8	395	I400A	u395S	355S	350	I360S	J345S	I255S	J255S	J300S	260	265	J295	SJ300R	J295R	255	J250R	260	320	260	285	300	380	365
9	390	310	330	310	295	295	280	250	J260R	J250R	J250R	C	C	295S	255	250	250	250	I300S	280	285	310	320S	345
10	350	320	300	310	280S	305	255	250S	250R	J255R	255	285	295	u255R	I250R	J245R	250	265	280	250	340	300	330	330
11	330	325	305	350	345	345	255	I250S	u250R	250	255R	250	290	280	u255S	255	250	250	255	305	J310S	320	350	360
12	345	345	355	350	290S	285	275	u250S	I250S	J255R	255	285	255RJ	255S	280	255	J250R	250	305	305	300	380	350	345
13	C	C	C	C	C	C	C	C	C	305	255	250	260RI	265SJ	255SI	250S	J250S	250	295	250	350	350	J320S	325
14	305	320	330	330	290	310	285	250	J255RI	250R	250	255	J260RI	250R	255	255	I250SI	I250S	295	305	305	345	J300S	290
15	350	355S	310S	310	345	u330S	300	J250S	240	260S	280	u255S	I270RI	270S	280	J250R	250	250	300	300	310	310	300	u300S
16	330	330	315	300	305	J315S	265	u235S	R	J250RJ	250R	285	285SJ	255SJ	250S	250S	250	250	225	260S	I340A	305	300	335
17	u345S	360	355	330	J310S	J295S	290	250	I250S	255	255	J255S	255S	255	280	245	245S	260S	255	305	275	300	295	370
18	370	390S	375S	305	200	300	305	295	I260C	280S	260	I295S	I300R	295	250	250	250R	250	u355S	395	365	I310S	350	355
19	355	255	u330S	300	330	315	295S	255S	255	250	255	J300S	J290R	285R	250	250	275	255	290	255	305	300	350	I360A
20	350	280	295	300	350	J305S	295	u250S	235	245	265	J250R	J255R	265RJ	250R	250	u240S	250	300	265	280	280	340	370
21	355	355	345	290	305	300	290	I260SJ	245R	250	290	250R	250	260	J255S	250S	250	235	u245R	300	I300A	300	350	330
22	330	305	300	305	305	305	275S	250	250	u250S	260	250	245	255	225	250	J245R	255	280	250	275	300	355	305
23	300	280	310	345S	290	305	295	I250S	J255S	255	250	245	250	J280R	250	250R	250	250	275S	345	310	305	305	300
24	305	300	300	300	280	305	305	I260S	J245S	260	250	245	250	255	250	J235S	250	280	285	295	I270S	295	345	320S
25	315	300	305	J305S	J275Su	245S	285R	250S	J255S	295	255	245	250	245	255	245	250	230	255	275	310	325	360	305
26	325	315	360	285	300	305	305	J280S	250	270	275	275	J245S	250S	230	250	250	270	255	290	310	350	350	280
27	350	330	335	340	275	270	u300S	265S	250	255	250R	270	265	255	J265S	260	230	300	305	I270A	I270A	J300S	375	360
28	355	350	305S	305S	J275S	295S	SJ315S	250S	250	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	255	J275R	260	255	285	250	235	230	250	280	295	305	300	360	I345A
30	I315A	345	320	315	300	295	290	255S	250	250	255	255	290	245	250	250	u235S	255	250	285	290	300	355	385
31																								
No.	28	28	27	27	27	27	27	27	26	29	29	28	28	29	29	29	29	28	28	28	28	28	29	29
Median	335	320	330	305	300	305	290	250	250	255	255	255	265	270	255	250	250	250	280	290	310	310	350	345

hpF2

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	65	105	65	95	55	95	65	I 50^{S}	50	55	65	J 50^{R}	60	J 55^{S}	70	U 50^{R}	50	U 95^{S}	95	55	55	100	95	110
2	95	75	100	70	J 90^{S} J 95^{R}	65	55		50	I 50^{A}	50	50	90	60	45	J 50^{R}	J 55^{S}	I 55^{S}	60	100	105	J 90^{S}	95	100
3	85	U 90^{S} U 80^{S}	J 65^{S}		85	70	U 65^{S}	U 50^{S}	U 85^{S}	85	U 55^{S}	50	60	60	50	55	50	U 50^{S}	95	105	90	I 100^{A}	75	95
4	70	100	100	U 55^{S}	60	J 90^{S}	50^{S}	I 40^{S}	50	50	50	50	85	65^{S}	I 50^{S}	50^{S}	50	55	100	95	I 90^{A}	J 55^{S}	100	85
5	85^{S}	85	70	U 80^{S}	60^{S}	I 90^{S}	I 95^{S}	20	50	50	50	65	40^{S}	85	45	I 60^{C}	50	70	60	95	70	J 70^{S}	U 95^{S}	J 75^{S}
6	110	55^{S}	C	C	C	C	C	C	C	I 45^{R} J 30^{R}	45		60	55	J 55^{R}	J 55^{R}	45	90	90	60	75	I 65^{A}	60	65
7	85	U 75^{S}	100	85	70	70^{S}	U 95^{S}	J 50^{S}	45	U 50^{S}	50	55	50	J 35^{R}	J 90^{S}	55	45	C	C	C	C	A	I 85^{A}	I 90^{A}
8	100^{S}	I 95^{A}	U 100^{S}	90^{S}	145^{S}	I 105^{S}	J 100^{S}	I 60^{S}	J 50^{S}	J 50^{S}	85	65	J 55^{S}	J 55^{R}	J 45^{R}	60	J 50^{R}	90	75	40	70	95	75	85
9	60	85	75	95	95	55	70	50	J 50^{R}	J 60^{R}	J 50^{R}	C	C	35^{S}	50	50	40	60	I 75^{S}	75	70	90	75^{S}	100
10	95	85	95	85	70^{S}	90	60	50^{S}	45^{R}	J 50^{R}	75	60	60	U 60^{R}	I 70^{R}	J 20^{R}	45	85	70	65	65	90	70	70
11	65	70	85	95	100	100	50	I 50^{S}	U 60^{R}	50	45^{R}	45	55	65	U 50^{S}	80	40	50	90	90	J 90^{S}	80	90	90
12	55	60	90	95	65^{S}	70	85	U 70^{S}	I 50^{S}	J 50^{R}	45	60	50^{R}	J 50^{S}	65	45	J 40^{R}	50	140	95	95	65	90	55
13	C	C	C	C	C	C	C	C	C	50	60	145	65^{R}	I 55^{S}	J 50^{S}	I 45^{S}	J 40^{S}	55	55	95	65	95	75^{S}	75
14	90	75	115	75	60	90	70	50	J 50^{R}	I 45^{R}	60	60	J 55^{R}	I 85^{R}	55	50	I 35^{S}	I 50^{S}	100	105	90	100	J 95^{S}	105
15	60	90^{S}	135^{S}	85	100	U 115^{S}	55	J 55^{S}	15	95^{S}	65	U 90^{S}	I 70^{R}	I 60^{S}	50	J 50^{R}	50	95	95	95	95	85	80	U 65^{S}
16	75	75	90	95	100	J 85^{S}	85	U 20^{S}	R	J 50^{R} J 45^{R}		20	60^{S}	J 50^{S}	J 50^{S}	I 50^{S}	50	50	70	135^{S}	I 90^{A}	95	90	70
17	U 60^{S}	90	90	65	J 85^{S}	J 100^{S}	55	50	I 50^{S}	115	90	J 90^{S}	90^{S}	90	65	55	55^{S}	80^{S}	55	90	75	55	60	60
18	65	60^{S}	80^{S}	95	100	75	90	100^{S}	I 90^{C}	I 70^{S}	85	I 50^{S}	I 55^{R}	35	50	55	45^{R}	50	U 90^{S}	100	80	I 60^{S}	100	95
19	60	45	U 70^{S}	95	80	80^{S}	55^{S}	45^{S}	60	45	45	J 35^{S}	J 65^{R}	65^{R}	50	50	75	75	60	100	90	55	95	I 75^{A}
20	95	65	55	95	95	J 90^{S}	95	45^{S}	40	60	50	J 45^{R}	J 45^{R}	45^{R}	J 50^{R}	45	U 45^{S}	55	95	65	70	70	65	75
21	60	90	65	65	90	55	60	I 55^{S}	J 15^{R}	85	55	75^{R}	55	50	J 50^{S}	45^{S}	45	55	U 60^{R}	100	I 80^{A}	95	90	60
22	115	85	95	90	90	60	70^{S}	50	50	U 50^{S}	40	45	100	90	35	50	J 15^{R}	90	100	95	70	95	90	90
23	90	75	85	60^{S}	65	95	100	I 50^{S}	J 50^{S}	45	65	50	45	J 65^{R}	45	30^{R}	55	95	80^{S}	110	95	95	85	90
24	90	55	75	55	65	90	90	I 60^{S}	J 35^{S}	60	50	50	60	50	40	J 60^{S}	50	65	110	50	I 65^{S}	100	70	80^{S}
25	80	95	90	J 95^{S}	J 70^{S}	U 60^{S}	110^{R}	45^{S}	J 45^{S}	65	90	75	75	85	55	55	80	80	85	75	60	75	80	75
26	75	80	80	70	100	75	85	J 80^{S}	55	80	55	70	J 60^{S}	55^{S}	70	85	55	75	70	60	85	95	80	120
27	60	70	75	60	75	80	U 75^{S}	95^{S}	100	95	70^{R}	70	85	65	J 80^{S}	85	75	80	85	I 75^{A}	I 90^{A}	J 80^{S}	75	80
28	75	95	95^{S}	100	J 95^{S}	95^{S}	J 85^{S}	115^{S}	95	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	55	J 40^{R}	45	45	50	50	40	65	50	65	60	90	15	95	I 60^{A}
30	I 80^{A}	55	75	75	90	60	60	45^{S}	50	45	90	85	25	30	45	45	U 60^{S}	75	50^{S}	65	55	55	90	70
31																								
No.	28	28	27	27	27	27	27	27	26	29	29	28	28	29	29	29	29	28	28	28	28	28	29	29
Median	80	80	85	85	85	90	70	50	50	50	55	50	60	55	50	50	50	70	80	90	80	90	85	80

ypF2

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

The Radio Research Laboratories, Japan.

K 14

IONOSPHERIC DATA

Nov. 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	3.7	3.6	3.5	3.4	3.1	2.7	2.7	6.0	6.5	7.1	9.0	8.2	6.8	9.9	11.1	11.4	8.1	6.3	5.3	4.5	4.4	4.5	3.8	3.2
2	3.2	3.5	3.2	3.2	3.8	2.7	2.9	6.1	7.0	7.1	8.9	9.2	8.6	9.2	10.5	10.8	7.2	6.2	5.8	4.9	4.6	4.9	4.6	3.6
3	3.5	3.8	3.5	3.6	3.0	2.6	2.8	5.8	6.9	8.4	11.0	10.0	7.0	8.5	11.1	10.4	7.6	6.2	6.3	5.3	4.4	4.6	4.3	3.8
4	3.9	3.9	3.4	3.3	3.7	3.4	2.9	5.6	6.8	8.5	9.5	9.2	7.3	9.9	11.4	9.0	7.9	6.5	5.0	4.2	4.4	3.6	3.4	3.3
5	3.4	3.5	3.4	3.4	3.6	2.8	2.9	6.1	7.4	7.3	8.6	9.1	9.0	9.9	10.6	8.7	8.0	6.8	6.9	5.4	4.6	4.3	4.5	4.3
6	3.7	3.0	3.3	3.3	3.5	3.1	3.1	5.8	9.4	8.5	10.0	11.5	10.9	10.6	9.5	8.8	7.9	7.7	6.5	4.9	4.5	4.0	4.1	4.5
7	3.5	3.6	3.2	2.9	3.1	2.8	3.0	5.8	9.0	8.2	8.6	10.0	8.7	9.3	11.4	9.6	8.2	6.6	5.9	4.9	5.4	4.7	3.7	4.0
8	3.7	3.8	3.7	4.0	3.5	3.6	3.4	6.6	9.1	10.0	12.1	12.3	10.2	11.3	12.6	11.3	7.7	7.1	6.2	6.9	5.8	4.2	3.5	3.7
9	3.8	4.0	4.0	3.3	3.5	3.0	2.9	5.5	8.0	11.0	8.5	8.8	7.9	10.2	12.1	11.0	8.4	6.8	5.4	4.5	4.9	3.8	3.4	3.2
10	3.4	3.4	3.2	3.0	3.4	2.7	2.7	6.0	7.0	7.5	8.6	9.0	9.1	12.1	11.5	9.3	7.6	6.0	5.1	4.5	3.7	3.5	3.6	3.5
11	3.2	3.2	3.2	3.5	3.6	3.7	3.6	6.3	7.5	7.7	8.4	9.1	8.1	9.4	11.7	9.7	7.3	6.8	5.9	3.8	3.5	3.2	2.6	2.7
12	3.0	3.1	3.3	3.6	4.2	3.6	2.5	5.3	7.2	8.0	8.1	8.9	8.5	9.3	9.2	10.6	8.2	7.6	5.0	4.8	4.2	4.6	3.7	3.9
13	4.0	3.8	4.0	4.1	3.9	3.7	3.2	5.4	8.9	11.6	13.2	11.5	11.3	12.3	12.7	10.0	8.8	7.0	4.8	4.3	4.2	3.8	3.6	3.1
14	3.2	3.3	3.3	3.4	4.2	2.7	2.9	5.3	7.9	8.8	9.9	9.4	9.6	9.6	11.1	10.0	8.3	6.9	4.9	3.6	3.8	3.8	3.6	3.2
15	3.1	3.6	3.9	4.0	3.7	3.4	3.6	6.3	7.7	7.3	8.0	8.4	9.7	9.1	9.6	8.3	8.9	6.8	4.6	3.3	3.5	3.8	3.7	3.3
16	3.4	3.5	3.4	3.4	3.4	3.0	3.2	5.8	7.0	8.1	7.5	7.9	7.3	8.8	10.4	9.3	6.6	5.6	4.2	3.2	3.1	A	3.7	2.9
17	2.9	2.9	3.0	3.1	3.3	3.2	3.1	5.4	6.5	6.7	8	7.9	8.4	8.5	8.4	9.0	7.3	6.5	4.8	3.7	4.3	3.9	3.0	2.5
18	2.8	2.8	F	3.6	2.9	1.9	2.2	4.7	7.1	6.7	7.4	7.6	10.2	9.0	10.7	8.2	8.6	6.3	5.0	4.5	4.5	4.4	3.9	3.2
19	3.6	3.8	3.5	3.9	3.3	3.0	3.4	5.8	8.4	8.9	8.1	8.7	11.1	11.6	10.1	7.7	6.8	5.2	5.4	4.2	3.2	3.2	2.9	3.0
20	3.1	3.7	2.3	2.3	2.6	2.2	2.5	5.2	6.4	7.2	8.8	10.2	8.0	9.2	9.3	7.9	7.6	6.4	4.1	3.6	3.7	2.6	2.6	2.5
21	2.8	3.1	3.1	3.5	3.3	3.2	3.3	4.8	7.1	6.4	8.5	10.2	7.9	9.2	7.5	8.4	7.4	5.7	3.8	3.4	3.3	3.1	3.3	3.3
22	3.4	3.4	3.7	3.4	3.5	3.4	3.1	4.7	6.9	8.6	8.4	7.9	8.6	7.0	6.4	6.9	5.7	6.4	4.9	3.0	3.0	3.0	3.1	3.1
23	3.3	3.3	3.2	3.2	3.2	2.9	2.9	4.2	6.8	8.3	8.5	9.2	9.1	8.7	7.6	6.3	6.4	5.7	3.7	2.9	3.0	3.0	3.5	2.8
24	3.0	3.1	3.2	3.4	3.3	2.7	2.6	4.8	5.9	6.8	8.0	7.2	7.8	6.5	6.6	6.6	6.2	5.5	3.6	3.6	3.9	3.3	3.2	3.3
25	3.5	3.4	3.4	3.5	3.7	3.3	2.4	4.3	S	7.1	9.1	8.1	8.4	8.6	8.3	6.7	6.4	5.7	3.9	2.9	2.8	2.8	3.2	3.3
26	3.2	3.2	3.3	3.4	3.2	2.6	2.4	4.1	6.5	6.8	7.0	8.2	8.2	7.5	8.3	7.1	6.4	5.9	4.2	4.4	3.8	3.1	3.1	2.8
27	2.8	2.9	3.0	3.4	3.4	3.1	2.4	4.1	6.2	6.9	7.1	8.2	8.4	10.6	7.4	7.5	6.6	6.0	4.1	4.7	4.0	3.0	2.8	2.8
28	2.9	3.0	3.6	3.2	3.6	2.5	2.1	4.1	6.6	7.4	7.7	8.1	7.9	7.8	8.2	5.8	8.5	5.8	4.8	3.7	3.7	3.2	3.1	2.6
29	2.6	2.6	2.8	3.0	3.2	2.1	2.3	4.2	6.1	6.5	9.0	10.6	8.4	8.3	8.3	8.0	6.6	5.5	3.7	3.4	4.2	3.5	2.8	3.0
30	3.1	3.2	3.3	3.2	3.4	2.6	2.5	4.4	6.5	7.4	7.5	8.1	7.8	8.3	6.7	7.1	7.2	5.4	4.7	4.5	4.3	4.0	3.3	2.9
31																								
No.	30	30	29	30	30	30	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	29	30	30
Median	3.2	3.4	3.3	3.4	3.4	3.0	2.9	5.4	7.0	7.4	8.5	9.1	8.4	9.2	9.8	8.8	7.6	6.4	4.9	4.2	4.1	3.8	3.4	3.2
U.Q	3.5	3.6	3.5	3.5	3.6	3.3	3.1	5.8	7.8	8.5	9.0	10.0	9.1	9.9	11.1	10.0	8.2	6.8	5.4	4.7	4.5	4.4	3.7	3.5
L.Q	3.0	3.1	3.2	3.2	3.2	2.7	2.5	4.7	6.5	7.1	8.0	8.2	7.9	8.5	8.3	7.5	6.6	5.8	4.2	3.6	3.5	3.2	3.1	2.9
Q.R	0.5	0.5	0.3	0.3	0.4	0.6	0.6	1.1	1.3	1.4	1.0	1.8	1.2	1.4	2.8	2.5	1.6	1.0	1.2	1.1	1.0	1.2	0.6	0.6

foF2

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

The Radio Research Laboratories, Japan.

Y 1

447

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L			L	L								
2											L	L	L		L									
3											L	L	L			L								
4										C	L	L	4.3		L	L								
5											L	L	L	L										
6												L	L	L	L									
7																								
8																								
9												L	L											
10																								
11																								
12																								
13												L												
14										C		L	L	L										
15																								
16																								
17												L		L	I 4.3 L									
18												L	A	L	L									
19																								
20																								
21																								
22																								
23																								
24																								
25												L	L	4.3										
26													L	L										
27												L												
28												4.4 L	A											
29											L	44 L	I 4.6 L	4.5	L	L								
30												L	L											
31																								
No.												2	2	2	1									
Median												44	4.4	44	4.3									

The Radio Research Laboratories, Japan.

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

Y 2

IONOSPHERIC DATA

Nov. 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								1.70	2.35	2.70	3.05	3.20	3.30	3.25	3.05	2.70	2.00	A						
2								1.85	2.40	2.80	3.10	3.20	3.20	A	A	A	A	A						
3								A	2.35	2.80	3.00	3.20	3.20	3.20	3.00	2.60	A	A						
4								1.75	2.40	I 3.05 C	3.10	I 3.25 A	A	A	3.10	2.70	2.30	S						
5								S	2.40	2.95	3.20 R	I 3.15 R	3.25	3.25	2.90	I 2.65 A	2.50	S						
6								S	2.30	2.80	3.10	3.30	3.25	3.20	3.10	2.70	A	A						
7								S	A	2.70	3.00	A	A	3.25	I 3.10 A	I 2.85 A	2.40	A						
8								2.00	2.50 R	2.80	A	A	3.30	3.25 R	3.05	2.80 H	2.30	S						
9								S	2.40	I 2.65 A	I 3.10 A	I 3.15 A	3.30	3.30	3.15	I 3.00 A	2.50	A						
10								S	2.45	I 2.65 A	A	A	A	I 3.20 A	3.10	I 2.80 A	2.30	S						
11								S	2.40	2.95	3.10	3.25	3.20	3.20	3.00	A	A	1.80						
12								1.65	2.50	2.90	3.15	3.30	3.30	3.10	I 3.20 A	2.95	2.50	S						
13								S	2.30	2.70	3.00	3.10	3.20	3.00	3.00	I 2.70 A	I 2.35 A	S						
14								S	2.40	I 2.75 C	2.90	A	A	A	3.10	2.85	2.40	S						
15								S	2.30	2.70	I 2.85 A	3.10	3.10	3.25	3.00	2.80	I 2.35 A	A						
16								1.90	2.30	2.65	2.90	3.20 R	3.25	3.30 R	3.15	2.80	A	A						
17								S	2.30	2.65	3.05	3.20	3.20	3.10	2.90	I 2.80 A	2.30	A						
18								S	2.35 H	2.70	3.00	3.15	3.15	3.10	3.05	2.50	2.20	S						
19								S	2.25 H	2.70 H	3.00 H	3.10 H	3.05	3.00	2.95	2.75	2.20	S						
20								A	2.20 H	2.70	2.90	3.10	A	A	A	A	A	A						
21								S	2.25	2.60	2.90	3.10	3.10	3.10	I 2.95 A	2.75	I 2.25 A	S						
22								S	2.30	2.70 H	3.00 H	3.05	3.15 H	3.05	3.00	I 2.65 A	2.20	S						
23								S	2.30 H	2.70	3.00	3.10	3.20	3.20	3.10	2.70	2.30	S						
24								S	2.25	2.80	3.00	3.20	3.30 R	3.20	3.10	2.90	2.40	1.80						
25								S	2.00	2.60	3.00	3.15	I 3.25 A	I 3.20 A	I 3.10 A	2.80	2.35	S						
26								S	2.30	I 2.85 R	I 3.00 A	3.20	I 3.20 A	3.25	3.05	I 2.65 A	I 2.20 A	S						
27								S	2.10	2.80 H	3.00	3.10	I 3.10 A	I 3.10 A	I 3.00 A	2.80	2.30	S						
28								S	2.15 H	2.70 H	3.00	I 3.15 S	3.25	3.30 R	3.10	2.80	2.40 H	S						
29								S	2.30	2.80 H	3.00	3.10	3.20	I 3.15 A	I 3.10 A	2.80	I 2.20 A	A						
30								S	2.30	2.80	3.10	3.15	I 3.15 A	A	A	A	A	A						
31																								
No.								6	29	30	28	26	25	25	27	26	23	2						
Median								1.80	2.30	2.70	3.00	3.15	3.20	3.20	3.05	2.80	2.30	1.80						

foE

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

The Radio Research Laboratories, Japan.

Y 3

IONOSPHERIC DATA

Nov. 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	S	1.3	1.9	S	1.5^{s}	2.0	2.7	3.4	3.7	3.8	4.3	3.7	3.8	3.2	6.1	5.2	3.8	2.2	3.2	3.8	2.5	1.8
2	S	S	S	E	E	S	S	4	2.7	3.1	3.9	3.7	3.8	4.0	5.1	6.0	4.4	2.9	2.4	4.4	3.6	3.0	2.4	2.2
3	2.1	S	S	E	1.5	1.9	1.6^{s}	1.6	2.9	3.4	5.1	5.1	4.1	3.8	3.4	3.0	2.4	2.1	2.0	1.8	2.8	3.5	S	2.8
4	E	2.2	1.7	1.6	1.5	S	S	4	4	C	3.2	3.4	3.7	3.5	3.8	3.8	3.5	3.2	3.4	3.4	3.7	5.3	3.2	3.0
5	2.5	2.1	2.2	1.9	E	S	1.4^{s}	4	4	3.3	4.6	3.7	4.1	4.0	3.8	3.1	2.9	3.1	2.4	2.4	4.4	S	S	S
6	S	S	1.8	E	E	S	S	1.9	2.9	3.7	3.7	4.6	5.3	5.0	3.8	5.4	5.9	3.2	3.1	3.2	S	S	2.4	2.3
7	3.1	3.7	3.2	2.3	2.1	S	S	4	2.7	4	4	3.3^{M}	3.2	4	4.8	3.1	2.4^{4}	2.3	2.3	2.2	2.4	2.4	3.0^{M}	S
8	2.3	3.1	S	E	E	E	S	2.4	3.1	3.8	4.2	3.7	4.1	3.7	4	2.1^{4}	1.7^{4}	2.4	2.1	S	S	S	S	S
9	S	2.1	2.2	2.0	E	E	S	S	4	3.6	3.1	3.4	3.4	3.4	3.3	3.1	2.4^{4}	1.9	S	S	S	S	S	S
10	E	S	E	E	E	S	S	S	4	3.3	4.9	3.3	4.8	4.3.7	2.4^{4}	3.1	4	S	S	S	S	S	S	S
11	S	S	2.0	2.1	E	S	S	S	4	4	3.4	3.6	3.9	3.5	3.7	4.6	3.2	4	S	S	S	S	S	S
12	2.1	S	1.7	1.8	E	S	S	4	4	3.3	3.5	3.8	4.6	5.3	3.7	2.9^{4}	4	S	S	S	S	S	S	5.7^{M}
13	3.2	3.8	2.3	2.1	2.4	1.7	S	4	2.6	3.0	3.5	4.0	3.8	3.7	3.7	3.1	2.9	S	S	S	S	S	S	S
14	S	3.0	1.9	1.9	E	1.8	S	4	4	C	3.4	3.7	3.7	3.3	3.1^{4}	3.0	4	4	S	S	S	E	S	E
15	S	2.1	1.9	1.7	1.1	S	S	S	4	4.2^{M}	3.1	3.0^{4}	2.9^{4}	3.1^{4}	4	3.1	2.6	2.0	2.4	1.6^{s}	2.3	S	S	1.9
16	S	S	E	E	E	S	S	4	2.9	3.1	4	3.6	3.9	4.5	2.1^{4}	3.7	3.9^{M}	2.2	1.9	S	S	3.2	S	2.1
17	S	S	E	E	E	S	S	S	4	3.3	3.6	3.5	3.7	3.3	3.2	3.1	2.1^{4}	2.6	S	S	S	S	S	S
18	S	S	E	E	1.3	S	S	S	4	3.0	3.4	3.7	4.7	3.7	3.2	3.1	4	S	1.7^{s}	S	S	S	S	2.1
19	S	S	2.8^{M}	2.0	1.8	2.0	S	S	4	4	3.9	3.2	3.8	3.5	3.2	3.9	2.6	2.2	2.2	S	2.0	S	S	2.7
20	S	2.7	2.0	4.8	3.1	2.0	2.4	2.2	2.9	3.1	2.8^{4}	3.5	3.6	3.3	3.5	6.0	3.2	2.5	1.8^{s}	S	S	S	S	2.4
21	2.0^{s}	S	2.1	E	1.6	S	S	S	1.9^{4}	2.1^{4}	2.4^{4}	2.5^{4}	2.5^{4}	3.0^{4}	3.4	3.1	2.5	4	S	S	S	S	S	2.3
22	S	S	E	E	E	S	2.7	2.2	4	4	3.5	3.2	3.5	3.6	3.2	3.2	2.8	S	S	S	S	S	S	S
23	S	S	S	E	E	E	S	S	4	4	3.9	3.4	3.1^{4}	4	3.3	3.4	2.5	4	S	S	S	1.9	S	S
24	S	S	S	E	E	S	S	S	4	4	4.3	3.8	4.3	4.2	5.1	3.1	3.9	4	S	3.2	2.3	E	S	S
25	S	S	E	E	E	S	S	S	2.6	3.1	4.1	4.2	4.2	3.7	4.0	4	4	2.1	S	S	S	S	S	S
26	E	S	E	2.5^{M}	1.9	S	S	4	4	2.9	3.3	2.9^{4}	3.8	3.6	4.4	3.0	3.1	3.1	S	S	S	S	S	S
27	S	S	E	E	E	2.0	2.0	2.0	4	3.1	3.8	3.8	5.0	4.7	5.3	3.3	4	4	E	S	S	S	S	S
28	S	S	S	E	E	E	S	S	4	2.4^{4}	2.9^{4}	S	4.3	3.8	4.7	3.8	4.7	4	2.0	S	2.1	2.2	S	S
29	S	S	E	E	E	S	S	S	1.8^{4}	3.1	3.6	3.8	3.7	3.8	3.6	3.2	5.1	2.1	2.3	S	S	S	2.9	2.2
30	2.3	2.7	2.3	2.1	2.0	1.5^{s}	S	2.3	2.7	3.0	3.5	4.1	3.6	3.5	5.1	5.2	3.9	3.5	2.3	S	S	S	S	S
31																								
No.	11	11	23	30	30	11	6	17	30	28	30	29	30	30	30	30	30	25	17	9	10	10	6	14
Median	2.1	2.7	1.8	E	E	1.7	1.8	4	4	3.1	3.5	3.7	3.8	3.7	3.6	3.1	2.7	2.2	2.3	2.4	2.6	2.7	2.7	2.2
U.Q	2.5	3.1	2.2	2.0	1.6	2.0	2.4	2.1	2.7	3.3	3.9	3.8	4.3	3.8	4.0	3.8	3.9	3.0	2.4	3.3	3.6	3.5	3.0	2.7
L.Q	E	2.1	E	E	E	E	1.5	4	4	4	3.2	3.4	3.6	3.4	3.2	3.1	4	4	2.0	2.0	2.3	1.9	2.4	2.1
Q.R		1.0					0.9				0.7	0.4	0.7	0.4	0.8	0.7			0.4	1.3	1.3	1.6	0.6	0.6

foEs

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

The Radio Research Laboratories, Japan.

Y 4

IONOSPHERIC DATA

Nov. 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	1.6	S	1.2	1.7	S	S	G	G	3.3	3.5	3.7	4.3	3.6	3.8	3.7	4.4	4.8	2.7	1.9	3.1	3.7	2.5	E1.8S
2	S	S	S			S	S		G	3.1	3.8	3.6	3.8	4.0	3.9	4.3	2.6	2.4	2.2	4.3	2.9	2.2	2.3	2.2
3	2.1	S	S	-	1.5	E	S	G	2.8	3.2	3.4	4.0	G	3.6	3.4	G	G	2.0	1.9	1.8	2.6	3.2	S	2.0
4		1.6	E1.7R	E1.6R	1.5	S	S			C	G	3.4	3.5	3.5	3.7	3.7	3.4	3.2	3.2	3.2	2.5	A	2.3	2.2
5	2.4	2.1	1.4	1.5		S	S			3.3	3.4	3.6	4.0	3.6	G	G	G	2.5	2.2	2.2	A	S	S	S
6	S	S	1.2			S	S	G	G	3.1	G	3.9	4.4	4.8	3.6	4.3	2.7	G	2.6	2.6	S	S	2.0	2.0
7	2.5	2.5	2.2	1.7	1.5	S	S		G			G	G		3.5	G	2.2G	2.0	E	2.0	2.3	2.1	2.1	S
8	1.9	2.6	S				S	G	G	3.3	4.1	3.7	4.1	E3.7R		2.0G	1.7G	G	2.0	S	S	S	S	S
9	S	1.8	1.9	1.4			S	S		3.4	E3.1R	G	G	G	G	G	2.4G	G	S	S	S	S	S	S
10		S				S	S	S		3.3	4.2	G	4.4	E3.7R	2.2G	G		S	S	S	S	S	S	S
11	S	S	E	1.6		S	S	S			3.3	G	3.9	3.5	3.5	3.6	2.9		S	S	S	S	S	S
12	2.1	S	1.7	1.5		S	S			G	G	3.7	4.4	4.3	3.7	2.6G		S	S.	S	S	S	S	2.7
13	2.5	2.0	2.1	1.8	2.2	1.7	S		G	G	3.3	3.8	3.7	3.5	E3.7R	3.0	G	S	S	S	S	S	S	S
14	S	2.2	E	1.5		E	S			C	G	3.4	3.5	G	2.9G	2.3			S	S	S		S	
15	S	E	1.8	1.3	1.1	S	S	S		2.6	G	2.9G	2.6G	2.2G		G	G	G	2.2	S	E	S	S	E1.9S
16	S	S				S	S		1.5	2.4		G	3.8	4.2	2.0G	3.5	3.3	G	1.9	S	S	A	S	E
17	S	S				S	S	S		G	3.6	G	3.7	G	E3.2R	3.0	2.0G	2.4	S	S	S	S	S	S
18	S	S			1.2	S	S	S		G	G	3.6	4.6	3.5	3.2	G		S	S	S	S	S	S	2.0
19	S	S	1.9	1.6	E	2.0	S	S			3.9	E3.2R	3.6	3.4	G	G	G	2.1	2.0	S	1.9	S	S	E
20	S	2.0	1.9	2.0	2.0	1.6	2.1	2.0	2.6	2.9	2.8G	G	3.5	E3.3R	3.4	5.5	2.6	1.9	S	S	S	S	S	A
21	S	S	E		1.5	S	S	S	1.8G	2.0G	2.4G	2.4G	2.5G	2.9G	3.4	3.0	2.4		S	S	S	S	S	2.2
22	S	S				S	E	G			3.4	E3.2R	3.5	G	G	E3.2R	2.7	S	S	S	S	S	S	S
23	S	S	S				S	S			3.3	G	2.9G		G	2.0	2.5		S	S	S	1.9	S	S
24	S	S	S			S	S	S			3.9	3.8	3.5	3.6	4.5	G	2.2		S	2.4	2.2		S	S
25	S	S				S	S	S	2.6	G	3.4	4.0	3.7	3.4	G			1.9	S	S	S	S	S	S
26		S		1.1	1.1	S	S			G	3.3	2.9G	E3.8R	3.5	4.1	2.9	G	S	S	S	S	S	S	S
27	S	S				E	E	1.8		3.1	3.6	3.7	3.6	3.9	4.1	3.3				S	S	S	S	S
28	S	S	S				S	S		2.3G	2.6G	S	4.2	3.8	4.7	G	2.8		E	S	2.0	1.9	S	S
29	S	S				S	S	S	1.8G	3.1	3.3	3.4	3.6	3.3	3.3	2.6	4.2	1.8	2.2	S	S	S	E	2.0
30	1.9	E	2.1	1.3	1.2	S	S	G	1.7	G	3.4	3.9	3.6	3.4	4.2	4.6	3.9	2.6	2.0	S	S	S	S	S
31																								
No.	7	11	14	13	12	6	9	8	13	22	28	29	29	26	27	28	24	17	14	8	10	8	6	13
Median	2.1	2.0	1.8	1.5	1.5	E	E	G	G	2.8	3.3	3.4	3.6	3.5	3.4	2.6G	2.4	2.0	2.1	2.3	2.4	2.7	2.2	2.0

foEs

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

The Radio Research Laboratories, Japan.

Y 5

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IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E1.60	1.30	E1.50	E	E	E1.60	E1.60	E1.50	E1.60	1.55	1.60	2.00	2.20	2.00	2.00	1.90	E1.50	1.20	E1.40	E1.60	E1.70	E1.40	E1.50	E1.45
2	E1.60	E2.00	E1.60	E	E	E1.50	E1.60	E1.80	E1.60	1.60	1.65	2.00	2.20	2.00	1.70	1.60	1.60	E1.50	1.30	E1.50	E1.50	E1.60	E1.40	1.20
3	E1.50	E1.65	E1.35	1.50	1.05	E1.50	E1.60	1.25	1.60	1.60	1.70	2.00	2.20	2.20	2.10	1.50	E1.70	1.30	E1.40	E1.55	E1.60	E1.70	E2.20	E1.60
4	1.30	E1.40	1.10	1.00	E	E1.70	E1.70	E1.40	E1.50	I 1.50 C	1.70	1.60	2.20	2.20	2.00	1.60	E1.60	E1.50	E1.60	E1.50	E1.70	E2.00	E1.60	E1.70
5	E1.60	1.30	1.10	E	E	E1.70	E1.40	E1.60	E1.70	1.60	1.60	1.80	1.70	2.20	1.70	1.80	1.40	E1.50	E1.55	E1.40	E1.60	E1.70	E1.65	E1.80
6	E1.60	E1.85	E	E	1.10	E1.70	E1.50	E1.40	E1.50	1.70	1.60	2.05	1.60	2.00	2.00	1.70	E1.60	E1.60	E1.65	E1.55	E2.00	E2.00	E1.75	E1.70
7	E1.40	E1.50	1.10	E	E	E1.40	E1.60	E1.50	E1.70	1.50	1.50	1.60	2.20	2.10	2.00	1.60	1.50	E1.40	E1.50	E1.50	E1.60	E1.40	E2.00	E1.90
8	1.30	E1.50	E1.50	E	E	1.20	E1.35	E1.50	1.30	1.45	1.40	2.00	1.80	2.10	2.10	1.65	1.30	E1.70	1.30	E2.00	E2.00	E1.50	E1.55	E1.85
9	E1.50	E1.40	E	E	E	1.50	E1.60	1.80	1.35	1.60	1.65	2.00	2.00	2.00	2.00	2.20	1.70	E1.40	E1.60	E1.80	E1.60	E1.80	E2.00	E2.00
10	1.30	E1.70	1.30	E	1.05	E1.50	E1.85	1.90	1.30	1.60	1.60	1.95	2.00	1.70	1.50	1.50	E1.60	1.80	E1.70	E1.50	E1.60	E1.50	E1.60	E1.60
11	E1.60	E1.50	E1.50	E	1.10	E1.45	E1.60	1.70	E1.40	1.50	1.50	1.95	2.00	2.50	2.05	1.60	E1.60	E1.60	1.30	E1.50	E1.50	E1.40	E1.90	E1.80
12	E1.65	E1.80	1.05	E	1.15	E1.50	E1.50	E1.50	1.40	1.35	1.60	1.80	1.95	2.00	1.70	1.50	1.30	E1.75	E1.40	E1.60	E1.60	E1.50	E1.60	E1.60
13	E1.40	E1.40	1.15	E	E	E1.60	E2.00	E1.40	E1.50	1.45	1.50	1.60	2.05	2.30	1.80	1.80	1.50	E1.80	E1.50	E1.55	E1.50	E1.50	E1.50	E1.50
14	E1.35	E1.75	E1.65	E	E	1.30	E1.50	E1.50	1.30	I 1.30 C	1.60	1.90	1.95	2.00	1.65	1.50	E1.60	E1.60	E1.45	E1.30	E1.50	1.25	E1.80	1.20
15	E1.85	E1.80	1.60	E	E	E1.40	E1.50	E1.70	1.25	1.50	1.50	1.60	1.60	1.50	1.60	1.60	1.30	1.20	1.35	E1.50	E1.50	E1.50	E1.50	E1.60
16	E1.70	E1.60	1.20	E	E	E1.40	E1.60	E1.50	1.10	1.20	1.50	1.70	1.65	1.60	1.40	1.30	E1.60	1.40	E1.60	E1.50	E1.60	E1.50	E1.60	E1.50
17	E1.70	E1.50	1.30	E	E	E1.80	E1.40	E1.40	1.30	1.70	1.60	1.90	1.95	1.95	1.90	2.00	E1.60	E1.50	E1.50	E1.40	E1.70	E1.60	E1.90	E1.90
18	E1.70	E1.60	1.30	1.35	E	E1.40	E1.60	E1.70	E1.70	2.00	1.85	2.00	1.95	1.95	1.70	1.65	E1.60	1.90	E1.90	E2.00	E1.90	E1.90	E1.90	E1.65
19	E1.90	E2.20	E1.50	E	1.40	E1.70	E1.70	E1.80	E1.90	1.50	1.95	2.10	2.00	2.05	1.65	2.00	1.45	E1.60	E1.50	E1.65	E1.60	E1.95	E1.90	E2.00
20	E2.00	E1.90	1.20	E	E	1.30	E1.70	1.10	E1.50	1.60	1.95	2.00	1.95	1.95	1.95	1.60	1.60	E	E1.70	E1.90	2.20	E2.10	E1.50	E1.85
21	E1.80	E2.00	1.05	1.00	E	E1.90	E1.90	E1.85	E1.60	1.30	1.60	1.90	2.00	2.00	1.60	1.60	E1.65	E1.60	E1.30	E1.90	E1.40	E1.40	E2.00	E1.50
22	E1.70	E1.80	1.25	E	E	E1.50	E1.90	E1.60	E1.50	1.95	2.00	2.10	2.45	2.20	2.00	2.00	E1.50	E1.90	E1.60	E1.50	E1.65	E1.90	E2.00	E1.70
23	E1.40	E2.60	E1.60	1.40	1.20	1.30	E1.60	E1.70	1.60	1.40	1.70	2.00	2.30	1.90	2.25	1.90	1.55	E1.70	E1.50	E1.40	E1.50	E1.40	E1.90	E1.90
24	E1.60	E1.90	E1.60	1.15	E	E1.50	E1.70	E1.70	E1.65	1.55	1.90	1.80	2.00	2.00	1.40	1.50	1.40	E1.60	E1.70	E1.70	E1.80	1.30	E1.70	E1.50
25	E1.50	E1.70	1.20	E	E	E1.60	E1.30	E1.70	E1.50	1.70	2.00	2.20	2.00	2.00	2.20	2.00	1.80	E1.80	E1.50	E1.40	E1.70	E1.70	E2.20	E1.40
26	E	E1.45	1.30	E	E	E1.40	E1.60	1.10	1.70	1.80	2.20	2.40	2.20	2.40	2.00	1.90	E1.60	E1.60	E1.60	E1.40	E1.50	E1.70	E1.40	E1.40
27	E1.50	E1.50	1.20	E	E	E	E1.50	E1.50	1.70	2.00	1.90	2.00	2.55	1.95	1.80	1.50	1.30	E1.40	1.10	E1.50	E1.50	E1.50	E2.00	E1.50
28	E1.50	E1.70	E1.50	1.10	E	1.30	E1.50	E1.50	1.40	1.50	1.60	E3.60	1.85	2.00	1.95	1.50	1.50	E1.60	E1.50	E1.50	E1.40	1.20	E1.90	E1.60
29	E1.40	E1.90	1.60	E	E	E1.55	E1.70	E1.70	E1.40	1.50	1.95	1.70	1.90	1.90	1.75	1.55	E1.50	1.30	E1.50	E1.90	E1.90	E1.90	E2.00	E1.70
30	E1.70	E2.00	1.20	E	E	E	E2.00	E1.80	1.30	1.55	1.90	1.80	2.00	2.00	1.55	1.70	E1.60	1.00	1.20	E1.70	E1.90	E1.85	E2.10	E1.80
31																								
No.	30	30	20	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
Median	E1.60	E1.70	1.20	E	E	E1.50	E1.60	E1.55	E1.50	1.55	1.60	1.95	2.00	2.00	1.85	1.60	E1.60	E1.60	E1.50	E1.50	E1.60	E1.55	E1.85	E1.60

f-min

Sweep 1.0 Mc to 200 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 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	2.85	2.85	2.95	2.95	3.10	3.00	3.10	3.60	3.40	3.40	3.25	3.65	3.50	3.25	3.25	3.50	3.60	3.55	3.40	3.25	2.75	3.00	3.40	2.80
2	2.80	2.75	3.10	3.00	3.40	2.65	2.90	3.50	3.60	3.40	3.55	3.45	3.25	3.20	3.25	3.45	3.60	3.40	3.45	3.20	2.75	2.95	3.10	2.85
3	2.90	3.15	3.00	3.10	3.25	2.90	3.00	3.50	3.30	3.20	3.50	3.60	3.30	3.10	3.35	3.45	3.55	3.35	3.35	3.10	2.85	2.95	3.15	2.90
4	2.95	3.05	2.95	2.95	3.10	3.55	2.95	3.55	3.40	3.45	3.40	3.55	3.05	3.15	3.40	3.45	3.55	3.60	3.30	3.05	3.05	3.10	3.10	2.90
5	2.95	3.05	2.80	3.00	3.20	2.85	2.95	3.55	3.55	3.55	3.30	3.45	3.20	3.25	3.40	3.35	3.40	3.30	3.30	3.35	3.00	3.00	3.05	3.50
6	3.30	2.55	2.75	2.90	3.00	3.05	2.75	3.30	3.50	3.40	3.20	3.25	3.60	3.25	3.40	3.30	3.40	3.40	3.35	3.10	3.00	2.80	2.95	3.10
7	2.85	3.05	2.95	2.95	3.05	2.75	2.95	3.40	3.60	3.50	3.45	3.40	3.20	3.05	3.30	3.40	3.40	3.25	3.25	2.90	3.15	3.20	2.80	2.65
8	2.90	2.90	2.90	2.75	2.55	2.95	2.65	3.35	3.30	3.25	3.30	3.40	3.15	3.10	3.25	3.45	3.50	3.35	3.10	3.25	3.60	3.20	2.75	2.75
9	2.75	2.90	3.30	2.90	3.10	3.25	3.25	3.45	3.40	3.50	3.45	3.50	3.15	3.15	3.25	3.45	3.50	3.40	3.35	3.10	3.30	3.20	2.85	2.95
10	3.05	3.10	3.20	3.00	3.25	3.10	2.95	3.55	3.60	3.40	3.40	3.20	3.05	3.30	3.40	3.55	3.55	3.45	3.30	3.35	3.15	3.00	3.15	3.25
11	3.15	2.90	2.95	2.95	3.10	3.15	3.10	3.50	3.65	3.55	3.30	3.65	3.25	3.10	3.35	3.60	3.50	3.40	3.40	3.30	3.20	3.20	3.45	2.85
12	3.10	2.95	2.90	2.95	3.35	3.45	3.05	3.40	3.60	3.40	3.35	3.40	3.15	3.25	3.10	3.35	3.45	3.40	3.20	2.95	3.15	3.05	3.10	2.80
13	2.85	2.80	2.85	2.95	2.95	3.15	2.80	3.25	3.25	3.25	3.40	3.45	3.10	3.15	3.30	3.30	3.40	3.45	3.25	3.20	3.00	2.95	3.05	3.15
14	3.00	2.90	3.05	3.10	3.45	3.35	2.95	3.30	3.45	3.55	3.50	3.40	3.30	3.10	3.25	3.35	3.40	3.35	3.45	2.95	3.25	3.20	3.35	3.05
15	3.05	2.90	2.95	3.25	3.10	3.00	2.95	3.40	3.65	3.55	3.40	S	3.30	3.30	3.35	3.25	3.45	3.40	3.50	3.15	2.90	3.15	3.25	3.00
16	2.95	3.05	3.20	3.05	3.20	3.15	3.20	3.40	3.50	3.60	3.40	3.70	3.20	3.15	3.40	3.55	3.65	3.65	3.50	3.45	2.75	A	3.30	3.15
17	2.85	2.75	2.80	2.95	3.05	3.15	3.10	3.55	3.65	3.55	S	3.40	3.60	3.45	3.10	3.55	3.40	3.40	3.40	2.90	3.25	3.30	3.05	2.90
18	2.90	2.80	F	3.30	3.45	2.65	3.00	3.35	3.45	3.50	3.25	3.30	3.45	3.20	3.35	3.35	3.60	3.55	3.20	2.80	2.90	3.00	3.25	2.65
19	2.80	3.25	2.95	3.25	3.20	2.90	2.95	3.30	3.50	3.55	3.60	3.25	3.30	3.25	3.35	3.35	3.20	3.40	3.45	3.35	3.00	3.15	3.05	2.80
20	2.95	3.25	3.90	2.90	3.25	2.95	3.20	3.45	3.55	3.40	3.50	3.45	3.30	3.35	3.40	3.45	3.40	3.55	3.55	3.05	3.45	3.25	3.25	2.95
21	2.75	2.90	3.05	3.15	3.35	3.15	3.20	3.55	3.50	3.25	3.30	3.55	3.40	3.50	3.35	3.35	3.50	3.50	3.35	3.10	3.20	3.20	3.10	3.05
22	2.95	2.95	3.15	3.10	3.15	3.25	2.90	3.20	3.50	3.60	3.55	3.40	3.60	3.55	3.50	3.45	3.40	3.50	3.45	3.85	2.85	3.05	2.75	2.80
23	2.95	3.10	3.20	3.00	3.15	3.25	3.60	3.35	3.40	3.50	3.25	3.45	3.20	3.30	3.50	3.50	3.45	3.65	3.50	3.25	3.00	3.05	3.45	2.70
24	2.75	2.85	3.15	3.25	3.25	3.45	3.10	3.35	3.60	3.50	3.40	3.65	3.45	3.55	3.25	3.60	3.55	3.60	3.35	3.05	3.05	3.05	3.10	3.05
25	3.00	3.05	3.00	2.90	3.40	3.65	3.15	3.45	S	3.35	3.55	3.05	3.40	3.35	3.50	3.60	3.45	3.55	3.60	3.00	3.00	3.20	3.15	3.05
26	3.30	3.00	2.90	3.25	3.30	3.05	3.10	3.40	3.45	3.60	3.65	3.55	3.40	3.35	3.45	3.45	3.50	3.60	3.15	3.35	3.25	3.05	3.10	3.05
27	3.05	2.95	2.95	3.25	3.25	3.30	3.40	3.40	3.50	3.40	3.25	3.20	3.10	3.40	3.35	3.45	3.55	3.50	3.35	3.50	3.40	2.80	3.00	2.85
28	2.90	2.80	3.05	3.20	3.45	3.00	2.70	3.35	3.50	3.40	3.65	3.55	3.35	3.35	3.35	3.50	3.50	3.40	3.25	3.00	3.15	3.15	3.00	2.80
29	2.80	2.75	2.95	3.05	2.80	2.95	3.05	3.35	3.30	3.25	3.25	3.40	3.25	3.35	3.35	3.60	3.65	3.65	3.45	3.10	3.05	3.45	3.00	2.80
30	2.85	2.85	3.05	3.05	3.40	3.15	2.90	3.30	3.55	3.45	3.35	3.45	3.35	3.50	3.45	3.40	3.40	3.35	3.40	3.50	3.15	3.05	3.25	2.80
31																								
No.	30	30	29	30	30	30	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	29	30	30
Median	2.90	2.90	2.95	3.00	3.20	3.10	3.00	3.40	3.50	3.45	3.40	3.45	3.30	3.25	3.35	3.45	3.50	3.40	3.35	3.10	3.05	3.05	3.10	2.90

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

Nov. 1961 | M(3000)F1 | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' E

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

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

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

h'F2

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

IONOSPHERIC DATA

Nov. 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	295	265	260	235	255	270	265	230	235	230	230	230	240H	210H	255	240	235	245	230	240	E340A	E305A	250	305
2	320	305	255	260	240	E270SH	300	240	230	230	250	220	220	225H	250	250	230	230	225	E300A	305	280	255	305
3	310	270	250	250	225	305	290	230	235	230	250	I240A	220	210H	220H	235	235	230	240	225	295	290	260	300
4	270	260	255	295	255	240	285	230	235	I235C	230	220	200	200H	255	245	240	220	250	290	275	I270A	300	300
5	330	285	290	280	245	250	295	235	240	230	225	230	245	210	250	230	240	230	240	220	A	275	265	250
6	240	370	305	250	250	260	290	255	240	235H	225H	235	A	I230A	225	255	240	230	235	240	250	300	300	250
7	E310A	305	260	285	280	E290S	285	240	240	235	230	205H	220H	200H	250H	240	240	225	225	255	270	250	270	330
8	290	320	305	290	340	340	280	240	240	240	250	240H	E245AH	250	225H	235	210H	235	250	250	225	240	300	330
9	310	290	250	270	255	230	235	230	240	240	205H	225	225	230H	225H	235	235	225	225	245	240	250	305	290
10	275	275	240	255	255	260	305	240	230	235	255H	225H	255H	255H	230H	235	230	205H	240	230	240	260	265	255
11	280	305	275	290	255	255	255	235	230	215H	230	215H	215H	210H	245H	235	230	235	210	230	240	255	250	320
12	305	265	325	285	240	230	275	230	230	235	225	230H	255	255	250H	240H	235	225	205	250	245	255	250	375
13	340	320	305	300	295	240	305	255	245	240	245	225	205H	215H	250	230H	230	220	220	230	235	255H	250	270
14	280	315	290	270	240	210	260	240	240	I235C	230H	205	240	205	220H	230	230	210	225	250	245	250	245	255H
15	305	315	290	255	240	270	260	240	220	195H	215	225H	190H	205H	195H	230H	235	225	225	250	290	270	255	300
16	290	275H	255	250	250	245	240	230	235	230H	200H	230H	240H	270H	230H	240	220	220	220	225	270	I300A	255	250
17	315	330	315	275	270	250	255	230	230	235	230	230	250	225	230	235H	215H	220	220	245	255	230	270	345
18	300	355	340	250	205	400	295	250	240	200H	205H	240	I240A	230	220	205H	225H	220	245	265	280	275	230	360
19	340	265	275	255	250	305	300	250	240	245	240	210H	260H	225H	230	220H	215	230	215	250	260	255	290	E355A
20	325	260	220	E360A	300	305	E300A	235	225	205H	180H	250H	205H	220H	245H	230	230	230	210	250	240	E290S	260	A
21	370	330	255	250	250	270	240	215	210	210H	190H	240	225H	205H	230H	210H	235	210	220	250	250	250	285	290
22	275	340	260H	240	250	250	280	245	235	200H	245H	225H	230H	225H	230H	250	215H	230	240	205	295	290	330	335
23	300	E305S	260	275	255	220	240	240	230H	230	245	210H	200H	190H	240	230	220H	225	210	220	270	265	240	370
24	340	305	270	235	240	240	290	230	230	190H	250	235	230H	225H	I220AH	200H	230	225	215	310	275	225	260	270
25	270	255	275	275	225	210	240	240	240	220H	240H	240	245	205	230	210H	200H	225	210	250	260	270	290	270
26	270	255	295	250	210	245	250	240	240	240	225H	225H	250	210	I220AH	220H	190H	225	220	230	215	255	270	255
27	290	290	290	250	235	220	240	230	240	245	235	240	240H	250	I245AH	240	230	225	205	240	205	240	305	310
28	310	320	250	250	230	205H	E345S	250	230	190H	240	235	I215A	I215AH	I225AH	225H	250	230	215	230	250	280	290	E270S
29	305	355	305	240	245	E270S	310	240	225	230	250	240	225	235	210	220	230	225	230	270	255	250	300	310
30	315	300	300	275	240	240	E300S	240	230	230	225	245	225	220H	AH	AH	240	230	225	215	250	235	255	340
31																								
No.	29	30	30	29	30	27	27	30	30	30	30	30	28	30	29	29	30	30	30	29	28	28	30	28
Median	305	E305	275	255	250	250	280	240	235	230	230	230	230	220	230	235	230	225	225	245	250	255	265	300

h'F

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

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

Nov. 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	S	105	105	S	S	140	135	130	125	125	125	125	125	120	110	110	110	115	110	105	105	105
2	S	S	S	E	E	S	S	G	130	130	125	125	125	120	115	110	115	120	120	110	110	105	105	105
3	105	S	S	E	105	105	S	105	135	130	130	130	125	125	125	125	120	120	120	115	110	110	S	110
4	E	110	105	105	105	S	S	G	G	C	150	140	110	125	125	125	120	120	120	110	110	115	115	115
5	110	110	110	110	E	S	S	G	G	155	130	130	125	130	125	125	145	125	120	120	110	S	S	S
6	S	S	105	E	E	S	S	145	140	130	130	130	125	120	120	120	120	115	110	110	S	S	110	110
7	105	105	105	105	105	S	S	G	125	G	G	115	120	G	110	120	110	110	115	110	105	105	115	S
8	110	105	S	E	E	E	S	155	170	155	145	145	140	140	G	105	105	105	100	S	S	S	S	S
9	S	110	105	105	E	E	S	S	G	110	110	115	145	140	140	130	125	105	S	S	S	S	S	S
10	E	S	E	E	E	S	S	S	G	120	110	110	110	105	105	100	G	S	S	S	S	S	S	S
11	S	S	110	105	E	S	S	S	G	G	130	130	125	130	120	120	115	G	S	S	S	S	S	S
12	110	S	105	105	E	S	S	G	G	135	145	130	125	120	130	115	G	S	S	S	S	S	S	110
13	110	110	110	105	105	105	S	G	170	125	125	125	125	120	125	120	120	S	S	S	S	S	S	S
14	S	105	105	105	E	105	S	G	G	C	120	110	115	120	120	115	G	G	S	S	S	E	S	E
15	S	105	105	100	105	S	S	S	G	110	110	110	110	105	G	155	105	105	105	S	105	S	S	100
16	S	S	E	E	E	S	S	G	105	110	G	155	155	140	105	140	100	100	100	S	S	125	S	120
17	S	S	E	E	E	S	S	S	G	160	145	150	150	140	130	125	125	110	S	S	S	S	S	S
18	S	S	E	E	105	S	S	S	G	180	155	140	130	130	135	130	G	S	S	S	S	S	S	110
19	S	S	110	110	110	115	S	S	G	G	140	155	135	130	145	140	125	120	120	S	115	S	S	105
20	S	105	105	115	120	115	110	105	145	140	120	175	110	120	120	110	110	120	S	S	S	S	S	110
21	S	S	125	E	120	S	S	S	120	110	105	105	115	105	105	140	120	G	S	S	S	S	S	105
22	S	S	E	E	E	S	120	105	G	G	170	135	175	155	160	185	155	S	S	S	S	S	S	S
23	S	S	S	E	E	E	S	S	G	G	130	135	120	G	180	105	155	G	S	S	S	120	S	S
24	S	S	S	E	E	S	S	S	G	G	150	150	130	135	130	145	105	G	S	130	125	E	S	S
25	S	S	E	E	E	S	S	S	130	155	135	135	125	130	110	G	G	105	S	S	S	S	S	S
26	E	S	E	110	110	S	S	G	G	175	120	120	145	130	125	125	110	110	S	S	S	S	S	S
27	S	S	E	E	E	110	105	105	G	160	130	125	125	110	110	140	G	G	E	S	S	S	S	S
28	S	S	S	E	E	E	S	S	G	115	110	S	130	155	140	145	130	G	105	S	120	105	S	S
29	S	S	E	E	E	S	S	S	125	140	130	125	130	120	120	120	105	105	110	S	S	S	110	115
30	120	110	105	105	100	S	S	115	125	145	135	125	140	110	110	105	100	100	100	S	S	S	S	S
31																								
No.	7	11	14	14	12	6	3	8	13	22	28	29	30	28	28	29	24	18	14	8	10	8	6	13
Median	110	110	105	105	105	110	110	110	130	130	130	130	125	125	125	125	120	110	110	110	110	110	110	110

h'Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Nov. 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		f2		f	f2		f	c	h3	h	h	h2	c	h	h	c2	c4	l3	f2	f	f3	f3	f	f
2									c2	h2	h2	h	h	l	l3	l2	l2	l2	f	f2	f2	f3	f3	f
3	f				f2	f	f	l	h2	h	h	h	c	c	c	c	l	ll	f2	f	f2	f5		f2
4		f	f	f	f						h,l	h,l	l2	l	c	c2	c2	c5	f3	f3	f2	f3	f2	f
5	f3	f	f2	f2			f			h	h,l	h	c	c	c	l	h2	c2	f2	f	f3			
6			f2					c	h	h2	h	h	c	c2	c	c2	l2	l2	f2	f2			f	f2
7	f3	f2	f2	f2	f2				l2			l	l		l2	l	l	l	f	f	f	f	f	
8	f	f2						c2	h3 l	h,l2	h,l2	h,l2	h,l	h		l	l	l	f					
9		f2	f3	f						l	l	l	h	h	h	l	l	l						
10										l2	l2	l	l2	l2	l	l2								
11			f	f							h	h	c	h	c2	l3	l2							
12	f		f	f						h	h,l	h	c2	c2	l2	l								f2
13	f3	f3	f3	f3	f3	f			h	h2	h	h	c2	c	c2	l	l							
14		f3	f	f		f					h	l	l	l	l	l								
15		f2	f	f	f					l	l2	l	l	l		h,l	l2	l	f4	f	f2			f
16									l	l		h	h2	h	l	h2,l	l2	l	f			f5		f
17										h2	h2,l	h	h2	h	h	l2	l	l2						
18					f					h	h	h	h2	h	h,l	c,l			f					f2
19			f2	f2	f	f2					h2	h	h3,l	c,l	h,l	h	c	c2	f2		f			f2
20		f3	f2	f2	f f	f	f2	l	h2,l	h2	l	h,l	l	l	l2	l3	l3	l	f					f2
21	f		f		f				l	l	l	l	l	l2	l3	h2,l2	l2							f
22							f	l			h	h	h	h h	h	h,l	h2							
23											h	h	l		h,l	l h	h					f		
24											h	h	h,l	h	h2,l	h,l	l2			f2	f2			
25									h2	h	h	h	h,l	h,l	l2			l						
26				f	f					h,l	l2	l	h,l	h	c2	l	l	l						
27						f	f	l		h	h2	h2	l	l2	l2	h2,l2								
28										l	l		h2,l	h,l	h2	h2	h2		f		f	f		
29									l	h2	h	h	c,l	l	l2	l	l4	l	f2				f2	f2
30	f	f	f2	f2	f	f		l	l	h	h	h2	h,l	l2	l3	l3	l2	l2	f					
31																								
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

Y 12

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

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

No outstanding occurrence.

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Nov. 1961	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	4 4 4	3 - - (4)	4 4 4 4	4 4 4 4	N N N N			
2	5-	5 4 4	4 - - 5	5 5 5 5	5 4 4 4	N N N N			
3*	4o	4 4 4	4 - - 4	5 4 4 4	4 4 4 5	N N N N			
4*	4o	4 5 3	3 - - 5	4 3 5 5	5 4 5 5	N N N N			
5	4o	5 4 3	5 - - 3	4 3 4 4	5 5 5 5	N N N N			
6	4-	5 3 (2)	3 - - 3	4 5 4 5	4 3 3 4	N N N N			
7	4o	4 3 5	3 - - (5)	3 4 4 4	4 5 (3 4)	N N N N			
8	3+	3 3 4	(5) - - (3)	3 3 3 3	4 5 (4 4)	N N N N			
9	3+	3 2 4	(3) - - 3	4 4 4 4	4 (3) 4 4	N N N N			
10	3+	4 4 3	3 - - 2	5 4 3 3	5 3 3 4	N N N N			
11	3+	4 4 4	2 - - 3	4 3 3 3	4 3 4 5	N N N N			
12	4-	3 2 5	3 - - (4)	4 4 4 4	5 5 5 5	N N N N			
13	4o	4 3 3	4 - - 4	4 5 5 5	4 3 4 4	N N N N			
[14]	4o	4 5 5	3 - - 4	3 4 4 4	4 3 4 4	N N N N			
[15]	4+	4 4 4	3 - - 4	5 5 5 5	4 4 4 4	N N N N			
[16]	4-	4 3 4	3 - - (4)	3 4 4 4	4 (4) 4 4	N N N N			
17	4o	4 4 4	4 - - 4	4 4 4 4	4 5 4 5	N N N N	14.0	---	
18	3o	3 2 3	3 - - 3	4 4 3 3	5 5 5 5	U U U U	0619	---	115γ
19	3o	3 3 2	3 - - 3	4 3 3 4	5 4 4 5	U U U U	---	01xx	
20	4-	4 (3 4)	2 - - 4	4 4 4 4	5 5 4 5	N N N N			
21	3+	3 3 (3)	2 - - (4)	3 3 4 4	5 4 4 5	N N N N			
22	4-	4 4 4	3 - - 4	3 4 4 4	5 4 4 5	N N N N			
23	4-	3 3 3	3 - - 5	3 4 4 4	5 4 4 5	N N N N			
24	4+	4 4 4	4 - - (5)	4 4 5 5	5 5 5 (5)	N N N N			
25	4o	4 4 5	4 - - 5	3 3 4 4	4 4 4 4	N N N N			
26	4-	4 4 4	4 - - 5	3 4 3 3	5 4 3 4	N N N N			
27	4o	4 4 5	5 - - 5	3 4 4 3	4 3 3 4	N N N N			
28	4o	3 4 5	5 - - (C)	3 3 4 4	5 4 4 (5)	N N N N			
29	5-	- - 5	(C) - - 5	4 4 5 5	(5) 4 (5 5)	N N N N			
30	5-	(4) 5 5	- - - 5	5 4 4 4	4 4 4 4	N N N N			

* = day of Special World Interval

[ ] = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Nov. 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	SH										
	None															

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1961
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